Final Report

UNIFORM REPORTING SYSTEM FIELD TEST

JULY 1995

U.S. Department of Health & Human Services
Public Health Service
HRSA
Health Resources and Services Administration
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AUTHORSHIP AND ACKNOWLEDGMENTS

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EXECUTIVE SUMMARY

In September 1992, the Health Resources and Services Administration (HRSA) began a year-long field test of a uniform reporting system (URS) through which the impact of Titles I and II of the Ryan White Comprehensive AIDS Resources Emergency (CARP) Act of 1990 would be documented. Under these titles, major metropolitan areas and states receive federal grants to help them provide essential health and social support services to people with AIDS or HIV disease. The reporting system was intended to obtain data on the populations reached by Title I and II service providers, and on the types and amounts of services delivered to clients. This summary recaps the history of the URS and the field test experience.

As designed, the URS had two data collection components: aggregate data would be obtained in the form of an annual administrative report (AAR) submitted by the grantee for each organization receiving CARP Act funds; and client-centered data would be collected through a computer-encrypted unique client record number (URN) to ensure client anonymity. Gathering client-level information was a substantial departure from usual data collection efforts in grant programs sponsored by the Public Health Service, but it could make possible answers to still-open basic questions about program beneficiaries and accomplishments. It is noteworthy that recent proposals for reform of the health care system would rely on client-level data similar to the URS to monitor program performance.

HRSA designed the reporting system in collaboration with state and local grantees, service providers, and representatives of people living with HIV. This process, which involved hundreds of people, included seven public meetings and three rounds of written comments on the proposed data elements and reporting procedures. At the conclusion of the initial design phase, HRSA decided to request OMB approval for aggregate reporting in the form of annual administrative reports from service providers and to defer a decision on client-level reporting until its feasibility was determined in a field test. The test would assess the following:

- Feasibility of unduplicated, client-level reporting
- Value of the resulting information
- Level of effort and cost required of all participants
- Adequacy of measures, including the URN, to protect the identity of clients
- Types and amounts of technical assistance HRSA would have to provide
- Refinements needed in the URS data elements or procedures

In March 1992, HRSA announced the availability of funds to support a field test of the URS, and in summer 1992, awards were made to 15 grantees. Nine were states receiving Title II funds, two were cities receiving Title I funds, and four grants were awarded for joint Title I and Title II field tests in two states. The sites began to collect data with the URS in the latter half of 1992.

Supported by several forms of technical assistance provided by HRSA and its contractor, the field test sites performed two very substantial activities simultaneously: (1) they implemented the aggregate and client-level components of the URS, and (2) they participated in a detailed evaluation protocol, which involved:

- Completing numerous instruments to collect data on level of effort, cost, and difficulties encountered under the URS and the predecessor
- Data systems of participants
- Participation in structured individual and group interview sessions
- Preparing final reports on the test in their site

The final reports explained how the URS was implemented, the extent to which it was successful, the problems experienced, and how useful the site thought the URS data would be for grantee and provider organizations. These reports and other information gathered by HRSA through several evaluation

instruments and multiple visits to each site were synthesized into a draft field test report that was discussed at a September 1993 meeting of representatives from all test sites.

FIELD TEST STRUCTURE AND FINDINGS REGARDING URS DATA

This section briefly describes the field test experience and summarizes the test findings. The 15 grantees worked with 89 service provider agencies to collect client data; participating clients in each agency ranged from five to nearly 1,000 (Appendix Table A. 1 provides summary information on the 15 field test sites). The providers were case management agencies, primary medical care and other providers of health care and social services, AIDS drug assistance programs, and health insurance continuation programs. Data on client demographics, medical information, and service utilization were collected.

Participating grantees and providers implemented the URS in various ways. Some modified existing data collection systems to incorporate URS data elements. Others developed new systems, often automating their data collection efforts for the first time during the field test. Some used HRSA-sponsored software (COMPIS, IMACS, Toolbox), while others used or customized their own software systems.

Availability of URS Data

An important objective of the field tests was to learn more about the availability of URS data and the impact of collecting this data on service providers. Baseline information was obtained by sending inquiry forms at the beginning of the field test to participating service providers. The 64 that responded represented over 20,000 client encounters per month. They provided information about the availability of data needed to create each URS element, the frequency with which such data was collected, and how it was stored (I. e., on paper forms, in a computer database, or in some combination of both). Their responses indicated that, in general, providers already collected in some form the types of information called for in the URS (noteworthy exceptions were sexual orientation of clients and certain information

about their medical status.) Nonetheless, many providers need to alter their data collection activities to accommodate the URS, since information was often not collected as asked for in the URS.

With respect to the ease with which URS data elements could be collected, grantees and providers reported few significant problems. Most problems were related to certain data elements, including sexual orientation (the only optional item), the series of elements related to living arrangement, and income. Several participants reported difficulties integrating data from multiple sources, dealing with client characteristics that change over time, and consistently defining data elements that would be collected in different settings.

Coordination of Reporting Requirements

Many grantees and providers noted a broad concern about reporting requirements in general: multiple sources of funding require providers to report the same type of data according to different specifications and in different formats. Responding to all of these requirements required considerable effort from agency and provider staff Also, because various reporting systems focus on services made available through specific program funds, they were often of limited value for drawing conclusions about the needs or characteristics of a community's entire HIV-infected or symptomatic populations. Despite these issues, however, a number of grantees and providers noted that the URS data represented a core around which more comprehensive and useful data reporting systems could be developed.

Among the recommendations related to these issues was that HRSA should attempt to coordinate the requirements of "redundant" reporting systems and take steps to increase the compatibility of various federal reporting requirements.

Automation

Most providers used automated systems to prepare the URS electronic files and reports. Three used a centralized system (single software package and single shared database), and others used decentralized

systems (separate databases at each provider). Administrative and management information systems (MIS) staff most often prepared the URS files and reports. To consolidate data from multiple sources, most sites used automated unduplication procedures or software that prevented duplicate client records. They also used a variety of quality assurance methods involving both software and visual checks. Service-providing agencies that automated for the first time as part of the field test often reported difficulty in learning new and unfamiliar software, reconciling duplicate client records, and consolidating data in the brief duration of the field test.

Usefulness of Data

Most grantees and providers were optimistic about the usefulness of URS data. They commented primarily on the data's usefulness for informing decisions on policy, planning, and budgeting, and for preparing applications to funding sources. One grantee reported that URS data were used to develop cross-provider utilization profiles. These profiles allowed clients shared by several major providers to be identified. Additionally, one of those major providers used URS data to successfully complete a grant application for additional funding. Several grantees also noted that the URS would encourage the collection of additional data and form the basis of a unified, multifunder reporting system.

Quality of Data

Most providers and grantees implemented informal quality assurance procedures such as manually reviewing data before and after entry. However, several grantees developed comprehensive training programs for assessing data quality and provided for feedback of results to case managers and other direct service personnel.

Many grantees noted that integrating the URS data collection effort into daily provider operations was important to the accurate collection and entry of data They suggested that integration could be achieved by giving providers a voice in designing the local reporting system and by enabling them to customize their

own data systems. In particular, they noted that designing a system that could satisfy reporting requirements for Title I, Title II, and Title III would reduce the perceived reporting burden and result in better data.

Grantees recommended that HRSA develop ways to ensure data quality, encourage provider training programs, develop and distribute a glossary of URS data elements, combine reporting for all Ryan White Titles, and investigate the quality of URS data by comparing it with data obtained from organizations with formal quality assurance procedures.

CONFIDENTIALITY AND DATA SECURITY

Throughout the design of the URS, full protection of client confidentiality was seen by all participants as a fundamental requirement HRSA's approach to ensuring the confidentiality and security of URS data during the field test included six components:

1. Carefully selecting and refining URS data elements to minimize the possibility of identifying individuals
2. Prohibiting the publication of URS data in forms that could undermine individual anonymity (e.g., reporting actual counts for small cells in published tables)
3. Developing the encrypted URN system to link client records from multiple service providers
4. Developing comprehensive confidentiality guide books for grantees and providers
5. Obtaining a federal certificate of confidentiality to protect URS data against disclosure in federal, state, or local civil, criminal, administrative, legislative or other proceedings
6. Providing training and technical assistance for maintaining confidentiality

Nearly all grantees and providers reported that the URS effectively protected the identity of clients. In fact, many reported that the URS field tests resulted in an overall improvement in the measures intended to protect the confidentiality and security of data about clients. Per prior agreement, however, one grantee

did not supply HRSA with the URN, pending additional quantitative analysis of the ability of the URN to withstand certain technical attacks.

Participating service providers reported that clients expressed very little concern about the treatment of confidentiality in the URS. Grantees and providers did make some recommendations related to confidentiality of client information. They asked HRSA to develop consent forms that explain how the client-level data would be used. They also requested HRSA to review and approve how service providers maintain confidentiality.

IMPACT OF URS DATA COLLECTION ON RELATIONSHIPS

One of the goals of the field test was to assess the impact of the URS on provider-client and provider-grantee relationships. Providers viewed the use of computers in collecting data both positively and negatively--regardless of whether that use was related to the URS or general data collection. Indeed, it was difficult for them to differentiate between the various data collection efforts and their impact on the provider-client relationship. Some providers reported that computers were an impediment to developing rapport with clients and delivering services. They observed that any negative reactions by clients tended to occur during intake and to dissipate after they developed a relationship with clients.

During the design of the URS, service providers often expressed concern that the time required to collect and report URS data could detract from the time available for providing direct services to clients. In the discussion sessions that were part of the field tests, however, no provider reported that the number of clients dropped because of the URS or other data collection procedures. Nevertheless, providers stated that increasing data requirements have the potential to affect the number of clients served. To reduce this potential, providers recommended that HRSA continue to work closely with providers and grantees to coordinate local and federal reporting requirements, and that forms and software be developed to collect information for a variety of reporting efforts.

Overall, little or no impact of URS data collection on the provider-grantee relationship was reported, although a few relatively minor effects, more often positive than negative, were reported. It was suggested that the potential for negative effects could be reduced by better coordinating reporting requirements and, expanding the technical assistance given to providers by grantees.

URS IMPLEMENTATION AND OPERATION

Sites varied greatly in how they implemented the URS. In analyzing the field test data, HRSA categorized sites into four broad types of approaches to implementation: (1) modification of existing systems (used most often by service providers with an existing computerized data system and the technical expertise to augment it); (2) implementation of new systems (usually involving new software and hardware, this approach was used most often to replace a paper system); (3) implementation of the same system for multiple providers; and (4) use of a central database, with client information accessible to providers in real time.

Each approach brought with it certain advantages and disadvantages (summarized in Appendix E, Table E.2), but all sites faced some common obstacles in implementing the URS. These included the brief time frame of the field tests, a shortage of appropriate computer hardware and software in many sites, and staffturnover. In addition, all sites underestimated the amount of work that would be required in the field tests--to both implement the URS and participate in HRSA's evaluation protocols. Because grantees also tended to overrate the computer skills of service providers, they had to devote more time than expected to basic computer training and problem solving.

COST AND EFFORT REQUIRED TO IMPLEMENT THE URS

Patterns in the field test cost data in sites that modified existing systems differed from the patterns in sites that implemented new systems. While the cost estimates reflect the experience of grantees and service providers during the field test, several factors argue for caution in interpreting these estimates as

predictive of the cost of full-scale implementation of the URS. First, many grantees and providers limited this trial URS implementation to a subset of providers and clients; full implementation would require more resources for technical assistance and some other activities. Second, all grantees and most providers volunteered to participate in the field test. This self-selection may well have resulted in a cost and effort profile for the field test that would not be duplicated in full nationwide implementation of the URS, although the direction of any such bias is not entirely clear. To the extent that field test participants were better prepared for or more receptive than other grantees and providers to the URS, full implementation would generate higher costs. Conversely, the field test sites had a pre-existing interest in improved data systems, which may have prompted implementation approaches that were more comprehensive and thus more expensive than would be the norm under full implementation. Third, the grantee and provider staff who implemented the URS were generally the staff who participated in a variety of field test evaluation activities that would not be required in full URS implementation. Although the data collection instruments asked participants to exclude these activities from reports on URS cost and effort, participants were not always able to separate the two roles; thus, to some degree, they overstated URS implementation costs.

Overall findings regarding the costs of the URS in different settings include the following:

- Agencies automating for the first time during the field test reported substantially higher costs and substantially greater need for technical assistance than previously automated agencies or those that implemented the URS without automating.

- Developing a new system of data collection generally costs more than modifying an existing system. This is evident across the spectrum of URS costs, from training and technical assistance time to the staff needed to operate the URS to hardware/software expenses.

- Agency size did not affect initial implementation costs. The costs to train staff, purchase equipment, develop new intake and encounter forms, and reprogram existing data systems were as high for smaller agencies as they were for larger agencies.

- The costs to implement and to continue to operate the URS were higher if the URS was not fully integrated into an agency's data collection system. Parallel systems of data collection, chart abstraction, and multiple data sources especially increased the need for additional staff and time required to generate reports.

- Partly because the participating medical providers less often integrated the URS into their systems, their costs were generally higher than those of nonmedical providers.

- Providers with centralized systems of data collection had somewhat lower costs for hardware/software, consulting fees, and staffing. The initial development of such systems may have cost more than noncentralized systems, but the ongoing costs per provider tended to be less.

- Generally, both grantees and providers felt that the greatest potential for saving time through the URS was its report-generation capability. While many providers had some difficulty producing the initial reports, they reported that generating reports became (or would become) easier and less time consuming as staff became more familiar with the URS and automated report production.

Findings regarding level of effort and cost for specific activities include the following:

- ***Intakes/Encounters***. Generally, the URS caused little or no increase in intake or encounter time with clients. The one exception to this finding was that medical providers often reported an increase (sometimes significant) in the time it took to collect the URS information from patients (especially information related to sexual orientation, living arrangements, and income).

- Training ***Time***. Providers modifying an existing data collection system reported that it took from 0 to 4 hours per staff member to train data entry and direct service personnel. Training times were somewhat higher and quite variable for providers developing new data collection systems.

- ***Report Generation***. Small agencies (30 to 100 clients) and providers with integrated data collection systems generated initial reports in 0.5 to 10 person hours. Larger providers and those with multiple data did so in 10 to 20 person hours. Most grantees and providers reported that this time did or would decrease significantly over time. Grantees and providers developing new systems had more difficulty producing the initial reports. Because few of them reached steady-state operation during the brief field test period, it was difficult for them to fully estimate costs.

Estimated Annual Cost of Full Implementation of the URS

To supplement the field test cost data grantees and providers were asked to estimate the annual cost of fully implementing the field test version of the URS relative to their pre-URS baseline. These were actual estimates specific to their organizations, and they include costs related to assessing/ensuring data quality.

- ***Staffing Requirements.*** Grantees modifying an existing data collection system generally estimated a need for 1 additional full-time equivalent (FTE) to supervise the data collection effort and assist providers with the process (including automating their systems). Some estimated that an additional 0.25 to 1 FTE would be required at the regional or consortium level. These grantees estimated the workloads of data entry personnel to be minimal.

  Grantees developing new systems of data collection also estimated a need for approximately 1 additional FTE to oversee URS implementation. They did not report a need for additional staff to support activity at the regional level (although this may be needed in some cases). Some also estimated a need for 0.5 to 1 additional data entry FTE to accommodate paper-based providers.

  Providers modifying existing systems generally estimated they would need 0.25 to 0.5 additional FTEs in MIS/supervisory staff, with more than 0.5 FTEs required during the first few months of implementation. Most of these providers said they could implement the URS with existing data entry staff, though some larger agencies (500 to 1,000 clients) estimated they would require up to 1 FTE for data entry.

  Providers developing new data systems estimated that they would require 0.5 to 1 additional MIS/supervisory FTE to oversee initial implementation and provide ongoing assistance. These providers also estimated that they would need 0.25 to 1 additional data entry FTE depending on agency size.

- ***Hardware/Software Costs***. Overall, cost estimates for hardware and software did not vary with agency size. Certain grantee costs (e.g., consulting service) did depend on the number ofproviders in the system. Total hardware, software, and consulting costs increased with the number of administrative levels involved in data collection (providers, regional consortia, and grantees.)

  For providers and grantees modifying their data collection systems (and whose current hardware and software could not accommodate additions or modifications to the data system), computer hardware and software were estimated to cost between $1,250 and $2,250 per provider. Estimates of grantee costs for hardware and software ranged from $3,000 to $4,000. Estimates of computer consulting fees ranged as high as $5,000 to $6,000 per provider if custom programming was necessary.

  For providers and grantees developing new data collection systems (and whose current hardware and software could not accommodate additions or modifications to the data system), cost estimates for hardware and software were generally higher. They ranged from between $1,750 and $3,250 per provider for noncentralized systems to between $5,750 and $7,585 for centralized systems. Estimates of grantee costs for computer equipment ranged from $3,750 to $5,750. Estimates of computer consulting costs were as high as $10,000.

TECHNICAL ASSISTANCE IN THE FIELD TEST

Technical assistance to grantees and providers was critical to the successful implementation of the URS. HRSA initially offered seven types of assistance for the field test, then added five mechanisms that service providers and grantees requested during progress visits.

The initial modes of technical assistance were:

- ***URS-Compatible Software Systems.*** Two PC-based software systems (COMPIS and IMACS) were selected, modified, and made available to all field test participants.
- ***Toolbox Software. The*** Toolbox provided a set of utilities for manipulating URS data, including generating the URNs, URS datafiles, and verification tables. The Toolbox was distributed to all grantees, who could freely share the software with their service providers
- ***Documents and Manuals. These*** included technical references for field test participants.
- ***Bulletin Board System.*** Made available to all grantees and their service providers, the bulletin board system enabled participants to share electronic mail and computer files.
- ***Phone*** Assistance. A toll-free 800 number was established for grantees so that HRSA staff could answer questions about the field test and the URS.
- ***Scannable Forms Technology.*** Samples of scannable forms that could be used to collect URS elements were made available to grantees on request.
- ***On-Site Visits and Training. An*** orientation meeting was held to acquaint grantee staff and participating providers at each field test site with the project scope and to review implementation schedules. On-site training visits were scheduled on an as-needed basis.

The following additional types of technical assistance were developed during the field test:

- ***Answers to Common Questions. The*** questions most often asked by sites were collected, and answers were prepared and distributed to all sites in hard copy and on the bulletin board.
- ***Guidance on Using COMPIS with the URS.*** In response to some participants who were not clear about which of the many features in COMPIS were required for URS data collection, HRSA prepared and distributed a refined guidance document on COMPIS.
- ***URN Source Code and Documentation.*** For sites programming their own data systems, source code and documentation was provided via the bulletin board.

- ***User's Manual for the Bulletin Board.*** ***This was*** written for participants not experienced in the use of electronic bulletin board systems.

- ***Sharing of Forms***. Some sites developed comprehensive intake and encounter forms to encompass all information needed for the reporting systems for Title I, II, and III. HRSA shared these forms with other field test sites.

FIELD TEST RESULTS AND IMPACT

In November 1993, HRSA shared the following eight major findings from the field test at the annual meeting of all Title I and II grantees:

1. URS data are available and, in general, providers can obtain and report on the required information.

2. The field test version of the URS has some problematic data elements, including sexual orientation, income, living arrangements, and several elements regarding medical status. Recommendations were made for deleting or revising these elements.

3. Automating small providers must be approached cautiously. The benefits of automation for providers with small caseloads typically will not justify the level of effort required.

4. URS client-level data are valuable for a variety of local purposes including planning, ensuring accountability to funding sources and communities affected by HIV, and fund-raising.

5. Attention to data quality yields more useful data over time. Sites that completed several cycles of data submission observed substantial improvement in the data as a result of these efforts in data quality assurance.

6. The cost and level of effort required to implement the URS varies greatly with site configuration. Sites that implemented a separate URS data collection effort that paralleled existing data collection systems tended to have higher costs (and lower commitment to data quality and usefulness) than sites that integrated the URS into their existing data systems. In general, ongoing operation of the URS was much less labor intensive than the design and initial implementation phases.

7. The effort required to properly implement the URS is greater than the participants expected. Participants tended to underestimate the time needed to effectively explain URS data elements and definitions; compare required elements with those currently used by providers; modify intake and encounter forms; obtain and install hardware and software, or modify software; and train and retrain provider staff in new or revised forms and systems. Staff time for data entry at newly automated providers was especially underestimated.

8. URS confidentiality measures are adequate. The confidentiality guides were found to be especially helpful and in a number of instances enabled service providers to strengthen their pre-field test procedures.

HRSA CONCLUSIONS AND POLICY DECISIONS

Analysis of the field test led HRSA to three important conclusions about the URS:

- URS client-level data systems are feasible and valuable.
- Effectively implementing URS client-level reporting would require significant effort by grantees and service providers.
- A high level of technical support from HRSA would be needed for full implementation of the URS nationwide.

In addition, HRSA officials considered it imperative to implement some form of URS reporting in 1994 to obtain nationwide data on CARE Act clients and services. These data were needed to inform decisions about reauthorizing the CARE Act; program appropriations; and proposals at local, state, and national levels for reforming the health care system.

On the basis of these conclusions, HRSA made three policy decisions regarding the URS:

1. ***Implement the Annual Administrative Report in 1994.*** HRSA submitted to OMB a request for approval of mandatory implementation of the AAR, which is the aggregate reporting component of the URS. After receiving approval from OMB, HRSA notified Title I and II grantees in November 1993 that nationwide implementation would occur in 1994. Data collection started July 1, 1994, with the AAR for 1994 due to HRSA on March 15, 1995.

2. ***Proceed with Client-Level URS Reporting on a Voluntary Basis.*** HRSA announced that it would not take steps to mandate client-level URS reporting. Instead, the agency would continue to develop the client-level URS as a model, making changes in the data elements that the field test showed to be necessary. HRSA would also, as resources permit, provide technical assistance for the client-level URS to grantees interested in adopting or continuing the system. Grantees would be helped to develop data systems for local service planning and program management, and providers would be helped to prepare for the kind of data collection and reporting that would likely be required of them under various health care reform initiatives.

3. ***Establish Demonstration Sites for Client-Level URS Reporting.*** HRSA announced its intention to provide financial support, on a competitive basis, to a small number of grantees volunteering to continually collect and report client-level URS data. Data from these sites would be used to supplement the aggregate data from the AAR in preparing analyses and evaluations of CARE Act programs.

I. INTRODUCTION

Titles I and II of the Ryan White Comprehensive AIDS Resources Emergency Act of 1990 (often referred to as the Ryan White CARE Act) authorizes grants to metropolitan areas and states for HIV-related outpatient health care and social support services. The Division of HIV Services within the Bureau of Health Resources Development (BHRD) of the Health Resources and Services Administration (HRSA) works in partnership with state and local governments, national and community-based organizations concerned with HIV, organizations providing HIV services, and people living with HIV infection and AIDS to administer funds. In the context of this partnership, HRSA initiated a collaborative effort to develop a uniform reporting system and data set that would assist service providers, planning councils, care consortia, and grantees in documenting the impact of Ryan White CARE Act funding. This document is the final report on the year-long field test of the reporting system that was conducted by selected grantees and service providers in collaboration with HRSA staff beginning in September 1992.

This introductory chapter provides an overview of the Uniform Reporting System (URS) and the field tests. Chapter II outlines the characteristics of each field test site, describing the types of providers, the number of clients, and each grantee's implementation approach. Chapter III examines the availability, usefulness, and quality of URS data. Chapter IV addresses data security and confidentiality issues. The impact of the URS on grantee/provider and provider/client relationships is the subject of Chapter V. URS implementation and operation, including a discussion of the technical approaches employed by grantees, an analysis of level of effort and cost, and an examination of technical assistance needs are covered in Chapter VI The report concludes in Chapter VII with a summary of the results of the field test experience and the policy decisions generated.

A. THE UNIFORM REPORTING SYSTEM

1. Purpose: Legislative Accountability and Program Planning Needs

The Ryan White CARE Act establishes service priorities and authorizes certain types of HIV-related health and support services to be delivered to affected populations. The priority populations are those most heavily **affected** by the HIV epidemic (e.g., men who have sex with men, injection drug users and their sex partners, minority populations, and homeless people) and individuals or families who do not have adequate access to care (e.g., people with low incomes, the uninsured, women and children, families, people in some rural areas and street youth).

The Uniform Reporting System **(URS),** which was developed for programs funded under Title I and Title II of the CARE Act, is intended to obtain uniform data on the populations reached by Title I and II service providers and on the types and amounts of services delivered to clients. These data are needed for program planning and budgeting at the local, state, and federal level. They are also needed to assess the impact of Ryan White programs and funds on local service delivery. The information will help to determine whether services are delivered to the populations as mandated in the statute and according to locally established priorities.

2. Design

HRSA conceived of the URS in two components. The first was aggregate data on the numbers and characteristics of clients served, the characteristics of organizations providing care, and the types and extent of services provided. These data would be submitted to HRSA by grantees in the form of an Annual Adminktrative Report (AAR) for each service-providing organization receiving funds under Title I or II of the CARE Act. The second component was client-centered data, which would include demographic and service information on each client. These data would be collected by state and local grantees, and reported to HRSA with a computer-encrypted unique client record number that would allow clients to

remain anonymous. This anonymity would ensure that all information contained in each record would remain confidential.

The development of a client-level data set represented a significant departure from prior data collection efforts at HRSA and other federal health agencies; reporting systems for current grant programs nearly always include aggregate data only. Aggregate data, however, severely limit the ability of interested parties to answer questions involving combinations of client characteristics and services. The ability to create these combinations of data elements (called cross-tabs) with client-level data provides far greater analytical flexibility than does aggregate data. [1] It is possible to have such cross-tab tables reported in an aggregate reporting system. However, because of the size and number of such tables, they become enormously burdensome to prepare if more than a very few cross-tabs are desired. Moreover, such an approach offers no flexibility for preparing cross-tabs not defined at the outset.

In HRSA's view, because a client often receives health and social support services from many different providers, client-level data are essential to answer such basic questions as how many people are being served with CARE Act funds, what their demographics are, and which providers serve them. HRSA also felt that client-level data was needed to answer more complex questions concerning (1) the use of particular services by different client populations, (2) equitable distribution of services provided to different populations affected by HIV, and (3) profiles of and trends in service utilization by clients with different medical, demographic, and socioeconomic characteristics. Table I. 1 summarizes some important program monitoring and evaluation questions and the types of data needed to answer them.

'With an aggregate data collection system, for example, total numbers of women and total numbers of injection drug users served by an agency can be collected. But the system precludes calculating number of injection drug-using women because some women in the aggregate do not use drugs and some injection drug users in the aggregate are not women. With client-level data, however, a client record is created for each person, with all of their characteristics contained in it. Pieces of these individual records can be combined in many ways to examine different combinations of characteristics. One can, for example, count all of the records for men and then count how many of those men fall into various racial/ethnic categories.

TABLE I. 1

THE UNIFORM REPORTING SYSTEM: INFORMATION NEEDED TO ANSWER MONITORING AND EVALUATION QUESTIONS

Ouestion	Information Needed
How many individuals are served with Title I and Title II CARE Act funds?	Unduplicated count of individuals served by providers who receive CARE Act funds
What are the demographic characteristics of the individuals? What proportion of these individuals are women and children? Where do they reside? What proportion are homeless?	Demographic and other characteristics of clients, such as gender, age, residence, and living arrangements
Are services distributed equitably to the clients served across racial and ethnic groups?	Racial/ethnic heritage
What proportion of individuals served have low income? How many are uninsured? Do they have potential access to insurance through an employer?	Income, employment, and insurance source
What types of services did individuals receive? Did utilization of certain types of services increase over time as a result of CARE funds?	The types and quantity of certain types of services delivered to each individual served
What types of providers are delivering services funded under CARE?	Type of organization, location, and ownership status for each provider
How do the types and quantity of services provided vary across different provider types?	For each provider, provider type, major service categories, and volume of services provided in each major category
How accessible are service providers to target populations?	Provider location and location of residence of individuals served for each provider

The ability of the client-level URS data to render an unduplicated count of clients and answer such detailed and varied questions represented a significant improvement over most data collection systems. While some service providers can analyze their own client-level data (either through a computer system or hand-counted paper files), HRSA's URS represented a pioneering effort to aggregate and unduplicate client and service counts ***across service*** providers in a community, and across cities and states. For the first time, service providers, grantees, HRSA, Congress, and other interested parties would be able to see how many people were being reached by the Ryan White CARE Act at the local, state, and national level--a rare accomplishment for a government program. As resources become more restricted, and as health care reform moves forward, such data becomes extremely important--not only for Ryan White programs but. also for other government-funded initiatives. The client-level URS was thus a forerunner in the movement to use more specific and accurate data to inform grant program policy decisions.

At the same time, HRSA recognized that the participation of multiple organizations in the care of an individual client presents unique challenges for the collection and analysis of client-level data. Collecting such data at the provider level is difficult for some agencies. Effectively transferring these data to the grantee and from the grantee to HRSA for regional and national aggregation would require solving a variety of technical and procedural problems. Moreover, a successful system would require the data from widely varying regions of the country to be uniformly interpreted. It would also require the sharing of information and the use of a unique client identifier to properly link information about services received by clients from multiple sources. Developing such a system would therefore require carefully balancing benefits and costs while fully protecting client confidentiality,

To ensure that the URS would strike an appropriate balance, and in keeping with a philosophy of collaboration in establishing important program policies, HRSA developed and refined the proposed reporting system through extensive consultation with grantees, service providers, and representatives of people living with HIV. This process included seven public meetings and three rounds of written

comments. The initial design phase of the URS is summarized in Figure I. 1. Hundreds of individuals participated in this effort, including state and local grantees, providers of HIV services, people living with with HIV or AIDS, and interested national organizations such as the AIDS Action Council and the Association of State and Territorial Health Officials. Mathematica Policy Research, Inc. (MPR) provided technical assistance to HRSA under a series of contracts awarded through the program evaluation process of the Department of Health and Human Services.

All the participants concentrated on the potential cost of a client-level reporting system and its potential impact on confidentiality. From the outset, HRSA attempted to keep the cost of the URS reasonable by limiting the data elements to those that were most important for useful analysis and those that were already being collected by many organizations providing HIV services. Moreover, the proposed URS exempted certain types of service providers from client-level reporting (organizations that receive very small amounts of CARE Act funds or that provide services for which little or no client information is normally collected, such as food banks and drop-in counseling sessions). Similarly, HRSA saw the full protection of client confidentiality as absolutely essential. This led to the development of an encrypted client record number system and numerous procedures to safeguard confidentiality. Throughout the design process, HRSA made many changes to the URS in response to suggestions from reviewers.

3. **Proposed Content**

The initial design phase of the URS culminated in December 1991 with the presentation of the proposed URS at a 1 ½-day meeting in Washington, DC, with all state and local grantees and a number of service providers and interested national organizations. HRSA described the reporting system in detail in its publication, Ryan *white CARE Act, Title I and Title II, Uniform Reporting System, Documentation of Clients and Service: Data Set and Reporting Procedures,* December 199 1. The proposed system included four main components:

1. Definitions of the data elements to be collected and reported, which consisted of information about clients and service providers

2. A description of how the information would flow, covering the activities of service providers, grantees and HRSA and detailed specifications for the submission of data in electronic media

3. Measures to protect the confidentiality of information about clients

4. Technical assistance that would be available from HRSA, including (optional) software and scannable paper forms

a. Proposed Data Elements

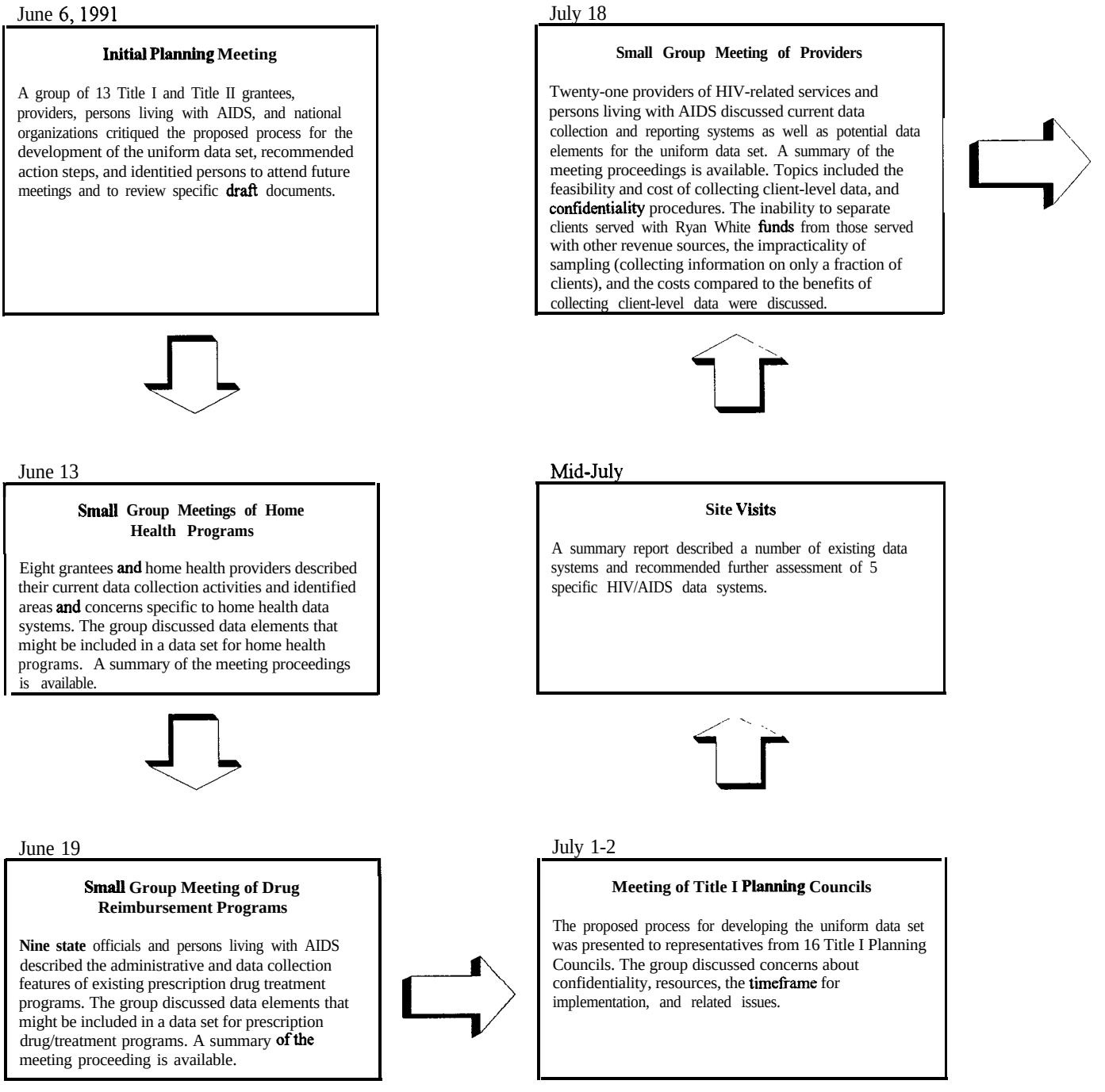
i. Information about Clients

The proposed URS would collect the following information that clients routinely give to their service providers: place of residence, gender and racial/ethnic heritage, whether they live with potential caregivers, family income, and whether they are employed. In addition, providers delivering primary medical care services would report basic HIV-related medical information. Most types of providers would report information about the number and types of services received by each client. All of this information would be submitted in the form of client-level data sets. No information that identifies a client, such as name, address, and other contact information, would be reported by service providers to grantees or to HRSA.

Accurate documentation of the number of clients served and the services received requires that participating providers and grantees define and report data uniformly. The need for uniformity is even greater given the structure of delivery systems funded under the CARE Act, in which multiple providers coordinate service delivery across large geographic areas. Analysis of national and regional trends, and of variation in service utilization within and across service delivery systems also requires uniformly defined information. Three sets of uniform data elements were therefore defined to accommodate the variety of programs operated with CARE Act funds. The first set was for Title I Programs, Title II Consortia programs and Title II Home- and Community-Based Care Programs. The second set was for state AIDS drug assistance programs (ADAPs). The third set was for state health insurance continuation programs.

FIGURE I. 1

PROCESS FOR DEVELOPING THE PROPOSED UNIFORM DATA SET FOR TITLE I AND TITLE II OF THE RYAN WHITE CARE ACT



August 8, 1991

Distribution of a Proposed Uniform Data Set

A first draft of a proposed uniform data set was distributed to all Title I and Title II grantees, participants in the earlier small group meetings, and other select reviewers. A report describing linkage data issues and confidentiality protections was also distributed.

August 14-15

Meeting to Review Proposed Uniform Data Set

Forty-three Title I and Title II grantees, providers, persons living with AIDS, and HIV/AIDS national organization representatives met to review and comment on the contents of the proposed uniform data set and related implementation issues. A summary of the meeting proceedings is available. Comments led to a substantial reduction in the size of the proposed Uniform Data System, distinguished between service data elements to be collected on an encounter basis from those to be documented on a yes/no basis annually. Comments from this meeting also led to the current "two-tier" provider approach in which larger providers of medical and dental care, case management services, rehabilitation services, mental health, home health care, and substance abuse treatment services and counseling would collect client and encounter information. Smaller providers of transportation, buddy and companion assistance, food, and other services would indicate only whether or not the client received such services.

August-October

Development of Draft Proposed Reporting System Specifications

Using recommendations from the August 14-l 5 meeting. the uniform data set was revised and detailed reporting specifications developed

October 28

Distribution **of Proposed Reporting System Specifications**

A draft of the reporting system specifications document is distributed to all grantees and to participants in earlier meetings. Comments and suggestions will be incorporated into the final drag reporting system specifications document, to be presented in a meeting in December.

December 12-l 3

Meeting to Present the Proposed Title I and Title II Reporting Specification

The proposed reporting specifications were presented and explained to all Title I and Title II grantees. Technical assistance options were presented and input received. Sample automated data systems were displayed and discussed.

These data sets would provide HRSA with information necessary to respond to inquiries from Congress, the Department of Health and Human Services, and others concerning the impact of CARE Act funds on individuals and communities.

ii. Information about Providers

The proposed URS also specified that all service providers receiving funds under Title I and Title II would submit an annual administrative report to the grantee. The report would include aggregate data concerning clients served; the types and quantity of services provided; and information on HIV/AIDS funding sources, HIV/AIDS expenditures, and staffing profiles. Appendix A lists the specific elements proposed for each type of program, for both client and provider information.

b. Information Flow

The proposed URS called for information to flow as follows:

- Provider organizations would collect information about their clients, the services provided to their clients, and their organization.
- Providers would send this information to their grantee in the manner requested by the grantee (or to their consortium if they are subcontractors).
- Providers could if they wish, generate descriptive reports and conduct analyses for their internal use.
- Grantees would generate verification tables and prepare electronic files.
- Grantees would send verification tables and electronic files to HRSA.
- Grantees would, as they desired, generate descriptive reports and conduct analyses for internal use and for use by their providers, planning councils, and consortia.
- HRSA would generate descriptive reports about the uses of funds and the types of providers receiving them; the agency would also conduct detailed analyses of national and regional information about clients and services.
- HRSA would distribute the descriptive reports and the results of the analyses to grantees and Congress.

c. Confidentiality

People with HIV infection have the right to know that information identifying them is kept confidential by everyone involved in HIV care. Protecting the confidentiality of clients was therefore an imperative throughout the process of designing the URS. Confidentiality would be protected in two main ways:

1. Use of an ***encrypted record number (the*** Unique Record Number) instead of identifying information such as name, address, or Social Security number to report and link information from multiple service providers regarding a single client

2. Use of ***appropriate procedures to safeguard*** client information by all parties involved in the URS

i. Unique Record Number

The Unique Record Number (URN) would allow providers, grantees, and HRSA to produce unduplicated counts and service records for clients receiving services funded, in whole or in part, with CARP funds and to analyze the quantity and variety of services clients received without revealing a client's identity. With pieces of information that are not likely to change (date of birth, gender, and four letters selected from the full name), a code would be generated for a client that would be the same regardless of where the client goes for service. Particular pieces of information were selected because they could produce unique codes for most individual clients (even when the number of clients is large) without allowing the identity of an individual to be determined For further protection, the code would be encrypted (scrambled) such that the original information cannot easily be reconstructed. The resulting nine-digit (encrypted) code, or URN, would not resemble the original information in any way.

The encryption process is based on a technique (a "message digest algorithm" called MD5) developed by RSA Data Security, Inc., which is widely used and has been shown over years of scrutiny worldwide to be extremely secure. The URN encryption process was embedded in several software packages HRSA made available to support the reporting system, but service providers without computers also could use

the URN. They would record the unencrypted pieces of information and obtain assistance from the grantee in generating the encrypted code of the URN.

ii. Confidentiality Procedures

URS procedures regarding the content and transmission of data reported from service providers to grantees, and from grantees to HRSA were designed to ensure that the information could not be used to identity clients. Names, addresses, Social Security numbers, and full dates of birth would ***not*** be included in information sent to grantees and HRSA Other procedures precluded making public any URS data that could jeopardize client confidentiality. For example, published tables of client characteristics would mask the actual numbers of clients in cells whose size is small relative to the size of the corresponding segment of the general population, as well as the corresponding row or column totals, where necessary, in order to prevent calculation of the masked cell counts.

In addition, two confidentiality guides were developed to assist service providers and grantees in reviewing their confidentiality procedures as part of implementing the URS One guide was addressed to service providers and the other was addressed to grantees. The guides were similar, but not identical, because service providers and grantees have different responsibilities under the URS and because service providers deal with truly confidential information, while grantees generally do not. The guides were based on standards of practice contained in HIV-specific and more general confidentiality policies. Although variation in local confidentiality laws precluded mandating a single approach nationally, the guides contained highly recommended procedures such as:

- Developing, communicating, and enforcing specific confidentiality policies
- Identifying an appropriate person as a confidentiality coordinator
- Conducting interviews with clients in appropriate settings
- Maintaining physical security of paper and electronic records

- Establishing hierarchically limited access to records, in which the most sensitive information is available only to staff with a genuine need to see it
- Encoding information that would identify individuals
- Encryption of sensitive data before transmission by modem/fax/diskette
- Use of written agreements, signed by staff, that they will follow the organization's confidentiality procedures
- Establishing penalties for any violations of confidentiality procedures by staff, contractors, or board members

d. Role of HRSA Technical Assistance

To implement the URS, HRSA would assist grantees in several ways and to the fullest extent that resources permitted. It would make specific technical assistance plans regarding the activities to be conducted after consultation with grantees. The assistance would consist of the following activities:

Training

- Issuance of a reporting system manual containing explanations of reporting system features, electronic file specifications, and data element definitions
- Organization of a national meeting for all grantees to explain the reporting system and the roles of grantees, program administrators, service providers, and HRSA in its implementation
- Training sessions for grantee staff with responsibility for the reporting system
- Phone assistance to explain the reporting system and data elements, and to provide data system advice

Implementing the reporting system (appropriate administrative and computerized procedures)

- Suggestions for the appropriate system to collect and report information, given the characteristics of the grantee, consortium, or provider
- Development of public domain (i.e., available at no cost to the user) data system software tailored to the URS
- Consultation and support by the original developers of the data system software brought into the public domain by HRSA and/or by other contractors

- Assistance in modifying existing systems and implementing computerized and non-computerized systems to support the reporting system
- Dissemination of information about commercial data system software that has been used by HIV service providers
- Dissemination of information about the implementation activities of grantees, consortia, and service providers

Working with grantees to ensure confidentiality of data

- Provision of the URN algorithm
- Specification of protections for low-prevalence areas, including modifications in reporting selected data elements
- Suggestions for confidentiality procedures and guidelines

Assistance to grantees in developing and utilizing analysis capabilities

- Provision of sample tables to providers and grantees
- Inclusion of limited report generating capabilities in the systems developed by HRSA

To assist HRSA in setting priorities for these activities, grantees were asked to participate in a technical needs assessment.

B. URS FIELD TEST

HRSA had planned to submit the proposed URS to the Office of Management and Budget (OMB) for approval shortly after the December 1991 presentation to grantees. This would be followed by nationwide implementation of the URS as soon as possible after OMB approval (allowing for adequate preparation by grantees and service providers). HRSA believed that this was feasible based on the evolution of written and oral comments by grantees, service providers, and others during the initial phase of URS design. HRSA's conclusion after analysis of these comments was that the suggestions and concerns of most reviewers had been incorporated and addressed to such an extent that implementation of the URS was acceptable to most of the CARE Act community. Although many grantees still expressed

some degree of concern about the administrative burden of the reporting system, most indicated that it would be manageable with technical assistance from HRSA. Relatively few expressed strong reservations about the URS. The comments of state and local grantees did not markedly differ from one another, nor did the comments from particularly high- incidence and other areas.

Grantee reactions during the December presentation generally followed these same lines. However, on the basis of the intensity of concerns expressed by some participants during and shortly after the meeting, HRSA concluded that an adequate consensus for full implementation of the URS did not yet exist. In spring 1992, HRSA notified grantees that implementation of the two components of the URS would proceed along different paths. OMB approval would be requested for mandatory submission of aggregate URS data in the form of Annual Administrative Reports from service providers. The aggregate component of the URS presented fewer technical issues than did client-level reporting, and it had not been identified by reviewers as problematic. In contrast, a final decision about implementation of client-level reporting would be deferred until after conducting a field test of the entire proposed URS. The purpose of the field test would be to evaluate the feasibility, including benefits and costs, of client-level URS reporting. It would be conducted by selected grantees and service providers, working closely with HRSA staff. The purpose and structure of the field test as well as the evaluation protocol are described below.

1. Purpose

The field test was designed to evaluate how the elements of the URS operated in a variety of settings. Specifically, the test was designed to provide HRSA with a detailed assessment of

- The feasibility of unduplicated, client-level reporting
- The value of the resulting information
- The level of effort and cost required of all parties
- The adequacy of the URN and various confidentiality procedures

- The types and amounts of technical assistance, including software and help in modifying forms and software at the grantee and provider levels, needed from HRSA
- Refinements that may be needed in the URS data elements and procedures

2. Structure

In March 1992, HRSA announced the availability of funds to conduct a field test of the URS. The announcement invited interested state and local grantees to apply for the funds, which would be awarded competitively under contracts and grants respectively. The selected sites would be required to participate in two related activities. First, they would implement the URS on a trial basis and submit URS reports to HRSA covering at least six months of data collection. Second, they would participate in a detailed evaluation protocol for the field tests (described below).

In preparing their applications, grantees would solicit participation from all or some of their service providers and decide on the technical approach they would adopt to implement the URS. Applicants were to state in their proposals which services and providers would be included in the field test and estimate the number, demographics, and other characteristics of clients for whom data would be collected and reported to HRSA. Applicants also were to submit both evidence that the selected service providers were committed to carrying out the roles prescribed for them and tables showing which URS data elements each participating provider would report, including how those elements compared with the information currently available. Title I applicants were to submit evidence that the HIV Services Planning Council for their area supported their application. All applicants were to provide assurance that they would abide by the confidentiality provisions of the URS. Finally, and most problematic for many grantees, applicants were to commit to beginning data collection within a month of receiving their award.

Forty of the 79 grantees requested application kits, and 19 submitted applications. Having this many grantees willing to participate made it possible to test the URS in a collection of sites that represent a very

wide range of situations with respect to (1) the programs, services, and clients involved and (2) the technical approach taken to test the URS. Fifteen awards were made to the grantees listed in Table 1.2.

TABLE I.2

URS FIELD TEST SITES

Title I	Title II	Joint Title I/Title II
Houston	Colorado	Fulton County/Georgia
San Francisco	Florida	Philadelphia/Pennsylvania
	Hawaii	
	Louisiana	
	Michigan	
	Mississippi	
	Ohio	
	Virginia	
	Washington	

HRSA obtained technical assistance in designing the evaluation protocol, developing the various data collection instruments, and implementing other aspects of the field test through an evaluation contract with MPR. The technical assistance program was developed with the advice of grantees and included the development and distribution of a series of seven URS guidance documents:

1. *URS Overview: The Uniform Reporting System of the Ryan White CARE Act (Title I and II),* June 1992
2. *URS Uniform Data Set Volume I: Elements Reported by Title I Programs, Title II Consortia, and Title II Home and Community Based Care Programs,* June 1992
3. *URS Uniform Data Set Volume II: Elements Reported by Drug Assistance Programs,* June 1992
4. *URS Uniform Data Set Volume III: Elements Reported by Health Insurance Continuation Programs,* June 1992
5. *Protecting the Confidentiality of HIV-Related Information: A Guide for Providers,* September 1992

6. *Protecting the Confidentiality of HIV-Related Information Under the Uniform Reporting System: A Guide for State and Local Agencies Receiving Ryan white CARE Act Grants,* September 1992

7. *Field Test Guide: Uniform Reporting System Field Test,* September 1992

Additional technical assistance activities included developing and distributing public domain data system software tailored to the reporting system; conducting training sessions on this software and the reporting system; disseminating information about commercial data system software and implementation activities of grantees, consortia, and service providers; providing guidance and information by telephone, on-site visits, and an electronic bulletin board; and working with grantees to develop data analysis capabilities.

3. Evaluation Protocol

The field test of the URS began in September 1992 and was designed to continue for six months. Several sites, however, began URS data collection after September, and HRSA extended the field test beyond this six-month period.

a. Site Activities

The field test sites were expected to perform the following activities:

- ***Implement the URS. The*** first step in implementing the URS was to assess the capabilities of particular providers and decide on the technical approach and any software to be used. The next steps were to assess providers' intake and encounter forms and modify them as needed; install any necessary computer hardware; hire any needed staff or consultants, making sure that the relevant staff understood their URS-related responsibilities; and review the HRSA guidance documents. Sites were required to collect URS data, perform quality assurance checks on the data, and establish the systems to generate and send the URS electronic files and reports to the appropriate recipients.

- ***Evaluate Data Collection Efforts.*** Sites were required to appoint a field test coordinator who would ensure that the relevant staff understood their evaluation-related responsibilities, completed the evaluation-related logs and questionnaires, and were available for site visits and interviews.

- ***Submit Monthly Reports.*** Each grantee was required to submit a monthly progress report to HRSA, describing success in implementing the URS, information on start-up activities and costs/time, IRS-related problems, the progress made in resolving those problems, staff and organizational changes, and plans for the following month. These reports were optional for providers.

- ***Submit Final Report*** Each grantee was asked to submit a final report to HRSA at the end of the field test. The final report described the general grantee and provider experience in implementing the URS, the extent to which the effort was successful, and the problems experienced and progress made toward resolving them. The reports also discussed the anticipated usefulness of the final URS data to grantee and provider organizations and the unduplication of client records.

b. Site Visits

During the field test, HRSA (and sometimes MPR) staff visited each site three times. The initial visit occurred at the beginning of the field test, at which time HRSA/MPR staff presented an overview of the field test and evaluation objectives, explained the data collection responsibilities of providers and grantees, and provided training for completing the first set of evaluation-related materials. A progress visit took place approximately six weeks after software installation and training had occurred. This visit included technical assistance, a discussion of progress and problems, and interviews with appropriate provider and grantee staff A final visit was arranged at the end of the field test period as providers and grantees were generating URS reports and electronic files.

c. Evaluation Instruments

Grantees and providers were asked to complete various evaluation-related instruments between visits. Some of these materials were one-time questionnaires, and others were ongoing evaluative tools. Table I.3 summarizes the field test evaluation instruments. In addition to the logs and questionnaires, grantees and providers were asked to answer interview questions during each site visit. Table I.4 lists the information sought by the interviewers and staff members responsible for answering them.

TABLE I.3

URS FIELD TEST EVALUATION MATERIALS

Materials	Purpose	Completion Period	Staff/Organizations Providing Information
		Logs	
Timesheet Log	To obtain information on staff level of effort	Completed daily during three specific 2-week periods: 1. Immediately alter the initial visit 2. Two weeks prior to the progress visit 3. Prior to the final visit	All staff involved in URS-related activities at each grantee and provider organization
URS-Related Purchases Log	To obtain information on non-labor expenditures related to the reporting system	Completed on an ongoing basis throughout the field test	Field test coordinators and accounting staff from all grantees and providers
Computer-Related Problems Log	To obtain information on URS-related computer problems	Complete on an ongoing basis throughout the field test	MIS staff of all providers and grantees
Missing URN-Related Elements and Problematic Uniform Data Set (UDS) Elements Log	To obtain information on the types of problems encountered while recording clients' answers regarding UDS elements, and to track the number of clients who refuse to submit identifying information	Completed daily during two specific 2-week periods: 1. Prior to the progress visit 2. Prior to the final visit	Intake staff at all provider organizations
		Questionnaires	
Site Background and Baseline Data Elements Questionnaire	To obtain basic information on each organization participating in the field test and a baseline measure of the extent to which currently collected data can be used to construct the UDS elements	Completed during the initial visit	Data managers of all providers, with assistance from HRSA staff
Questionnaire on Missing/unknown Responses in Baseline Data	To obtain a baseline measure of the reasons for unknown and missing responses in currently collected data	Completed prior to the progress visit	Data managers of all providers

TABLE I.4

URS FIELD TEST INTERVIEWS

Type of Visit	Purpose	Staff/Organizations Providing Information
Progress Visit	To evaluate HRSA software	MIS staff from all grantee and provider organizations
	To obtain information on preparatory activities/cost	Data managers and case manager supervisors of all providers
	To obtain information on problems encountered while recording client responses to URS elements	Senior agency staff from all provider organizations
	To obtain providers' general impressions of client reaction to the URN algorithm	
	To obtain information on providers' confidentiality policies and procedures	
Final Visit	To evaluate HRSA software	MIS and policy staff from all grantee and provider organizations
	To evaluate software materials and policy manuals	Senior provider staff or data managers of provider organizations
	To obtain providers' reactions to client-level data collection and reporting	
	To obtain information on the usefulness of URS data	

4. Final Meeting

After the completion of the field test, HRSA/MPR organized a final field test meeting in Warrenton, VA, in September 1993. Representatives from all field test sites attended. The purpose of the September meeting was to review and discuss a draft version of the field test final report produced by HRSA/MPR in late summer 1993 and sent to all field test grantees for review. It contained preliminary findings on the availability, usefulness, and quality of URS data; the impact of the URS on grantee/provider and provider/client relationships; URS data security and confidentiality; and the technical assistance and level of effort and cost necessary to implement the URS. These findings were based on an analysis of completed evaluation instruments, HRSA/MPR site visit reports, grantee monthly reports, and the grantee final reports.

The September meeting was organized around a series of workshops on each section of the draft report, offering field test participants an opportunity to help HRSA refine its conclusions about the URS. Grantees and some representatives of provider organizations gave feedback to HRSA/MPR on the initial analysis of field test evaluation data. Meeting participants reached consensus on the report content and made recommendations to HRSA/MPR concerning ways to change and improve the URS. On the basis of transcripts of the September meeting and the recommendations made there, as well as supplementary information regarding the cost of the URS that grantees submitted after the meeting, HRSA/MPR staff revised the draft report to produce this final version of the URS field test report.

II. THE FIELD TEST SITES

Eleven Title II grantees and four Title I grantees, working with 89 service provider agencies, participated in the URS field test. These providers included case management agencies, primary medical and other health care providers, other social services providers, ADAPs, and health insurance continuation programs. The collected service utilization, demographic, and medical information on all or some of their clients. The number of participating clients in each agency ranged from 5 to nearly 1,000. Table II. 1 shows types of providers by grantee. Table II.2 displays the types of data collected and number of clients in the field test by grantee.

Participating grantees and providers implemented the URS in various ways. Some modified existing data collection systems to incorporate URS data elements. Others developed new systems, often automating their data collection efforts for the first time during the field test. Some used HRSA-sponsored software (COMPIS, IMACS, Toolbox),[1] while others used or customized their own software systems. Table II.3 shows the various configurations by site.

This chapter summarizes the implementation approach of each grantee. Each summary includes the name of the grantee, the types and number of participating service providers, type of data collected, number of participating clients, and type of software used. Also included is a brief discussion of some of the issues faced by each grantee during the field test, including pre-field test data collection efforts, data flow from provider to grantee, and data collection plans at the time the field test ended.

[1]COMPIS (CD4 On-Lme Management and Patient Information System) and IMACS (Information Management of AIDS Cases and Services) are interactive, microcomputer-based systems designed to help organizations provide and monitor client services, including case management. The HRSA Toolbox is a software system containing URS-specific utilities that assist providers and grantees in preparing data for transmittal to HRSA.

TABLE II. 1

TYPES OF PROVIDERS AND PROGRAMS

Site	Case Management/ Social Services	Medical Services	Home Health Services	AIDS Drug Assistance	Health Insurance
Colorado	✓	✓	✓	✓	
Florida	✓			✓	
Fulton County (Atlanta)	✓	✓			
Georgia	✓	✓		✓	✓
Hawaii	✓			✓	✓
Houston	✓				
Louisiana	✓		✓		✓
Michigan	✓			✓	
Mississippi		✓	✓	✓	
Ohio	✓				
Pennsylvania	✓				
Philadelphia	✓	✓			
San Francisco	✓	✓			
Virginia	✓				
Washington	✓	✓		✓	

TABLE II.2

TYPES OF DATA COLLECTED AND NUMBER OF CLIENTS

Site	Demographic	Service Use	Medical	AIDS Drug Assistance	Health Insurance	Number of Clients
Colorado	✓	✓	✓	✓		1200
Florida	✓	✓		✓		3ooo
Fulton County (Atlanta)	✓	✓	✓			900
Georgia	✓	✓	✓	✓	✓	300
Hawaii	✓	✓		✓	✓	200
Houston	✓	✓				800
Louisiana	✓	✓	✓		✓	300
Michigan	✓	✓				4000
Mississippi	✓	✓	✓	✓		200
Ohio	✓	✓				200
Pennsylvania	✓	✓				100
Philadelphia	✓	✓	✓			300
San Francisco	✓	✓	✓			1900
Virginia	✓	✓				150
Washington	✓	✓	✓	✓		1700

TABLE II.3

FIELD TEST CONFIGURATION AND SOFTWARE

Site	Central Database	Common Software	Custom	COMPIS	IMACS	Toolbox	Other
Colorado	✓	✓	✓		✓		Scannable forms
Florida		✓	✓	✓		✓	EPI-INFO
Fulton County (Atlanta)		✓	✓				EPI-INFO
Georgia		✓	✓				EPI-INFO
Hawaii		✓	✓	✓			
Houston	✓	✓	✓				
Louisiana		✓	✓				
Michigan					✓	✓	COMPASS
Mississippi		✓		✓			
Ohio	✓	✓	✓		✓		
Pennsylvania		✓	✓			✓	
Philadelphia		✓	✓			✓	
San Francisco		✓	✓			✓	
Virginia						✓	Paper forms
Washington			✓			✓	

COLORADO

Grantee

Governor's AIDS Council, State of Colorado (Title II)

Providers

Participating

Of the four Title II consortia in Colorado, three participated in the field test. Several of the largest providers in the fourth consortia also participated, as did a statewide drug reimbursement program and a statewide home health care program. Each provider collected information on all clients receiving Ryan White-eligible services.

Types

Case management/social services (2)
Medical (1)
Home health (1)
Drug assistance (2)

Coverage

Rural and urban

Data Collected

Demographic
Service use
Medical
Drug assistance

Approximate Number of Unduplicated Clients

1,200

Software

Providers

One provider supplemented an existing scanner-based system with HRSA software (IMACS) . Other providers replaced informal, paper-based systems with HRSA software (IMACS).

Grantee

HRSA software (IMACS)

Client-level data were entered into a single, central database at each provider location using IMACS software. This software was used to generate URNs and URS electronic files.

FLORIDA

Grantee	**State of Florida, Department of Health and Rehabilitative Services (Title II)**
Providers	**Participating** A subset of the state's Ryan White providers **Types** Case management agency (1) Consortium lead agency providing case management services (1) Drug assistance (1) **Coverage** Rural and urban
Data Collected	Demographic Service use Drug assistance
Approximate Number of Unduplicated Clients	**500 case** management/social services **2,500 drug** assistance
Software	**Providers** Case management/social service providers used COMPIS and custom software. The drug assistance program used custom software based on Epi-Info. **Grantee** HRSA Toolbox

The original paper-based, aggregate reporting system was replaced with a client-level system. One provider augmented the COMPIS software system with custom software designed to be more useful to case managers and to expand reporting capabilities. Consortia received client data from providers, unduplicated this information, and forwarded it to the state. URNS were generated within COMPIS. The ADAP converted Epi-Info data into dBase, and the Calcurn module in Toolbox generated the URN. Data was collected on all clients served by the participating providers.

FULTON COUNTY (ATLANTA)

Grantee	**Georgia Department of Human Resources** **Division of Public Health (Title I)**
Providers	**Participating** A subset of providers supplied the grantee with data. The planning council participated in the review and analysis of reported data. **Types** Six agencies provided case management/social services and/or medical services. **Coverage** Urban
Data Collected	Demographic Service use Medical
Approximate Number of Unduplicated Clients	**900**
Software	**Providers** Providers replaced primarily paper-based systems with a custom system based on Epi-Info. **Grantee** Grantee used custom software based on Epi-Info.

The Georgia Title II field test was conducted in conjunction with the Atlanta Title I field test. Organizations in both tests used identical data systems and reported data to the same entity within the Georgia Department of Human Resources. See the summary of the Georgia Title II field test on the next page for a discussion of data systems.

GEORGIA

Grantee	**Georgia Department of Human Resources** **Division of Public Health (Title II)**
Providers	**Participating** A subset of the state's Title II consortia supplied the grantee with data. **Types** Five consortia provided case management/social and medical services through seven provider sites. Drug assistance (1) Health insurance (1) Coverage Rural and urban
Data Collected	Demographic Service use Medical Drug assistance Insurance
Approximate Number of Unduplicated Clients	**300**
Software	**Providers** Primarily paper-based systems were replaced with a custom system based on Epi-Info . **Grantee** **The grantee used** custom software based on Epi-Info.

The Georgia Title II field test was conducted in conjunction with the Atlanta Title I field test. Organizations in both tests used identical data systems and reported data to the same entity within the Department of Human Resources. Consortia that had relied **primarily** on paper-based systems installed Epi-Info to collect client-level HIV data for the URS. The grantee, in conjunction with the consortia, developed data intake and encounter forms containing the required URS data elements plus additional site-specific elements. Case managers filled out the forms, which were then entered into Epi-Info at the local site. **URNs** were generated locally. Data diskettes were periodically forwarded to the grantee, who unduplicated data and generated HRSA-format electronic files and verification tables. At the time that the field test ended, the field test system continued to be used by the consortia and grantee. Future plans at that time included expanding the system to include all clients of field test **organizations and the installation of Epi-Info at other consortia.**

HAWAII

Grantee	**State of Hawaii, Department of Health, STD/AIDS Prevention Branch (Title II)**
Providers	**Participating** **All** Ryan White case management and service (nonmedical) providers and the state's only consortium **Types** Case management/social services (6) Drug assistance (1) Health insurance (1) The field test started with 5 case management providers. During the test, 2 were added and one of the original providers dropped out of the consortium. Coverage Rural and urban
Data Collected	Demographic Service use Drug assistance Health insurance
Approximate Number of Unduplicated Clients	**200**
Software	**Providers** COMPIS and custom software (drug assistance) **Grantee** COMPIS

Before the field test, CARE subcontractors provided the consortium with client-level data on paper. The consortium then entered the information into an automated system. The drug assistance and health insurance programs maintained separate automated systems. During the test, the consortium system was replaced with an automated system based on HRSA URS software (COMPIS). Sites provided monthly report disks and verification tables that were integrated and summarized by consortium staff. The drug assistance program modified its automated system to comply with URS standards, while the health insurance program replaced its system with COMPIS. Data from all programs were sent to the consortium, where tmduplication is performed. At the time the field test ended, the system developed for the field test continued to be used and there were plans to include clients of other (non-CARE) programs.

HOUSTON

Grantee	**Harris County Health Dept./HIV Services Division (Title I)**
Providers	**Participating** All Ryan White case management and service (nonmedical) contractors participated in the field test. The consortium and planning council did not directly receive field test data. **Types** Case management/social services (17) During the field test, 5 case management/social service providers were added to the 12 originally scheduled to participate. Coverage Urban
Data Collected	Demographic Service use
Approximate Number of Unduplicated Clients	800[2]
Software	**Providers** Custom software **Grantee** Custom software

Houston originally intended to replace its existing automated system with HRSA-supplied software (DC ARMS). When it became apparent that DC ARMS would not be available in time for the field test, Houston elected to enhance its existing automated system to incorporate URS data elements and to improve performance. Information was collected on all clients served by participating providers. At the time the field test ended, the new system was used daily at each provider site. Provider staff used microcomputers as terminals to communicate via telephone with a database located on a central local area network in the Health Department. The URN, calculated at the central system, was used to identify clients in lieu of name, address, or similar information. Because client data were being maintained in a central database, unduplication procedures were not necessary when reports were generated.

'1,200 clients were in the data system. 800 received services during the field test period.

LOUISIANA

Grantee	**State of Louisiana, Department of Health and Hospitals, HIV Program Office (Title II)**
Providers	**Participating** A subset of the state's Title II consortia and providers collected information on all clients receiving services. **Types** Case management/social services (5 consortia) State-administered home health care/hospice program (1) Health insurance (1) **Coverage** Rural and urban
Data Collected	Demographic Service use Medical Health insurance
Approximate Number of Unduplicated Clients	**300**
Software	**Providers** Paper-based systems were replaced by a state-developed custom software system. **Grantee** The state developed custom software.

The case management providers (consortia) converted from paper-based systems to a custom, statedeveloped software system designed to support new state client-level reporting requirements. The state-administered reporting system was implemented at about the same time as the field test. The state's software was the first data system implemented for these programs. During the test, most providers and programs collected data using state-supplied paper forms. Some providers entered data locally and periodically forwarded electronic files to the grantee, while others relied on the grantee to enter data. One provider abstracted client data from charts and entered data locally. The grantee unduplicated data, generated the URN, and prepared verification tables and electronic files. The grantee and providers are continuing to use the state system. At the time the field test ended, the grantee intended to expand it to other providers/consort&and to enhance the system's report-writing capabilities.

MICHIGAN

Grantee	**State of Michigan, Department of Public Health (Title II)**
Providers	**Participating** A subset of the state's Ryan White contractors participated in the field test. Title II consortia did not directly participate. **Types** Case management/social services (3) Drug assistance (1) Coverage Urban (Detroit, Flint)
Data Collected	Demographic Service use
Approximate Number of Unduplicated Clients	4,000
Software	**Providers** Existing commercial software (COMPASS) and existing HRSA software (IMACS) **Grantee** HRSA Toolbox

Providers modified existing commercial case management software (COMPASS) and HRSA software (IMACS) that they had purchased and were using prior to the field test. This software was used to collect URS data elements, perform unduplication, and generate URS reports and electronic files. Providers collected data on all their clients. Providers and grantees unduplicated field test data. At the time the field test ended, providers intended to continue using the modified systems.

MISSISSIPPI

Grantee	**Mississippi State Department of Health (Title II)**
Providers	**Participating** Two providers receiving Title II funds participated and collected information on new and existing clients. **Types** Medical (2) Drug assistance (1) One of the medical providers dropped out after the test began. **Coverage** Rural
Data Collected	Demographic Service use Medical Drug assistance
Approximate Number of Unduplicated Clients	**200 drug** assistance program **20** medical/home health
Software	**Providers** Mixed paper/automated systems were replaced with HRSA software (COMPIS). **Grantee** Paper-based system was replaced with HRSA software (COMPIS).

As of the end of the field test, HRSA software (COMPIS) has permanently replaced the state's paper-based, client-level reporting system. Data on all clients were entered locally by the providers and then sent to the grantee, who unduplicated data and generated reports and electronic files.

OHIO

Grantee	**Ohio Department of Health (Title II)**
Providers	**Participating** Case managers in one consortium collected data on all clients receiving Ryan White-eligible services. **Types** Case management/social services (7 case managers associated with four agencies) Coverage Primarily urban, although some case managers served clients in rural settings
Data Collected	Demographic Service use
Approximate Number of Unduplicated Clients	**200**
Software	**Providers** Existing HRSA software (IMACS) **Grantee** An existing custom system, written in dBase IV, was modified.

Before the field test, case managers accessed a central, automated system (IMACS) via modem. This system provided case management support functions, while a second, paper-based system was used to satisfy state client-level reporting requirements. During the test, participants investigated other HRSA software (COMPIS) but elected to modify the existing IMACS system to collect URS data. The modified IMACS system was used in parallel with the state system. At the end of the field test, grantees and providers intended to continue using the modified IMACS system and to replace the state paper forms with special reports generated by IMACS. URS test data were unduplicated and URNs and electronic files generated by the central IMACS software.

PENNSYLVANIA

Grantee	**Department of Health, Bureau of HIV/AIDS (Title II)**
Providers	**Participating** A subset of providers receiving Title II funds collected information on all clients receiving services. **Types** Case management/social services (6) The legal assistance provider dropped out before the start of the field test. **Coverage** Rural and urban
Data Collected	Demographic Service use
Approximate Number of Unduplicated Clients	100
Software	**Providers** Custom software **Grantee** HRSA Toolbox and existing custom software

The Pennsylvania Title II test was conducted in conjunction with the Philadelphia Title I test. Organizations in both tests reported data to the same entity. Providers tested both the URN and a Client Key System (CKS) as approaches to maintaining confidentiality of URS client-level data. Data were collected and entered at each site, and electronic files were fed into the Title I URS test system developed especially for the field test. The grantee test system was run in parallel to an existing automated, client-level reporting system. The grantee unduplicated client-level data and generated electronic files. The grantee viewed the results of the CKS test as promising, but methodological problems with the test precluded definitive statements about advantages or disadvantages relative to the HRSA URN. As of the end of the field test, Title II providers participating in the test planned to continue to collect client-level data to comply with the state's client-level reporting requirements.

PHILADELPHIA

Grantee	**Philadelphia Department of Public Health (Title I)**
Providers	**Participating** A subset of Title I providers collected information on all clients receiving services. The Title I planning council did not directly participate in the test. **Types** Case management/social services **(2)** Medical **(3)** Coverage Urban
Data Collected	Demographic Service use Medical
Approximate Number of Unduplicated Clients	**300**
Software	**Providers** Modified version of an existing custom client-level reporting system **Grantee** HRSA Toolbox and existing custom software

The Philadelphia Title I test was conducted in conjunction with the Pennsylvania Title II test. Organizations in both tests reported data to the same entity. Providers tested the URN and a Client Key System (CKS) as approaches to maintaining confidentiality of client-level data. Data was collected in parallel with an existing URS compatible client-level reporting system. The existing system uses paper forms for data collection, with central data entry. Forms were modified to incorporate additional data elements required by the URS. The grantee tmduplicated client-level data and generated electronic files. The grantee viewed the results of the CKS test as promising, but methodological problems with the test precluded definitive statements about advantages or disadvantages relative to the HRSA URN. As of the end of the field test, Title I providers participating in the test will continue to collect client-level data under the existing reporting system. The grantee intended to modify the system to incorporate local data entry and to prepare electronic files in place of the current centralized data entry process.

SAN FRANCISCO

Grantee

San Francisco Department of Health
AIDS Office (Title I)

Providers

Participating
A subset of the providers collected information on new and existing clients participating in selected CARE-funded programs within each agency.

Types
Case management/social services (7)
Medical (3)
Food bank/delivery (2)
One case management/social service provider dropped out prior to the start of the field test.

Coverage
Urban

Data Collected

Demographic
Service use
Medical

Approximate Number of Unduplicated Clients

1,900

Software

Providers
Manual and automated systems replaced with custom software

Grantee
HRSA Toolbox supplemented by custom software for data cleaning

In lieu of an existing quarterly, aggregate-level reporting system, participating providers supplied the grantee with client-level URS data. Several providers permanently modified existing systems to incorporate URS data elements and reports. When it became apparent that HRSA software would not be available in time for the test, other providers replaced existing manual and automated systems with a custom software system developed locally. Some providers ran their field test data system in parallel to existing systems Grantees generated URNs, and grantees and providers unduplicated data. Because of confidentiality concerns, the grantee stripped URNs from any data supplied to HRSA. As of the end of the field test, providers planned to continue to collect client-level information, but there were no plans to continue reporting URS client-level data to the grantee. The planning council participated in the project but did not receive or process any data.

VIRGINIA

Grantee	**Virginia Department of Health, Bureau of STD/AIDS (Title II)**
Providers	**Participating** A subset of the state's Title II consortia and providers
	Types Case management/social services (2)
	Coverage Urban
Data Collected	Demographic Service use
Approximate Number of Unduplicated Clients	150
Software	**Providers** Paper forms
	Grantee and Consortia HRSA Toolbox

The grantee was in the midst of implementing a statewide, client-level reporting system when the field test began. Its reporting system, which was based on a draft of the URS specifications, was being implemented in all Title II sites except for the two providers participating in the field test. The statewide system called for providers to submit paper forms to consortia. The paper forms would then be forwarded to the state for data entry. Information from implementing the state system augmented knowledge gained during the field test. State and field test systems collected information on all clients receiving Ryan White-funded services. At the start of the field test, the two participating providers intended to use HRSA-supplied software (COMPIS) to automate data collection and reporting. Difficulties in installing and customizing the software, providing training and support, and limited access to computers caused the two providers to abandon their computerization plans in favor of paper forms for reporting. Data on paper forms were entered into a computer and checked for duplicates at the consortia/state level.

WASHINGTON

Grantee

State of Washington Department of Health (Title II)

Providers

Participating
A subset of the state's Ryan White contractors participated. The consortium and planning council received and reviewed field test data.

Types
Case management/social services (4)
Medical (2)
Drug assistance (1)

Coverage
Rural and urban

Data Collected

Demographic
Service use
Medical
Drug assistance

Approximate Number of Unduplicated Clients

1,700

Software

Providers
Custom software

Grantee
HRSA Toolbox

The URS was tested in parallel with the state's existing HIV services reporting system. Both case management providers had automated data systems. One replaced its system, while the other modified its system. Both medical providers were also automated but elected to run temporary parallel systems for collecting field test data. The state drug assistance program extracted data from its automated system. Providers collected data on all of their clients receiving Ryan White-eligible services. Data was supplied each month to the field test coordinators. The providers generated the URN for their clients, and the grantee unduplicated data.

III. AVAILABILITY, USEFULNESS, AND QUALITY OF URS DATA

This chapter addresses the availability, usefulness, and quality of URS data as observed during the field test. We review the availability of URS data at providers before the field test, and we describe the relationship of the URS to other reporting systems, procedures for preparing URS electronic files and reports, the usefulness of the URS data to providers and grantees, and quality assurance procedures implemented during the field test.

A. AVAILABILITY OF URS DATA

This section addresses the availability of URS data. We review the data elements collected by providers before the field test, address the issues related to defining clients according to the URS, and discuss the relative ease of collecting URS data.

1. Data Collected Before the Field Test

A fundamental goal of the field tests was to learn more about the availability of URS data and the likely impact of the URS on data collection activities at the provider level. To achieve this goal, we compared the data available before the field test with URS data elements.

a. Obtaining Information on Baseline Data

We obtained information on baseline data from forms distributed to providers at the beginning of the field test. They supplied basic background information about their organization and the following information for each of the URS data elements or subelements:

- Whether, before the field test, they collected the information necessary to create the URS data element
- Whether the information was collected with the same frequency as called for under the URS

- Whether the information was stored on paper or in a computer

Sixty-four service providers funded under Title I/Title II consortia and home- and community-based CARE programs, representing over 20,000 encounters per month, returned completed forms. Twenty-five were medical providers, four were drug assistance programs, and two were health insurance programs.

b. Categories of Data Elements

An analysis of the completed forms showed that the 70 URS data elements and subelements could be aggregated into 20 categories of variables (Table III. 1). The elements were categorized in this way because a provider's ability to create data elements was typically the same for all of the elements within each category.

c. Measures of Availability

Availability is defined as the presence of information in a paper or automated data system; information in unstructured narrative or progress notes is considered not available. We measured the availability of URS data by asking providers to tell us about the availability of information needed to create each URS data element. We asked them to categorize available data as follows:

- ***All***. All the information necessary to create the URS data element exists. This includes cases in which the terminology in the provider's existing system may differ, or the provider's data may need to be manipulated to create the URS data element in the required format.
- ***Partial***. Some of the information necessary to create the URS data element exists, and the URS element can be partly derived from existing information.
- ***None. The*** information necessary to create the URS element is not requested, recorded, or entered in a form that would allow the URS data element to be even partially derived.

In measuring the ability to generate data elements on services and primary medical care, we attempted to account for whether the organization provided each type of service. If one or more of the

TABLE III.1

URS DATA ELEMENTS BY CATEGORY

Category	URS Data Element
Client Characteristics	
General Client	Intake date Date of latest contact Client ZIP code Year of birth Gender
Racial/Ethnic Heritage	Racial/ethnic heritage
Sexual Orientation	Sexual orientation (optional)
Living Arrangement	Lives alone Lives with spouse or significant other Lives with children who receive assistance or support from client Lives with parent or guardian Lives with relatives other than spouse, children, or parents Lives with nonrelatives who share expenses and/or child care Lives with other nonrelatives Homeless
Employment Status	Employment status
Medically Unable to Work	Medically unable to work
Income	Income
Receiving Public Assistance	Receiving public assistance
Payor/Insurance Status	Private insurance Medicaid Medicare Other public insurance
Primary Health Care Source	Primary health care source
Services	
Office-Based Health Services	Medical care visit Dental care visit Mental health treatment/therapy/counseling visit Substance abuse treatment/counseling encounter Rehabilitation service encounter
Case Management Services	Case management encounter

TABLE III. 1 (continued)

Category	URS Data Element
Home Health Care	Paraprofessional care visits
	Professional service visits
	Specialized care visits
Other Services	Residential hospice care
	In-home hospice care
	Durable medical equipment
	Buddy/companion services
	Client advocacy
	Other counseling/not mental health
	Day or respite care
	Emergency financial assistance
	Housing assistance
	Food bank/home-delivered meals
	Transportation
	Education/risk reduction
	Foster care/adoption service
	Other services not listed
Additional Data from Primary Medical Care Providers	
General Medical	HIV-positive year
	AIDS year
	AIDS location
Symptom Status (Non-CD4)	Opportunistic infection
	Malignancies
	AIDS dementia, PML
	Wasting syndrome
Symptom Status (CD4)	CD4 plus lymphocyte (T-cell) count
	CD4 less than 20% total lymphocyte count
Other History	Tuberculosis (PPD status)
	Syphilis
Immunizations	Influenza shot this reporting period
	Hepatitis B vaccine
	Pneumovax

URS data elements in the category was marked as "Able to Create," that provider was deemed to be able to generate the elements for the services relevant to its area of focus.

Providers also indicated the frequency of data collection:

- ***Identical***. Information is collected at the frequency specified in the **URS.**
- **Other.** Information is collected at a frequency other than that specified in the URS.

In addition, we received information on storage media:

- ***Paper Only. The*** information was stored in a paper-based system.
- ***Stored in Computer. The*** information was stored in electronic-readable format on a computer.

d. Availability of URS Data Elements by Provider Characteristics

The ability of providers to create URS data elements from existing data is likely to vary with the characteristics of each provider organization. Using the set of baseline data forms that were available in July 1993, we analyzed the availability of information needed to generate URS elements according to the following provider characteristics:

- Program type: whether the provider was a recipient of funds under Title I, Title II consortia, or Title II home- and community-based CARE program, a drug assistance program, or a health insurance program
- Types of services provided: whether the organization provided primary medical care, case management services, or other services
- Presence of a computerized data system
- Whether the provider served persons with HIV only

Tables III.2 through III.9 display the proportion of providers able to generate URS client characteristics data elements from data they collected before the field test. Although the small number of respondents

TABLE III.2

PROPORTION OF RESPONDING PROVIDERS BY ABILITY TO CREATE URS DATA ELEMENTS ON CLIENT CHARACTERISTICS
(Title I and Title II Programs)

Categories of Client Characteristics Data Elements	Ability to Create Using Current Data		
	Able to Create	Partially Able to Create	Unable to Create
General Client	0.95	*0.05*	0.00
Racial/Ethnic Heritage	*0.52*	*0.44*	*0.05*
Sexual Orientation	*0.27*	*0.31*	*0.42*
Living Arrangement	*0.58*	*0.38*	*0.05*
Employment Status	*0.66*	*0.27*	*0.08*
Medically Unable to Work	*0.64*	*0.28*	*0.08*
Income	*0.55*	*0.31*	0.14
Receiving Public Assistance	*0.67*	*0.22*	0.11
Payor/Insurance Status	*0.75*	*0.22*	0.03
Primary Health Care Source	*0.70*	0.19	0.11

NOTE: Number of providers = 64

TABLE III.3

PROPORTION OF RESPONDING PROVIDERS BY ABILITY TO CREATE URS DATA ELEMENTS ON CLIENT CHARACTERISTICS
(Title I and Title II Program, Medical Providers Only)

Categories of Client Characteristics Data Elements	Ability to Create Using Current Data		
	Able to Create	Partially Able to Create	Unable to Create
General Client	0.88	0.12	0.00
Racial/Ethnic Heritage	0.48	0.52	0.00
Sexual Orientation	0.16	0.44	0.40
Living Arrangement	0.52	0.44	0.04
Employment Status	0.76	0.16	0.08
Medically Unable to Work	0.76	0.20	0.04
Income	0.52	0.40	0.08
Receiving Public Assistance	0.68	0.20	0.12
Payor/Insurance Status	0.76	0.24	0.00
Primary Health Care Source	0.84	0.08	0.08

NOTE: Number of Providers = 25

TABLE III.4

PROPORTION OF RESPONDING PROVIDERS BY ABILITY TO CREATE URS DATA ELEMENTS ON CLIENT CHARACTERISTICS
(Title I and Title II Programs, Nonmedical Providers Only)

Categories of Client Characteristics Data Elements	Ability to Create Using Current Data		
	Able to Create	Partially Able to Create	Unable to Create
General Client	1.00	**0.00**	0.00
Racial/Ethnic Heritage	0.54	***0.38***	***0.08***
Sexual Orientation	0.33	***0.23***	***0.44***
Living Arrangement	***0.62***	***0.33***	***0.05***
Employment Status	***0.59***	***0.33***	***0.08***
Medically Unable to Work	***0.56***	***0.33***	0.10
Income	***0.56***	***0.26***	0.18
Receiving Public Assistance	***0.67***	***0.23***	0.10
Payor/Insurance Status	***0.74***	***0.21***	0.05
Primary Health Care Source	***0.62***	***0.26***	0.13

NOTE: Number of Providers = 39

TABLE III.5

PROPORTION OF RESPONDING PROVIDERS BY ABILITY TO CREATE URS DATA ELEMENTS ON CLIENT CHARACTERISTICS
(Title I Programs)

Categories of Client Characteristics Data Elements	Ability to Create Using Current Data		
	Able to Create	Partially Able to Create	Unable to Create
General Client	0.92	0.08	0.00
Racial/Ethnic Heritage	0.50	0.50	0.00
Sexual Orientation	0.42	0.17	0.42
Living Arrangement	0.75	0.17	0.08
Employment Status	0.92	0.08	0.00
Medically Unable to Work	0.92	0.08	0.00
Income	0.58	0.33	0.08
Receiving Public Assistance	0.83	0.08	0.08
Payor/Insurance Status	0.75	0.25	0.00
Primary Health Care Source	0.83	0.08	0.08

NOTE: Number of Providers = 12

TABLE III.6

PROPORTION OF RESPONDING PROVIDERS BY ABILITY TO CREATE URS DATA ELEMENTS ON CLIENT CHARACTERISTICS
(Title ZZ Programs)

Categories of Client Characteristics Data Elements	Ability to Create Using Current Data		
	Able to Create	Partially Able to Create	Unable to Create
General Client	0.96	0.04	0.00
Racial/Ethnic Heritage	0.52	0.43	0.06
Sexual Orientation	0.22	0.33	0.44
Living Arrangement	0.52	0.43	0.06
Employment Status	0.61	0.30	0.09
Medically Unable to Work	0.59	0.31	0.09
Income	0.56	0.30	0.15
Receiving Public Assistance	0.65	0.24	0.11
Payor/Insurance Status	0.76	0.20	0.04
Primary Health Care Source	0.69	0.20	0.11

NOTE: Number of Providers = 54

TABLE III.7

PROPORTION OF RESPONDING PROVIDERS BY ABILITY TO CREATE URS DATA ELEMENTS ON CLIENT CHARACTERISTICS
(Program Serves HIV Clients Only)

Categories of Client Characteristics Data Elements	Ability to Create Using Current Data		
	Able to Create	Partially Able to Create	Unable to Create
General Client	0.96	0.04	0.00
Racial/Ethnic Heritage	0.62	0.35	0.04
Sexual Orientation	0.27	0.23	0.50
Living Arrangement	0.58	0.38	0.04
Employment Status	0.69	0.31	0.00
Medically Unable to Work	0.81	0.15	0.04
Income	0.69	0.31	0.00
Receiving Public Assistance	0.73	0.23	0.04
Payor/Insurance Status	0.88	0.12	0.00
Primary Health Care Source	0.73	0.19	0.08

NOTE: Number of Providers = 26

TABLE III.8

PROPORTION OF RESPONDING PROVIDERS BY ABILITY TO CREATE URS DATA ELEMENTS ON CLIENT CHARACTERISTICS
(Computer-Based Data System Present)

Categories of Client Characteristics Data Elements	Ability to Create Using Current Data		
	Able to Create	Partially Able to Create	Unable to Create
General Client	*0.95*	0.05	0.00
Racial/Ethnic Heritage	*0.46*	*0.49*	*0.05*
Sexual Orientation	*0.23*	*0.31*	*0.46*
Living Arrangement	0.51	*0.49*	*0.00*
Employment Status	*0.64*	*0.26*	0.10
Medically Unable to Work	*0.72*	0.18	0.10
Income	*0.59*	*0.28*	0.13
Receiving Public Assistance	*0.64*	*0.23*	0.13
Payor/Insurance Status	0.77	*0.23*	0.00
Primary Health Care Source	0.72	*0.15*	0.13

NOTE: Number of Providers = 39

TABLE III.9

PROPORTION OF RESPONDING PROVIDERS BY ABILITY TO CREATE URS DATA ELEMENTS ON CLIENT CHARACTERISTICS

(Paper-Based System Reported/ No Computer-Based Data System Present)

Categories of Client Characteristics Data Elements	Ability to Create Using Current Data		
	Able to Create	Partially Able to Create	Unable to Create
General Client	0.96	***0.04***	0.00
Racial/Ethnic Heritage	0.61	***0.35***	***0.04***
Sexual Orientation	0.30	***0.35***	***0.35***
Living Arrangement	0.70	***0.22***	***0.09***
Employment Status	0.65	***0.30***	***0.04***
Medically Unable to Work	0.48	***0.48***	***0.04***
Income	0.43	***0.39***	***0.17***
Receiving Public Assistance	0.70	***0.22***	***0.09***
Payor/Insurance Status	0.70	0.22	***0.09***
Primary Health Care Source	0.65	0.26	***0.09***

NOTE: Number of Providers = 23

and problems with item nonresponse prevent a detailed and rigorous statistical analysis, the tables do show some basic patterns. First, they suggest the following relationships between provider characteristics and the availability of data on client characteristics:

- Most providers would have little difficulty creating the general client characteristics data elements as defined in the URS.
- With the exception of sexual orientation, all or part of each element in the client characteristics data was available in 86 to 97 percent of providers.
- About one-quarter of all providers would be able to exactly, or fully, generate the optional sexual orientation data element. More than 40 percent would not be able to even partially create this element.
- About half would be able to exactly, or fully, generate URS data elements on race/ethnicity, living arrangement, and income.
- Two-thirds to three-quarters of providers could exactly, or fully, generate URS elements in the remaining categories.
- Providers receiving Title I funding would be somewhat more likely than providers receiving Title II funds to be able to generate URS elements.
- Providers serving only HIV-persons would be somewhat more likely than other providers to be able to generate URS elements using existing data.
- Providers with computer-based systems would be more likely than those with paper-only data systems to be able to generate URS elements associated with ability to work, income, payor/insurance status, and primary health care source. Organizations with paper-only data systems were more likely to have the information needed to generate URS elements such as racial/ethnic heritage, sexual orientation, living arrangement, and public assistance status.

Table III 10 shows the following relationships between provider characteristics and availability of data on service and primary medical care:

- About half the medical providers could generate the office-based health services, HIV exposure category, and primary medical care elements (with an additional one-quarter partially able to generate the elements). The symptomatic status (non-CD4) elements were least likely to be available.

TABLE III. 10

PROPORTION OF RESPONDING PROVIDERS BY TYPE OF PROVIDER AND ABILITY TO CREATE URS DATA ELEMENTS ON SERVICES AND PRIMARY MEDICAL CARE
(Title I and Title II Programs)

Type of Provider/Data Elements	Ability to Create Using Current Data		
	Able to Create	Partially Able to Create	Unable to Create
Office-Based Health Services			
All Data Elements	0.55	0.43	0.00
Case Management Services			
All Data Elements	0.80	0.20	0.00
Home Health Services			
All Data Elements	0.55	0.42	0.03
Other Services			
All Data Elements	0.70	0.30	0.00
Primary Medical Care Providers			
General Medical	0.52	0.36	0.12
Symptom Status (Non-CD4)	0.36	0.36	0.28
Symptom Status (CD4)	0.48	0.28	0.24
Other History	0.48	0.24	0.28
Immunizations	0.48	0.24	0.28
HIV Exposure Category	0.52	0.36	0.12

NOTE: Number of: Office-Based Health Service Providers = 42
Case Management Service Providers = 50
Home Health Care Service Providers = 33
Providers of Other Services = 56
Primary Medical Care Providers = 25

- Nomnedical providers could generate all or part of the applicable URS service utilization data without exception.

Both health insurance programs currently collect the information needed to create most of the client characteristic data elements. They would also be able to partially generate the racial/ethnic heritage element. Neither program currently collects information on medical ability to work.

Two of the four drug assistance programs could generate all of the URS drug assistance program data elements. The third program could generate all but the "unable to work" element, and the fourth could provide partial information for most of the elements.

e. Summary of Results/Implications for the URS

To the extent that the providers participating in the field test and completing the baseline data collection questionnaire are representative of other providers, we can tier several general conclusions about the availability of data. Except for sexual orientation and some medical status items, most providers already collect in some form the types of information called for in the URS. Nevertheless, because the information is often not collected exactly as asked for in the URS, many providers will need to alter their data collection activities to generate URS data elements. Most will need to consider collecting data on sexual orientation (an optional element). A somewhat smaller, but still substantial, proportion of providers will need to start collecting the information needed to generate the elements for race/ethnicity, living arrangement, and income. About half the medical providers will need to begin generating URS medical data elements. Additional review of the usefulness and definitions of these elements may be warranted, and HRSA should also expect to provide additional guidance/training for collecting these elements.

Participants in the September meeting agreed that most of the data were available from most of the sites. However, they noted that the grantees and providers participating in the field test were not randomly selected. Instead, grantees and often service providers were allowed to "self-select" into the field test. Consequently, the participating organizations, by and large, were predisposed to collecting client-level data,

and were perhaps already collecting many of the kinds of information covered by the URS. Field test participants therefore felt that the site selection process may have introduced a bias into the test results, calling into question the extent to which the pilot test experience can be generalized to the general Ryan White provider community. Additional bias may have resulted from work performed by some sites in preparation for the pilot test. Some grantees worked with providers to collect certain data elements that would otherwise not be collected or would have been collected in a different format. As a result, some of the data intended to depict data availability before the field test may have captured the status of data collection after these changes were made.

2. **Identifying Clients Receiving Ryan White-Eligible Services**

The URS specifies that grantees and their service providers are to supply information on all individuals and families with HIV infection who receive at least one service eligible for funding under the CARE Act during the relevant reporting period. One goal of the field test was to observe the ability of organizations to collect information on clients as they are defined by the URS. We discussed this issue during the final site visits.

Most organizations successfully collected information for clients as they are defined by the URS. Organizations typically decided before the field test to collect data for all of their clients. Other providers identified specific staff or programs within the larger organization that would participate in the field test and then collected information for all clients served by those staff or programs. This was especially true for providers that used the field test as an opportunity to revamp or expand their data collection systems for their own purposes. In addition, many providers reported that collecting the same data on all clients, or at least on all clients served by certain departments or staff members, was easier than keeping track of which questions to ask each client.

However, the ability and willingness to collect information on clients as defined by the URS was not universal. Indeed, defining a Ryan White client in one way may enhance the usefulness of URS data for

some purposes but limit its usefulness for others. During the design of the URS, providers, grantees, and other organizations joined HRSA in expressing interest in the use of URS data for a variety of purposes including, for example, local or regional service planning and local service contract administration and monitoring. Service planning would be enhanced if the URS collected information on all recipients of HIV services. However, this approach would provide information that is sometimes not specific to a single contract, which in the view of some participants would make the data less useful for monitoring Ryan White-funded contracts. On the other hand, many organizations pool their revenues from Ryan White and other funding sources, and so are unable to identify a specific service or individual as being funded by a particular source or contract.

More specifically, some grantees and providers identified reasons related to contract administration, cost, procedural problems, and software capabilities for not providing information on clients as defined by the URS.

- ***Contract Administration.*** One grantee expressed a desire to use data collected through the URS to monitor provider contracts. Since contracts are often established for the provision of a specific amount of services, this grantee believes it is less helpful to the grantee or provider if the reported information includes data for all clients at the agency receiving a service. To effectively monitor its contracts, the grantee needs to know (and the contractor must report) both the numbers and characteristics of clients receiving services under each contract. Another grantee, who decided to collect information on services funded only by the Ryan White CARE Act, felt that this was the only way to measure the services purchased with Ryan White funds.

- ***Cost.*** Some providers that receive only a small portion of funding from the Ryan White CARE Act expressed concerns about the cost of collecting and reporting information on all HIV clients.

- ***Procedural Problems.*** Some providers were collecting information at intake but lagged in entering service encounter data_ As a result, they were submitting little or no service information for some clients, including those who may not have received Ryan White-eligible services.

- ***Software Capabilities.*** Some providers chose to retain their existing system and use HRSA software as a second, parallel system for only Ryan White-funded clients. The HRSA software alone did not allow these providers to satisfy all of their information needs.

- Other *Concerns*. One grantee was confused about whether to report services provided to someone that is affected but not HIV-infected.

The likelihood of successfully implementing the URS is a function of its usefulness to grantees and providers. Ensuring that the data collection systems satisfy the service delivery and administrative needs of providers and grantees as well as the URS data needs will minimize the problems noted above.

3. The Relative Ease of Collecting URS Data Elements

One of the goals of the field test was to evaluate the ease with which URS data elements could be collected. We made this assessment on the basis of comments from grantees and providers during progress and final site visits, and some grantee final reports. The information we gathered creates a picture of the grantees' and providers' general impressions of the URS and their responses to specific data elements. For insight into client reactions to the data elements, we asked staff who provided services directly to clients as well as other staff responsible for client intake or registration to record any problems associated with collecting any of the data elements on Problematic Data Element forms.

a. Overall Grantee and Provider Reactions

Grantees and providers reported little difficulty collecting most URS data elements. Although problematic for some data elements, collecting URS data was feasible and practical, according to most grantees. Some stated that they had no serious difficulties with the URS elements, finding them simple to understand and collect. One grantee did not recommend any changes in the data elements. Another grantee incorporated all the URS data elements into the data collection/maintenance system mandated by the state.

Collecting the URS elements was easiest for grantees and providers who were already collecting similar data or who chose to integrate the URS elements into their existing data collection process. Some providers noted that the URS did not add significantly to the types and amounts of data already being

collected and reported that a few additional questions on the standard form or system was not a major problem One of the grantees reported that the collection of encounter data improved after distributing a standard encounter form to all of its providers. One Title I grantee said that the state and the URS ask for much the same information. Another noted that it previously required providers to collect more detailed information than called for by the URS. The participants generally indicated that there had been minimal impact on clients. In fact, numerous participants reported that completing the field test logs and other instruments was considerably more burdensome than collecting the URS data We found that collecting data was easier for organizations with very few clients than for larger sites.

Grantees expressed some concern about the definitions for selected data elements. Several suggested that additional guidance, perhaps in the form of a detailed glossary to supplement the data element definitions, would minimize confusion and the possibility of misinterpreting definitions. Some reported problems with the service data definitions. Some perceived the definitions for case management and home health care services as confusing and redundant. Others were confused about the definition of case management or what constitutes a medical visit. For example, is a blood draw a medical visit? Some providers did not understand the distinction between the diagnosis of AIDS and that of HIV-positive status. It was suggested that HRSA should do more to define data elements by specifying not only what a medical visit is, but also what it is not. It was suggested that examples would clarify definitions. In addition, for still other grantees, reporting under case management only "face-to-face" encounters was perceived to be too restrictive; they recommended additional, more detailed data collection to capture the full array of case management services. However, because of concerns about overall reporting burden, many grantees were reluctant to collect additional information.

Other grantees expressed a variation on this theme. Although they felt a need to collect even more detailed information than included in the URS for their own planning purposes, they also believed that because interpretations of certain data elements (e.g., those dealing with living arrangements and medical

inability to work) differed by grantee, these elements would be of little value to HRSA. They felt that these variables should be simplified or deleted altogether. One site reported that its state's intake information does not exactly match the URS elements, and that a combination of state questions must be used to ascertain URS information. Intake workers often did not follow through on this process.

As shown in Table III. 11, the few difficulties that did exist were largely confined to specific elements and the reporting period. One large provider reported difficulty integrating data when services were provided by different administrative units. In addition to political and administrative problems, there were problems because of different data element definitions, storage media, and procedures concerning confidentiality. Medical information was particularly difficult to obtain when data were recorded on paper because accessing medical records was costly and sometimes not feasible.

One grantee reported no difficulty with the reporting period, since its software can generate data from any time, while another found it confusing that the URS reporting period did not match the grant funding dates.

A few grantees and providers mentioned that a number of elements are subject to change during the reporting period. Examples include employment and living arrangements, payor and insurance status, symptom status, and whether the client was medically unable to work. These organizations felt that the URS would be more useful if it were to include disease progression in this group. This would mean that information about the date that any of these elements changed would need to be collected.

b. Client Reactions to URS Data Elements

Fewer than 20 grantees and providers supplied complete sets of Problematic Data Element forms. Of those that did, a substantial majority listed few or no problems with client responses to URS data elements. The problems that did emerge are summarized in Table III. 12. (A problem is listed even if it was reported only once.)

TABLE III. 11

PROVIDER AND GRANTEE COMMENTS ON SPECIFIC DATA ELEMENTS

Sexual orientation

Many providers and grantees suggested deleting this element. (Sexual orientation was an optional data element during the field test.) Some noted that homosexual acts are illegal in some states, and the collection of this data makes some clients very uncomfortable.

One of the grantees noted that most of its providers do not ask questions on sexual orientation. Another organization noted that case managers determine sexual orientation indirectly from an analysis of the clients' response to other questions. Grantees felt their providers generally had difficulty obtaining data on sexual orientation and were concerned that the wide variation in procedures used to obtain the information would lead to inconsistencies within and across their providers.

Gender

One of the grantees reported that gender was one of the elements to which its providers' clients were most sensitive. Others were uncertain about the categories, asking whether, for example, transsexuals are to be reported as male or female.

Race/ethnic@

One grantee noted that the URS data element for race/ethnic heritage was not detailed enough to accommodate their large multiracial/ethnic population. (This grantee faces this problem with other reporting systems and has an established protocol for placing people in certain categories). Another provider felt that the racial categories were too specific. Treatment of multiracial/ethnic groups may be inconsistent across field test sites. Several grantees urged standardization of this data other data systems.

Medically unable to work

Several providers felt that "medically unable to work" should be more clearly defined. For some providers, this element was not taken seriously by intake personnel since it is not required by the State. Many grantees felt the term was subjective. They felt the definitions varied within and across sites.

Location of AIDS diagnosis

Some providers did not have access to the HRSA codes.

Living arrangement

Some grantees felt that the living arrangement elements were implemented in a cumbersome manner in some of the URS software (IMACS). Some providers felt the elements were "awkward, " and as a result, these providers were not using **HRSA's** data format. Other providers noted that the elements as defined do not adequately capture the incarcerated. In addition, living arrangement data are often difficult to obtain because clients are often in transition when first requesting services. Some providers were also unsure about how to identity residents of group homes.

TABLE III. 11 (continued)

Grantees generally challenged the value of the data element to HRSA because living the arrangement for an individual can change many times within a year.

Income

Some grantees and providers noted that income and other financial data often were difficult to obtain. There appears to be some concern among clients that supplying financial information will jeopardize their eligibility. In addition, clients are often in a period of employment transition when first requesting service.

There was contusion about whether the URS requires individual or family income, what kinds of income should be reported, and what constitutes a family or household.

One grantee suspected some errors in reporting, specifically that providers may be reporting blank, or "missing, " values for clients with zero income.

Grantees generally felt that the current definition would result in inconsistencies within the grantee area and across grantees.

Employment

One provider noted that employment information is sometimes difficult to obtain because clients are often in transition when requesting services. Others didn't collect the information because it didn't affect the provision of services. There was also a question raised over the definition of a job (e.g., is it full-time? part-time? second job?).

ZIP code

Some grantees reported that clients, particularly in rural areas, felt threatened by this data element. One provider expressed concern about small cell sizes in tables showing 5digit ZIP codes and suggested reporting only the first three digits. Another simply did not ask for ZIP code.

Public assistance

Providers and grantees expressed confusion about the need or usefulness of these data element due to the state- and site-specific nature of public assistance eligibility. One provider initially found the definition of "Other Forms of Public Assistance" to be confusing. Another did not bother to collect this information because it was not currently required by the state.

Exposure category

Several providers suggest dropping exposure category completely. This concern relates in part to the fact that homosexual acts are still a crime in at least one state and the collection of this data makes some clients very uncomfortable. Other providers and grantees urged the URS to use all of the categories of other data reporting systems, without any consolidation into broad categories.

Insurance coverage

One grantee questioned the value of this element since having insurance does not mean that more

TABLE III. 11 (continued)

Service data

Several providers expressed displeasure with the definition of case management services. The URS definition is restricted to face-to-face contacts and does not capture telephone contacts or the number of referrals provided. Case managers felt that face-to-face contact was not enough to define what case managers do because they also function as advocates and make collateral contacts for the client. One provider suggested that case management be defined as direct or indirect by event. For example, case managers could track face-to-face encounters with the client, other contacts with the client (telephone, letter, etc.), and indirect contacts (i.e., on the client's behalf). Rural providers expressed concern about relying on face-to-face contacts because they occur less frequently in rural than in urban areas.

Some providers felt that counts of service encounters did not adequately capture the "intensity" of some services. They suggested that services like case management should be measured in terms of 15-minute intervals rather than encounters.

Other providers noted that information about the number of referrals provided, as distinct from the number of services actually provided, would assist sites in determining their real work distribution. Many referrals require considerable time on the telephone to organize, and this time would not otherwise be captured. Additional provider categories such as nonprofit, free clinic should be added. These providers do not want to be identified as "Others."

Clinical data

Some providers expressed concern about the frequency with which clinical elements were collected. They felt these elements should be updated quarterly.

One provider mentioned that some of its case managers were not comfortable with the CD-4 count element and did not report it for the majority of clients.

Other providers collected information about medical services even though they were not medical providers. One of these providers entered medical services as a service delivered (based on client-reported information) but neglected to record case management as a service. Another provider noted that case managers indicated tuberculosis status as "Not Treated" because its organization was not providing treatments or making referrals.

Date information

One provider reported difficulty in obtaining date information for illegal aliens. Blanks are now stored in these fields for clients who are illegal aliens.

Prescription coverage (drug assistance program)

One provider noted that intake workers no longer asked about prescription coverage because it was not on their intake form. The provider felt that clients would not be seeking drug assistance if they had coverage (or would conceal that fact if they did).

TABLE III. 12

PROBLEMS WITH CLIENT RESPONSES TO URS DATA ELEMENTS

Data Element	Problem				
	Client's Response Did Not Fall into Available Categories	Client's Response Fell into Two or More Categories	Client Refused to Provide Information	Client Did Not Understand	Client Did Not Know
Living Arrangement	✓	✓			
Racial/Ethnic Heritage	✓	✓			
Employment Status	✓		✓	✓	
Gender	✓				
Medical Insurance		✓			
Primary Medical Care		✓			
Exposure Category		✓		✓	
Income			✓	✓	
Date of Birth			✓		✓
Sexual Orientation			✓		✓
ZIP Code			✓		✓
Last Insurance				✓	
Last Time Tested				✓	✓
Medically Unable to Work					✓
CD4 Count					✓
Diagnosis Date/Location					✓
HIV Date					✓

NOTE: Difficulties may have been reported as infrequently as a single instance.

The most frequent problem was client refusal to provide information on sexual orientation. Five case managers mentioned that this problem occurred about 20 times during the three two-week periods during which problematic data element information was logged. Other problems were mentioned by one or two case managers and were associated with only a few clients.

c. Summary of Results/Implications for the URS

Grantees and providers generally had little difficulty collecting most URS data elements. However, some elements were quite problematic. The most problematic were sexual orientation (the only optional element), the series of elements related to living arrangement, income data, and several of the medical status elements. Grantees and providers noted several factors that affected their ability to collect the URS data elements, including an absence of clear definitions and variation in interpreting definitions across provider sites.

4. Data Collection at Intake and Encounters

During the final site visit, we discussed the level of difficulty providers experienced in obtaining data at intake and at encounters. This allowed us to evaluate the impact of the URS at both data collection points.

Grantees and providers reported little difference in their ability to obtain data at intake and encounters. In fact, most said that the differences, if any, were not an important issue. Some sites reported that collecting and submitting URS-like data (in aggregate and/or in person-level form) was already a reporting requirement for providers, so the URS had no impact on the need to collect data at intake and during encounters.

One provider noted that all case managers were recording demographic data at intake, but not all of them seemed to be entering service delivery information because of the time and cost involved. Other

providers reported that it was difficult to obtain data initially but less so as the field test proceeded--primarily because case managers became more familiar with the URS data elements. Other providers noted that as trust developed between provider and client, it became less difficult to obtain data.

5. Data Collection for New and Established Clients

Discussions with grantees and providers did not suggest differences in the difficulty of collecting data from new as compared with existing clients. For the most part, we addressed difficulties in obtaining demographic and other URS intake information that was not already in the provider's data system. One provider noted that its case managers were collecting URS data from new clients only but surmised that this was occurring because workers had not been told of the need to collect data for all clients, both old and new.

6. Recommendations

- ***Eliminate Selected Variables***. Sexual orientation, income, employment status, and living arrangement would be eliminated.
- ***Redefine and Clarify Other Variables.*** Review the definitions and clarify remaining variables by developing a working glossary to serve as a guideline to grantees and providers when applying the URS definitions to their own situations.

B. RELATIONSHIP OF THE URS TO OTHER REPORTING SYSTEMS

Grantees noted that many Ryan White providers also receive funds through other programs sponsored by HRSA, other DHHS agencies, and state and local governments. Grantees indicated that multiple reporting requirements for these programs add considerable burden to their operations and appear to some extent to be unnecessary, since providers must report the same or similar information in different formats. At the same time, grantees recognized that multiple reporting requirements and relatively narrowly defined federal reporting systems reflect the categorical nature of congressional authorization and appropriation processes. These categorical divisions and the consequent differences in data collection systems will not

easily be eliminated. Because of these concerns, field test participants were asked to discuss how multiple reporting requirements were coordinated and to identify revisions to the URS or HRSA activities that might make it easier for grantees and providers to comply with the various requirements. In this section, we compare other reporting systems with the URS as the basis for discussing the issues multiple reporting requirements create for grantees and providers.

1. The URS Compared with Other Reporting Systems

The three reporting systems most likely to overlap with the URS are the Ryan White Title III(b) reporting system administered by HRSA's Bureau of Primary Health Care, the Pediatric/Family AIDS Demonstration reporting system administered by HRSA's Bureau of Maternal and Child Health, and the AIDS Reporting System administered by the Centers for Disease Control and Prevention (CDC).

Title III(b) of the CARE Act provides federal funding directly to service providers for early intervention services. The law requires grantees (e.g., community health centers) to provide outpatient counseling, testing, referrals, and primary health care services and gives grantees the option to provide outreach, case management, and eligibility assistance services. The reporting period for this system is biannual (from January to June and from July to December). One section of the reporting system requires aggregate statistics on the demographic characteristics-of clients and is based on a large number of aggregate cells determined by the client's age, race/ethnicity, gender, transmission category, and HIV status. Another section requires counts of the number of clients who receive each service. While the format of this reporting system corresponds only moderately with the URS, URS person-level data could be used to generate many of the aggregate statistics required by this system.

The Pediatric/Family AIDS Demonstration projects are designed to serve children and families affected by or at risk for HIV infection. They provide health, support, outreach, and education services. The reporting system collects information on the service providers in each grantee's network; the services each grantee makes available to different types of clients; the demographics of clients enrolled in the

demonstrations and the services they receive; and grantee efforts in prevention, outreach, and education. The client demographic and service utilization information is presented in aggregate form but must be generated from person-level information such that the numbers are unduplicated counts. The information obtained fiom the system includes counts, by service population,' of service encounters, enrollment, length of follow-up, race/ethnicity, HIV status and disease stage, HIV exposure category, reimbursement source, housing/living arrangement, and primary caregiver. The reporting system also has a service utilization summary information form. The expected reporting period for this system is biannual (from January to June, and from July to December). While the URS differs from this reporting system, the local data collection systems that form the basis for these reports can be quite similar, since person-level URS data is used to generate many of these aggregate data elements.

The AIDS Reporting System has been the primary source of information on the magnitude and dynamics of the AIDS epidemic. All states require reporting of an AIDS diagnoses, and compliance is believed to be high. This reporting system was designed by CDC and is administered through cooperative agreements with states and a few large city health departments. Part of the case report submitted to the state or city for a diagnosis of AIDS includes the patient's name, date of birth, age at diagnosis, gender, race/ethnicity, country of birth, residence at time of diagnosis, facility of diagnosis, source of the report, presence of risk factors, presence of AIDS indicator diseases, and laboratory information. CDC receives the same information, except that a case report number based partly on a Soundex code instead of the person's name is sent to CDC. CDC and selected states have developed an HIV case reporting system, which collects similar information on HIV-infected individuals without an AIDS diagnosis. These person-level reporting systems correspond to some degree with the URS, although the differences between them are significant.

'Service populations include infants, pregnant women and mothers, other women, adolescents, adult men, and families. The pregnant women and mothers group is divided into two subgroups, with the break occurring at age 22.

HRSA has initiated and participated in meetings with CDC program staff intended to make the URS and AIDS Reporting System more compatible in future iterations of the two systems. The URS exposure categories, for example, were based on the AIDS Reporting System. While some differences remained during the field test, these efforts are continuing.

2. **Grantee and Provider Reactions**

During the meetings and in the progress and final visits, grantees and providers identified the challenges and opportunities presented by URS reporting. They stated that multiple funding requires providers to obtain, automate, and report elements according to different specifications. These reporting specifications often call for the same information in a different format and can require considerable effort from agency staff since they result in redundant data collection and management effort. A number of grantees noted that because these reporting systems focus on services made available through specific program funds, data from the URS and these other reporting systems are often of limited value for drawing conclusions about the needs or characteristics of a community's entire HIV-infected or symptomatic populations. A few grantees or providers have tried to integrate their reporting efforts by collecting data on service delivery activities that cross program lines.

Despite these concerns, the URS gives grantees and providers an opportunity to develop more comprehensive and useful data reporting systems. A number of grantees view the URS as the basis of a reporting system that can be used to generate all required reports and serve state or local planning purposes. One grantee suggested that the type of information obtained through the URS is likely to be more useful in planning for the needs of HIV-infected people than is surveillance data, the traditional information source. Also, a number of grantees and providers are developing revised intake and encounter forms to collect a broader range of information to satisfy agency planning needs and additional reporting requirements.

3. Recommendations

- HRSA should continue its efforts to increase the degree of compatibility between federal reporting system requirements that affect grantees and providers.

- Grantees and providers should revise their data collection strategies to collect information that can satisfy multiple reporting systems in the most efficient way possible. Definitions of data elements will need to be detailed enough to allow staff to construct the measures they require and those required by relevant federal reporting systems. HRSA could be of assistance in such efforts by providing both sample forms that could be used to collect data for several federal reporting systems and general techniques for determining, at the provider or grantee level, exactly what data must be collected to satisfy all applicable reporting requirements.

C. PREPARING URS ELECTRONIC FILES AND REPORTS

This section explains how grantees and providers prepared the URS electronic files and verification tables. It covers the following aspects of file and table preparation: formats for and types of files and tables; storage and assembly of data, and transmission of data to grantees; time required for preparation; personnel involved in data assembly; methods used by providers to unduplicate client-level data; provider quality assurance measures; difficulties in preparing the files and tables; time requirements for preparing URS data and reports preparation compared with time requirements for other reporting systems. Our information is based on four sources: (1) a questionnaire completed by providers during the field test final visits, (2) grantee final reports, (3) summaries of final site visits with grantees, and (4) discussions during the September meeting of all pilot test sites. Forty-seven providers returned the questionnaires. Although this small number of respondents and problems with item nonresponse prevent a detailed and rigorous statistical analysis, we can observe some general trends in the experience of providers as they prepared electronic files and reports according to URS reporting requirements.

1. Electronic Files and Verification Tables: Format and Types

The URS electronic file specifications prescribe certain formats for all data files sent from grantees to HRSA. Providers may also prepare the data sent to their grantees according to these specifications.

Data are sent to HRSA in text format, also known as character, or ASCII, format. This format was chosen because text files can usually be readily generated from, and likewise imported into, other database systems, including common spreadsheet and statistical processing programs. This common data format therefore facilitates the transfer of data from one program or computer system to another, allowing HRSA to accept data from numerous, diverse sources. In turn HRSA can construct and maintain an aggregate database of Ryan White CARE Act service delivery data.

Because the URS data elements vary by type of provider and program, the reporting system was designed to have the following seven kinds of files to accommodate the various data that are collected:

1. Title I/Title II Programs - Client Characteristics and Service Data
2. Title I/Title II Programs - Administrative Data from Providers
3. Title I/Title II Programs - Alternative Administrative Data from Providers operating under fee-for-service arrangements with grantees
4. Drug Assistance Programs - Client Characteristics and Drug Data
5. Drug Assistance Programs - Administrative Data from Providers
6. Health Insurance Programs - Client Characteristics and Service Data
7. Health Insurance Programs - Administrative Data from Providers

Like the tile specifications, the URS verification tables specifications call for a standard format for the reports sent from all grantees to HRSA. This facilitates the analysis of data from numerous, diverse sources. Some of the tables present various counts and percent distributions of client-level data, while others present summary data for administrative functions of the providers. The verification tables contain aggregate, rather than client-specific, data.

The verification tables also vary by provider and program The following six verification table formats were therefore developed to accommodate the variation:

1. Title I/Title II Client Report
2. Title I/Title II Client Report (Medical Information)
3. Title I/Title II Provider Report
4. Title II Drug Assistance Programs - Client Report
5. Title II Health Insurance Programs - Client Report
6. Title I/Title II Modified Annual Administrative Report

2. **Data Storage, Assembly, and Transmittal**

In the URS, data are typically collected, stored, and assembled at the provider site. They are then transmitted to the grantee site, where they are aggregated and used to prepare the files and reports for transmittal to HRSA Of the providers responding to the question on file preparation, 76 percent prepared their electronic files and reports from data stored on a computer, 12 percent prepared the files and reports from data stored on a computer and on paper, and the remaining 12 percent stated that the data were not stored initially on a computer.

Providers used a variety of procedures to assemble data. Many entered their data into COMPIS, EpiInfo, IMACS, or custom software systems designed specifically to capture the URS data. These systems made it relatively easy for the providers to export their data files to the field test coordinator. Other providers followed a more complicated procedure to extract data from their existing databases and format it according to URS specifications. Some providers that did not have their client data stored on a computer prepared the URS files and reports by entering the data directly into spreadsheets or WordPerfect documents. In general, providers did not themselves assemble the URS format electronic files or verification tables but typically sent data files by mail or modem to the field test coordinator, who combined them into a single set of files.

Data was usually transmitted by mail on diskette or via modem. A few providers supplied paper forms to the grantee, who then entered the data (Chapter IV presents information on confidentiality

procedures.) Completed grantee final reports and summaries of final visits indicated that six field test sites received the data by marl, one field test site received data files by modern and one received data by modem and mail. Three other sites used a central software system that obviated the need to transmit data at the time of report generation. The grantee Toolbox was used by some grantees to consolidate the data sent from providers and to generate the files and reports.

3. Personnel and Time Required to Assemble the Files and Reports

Responses to the provider questionnaire indicated that administrative staff were most likely to prepare the files (37 percent) and the reports (26 percent). MIS staff were the next most likely (32 percent and 18 percent, respectively). Direct service staff and clerical staff were involved to a lesser degree.

At the September meeting, the issue of time required to prepare the first set of summary files and reports surfaced several times. Participants commented that the large amount of preparation time had a negative impact on data and report quality. Several factors were thought to contribute to the problem. For example, at some sites, there was a large gap between the time when staff were trained in the use of the software and when they actually began entering data As a result, staff lost the knowledge and enthusiasm necessary to enter data accurately and quickly. Another contributing factor was frequent staff turnover and consequent retraining.

While it is not possible to quantify the extent to which preparation time was lengthened because provider and grantee staff were preparing the URS files and reports for the first time, grantees did mention that preparation time dropped as providers and grantee staff became more familiar with procedures. For example, one grantee described how the transfer of data from each provider site to the central office became routine for most sites, with those less familiar with computers developing the necessary expertise by the end of the pilot test. (Chapter VI, Section B.5, presents a detailed analysis of time required to assemble electronic files and reports.)

4. Unduplicating Client-Level Data

One of the goals of the URS is to provide CARE Act grantees and HRSA with an accurate count of the number of individuals receiving services funded in whole or part by Title I and Title II of the CARE Act. The process known as "unduplication" ensures that clients receiving services from more than one provider are not counted more than once.

Although field test sites used several methods to unduplicate their client-level Title I/II data, there appear to be two basic methods. One is a centralized software system that does not allow duplicate records to exist. The other is automated unduplication.

IMACS, an example of the first method, is a multisite, computer-linked system used by all providers in a field test site. If a provider completes an intake for a new client with a record identifier that already exists in the system, the new record cannot be added. The situation is researched to determine if the new client is already receiving services from a participating agency, or if there has been an error in collecting the data used for constructing the record identifier. Field test sites using this methodology did not have to unduplicate their client-level data as a separate stage of file preparation.

Automated unduplication begins with the construction of the URN if it is not already present in the data The unduplication program then sorts the data by URN, detects records with duplicate URNs, and reconciles them. Reconciliation consists of determining a principal record, usually on the basis of a date field, and updating it with data from the duplicate records. The duplicates are then deleted. In some cases, automated unduplication takes place at the provider site before data are transmitted to the central site and again at the central site after all provider data are consolidated. In other cases, automated unduplication is performed only at the central site. The Grantee Toolbox is an example of software used for automated unduplication.

Some providers also used manual unduplication procedures. These providers obtain listings of the data and scan them visually to determine if duplicate records are present. If so, they are researched, reconciled, and deleted.

Unduplication revealed some interesting situations. For example, at one field test site, 400 clients were unduplicated down to 100 clients, whereas at another site, only 6 of 300 clients were found to be duplicates. The latter situation is more typical of a wide service area (e.g., a few participating providers scattered throughout a state) where it is less likely that clients will receive services from multiple providers than in a compact service area, such as an urban location.

Participants agreed that unduplication was useful for four reasons. First, unduplicated counts reveal the "real" number of clients and, as such, are helpful for planning purposes. Second, this accounting of clients and services revealed patterns of service previously unknown to grantees and providers. Third, when the URN is used for unduplication, it also helps to protect confidentiality. Finally, to a lesser degree, unduplication helped to ensure that clients did not receive "redundant" services.

5. Quality Assurance Measures

Grantees and providers performed a range of quality assurance (QA) activities for the electronic files and the verification tables. The activities can generally be classified into two main groups: visual checks and software-aided checks, the former being performed more often than the latter. Visual checks included the following activities:

- Checking the accumulation of client database records against the number of accumulated client paper forms
- Spot checking and reviewing the data files before transmitting them to HRSA
- Reviewing reports on a monthly or daily basis

Software-aided checks included the following activities:

- Incorporating software routines and programs to check data for illogical or inconsistent values at or shortly after data entry
- Tabulating selected data fields outside the software system and comparing the results to tabulations generated within the system
- Comparing URS reports to other agency reports and statistics for consistency
- Using statistical software to tabulate the data to check it for inconsistencies and errors
- Using a program to check data for inconsistencies and errors and to generate an error report showing records needing correction and follow-up

Some sites did not conduct QA activities when they prepared the electronic files and verification tables. This may have been because they felt that sufficient QA activities had been incorporated into the URS data collection operation so that further QA at the end of the process was unnecessary. In a few cases, staff members stated that they felt there were no QA activities that they could perform.

Participants mentioned other QA activities, but they did not pertain specifically to the preparation of electronic files or reports. These activities are discussed in more detail in Section E. However, one recurrent theme in the discussions was that in order to ensure quality data, providers need to feel invested in the results; that is, if they see locally relevant reports or tools produced as a result of capturing the URS data, they are more inclined to produce data of high quality. For instance, providers would be motivated to improve data quality if URS data generated reports designed to be useful to them, provided the capability to use their database to produce mail labels, or offered customized databases to meet their needs.

6. Diffkulties in Preparing Files and Tables

Medical and case management providers experienced approximately the same level of difficulty in preparing the URS files and reports. Of the medical providers that completed the questionnaire, 42 percent experienced difficulties. Of the case management providers that completed the questionnaire, 44 percent experienced difficulties. For providers of other types of services, the proportion experiencing difficulties was much higher at around 68 percent. Common problems included:

- Insufficient computer memory
- Software bugs, especially at the beginning of the field test
- Seriously underestimated data entry time, especially for providers automating for the first time or operating parallel data systems
- Insufficient time to consolidate data
- Unfamiliar software to consolidate data
- Locating some data items in wholly or partly paper-based systems
- Reconciling duplicate records with identical URNs
- Reconciling records with different URNs that appear to belong to the same client
- Lack of available computer time, especially at small or rural sites
- Delays between the arrival of hardware and software
- Delays between software training and the start of data entry, resulting in a loss of knowledge
- An insufficient number of technical personnel and a lack of technical expertise in some areas
- Some aversion to computers and an unwillingness to develop computer skills

7. Comparison with Other Reporting Systems

The relevant question in a comparison of the preparation of the URS files and reports to the preparations required for other reporting systems, is the incremental burden imposed by the URS reporting requirements. In addressing this question, it is useful to divide field test sites into two groups. The first group consists of sites using separate or parallel reporting systems to prepare the URS files and reports. The second consists of sites that used integrated systems. Most field test sites fell into this category.

Sites typically had separate or parallel systems for the URS reporting requirements if their existing systems could not be reconfigured to capture the URS data if they believed the limited duration of the field test did not justify the effort to integrate URS elements into existing systems, or if they had been using

paper-based systems. For these sites, it is reasonable to expect that the incremental burden imposed by the URS would be significant. This proved to be true for the few sites with parallel systems. Additionally, participants commented that parallel systems were often viewed as yet another burden on providers, and this affected data quality. Integrated systems incorporate the URS elements into existing data collection systems. Sites having these systems reported that URS file and report preparation activities did not impose a significant incremental burden.

Most providers did not respond to a request to compare the time and personnel required to prepare the URS reports and files as compared to their other reporting requirements. Of the 15 percent who did, the answers were evenly split. One-third said that the URS file preparation required the same amount of time, one-third said that it required less time, and one-third said that it needed more time. Providers responded similarly when asked to compare the URS report preparation time to their other reporting requirements.

8. Summary of Results

Most providers used automated systems to prepare the URS electronic files and reports. Three sites used a centralized system with a single software package and a single shared database, while the other sites had decentralized systems with separate databases at each provider. Administrative and MIS staff were most likely to prepare the files and reports. Most sites used automated unduplication procedures or software that precluded duplicate client records. A variety of quality assurance methods involving both software and visual checks were used. Sites had some difficulty with the following: using new and unfamiliar software, reconciling duplicate client records, and consolidating data in the time allowed.

9. Recommendations

- Providers should not overestimate their readiness to use computers for the first time; providers and grantees should very carefully assess automation capabilities.

- Complicated or customized software is best reserved for more experienced computer users.
- Small providers do not necessarily need to computerize in order to implement the URS.
- Less experienced users can have unrealistic expectations of what a computer system can do for them; technical staff should educate users before implementing a system.
- More technical assistance is needed for all sources.
- The gap between software training time and use of the system should be minimized.
- Training should be well prepared and intense.
- All data collection resources should be in place (e.g., hardware, software, paper forms, consultants) before implementation starts.
- Multiple uses of the software, such as using it to produce mail labels, should be highlighted.
- Databases should be customizable to meet provider needs in order to foster a greater commitment to data quality.
- Information about other software packages, such as ones developed by private companies, that may be useful to providers or grantees should be made available.
- Bugs in HRSA-supported software need to be remedied.
- More technical documentation for HRSA-supported software is needed.
- The mechanism for distributing software updates needs improvement.

D. USEFULNESS OF THE DATA

Most grantees and providers were optimistic about using URS data in the future. Few had actually begun to use these data, since most grantees had only recently began to acquire the data by the time the field tests ended. Most of the comments about the usefulness of the data focused on its role for informing policy, planning, and budgeting decisions and for preparing grant and other funding applications.[2]

[2] A few grantees and providers attributed success in obtaining competitive grant awards to their enhanced ability to describe their clientele and service delivery as a result of the URS.

Most grantees and providers were optimistic about the usefulness of URS data. They commented primarily on the data's usefulness for informing decisions on policy, planning, and budgeting, and for preparing applications to funding sources. One grantee reported that URS date were also used to develop cross-provider utilization profiles. These profiles allowed clients shared by several major providers to be identified. Additionally, one of those major providers used URS data to successfully complete a grant application for additional funding. Several grantees also noted that the URS would encourage the collection of additional data and form the basis of a unified, multifunder reporting system.

Grantees expected that the data would be used to:

- Support planning council and consortia decision-making activities
- Develop statistical profiles of clients
- Generate unduplicated counts throughout the service delivery system
- Examine the distribution of services throughout geographic areas, racial/ethnic categories, and by other client characteristics to identify gaps in service delivery
- Identify patterns of client sharing among providers
- Examine clinical factors that affect service delivery, including other conditions (such as substance abuse, mental illness, etc.) and disease stage indicators over time (such as CD4 counts)
- Examine the insurance status of clients
- Examine service delivery costs
- Perform selected cross-tabulations to address questions of particular interest. (For instance, what proportion of the uninsured are also unemployed?)

A few grantees also noted that the URS would encourage the collection of additional data and form the basis of a unified, multifunder reporting system.

Despite the grantees' overall optimism about the usefulness of the data, a few raised concerns about the accuracy and comprehensiveness of the data and suggested that the URS could not address a number

of central planning issues. For instance, during the September meeting, grantee participants noted that improvements in data quality over what the first round of reports showed were critical to improving the usefulness of the data. Grantees who completed more than one cycle of reports observed that the quality of the data improved noticeably with successive submissions.

Providers also responded favorably to the URS. Nearly 80 percent of providers that responded to the question about usefulness believed that the URS data would be useful to their organizations in many of the same ways cited by grantees. However, their responses suggested that they were more focused on their operations, training activities, and grant-application funding activities than on policy and service planning. Somewhat contrary to expectations, almost one-third of these providers had already used the client-level data for some local purpose. It appeared that reports were received primarily by personnel responsible for the day-to-day provision of care and administration of the field tests, although about one-third of the recipients were agency supervisors or directors. Although one grantee noted that many providers were not expected to find the URS data to be useful, since it would be unlikely that CARE Act clients would constitute a large proportion of their client population, providers, like grantees, also hoped that the URS could be the beginning of a multifunder reporting system.

Grantees and providers recommended that HRSA continue, through support activities, to encourage organizations to use the URS data and to show them how to do so.

E. DATA QUALITY

The value of URS date depends on its accuracy, completeness, and consistency at initial implementation and over time. One of the goals of the field test was to evaluate the data quality and analyze quality assurance procedures implemented by grantees and providers. The accuracy of specific data elements was previously discussed. This section presents grantee and provider perceptions of data quality and describes their quality assurance procedures. Our information is based on the grantee final reports and the September meeting.

1. Grantee and Provider Perceptions of Data Quality

According to several grantees, their providers believed that client descriptive information was almost always complete, but they generally felt that service utilization data were not because of the delay in and cost of data entry. One grantee mentioned that information on subcontracted services lagged because service data were only reported monthly. Another grantee used duplicate data (information on the same clients as collected by different providers) to investigate inconsistencies. As described in its final report:

> A more thorough evaluation of the accuracy of these data was completed on the known duplicate records, of which there were 39. One of these clients had visited three sites, two Title I sites and a single Title II site. Of the 39 variables assessed, variability between the duplicates ranged from 4 percent to 96 percent. There are a number of explanations for this variability including:
>
> - there may have been some alteration in the status of some of the dynamic variables between data collection points over time, such as insurance status, living arrangements as two examples;
> - collection of additional information at a second site or visit, such as increased information about possible risk for infection;
> - some sites were not routinely asking some questions such as immunization status and were recording 'unknown' compared to another site which collected the information.

Grantees observed the following about the quality of data reported by providers:

- Quality was better when providers could also use the system for their own practical purposes.
- providers that received feedback from their system and the grantee tended to generate better data.
- Systems operated as parallel, rather than integrated, systems tended to generate lower quality data
- Data reported more frequently to the grantee tended to be of higher quality. Higher report frequency meant that problems were being assessed earlier and that the lag between training and production of reports was being reduced.
- Confusion about the definition of a Ryan White URS client led to problems at some sites, thus reducing data quality.

- Systems requiring more staff time resulted in lower quality data. Staff felt the systems were more of a burden.

- Organizations with high staff turnover generated lower quality data. New staff were more likely to need training.

- For some providers, there was a lag between service provision and entering information on the services. The longer the lag, the more likely were the problems with information.

- Some providers were generally not attentive to data collection.

- Staff at sites that did not have enough computers were forced to hurriedly enter data or delay entry until they had computer access. Both were likely to result in errors.

- Allowing organizations to specify local or custom data elements for their systems made the systems more useful to the local organization, thus raising the quality of data.

- Fragmented implementation of the field test caused data quality problems. The inability to coordinate the start of data collection, training, and installation of computer hardware led to inefficiencies and aggravated problems resulting from staff turnover. For instance, individuals trained in the use of the system may have left the organization by the time the computer hardware became available.

HRSA is conducting additional analyses of the completeness and consistency of pilot data and will use these analyses in developing manuals on data quality.

2. Quality **Assurance Procedures**

Several grantees developed procedures to improve the quality of data collected during the field test. They included monthly or quarterly reports, reviewing data, modifying data collection procedures, training providers, modifying software, and giving feedback to providers.

a. Monthly or Quarterly Report

Grantees reported that collecting URS data on a quarterly or monthly basis improved data quality over time. Grantees were able to spot trouble earlier in the data collection process, allowing plenty of time to rectify any problem Moreover, the more often providers reported data, the more experience they gained in working out the bugs in their systems.

b. Reviewing Data

Providers and grantees reviewed the data collected during the field test at several points in the process. Although formal procedures were not typically established, providers were generally expected to review the quality of their data, and they reported spending significant amounts of time checking and rechecking information before and after data entry.

One grantee noted that it intended to train its providers to regularly:

- Review hard-copy data before entering information into the database
- Review the content of the database after data entry
- Generate reports to spot inconsistencies

Some grantees also invested substantial resources in reviewing the accuracy, completeness, and consistency of URS data At one site, grantee staff browsed their providers' databases for inconsistencies and retrained provider staff when necessary. After receiving data from their providers, many grantees would manually review (spot check) the responses for all the URS elements, looking for inconsistencies and incomplete data collection and entry. As provider data files were preprocessed and loaded into the grantee's data system, additional checks were made for missing or illogical data. Reports were then generated to highlight information that did not appear to be consistent with the population.

When separate, parallel systems were implemented for the field test, some grantees compared data for the same clients in the two systems to find discrepancies. This procedure also revealed that records were missing. Grantees responsible for entering provider information reviewed the update and original intake forms for missing or inconsistent information each time encounter update data were received from the provider. One grantee suggested that changing the URS reporting period to coincide with the fiscal

year (or grant period) would result in more accurate reporting because it would allow staff to focus on a single reporting period.[3]

c. Modifying Data Collection Procedures

One of the grantees reviewed provider data collection procedures before the field test as described in its final report:

> Provider site visits and training sessions were used to elicit feedback from providers on the types of problems that might be encountered in implementing the URS at the site level. Based on insights gathered in the field and awareness of URS data demands, quality assurance objectives focused on the development of
>
> - ***Uniform Client ID Procedure. This*** addresses quality assurance in the generation of the Unique Record Number. Duplicate client counts can be reduced by standardizing client-identification data collected at the provider level.
>
> - ***Uniform Intake Form (UIF). This addresses*** quality assurance in the collection and handling of client data necessary for URS reporting. By standardizing the content and format of data collection to incorporate URS requirements, entering data into COMPIS can be streamlined.
>
> - ***User-Group Training Session. This*** addresses quality assurance in provider training. The user-group training format can be advantageous in: (a) ensuring an even quality of COMPIS/URS[4] mastery among provider personnel; (b) addressing unanticipated problems through collective user feedback/interaction; © presenting new URS information/forms evenly across providers; and (d) ensuring understanding and use of the Uniform Client-ID Procedure and UIF.
>
> This UIF has been designed to ensure that all providers collect the same elements and use the same definitions. It is expected that this form will reduce training time necessary for staff who switch from one agency to another.

[3]However, fiscal years and grant periods both vary across grantees.

[4]Although all providers for this grantee used COMPIS software, this value of user-group training sessions is applicable to sites using other software.

The uniform intake form is further modified for each provider site. Spaces on the form for services not provided at a site are precoded with "998" (Not Applicable) to prevent accidental entry of improper codes.

d. Training Providers

Some of the grantees developed their own URS training materials as part of their quality assurance procedures. One grantee prepared a glossary of the URS data elements, which included instructions on interpreting the elements and what responses were appropriate. Grantees also conducted training sessions in the use of the URS software and computers in general. One of the grantees stated as a result of the training, "Sites were able to become more independent and generate some basic analyses of their own data."

e. Modifying Software

Most of the provider software systems included built-in automated data integrity routines to ensure that data were entered in the correct format. At a minimum, these systems prevented storage of the wrong type of information (character, numeric, date) for a data element. Other systems checked for illegal values and helped the user select the proper codes from "pick lists" or look-up tables. One of the software systems (IMACS) could display clients for whom data were missing so that case managers could review and update these records.

One grantee noted that the provider Toolbox did not allow ad hoc searches for specific values in the database, making it difficult to perform quality assurance checking. Another grantee suggested that submitting data in .dbf rather than ASCII format would simplify its quality control procedures. Since database programs that use .dbf files automatically track the location of information in the database, the user would be free to focus on the values of the elements without having to worry about physical locations such as column positions.

f. Giving Feedback to Providers

Several grantees recognized the importance of giving feedback to providers to ensure data quality. Some grantees prepared summary reports using reported data and distributed them throughout the state. It was believed that if providers saw the reports, case managers would be motivated to report accurate data Other grantees and some providers gave case managers client update lists so they could monitor the accuracy of their computerized caseload.

For each of its providers, another grantee generated more complex summary reports describing client demographics and services, and including an error report identifying specific person-level data in the reports that required correction or clarification. Another grantee randomly selected case managers and generated reports describing their clients. Grantee staff then personally reviewed the reports with each case manager. This procedure helped identify potential problems in data collection and entry.

3. Summary of Results/Implications for the URS

Most providers and grantees implemented informal quality assurance procedures such as manually reviewing data before and after entry. However, several grantees that viewed quality assurance as vital to the reporting system developed comprehensive training programs and provided for feedback of results to case managers.

Grantees felt that integrating the URS data collection effort into daily function provider operations was important to ensuring the collection and entry of good data This could be achieved by giving providers a voice in the design of their data system and enabling them to customize their systems. Combining Title I, Title II, and Title III reporting requirements would reduce the perceived reporting burden and more likely result in better data.

4. Recommendations for HRSA

- Develop instruments for assessing data quality and encourage providers to use quality assurance procedures

- Encourage provider training programs, perhaps by distributing sample training materials
- Promote consistency across providers by distributing a glossary of URS elements
- Provide software that may be customized at the local, provider level
- Combine Title I, Title II, and Title III reporting to reduce overall reporting burden
- Investigate the quality of data from these grantees and providers relative to data obtained from organizations with more informal quality assurance procedures as data become available.

IV. CONFIDENTIALITY AND DATA SECURITY

Field test participants stressed the importance of confidentiality at two levels. The first concerns the threat to confidentiality that would be posed by inadequate posed by everyday procedures at the provider site, including the absence of a confidentiality policy and safeguards for information review and processing, failure to keep passwords confidential, unattended computers, and otherwise not protecting sensitive data files, The second concerns data that passes from the provider site to grantees and to HRSA; this involves issues such as encryption of client identification codes and access to client information at the federal level. In this chapter, we discuss these issues as they relate to the URS.

A. CONFIDENTIALITY IN THE URS

This section highlights the importance of confidentiality in client-level reporting systems, describes HRSA's approach to addressing both levels of confidentiality concerns, and discusses the Client Key System (CKS), an alternative to the URN.

1. The Importance of Confidentiality

The collection and reporting of person-level information raises important confidentiality issues that are not present to the same degree in aggregate reporting systems. This is so because information about individuals is not maintained solely by providers but is transmitted to other agencies. Providers and clients are concerned that transmitting and sharing data could make unauthorized disclosure and identification of HIV-infected individuals more likely. Recognizing that client confidentiality is of paramount concern, HRSA worked with grantees and providers to identify threats to the security of URS data and develop appropriate solutions. HRSA enlisted the assistance of nationally recognized security experts, grantee and provider representatives with particularly relevant expertise, and HIV advocacy organizations. The URS

field test was an important opportunity to examine these solutions and evaluate the need for alterative security measures.

2. HRSA Confidentiality Procedures and Activities

Because confidentiality is such an important issue in the URS, HRSA took a highly comprehensive approach to enhancing data security:

- ***Developed Organizational Confidentiality Guides.*** HRSA developed detailed confidentiality guidelines for grantee and provider organizations to review and consider adopting. These guidelines present a broad range of computer and organizational practices designed to enhance the security of INS-participating organizations.

- ***Developed the URN System.*** HRSA enlisted the assistance of several organizations to develop the URN, which is encrypted from letters of the client's name, date of birth, and gender. It acts as the identifier in URS person-level data records and as the mechanism to link person-level records across providers. The URN is specially designed to prevent casual and systematic efforts to discover the identity of individuals. It was developed out of concern about the absence of protection offered by more traditional identifiers, such as name or social security number, and out of a desire to minimize the number of individuals who have access to such identifying information. The use and testing of the URN was central to this nationwide field testing effort.

- ***Disseminated Technical Assistance.*** During the field tests, HRSA staff briefed grantees and providers on the confidentiality guides and the URN and discussed them in considerable detail with site staff. At each site, HRSA also discussed recommended approaches to ensuring security when handling, storing, and transmitting data.

- ***Removed or Modified Certain URS Elements.*** HRSA removed and modified certain candidate data elements to reduce the risk that these elements could be used to identify an individual. For example, the date of birth element was changed to year of birth.

- ***Secured a Federal Certificate of Confidentiality. This*** certificate protects URS data by permitting any potentially identifying characteristics of clients in the field test to be withheld from all persons not connected to the project. The certificate specifically forbids the disclosure of identifying characteristics of field test clients in any federal, state or local civil, criminal, administrative, legislative, or other proceedings to compel disclosure of the identifying characteristics.

3. The Client Key System: An Alternative to the URN

The Client Key System (CKS) was developed by the Philadelphia grantee as an alternative to the URN for tracking clients and producing unduplicated client information. Developed at the same time as the URS, the CKS is an encrypted string generated from portions of traditional personal identifiers and a "client key." The client key is a string created by the client, similar to a personal identification number used for automatic teller machines. It was proposed as part of the input string to (1) ensure that URNs cannot be generated from databases that contain personal information in an attempt to identify an individual and (2) give clients a greater sense of comfort with control over the information they provide. While the client key has the potential for additional protection, it also requires clients to remember their key and adds procedures for providers to follow.

B. GRANTEE AND PROVIDER REACTIONS

The field test of the URS was an opportunity for HRSA to examine the URN and CKS in operation and determine whether grantees and providers find them to be adequate. HRSA examined the impact of the confidentiality guides on organizational procedures; reviewed participating organizations' assessments of the guides; and evaluated grantee, provider, and client reaction to the URN and the CKS.

Because a record number is central to the URS, we devoted much effort to determining whether grantees and providers are comfortable with the URN and whether the URN is operationally feasible. We gathered information on these issues through numerous questionnaires, discussion group sessions, and monthly and final reports. Although we similarly assessed reactions to the CKS, it was only tested at one grantee site for a brief time. HRSA therefore has only limited information on it.

1. Reactions to the Confidentiality Guides

Grantees and providers were uniformly positive about the content and format of the confidentiality guides. Both the grantee and provider guides contained discussions of confidentiality issues at each step

in the flow of URS data, followed by a checklist that an organization could follow in reviewing the adequacy of its current confidentiality procedures. Participants reported being satisfied with the scope of issues covered in the guides and with the checklist. They also reported that many organizations identified and corrected weaknesses in their confidentiality policies and procedures with help from these guides. Several grantees and providers stated that the attention to confidentiality in the URS field tests generally, and changes in local procedures occasioned by these confidentiality guides in particular, clearly prompted an overall improvement in the security of confidential client information.

2. **Reactions to the URN**

Most grantees and providers believed that the URN effectively protects the identity of clients. HRSA's explanation of URN design implementation, and potential weaknesses to guard against generally left field test participants satisfied with the security offered by the URN. While some organizations expressed concern in the beginning of the field test about person-level reporting, grantees and providers felt comfortable with the URN once it was discussed in detail. Providers at two sites reported that they preferred the URN over other identifiers proposed for statewide reporting activities. At another site, the URN was endorsed as an alternative to the use of names in HIV reporting. A few other grantees noted that since providers in their states are required to report persons with HIV to the state by name, the URN presents neither a security issue nor significant concerns for providers.

Several grantees and providers were concerned about confidentiality breaches that could be caused by matching a rural client's demographic information with his or her ZIP code. Some grantees and providers also expressed concern about allowing providers with limited automation capabilities to submit unencrypted URNs. While the URN was typically generated by providers, the grantee sometimes generated them. One grantee, which generated URNs for all its providers, would obtain unencrypted strings along with the data record, generate the URN, and to protect these data, would then destroy the unencrypted string. This approach was intended to assist providers and enhance confidentiality by

eliminating the need to store URNs and corresponding data records in the same locations. Another grantee used a similar approach to assist its providers and protect confidentiality. Providers needing help in generating URNs would submit unencrypted strings to the grantee. The grantee would then generate the URNs and send them to the appropriate provider, who would attach them to data records and then forward records back to the grantee. Both approaches may provide a useful model for grantees interested in alleviating provider concerns about burden, or who have many providers with limited data processing capabilities.

Before the field test, one grantee established that it would not supply HRSA with URNs. While this was acceptable to all parties for the field tests, the grantee and its providers are likely to remain uncomfortable with the URN until HRSA completes additional quantitative analysis of the threat posed by external database attacks to the URN. (An external database attack occurs when URNs are generated from large databases and linked to a list of URNs.) A HRSA-sponsored quantitative assessment of the risks of identification posed by these attacks is in progress.

Providers discussed the purpose of the URS and the uses of client-level information with clients at several sites. At other sites, clients received little or no information about the URS, perhaps because providers believed that current consent forms adequately addressed the URS. Several sites noted that early attempts to discuss the reporting system with clients confused them, and it is possible that these agencies were reluctant to describe the reporting system out of concern about their ability to communicate effectively. Generally, however, clients in the field tests did not seem to be concerned about confidentiality with respect to the URS. Nevertheless, HRSA and the Ryan White community have a responsibility to protect the sensitive data collected through the URS.

3. Reactions to the CKS

One grantee field tested the CKS. Consequently, we have only a very preliminary assessment of this system. The grantee and its providers believed that the CKS enhanced the protection offered to clients and

gave them greater control over the identifier. Yet, these providers also noted that the clients tended to rely on their case managers to keep track of the client keys. Furthermore, the providers believed that most clients would forget their keys, at least occasionally. In addition, using the CKS/mock voice mail dummy intake disrupted the process of establishing a comfortable client relationship and service provision. These observations raise questions about the protection actually offered by the CKS and its feasibility.

4. Other Issues Related to Confidentiality

A few site-specific issues emerged during the field tests. At one site, a service provider discovered a way to circumvent the password protection scheme of the software used by providers to collect and report URS data. This weakness, discovered early in the field test, was easily fixed. But for a time, the problem undermined provider confidence in the system's ability to protect URS electronic files kept at provider sites.

At another site, a practice of maintaining client-identified information in the grantee's databases predated the field test. During the field test, but not related to the URS data, this arrangement became a source of concern in a period of tension between the grantee and a number of community organizations. The field test provided a means of alleviating this concern as the grantee and providers agreed to use the URN instead of client names or other identifying information in all client-centered data sent to and maintained by the grantee.

At a third site, in which data were entered into computers during client intakes and service encounters, one provider reported that some clients became reluctant to provide full or accurate personal information as they observed the staff entering their answers into a computer. These concerns were often, but not always, alleviated through discussing the reasons for and uses of the data as well as computer security provisions.

5. Recommendations

While the URN, the Certificate of Confidentiality, and other security procedures were considered effective, field test participants recommended other ways to further secure the confidentiality of URS client information.

- ***Develop Consent Forms. These*** forms would be a one- or two-page outline of how the client-level data would be used. A client's signature would indicate consent to this use of information.

- ***Develop HRSA-Approved Confidentiality Procedures.*** It was suggested that HRSA's approval of provider procedures to protect confidentiality would make clients feel more secure.

- ***Develop Additional Security Measures for HRSA-Supplied and HRSA-Supported Software. These*** include screen savers, locking mechanisms, and other features.

- ***Continue to Assess and Explain the URN and CKS.*** HRSA should continue to assess the vulnerability of the URN and CKS. Improvements in the design of the URN or its implementation at provider sites should be investigated by HRSA and reported to the Ryan White community. HRSA and grantees should continue'to explain the URN to organizations, staff, and clients who express concerned about it.

- ***Modify Rural ZIP Code.*** HRSA should consider the feasibility of allowing providers in rural areas to omit ZIP code information or to report only the first three numbers of the code.

- ***Extend Certiicafe of Confidentiality to Grantees. This*** would further protect potentially identifying client information from being disclosed in any federal, state, or local proceeding designed to do so.

V. IMPACT ON RELATIONSHIPS

Through continual consultation with grantees and providers during development of the URS, HRSA became keenly aware of the potential impact that the URS could have on the relationship between providers and clients, and between providers and grantees, In many instances, URS data will be only a portion of the data providers are expected to collect from clients during intake and follow-up encounters. These increasing demands for URS and other program-related information have the potential to affect providers' ability to render services, creating additional barriers for providers to overcome in meeting the often complex, changing needs of clients with HIV.

Data collection and reporting requirements may also have unintended effects on the relationship between grantees, who must provide information to federal and state funding sources, and providers, who must provide information to grantees. Although all such effects may not be negative, implementing and maintaining a new reporting system such as the URS, as well as meeting other reporting requirements, will put pressure on providers and grantees, which, in turn, could affect their relationship.

One of the goals of the field test was to assess the impact of the URS on the provider-client and provider-grantee relationships. This chapter addresses this subject, focusing on issues identified by grantees and providers during field tests. The chapter is based primarily on discussions with grantees and providers during the final site visits and on the final reports of grantees.

A. PROVIDER-CLIENT RELATIONSHIP

Collecting URS and other program data has the potential to adversely affect the relationship between providers and clients. Providers could have difficulty establishing trust and rapport or adequate comfort levels with clients. It could also be difficult to obtain non-URS data from clients, and intake time would be likely to increase. Data entry and reporting could decrease overall time available for direct service, and clients could become frustrated about being required to provide more information for the same level of

services. This section focuses on the reported impacts of (1) computer usage for URS data collection and (2) URS time requirements for collecting data and reporting on the provider-client relationship.

1. Methodology

HRSA attempted to assess the impact of computer usage and other factors on the provider-client relationship by interviewing service providers. Questions were administered in group sessions with varying numbers of provider representatives. For sites with large numbers of providers, two or more group discussions were held. Since the sessions were informal group discussions rather than structured one-on-one interviews, we could neither precisely tabulate responses to each question nor conduct a quantitative analysis of site-specific or group responses. We therefore analyzed group discussions on the basis of major themes that emerged from site-specific comments, as summarized in Table V. 1. The purpose of this type of analysis is to identify points of consensus on issues that affect relationships. It is not intended as an exhaustive summary of the entire discussion.

2. Impact of Computers

The use of computers to collect and report URS information could influence client and provider perceptions about service delivery and the importance of data collection. From the client's perspective, the use of a computer during intake to record personal data could seem insensitive, showing more concern with data collection than service provision. This could be especially true for clients attempting to obtain services for the first time or during a crisis, or for those anxious about being identified as a person with HIV. From the provider's perspective, the use of computers to record client data could interfere with establishing an initial comfortable dialogue with clients.

TABLE V.l

SUMMARY OF PROVIDER COMMENTS FROM GROUP DISCUSSIONS

Field Test Site	Reported Impact of Computer Usage on Provider-Client Relations	Reported Impact of URS on Provider Time and Service Provision
Test Site 1	No impact reported from computer usage.	During early implementation, development of forms required extra provider time. No reported impact on service provision.
Test Site 2	Information is generally collected manually.	Hardware and software problems, which affected a few providers, detracted from service provision.
Test Site 3	Computers usually are not used during initial intake. Information is collected on forms and entered into the computer.	No negative impact on time or provision of services reported. Increased stability and consistency of case management services may be partially attributable to IMACS/URS implementation. IMACS had been used prior to the field test.
Test Site 4	No reported impact of computer usage on client relations. Increased usage for all data requirements has created time concerns from some case management supervisors and providers.	Overall collection of URS and other locally mandated data was perceived by some providers to be burdensome for clients and providers. No reported negative impact on provision of services.
Test Site 5	One provider reported that some clients react negatively to using computers to enter information during initial intake; this usually did not continue after case managers developed rapport with clients.	No major impact on time requirements or service provision reported.

TABLE V. 1 (*continued*)

Field Test Site	Reported Impact of Computer Usage on Provider-Client Relations	Reported URS Impact on Provider Tie and Service Provision
Test Site 6	Use of computers was time consuming at the start of the field test. They became more valuable as providers became used to them. Updating was sometimes easier without computers. Use of laptops in home or hospital settings created barriers between clients and case managers.	During initial implementation, there was some impact on time available for services due to learning and maintaining the system. Intake time was lengthened, causing provider reluctance to do further data collection follow-up.
Test Site 7	No impact from computer usage; data is collected manually.	URS was largely implemented prior to the field test. No additional impact on provider time or provision of service was reported.
Test Site 8	No impact reported from computer usage.	Because the COMPIS/URS does not fully accommodate all reporting needs of providers, it is viewed as redundant and time consuming by some providers. No reported impact on service provision.
Test Site 9	Most providers did not enter data via computers in the presence of clients. For those who used computers, no negative client reactions were reported. Several providers felt that using a computer for data collection (URS and other) takes too much time.	Some providers felt that URS data collection decreases time available for clients and service delivery. As providers become comfortable with the system, there may be a net gain in time for services

TABLE V. 1 (continued)

Field Test Site	Reported Impact of Computer Usage on Provider-Client Relations	Reported URS Impact on Provider Time and Service Provision
Test Site 10	According to one provider, very few clients have been hesitant about providing information when computers are used to enter data in the presence of clients. Some clients were skeptical about computer usage during initial consultations; this usually did not continue after initial intake.	According to one provider, computer usage, which has decreased paperwork, may have given case managers more time with clients. Another provider reported no overall impact on service provision or client relations. During initial start-up, de centralized data-entry system impacted case manager time for direct client service.
Test Site 11	Use of computers was intrusive at intake, may have disrupted establishment of initial client relationship; this was less problematic after trust was developed.	No impact on time requirements or provision of service.
Test Site 12	At one provider site, some clients have been reluctant to provide accurate data for the URN. Clients have raised concerns about centralized computer system security and potential uses of URS data.	At one site where URS implementation was part of overall increased automation, extra data entry time was required.
Test Site 13	No impact of computer usage reported.	No impact reported on provider time or ability to provide services.

a. Discussion Questions and Findings

To measure the impact of computers on clients, providers were asked the following questions:

- Did the use of computers impact client relations in your agency? If so, how much was due to specific URS activities, and how much was due solely to the introduction of computers?
- If URS data are entered into a computer in the presence of clients, was there any negative reaction from clients? (The URS does not require providers to enter information into a computer in the presence of clients. Typically, most direct-service providers collect information using paper forms and later enter it into computers.)

The general impact of computer use on direct-service providers was reported to be minor across all field test sites. Providers in 4 of the 13 sites reported some impact on the provider-client relationship. Although most of the reported effects were related to client reactions to computer use during intake and encounters, other comments related to the general impact of computers on provider activity and time. The major themes related to computers reflect both positive and negative responses:

- Computers were viewed by some providers as an impediment to developing relationships with clients and completing direct service activities.
- Computers may not be appropriate for all settings, for example, homes or hospitals.
- Providers realize the benefits of increased computer use for daily activities when they experience how computers increase or enhance ability to provide services.
- Negative client reaction generally occurred during intake.
- Negative reactions were overcome after providers developed a rapport with clients.

It is noteworthy that these themes emerged from provider comments about computer use related to both the URS and general data collection. Although HRSA facilitators attempted to focus the discussion on the URS, it often was difficult for providers to differentiate between URS-related activities and other data-collection efforts. This was due in part to the various ways that the URS was integrated (or not integrated) into provider data systems. Because some providers perceived the URS and other data

collection processes to be part of "the computer system," the impact of various data collection activities could not be distinguished from one another.

b. Implications of Findings, and Recommendations

In some instances, the perception that computers impeded the provider-client relationship occurred during the implementation stage, when providers were required to begin using computers for data collection, but changed after they became accustomed to them. However, other providers continued to view computers as barriers to service provision or, as mentioned, inappropriate in such situations as hospitals or some home settings.

Given these findings, provider agencies that are increasing the use of or introducing computers may want to consider the following suggestions for minimizing their negative impact:

- Providers should be trained on software and hardware functions to ease their own discomfort, which may unintentionally set the tone for a client interview. If computers are used in the presence of clients, training should include mock interviews so providers can practice dealing with different client reactions, such as agitation or confusion, and with different situations, such as a home setting or normal office encounter.
- Gradually phase in computers for certain activities until providers become comfortable with hardware and software.
- Emphasize the value of data collection. Provider agencies should attempt to develop mechanisms for continual feedback to direct-service personnel about how data is used to improve service delivery and efficiency.
- Thoroughly explain to clients how the computer is used during the interview.
- Discuss what information will be collected and how it will be used.
- Give direct-service personnel the option to collect data manually when it may be inappropriate or impractical to use computers.

3. Impact of URS Time Requirements on Service Provision

Providers at all levels are concerned that the time required to collect and report URS and other program-related data could consume staff resources otherwise devoted to providing direct services to

clients. HRSA collected estimates of time requirements for URS-related activities for each provider through field test logs and provider surveys. Findings based on these data are presented in Chapter VI, Section B. To supplement this information, we also asked providers during discussion sessions about their general impressions of URS time requirements and their impact on service provision. These impressions are the focus of this section.

a. Discussion Questions and Findings

Providers were asked the following questions during each discussion session:

- Does participation in the URS increase or decrease time required of different staff (case management, clinical, administrative, or management information staff)?
- As a result, do URS requirements directly or indirectly influence your ability to provide services to clients?
- Since implementing the URS, have you been able to serve the same number of clients?

A general summary of site-specific responses to these questions was displayed in Table V. 1.

A few providers reported some negative impact of URS time requirements on the provision of services. At two sites, providers reported that during early implementation, case managers needed to spend extra time learning the new system and entering data on current cases. Although these activities affected case managers' time, they did not, according to providers, adversely affect the delivery or provision of services.

Providers from two sites reported that URS implementation, along with software conversions, helped improve case management services by decreasing manual paperwork and increasing consistency of services.

No providers in any discussion session reported a decrease in the number of clients served due to the URS or other data collection procedures. However, a theme that emerged from all sessions was that if the

URS and other data requirements continue to increase, they have the potential to affect the number of clients served.

b. Implications of Findings, and Recommendations

The consensus in most of the provider discussions was that the URS had little, if any, direct impact on service provision. Several reasons were offered for this finding:

- The URS was integrated in a manner that required only minor system modifications, which therefore did not much affect how case managers and other providers collected information.
- The data required by the URS is similar or identical to data already being collected.
- Providers made extra time for data-related activities and did not allow them to interfere with service responsibilities.

The discussion format did not permit us to question each provider to determine which of these reasons were relevant to its particular situation. However, medical providers in at least two sites did cite the third reason: when necessary, data collection and other nonservice activities were completed after service hours or on weekends.

When some service impact was reported, it was related to time required for data entry and system maintenance. Providers perceived these activities to take "a lot of time" but could not be specific about how much. It is possible that since baseline time information was collected in the beginning of the field test, providers may have been reluctant to give estimates that did not correspond with previously submitted information, or they may not have been able to remember how much extra time was required during implementation. Particularly in clinical settings, where pieces of URS information are often culled from several sources, it may have been especially difficult for providers to recall how much time was spent recording any given "piece" of URS data. Although providers reported that URS requirements had little or no impact on service provision, they continue to be concerned about data and reporting activities. It is

important to understand that data activities are perceived by service providers to have the potential to decrease the number of clients served and time available for clients.

The following are recommended to ensure that the URS and other reporting requirements do not adversely affect service provision:

- HRSA should continue to work closely with providers and grantees on coordinating local and federal reporting requirements.
- All parties should strive to minimize the reporting burden on providers by developing forms and software that can collect information for a variety of reporting purposes.

B. PROVIDER-GRANTEE RELATIONSHIP

The URS has the potential to affect the provider-grantee relationship in a variety of ways. It could strengthen or strain this relationship depending on the type and magnitude of problems encountered during implementation and the manner in which they are resolved. For example, the need for coordination among URS participants has the potential to stimulate a closer relationship between grantee and provider staff who collect data, such as management information personnel or direct service providers (e.g., case managers).

HRSA attempted to assess the impact of the URS on the provider-grantee relationship by interviewing grantees and providers. Because most providers focused exclusively on relationships with clients, we discuss the impact of the URS on the provider-grantee relationship primarily from the perspective of grantees. Our information is based on grantee final reports and discussions with grantees during the final site visit as summarized by HRSA in final visit reports.

1. Findings

Table V.2 summarizes the impact of the URS on the provider-grantee relationship as reported by grantees. Four sites reported little or no impact. Of the nine sites that did perceive an impact, three reported that the URS helped to improve the relationship, while three reported that it strained the

TABLE V.2

GRANTEE ASSESSMENT OF URS IMPACT ON PROVIDER-GRANTEE RELATIONS

Field Test Site	Reported Impact
Test Site 1	URS implementation enabled the establishment of direct working relationships with providers. The potential for the URS to standardize state and federal case management reporting requirements and end discrepancies between Titles I, II, and III will strengthen the grantee-provider relationship.
Test Site 2	URS implementation had little effect on the grantee-provider relationship. Some providers were frustrated with the project's software consultant and were concerned during initial implementation about confidentiality. The field test has fostered communication between grantee and provider MIS staff.
Test Site 3	Overall, the URS has improved the grantee relationship with case managers. It allowed case managers to better appreciate the importance of their role and responsibility in tracking funding. Case management agencies have expressed concern about administrative costs for the URS. It was sometimes difficult to obtain medical data from rural providers with small caseloads.
Test Site 4	The URS was incorporated and tested within an existing system; therefore, there was little impact on the grantee-provider relationship. The replacement of client-identifying information with the URN had a positive effect on the grantee relationship with providers and their clients. Dialogue about data collection and confidentially issues has given the grantee and providers an opportunity to work together on improving the entire data system.
Test Site 5	URS implementation resulted in the establishment of new, direct relationships with providers. Provider noncompliance with field test requirements and grantee inability to consistently provide necessary technical assistance led to a strained relationship with some providers. Provider attitudes toward the field test affected the grantee-provider relationship.
Test Site 6	Implementation appeared to have little impact on the relationship between providers, and Title I and Title II grantees. As result of the field test, providers are more knowledgeable about their automation capabilities and able to more clearly delineate their automation needs.
Teat Site 7	The need to increase communication brought about by URS implementation has improved the grantee-consortia relationship and the consortia-provider relationship.
Test Site 8	Because URS implementation has increased data management responsibilities, the field test experience was difficult for many providers. Grantee flexibility and understanding of provider personnel frustrations with the URS helped to maintain cooperative relationships.

TABLE V.2 (continued)

Field Test Site	Reported Impact
Test Site 9	URS implementation has helped to further enhance a good pm-existing relationship between the grantee and providers. It has encouraged the development of closer communication between the grantee and providers, and among all provider participants in the field test.
Test Site 10	One provider reported that a good relationship was maintained throughout the field test. Providers were very interested and cooperative. According to another provider, the relationship was strained because of dissatisfaction with software and hardware chosen for the field test. Providers were less enthusiastic and cooperative in fulfilling field test requirements. Statewide URS as a standard could help to encourage a more positive grantee-provider relationship.
Test Site 11	The relationship with providers has always been good. The **URS/COMPIS** implementation did not negatively impact the relationship. Providers had some minor concerns about time requirements for use of the software. Since the grantee intends to require the URS as a condition for **enrollment** in the state's drug assistance and home care programs, ability to comply with reporting requirements will be used as a criterion to select future providers.
Test Site 12	Overall, the URS had a positive impact on the grantee-provider relationship. A strained relationship with some providers was a result of concerns about confidentiality and security caused, in part, by the general distrust that some providers have toward the state and its approach to HIV disease. The grantee, through implementation of the URS, was able to establish a level of trust with providers that helped to improved working relationships.
Test Site 13	As a result of URS implementation, a direct, less formal working relationship was developed with case management providers. However. a less **collegial** relationship was developed with home health providers, who viewed data collection as intrusive to the nurse/client relationship.

relationship with some providers. Three sites reported that the URS helped to develop beneficial new or more direct relationships with providers.

Overall, grantees identified the following factors that could influence the URS impact on the provider-grantee relationship:

- Nature or character of the pre-existing relationship
  - Was there a good relationship prior to URS implementation?
  - Was there a pre-existing level of trust between the grantee and providers?
  - Did implementation encourage the establishment of a new relationship?
- Utility to providers of software used to collect and report URS data
- Level of technical assistance required by providers
- Availability of technical assistance and grantee ability to provide such assistance and support
- Provider commitment to and attitude toward the field test
- Political and confidentiality concerns related to URS implementation

2. **Implications of Findings**

Grantees felt that the URS had little negative impact on their relationship with providers. The strained relationships noted by three sites occurred with only some of the participating providers and were attributed to a variety of reasons, including provider dissatisfaction with software, noncompliance with field test reporting requirements, lack of commitment to the field test, unexpected staff changes that disrupted field test activities, and persistent provider concerns over confidentiality and system security. Sites that reported a positive impact on their relationship with providers felt that the URS was responsible for improved communication with providers. Most sites reporting this impact believed that *better* communication was a result of *more* communication with providers.

As mentioned, three sites reported that the URS helped to establish new or more direct relationships with providers. In most instances, these relationships were considered to be the basis for building a better

overall relationship. Some grantees reporting this impact also mentioned that the new or direct relationship enabled them to better understand how particular provider agencies operate and whom they serve.

One grantee reported that the pre-existing provider-grantee relationship was a good indicator of how the grantee and provider related during URS implementation. In many instances, providers selected to participate in the field test were the most willing and cooperative. Generally, they had good pre-existing relationships with grantees, which may have helped to limit the negative impact of the URS. Several grantees mentioned that a good pre-existing relationship enabled both parties to work through difficult periods during the field test. Conversely, a strained pre-existing relationship between a grantee and a particular provider posed additional problems during the field test.

It is difficult to draw general conclusions about the factors that influenced the impact of the URS on the provider-grantee relationship. Of the factors that were mentioned by grantees (e.g., nature of the pre-existing relationship, level of technical assistance required, utility of software, etc.), only utility of software was cited by more than one grantee as having affected the impact of the URS. In most instances, it was one factor or a combination of factors that influenced the URS impact on the relationship. For example, one site reported that a particular provider's attitude and lack of commitment, coupled with technical assistance demands, led to a strained relationship. **Two** other sites attributed the strain to some providers' overall concern with confidentiality and system security.

It is clear that the URS and general reporting requirements can have beneficial as well as detrimental effects on the provider-grantee relationship. In a large scale implementation of the URS with a variety of providers who have different kinds of relationships with grantees, it is reasonable to expect that the URS would strengthen some relationships and strain others much as it did in the field test.

3. Recommendations

The following could minimize a negative impact of the URS on the provider-grantee relationship:

- HRSA and grantees should continue to work together to coordinate reporting requirements and develop software that can be used for multiple purposes (i.e., to allow providers to meet reporting requirements and perform such other specialized functions as case management).

- Grantees should provide necessary technical assistance and reports from the system that are useful to providers. By working closely with providers to implement and maintain a reporting system such as the URS, grantees have an opportunity to better understand provider agencies, which can lead to more effective working relationships and ultimately improve services for clients.

VI. URS IMPLEMENTATION AND OPERATION

Analyzing URS operation is more complicated than simply comparing before and after pictures for each service provider, since no two service providers are alike nor did they approach the collection and reporting of URS data in exactly the same way. They differed widely in terms of the following characteristics that influenced their ability to implement the URS:

- The complexities of existing reporting requirements and procedures
- The degree to which URS elements were compatible with the existing reporting requirements and the degree to which additional elements were integrated into existing information flows.
- The level of technical expertise available to service providers--in-house or through some external source
- Client caseload and staffing ratios
- The presence or absence of a computerized information management system
- The types of data necessary to be tracked and reported for the URS
- Whether an immediate agency benefit from expanded data collection was identified
- Monetary resources available to expand data collection

In addition to these differences, other extenuating circumstances prevented some provider sites from fully participating in the field tests. Contracting difficulties, staff turnover, and hurricanes Andrew and Iniki interrupted implementation timelines and imposed unexpected costs at some sites. To deal with this variation and to draw some general conclusions about the cost, level of effort, and technical assistance necessary to implement the URS, this report categorizes grantees and service providers according to four broad types of technical approaches to URS implementation. Section A of this chapter describes these approaches. The costs associated with each approach and with the URS in general are discussed in Section B. Technical assistance (TA) issues are discussed in Section C.

A. TECHNICAL APPROACHES TO COLLECTING AND REPORTING URS DATA

The URS specifies a set of data to be collected and how it should be formatted for submission. In recognition of the great variety of data collection approaches and hardware/software in use by service provides and grantees, HRSA intentionally did not prescribe the means by which the data would be collected--grantees and service providers developed their own implementation plans. These plans included a broad range of goals, such as integrating the URS with other reporting requirements, obtaining other non-URS data for program monitoring and planning, creating centralized management information systems, and computerizing data management in general. The goals and approaches had a great impact on the face the URS presented to service providers. As shown in Table VI.1 the *many* different approaches to implementing the URS fall into four categories that are not mutually exclusive: modification of existing systems, implementation of new systems, implementation of the same system for multiple providers, and use of a central database. This section describes these approaches, their advantages and disadvantages, and the obstacles to implementation. Table VI.2 consolidates this information.

1. Types of Approaches

a. Modification of Existing Systems

In this approach, service providers integrated the URS requirements into their current systems of collecting and reporting data They did not implement any *new software* systems or *new* paper forms to collect URS data, but modified the existing systems and forms. This approach was most often used by service providers with a computerized data system and the technical expertise to augment it. Not included in this category are sites that used the Toolbox because it was used almost exclusively by grantees to combine the data from providers. Service providers using the Toolbox did so to complement their existing systems.

TABLE VI. 1

TECHNICAL APPROACHES BY SITE

Site	Modification of Existing Systems	Implementation of New Systems	Implementation of the Same System for Multiple Providers	Use of a Central Database
Colorado		✓	✓	✓
Florida		✓	✓	
Fulton County/GA		✓	✓	
Hawaii		✓	✓	
Houston	✓		✓	✓
Louisiana		✓	✓	
Michigan				
Mississippi				
Ohio	✓		✓	✓
Philadelphia/PA		✓	✓	
San Francisco*	✓	✓	✓	
Virginia[a]				
Washington	✓			

"Two sites implemented a new, uniform system for most providers while allowing some providers to modify their current systems.

TABLE VI.2

TECHNICAL APPROACHES TO URS IMPLEMENTATION

Approach	Advantages	Disadvantages
Modification of Existing Systems	Little changes to the existing system and data flow In-house or contract support to maintain the system	Extra resources are necessary to maintain the system Additional training can be burdensome Technical assistance from the grantee is unavailable to sites with unique system configuration
Implementation of New Systems	Unification of reporting requirements Use of latest technology	Staff resistance to change Resource and time costs
Implementation of the Same System for Multiple Providers	Efficient use of training and support resources Reliance on fellow users for support	Coordination and planning prior to and during implementation
Use of a Central Database	Efficiency in training and assistance One person can maintain system for a number of providers Providers require less technical ability Minimizes geographic barriers	Confidentiality requires careful attention Long distance phone charges Incorporating system into local data flow
Obstacles to Implementation		
Field test timeframe	Insufficient technical assistance	
Lack of computer hardware	Loss of key staff	
Inappropriate software		

b. Implementation of New Systems

In this approach, service providers and grantees installed new data management systems. In most cases, this involved acquiring and installing both new software *and* hardware (all sites had some form of paper system in place, so there were no "new" paper systems, only modified ones). This approach was used primarily at sites that relied on a paper system and wanted to computerize their data management activities, but a few sites completely replaced old computer-based systems.

c. Implementation of the Same System for Multiple Providers

In this approach, grantees chose or designed a software or paper-based system that was implemented by all or a large number of their providers. The system was new for all sites using this approach except Virginia, which created a paper system based on its existing one.

d. Use of a Central Database

In this approach, a grantee (or a group of its service providers) maintained a central database, with client information accessible to the providers in real time. In two cases, the grantee regularly accessed and maintained the database. The users connected to the system remotely through modems and regular telephone lines. This approach was the same for all providers because each used the same software interface to access the data.

2. Advantages and Disadvantages of Technical Approaches

Field test participants selected an approach according to what was perceived to be appropriate for their site. These assumptions were "tested" in the field test, and the advantages and disadvantages of each approach emerged as participants shared their experiences in progress visit and final visit interviews.

a. Modification of Existing Systems

The advantage of this approach was that it generally required little change to the existing systems and flow of information. The person responsible for programming the system changes and adapting paper forms assumed the bulk of the work. For instance, case managers in two previously automated agencies in one state reported that the URS had little or no impact on their work. The burden fell to each agency's systems programmer.

Service providers with an existing computerized system also usually had in-house support staff or a contract with an outside consultant to maintain it. Having struggled through the problems inherent in automating information management, these agencies had the opportunity to devise a system that met their

needs. It was no surprise, then, that these agencies had the least difficulty collecting and reporting URS data. The major exceptions to this finding were hospital-based medical providers, who often used data systems integrated to some extent with the larger service delivery data systems in the hospital. Consequently, they often did not have the authority or resources to modify a hospital-wide system of data collection In all cases, these providers either discontinued participation or developed parallel systems to collect and report URS data. When in-house or contracted assistance was not available, this approach had no advantages over any of the others.

The main disadvantage to this approach was the extra resources required for system maintenance. This was crucial when the system was programmed specifically for an agency. The choice of development tools also affected the availability of future resources. For instance, a system developed in an uncommon programming language restricted the pool of knowledgeable programmers available to an agency. Even using a popular programming language did not completely alleviate this problem. One group of providers was planning to use a custom system developed in a popular xBASE language. The original programmer did not complete the job, and another was forced to spend considerable time simply interpreting the first programmer's code.

Custom systems also brought the additional burden of training, which increased if the systems were to be operated by new staff without similar experience. Technical support from the grantee was either unavailable or considerably more difficult to obtain for a unique configuration at the provider site.

b. Implementation of New Systems

Creating a new system was a time-consuming and resource-intensive process. New paper forms incurred minimal expense, compared with new software and hardware systems (all field test sites used some type of paper form before the URS, often in conjunction with automated systems). New computerized data systems required agencies to evaluate their information flow and devise a process to change it. Most of the service providers did not have enough technical staff to successfully accomplish

this task. Some relied on consultants to recommend or develop systems (and these consultants did not always understand the way HIV service providers operate). Others relied on the most willing and computer-literate of their current staff, an approach that, while successful for several providers, placed heavy demands on the time and forbearance of the individuals involved.

One advantage to implementing new systems was the ability to unify reporting requirements and operations among many agencies, especially when this activity was led by a grantee or a group of service providers. Many grantees used the field test as an opportunity to replace paper forms with new "uniform" intake and encounter forms, which typically incorporated both URS requirements and all of the state, EMA, or other federal reporting requirements for service providers. Grantees also chose to *uniformly* implement new software systems among many providers (see the following section). An additional benefit was the latest of ever-improving hardware technology. These improvements came without an increase in cost, compared with systems available less than a year ago.

New systems were used more often than any other approach--largely because of the low degree to which service providers were using computerized systems to manage their data and because automation is a high priority for service providers. Most of the participants were able to successfully implement their new systems during the field test but agreed that the quality of the data produced by the systems was questionable during the first six to nine months of operation.

New systems required changes to existing procedures and information flows, and the changes often met with some degree of resistance, especially in environments with few resources. A major concern for staff providing direct services was that the use of computers and increasing data-collection requirements would take time away from service provision. Grantees implemented new systems more successfully when their utility could be demonstrated to the staff most affected by them.

The choice of systems seemed to be the most critical component after training and assistance issues were resolved. When a system was installed and later deemed to be inappropriate or not as useful as

described, grantees and service providers had to decide whether to continue implementation through software modifications or to switch to a different system altogether.

c. Implementation of the Same System Among Multiple Providers

All grantees who placed new systems within several service providers chose one software system and designated it the "supported" system The issue of technical assistance drove the selection of this approach, as grantees could offer more comprehensive training and assistance for one system than for a variety of different systems. Service providers using the same software had the advantage of relying on one another for assistance as well. Some sites formed user groups to facilitate ongoing training and monitoring of progress.

A disadvantage of this approach was the amount of coordination and planning required before and during implementation Grantees first had to create uniform reporting formats and procedures. Providers had to agree on one software package that could address diverse needs. The choice of software was often inappropriate for some of the service providers. Most grantees allowed service providers to select other more appropriate software in these situations but were not able to support these other systems. Providers without their own means of support were either forced to adopt a system they did not want or were left out of the field tests. Forty percent of the grantees implementing a uniform system chose prepackaged software (IMACS or COMPIS). Sites that developed a custom system were able to design the software with their own needs in mind and consequently encountered less resistance from providers when those systems were introduced.

d. Use of a Central Database

In three grantee sites, a collection of small to medium-sized providers used modems to connect remotely with a central database managed by the grantee or one of the providers. Ohio and Colorado used IMACS to maintain their database; Houston developed a custom system for this purpose. By the end of

the field test, some providers in a Florida consortium were beginning to modify COMPIS to create a centralized system, and so capitalized on the training advantages inherent in this uniform approach. An additional advantage in all three of these sites was that one person could maintain the system for a number of providers without having to travel frequently to many locations. (Colorado reported that some travel was necessary to initiate providers into the system and install the terminal equipment at the beginning of the test.) The providers did not need on-site staff to maintain the system, but technical skills were helpful in the day-to-day use of the system and in subsequent retraining.

A centralized system proved to be the most effective way to bring computerized information management to many service providers with little technical capability. Colorado used this system to link geographically distant providers as well. Sites with a centralized system had little or no difficulty combining data from the various providers for unduplication. The grantee or coordinating provider carried the bulk of the technical assistance burden.

However, protecting confidentiality became even more critical for users of a centralized system. Provider agencies first had to decide how much information they were willing to share. Consent forms were modified, and community reaction had to be anticipated and addressed. For example, Cincinnati held a series of community meetings on confidentiality before clients and providers were willing to use a centralized system. Colorado and Houston modified their systems so no identifying information (e.g., name) was stored on the system; the URN or some other identifier was used to reference the client information.

Next to confidentiality, the following concerns were cited most frequently: the additional expense of purchasing and maintaining more hardware (modems), the ongoing costs of dedicated phone lines, and phone system usage charges to providers who were in a long-distance calling area in relation to the centralized system. One possible solution to the last problem is a toll-free number paid for by the grantee.

Another disadvantage arose from the concern service providers had about being able to incorporate a centralized system into their own information flow. If the centralized system did not collect all the information a provider wanted to track, the provider was faced with setting up an alternate in-house system thus creating a duplicate system that might require users to enter the same information into both systems or to work longer to combine information from several sources. Finally, the uniformity of a centralized system carries some of the same disadvantages associated with implementing one system uniformly among providers (for example, the software may not be appropriate for all providers, more coordination may be required, etc.).

3. Obstacles Affecting URS Implementation

Sites faced many obstacles when implementing the URS during the field tests. Several were repeatedly cited during interviews with grantee and provider staff.

a. Timeframe of the Field Tests

The timeframe for the field tests presented obstacles to many of the sites. Some grantees did not receive detailed instructions from HRSA until after the proposed start date, which affected contractual and staffing arrangements already in place for the tests. The relatively short duration of the project required some sites to accelerate their implementation phase, which critically affected their ability to collect complete and accurate data By the time of the progress visits, some service providers were still struggling to modify or develop their data systems. Although paper forms were largely in place by this time, the lack of properly modified software meant that a considerable amount of backlogged data would later have to be entered into the computer systems. By the end of the test period, most service providers were able to supply the required data, but many questioned its value and completeness. They suggested that data would be of better quality in subsequent reporting periods. In some cases, the data systems under development were not completed during the testing period.

b. Lack of Computer Hardware

The lack of adequate computer hardware was another major obstacle to implementing the URS. Because decisions about software were made up to six months before the field tests, hardware requirements for a software package may have changed (COMPIS), or the hardware availability in a site may have changed by the time the tests began.

c. Inappropriate Software

When appropriate software was not available, sites were delayed until another system could be installed or the chosen software could be modified. In one site, service providers rejected the software chosen by the grantee because it did not meet their needs and was too difficult to use. Apparently, either the provider staff were not consulted about the software choice, or they did not adequately examine the selected software before the decision was made. Staff turnover contributed to this problem because new staff did not understand the reasons for selecting certain software or they did not agree with the decisions. Because software development and modification is a lengthy process, some providers in three sites were unable to continue to participate in the tests because they did not have working software.

d. Insufficient Technical Assistance

The most prominent obstacle was an underestimation of the amount of work involved in the field tests. Computer skills of service providers were consistently overrated, which caused grantees to spend more time than expected on basic computer training and general computer problems. The evaluation materials for the field tests took considerably more time to manage than the sites expected, affecting the time available for technical assistance related to the URS. The sites scaled back many of their goals when the amount of work involved became clear, especially for those sites adopting new systems.

e. **Loss of Key Staff**

The staff at grantee and provider sites were crucial to the success and operation of the URS. Some key staff left their positions during the field test, which seriously affected the ability of providers and grantees to reach the goals outlined for the site. Hiring new consultants or training new staff was not always feasible because of the short duration of the field tests.

B. COST OF IMPLEMENTING AND OPERATING THE URS

This section presents information on the level of effort and cost associated with implementing and operating the URS at the provider and grantee levels. We explain the concern about cost and level of effort, and through a discussion of the four phases of URS implementation, we address the URS experience in general, examining the broad issues facing most sites during the field test and the roles of provider and grantee staff. We also explain the methodology used to analyze the cost and level of effort involved in collecting data during the field test and examine the time costs, staffing costs, and hardware/software costs associated with URS implementation. We conclude with a summary of this analysis.

Cost figures are examined across grantee and provider sites, which are regrouped into two of the four technical approaches discussed in Section A: sites that modified an existing data collection system and sites that implemented a new data collection system Certain system configurations and site characteristics (i.e., centralized data systems, number of providers, and number of clients) are highlighted to account for further differences in cost. This analysis will give other grantees and providers a sense of the URS-related resource requirements for their present or future situation.

1. Concern about Cost and Level of Effort

Throughout the development of the URS, grantees and providers reported that the burden of the system was one of their greatest concerns. They expressed reservations about the additional time and

resource costs associated with collecting and reporting client-level data. However, the potential savings of time and effort in comparison to existing systems for data collection and reporting also warrant consideration. Many providers already keep progress notes, ask many of the same questions required for the URS, and produce reports for a variety of purposes and funding sources. In the field tests, some providers reported that the time and energy saved in producing specific reports without conducting manual tallies compensated for time spent on system modification and implementation. To understand the overall burden of the URS, it is therefore necessary to understand the net incremental cost and level of effort associated with the URS.

An estimate of this burden at the provider and grantee levels was a key element in reaching a decision about the feasibility of full implementation of the URS. Estimates about staff costs are especially important in assessing the practicality of requiring client-level reporting--particularly since providers and grantees are often underfunded and understaffed. A reporting system that diverts substantial resources away from direct client care would clearly be unwarranted.

2. General Field Test Experience

For most providers and grantees, the field test can be divided into the four phases listed below. Each involved different time commitments from various types of staff, and the duration of each varied across sites.

1. ***Planning and Implementation.*** During this phase, providers and grantees planned data system modifications or development, trained staff, and installed equipment.
2. ***Early Operation. In this*** phase, personnel became familiar with questions, forms, and data entry.
3. ***Mature Operation. This*** phase was the regular ongoing operation of the URS.
4. ***Report Preparation and File Generation.*** During this phase, providers and grantees unduplicated client records and generated electronic files and reports.

a. Planning and Implementation

The planning and implementation phase involved assessing the URS in relation to the existing data system of each participating organization. Activities in this phase included revising paper forms for client intake and service encounters, acquiring hardware, modifying and installing software, setting up procedures, and getting accustomed to a new routine. In some sites, hardware acquisition and software implementation problems absorbed most of the grantee's and/or field test coordinator's time during the first months of the field test. In a small number of sites, these problems continued to consume staff time throughout the field test. In no case was this phase completed in fewer than three months.

Training was time consuming in sites where providers spanned a large geographic area or in which a number of staff had no previous experience. Training was particularly time consuming for sites that attempted to replace paper records with a single, new system computerizing all providers.

b. Early Operation

The second phase, early operation, involved becoming comfortable with the new or modified data system. Staff had to become accustomed to (1) asking clients new questions or a new way of **asking** familiar questions; (2) new information to extract from records; (3) new data intake forms; and (4) new activities related to confidentiality procedures, data entry, and information storage. Providers and grantees expressed many concerns during this phase about the advisability of using computers with clients present, the time required to conduct chart abstractions, the need for data systems to track progress notes, and staff discomfort with computers. Grantee technical staff spent considerable time on the phone and visiting sites to answer questions, restore data, and continue training.

c. Mature, or **Steady-State," Operation

The third phase, mature operation, was for many sites characterized by substantially less frustration and resistance, discovery of easier methods of data entry, more effective use of staff, and lower time costs.

However, because the initial phases consumed so much time in relation to the short duration of field test, a few providers never reached this phase.

d. Report Preparation and File Generation

The last phase, report preparation and electronic file generation, typically affected only the grantee and one person in each agency. In sites with centralized data systems, generating reports involved the grantee staff only. The time costs were minimal if the software was functioning properly. Often, however, for the first cycle of reports, software had to be modified to produce the desired reports and to unduplicate records. At this stage, some providers realized time savings in comparison with prior report-generating procedures, such as manual tallies.

3. Staff Roles

The different staff involved in URS implementation and the variation in their roles across phases and sites provides insight into the general field test experience. The primary types of staff involved in the field tests, listed below, would likely be involved in full implementation of the URS:

- Intake workers and data entry clerks
- Direct service personnel (case managers, medical staff, etc.)
- MIS or data coordinators at the provider level
- Grantee staff and field test coordinators

a. Intake and Data Entry Personnel

URS implementation affected intake and data entry personnel primarily during the early and mature operation phases of the field test. These personnel spent significant time training and learning to use the computer and the software. Changes in forms and questions prompted by the URS affected their time to conduct intake and follow-up interviews, but these effects were very small, particularly during the mature

operation phase if a similar intake form had been used. Providers who had not been using intake forms or computerized records reported that implementation consumed large amounts of time and required data entry staff to be hired.

b. Direct Service Personnel

Direct service personnel were often responsible for completing field test evaluation instruments, data entry for their clients, and record keeping. When there was no data entry clerk available, they found the early operation phase of the URS to be particularly difficult, with inadequate amounts of time for each of these responsibilities. Frequently, case managers mentioned the difficulty of recording information on the computer in front of a client and indicated a preference for taking notes and recording them later.

During the mature phase of operation, some of the difficulties were resolved and much of the burden was eased, but data entry time continued to be a concern particularly for newly automated agencies without data entry staff. Grantees and providers approached this issue in various ways, including using secretaries to administer intake forms, having volunteers enter data, hiring data entry personnel, and setting aside time to record progress notes. The burden on direct service personnel generally decreased dramatically as case managers and data entry clerks became familiar with computer hardware and software.

c. MIS Staff and Data Coordinators

MIS staff and data coordinators bore a large share of the burden during the planning and report preparation phases of URS implementation. They were responsible for modifying the data collection system and often had to act as the liaison between the provider and grantee staff, computer consultants, and HRSA representatives. They often acted as the field test coordinator for many providers. During the report generation phase of the field test, MIS staff and data coordinators prepared data and produced the reports.

MIS staff and data coordinators worked at both the provider and grantee levels, depending on the field test configuration. Larger agencies had their own in-house staff, while smaller providers relied on staff at the grantee level, particularly if the data management system was centralized.

d. Grantee Staff and Field Test Coordinators

Grantee staff and the field test coordinators were most affected during the planning phase of implementation. Much of the start-up time and energy involved revising forms and training, and the grantee staff was usually responsible for most hardware and software problems. Time commitments and logistical difficulties varied widely. In some sites, grantee staff and software programmers spent considerable amounts of time learning and modifying software. In other sites, staff traveled over.a large area to conduct training.

Similarly, grantee staff and field test coordinators were typically responsible for generating reports or providing technical assistance to providers to generate reports during the final phase of implementation. Grantee staff generated the verification tables, often discovering software-related difficulties with unduplicating records and handling groupings from raw data

The expertise for generating electronic files was often not available at the provider level, which necessitated technical assistance (TA) from personnel with computer training. Even when the information being collected was sufficient for the URS, TA was required for report generation and computerization.

4. Methodology for the Cost Analysis

Developing burden estimates for providers and grantees is a complex task because of wide variation in agency environment, number of clients, staff expertise and availability, and computer support (hardware, software, technical expertise). Some field test sites had skilled data coordinators at the grantee and/or provider levels, while others had considerable difficulty locating and retaining appropriate personnel for

the field test activities. In some sites, employee turnover and political tensions related to confidentiality, which predated the URS field test, consumed large amounts of time.

Moreover, the goals and structures of the field tests differed across sites and affected the way grantees allocated their field test funds. Grantees sometimes pursued goals much broader than URS implementation, including collecting data elements other than those in the URS, computerizing all data collection and reporting activities, enhancing MIS capabilities among providers, and adopting a single software system for all providers. A few of the sites attempted to involve a number of providers across a large geographical area to assess statewide implementation. Others included providers in a small geographic area in order to monitor activities most closely.

While no two URS field test sites followed exactly the same approach, it is useful to examine cost information across sites by grouping them into two of the four broad technical approaches: (1) grantees and providers that modified existing systems and (2) grantees and providers that implemented new systems. These categories capture the differences among sites that appeared to have had a major impact on the time and resource costs required to implement the URS. We highlight other site differences (number of clients, number of providers, centralized/noncentralized systems) within the two broad categories that account for further differences in time and resource costs. These variables provide a rough estimate of implementation costs for future URS users, depending on their technical configuration and the site characteristics.

These estimates are limited in three ways. First, grantees and providers in the field test often limited URS implementation to a subset of providers and clients. Full implementation might require more resources than used in the field test. Where possible, full implementation costs based on provider and grantee estimates are discussed in the analysis. Second, all grantees and most providers in the field test were volunteers and therefore already willing and able, to some extent, to collect and report client-level data However, future URS users may not be predisposed to do so, and "self-selection bias" may have kept

costs lower than they would be for grantees and providers with no interest in client-level data collection and reporting. Conversely, a pre-existing interest in improved data systems may have led to implementation approaches that were more ambitious and thus more expensive than would be the norm under full implementation. While not quantifiable, these biases must be considered when applying field test cost estimates to nonparticipating entities. Third, the grantee and provider staff who implemented the URS generally were the same staff who participated in HRSA's evaluation protocol for the field test. This dual responsibility meant that these people were not always able to separate the two roles. Although the HRSA evaluation material asked for a distinction, it was not always made, and so it is not entirely possible to isolate the effort to implement the URS from the very considerable effort involved in completing field test evaluation instruments.

A complete and useful picture of burden requires estimates of time, staffing needs, and equipment purchases (including software modifications). Data sources for these three areas included timesheet logs, purchase logs, grantee monthly reports, HRSA site visit reports, provider questionnaires and grantee final reports. (An important source of data was forms supplied to grantees after the September meeting asking for estimates of staff needs, report generation time, and hardware/software costs.) Through quantitative and qualitative analysis of the data collected with these instruments, we developed estimates of provider and grantee time (i.e., level of effort) required to implement the URS. Where possible and appropriate, these costs were estimated for the field test and full implementation of the URS. The differences between the two sets of estimates enabled us to assess more accurately the full burden of URS implementation. The findings of this analysis are discussed in the following subsection.

5. Findings from the Cost Analysis

In general, the providers and grantees who used existing software, modified and implemented by existing staff, had very different equipment, training, and personnel needs, and therefore very different costs, than providers and grantees that converted from paper-based files to computerized systems. In sites

where software and hardware were obtained or modified early in the field test and functioned well, time and financial costs were not perceived to be as burdensome as they were in sites where problems of logistics, acquisition, and debugging distracted site coordinators and frustrated personnel. Those with existing systems reported less staff resistance and frustration with respect to data collection, data entry, and report generation. In a few cases, the URS and accompanying software actually saved time, compared with pre-existing data collection and reporting systems.

Most providers in sites implementing a new data collection system converted a paper-based system to an automated one using HRSA-developed software or a locally customized system. By and large, these sites experienced more difficulty in implementing the URS than did sites modifying an existing system. Training, for example, was particularly time consuming, especially in sites that included providers across a large geographic area, involved a number of staff with no computer experience, or attempted to computerize all providers in a single new system.

For several reasons, it is especially difficult to estimate burden for sites in this group. Because the early phase of URS implementation (revising paper forms, acquiring hardware, training staff to use the hardware/software, setting up procedures, and getting accustomed to a new routine) consumed so much time, a number of these sites did not attain a smoothly operating record-keeping system during the field test. As a result, timelog sheets often were not complete, making it more difficult to calculate precise time estimates for various activities.

For this group of providers, the mere presence of computers added a burden that is only partly defined in time and monetary costs. "Computer aversion" was nonetheless a very real burden they had to overcome. One agency wrote, "It has been very difficult to put time or energy into data management or statistical analysis when it is not in our model of service delivery." Sites modifying their existing systems had at least partly overcome this burden before URS implementation.

We analyzed three types of costs associated with implementing the URS: those associated with time, staffing needs, and computer equipment. Costs associated with time are broken down according to the five activities related to URS implementation: (1) client intake, (2) client encounter, (3) data entry, (4) training and assistance, and (5) report generation. Costs associated with staffing needs include estimates of data entry personnel and MIS/supervisory staff Costs associated with computer equipment include the purchase of hardware, software, maintenance agreements, and consulting services. [1]

a. Time Costs: Client Intake/Encounter

The net increase in client intake and encounter time cannot be estimated with the available data. The prescribed method was to compare time per client for intakes and encounters before the field test to time per client during the field test, but too often the time log sheets that were designed to capture this information did not provide reliable data. Many providers did not complete the baseline timelog sheet designed to capture pre-field test time estimates. Others had incorporated all or part of the URS data elements into their intake forms before the field test began making a clean baseline impossible to obtain. Moreover, the direct service staff of some providers did not complete the timelog sheets uniformly because definitions of intake and encounters were interpreted differently. This lack of uniformity was compounded by staff turnover during the field test. The resulting variation in recorded information across providers makes it very difficult to make reliable comparisons. Analysis of time costs for client intake and encounters

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'As mentioned, these costs are examined for providers and grantees grouped according to their technical approach. Grantees counted as modifying an existing system are Washington, Houston, Virginia, San Francisco (8 providers), Michigan and Ohio. Grantees counted as developing a new system are Philadelphia/PA, Atlanta/GA, Mississippi, Louisiana, Florida, Colorado, Hawaii, San Francisco (3 providers). Providers are grouped primarily according to their grantee's classification. Some providers are placed in a different category based on descriptions of their data system. San Francisco is counted as both a new-system grantee and a modified-system grantee in the analysis. Virginia started out with a new system but ended up modifying the prior system. The costs associated with Virginia's URS implementation are counted as they apply to the modified-system only.

therefore relies on nonquantitative assessments in provider questionnaires, site visit reports, and grantee final reports.

i. Modified Systems

In general, sites modifying existing systems of data collection reported little or no net increase in client intake or client encounter time as a result of incorporating URS data elements. The grantee final reports included assessments such as, "There was not a great deal of impact on providers regarding collection of data" Another report indicated, "The URS does require additional tune spent with clients during the intake process; however, since most programs require certain amounts of data collection the overall net impact of collecting information is minimal."

Not all providers shared this view. Two reported that obtaining URS information increased intake time, one estimating that the URS doubled data collection time. (It is unclear whether the estimates of these providers include time for data entry, which, according to HRSA evaluation instructions, should be assessed separately from intake tune.) Five providers reported that the URS required 15 extra minutes per client to ask and record the data. (Our information did not allow us to separate the asking time from the recording time or to verify that data entry time was documented separately from recording time.)

In general, however, case management agencies modifying their data collection systems reported little net increase in intake or encounter time as a result of gathering URS information. These time costs were controlled by intake and encounter forms that fully incorporated URS data elements and/or intake computer screens that were easy to follow. However, the biggest factor in minimizing time costs was the extent to which URS-like data elements were included in the provider's intake and encounter data prior to the field test. Several providers reported that intake and encounter time was minimal because URS-like data were collected before the field test or were part of the pre-existing local and state data requirements.

ii. New Systems

Like providers modifying existing data collection systems, most providers creating a new system reported no change in the time it takes to conduct client intakes or encounters as a result of URS implementation. One grantee wrote, "The URS field test has not required provider personnel to spend additional time collecting data This is due to the fact that most of the minimum client-level encounter data specified by the URS is already collected at the point of intake." Similarly, case management organizations that integrated the URS into their newly developed data collection systems generally reported that the URS did not affect the time required to conduct intakes and encounters.

Other new-system providers, however, indicated that the URS required additional intake and encounter time. These providers, primarily medical providers, encountered difficulty in incorporating URS requirements into their data collection systems. Most medical providers did not collect all the URS data elements prior to the field test and universally reported that the URS added more time to client intake. A few medical providers supplied specific estimates of the net increase in intake time created by these additional data elements that ranged from 5 to 20 minutes per client.

b. Time Costs: Data Entry

Many providers expressed concern about the time required to track down and enter URS data into a computer system. One grantee wrote, "The majority of costs lie in personnel and time spent on computer training and data entry." Direct service providers expressed concerns about having to input information or hire data entry staff.

It is difficult to estimate the additional time required to input data as a result of the URS because field test data entry time was collected in terms of hours per week rather than hours per client or hours per client intake form.[2] Moreover, for many providers, data entry often included time spent tracking down missing

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While later versions of the timesheet logs asked for number of clients seen, these figures referred to (continued.. .)

client information from direct service personnel. How much of this time was picked up on timesheet logs is unclear.

To avoid calculating unreliable estimates from timelog sheets, HRSA asked providers and grantees to estimate their need for additional data entry staff Generally, grantees and providers developing a new data collection system required more data entry staff than those that modified an existing system. The same integration problems discussed above generally also apply to data entry staff needs. The less the URS was integrated into the data collection system, the more data entry staff was required to track down and assemble the required information. In particular, providers using parallel systems (i.e., a URS system in addition to the pre-existing system) inevitably face double entry of data and therefore increased data entry time. A detailed analysis of this staff need appears in Section B.5, Staff Needs.

c. Time Costs: Training and Assistance

Training and assistance activities required to implement the URS affected all staff at the provider and grantee levels. Analysis of their time input is important in order to develop a complete picture of time costs. This section focuses only on training and assistance time for direct service personnel and data entry staff at the provider level. The estimates presented here provide a rough guide to the amount of time required to train such personnel. The resources needed to conduct the actual training are discussed later in this. chapter.

The timelog sheets provide better estimates for training and assistance time. Analyzing an aggregate total of time spent by all direct service personnel and data entry staff in training and assistance for each provider would not, however, explain differences in time costs. Larger providers would obviously have larger time costs, and more subtle differences in training and assistance time would be lost. The timelog

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[2](. . . continued)
client intakes and encounters, not data entry records. Data entry clerks had no means to report the number of client records they entered. Direct service staff who entered data at intake or during an encounter did not/could not separate the data entry tune from the overall intake or encounter time.

sheets allow for the calculation of time per staff per day: total staff hours spent in training and assistance activities are divided by the number of staff days over the two-week period measured by the timelog sheets. A staff day is one day worked by one staff member. This number is not necessarily 10 days for each staff member, since some staff worked more than 10 days, while others worked less over the two-week period. Time per staff per day must then be multiplied by a certain number of days to arrive at the total training time necessary to train one staff member.

i. Modified Systems

At the start of the field tests, providers modifying an existing data collection system devoted a large amount of time to training and assistance activities. They learned to use the modified data collection system, including the use of adapted forms, new URS data elements, and new or adapted computer screens. The timelog sheets clearly indicate, however, the existence of a learning curve, as training and assistance time diminished later in the field test.

For the purposes of this analysis, only the initial "surge" in training time will be examined to estimate initial training time costs. Grantees and providers noted, however, that any portion of ongoing training time for existing staff and training time for new staff that is in excess of what would have been required for the pre-URS system also should be counted as a URS-related cost. Ongoing training is vital to data quality, and explaining data elements to new stafftakes time and effort. Unfortunately, these incremental ongoing training costs cannot be estimated with the available data because they were not specifically measured in the field test. Only the initial training time costs for direct service and data entry staff will be analyzed.

It is assumed here that for providers modifying an existing data collection system, the complete training of one staff member takes place on a part-time basis over a 2-week (1 O-working day) period. This assumption, based on anecdotal evidence from the field test, was confirmed by grantees at the September meeting. Time per staff per day will therefore be multiplied by 10 to estimate training time for that staff member. Table VI.3 shows that there is a wide distribution of the time required to train direct service staff

TABLE VI.3

STAFF TRAINING, MODIFIED SYSTEMS
(Hours per Staff Member)

	Number of Providers	
Hours per Staff Member	Direct Service Staff	Data Entry Staff
0.0	5	2
0.1 - 1.0	5	0
1.1 - 2.0	2	2
2.1 - 3.0	1	1
3.1 - 4.0	2	1
4.1 - 5.0	0	0
5.1 - 6.0	1	1
6.1 - 7.0	1	0
7.1 - 8.0	3	0
8.1 - 9.0	0	0
9.1 - 10.0	0	0
10.1 - 11.0	2	1
18.7	0	1

and data entry personnel for providers that modified existing systems. Direct service staff time ranged from 0 to 11 hours, while data entry staff time ranged from 0 to nearly 19 hours. (The number of providers with data entry staff time estimates is low because not all agencies used data entry staff, and some did not have useable timelog sheets to analyze.)

In general, providers at the low end of the range (0 to 4 hours) for direct service staff were large agencies with a well-established MIS department, which took on much of the burden of URS implementation. Direct service staff, who had easy access to MIS staff to answer computer related questions, could concentrate on learning URS data elements. Because the agencies at the low end of the

range also tended to incorporate URS data elements into their already existing data collection system, learning the URS took little time.

At the other end of the spectrum were generally smaller agencies without significant staff support. In these agencies, direct service staff had to learn the URS data elements for themselves *and* how to properly record and enter that data into their computer systems.

Analyzing training and assistance time costs for data entry staff is limited by the number of providers supplying this information. In general, however, training for data entry ranged from 0 to 4 hours per staff member. Training time tended to be higher for agencies that significantly modified their databases to incorporate URS data because this process entailed learning new data screens and filling out new forms. Even if the provider's pre-existing data were similar to URS data, a significantly changed data collection process meant that data entry staff had to take the time to learn it. One provider that significantly expanded its data system reported that although the impact of the URS on case managers was minimal given that they were already collecting most of the URS information before the field test, the impact on data entry staff was substantial.

ii. New Systems

Unlike providers that modified their data collection systems, providers that had to become familiar with a new system did not report a clear learning curve. It is likely that this reflects the difficult process of getting the system up and running and using it consistently. The period of the learning curve for some of these providers probably exceeded the length of data collection time in the field test. Direct service personnel focused primarily on learning how to use new forms and collect new information, while data entry staff learned a new data collection system.

It is assumed here that for providers developing a new data collection system, the complete training of one staff member takes place on a part-time basis over a period of one month (20 working days). As with the modified-system group, this assumption is based on anecdotal evidence confirmed by grantees

and providers at the September field test meeting. Time per staff per day will therefore be multiplied by 20 to estimate training time for that staff member. Based on that calculation, Table VI.4 shows the distribution of the time required (in hours) to train direct service staff providers that developed new data collection systems.

We did not have enough completed logs to estimate data entry staff training time for new-system providers. This lack of data indicates that most providers developing a new data collection system did not use data entry staff but relied on direct service staff members to collect, record, and report URS data. (This is not to suggest that these providers did not need data entry staff, as discussed in the Staff Needs

TABLE VI.4

DIRECT SERVICE STAFF TRAINING, NEW SYSTEMS
(Hours per Staff Member)

Hours per Staff Member	Number of Providers
0.0	6
0.1 - 1.0	1
1.1- 2.0	1
2.1 - 3.0	0
3.1 -4.0	1
4.1 - 5.0	0
5.1 - 6.0	0
6.1 - 7.0	1
7.1 - 8.0	1
10.0	4
13-16	3
20.0	2
30.0	2
67	1

section below.) The burden of learning URS data elements as well as a new computer system thus fell completely on direct service staff. This double burden vastly increased the training time for direct service staff compared with staff at sites modifying an existing data collection system. Even if training days were assumed to be the same for both groups of providers (i.e., 10 days), training time for providers with new systems would be significantly higher than training time for those with modified systems.

Patterns in the distribution are not readily apparent. Providers on the lower end of the distribution (i.e., below or equal to 7 hours per staff member) tended to have a pre-existing data collection system onto which they attached the URS as a parallel, nonintegrated data collection effort in which the role of direct service staff may have been minor. They also tended to be medical providers who abstracted client information from patient charts. Providers at the high end of the spectrum had replaced paper-based systems with automated ones. They reported difficulty in learning a new computer system and overcoming staff aversion to electronic data collection.

Although it is impossible to identify a single range for training time per staff member, it is clear that training time per staff member on new data collection systems, especially for providers automating a paper-based system, can be very high compared with providers modifying their systems.

d. Report Generation Costs

URS report generation and electronic file preparation primarily affected the MIS and supervisory staff at the grantee and provider agency. In general, direct service staff spent less time than other staff members in generating reports. The field test coordinator or MIS staff carried more of this burden--they prepared electronic files, produced verification tables, and checked data for accuracy. Most providers indicated that the time costs to generate reports were minimal once the software was functioning properly. However, data collection system software often had to be modified during the first attempt to unduplicate records and produce reports.

Grantees and providers were asked to estimate the total person hours spent in carrying out report generation activities. Specifically, they were asked to estimate time spent on electronic file preparation time, verification table production, and data quality assurance for each reporting cycle. Most often, this reporting cycle occurred once at the end of the field test. Some sites, however, were able to generate reports more often. For the purposes of this analysis, electronic file preparation and verification table production will be combined as report generation time. Quality assurance time will be kept separate; it does not include time for training and retraining staff. While training and retraining are vital to high quality data, the activities referred to in this discussion focus only on checking data for accuracy and consistency during report generation.

i. Modified Systems

Provider Time Costs. Of 89 providers in the field test, 75 supplied staff time estimates for report generation and quality assurance. Of these 75, 34 modified an existing data collection system. Their staff time spent on report generation and data quality assurance, expressed in total person hours per report cycle, is distributed in Table VI. 5.

All URS reports on clients at the 25 providers that indicated no report generation costs were produced by their grantees. Seventeen of the 25 providers were part a fully centralized system, which allowed the grantee to manipulate the data prepare electronic files, and produce reports. The remaining eight submitted paper forms to the grantee for data entry and report generation.

Most providers that did produce reports on site estimated that producing the first cycle of reports took from 0.1 to **20.0** person hours. At the low end of this range (10 person hours or less) were two groups of agencies. One consisted of smaller agencies with caseloads between 30 and 100 clients. The other consisted of larger agencies (300 to 3 50 clients) that had either successfully integrated the URS into their data collection systems or installed URS-compatible software. Producing reports electronically did not demand much staff time in these agencies even though their caseloads were large. One agency with a

TABLE VI.5

PROVIDER REPORT GENERATION/QUALITY ASSURANCE TIME,
MODIFIED SYSTEMS
(Person Hours per Report Cycle)

Person Hours per Report Cycle	Number of Providers	
	Report Generation	Quality Assurance
0.0	25	24
0.1 - 5.0	2	1
5.1 - 10.0	2	2
10.1 - 15.0	1	3
15.1 - 20.0	1	2
20.1 - 25.0	0	0
50.0	0	1
60.0	2	0
90.0	1	0

NOTE: The hours reported by one of these providers includes quality assurance time. Hence, there are 34 providers with report generation time reported, but only 33 in the quality assurance column.

caseload of 350, for example, reported spending 0.5 hours on URS reports, basically "at the touch of a button." This agency had incorporated the URS into its database and had an experienced MIS staff

At the high end of the range (10.1 to 20.0 person hours) were one AIDS Drug Assistance Program with 500 clients and one case management agency with 886 clients. These two providers had to pull URS information from several sources in order to prepare the electronic files and produce URS reports. The case management agency reported, for example, that the modifications made to their system to incorporate the URS did not include the means to produce URS reports. The data program manager had to extract the data from two sources, convert the unencrypted strings to URNs, and use parts of the Toolbox to produce verification tables. The data manager reported that the time to complete this process would be reduced

significantly in the future as MIS staff became more familiar with the process and the computer "bugs" were worked out.

Three providers estimated report generation time well above the range estimated by most providers. However, one of these providers (reporting 60 person hours) included quality assurance procedures in this time cost. These procedures consisted of routine checks for duplicate entries during the whole process of data collection. The provider did report having difficulty extracting URS data from its existing database and recoding it to produce reports. Once the bugs were worked out, however, the provider felt that producing URS reports would require little additional effort. Similarly, an ADAP reporting 90 person hours to produce URS reports had great difficulty extracting URS data from its existing database. The third provider's relatively high estimated report generation time (60 person hours) is unexplainable with the available information. The provider included fewer than 100 clients in the field test.

Data quality assurance procedures for providers consisted of visually inspecting the data for duplicate entries, running computer programs to check data accuracy, comparing URS reports to parallel or pre-existing reports, and in one case, matching client services to reimbursement vouchers. As shown in Table VI.5, however, most providers did not spend any time on quality assurance procedures. Twenty-two of these 24 providers are the same providers that estimated no time for report production. This group also includes the providers in the centralized system leaving the grantee with the responsibility for data quality checks. The other two providers are an ADAP with 500 clients and a case management agency with a caseload of 352. The ADAP pulled URS data from an existing database, and the case management agency inspected electronic files visually for obvious inconsistencies. The grantee pursued more detailed quality assurance measures.

In general, agencies with smaller caseloads spent less time on quality assurance procedures. The providers in the 0. 1- to 1 S-person-hour range had between 30 and 130 clients in the field test. The two providers in the 15. 1- to 20-person-hour range had 295 and 886 clients, respectively. The provider with

886 clients compared data in two parallel systems to find discrepancies and determine the correct data., reporting that this process took more time than just accepting the data from one system. The provider used this process to identify areas where information might be less than accurate. One provider reported 50 person hours devoted to quality assurance procedures. It is not clear why this time is so much higher than that for the other providers.

Grantee Time Costs. Grantees took the electronic files and reports from providers and aggregated them into one large file and report. Grantees also spent time checking the provider data for accuracy and consistency. The time costs of grantees modifying an existing data collection system for report generation and data quality assurance procedures, expressed in total person hours per report cycle, are distributed in Table VI.6.

TABLE VI.6

GRANTEE REPORT GENERATION/QUALITY ASSURANCE TIME, MODIFIED SYSTEMS
(Person Hours per Report Cycle)

	Number of Grantees	
Total Person Hours per Report Cycle	Report Generation	Quality Assurance
0.0	1	1
0.1 - 5.0	1	0
5.1 - 10.0	0	3
10.1 - 15.0	2	1
15.1 - 20.0	0	1
34.0	1	0
64.0	1	0

Grantees' time costs for report generation ranged widely. The grantee with no report generation time had one provider in the field test, which produced its own reports. The grantee had nothing to aggregate so did not produce statewide reports for the field test. Both grantees with the highest report generation time reported having significant difficulty converting the provider data. The grantee with 34 person hours of report generation time had 11 providers in the field test that sent unduplicated client information, which the grantee imported into Toolbox. This process did not work well, placing significant demands on the field test coordinator to work out the bugs. The grantee with 64 person hours of report generation time and 4 providers in the field test had similar problems converting provider data into a form that could be imported into the Toolbox.

The other three grantees did not report major difficulties in producing aggregate reports. Their time spent on report production varied with number of providers in the field test. The grantee in the 0.5- to 5-person-hour-range had 3 providers in the field test. The grantees in the 10.1- to 15-person-hour range had 6 and 17 providers, respectively. The grantee with the 17 providers modified a fully centralized data collection system and reported no difficulty in generating URS reports.

The time grantees spent on data quality assurance generally varied with number of providers in the field test. The grantee with the fully centralized data system and 17 providers in the field test spent 20 person hours on quality assurance procedures, selecting a sample of case managers and reviewing the generated reports with them. The grantee that spent 8 person hours on data quality assurance had 11 providers in the field test, and the grantee that spent 6 person hours on data quality assurance had 6 providers. The grantee with 12.5 person hours of data quality assurance used a paper-based system. For its 3 providers in the field test (150 clients total), grantee staff reviewed the paper forms and checked them against electronic data for accuracy. The last grantee, which spent 10 person hours on data quality assurance, had only 4 providers in the field test, but two of them were very large providers (800 to 1,000 clients each), requiring significant time to review the electronic files.

Summary. The data on providers modifying an existing data collection system suggest that report generation time is kept relatively low (0.1 to 10 person hours) by small caseload size or integration of the URS into existing data collection systems. The data further suggests that once agencies reach steady-state operation of the URS, report generation time for large agencies can be kept within this range. Staff time devoted to data quality assurance procedures was minimal for most providers, suggesting that providers may have to spend more time on these activities in the future if data quality is expected to be high.

It is difficult to generalize about the data on grantee staff time devoted to producing URS reports except to say that grantees with data conversion problems estimated higher person-hour totals (34 to as high as 64 person hours). Grantees without such difficulties estimated that between 0.1 and 15 person hours were devoted to report production per cycle. Even these grantees reported that staff time to produce URS reports should decrease in the future. Grantee staff time devoted to data quality assurance varied with number of providers in the field test. More providers were associated with more time spent checking data for accuracy and consistency. Report generation time was also longer for grantees with paper-based forms and particularly large provider sites.

ii. New Systems

Provider Time Costs. Of 89 providers in the field test, 75 submitted'time estimates on report generation and data quality assurance procedures. Of these 75, 41 implemented new data collection systems, the majority of whom spent very little time on these activities. Their time estimates for report generation and data quality assurance per reporting cycle are distributed in Table VI.7.

Grantees produced reports for the providers that estimated no report generation time. Five of the 13 providers in the 0. 1- to 5-person-hour range were part of centralized systems of data collection. The grantee performed most of the report-producing functions. The 5 providers spent 1 hour each on assisting the grantee in verifying data. Most of the other providers in this person-hour range had fewer than 130

TABLE VI.7

PROVIDER REPORT GENERATION/QUALITY ASSURANCE TIME, NEW SYSTEMS
(Person Hours per Report Cycle)

Total Person Hours per Report Cycle	Number of Providers	
	Report Generation	Quality Assurance
0.0	24	29
0.1 - 5.0	13	11
5.1 - 10.0	3	0
10.1 - 15.0	1	0
15.1 - 20.0	0	1

clients in the field test. One, with 432 clients, reported that once the data were converted to the proper format, report production was very easy and not at all time consuming.

The providers in the remaining two ranges had various caseload sizes that do not appear to correlate with time spent producing reports. All reported that learning the report capabilities of the new data collection system took time and made report production difficult. Generally, providers felt that as the data collection system operated more smoothly, time to produce reports would diminish significantly.

Because so many providers developing a new data collection system devoted so much time to getting the system up and running, almost none of then devoted any significant time to data quality assurance procedures.

Grantee Time Costs. Grantees developing new data collection systems spent a great deal of time preparing electronic files and reports for their providers and aggregating them into one large file report. Grantees also spent time checking the provider data for accuracy and consistency. The time costs of

grantees developing a new data collection system for report generation and data quality, expressed in total person hours per report cycle, are distributed in Table VI.8.

No clear pattern emerges from the data on report generation time. One grantee in the 0.1- to 5-person-hour range had 10 providers in the field test. One grantee in the 15.1- to 20-person-hour range had 2 providers. The three grantees in the 0.1- to 5-person-hour range did not report any difficulty producing their reports. Grantees at the high end of the distribution (10.1 hours and more) either produced all reports for their providers or had difficulty in converting provider data to the proper format for report production. Three of these grantees reported that report generation time would decrease substantially once a more steady-state operation was reached.

TABLE VI.8

GRANTEE REPORT GENERATION/QUALITY ASSURANCE TIME,
NEW SYSTEMS
(Person Hours per Report Cycle)

Total Person Hours per Report Cycle	Number of Grantees	
	Report Generation	Quality Assurance
0.0	0	2
0.1 - 5.0	3	1
5.1 - 10.0	0	3
10.1 - 15.0	1	0
15.1 - 20.0	2	1
34.0	1	0
40.0	1	0
57.0	0	1
64.0	0	0

Time spent on data quality assurance by grantees developing a new data collection system is also difficult to analyze. No pattern emerges from the distribution regarding number of providers in the field test. Nor did grantees supply very detailed information as to what data quality activities were carried out.

Summary. We can make only a few generalizations about the time required to generate reports for grantees and providers developing a new data collection system because many of them did not reach this phase of URS implementation. When reports were generated, the conditions under which this happened did not reflect steady-state operation. The absence of reasonable and comparable conditions makes it difficult to analyze time estimates for report production.

What can be said is that when providers could not or did not produce their own electronic files or verification tables, grantee staff time increased. Additionally, most grantees and providers reported that report production time would decrease with a more steady-state operation. The data from one provider suggest that once new system providers have their systems operating smoothly, report generation time could approach that of providers that modified their systems.

e. Staffing Needs

Field test sites generally reported that URS implementation requires some additional staff capacity at both the provider and grantee levels. Specifically, in many organizations, the URS created the need for additional data entry and MIS staff time to input and manage client-level data and produce HRSA-defined reports. One grantee wrote:

> In order to implement the URS on a permanent, ongoing basis, the agencies would first require a significant infusion of start-up funds to equip and staff the change in data reporting. . . . The grantee will require funding for dedicated staff to provide ongoing technical assistance to agencies, assure uniformity of data collection, unduplicate agency data records, and generate aggregate data reports.

Specific staffing needs cannot be directly assessed from time estimates discussed above. During the URS field test, the various staff had multiple responsibilities. Direct service personnel often entered data

on their own clients and assisted in producing reports. Supervisory staff and field test coordinators performed direct service, data entry, and report generation activities. Grantee personnel also played multiple roles, including training staff and creating verification tables. While various staff would be likely to continue performing multiple tasks in full URS implementation, it is probable that data entry staff and MIS staff would take on most, if not all, of the URS administrative activities.

Grantees and providers were asked to estimate their additional needs for MIS staff, supervisory staff, and data entry staff during the field test. Because the field test did not always reflect full implementation conditions, grantees and providers were also asked to estimate these needs plus technical assistance staff needs for full implementation of the URS. (Field test technical assistance needs are discussed in Section C.2.) For a grantee, full implementation means including all providers in the state or EMA. For providers, it meant including all their Ryan White clients in their reporting system.

The responsibilities of these staff vary by provider and grantee. In general, MIS staff provided ongoing support for computer and database management and report production. Supervisory staff oversaw the general operation of the data collection system and directed quality assurance procedures for reporting. Technical assistance staff trained direct service and data entry staff on the use of computer systems. Finally, data entry staff keyed client information into the computer and often tracked down missing information from case managers, primary care physicians, and client charts.

These roles often overlapped, and different system-related activities were often performed by the same person. Separate FTE estimates do not necessarily mean that different people performed various tasks. The most difficult duties to separate are those for MIS staff and supervisory staff because determining where computer support/management ends and oversight/quality assurance begins is nearly impossible. The field test coordinator (at both the provider and grantee levels) most often performed both of these roles. For the purposes of this analysis, therefore, the FTE estimates for supervisory and MIS staff will be combined, leaving data entry as a separate estimate. Data entry staff needs include all the activities

associated with data entry listed above (i.e., keying in client data, tracking down missing client information and abstracting client charts). The term "data entry" always includes these data collection activities.

i. Modified Systems

Provider Staff Needs. Of 89 providers in the field test, 58 reported staff estimates. Of these 58, 26 modified an existing data collection system. The estimated need for additional staff for the URS field test is distributed in Table VI.9.

The data show that most providers modifying an existing data collection system required little additional MIS or supervisory staff time to implement the URS in the field test. Four providers did require such staff. In the 0.25- to 0.49-FTE range, two providers had large caseloads (1,026 and 886 clients, respectively) and reported a significant burden in checking data quality and extracting URS information from their existing data systems. The third provider, also in this range, had a smaller caseload of 87, but its data system had to be substantially overhauled to implement the URS, requiring the director to oversee the process. The fourth provider in this range had a caseload of 295 and implemented a system wherein 7 remote case managers in a consortium collected data and reported the information to a central agency via modem. This locally centralized system required significant support from the field test supervisor in

TABLE VI.9

PROVIDER ADDITIONAL STAFF NEEDS (FIELD TEST), MODIFIED SYSTEMS

	Number of Providers	
FTEs	MIS Staff/Supervisory Staff	Data Entry Staff
0.0 - .20	22	22
0.25 - 0.49	3	2
0.50 - 0.99	1	2
1.0	0	0

aggregating data from the remote sites and debugging the system. She indicated that when the system ran smoothly, the demands on her time were minimal. When the system failed, which it often did, her time went up significantly.

Most of these providers also estimated little need for additional data entry personnel time. Seventeen of the 22 providers in the 0- to 0.20-FTE range were part of a fully centralized data system and required no additional data entry staff. They were accustomed to collecting, entering, and reporting electronic data to a central location in this manner and the additional URS data had very little impact on their activities. Of the remaining five providers in this range, one reported that the impact of the URS affected only MIS staff, which extracted the data from the existing database. Similarly, one ADAP with 500 clients pulled URS data from its database already in place before the field test. The additional URS data entry for these two providers was minimal. Two other providers in the 0- to 0.20-FTE range had small caseloads, and data entry was handled by the direct service staff or existing data entry staff

The four providers with data entry staff needs were generally large agencies. Three of them had relatively high caseloads (886,295 and 352 respectively).

Grantee Staff Needs. Estimates for additional staff for field test implementation of the URS for grantees modifying an existing data collection system are distributed in Table VI. 10. The grantee with the smallest MIS/supervisory staff need (in the range of 0.24 to 0.49 FTEs) had only one provider in the field test, from which it received electronic data before the field test. This grantee's additional staff needs were therefore minimal because the URS data were not a great addition to their existing data system. Incorporating the URS data into its database did, however, require 0.20 FTEs for programming (not counted in the above estimates).

One grantee with the additional MIS/supervisory staff need of 1 FTE collected paper forms from its 3 field test providers, entered the data and produced all reports. This work required a relatively high level of staff time because the grantee checked the paper forms for completeness and duplication. Obtaining

TABLE VI. 10

GRANTEE ADDITIONAL STAFF NEEDS (FIELD TEST), MODIFIED SYSTEMS

	Number of Grantees	
FTEs	MIS Staff/Supervisory Staff	Data Entry Staff
0.0 - 0.20	0	5
0.25 - 0.49	1	0
0.50 - 0.99	3	0
1.0	2	1
2.0	0	0

the correct information from the consortium and its providers, making the necessary changes, and producing the final report demanded more of the grantee staff The other grantee with additional MIS/supervisory staff needs of 1 FTE had 17 providers and modified a centralized system of data collection.

The other 3 grantees in the middle range for additional MIS/Supervisory staff needs had various numbers of providers in their systems. One had 4 providers, one had 6, one had 11. The staff at these providers all played similar roles in overseeing the project, aggregating provider data, checking electronic data quality, and producing reports. Staff also worked with providers to modify their database systems, assist in producing reports, and monitor provider progress.

Nearly all of the grantees modifying their data systems estimated no need for additional data entry staff time during the field test. The one exception was the grantee with the paper-based system. The process of entering provider data from a paper form into the database required 1 FTE.

Full **Implementation Staff Needs.** Reconstructing Table VI.9 for full implementation and adding full implementation technical assistance needs to the MIS/supervisory staff roles yields the distribution shown in Table VI. 11 for providers modifying existing data collection systems. The distribution of

TABLE VI. 11

ADDITIONAL PROVIDER STAFF NEEDS (FULL IMPLEMENTATION), MODIFIED SYSTEMS

	Number of Providers	
FTEs	MIS Staff/Supervisory Staff	Data Entry Staff
0.0 - 0.20	21	21
0.25 - 0.49	3	2
0.50 - 0.99	2	1
1.0	0	2

MIS/supervisory staff (which includes full implementation technical assistance needs) did not change dramatically from the field test distribution. The 17 providers in the centralized system continued to estimate no additional staff requirements with full implementation. Three providers, including two ADAPs, remained unchanged in the 0- to 0.20-FTE range. One provider with 0.25 FTEs in the field test estimated 0.1 FTE for full implementation because a more steady-state operation would mean lower MIS/supervisory and technical assistance needs.

Another provider with an additional MIS/supervisory staff need of 0.41 FTEs in the field test estimated a decrease to 0.25 FTEs for such needs with full implementation. The field test coordinator at this site functioned as the data systems coordinator and overall supervisor. During the field test, she worked with a consultant to upgrade the provider's main case management data system, trained staff, and ensured that the data collected were complete and accurate. With full implementation, she wrote, "Once the program is done, and working satisfactorily, the technical assistance time would go to a lower level just to maintain the current system or to make occasional changes."

Four providers estimated modest additional MIS/supervisory staff needs compared with the field test for full implementation of the URS. Two estimated increases to 0.3 FTEs with full implementation (from

0.1 FTE in the field test). Both had well-established data systems and MIS staff. Another provider saw the need for 0.75 FTEs with full implementation (from 0.5 FTEs in the field test). This provider constructed the locally centralized system linking remote case managers to a central database. The fourth estimated an increase to 0.6 FTEs (from 0.25 FTEs in the field test) for additional MIS/ supervisory staff. This provider was small and did not have specific MIS staff devoted to computer support.

Estimates for data entry staff for full implementation generally increased more dramatically than estimates for MIS/supervisory staff. Two providers estimated full implementation data entry staff needs of 1 FTE (up from 0.5 FTEs and 0.62 FTEs, respectively, in the field test) to accommodate a higher caseload. Another provider estimated a less dramatic increase to 0.3 FTE with full implementation (from 0.25 FTEs in the field test).

With the exception of one provider, all 22 of the providers with additional data entry staff needs in the field test of 0 to 0.20 FTEs estimated the same needs with full implementation. The one exception estimated a large increase in caseload from 50 in the field test to 1,500 with full implementation--and thus a full implementation data entry need of 0.5 FTEs.

These estimates suggest that the need for data entry staff is more closely tied to caseload size than is the need for MIS/supervisory staff. This is not surprising, since time spent collecting and entering client data is directly dependent on the number of clients the agency serves. The need for MIS/supervisory staff depends more on complexity and size of the data system. While system size is somewhat connected to agency size, the relationship is less direct. A breakdown in the data collection system, for example, can force an MIS staff person to spend the whole day fixing it no matter how big the system is. Grantees reported that, especially for initial implementation, demands on MIS/supervisory staff time were equal for small rural providers and large established agencies.

While most providers modifying an existing data collection system did not report any additional data entry staff needs, the data suggest that providers that did report such need would require roughly 0.3

additional FTEs if they have up to 350 clients and 1 FTE if they have between 500 and 1,000 clients. The evidence shows three exceptions: an ADAP with 500 clients and no estimated data entry need and two case management agencies with over 1,300 clients and a data entry staff need of fewer than 0.5 FTEs. The ADAP and one of the case management agencies pulled URS data easily from their existing databases, perhaps explaining their small additional data entry need. With currently available information, it is difficult to explain the small need of the other case management agency.

In addition to caseload size, location of client information affects the need for data entry staff One case management agency with 350 clients kept its additional data entry staff need to 0.3 FTEs partly by modifying intake forms and activity sheets to reflect the computer screen. Gleaning URS information from this form and entering it into the computer was therefore not overly burdensome. Time spent by data entry staff to track down information not contained on such forms from case managers and other staff increases the agency's need for additional data entry staff. If chart abstraction is part of the agency's data collection system, the need for data entry staff can be high, even for small providers. (This general condition is more apparent among the providers developing a new data collection system, as explained in the next section.)

Reconstructing the distribution of grantee staff needs in Table VI. 10 with full implementation estimates yields Table VI. 12, which shows a large increase in grantee staff needs. (One grantee did not supply full implementation estimates.) All of these increases are a result of adding consortia and providers to the data collection system. At the high end of the distribution, one grantee estimated a need for 1 FTE at each of the five consortia in the fully implemented system to provide computer support and training to the providers within that consortium. Such regionalization of the data collection process was characteristic of most of the grantees, with each region requiring between 0.25 and 1 FTE to support the providers within that consortia, conduct quality assurance, aggregate regional data and produce regional reports. This regional system and the MIS/supervisory staff needs of each region account for most of the estimated

TABLE VI. 12

ADDITIONAL GRANTEE STAFF NEEDS (FULL IMPLEMENTATION), MODIFIED SYSTEMS

	Number of Grantees	
FTEs	MIS Staff/Supervisory Staff	Data Entry Staff
< 0.5	0	3
1.0 - 1.99	1	0
2.0 - 2.99	1	1
3.0 - 3.99	2	1
> 4.0	1	0

increases in the need for grantee MIS/supervisory staff for full implementation of the URS. The grantee itself would still require up to 1 FTE to oversee the whole system and produce statewide reports.

The MIS/supervisory staff needs of the one grantee with the fully centralized system would more than triple (to 3.5 FTEs) with the addition of nearly 42 providers to the system. The limited data suggest that this need translates into approximately 0.5 FTEs for every 10 providers. This grantee reported that these staffneeds would be reduced if medical providers were not included in the system or if the data required from medical providers were reduced.

The need for data entry staff during full implementation remained relatively low (compared to the field test) for most grantees. It exists primarily because data from providers that would continue to use paper-based systems must be entered. The highest data entry staff estimate in the 3- to 3.99-FTE range, translates into 0.7 FTEs per consortia The reason for the other relatively high data entry staff need estimated by the fully centralized grantee is somewhat unclear. The currently available information cannot explain why, with a primarily computerized system, the grantee would need so many data entry FTEs.

Summary. The data suggest that grantees and providers modifying their data collection systems require some additional staff time to implement the URS. For providers, the need for additional MIS/supervisory staff in full URS implementation is fairly small. Most providers estimated no such need at all. Some evidence suggests that providers in a centralized system especially do not require such staff, relying instead on the MIS/supervisory staff of the grantee. Of providers that estimated a need for MIS/supervisory staff, most estimated it at 0.25 to 0.5 FTEs. The better established the MIS staff is before implementation, the lower the additional staff need. Even for small agencies, the need for MIS/supervisory staff can be relatively high if no such system existed. These needs are especially high for initial implementation of the URS. Some evidence suggests that this need decreases with a more steady-state operation.

The need for additional data entry staff for providers modifying a data collection system varies by agency size. Most providers in this group were able and would be able to implement the URS without additional data entry staff. For agencies that did require additional staff, 0.3 FTEs generally met the need for agencies with up to 300 clients. One FTE was needed for agencies with 500 to 1,000 clients. The ability to extract URS data from existing databases generally minimizes this need, as does closely linking client information to the data entry process (i.e, minimize chart abstraction and make intake forms reflect the data entry screens). Most providers modifying their data systems were able to do this in the field test and would continue to do so with full implementation. Some evidence suggests that ADAPs are particularly able to extract URS data easily.

Field test data and full implementation staff estimates indicate that most grantees need 1 FTE to oversee URS implementation and operation, monitor the progress of providers, check data quality, and produce URS reports. At the grantee level, this needs to be augmented with regional or consortia MIS/supervisory staff to provide oversight and technical assistance to the providers within that region. This regional staffrequirement ranges from 0.25 to 1 FTE depending on the number of providers and their

level of computer sophistication. Centralized data systems can require more grantee staff (approximately 0.5 FTEs for every 10 providers). Additional data entry needs for grantees are minimal.

ii. New Systems

Like sites modifying their data collection systems, grantees and providers implementing new data systems also reported the need for additional staff to implement the URS. The roles of the various staff are similar to those in sites that modified their systems, and they are analyzed in the same manner. That is, additional needs for MIS/supervisory staff are combined and examined apart from needs for data entry staff. Full implementation estimates include the need for technical assistance in the MIS/supervisory staff category. Data entry includes data collection.

Provider Staff Needs. Of 89 providers in the field test, 58 reported staff estimates. Of these 58, 32 developed a new data collection system. Their staff needs are distributed in Table VI. 13.

The clear majority of providers with new data collection systems did not require additional MIS/supervisory support for field testing the URS. One of the providers that did require such additional staff (in the 0.25- to 0.49-FTE range) was a medical provider running the URS data collection system for 87 clients parallel to its existing system. The provider reported difficulty training clinical staff that rotated frequently. The clinic manager spent a great deal of time gathering URS data from various sources and combining, cleaning, and reformatting it for URS specifications. The provider with a need for 1.25 FTEs of additional MIS/supervisory staff was a case management agency with 347 clients in the field test that developed a complex data collection system that linked remote case managers to a central database. The general oversight for developing and maintaining a wide area network consumed large amounts of time. The provider with a need for 1.5 FTEs of additional staff was a health insurance continuation program with 60 clients that abstracted data from hard copies of client information.

TABLE VI. 13

ADDITIONAL PROVIDER STAFF NEED (FIELD TEST),
NEW SYSTEMS

	Number of Providers	
FTEs	MIS Staff/Supervisory Staff	Data Entry Staff
0.0 - 0.20	27	7
0.25 - 0.49	1	2
0.50 - 0.99	1	19
1.0	0	4
1.25	1	0
1.5	1	0
1.75	0	0
2.0	1	0

Gathering the data and checking it for accuracy once entered into the computer system took a great deal of time for MIS/supervisory staff The relatively high estimates for MIS/supervisory staff needs of the other two providers (in the 0.5- to 0.99-FTE range and 2-FTE range) cannot be explained with current information. Both were case management agencies with very low caseloads (3 to 5 clients each).

Providers developing a new data collection system generally required 0.25 to 1 FTE of additional data entry staff, with most providers in this range needing 0.5 FTEs. Three of the providers at the high end of this range (with data entry staff **needs** of 1 FTE) had relatively high caseloads (250,278, and 387 clients, respectively) compared to the other providers. Two of these three abstracted client charts for URS information. This required a full-time employee to abstract and input the data. The fourth provider reporting a data entry staff need of 1 FTE had 5 clients in the field test. Its relatively high need cannot be explained with currently available information.

Providers requiring little or no additional data entry staff tended to be smaller (28 to 130 clients). Of the providers in this range with higher caseloads, one was an ADAP, which easily reported URS data from its existing database. The other provider could manage URS data entry with existing staff. The additional URS data elements did not add to the burden on data entry staff.

This analysis of data entry staff needs does not adequately highlight one general point made by some providers that implemented a new data collection system. They reported that when the URS data set was not fully integrated into the existing database, data entry needs became very burdensome. This integration problem was faced primarily by medical providers that implemented the URS parallel to their existing data collection systems, often requiring chart abstraction to retrieve URS data. This problem was also faced by some large providers that had medical and case management data in two or more databases that did not interface easily with each other. Tracking down the appropriate data from each source and combining it in one database added extra data entry burdens. providers that automated a previously paper-based system could integrate more easily because they created one database where none existed before. They did not generally face the burden of running parallel or nonintegrated systems.

Grantee Staff Needs. Estimates for additional staff needs made by grantees developing a new data collection system are distributed in Table VI.14. This distribution shows that 6 of the 7 grantees developing a new data collection system required 0.25 to 1 FTE for additional MIS/supervisory staff, with most grantees in this range needing approximately 0.5 FTEs. Four of these grantees had between 7 and 11 providers in the field test. One grantee in this middle range with only one provider in the field test also functioned as a provider. This dual role created additional work for the field test coordinator, who supervised the URS implementation at both the grantee and provider level. The other grantee in the middle range had five providers in the field test but developed a centralized data collection system. Although this grantee had fewer providers than the other grantees with similar staff needs, the demands created by the centralized system necessitated more staff time.

TABLE VI. 14

ADDITIONAL GRANTEE STAFF NEEDS (FIELD TEST), NEW SYSTEMS

	Number of Grantees	
FTEs	MIS Staff/Supervisory Staff	Data Entry Staff
0.0 - 0.20	0	5
0.25 - 0.49	2	0
0.50 - 0.99	3	2
1.0	1	1
1.25	1	0
1.5	0	0
1.75	1	0

Two grantees reported additional staff needs that were higher than the middle range. The grantee with a need for additional MIS/supervisory staff of 1.75 FTEs had 8 providers in the field test. Two issues may help explain its relatively high need. First, the providers were geographically dispersed, and second, the providers maintained their paper reporting systems in addition to a computerized URS. The grantee reported that this created "a great deal of frustration." The other grantee's additional staff needs were not much higher than most at 1.25 FTEs. This grantee had three providers in the field test, but two developed very complicated systems. The field test coordinator, in addition to overseeing the URS project, managed the data collection and reporting for the ADAP.

Most grantees developing a new system did not require additional data entry staff. This function was carried out primarily by the providers. One of the three grantees that did require data entry staff was the dual grantee/provider described earlier. The other two had providers in the field test that did not enter data

locally (partially by design and partially by failure of the data collection system to work as planned), creating a need for grantee staff to carry out this responsibility.

Full Implementation **Staff Needs.** Reconstructing the distribution for provider staff needs for full implementation yields Table VI. 15. As in the field test, most providers with a new data collection system did not estimate a need for additional MIS/supervisory staff with full implementation of the URS. Only three providers estimated an increase in MIS/supervisory staff from the field test to full implementation. One increased from the 0- to 0.20-FTE range in the field test to the OS- to 0.99-FTE range with full implementation. One increased from the 0.25- to 0.49-FTE range in the field test to the 0.5- to 0.99-FTE range with full implementation. Noting the need for better supervision of case managers to ensure quality assurance in full implementation, the third provider increased from the 0- to 0.24-FTE range in the field test to 1.25 FTEs with full implementation. None of these three providers estimated an increase in caseload, suggesting that their staff needs were not met in the field test.

TABLE VI. 15

ADDITIONAL PROVIDER STAFF NEEDS (FULL IMPLEMENTATION), NEW SYSTEMS

	Number of Providers	
FTEs	MIS Staff/Supervisory Staff	Data Entry Staff
0.0 - 0.20	25	6
0.25 - 0.49	0	2
0.50 - 0.99	4	17
1.0	0	6
1.25	2	0
1.5	0	0
1.75	0	0
2.0	1	1

One provider estimated a decrease in MIS/supervisory staff need with full implementation because once it was achieved, ongoing supervision and technical support would be less time consuming. In the field test, the provider needed 1.5 FTEs in additional staff, compared with 0.5 to 0.99 FTEs for full implementation.

The distribution of additional data entry staff needs for providers in the field test differs little from that for full implementation. Only six providers estimated an increase from the field test. Two of these providers also estimated an increase in caseload. Four did not, suggesting that their additional need for data entry staff was not met during the field test.

As in the field test, most providers estimated full implementation data entry staff needs in the 0.5- to l-FTE range. This need corresponds roughly to caseload. In the 0.25- to 0.49-FTE range is one provider with a full implementation caseload of 28 and one provider with a full implementation caseload of 432 (the relatively low data entry need for this provider is not explained with currently available data). In the 0.5- to 0.99-m range, most providers estimated a full implementation caseload of 3 5 to 150 clients. The two exceptions in this group are a medical clinic with 467 clients and an ADAP with 300 clients. The caseload for the providers estimating l FTE of additional data entry staff ranges from 300 to 1,200 clients.

Grantee estimates of the need for additional staff in full implementation shows an increase compared to the field test. (One grantee did not report full implementation estimates.) The distribution of full implementation grantee staff needs is shown in Table VI. 16. Six of the seven grantees that developed a new data collection system estimated a higher MIS/supervisory staff need in full implementation than in the field test. Most grantees estimated a need of 0.5 to 1 FTE in additional MIS/supervisory staff to fully implement the URS, including the need for technical assistance. Most of the grantees within that range estimated their need at 1 additional FTE. The increase stems from additional providers that would be added to the system with full implementation.

TABLE VI. 16

ADDITIONAL GRANTEE STAFF NEED (FULL IMPLEMENTATION), NEW SYSTEMS

	Number of Grantees	
FTEs	MIS Staff/Supervisory Staff	Data Entry Staff
0.0 - 0.24	0	3
0.25 - 0.49	0	0
0.50 - 0.99	1	2
1.0	3	2
1.25	0	0
1.5	1	0
1.75	1	0
2.25	1	0

The grantee with the smallest MIS/supervisory staff estimate also estimated the fewest providers (5 with full implementation). Most of the remaining grantees estimated that between 11 and 20 providers would be included in a fully implemented system. The number of providers, however, did not correlate with MIS/supervisory staff need. The grantees with the 3 highest MIS/supervisory staff needs estimated that their fully implemented system would include 10 to 15 providers. Wide geographic distribution of providers and a relatively high number of providers with little computer experience may explain the relatively high full implementation staff needs of these grantees. (These estimates do not include any regional or consortia staff need.) The 3 grantees with an estimated need of 1 FTE would have 15, 18 and 50 providers in a fully implemented system.

Data entry staff needs increased from the field test to full implementation for two grantees in response to paper-driven providers and their own data entry needs. The distribution suggests that data entry needs

for grantees developing a new data collections system range between 0.5 and 1 FTE with full implementation of the URS.

Summary and Comparison with Sites Modifying Existing Systems. The data suggest that grantees and providers developing new data collection systems generally require more additional staff to implement the URS than their counterparts in the system-modification group.

Grantees in both groups generally estimated 1 FTE of additional MIS/supervisory support, with a higher need estimated by grantees with centralized data collection systems. Grantees modifying their systems estimated an additional 0.25 to 1 FTE for regional support. While new-system grantees did not report such a regional structure, they do have a need for regional staff. Moreover, several new-system grantees estimated additional MIS/supervisory staff needs above 1 FTE. These were grantees whose providers were geographically spread out. They also supported providers trying to develop complex new systems of data collection, which can have a large impact on staff time. For instance, a grantee working with a provider modifying its system might be able to address concerns with a telephone call, while hands-on support may be needed by a provider trying to develop a new, fully automated system. If that provider is far from the grantee, travel time can be a particular burden for grantee staff The data from one grantee also suggests that demands on MIS/supervisory staff time are higher for grantees trying to manage providers with parallel systems of data collection. In contrast, grantees with modified systems did not, in general, have to support providers with parallel systems.

Additional data entry staff time was also fairly small for both groups of grantees. The majority of grantees modifying their systems and about half the grantees developing new systems estimated little or no additional data entry staff needs even with full implementation. Four grantees, however, in the new-systems group estimated additional data entry staff needs in the 0.5- to I-FTE range for full implementation. This higher need (relative to the system-modification group) may reflect the continued reliance of some providers on paper-based systems. Grantees with new systems will (or would) continue

to rely on paper despite efforts to automate. Changing from a paper-based to a computerized system is clearly a time-intensive process in which phasing in a few providers at a time may be necessary for some grantees. Until all providers are computerized, paper based systems will be a reality, necessitating data entry at the grantee level.

The additional MIS/supervisory staff need of providers developing new data collection systems generally ranged from 0.5 to 1 FTE compared with 0.25 to 0.5 FTEs for providers in the system-modification group. Most providers in both groups, however, estimated no additional MIS/supervisory support staff need. The higher range for new-system providers reflects the initial (and sometimes ongoing) difficulty they faced in providing continuing support for a newly computerized system of data collection.

Parallel systems of data collection and/or abstracting client charts for URS information also increases MIS/supervisory staff need. The staff must monitor the collection of the data and check it for quality along its movement from direct service staff to a chart to a data entry clerk to the computer. This process is time consuming and can drive additional staff need up even for small providers. Inasmuch as medical providers tended to implement parallel systems and abstract client charts for URS data, the estimates of staff needs for medical providers may be higher than those for nonmedical providers.

Two forces affect the long-term MIS/supervisory staff needs of new-system providers. One, noted by at least one provider, is the need to address issues of data quality. The other is the decreased demand on MIS/supervisory staff to support the computerization process. Achieving high levels of data quality takes a great deal of diligence, monitoring, and general supervision. These responsibilities were often sacrificed in the field test (especially by newly automated providers) just to get the data system up and running. In the long run, data quality activities would have to be carried out. Also in the long run, the demands on MIS/supervisory staff to support the computerization process would decrease as data systems become integrated and as staff become familiar with data collection processes in general and computers in particular. Whether these two forces would offset each other in terms of additional staff need is unclear.

The need for additional data entry staff is the point at which providers developing new systems and providers modifying existing systems diverge the most. While the clear majority of providers in the system-modification group could manage URS data with existing staff, the majority of new-system providers would require 0.5 to 1 .0 FTE in additional data entry staff Caseloads and data entry needs suggest that new-system providers with small caseloads need 0.25 FTEs of additional data entry staff Providers with mid-range caseloads (35 to 150 clients) need 0.5 to 0.99 FTEs, and providers with large caseloads (300 to 1,000 clients) need 1 FTE. (Similar data for system-modification providers suggest 0.3 FTEs are needed for less than 300 clients, and 1 FTE is needed for 500 to 1,000 clients.)

These higher data entry staff needs of providers with new systems reflect the new data entry burdens created by the computerization process. Most providers creating a new data collection system performed little if any data entry before the field test began. One grantee wrote:

> . . . the field test has placed intensive demands on provider personnel during data entry into COMPIS. Most provider-client data systems are paper based and not structured to interface smoothly with a computerized database. Consequently ... provider personnel must laboriously search through client files to locate and extract each piece of client information requested by COMPIS.

While data entry needs for both groups of providers are driven primarily by caseload size, the data from the providers with new systems also suggest that chart abstraction adds a burden to data entry. While a provider with an existing data collection system may only need 0.3 FTE in additional data entry staff for 300 clients, a provider of similar size with a new system that includes chart abstraction may need 1 FTE to collect and enter the same information. As medical providers more often than nonmedical providers tend to abstract charts for URS information, their data entry needs tend to be burdensome. Chart abstraction, as estimated by several medical providers, can take from 4 to 10 minutes per chart. These chart abstraction costs are part of the more general integration problem reported by some providers with new systems. If

the URS is not fully integrated into the existing data collection system or is contained in several different databases, data entry becomes a burdensome and time consuming process.

f. Hardware/Software Costs

i. Modified Systems

Providers incurred costs for hardware, software, computer maintenance agreements, and consulting services in modifying their existing data collection systems to accommodate URS requirements. These costs varied depending on the site technical specifications and system configuration (e.g., modem access, local area network, laptops, etc.).

Provider Costs. Of 89 providers in the field test, 72 reported cost data. Of these 72 providers, 3 1 modified their data collection systems. Their reported costs for computer hardware and software, including maintenance agreements and consulting services, are distributed in Table VI. 17.

Of the 21 providers that reported no hardware or software costs, 17 were funded by one grantee that modified a centralized data collection system. This system allowed the providers to use their existing hardware/software and enter data through modem access into a central database developed and maintained by the grantee. While the providers in this system escaped hardware/software expenditures, the grantee spent almost $24,000 for hardware and $20,000 in consulting fees to develop this system (see the cost discussion for grantees in the following subsection).

The other four providers in the no-cost group include two ADAPs and two case management agencies. These providers were able to implement the URS with existing equipment. The absence of hardware/software costs for the two ADAPs may be explained by the state's more extensive base of computer hardware compared with that of a local case management agency or a primary medical care provider.

The provider reporting hardware/software costs in the $25 1- to $750-range had a sophisticated existing data collection system, requiring very little in the way of new equipment. Its field test consisted

TABLE VI. 17

PROVIDER COSTS (FIELD TEST),
MODIFIED SYSTEMS

	Number of Providers	
Cost Range	Hardware/Software	Maintenance/Consulting
$0	21	28
$250 - $750	1	0
$751 - $1,250	0	1
$1,750 - $2,250	7	0
$2,251 - $2,750	0	1
$5,251 - $5,750	1	0
$5,751 - $6,250	0	1
$11,857	1	0

of reformatting the data collected by the existing data system to HRSA specifications. The agency bought only a modem and some miscellaneous software for the field test.

Each of the seven providers in the next range of hardware/software expenditures ($1,750 to $2,250) bought one PC to conduct the URS field test, and all but one used its existing software or software in the public domain at no cost. One provider bought a PC for $1,125, five bought laptops for $2,000 each, and one bought a PC for $2,300. The provider that purchased the PC for $1,125 also purchased a software package for $650.

The remaining two providers with reported hardware/software costs above $5,000, were case management agencies. One purchased a PC hard drive for $5,330. This agency tied to link several remote case managers to one central computer, where the data could be maintained and consolidated for reporting purposes. The other provider significantly expanded its data collection system during the field test. It added 21 computers, 4 laptops, 2 printers, network cabling, network upgrades and modems. The

provider estimated that 25 percent of the total cost for the expansion was attributable to the URS. The $11,857 represents that 25 percent. The provider wrote:

> [We] did not purchase any hardware during the field test that was specifically in order to implement the URS. ... However, it would be highly inaccurate to conclude that no money needs to be spent on hardware or software to implement the URS.

The provider is counted as modifying an existing system because it had equipment in place and modified its data collection forms to incorporated URS data elements. But the system hardware was radically reconstructed and expanded. Providers needing such a system overhaul can expect to pay significantly higher costs for hardware and software. How much of this cost to attribute to the URS, moreover, is difficult to determine.

URS client caseload does not significantly affect expenditures on hardware or software. The caseload of the agencies reporting no such expenditures ranged from 1 to 500 clients. Providers in the middle cost range ($250 to $2,250) reported on between 50 and 3 19 clients. Providers with the two highest hardware/software expenditures reported on 295 and 886 clients, respectively. The data suggest that providers modifying an existing data collection system need one additional 486 PC and perhaps some miscellaneous software, modem capability, and sufficient hard drive capacity to implement the URS. In general, this equipment adequately met the needs of small or large caseloads.

Contracts with computer consultants or software developers for customizing data systems, computer maintenance, and updates represent an additional provider cost. The distribution shows that few providers with modified data collection systems reported any costs for maintenance agreements or consulting services. One case management agency reported $775 in such costs. The agency spent $650 ($65 per hour) on a computer programmer and $125 on a maintenance agreement. The agency that largely expanded its system during the field test spent $965 on maintenance agreements and $1,495 on consulting

services attributable to the URS. Finally, one case management agency spent $5,845 for a computer consultant to overhaul its data collection system to prepare it to collect and report URS data.

This lack of expenditure on maintenance agreements and consulting services does not suggest that providers did not use resources for these areas. Many providers used internal staff to reprogram and maintain computer systems. While it is not possible to assign a dollar value to these internal resources, their cost is partly captured in the time costs and staff needs described above.

Grantee Costs. Hardware and software expenditures for the six grantees modifying their data collection systems ranged from $0 to $23,950. Their costs are distributed in Table VI.18. The two grantees with no hardware or software expenditures had equipment to implement the URS. Each of the three grantees in the next two ranges purchased a 486 PC, the cost of which ranged from $3,000 to $3,390. The grantee with the highest reported hardware/software expenditures had the centralized data collection system. It purchased a file server, five host PCs, modems, network software, and paid over $1,000 in phone charges.

TABLE VI. 18

GRANTEE COSTS (FIELD TEST), MODIFIED SYSTEMS

	Number of Grantees	
Cost Range	Hardware/Software	Maintenance/Consulting
$0	2	4
$2,751 - $3,250	1	0
$3,251 - $3,750	2	0
$19,440	0	1
$23,950	1	0
$37,400	0	1

This grantee was only one of two grantees in the system-modification group to report any expenditures on maintenance agreements or consulting services. It spent $19,440 for consulting services for its system, which includes the cost of programming work on the central database and consulting services for the 17 providers using the system. The other grantee that reported expenditures on consulting services had 11 providers in the field test and spent $37,400 on consulting services for 6 of them (the other 5 used internal support).

The effect of the number of providers in the field test on the grantee's hardware/software expenditures is somewhat complicated. Initially, it appears that this effect was minimal. One grantee estimating $0 cost had 6 providers, the other had 1. In the middle ranges, one grantee had 11 providers, the other two had 3 each The last grantee with very high expenditures had 17 providers in the field test. Its relatively'high cost is partly driven by the complexity of its centralized system. However, with fewer providers in the system, the grantee surely would have spent less. Perhaps it would have purchased fewer host PCs, modems, etc.? and spent less on phone charges. For centralized data collection systems, therefore, the number of providers in the system would have some effect on expenditures. Otherwise, grantees that modified their data collection systems were able to accommodate their needs with one 486 PC, no matter how many providers were in the field test.

Total Costs. While it is useful to separate grantees and providers to examine system configuration and explain differences in system costs, total costs tell us about the total resources consumed regardless of who consumed them. Total cost is an aggregate expenditure of providers and their grantees. Calculating a comparable figure per provider or even per client is difficult, however, because expenditures on hardware and software are not driven primarily by these factors.[3] A better estimate of total cost would

[3]For example, two grantees spent $3,000 on computer hardware and software. One grantee had two providers in the field test, the other had six. The grantees' per provider expenditures would be very different ($1,500 vs. $500). This per provider figure, moreover, implies that adding a provider would increase grantee expenditure by the per provider amount. The evidence from the field test does not indicate

(continued.. .)

include several separate costs: the direct provider costs, the per provider cost of grantee expenditures that are affected by number of providers, and the more constant grantee costs. The first two costs can be combined to estimate a per provider cost, regardless of who incurs it.[4] This per provider cost must then be added to the more constant grantee costs to estimate total cost. The costs that are driven more by number of providers are the grantee hardware/software costs *for centralized data systems* and all grantee-funded consulting services. Examining costs in this manner yields the distribution in Table VI. 19.

The per provider hardware/software cost for most providers ranges from $1,250 to $2,250. The costs for a centralized system are in the low end of that range ($1,250 to $1,750). One explanation for the lower per provider costs for the centralized system is that system developers can take advantage of some economies of scale, since the system does not require one PC per provider, but 5 host PCS for 17 providers.

Costs for maintenance agreements and consulting services are more difficult to analyze, given that so few grantees and providers paid for these services outside of their existing staff The data suggest that the per provider cost for maintenance agreements and consulting services was generally between $1,250 and $2,750 or $5,751 and $6,250. The lower range includes the per provider costs of the grantee with the centralized data system. The higher range includes a grantee funding consulting services for providers with very different data collection systems.

One hypothesis to explain these divergent consulting costs is that the time and effort required to reprogram and update the data systems of many providers using a central database is less than that necessary to reprogram and update many individual systems. Given that the centralized system was in

[3](. . . continued)
that this is a reasonable conclusion.

[4]Analytically, we are taking the per provider grantee costs and redistributing them among the providers.

TABLE VI. 19

TOTAL COST,
MODIFIED SYSTEMS

Cost Range	Number of Providers: Hardware/Software (per Provider)	Number of Providers: Maint./Consulting (per Provider)	Number of Grantees: Hardware/Software* (Grantee Costs)
$0	4	12	2
$251 - $750	1	0	0
$751 - $1,250	0	1	0
$1,251 - $1,750	17	17	0
$1,751 - $2,250	7	0	0
$2,251 - $2,750	0	1	0
$2,751 - $3,250	0	0	1
$3,251 - $3,750	0	0	2
$5,251 - $5,750	1	0	0
$5,751 - $6,250	0	4[b]	0
$11,857	1	0	0

[a]Only 5 grantees are counted here because the costs of the sixth grantee with the fully centralized system have been redistributed to its 17 providers.

[b]This figure refers to 4 providers not included elsewhere in the analysis who did not submit hardware/software cost estimates, but their grantee indicated that it spent significant resources on consulting services for many of its providers, including these four.

place before the field test also helps explain its relatively low cost in terms of consulting services. The grantee wrote, "The greatest factor in our ability to successfully complete the field test was our utilization of an existing system. The participating providers were already committed to a centralized data collection process and were motivated to improve this system." Conversely, the consultant working with one of the providers in the higher cost range wrote, "In general, designing the system to accommodate the needs of the HRSA tracking system and implementing the reporting system was not a complicated programming

task. However, it became difficult as we tried to reconcile the needs of the various reporting agencies with a single collection system."

The per provider hardware/software and maintenance/consulting costs suggest that URS implementation for providers and grantees modifying an existing data collection system requires between $1,250 and $2,250 of computer equipment per provider. Maintenance and consulting service costs per provider range more widely but can be as high as $6,250. The costs for centralized data systems may, in general, be on the lower end of these estimates.

These cost estimates do not include most grantees' expenditures for hardware and software, a reasonable estimate for which is $2,751 to $3,700 (see the preceding discussion of grantee expenditures). Adding this figure to the per provider cost above would yield a reasonable estimate of total cost for one grantee and a group of providers. This total cost will vary depending on whether the system is centralized or decentralized and on how many providers are in the system (since each one of them will require $1,250 to $2,250 worth of equipment).

Full Implementation Costs. Some providers limited their test of the URS to a portion of their clients and services. Some grantees did not include all of their providers. Since extrapolating the field test experience to "real" operations is therefore somewhat unreliable, grantees and providers were asked to estimate their additional costs on the basis of full implementation of the URS. For grantees, this meant including all providers in their state or EMA. For providers, it meant including all of their Ryan White clients in the URS.

Although it is possible to reconstruct Table VI. 19 with these full implementation estimates, it is not the best way to compare the information. Instead, discussing provider and grantee costs separately reveals the more subtle changes that would be brought about with full implementation of the URS.

The distribution of provider hardware and software costs for full implementation is not radically different from that for the field test. Five providers reported full implementation cost estimates that were

higher than actual implementation costs in the field test. Four of the five providers with higher per provider costs also estimated increased caseloads in full implementation as shown in Table VI.20.

The first provider, with no increase in caseload, reported the need for two additional PCS to give case managers better access. The second provider would need to incorporate four remote provider sites into the URS for full implementation and so would incur a 200 percent increase in hardware/software costs. Per remote site, however, hardware and software costs were in the range of $1,751 to $2,250. The third provider estimated less dramatic increases, reporting the need for slightly increased phone usage and modem capability. The fourth provider estimated a 45 percent increase in hardware costs for full implementation for one year's phone charges associated with linking remote case managers by modem. The fifth provider, which had the highest cost for field test hardware/software at $11,950, estimated full implementation costs at $13,950 for additional disk space, improved backup, a remote access driver, and miscellaneous software and network upgrades.

TABLE VI.20

FULL IMPLEMENTATION COST AND CASELOAD INCREASES,
PROVIDERS WITH MODIFIED SYSTEMS

Cost Range Increase	Caseload Increase
$0 to $5,750-$6,250	None
$1,751-$2,250 to $6,751-$7,250 (+200%)	50 to 1500 (+2900%)
$250-$750 to $751-$1,250 (+100%)	1026 to 1300 (+26%)
$5,250-$5,750 to $7,750-$8,250 (+45%)	295 to 500 (+70%)
$11,857 to $13,950 (+17%)	867 to 1100 (+27%)

This analysis further supports the hypothesis that system needs for full implementation, not caseload, drives increases in hardware/software expenditures. The experience of one provider suggests that it was just getting by during the field test and would need further resources for long-term implementation even though caseload would not increase. The needs of remote provider sites also warrants consideration when estimating costs, perhaps considering them as separate providers.

Nine providers did not report any changes in hardware/software costs for full implementation. Two of them (including a state administered ADAP) estimated no increase in caseload. One estimated a caseload increase of 129 percent (moving from 87 clients to 200 clients). A fourth, also a state administered ADAP, estimated an increase of 125 percent (133 clients to 300 clients). Unfortunately, we do not have full implementation caseload estimates for the remaining five providers. However, the available data add some support to the conclusion that caseload is not closely correlated with hardware expenditure and that ADAPs may need less in the way of new hardware and software to implement the URS.

The per provider hardware/software cost estimates for the grantee with the fully centralized system for full implementation were slightly less than the field test costs. They went from $1,251 to $1,750 per provider to $751 to $1,250 per provider, suggesting that these systems provide certain economies of scale. If, however, the additional providers brought into the system with full implementation had to purchase hardware and software to access the system, the per provider costs for this system would increase. The field test providers in this system did not have to do so.

With full implementation, three grantees described a quasicentralized data collection system whereby providers would submit data to regional data collection points (usually consortia), which would then aggregate the data and send it on to the grantee for further aggregation. These regional stations would require hardware and software, including PCS, modems, printers, telephone charges, and miscellaneous

software to convert the data to HRSA format. Grantee cost estimates for this equipment per region ranged from $2,751 to $3,750.

Maintenance and consulting cost estimates for full implementation also increased in terms of costs incurred directly by providers and grantee costs per provider. These data suggest that grantees and providers realized that computer maintenance and consultation needs could not adequately be met with internal resources. One ADAP reporting no consulting expenditures in the field test, for example, estimated a $5,000 need for reprogramming its system for full implementation. A case management agency estimated a need for $2,000 worth of system upgrades. The provider that would have additional remote sites with full implementation estimated a full implementation expenditure for consulting services of nearly $3,000 (an increase from $750 in the field test).

The grantee with the fully centralized data system estimated that the per provider consulting costs for full implementation were slightly lower than the field test cost. *Theperprovider* **or** ***per*** *region* costs for the remaining grantees, however, ranged widely. One grantee estimated no consulting costs with full implementation, one estimated costs in the range of $251 to $750 per provider, a third put costs in the range of $1,751 to $2,250 per provider, and the fourth gave an estimate in the range of $2,751 to $3,250 per provider. The grantees with the lowest two per provider consulting cost estimates may not be addressing all the needs of its providers, expecting them to pay for some consulting costs directly. The grantee in the range of $251 to $750 per region, for example, calculated the costs of one grantee staff member to conduct regional training. These costs included travel expenses but not salary costs. The grantee with an estimated cost per region of $1,751 to $2,250 noted the need for regional contracts to convert data from local to HRSA format. Finally, the last grantee calculated the costs of hiring one FTE to provide computer consulting and training to all 14 providers in the state.

Because so many grantees would have centralized or quasicentralized systems with full implementation and because one grantee did not report full implementation cost estimates, only one grantee

estimated constant hardware/software costs. It estimated the need for an additional modem, two additional computers, a printer, and miscellaneous software to fully implement the URS. Its providers would increase from 3 in the field test to 14, bringing its full implementation costs to $9,163.

Summary. As a whole, the cost data for grantees and providers modifying an existing data collection system leads to several general conclusions. First, overall provider costs do not primarily depend on the size of the agency and number of clients. Conversely, grantee costs can vary with number of providers, especially for centralized data collection systems and for grantees that pay for the consulting service needs of its providers. Second, overall costs increase when data collection and reporting involves more levels of administration. For instance, a system that requires URS data to be transmitted and aggregated from a remote provider site to a central agency to a regional consortia to a grantee will cost more than a system with information moving directly from the provider to the grantee. Because of economies of scale, a fully centralized system may generate even more cost savings. Third, each level of administration will require both computer equipment and consulting services. Based on the field test data and full implementation cost estimates, the hardware and software required to modify existing data collection systems would cost between $1,250 and $2,250 *for each level of URS administration* and each entity within that level, Grantees may require hardware in the range of $3,000 to $4,000. For example, modifying a system with two consortia of seven providers each can require up to $40,000 in computer equipment ($2,250 for each consortia, plus $2,250 for each provider, plus $4,000 for the grantee).

Consulting services for system upgrades, training and general maintenance are difficult to estimate with the available data, but they can be as high as $5,000 to $6,000 for the grantee and every provider and consortia within the data collection system. Factors that reduce these consulting costs include fewer changes to the existing system, high staff familiarity with the computer system, and availability of internal MIS staff support.

ii. New Systems

Provider Costs. Providers incurred large hardware and software costs to implement new data collection systems. Analysis of cost data from providers shows that most spent between $1,750 and $2,750 on computer hardware and software, and very little on maintenance and consulting. Of 88 providers in the field test, 72 reported specific cost data Of these 72 providers, 41 implemented new data collection systems. Their reported costs for computer hardware and software, including maintenance agreements and consulting services are shown in Table VI.21.

Most providers that reported no hardware/software costs implemented the URS with their existing hardware and installed new, public domain software (COMPIS, IMACS, Toolbox, etc). Seven of the 12 providers with no hardware/software costs were from the same state, which had been developing a client-level reporting system before the field test. The providers were well-prepared for client-level data

TABLE VI.21

PROVIDER COSTS (FIELD TEST),
NEW SYSTEMS

	Number of Providers	
Cost Range	Hardware/Software	Maintenance/Consulting
$0	12	40
$250 - $750	0	1
$1,250 - $1,750	2	0
$1,751 - $2,250	6	0
$2,251 - $2,750	16	0
$2,751 - $3,250	3	0
$6,250 - $6,750	1	0
$21,200	1	0
$33,735	1	0

collection and by using a software package designed by the grantee, minimized their hardware/software costs associated with the field test. One of the seven was a medical provider, which abstracted URS information from client charts.

Of the remaining five providers with no reported hardware/software costs, one was a large medical clinic that developed a new patient encounter system, which was operated parallel to its existing data collection system. A second medical provider in the no-cost group abstracted client data from medical charts, which did not require additional computer purchases. Of the three remaining providers, one was a state run health insurance continuation program, which did not need to purchase additional resources for the field test. This provider did report, however, exhausting its existing hardware capacity (i.e, URS hardware requirements infringed upon existing computer needs). The other two providers were agencies with small numbers of cases in the field test (3 and 28 clients, respectively); they used existing hardware with public domain software.

At the high end of the cost spectrum, three providers reported hardware/software cost in excess of $6,000. All three were funded by the same grantee. In the range of $6,250 to $6,750 was an ADAP with a caseload of 1,800. A case management agency with a caseload of 400 reported costs of $2 1,200. The provider with the highest reported hardware/software costs was a case management agency with a caseload of 347. These caseloads are relatively large, and more important, the two case management agencies developed very complicated systems, linking remote case managers to one central computer. These systems necessitated the purchase of numerous laptop computers (one per case manager) and a 486 computer for the central agency. The provider with the highest reported costs was working to develop a wide area network, necessitating the purchase of even more computer hardware.

In general, the size of the provider's caseload did not affect the magnitude of the expenditure on hardware or software. While the three agencies with the **largest expenditures had relatively high caseloads, they** generally varied without regard to equipment costs. One of the agencies expending no money on

hardware, for example, reported on 467 clients. One of the agencies in the range of $2,251 to $2,750 reported on 30 clients. Of the agencies in the middle range ($1,751 to $3,250), the caseload ranged from 17 to 3 87 (the caseload of 6 providers is unavailable).

Expenditures varied more with system complexity and number of computers purchased. The data show that chart abstraction does not generally require the purchase of any new computer hardware or software, whereas a wide area network, linking multiple remote users, requires an extensive investment in computer resources. Typically, however, a field test provider needed a computer with enough capacity to run the software (usually a 486 PC), a printer, and sometimes a modem hookup to implement the URS. Only one provider, a medical clinic, spent resources on maintenance contracts or consultant fees.

These data do not mean, however, that no resources were spent on computer maintenance and consulting services. In some cases, the grantee paid for consultants, and in many cases, the providing agency devoted MIS staff resources to developing and improving the data collection system. These staff resource costs do not show up as discreet line item expenditures. They are partly captured in the time costs and staff needs described earlier.

Grantee Costs. Like providers, grantees incurred large hardware and software costs. Of the 13 field test sites, 8 are counted as implementing new data collection systems. Their costs are distributed in Table vI.22.

The correlation between number of providers in the field test and hardware/software expenditure is weak. The grantee with the highest reported expenditure and one grantee reporting no computer expenditures had 11 providers in the field test. The grantee in the range of $4,751 to $5,250 had 1 provider, while the grantee in the range of $3,25 1 to $3,750 had 8.

Like providers, grantees bought 486 PCS, modems, and printers. The factor driving grantee hardware/so&are costs appears to be the location of data entry and report generation. The grantees with

TABLE VI.22

GRANTEE COSTS (FIELD TEST),
NEW SYSTEMS

Cost Range	Number of Grantees	
	Hardware/Software	Maintenance/Consulting
$0	3	6
$3,251 - $3,750	2	0
$3,751 - $4,250	1	0
$11,850	0	1
$21,750	1	0
$37,250 - $37,750	1	1

the highest hardware/software costs performed more data entry than the other grantees, having done this work for several providers, and produced all electronic files and verification tables for its providers.

While the grantee with the highest equipment costs did not develop a centralized system, its staff performed data entry for several providers and took raw data from providers to produce electronic files and verification tables in HRSA format. This process required computer equipment for multiple staff and various software packages. The grantee also had 11 providers in the field test. Although the correlation between number of provider sites and grantee hardware/software expenditures is generally weak, this high number of providers probably contributed to the grantee's high equipment costs given its large role in data entry, data manipulation, and report generation.

The grantee with second highest hardware/software expenditure developed a fully centralized system, whereby providers entered data directly to a central computer database maintained by the grantee. This centralized system required the purchase of a file server for five users (five providers), several modems, a software package to operate the system, and long distance charges for remote access to the network.

Though the data was entered locally by each provider, they were maintained and manipulated by the grantee.

Grantees implementing new data collection systems spent almost no money on maintenance agreements and consulting services. One of the two grantees to do so set up the centralized data collection system. In addition to relatively high hardware costs, the grantee spent $2,400 for a maintenance agreement and $9,450 for programming and consulting services for a total of $11,850. *The* other grantee spent $37,400 on consulting services for 6 of its 11 providers. No other grantee implementing a new system reported any such costs.

Total Cost. Total cost accounts for all computer costs associated with the URS and enables us to compare new data collection systems to modified data collection systems. As described in the discussion of modified systems, a good estimate of total cost includes several separate costs: the direct provider costs, the per provider cost of grantee expenditures that are affected by number of providers, and the more constant grantee costs.[5] As with modified systems, the costs for new systems driven more by number of providers are grantee hardware/software costs *for* centralized data *systems* and grantee-funded consulting services. To analyze the costs for developing new data collection systems, we counted the grantee with the large role in data entry and report generation as a centralized system. The providers of both of these grantees also purchased computer equipment, and their direct expenditures are added to the per provider costs of their grantees. Examining costs in this manner yields the distribution shown in Table VI.23.

The distribution shows a wide range of hardware and software expenditures per provider and few expenditures for maintenance and consulting services per provider. One cluster of hardware/software costs ranged from $1,751 to $3,250 per provider. This money generally bought the same sorts of equipment:

[5]As with the modified-systems group, we can combine the first two costs to arrive at a per provider cost by redistributing the per provider grantee costs among the providers.

TABLE VI.23

TOTAL COST, NEW SYSTEMS

Cost Range	Number of Providers: Hardware/Software (Per Provider)	Number of Providers: Maint./Consulting (Per Provider)	Number of Grantees: Hardware/Software (Grantee Costs)
$0	12	35	3
$251 - $750	0	0	0
$1,251 - $1,750	0	0	0
$1,751 - $2,250	6	0	0
$2,251 - $2,750	2	0	0
$2,751 - $3,250	2	0	0
$3,251 - $3,750	0	0	2
$3,750 - $4,250	0	5	1
$4,251 - $4,750	0	0	0
$4,751 - $5250	0	0	0
$5,751 - $6,250	13	1"	0
$6,251 - $6,750	3	1	0
$7,585	1	0	0
$21,214	1	0	0
$33,735	1	0	0

"This number represents one provider not included elsewhere in the analysis who did not submit hardware/ software cost estimates, but its grantee indicated that it spent significant resources on consulting services for many of its providers, including this one.

a 486 PC, a modem, and a printer. Some of the providers that were part of the centralized data system also paid for phone charges to access the system.

A second cluster of hardware/software costs ranged from $5,751 to $7,585. This range includes the per provider costs for the grantees with quasicentralized and fully centralized systems. This evidence suggests that building either of these systems can raise hardware/software costs relative to noncentralized

systems. Also at the high end of the cost range were providers that paid higher phone charges to access the fully centralized system due to distance from the grantee.

Costs for maintenance and consulting services are difficult to analyze because there is not enough data: only two grantees and one provider implementing new systems paid for these services. The grantee with the fully centralized data system paid $3,888 for each of its five providers for programming and training. The other grantee spent $6,200 each on 6 of its 11 providers. Only 2 of those 6, however, implemented a new system and are included in Table VI.23. One spent $550 of its own money, bringing the total cost to the range of $6,251 to $6,750.

In general, the per provider hardware/software and maintenance/consulting costs suggest that implementing the URS for grantees and providers with new data collection systems requires between $1,750 and $3,250 per provider for computer equipment. Centralized systems can cost as much as $5,750 to $7,585 per provider. Maintenance and consulting costs per provider, though difficult to estimate, can be as high as $6,750.

These per provider costs estimates do not include the more constant grantee expenditures for hardware/software. For grantees developing new data collection systems, these costs ranged between $3,250 and $4,250 (see the discussion of grantee costs above). Adding this figure to the per provider cost would yield a reasonable estimate of total cost for a grantee and a group of providers. This total cost will vary depending on the number of providers and the level of sophistication of the computer system.

Full **Implementation Costs.** Like providers and grantees modifying their data collection systems, those implementing new systems estimated hardware/software and maintenance/consulting costs for full implementation of the URS. These estimates show some significant changes in cost from the field test to full implementation.

Four of the 12 providers with no hardware or software expenditures in the field test estimated much higher expenditures for full implementation. One of these providers reported the need for two PCS to

facilitate data entry by intake staff and new database software for a cost of $7,000. To free up strained computer resources, two providers indicated the need for a new 486 PC with a modem and a printer for $3,750 to $4,250. The fourth provider needed an additional computer for $3,000. This last provider was the only one of the four to indicate an increase in caseload (from 45 to 120).

Three providers that did purchase computer equipment for the field test reported the need for additional resources so that case managers could have better access to the system. One provider reported the need for four additional computers and new software, raising its total cost from $3,000 in the field test to $16,000 with full implementation. A second provider indicated a similar need for three computers, bringing its full implementation total cost to nearly $10,000, up from $2,500 in the field test. The third provider indicated more modest increases, raising its total from $2,920 in the field test to $7,735 with full implementation. These providers reported an increase in caseload of 0, 20 (to 60 total), and 85 (to 200 total), respectively.

The two providers with the highest hardware/software costs in the field test estimated further costs with full implementation. The provider with the highest costs reported the need for two additional computers at a cost of $9,800 each, a printer, and 18 intermail software packages at $99 each. These additional resources would bring total hardware/software costs for this provider to over $55,000 for full implementation of the URS, with a full implementation caseload of 750, up from 347 in the field test. The other provider with the highest costs estimated the need for an additional computer and a printer, bringing the full implementation cost to $23,514, with no additional caseload.

The remaining 32 providers that developed a new data collection system estimated very small or no increases in full implementation costs. Data on estimated caseload increases are unavailable for seven of these providers. Six estimated no caseload increase. Nineteen providers estimated large increases in caseload, ranging from 63 percent to over 1,300 percent. These 32 **providers include two medical** providers, which reported no field test expenditures for hardware and software. Both abstracted URS

information from client charts, further suggesting that chart abstraction minimizes the need for additional computer equipment.

The grantee with the fully centralized data system estimated a decrease in hardware/software cost per provider with full implementation. It estimated no further equipment costs but would take on all phone charges for remote access to the system. Even with the addition of approximately 15 providers, the per provider cost deceased from $43 50 to $1,437, suggesting large economies of scale with this centralized system. This estimate does not include, however, the direct provider costs that might be incurred by those 15 providers. These costs could drive up the per provider cost for the fully implemented centralized system.

The grantee with the quasicentralized system did not estimate any significant increases in costs per provider with full implementation. This grantee reported the need for security software, communications software, and modems for an additional cost of $350 per computer (at each of its 11 provider sites and 4 at its location). The grantee estimated no additional providers in a fully implemented system.

The full implementation consulting costs per provider estimated by the grantee with the fully centralized data system were lower than its field test costs, suggesting that the addition of 15 providers to the system would not require significant consulting services. One grantee with no reported consulting costs per provider in the field test estimated a small per provider cost of approximately $500 for maintenance agreements and training. Otherwise, given that one grantee did not provide any estimates for full implementation costs, grantee cost estimates per provider for maintenance and consulting costs did not change compared to the field test experience (i.e, they remained at $0).

Estimates for full implementation maintenance and consulting costs incurred directly by providers were higher than similar costs in the field test. Four providers with no field test maintenance/ consulting costs estimated some costs for full implementation. One estimated $1,500 in consulting costs for computer training. Another estimated a very small software maintenance cost of $100. Two estimated $10,000 in

consulting costs to reprogram their computer systems. These latter two providers operated a new URS data collection systems parallel to their existing systems. Their high full implementation costs represent the cost of reprogramming their data collection system to integrate it with the URS. The one provider in the field test with consulting costs ($550 for computer consulting) also estimated additional full implementation costs of $150 for a software maintenance agreement. All other providers reported no maintenance/consulting costs in the field test and estimated no such costs for full implementation.

Finally, full implementation estimates for the more constant grantee hardware and software costs were higher, in general, than the field test costs. Of the three grantees with no field test costs for hardware and software, only one estimated full implementation costs to be $0. The other two estimated full implementation costs to be between $3,750 and $4,250 for a combination of a 486 PC, printer, modem, and software. The number of providers would increase for these grantees to 15 (from 7 and 3, respectively, in the field test). One grantee with field test costs in the range of $3,750 to $4,250 range estimated an increase of five providers with full implementation and the need for a printer, for a full implementation cost of $5,561. The fifth grantee had field test costs in the range of $3,251 to $3,750 range and estimated a full implementation cost of $10,280. It estimated a need for 12 modems, RAM upgrades, and two 486 PCS for full implementation. Because this grantee did not estimate any additional providers with full implementation and because it reported a need for 12 modems, its full implementation system may resemble a quasicentralized system, whereby providers can access a central URS data base.

Summary. As a whole, cost data for grantees and providers implementing a new data collection system to implement the URS suggests several general conclusions.

First, providers abstracting URS information from client records may require less in the way of new computer equipment and software. Using existing equipment, these providers can enter abstracted data into a rudimentary database for reporting purposes.

Second, fully centralized systems have economies of scale and cost less on a per provider basis. Initial construction of this system, however, can be quite costly compared to both new, noncentralized systems and modified centralized systems. This higher cost stems from the need of the grantee and its providers to invest in new computer hardware. Noncentralized systems do not create additional costs for the grantee, and existing centralized systems do not create additional costs for providers.

Third, a significant investment in reprogramming is required to fully integrate the URS into a provider's existing data collection system Two providers that ran the new URS system in parallel to their own estimated the need to invest $10,000 to reprogram the system in order to integrate the URS into it.

Finally, overall hardware, software, and maintenance and consulting costs for new data systems are the same or higher than similar costs for modifying an existing system. Though the wide range of costs for new data collection systems make precise estimates difficult, new system hardware and software for noncentralized systems can cost up to $1,000 more than hardware and software needed to modify an existing system. The range for the system-modification group was $1,250 to $2,250 per provider, while the range for the new system group was $1,750 to $3,250 for noncentralized systems. Hardware/software costs for developing new centralized systems are much higher than costs for modifying systems ($5,751 to $7,583 compared with $1,250 to $2,250). Maintenance and consulting costs are difficult to estimate for the new-systems group because the range is so wide. For full implementation, these costs can run as high as $10,000 per provider (compared with $5,000 to $6,000 for the system-modification group). Grantee costs for hardware and software for noncentralized new systems range from $3,750 to $5,750 compared with $3,000 to $4,000 for modified systems.

6. Summary of Costs and Level of Effort

Four points warrant special consideration in analyzing the cost and level of effort required to implement the URS:

- The field test of the URS did not necessarily involve all eligible clients at a given agency or all providers within a grantee's jurisdiction. Field test circumstances may not reflect full implementation conditions very well, making full implementation costs difficult to extrapolate from field test estimates. Where possible and appropriate, therefore, full implementation cost estimates (supplied directly by grantees and providers) were included in the analysis of cost and level of effort.

- The participants in the field test may have been predisposed to collect and report client-level data. This selection bias makes it difficult to apply field test cost estimates to nonparticipating grantees and providers. Mitigating this bias, however, were grantees that either purposely selected difficult providers to participate in the field test or included all their providers in the field test. This would help ensure a wide variety of attitudes, ability, and interest regarding client-level data among providers. The remaining selection bias, though impossible to measure, deserves consideration.

- The time costs of direct service personnel are not specifically isolated in this analysis. Some of these costs are captured in the intake time, training and assistance time, and additional staff need. Staff need, however, only captures the impact of the URS on direct service personnel by measuring the FTEs necessary to alleviate some of the pressure on direct service staff (i.e, 0.5 FTEs of data entry staff would mean less data entry for direct service staff). The field test measurement tools do not, however, allow for a quantitative measure of direct service staff time. These costs include meeting time, data entry and collection time, report generation time, ongoing training time, and general assistance in all URS activities. The measurements of this time were not clean or uniform across different provider sites despite attempts to standardize them. A busy case manager, for example, found it difficult to determine and record when data entry time ended and report generation time began. Isolating data entry time in the course of a client intake was also challenging.

- Related to the direct service personnel costs are the costs in time and resources to prepare for URS implementation Though not directly discussed, these costs are partly analyzed in the discussions on training and assistance time, MIS/supervisory staff needs, and consulting costs. The analysis of technical assistance needs in the next section of this chapter also addresses this issue. But the costs of preparatory meetings, overcoming computer aversion, and the psychological burdens of learning a new system, which are difficult to measure, are not included in the analysis.

With these caveats in mind, we can make a few general observations and draw some general conclusions about the cost and level of effort required to implement the URS:

- Costs to develop a new system of data collection are generally higher than those to modify an existing system. This is evident across the spectrum of URS costs from training and assistance time to staff needs to hardware/software costs.

- Initial implementation costs are not affected by agency size. The costs in training staff, purchasing equipment, developing new intake and encounter forms, and reprogramming existing data systems are as high for smaller agencies as they are for larger agencies.

- Costs for initial implementation and ongoing operation of the URS are higher if the URS is not fully integrated into data collection system. Parallel systems of data collection, chart abstraction, and multiple data sources especially increase additional staff needs and report generation time. Inasmuch as medical providers are more likely to have nonintegrated systems, their costs are generally higher than those of nonmedical providers. However, they may enjoy some cost savings in equipment purchases and training costs.

- Providers with centralized systems of data collection may enjoy some economies of scale in hardware/software costs, consulting fees, and staff needs. Initial development of such systems may cost more than noncentralized systems. The ongoing costs per provider, however, may be less.

- In general, grantees and providers felt that report generation time has the greatest potential for saving time. While many providers had some difficulty producing the required reports, they felt that over time, report generation would become easier and less time consuming as staff become more familiar with the URS and automated report production.

The specific costs estimates developed in this section can be summarized as follows:

- ***Intake/Encounter Time.*** Generally, the URS caused little or no increase in intake or encounter time with clients. The one exception to this finding is that medical providers reported an increase (sometimes quite significant) in the time it took to collect the URS information from patients.

- ***Training Time*** For providers modifying an existing data collection system, training staff on URS implementation takes from 0 to 4 hours per staff member for data entry and direct service personnel. If the agency does not have separate MIS and data entry support, training time can be as high as 6 to 10 hours per staff member. The training time costs are generally higher for providers developing new data collection systems, but precise time estimates are impossible to make with currently available data.

- ***Report Generation Time..*** Generating URS reports takes 0.5 to 10 person hours for small agencies (30 to 100 clients) and providers with fully integrated data collection systems. Generating reports for larger providers and providers with separate data systems can take 10.1 to ***20*** person hours.

  Grantees estimated that 0.1 to 15 person hours were required to produce consolidated reports if the computer system was working properly.

Most grantees and providers felt that report production time would decrease significantly over time.

Grantees and providers developing new systems had more difficulty producing reports. Because so few of them reached steady-state operation during the brief field test period, generalizations are difficult to make.

- ***Additional Staff Needs.*** Grantees modifying an existing data collection system generally require 1 additional FTE to supervise the data collection effort and assist providers with the process (including automating their systems). An additional 0.25 to 1 FTE would be required at the regional level. Data entry needs for these grantees are minimal.

  Providers modifying existing systems generally require 0.25 to 0.5 additional FTE in MIS/supervisory staff, with more than 0.5 FTEs required during the first few months of implementation. Most providers in the system-modification group could implement the URS with existing data entry staff Some larger agencies (500 to 1,000 clients) would require up to 1 FTE.

  Grantees developing new systems of data collection also require approximately 1 additional FTE to oversee URS implementation. They did not report a regional staff need, although it probably exists. They also require 0.5 to 1 additional data entry FTE to accommodate paper-based providers.

  In general, providers developing new data systems require 0.5 to 1 additional MIS/supervisory FTE to oversee initial implementation and address ongoing difficulties. These providers also require 0.25 to 1 additional data entry FTE, depending on agency size. Smaller agencies (less than 50 clients) need 0.25 additional FTEs. Mid-sized agencies (35 to 150 clients) need 0.5 to 0.99 additional FTEs. Larger agencies (300 to 1,000 clients) require 1 additional FTE.

- ***Hardware/Software Costs.*** Overall, hardware/software costs do not depend on agency size. Some grantee costs, like consulting service costs, do depend on the number of providers in the system. Total hardware, software, and consulting costs increase with the number of administrative levels involved in data collection (providers, regional consortia, grantees, etc.)

  For providers and grantees modifying their data collection systems, computer hardware and software can cost between $1,250 and $2,250 per provider (or per region). Grantee costs for hardware and software generally range from $3,000 to $4,000. Computer consulting fees are difficult to estimate but can be as high as $5,000 to $6,000 per provider (or per region) if custom programming is necessary.

  For providers and grantees developing new data collection systems, these costs are generally higher. They range from $1,750 to $3,250 per provider for noncentralized systems. Centralized systems can cost between $5,750 and $7,585 per provider. Grantee costs for computer equipment range between $3,250 and $4,250. Consulting costs are difficult to estimate because so few grantees and providers paid for consulting

services. These costs can be as high as $10,000 if the URS is to be completely integrated into a data collection system.

C. THE ROLE OF TECHNICAL ASSISTANCE IN THE URS

The URS is a complex combination of data sets, identifiers, and reporting procedures. It was designed to be used by a variety of service providers and types of Ryan White programs. Users of the URS must therefore have detailed information to understand what parts of the system they must employ. Automated data systems are needed at the grantee-level to create the URN and unduplicate client information across providers. Direct service providers must know how to interpret data elements and how often to collect information. Technical assistance gives grantees and service providers the information and support they need to collect and report URS information completely and accurately. The TA mechanisms used during the field tests were evaluated just as other components of the URS, with the expectation that these mechanisms would be used for full implementation of the URS. This section describes the TA provided by HRSA and other sources during the field test and reviews the sites' response to these efforts.

1. HRSA Technical Assistance

a. Determining the Necessary Types of Technical Assistance

In October 1991, a technical needs assessment (TNA) memorandum was sent to Title I and Title II grantees to determine their data collection capabilities and those of their service providers. The TNA captured information such as the skill level of key MIS personnel, the types and amounts of computer hardware available for reporting and analysis activities, and the TA activities deemed most important by the grantees. Analysis of the TNA indicated that, generally, grantees did not know the specific data collection capabilities of their providers. The respondents did estimate that a majority of providers collected some data manually, and a smaller number had automated data systems in place. Suggested technical assistance options were presented, and grantees were asked to rank them in order of importance. Four TA activities were rated the highest:

1. Conduct a meeting with grantee MIS staff to discuss URS features, requirements, and definitions

2. Provide on-site assistance to grantees for HRSA-developed software

3. Provide telephone support to grantees for HRSA-developed software

4. Develop and distribute a manual that recommends confidentiality procedures for the consideration of grantees and service providers

Activities not highly ranked included the development of scannable forms and dissemination of information about the data collection, analysis, and reporting activities of other grantees and service providers.

Since the URS requires an organized system of record keeping, HRSA expected the need for computerized data systems to increase as a result of URS implementation. At a minimum, each grantee would need a computerized system to manipulate the URS records and generate the URN for each client. On the basis of requirements and the findings of the TNA, HRSA developed the following TA strategy for the field tests.

b. Types of Technical Assistance Made Available at the Beginning of the Field Tests

i. URS-Compatible Data Systems

HRSA obtained the rights to three software systems to equip grantees and service providers for reporting the information required by the URS. These systems were chosen for their potential to be used in a variety of service environments, ease of use, and expansion capabilities. The systems were modified to collect the various URS elements as a part of the acquisition. The selected software systems operate on PC-based, IBM-compatible machines, which were determined to be used by a majority of grantees and service providers. The three systems, COMPIS, IMACS, and DC ARMS, were to be made available to all of the field test participants. DC ARMS was not ready when the field tests started and was consequently not used at any field test site.

ii. Toolbox Software

URS data must be manipulated on a computer before it is sent to HRSA. The Toolbox provides a simple interface for doing this. It also makes it easier for existing data systems to function in the URS. HRSA expected many grantees and service providers to adapt their existing systems rather than install new software, and the Toolbox enabled them to perform the following functions:

- Generate the HRSA URN for clients
- Combine client information based on the URN (unduplication)
- Generate verification tables and the **HRSA** electronic file format from collected data
- Enter URS data into a database (for agencies using paper data collection)
- Track service providers' submission of data to the grantee

The Toolbox software was distributed to all grantees who could freely share the software with their service providers,

iii. Documents and Manuals

A series of manuals and fact sheets were created as reference materials for users of the **URS**:

- *URS Overview*. A brief synopsis of the URS and all its parts
- *Uniform Data Sets. Three volumes with* detailed data elements, descriptions, and coding definitions
- *Protecting the Confidential@ of HIV-Related Information Under the Uniform Reporting System: A Guide for State and Local Agencies Receiving Ryan White CARE Act Grants.* Suggested procedures for reviewing confidentiality practices.
- *Protecting the Conzdentiality of HIV-Related Information: A Guide for Providers.* Procedures suggested specifically for service providers for reviewing confidentiality practices
- *Miscellaneous* ***Training*** *Materials for the URS.* Sample forms and "practice" clients

- ***Electronic File Specifications***. Detailed layouts for each of the data files to be submitted to HRSA

These documents were distributed to and reviewed with each of the grantees and their service providers at the initial visits.

iv. Bulletin Board System (BBS)

This is a computer link that people use to communicate with one another by sharing messages or electronic mail and computer files. HRSA established the DHS-BBS to facilitate communication among the field test sites, enable each participant to directly address questions to HRSA staff, provide all of the URS documentation in a computer readable format, and augment software support activities including downloading software updates. This system was made available to all grantees and their service providers.

v. Phone Technical Assistance

Grantees ranked phone TA third highest in their expected assistance needs. HRSA established a toll-free 800 number to answer questions about the field test and the URS. This avenue of support was put in place to help answer questions regarding data set definitions, data system or equipment problems, reporting requirements, data analysis, etc. The 800 number was generally made available only to grantees, who would act as the central conduit for all of their service providers' questions.

vi. Scannable Forms Technology

HRSA developed sample scannable forms to demonstrate their utility in collecting the URS elements. These forms were made available to grantees on request.

vii. On-Site Visits and Training

HRSA required each field test site and the participating service providers to attend an orientation meeting (held at a location determined by each grantee) to discuss the scope of the project and prepare

implementation timelines. During these meetings, HRSA discussed the types of data elements to be collected, how the URS would be implemented and the expected obstacles, computer hardware and software issues, and any special training or assistance needs. Each site was offered on-site training visits on an as-needed basis.

c. Additional Technical Assistance Made Available During the Course of the Field Test

Naturally, unexpected assistance needs arose during the field tests. Service providers and grantees were interviewed at the time of the progress visits to determine what extra assistance could be provided by HRSA. Five additional TA mechanisms were implemented.

i. Common Questions and Answers

A great deal of time was spent in the initial and progress visits answering questions and clarifying the URS and its components. These questions tended to be similar at all of the sites. HRSA devised a sheet to address the most common questions. This sheet was then distributed to all of the grantees and made available on DHS-BBS.

ii. Guidance on Using COMPIS with the URS

Many of the service providers using HRSA-supplied software began to blur the distinction between the URS and the software systems used to collect the data COMPIS and IMACS can collect a great deal more information than is actually used in the URS, and consequently, the users did not clearly understand that they were not required to use every option available in these packages in order to implement the URS. Some users became concerned about the burden imposed by using every option allowed by the software systems and attributed this "extra" burden to the URS.

In response to these problems, HRSA distributed a listing of COMPIS screens that clearly highlighted the fields that should be collected and the procedures to be used in the software. This approach allowed each site to implement only those options they found useful and ensured that the collection of URS data

elements would not be hindered. A similar document was not available for IMACS because of the difference in IMACS screens at each installation site.

iii. URN Source Code and Documentation

Sites that programmed their own data systems wished to integrate the software for calculating the URN (CALCURN) directly into their system. Source code written in C and technical documentation was provided to system programmers and was posted on DHS-BBS for downloading.

iv. User's Manual for BBS

The computer skills of grantee and service provider staff varied widely, and many potential users of DHS-BBS were not experienced with modem communications. A user's manual was developed to assist anyone not familiar with the DHS-BBS technology or concepts.

v. Sharing of Forms

A few field test sites developed coordinated intake and reporting forms to encompass all of Title I, Title II, and Title III data elements. HRSA shared these intake forms with other field test sites.

d. Utilization and Effectiveness of Technical Assistance

From the previous list of TA, several activities were tracked to analyze their use during the field tests. Effectiveness was measured through direct interviews, questionnaires, and in some cases, by inference from utilization patterns.

i. URS-Compatible Data Systems

The two URS-compatible data systems supplied by HRSA, COMPIS and IMACS, were used more often than any other given system, but they were used less often than other systems in general (Table VI.24).

A measure of software effectiveness was not possible given the design of the field test evaluation. Field test participants were able to provide us with feedback on the suitability of the software systems for

TABLE VI.24

SOFTWARE USED BY GRANTEES AND SERVICE PROVIDERS

	Participants	
Software	Percent	Number
IMACS	13	13
COMPIS	18	17
Other	69	67

particular tasks in particular situations. However, the experiences of each user, which varied too greatly to make any specific recommendations or to rate each system, were affected by such factors as:

- The suitability of the data system to the field test goals (many of the goals involved implementing a comprehensive MIS for client data in addition to collecting the URS elements)
- The technical expertise available to the user during crucial phases of implementation such as installation and report generation
- The previous experience of case managers, intake personnel, and other users with computers
- The degree to which the end users (i.e., case managers and intake personnel) were involved in the software selection and planning
- The extent to which paper forms and data entry screens were modified to be similar in layout
- The availability of immediate benefits to the users

ii. Toolbox Software

The Toolbox software was used at almost every site to perform URS-specific functions. Some sites incorporated Toolbox modules (tools) into their systems to perform the unduplication procedures, assign the URN, and generate the verification reports and electronic files. Other sites imported data or used the Toolbox data entry screens to perform these functions. With only a few exceptions, the Toolbox was used at the grantee level and not at the service provider level. Although users indicated that it was effective in performing the basic automated functions of unduplication (in every site except one), they suggested many enhancements (see Section 3 below).

iii. Documents and Manuals

HRSA expected the bulk of the detailed URS specifications to be conveyed through the written materials presented in the initial visits and during the course of the field tests. Some service providers lost or did not receive their documentation, and the lack of reference materials affected their ability to interpret or collect certain data elements. Other participants did not have time to read all of the documentation or preferred some other presentation format. While an effort was made to limit the amount of "required reading" by supplying or emphasizing only the relevant materials, this approach was not always effective because of HRSA's limited knowledge of each provider's configuration and, consequently, what they would be required to report.

The confidentiality guides were used at most sites for their checklists, which helped to review existing procedures and formally document policies. Participants found them most useful in stimulating discussions regarding confidentiality, especially on issues related to computer security.

iv. Bulletin Board System

As a rule, field test participants preferred phone TA over the BBS when they needed questions answered. A few participants, however, overcame the initial "technology barrier" and used the BBS

regularly, especially when direct telephone assistance from HRSA was not available (in most cases, service providers did not have direct access to the 800 number). The BBS was especially useful in quickly getting software updates to participants. Sites did not use electronic mail to communicate with each other, but to ask questions of HRSA staff. The majority of these questions were of a technical nature related to the software systems. BBS usage is shown in Table VI.25.

TABLE VI.25

DHS BULLETIN BOARD
USAGE BY URS FIELD TEST SITES: OCTOBER 1992 -JULY 1993
(26 Users from 13 Field Test Sites)

Site	Number of Calls	Number of Minutes	Average Time per Call (minutes)	Kilobytes Downloaded
Test Site 3	39	2662	68	2481
Test Site 6	8	386	8	100
Test Site 13	9	179	20	0
Test Site 9	13	149	11	32
Test Site 7	26	142	5	0
Test Site 1	7	70	10	108
Test Site 5	10	64	6	0
Test Site 8	7	57	8	192
Test Site 12	1	32	32	0
Test Site 4	3	32	11	0
Test Site 11	1	11	11	0
Test Site 10	1	10	10	0
Test Site 2	0	0	0	0
Total	125	3794	30	2913

v. Phone Technical Assistance

Phone TA was used to answer questions regarding field test procedures, software use, data element interpretation, reporting procedures, and other URS-related activities. Grantee feedback indicates that this was one of the most valuable sources of TA HRSA was able to provide. HRSA estimates that, over the course of the field tests, an average of three hours per grantee was spent in phone TA.[6]

vi. Scannable Forms Technology

None of the field test sites implemented a system using scannable forms to collect the URS data. However, during the final visits, one site indicated it intended to further research scannable forms as an implementation option for smaller service providers. The sample scannable forms prepared by HRSA were only used as examples.

vii. On-Site Visits and Training

Each grantee received an initial visit, a progress visit, and a final visit. Service providers participated in each of these meetings, although each provider may not have been present at every meeting, and often different staff attended on different occasions. While the initial visits served as an orientation to the URS, time was devoted at the progress visits to technical assistance issues. Most of the participants requested additional clarifications and instructions related to the URS at these visits. Even though other avenues existed for answering these questions, many participants did not know about or use them; it is clear that if the progress visits had not occurred, these questions would have remained unanswered, or incorrect procedures would have continued.

HRSA supplied additional training to four sites: Michigan, Florida, Mississippi, and Virginia. These training sessions were software-related and lasted one day in Michigan and two days in the other sites.

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[6] This estimate represents actual connect time for HRSA's help telephone line. Additional time required to research responses to questions about the URS or HRSA software is not included in the estimate. The estimate also omits support provided by the developers of HRSA software (COMPIS and IMACS).

2. Technical Assistance from Non-HRSA Sources

In addition to TA from HRSA, sites used their own sources of TA, including systems programming, debugging and maintenance, training for software and intake forms, and training related to confidentiality issues. Some grantees purchased hardware and developed software for its service providers. In other cases, the service providers purchased and/or developed these systems.

At the time of the progress visits, 56 service providers responded to a TA questionnaire, and 66 percent reported that they requested help from their grantee no more than once or twice a month for software and/or hardware related to the URS (Table VT.26).

Table VL27 shows the amount of time estimated by grantees and service providers that was spent on technical assistance activities during the field tests. Grantees offered the following observations during interviews:

- Assistance must be proactive to be the most effective. Often providers will not ask for help on specific problems, and the grantee will not find out about them until it is too late to fix them.
- Face-to-face TA is the most effective; however, it can place a greater burden on grantees whose providers are geographically distant.
- Small rural providers or providers with small caseloads should consider using a paper-based system instead of computers.
- The number of clients seen by providers was not a good measure of the amount of technical assistance they would need from the grantee. The same amount of time was spent in sites that served 20 clients or 500 clients. The difference in time was based more on the level of technical expertise, commitment, and enthusiasm of the providers.
- Regular feedback to providers about the accuracy and completeness of collected data was important in improving quality.

TABLE VI.26

FREQUENCY OF TECHNICAL ASSISTANCE REQUESTED
THROUGH THE GRANTEE AT THE TIME OF THE PROGRESS VISIT

Type of Assistance	Daily	Several Times/Week	Several Times/Month	Once or Twice/Month or Less
Software/Hardware Relevant to URS Activities	0.00% n = O	7.14% n = 4	26.79% n= 15	66.07% n = 37
Interpretation of URS Data Elements	0.00% n = 0	8.93% **n = 5**	14.29% n = 8	76.79% n = 43
Other TA	0.00% n = O	3.57% **n = 2**	17.86% n= 10	78.57% **n = 44**

3. **Suggested Changes to Existing HRSA Technical Assistance**

Field test participants suggested improvements to four of the seven types of TA.

a. URS-Compatible Data Systems

In general, it was agreed that each of the data systems should be more user-friendly and more useful. Beyond that, there was little agreement on the types of modifications to be made to each software system. Some participants wanted fewer data entry screens, others wanted more customizable screens; some wanted the software to use fewer hardware resources, while others wanted more features. The wide disparity of the comments reflects how needs and goals differ from one agency to the next. The issue is whether the software is simply a tool for reporting URS data or part of a larger client information management system.

Users clearly indicated that the ability to perform a few core functions is desirable:

- Customize the order of data fields and the appearance of the data-entry screens
- Generate their own or other agencies' forms with the client data already filled in (i.e., entitlement program applications, other paperwork)
- Quickly prepare reports for a variety of sources and in a variety of formats

TABLE VI.27

ESTIMATED TIME SPENT ON TECHNICAL ASSISTANCE ACTIVITIES

Site	Number of Providers[a]	Approach[b]	Grantee Time[c]	Provider Time[c]
Test Site 1	3	NU	0.50 FTE	0.80 FTE
Test Site 2	7	NU	0.50 FTE + 260 hours	0
Test Site 3	4	M	0.10 FTE	0.50 FTE + 80 hours
Test Site 4	1[d]	MUC	0.20 FTE	0.60 FTE
Test Site 5	5	NUC	0.85 FTE	0
Test Site 6	2	NU	0.40 FTE	0.15 FTE
Test Site 7	6	M	0.50 FTE	1.00 FTE
Test Site 8	3	M-NU	0.65 FTE	0
Test Site 9	8	NU	0.75 FTE	3.50 FTE
Test Site 10	11	NU	0.40 FTE	0.10 FTE
Test Site 11	11	N	1.50 FTE	0
Test Site 12	17	MUC	0.65 FTE	0
Test Site 13	11	M-NU	0.40 FTE	0.70 FTE + 100 hours

[a]Counts of providers include ADAPs and health insurance continuation programs where applicable.

[b]M = Modified Existing Systems
N = New Systems
U = Uniform Systems
C = Central Database

[c]Ongoing time is reported in FTEs; start-up and other one-time activities are reported in hours. Time includes in-house staff and consultants.

[d]One consortium with seven case managers in four agencies.

In addition, the software should:

- Be available on the Internet as well as the BBS
- Meet the security standards described in HRSA confidentiality documents
- Be easily modifiable and modular to allow users to respond to complex and varying data reporting requirements.

Participants suggested that HRSA develop modules that could be used with commercial database packages, that could then be customized by each site.

b. Toolbox Software

The Toolbox was revised frequently during the field tests to accommodate feedback and enhance its operation. During the final visits, users were interviewed and filled out questionnaires to assess further enhancements to the software. These suggested modifications are as follows:

- Make the Toolbox more user-friendly (e.g., the menus are confusing, the procedures ask for information at inappropriate times, etc.)
- Enhance the import procedures to work with a variety of file formats including Rbase, Paradox, and FoxPro
- Produce technical documentation for advanced users, including a data flow diagram
- Streamline unduplication reports
- Allow for batch processing of files
- Include additional data cleaning and data manipulation tools

c. Documents and Manuals

Many service providers and grantees recommended that HRSA create an expanded glossary of terms used in the URS. It would include more complete definitions of service types. System developers indicated a need for technical documentation to be centralized as opposed to using a number of different

smaller documents. They also indicated a need for additional guidance on what procedures should be included in a URS-compatible system. They felt that while the available information was comprehensive, it was not in a convenient format for referencing.

Service providers suggested that HRSA create:

- A brochure to explain the URN, how data flowed from the client to HRSA, and what steps were being taken to protect confidentiality
- A step-by-step guide as an aid to assessing and modifying forms and software so that it could be URS-compatible
- Fact sheets for different types of service provider personnel covering the purpose of the URS and how it will help them
- Written guidance on implementing unduplication and quality assurance procedures
- Written guidance on selecting software and hardware for the URS and other reporting needs

Grantees were interested in a HRSA-produced newsletter that would keep them informed of available software, changes to reporting requirements, and the data collection techniques and systems used by other grantees.

d. Phone Technical Assistance

Users of phone TA expressed gratitude at being able to call the HRSA 800-number for assistance; however, some were concerned about the fact that there were not enough staff at HRSA to cover the line during all business and extended hours. For grantees that must travel to provider sites to give assistance, the ability to contact HRSA for clarification while on site is critical to avoid making many trips to the same site.

4. Suggested Additional Technical Assistance

Grantees indicated that in addition to the TA supplied by HRSA, funding for a data manager at each grantee was the most crucial component in their ability to collect accurate, complete, and timely information. This data manager would perform needs and systems analysis for the grantee and its providers, tram staff in the use of data systems and data collection tools, and perform data entry when necessary. Most grantees said they did not currently have enough staff to adequately conduct these activities.

VII. FIELD TEST RESULTS AND IMPACT

The field test provided essential information about the feasibility, benefits, and costs of the URS, and about refinements that were needed in the data elements, procedures, and technical assistance. While specific findings were detailed in preceding chapters, this chapter discusses the broad lessons derived from the field test and the impact the tests have had on program policy.

A. OVERVIEW OF FIELD TEST RESULTS

HRSA shared its general conclusions from the field test experience with all grantees in presentations at the national technical assistance meeting in November 1993. Although participants were referred to this report for detailed findings, eight broad findings were presented:

- ***URS Data Are Generally Available.*** Most service providers were able to collect and report the data requested of them.

- ***Problematic Data Elements.*** A number of data elements presented special difficulty to service providers; recommendations were made to delete or revise them. The most problematic were sexual orientation, income, living arrangements, and several of the elements regarding the medical status of clients.

- ***Caution Is Warranted Regarding Automating Small providers.*** Automating a service provider for the first time as part of implementing the URS greatly magnified the scope of the task and resulted in substantially higher start-up costs for the provider and for the grantee supplying assistance. For many providers with small caseloads, the benefits of automating will not justify the level of effort required.

- ***URS Client-Level Data Is Valuable for Planning, Accountability, and Fund-Raising.*** Even in the short field-test period, participants began to successfully use the data for a variety of purposes, including obtaining additional financial support for services from public and private sources. Most participants believed that the data would be used more extensively as grantees gain more experience with the data, and as data quality improves with successive rounds of collection and reporting.

- ***Attention to Quality Yields More Useful Data Over Time.*** Sites varied in the amount of attention they were able to devote to data quality. Some found the initial data reports of adequate quality. Most sites found that increased attention to the completeness and

accuracy of the data was needed after the initial submission. Sites that completed several cycles of data submission observed substantial improvement in the data as a result of these efforts.

- **The Costs** ***and Level of Effort Varies Greatly with Site Configuration.*** ***The*** resources required to collect and report URS data varied greatly with the approach (as did the benefits). For example, sites that implemented a separate URS data collection effort in parallel to existing data collection systems tended to have higher steady-state costs (and lower levels of commitment to the quality and usefulness of the data) than did sites that integrated URS data into their systems. In addition, the resources required varied substantially over time during implementation, with ongoing operation being much less labor intensive than the system design and initial implementation phases for many types of staff.

- ***The Effort to Implement the URS Is Greater Than Expected.*** With few exceptions, grantees, service providers, and HRSA staff underestimated the effort and time required to implement the URS and obtain data of high quality. In particular, participants tended to underestimate the time needed to effectively explain URS data elements and definitions; compare in detail required elements with providers' current data elements; modify intake and encounter forms as needed; obtain and install any hardware, software, or modifications to software; and train (and retrain) provider staff in new/revised forms and systems. Stafftime for data entry, particularly for newly automated providers, was especially underestimated.

- ***URS Confidentiality Measures Are Adequate.*** In general, participants believed that the URN, the confidentiality guides, and other measures to protect client identities in the URS were adequate. The confidentiality guides were found to be especially helpful, and in a number of instances enabled service providers to strengthen their pre-field test procedures.

B. IMPACT OF THE FIELD TESTS

In addition to the eight broad findings, HRSA reached three important conclusions from the field test:

- URS client-level data systems are feasible and valuable.

- A high level of technical support is needed for full implementation of the URS nationwide.

- Obtaining nationwide data on CARE Act clients and services to inform decisions about program appropriations, CARE Act reauthorization, and health care reform proposals requires concentrating on implementing aggregate URS reporting in 1994.

1. Impact on Reporting System Policy

These conclusions led to three fundamental policy decisions about the reporting system.

- ***The Annual Administrative Report Would Be Implemented in 1994.*** HRSA submitted to OMB a request for approval of mandatory implementation of the Annual Administrative Report, which is the aggregate reporting component of the URS. After receiving approval from OMB, HRSA notified Title I and II grantees in November 1993 that nationwide implementation would occur in 1994.

- ***Client-Level URS Reporting Would Proceed on a Voluntary Basis.*** Concomitant with the announcement of implementation of the Annual Administrative Report (AAR), HRSA announced a decision not to pursue mandatory client-level URS reporting. Instead, HRSA would continue to develop the client-level URS, making changes in the data elements that the field test showed to be necessary. HRSA would also, as resources permit, provide technical assistance regarding the client-level URS to grantees interested in adopting or continuing the system. Grantees would be helped to develop data systems for local service planning and program management, and providers would be helped to prepare for the kind of data collection and reporting that would likely be required of many of them under health care reform. (The proposed Health Security Act would require community-wide client-level data systems that contain information on client characteristics and the volume of services received, and in which data from different providers would be linked using a unique client record number. This structure is quite similar to the client-level URS.)

- ***Demonstration Sites for Client-Level URS Reporting Would Be Established.*** HRSA would provide financial support on a competitive basis to a small number of grantees to continually collect and report client-level URS data. Data from these sites would be used to supplement the aggregate data from the Annual Administrative Reports in preparing analyses and evaluations of CARE Act programs.

2. Other Impacts

The field tests directly shaped operational policy and implementation approaches in several areas.

- ***AAR Content and Schedule. In*** preparing the final list of data elements for the AAR, HRSA deleted several elements shown in the field tests to be problematic for many providers. These included client sexual orientation and income levels, and some of the items related to service provider revenues and expenditures. In addition, the implementation schedule established for the AAR incorporated substantial time for grantees and service providers to prepare for data collection, as was shown to be needed in the field tests.

- ***Technical Assistance for the AAR.*** ***The types*** of technical assistance HRSA developed to support the URS were based on grantee suggestions and priorities. The field test experience with different forms of technical assistance confirmed that the principal types of technical assistance were appropriate. The experience also prompted refinements in existing modes and the development of some new ones. For example, the Guidance Manual for the AAR included several new sections to help grantees and service providers (1) consider some of the advantages and disadvantages of alternative technical approaches and (2) go through the process of modifying current data collection systems and forms efficiently. The manual also included a glossary of terms to supplement the definitions of data elements. In addition, several stages of enhancements in software developed or supported by HRSA were begun to make it easier to use or more helpful for purposes beyond data collection and reporting.

- ***Data Quality Assurance Manuals.*** Based on the field test experience, HRSA began to develop quality assurance recommendations for both AAR and client-level URS data. The recommendations are being developed on the basis of measures employed by field test sites, other measures suggested by field test participants, measures used in comparable nationwide data collection systems, and analysis of the observed quality of field test data The recommendations will be directed to service providers, grantees, and HRSA staff responsible for URS data collection and reporting activities. The recommendations will be distributed as manuals for ensuring the quality of URS data. They will encompass recommended standards (target quality levels), procedures for creating a profile of the data quality attained, and recommended procedures for improving data quality.

- ***URS Client-Level Data Elements.*** ***The URS*** client-level data elements were revised to incorporate the findings of the field test and the recommendations made by grantees at the September 1993 meeting. The recommendations from the meeting were augmented by the work of an advisory group, assembled on the recommendation of the field test participants to provide continuing assistance to HRSA in revising the client-level elements. In December 1993, HRSA staff held three conference calls with the advisory group, and the resulting recommendations included eliminating several data elements, and revising and clarifying others. HRSA program officials concurred with the changes. The result of this process was a pared-down data set with more precise definitions. The revised data set contains a core set of elements to be collected by all providers. An additional group of elements would be collected by case management agencies. Medical providers would collect a different additional group of elements. Appendix B includes a list of each data element and its revised status.

- ***Further Quantitative Analysis of the URN.*** Field test participants generally viewed the URN as an effective way to protect the confidentiality of clients while developing client data at the community level. With that qualitative assessment confirming the utility of the URN, HRSA continued a series of quantitative studies of the URN performance in three areas: the uniqueness of the URNs in different populations, which determines its theoretical power to correctly identify clients; whether refinements to the URN structure or computation procedures were appropriate to further reduce its potential vulnerability to certain types of attack using massive computing power; and the

extent of errors in linking client-level data due to data entry errors or variations in how clients present or providers record the information on which the URN is based.

APPENDIX A

TITLE I PROGRAMS, TITLE II CONSORTIA, AND HOME- AND COMMUNITY-BASED CARE PROGRAMS DATA SET

TITLE I PROGRAMS, TITLE II CONSORTIA, AND HOME- AND COMMUNITY-BASED CARE PROGRAMS DATA SET

Client-Level Data

Client Characteristics	Service Utilization	Medical Information
1. Unique Record Number	Health Services Involving Office Visits: Number of Office Contacts	Year of First Positive HIV Test
2. Intake Date	Case Management Encounters	Year Diagnosed with AIDS
3. Date of Latest Contact	Home Health Care Services: Number of Home Health Care Visits	County of Residence at AIDS Diagnosis
4. ZIP Code	Other Encounters (Yes/No): Whether Client Received Specific Social or Support Services	Symptom Status: Opportunistic Infections Malignancies Dementia, PML Wasting Syndrome
5. Year of Birth		CD4-Plus Lymphocyte Count
6. Gender		CD4 Less Than 20% of Total Lymphocyte Count
7. Sexual Orientation (Optional)		Other History: Influenza, Hepatitis B, Pneumovax
8. Racial/Ethnic Heritage		Primary HIV Transmission Category
9. Living Arrangements		
10. Employment Status/Medically Unable to Work		
11. Payor/Insurance Status		
12. Primary Health Care Provider		

NOTE: *Reported by medical care providers

TITLE I PROGRAMS, TITLE II CONSORTIA, AND HOME- AND COMMUNITY-BASED CARE PROGRAMS DATA SET
(continued)

II. ANNUAL ADMINISTRATIVE REPORT
(One report for each provider)

1. Unique Provider Number
2. Zip Code of Principal Provider Site
3. Total Number of Sites for Provider
4. Provider Type
5. Ownership Status
6. Membership on HIV/AIDS Planning Body
7. Minority Composition of Board and/or Staff
8. Unduplicated Number of Clients Served
9. Number of Anonymous Clients Served
10. Number of New Clients Served
11. Number of Clients with Low Incomes
12. Number of Clients by Age Group
13. Number of Clients by Gender
14. Number of Clients by Racial/Ethnic Heritage

    Number of Clients by Sexual Orientation (Optional)
15. Number of Office Based Health Visits by Type of Service
16. Number of Case Management Encounters
17. Number of Home Health Care Visits
18. Number of Clients that Received Certain Other Services
19. HIV/AIDS Funding by Source
20. HIV/AIDS Expenditures by Category
21. HIV/AIDS Paid Staff FTEs
22. HIV/AIDS Volunteer Staff FTEs
23. Additions to Paid HIV/AIDS Staff

TITLE II AIDS DRUG ASSISTANCE PROGRAMS
DATA SET

I. CLIENT-CENTERED DATA

1. Unique Record Number
2. Enrollment Date
3. Zip Code
4. Year of Birth
5. Gender
6. Racial/Ethnic Heritage
7. Employment Status/Medically Unable to Work
8. Annual Individual Income/Receipt of Public Assistance
9. Payor/Insurance Status/Prescription Coverage
10. AIDS status
11. CD4-Plus Lymphocyte Count
12. Prescription Drugs Received

II. ANNUAL ADMINISTRATIVE REPORT

1. State Program Number
2. Organization Type
3. Medical Eligibility Criteria
4. Average Processing Period
5. Recertification Frequency
6. Waiting List for Program
7. Number of Clients on Waiting List
8. Number of Clients Certified to Receive Each Drug
9. Expenditure for Each Prescription Drug
10. Total Cost of Program
11. Expenditures on Staff for Program
12. Program Funding by Source
13. Paid Staff FTEs
14. Percent of Staff Costa Paid by Ryan White Funds
15. Residual Budget (Dollars Not Spent)/Reason Budget Not Spent

TITLE II HEALTH INSURANCE CONTINUATION PROGRAMS
DATA SET

I. CLIENT-LEVEL DATA	II. ANNUAL ADMINISTRATIVE REPORT
1. Unique Record Number	1. State Program Number
2. Start Date	2. Number of Clients at Beginning of Period
3. Client Status in Program/Reason for Inactivity	3. Number of New Clients
4 Zip Code	4. Number of Clients at End of Period
5. Year of Birth	5. Program Funding By Source
6. Gender	6. Program Expenditures
7. Racial/Ethnic Heritage	7. Premium Payments and Number of Clients
8. Employment Status/Medically Unable to Work	8. Deductible Payments and Number of Clients
9. Annual Individual Income/Receipt of Public Assistance	9. Copayment Payments and Number of clients
10. Payments of Premium and Number of Months	10. Risk Pool Payments and Number of Clients
11. Payments of Deductibles and Number of Months	11. Residual Budget/Reason Funds Not Spent
12. Payments of Copayments and Number of Months	
13. State Risk Pool Payments and Number of Months	

APPENDIX B

CLIENT-LEVEL DATA SETS FOR THE URS

REVISED URS DATA SET

TITLE I PROGRAMS, TITLE II CONSORTIA, AND TITLE II HOME- AND COMMUNITY-BASED CARE PROGRAMS
CLIENT-LEVEL DATA SET FOR THE URS

Element Name or Description	Disposition
Client Characteristics	
Elements for all Providers	
Unique record number	**Same**
Intake date	Modified
Date of latest contact (changed to: Date of most recent update to client's record)	Modified
Client ZIP code	Modified
Year of birth	Same
Gender	Modified
Racial/ethnic heritage	Modified
Sexual orientation (optional)	Deleted
Living arrangements (7 elements)	Deleted
Homeless (now only reported by case management and medical providers)	Deleted
Employment status	Deleted
Medically unable to work	Deleted
Income	Modified
Receiving public assistance	Deleted
Does client have private insurance?	Modified
Does client receive Medicaid?	Modified
Does client receive Medicare?	Deleted
Does client have other public insurance?	Same
HIV status	New
Source of information on HIV status	New
AIDS status	New
Source of information on AIDS status	New
Primary health care aource (now only reported by case management and medical providers)	Deleted

Element Name or Description	Disposition
Additional Elements for Case Management Organizations Only	
CD4 plus lymphocyte count (previously reported only by medical providers)	New
Source of CD4 count	New
Homelessness	Modified
Active substance abuse	New
Active psychiatric illness	**New**
Primary health care source	**Same**
HIV-positive year (previously only reported by medical providers)	New
Additional Elements for Primary Medical Providers Only	
CDC-defined disease stage (Adult/Adolescent)	**New**
CDC-defined disease stage (Pediatric)	**New**
HIV-positive year	Modified
AIDS year	Deleted
AIDS location	Deleted
Opportunistic infection	Deleted
Malignancies	Deleted
AIDS dementia, PML	Deleted
Wasting Syndrome	Deleted
CD4 plus lymphocyte (T-cell) count	Modified
CD4 less than 20% total lymphocyte count	Deleted
Tuberculosis **(PPD)** status	Modified
TB Treatment Status	New
Was PPD performed last year?	New
Result of PPD performed in last year	New
Is client anergic	New
Syphilis	Deleted
Influenza shot this reporting period	Deleted
Hepatitis B vaccine	Deleted
Pneumovax	Deleted
Homelessness	Modified

Element Name or Description	Disposition
Active substance abuse	New
Active psychiatric illness	New
Primary health care source	Same
HIV exposure category	
Sex with male	Deleted
Adult/Adolescent: men who have sex with men	New
Sex with a female	Deleted
Injects non-prescription drugs (Adult/Adolescent: injection drug use)	Modified
Sex with person with HIV/AIDS infection (risk not specified)	Deleted
Sex with intravenous/injection drug user	Deleted
Adult/Adolescent: heterosexual contact with a person with or at increased risk for HIV infection	New
Transfusion of blood, recipient of blood components, or receipt of clotting factor for coagulation disorder (change: Adult/Adolescent)	Modified
Sexual abuse or assault (change: Pediatric sexual abuse or contact)	Modified
Worked in a health care setting	Deleted
If under 13, mother with HIV/AIDS (change: Pediatric: Mother with or at risk for HIV infection)	Modified
Pediatric: hemophilia/coagulation disorder; recipient of transfusion of blood, blood components, or tissues; other/undetermined risk	New
Other	Deleted
Service Data[a] - All Providers	
Case management: face to face encounter	Same
Case management: other encounter	New

[a]All service data remained the same except case management as noted

REVISED URS DATA SET

AIDS DRUG ASSISTANCE PROGRAMS
CLIENT-LEVEL DATA SET FOR THE URS

Element Name or Description	Disposition
Client Characteristics	
Unique record number	Same
Enrollment date	Modified
Client ZIP code	Modified
Year of birth	Same
Gender	Modified
Racial/ethnic heritage	Modified
Employment status	Deleted
Medically unable to work	Deleted
Income	Deleted
Receiving public assistance	Deleted
Private insurance	Modified
Does client Medicaid?	Modified
Does client receive Medicare?	Deleted
Does client have other public insurance?	Same
Prescription coverage	Deleted
AIDS status	Deleted
CD4 (T-cell) plus lymphocyte count	Deleted

NOTE: All service data remained the same, but the modes of drug administration were removed.

REVISED URS DATA SET

HEALTH INSURANCE CONTINUATION PROGRAMS
CLIENT-LEVEL DATA SET FOR THE URS

Element Name or Description	Disposition
Client Characteristics	
Unique record number	Same
Start date	Modified
Program status	Deleted
Reason for inactivity	Deleted
Client ZIP code	Modified
Year of birth	Same
Gender	Modified
Racial/Ethnic heritage	Modified
Employment status	Deleted
Medically unable to work	Deleted
Income	Deleted
Receiving public assistance	Deleted

NOTE: All service data remained unchanged except deductible months, which was deleted.