

**Pneumonia and Influenza**  
Summary of Methods and Data for Estimate of Costs of Illness

- |   |                 |
|---|-----------------|
| 1. Estimated Total Economic Cost  | \$ 25.6 billion |
| Estimated Direct Cost   | \$ 18.6 billion |
| Estimated Indirect Cost   | \$ 7.0 billion  |
| Reference Year  | 1999            |
| IC Providing the Estimate   | NHLBI           |
|   |                 |
| Direct Costs Include: Other related nonhealth costs   | No              |
| Indirect Costs Include:   |                 |
| Mortality costs   | Yes             |
| Morbidity costs: Lost workdays of the patient   | No              |
| Morbidity costs: Reduced productivity of the patient  | No              |
| Lost earnings of unpaid care givers   | No              |
| Other related nonhealth costs   | No              |
| Interest Rate Used to Discount Out-Year Costs   | 6 %             |
| 2. Category code(s) from the International Classification of Diseases, 9th Revision, Clinical Modification, (ICD-9-CM) for all diseases whose costs are included in this estimate: <u>480-487</u> . |                 |
| 3. Estimate Includes Costs:   |                 |
| Of related conditions beyond primary, strictly coded ICD-9-CM category  | No              |
| Attributable to the subject disease as a secondary diagnosis  | No              |
| Of conditions for which the subject disease is an underlying cause  | No              |
| 4. Population Base for Cost Estimate (Total U.S. pop or other)  | Total U.S. pop. |
| 5. Annual (prevalence model) or Lifetime (incidence model) Cost:  | Annual          |
| 6. Perspective of Cost Estimate (Total society, Federal budget, or Other)   | Total Society   |
| 7. Approach to Estimation of Indirect Costs   | Human Capital   |
| 8. <u>Source of Cost Estimate</u> : (Reference published or unpublished report, or address and telephone of person/office responsible for estimate)   |                 |

Unpublished. Contact Mr. Thomas Thom, NHLBI, 301-435-0710.

9. Other Indicators of Burden of Disease:

Combined, these two diseases comprise the sixth leading cause of death as an underlying cause, and pneumonia is a common contributing cause to many more deaths. Influenza is one of the most common acute illnesses.

10. Commentary:

Direct costs by type of cost for total respiratory diseases in 1995 were estimated by Tom Hodgson (National Center for Health Statistics) in a report to be published. He used a variety of survey data from NCHS and the Health Care Financing Administration, and elsewhere. Pneumonia and influenza costs for 1995 are estimated by applying to Hodgson's total respiratory

costs the proportions that pneumonia and influenza are of total respiratory diagnoses for: a) hospital days, b) physician office visits, c) drug mentions in physician visits, and d) home health discharges in the latest NCHS surveys. HCFA estimates of personal health care expenditures increased 22% over the four years 1993 (\$790.5 billion) to 1997 (\$969.0 billion). This percent increase is applied to the costs in 1995 to estimate them for 1999. Only the primary diagnosis of pneumonia and influenza reported in the surveys was considered. Allocating costs according to the primary diagnosis eliminated overlap with other diseases. Costs associated with pneumonia and influenza as a comorbid condition to some other primary diagnosis were not included. Costs incurred by family or other personal caregivers for pneumonia and influenza patients cannot be estimated and were not included. The national health expenditures that cannot be allocated to diseases (e.g. construction and research) were not included in the pneumonia and influenza direct costs.

Indirect morbidity costs of pneumonia and influenza could not be estimated. The indirect mortality cost of pneumonia and influenza in 1999 represents lost productivity based on lost earnings attributed to premature deaths from pneumonia and influenza in that year. It was estimated by applying the numbers of pneumonia and influenza deaths in 1997, by age and sex, reported from national vital statistics, to the age-sex estimates of the present value of lifetime earnings discounted at six percent. These lifetime values were estimated for 1997 by Wendy Max and Dr. Dorothy Rice (University of California, San Francisco). They are not published. They were obtained by personal communication. Those values were inflated to 1999 using an inflation factor (10%) based on the 1995-1997 change in mean annual earnings of year-round full time workers reported by the Bureau of the Census. Pneumonia and influenza deaths in 1997 were those where pneumonia and influenza was the underlying cause of death regardless of what other contributing causes may have been present. Other deaths, where pneumonia and influenza was a contributing cause, were not included. The accuracy of estimates of the present value of lifetime earnings has not been assessed by anyone at NHLBI; estimates were taken at face value.