Regulatory Framework for Assuring Quality of Cytology Screening

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Introduction

- Law
- Regulations
  - Quality Control
  - Proficiency Testing
- Cytology PT Chronology
- CLIA Approved Programs
- Process Overview – 2007 NPRM

CLIA Law---October 31, 1988

Periodic confirmation and evaluation of the proficiency of individuals involved in screening or interpreting cytological preparations, including announced and unannounced on-site proficiency testing of such individuals, with such testing to take place, to the extent practicable, under normal working conditions.

CLIA Regulations---February 28, 1992

- Contain specific requirements for Cytology
  - Quality control – Subpart K
  - Proficiency testing – Subpart H and Subpart I
    - Subpart H – what the laboratory must do
    - Subpart I – what the proficiency testing (PT) program must do
  - Personnel – Subpart M

http://www.phppo.cdc.gov/clia/regs/toc.aspx

Regulatory Components Must Fit

All the parts are required for quality performance

Subpart K---Quality Control

- Staining
  - Policies and procedures in place
  - Measures to prevent cross contamination
- Control procedures
  - 10% random review of negative gynecologic cases (including high risk)
  - Cytology/Histology correlation
  - 5 year retrospective review of all HSIL cases
  - Evaluation of case reviews of each individual vs. laboratory's overall statistical values
- Workload limits
  - Based on individual performance/review of statistics
  - Reassessed every 6 months
  - Not to exceed 100 slides/24 hours

Subpart K---Quality Control (contd.)

- Slide examination and reporting
  - Technical supervisor confirms all reactive/reparative and above and non-gynecological slides
  - Report contains narrative descriptive nomenclature
  - Unsatisfactory specimens and slides are reported
  - If corrected report is issued, states basis for correction
- Record and slide retention
- Documentation of testing and control procedures
- Periodic inspection of cytology laboratories by cytology personnel

Subpart H---PT Laboratory

The laboratory must ensure:

- Each individual performing gynecologic cytology examinations is enrolled in a program
- Each individual obtains a passing score (90%)
- Required remedial actions are taken following any failure of a testing event

Subpart I---PT Program

The PT program must:

- Submit an application by July 1 for approval and testing next calendar year
- Be a non-profit organization
- Provide annual testing and retesting (for scoring <90%)
- Provide announced and unannounced testing
- Compile 10 and 20 glass slide test sets
  - Each slide must have consensus of 3 pathologists
  - Each test set must include one slide from each category
- Score tests using CLIA scoring for pathologists (TS) and cytotechnologists
- Provide test reports to participants, laboratories, CMS
- Maintain documentation of testing

Testing Sequence

- Initial - 10 slide test
- Retest - 10 slide test
- Second retest – 20 slide test
- Third retest – 20 slide test

Testing Schematic

Test	Individual who scores <90% must….	Laboratory must..
First test 10 slides, 2 hrs	retest within 45 days	Enroll each individual Schedule retest
Second test 10 slides, 2 hrs	retest within 45 days Remedial training	Provide remedial training Reexamine slides until passes retest Schedule retest
Third test 20 slides, 4 hrs	complete 35 hrs continuing education Retest	Assure 35 hrs continuing education Ensure ceases to examine slides until passes retest Schedule retest
Fourth test 20 slides, 4 hrs	cease examining gyn slides	Assure 35 hrs continuing education Ensure ceases to examine slides until passes retest Schedule retest

PT Diagnostic Categories

- A **Unsatisfactory** for diagnosis due to:
  - Scant cellularity
  - Air drying
  - Obscuring material (blood, inflammatory cells, or lubricant)
- B **Normal or Benign Changes-**-includes:
  - Normal, negative or within normal limits
  - Infection other than Human Papillomavirus (HPV) (e.g., Trichomonas vaginalis, changes or morphology consistent with Candida spp., Actinomyces spp. or Herpes simplex virus)
  - Reactive and reparative changes (e.g., inflammation, effects of chemotherapy or radiation)
- C **Low Grade Squamous Intraepithelial Lesion-**-includes:
  - Cellular changes associated with HPV
  - Mild dysplasia/CIN-1
- D **High Grade Lesion and Carcinoma-**- includes:
  - High grade squamous intraepithelial lesions which include moderate dysplasia/CIN-2 and severe dysplasia/carcinoma in- situ/CIN-3
  - Squamous cell carcinoma
  - Adenocarcinoma and other malignant neoplasms.

Cytology PT Chronology

- October 1988 - CLIA Law mandated proficiency testing (PT) for Cytology personnel
- May 1990 – Proposed Rule Published
- February 1992 - CLIA Regulations require glass slide PT (GSPT)
- December 1993 - CLIAC recommended pursuing computer-based options

Cytology PT Chronology

- September 1994 - Awarded cooperative agreements to ASCP, NEMC, and TJU to develop computer-based testing prototypes
  - Multiple digital images – not a virtual slide
  - Did not test locator skills per participant evaluations

Cytology PT Chronology (contd.)

January 1995 - Awarded contract to Analytical Sciences, Inc. (ASI)

- Compared GSPT and CBPT scores to recent work performance score
- Work performance score equals evaluation of the rescreen of 500 slides
- CBPT model was CytoView I (CDC prototype virtual slide program)

ASI Study Results

July 1997 - Completed ASI study

- Correlation GSPT and rescreen = 0.30
- Correlation CBPT and rescreen = 0.29

Low probability of observing correlation by chance (<5 in 1000)

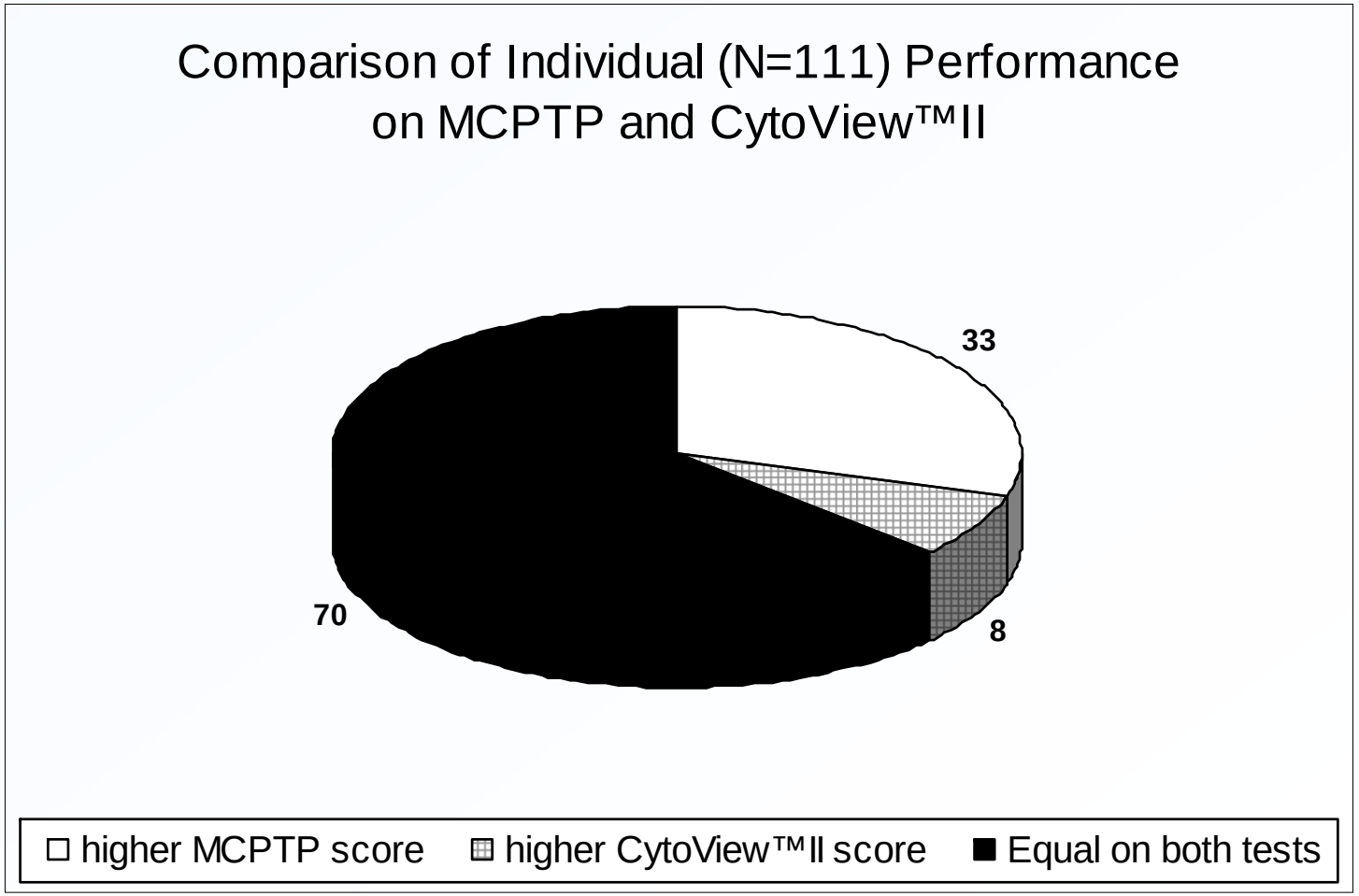
ASI Study Criticism

- Correlation is low due to measurement uncertainty with 10 items
- Direct comparison of CBPT and GSPT not performed
- Did not evaluate work place performance of pathologists

Cytology PT Chronology (contd.)

- February 2002 - Maryland Study
  - Compare performance on GSPT and CBPT
  - Pathologist/cytotechnologist team testing
  - CBPT was CytoView II (CDC patented virtual slide program)

Maryland Study Results



Maryland Study Conclusion

- Each slide (glass or virtual) must be field validated by cytotechnologists and pathologists.
- If field validation and CLIA referencing of virtual slides is comparable to glass slides, computer-based testing can be equivalent to glass slide testing.

MariBeth Gagnon, Stanley Inhorn, John Hancock, Barbara Keller, Dana Carpenter, Toby Merlin, Thomas Hearn, Pamela Thompson, Rhonda Whalen. **Comparison of Cytology Proficiency Testing- Glass Slides vs. Virtual Slides.** *Acta Cytologica* 2004;48(6): 788-794.

CLIA Approved PT Programs

- 1995 - State of Maryland Cytology Proficiency Testing Program
- 2005 - Midwest Institute for Medical Education, Inc.
- 2006 - College of American Pathologist
- 2006 - American Society of Clinical Pathologists (through acquisition of MIME program)

Process Overview for Developing NPRM

- Focus is on developing regulation – not on changing the statute
- Must go through the rulemaking process
- Solicit comments from cytology organizations
- Create a CLIAC workgroup
  - Consider the comments
  - Report findings to CLIAC
- Obtain input from PT providers
- CLIAC makes recommendations to HHS
- CDC/CMS develop proposed rule

Don’t over-compensate!

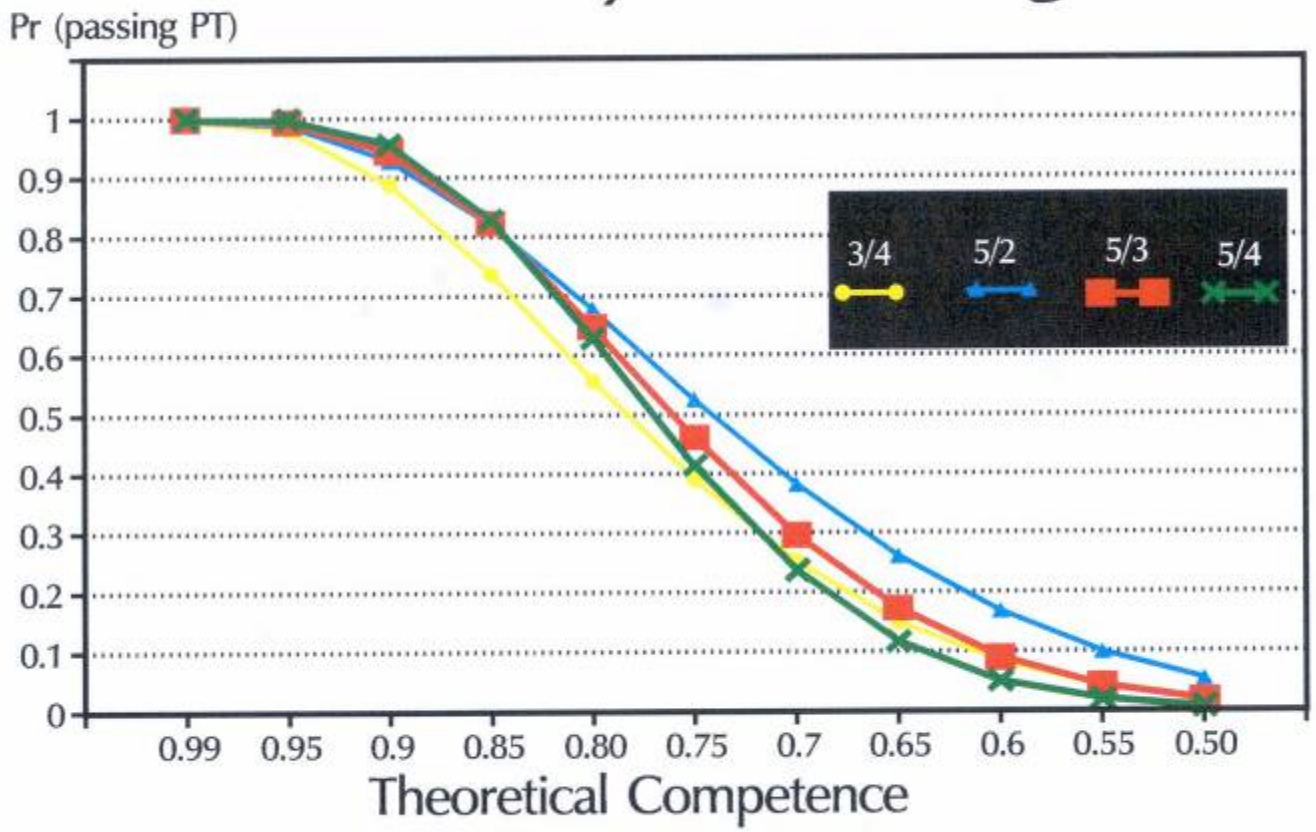
Cytology Requirements for PT in the 1990 Proposed Rule - 1992

- 2 PT events per year – changed to 1 in 1992
- 20 slide test – changed to 10 in 1992
- Scoring system based on awarding -1 to 2 points per slide response and adjusted to a 100 point score – changed in 1992 rule
- Re-screen 500 negative slides if cytotechnologist fails first event – changed in 1992 rule

Proficiency Testing Variables

- Difficulty of challenges
- Number of challenges per event
- Number of events in the “grading” interval
- Scoring scheme versus reasonable performance
- Distribution of slides representing various pathologies per event...and over events

Probability of Passing



High Performing Cytology Screening