

CT AND SCT PRACTICE ANALYSIS REPORT

For Development of
CT(ASCP) & CT(ASCPⁱ)
and

SCT(ASCP) & SCT(ASCPⁱ)

Content Guideline and Examinations
for Exam Publication January 1, 2020

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INTRODUCTION

The purpose of conducting a practice analysis (a.k.a. job analysis or job task analysis) is to provide the foundation of a certification examination by defining practice in a profession. The practice analysis provides evidence of content validation. It is required by psychometric standards and is considered best practices for high-stakes examination development. It also ensures the certification examination is fair, valid, job-related, and most importantly, legally defensible (Chinn and Hertz 2010)¹. The ASCP Board of Certification (BOC) conducts a practice analysis approximately every five years in accordance with ASCP BOC Policy and requirements of the accrediting body, ANSI (American National Standards Institute), under ANSI/ISO/IEC 17024:2012.

A practice analysis is a formal process for determining or verifying the responsibilities of individuals in the job/profession, the knowledge individuals must possess, and the skills necessary to perform the job at a minimally competent level. The practice analysis process provides a complete and modern understanding of the duties and functions of practicing laboratory professionals. The results of the practice analysis inform the specifications and content of the ASCP BOC certification examinations. The practice analysis process ensures that the examinations are reflective of current practices. It also helps guarantee that individuals who become certified are current and up-to-date on the state of cytotechnology and are competent to perform as certified laboratory professionals.

PRACTICE ANALYSIS PROCESS

ASCP BOC conducted a practice analysis survey to inform the following certification examination categories:

- Cytotechnologist (CT)
- Specialist in Cytotechnology (SCT)

The process for conducting a practice analysis consists of the following steps:

1. Survey Development
2. Demographics
3. Task Inventory – Knowledge and Skill Questions
4. Rating Criteria
5. Survey Construction
6. Pilot Testing and Revision
7. Survey Distribution
8. Survey Analysis
9. Committee Review and Discussion
10. Examination Content Guideline, Standard Setting, and Exam Publication

¹ Chinn, R.N., and N.R. Hertz. 2010. *Job Analysis: A Guide for Credentialing Organizations*. Lexington: Council on Licensure, Enforcement and Regulation (CLEAR).

SURVEY DEVELOPMENT

During the 2015 ASCP BOC examination committee meeting, the Cytotechnology Examination Committee provided the input and discussion to develop a practice analysis survey. The committee members (subject matter experts) collectively discussed all pertinent aspects of their profession to design a concise survey to extract useful feedback from field professionals while maximizing response rate. The survey had two main components: demographics and task inventory with appropriate rating scales for each.

DEMOGRAPHICS

The demographic questions asked about experience, education, gender, age, titles, work shift, type of facility, areas of lab work, work hours, etc. The purpose of these questions was to aid the committee in deciding whether the sample of respondents obtained was representative of the profession in general. The demographic data provided analytic categories that allowed refinement of the survey population to utilize only those responses from individuals at the targeted professional level.

TASK INVENTORY – KNOWLEDGE AND SKILL QUESTIONS

The survey was broken into two core areas: knowledge and skills. The committee developed a series of knowledge areas and job-related task questions that formed the body of the survey.

The survey had nine major sections:

- General Knowledge
- Gynecological Cytology
- Respiratory System
- Genitourinary System
- Body Cavity Fluids
- Gastrointestinal System
- Fine Needle Aspirations (FNAs) and Other
- Laboratory Operations
- Management

RATING CRITERIA

Different rating scales were used to assess the knowledge and skills on the survey. One rating scale was used for the knowledge-only tasks and asked respondents to assess the significance of having that knowledge to perform their job. The rating scale used for the skill-related tasks assessed whether respondents performed the specific task or not in their jobs.

SURVEY CONSTRUCTION

The practice analysis survey was created and delivered through Key Survey, an electronic survey vendor from Highroad Solution. Using an electronic tool allowed survey review and testing via the internet, email tracking of respondents using email addresses, and the ability to send email reminders for completion of the survey.

PILOT TESTING AND REVISION

The Cytotechnology Committee tested pilot versions of the survey. They reviewed and revised different aspects of the survey (e.g., information correctness, grammar/spelling errors, electronic glitches, correct survey branching, etc.). The pilot testing comments and edits informed the final version of the survey.

SURVEY DISTRIBUTION

The Cytotechnology Committee determined that the survey should be sent to all current CT and SCT certificants in the ASCP BOC Personify database. The survey was open for a three-week period between September 14, 2015 – October 4, 2015. ASCP BOC staff also directly emailed the survey to the Cytotechnology Committee and encouraged the committee membership to disseminate the survey to their colleagues. Additionally, the survey link was posted on ASCP social media sites (e.g., Facebook and Twitter).

SURVEY ANALYSIS

The respondents were asked to answer all questions and rate all tasks in the survey. The tasks were divided amongst nine major sections (General Knowledge, Gynecological Cytology, Respiratory System, Genitourinary System, Body Cavity Fluids, Gastrointestinal System, Fine Needle Aspirations [FNAs] and Other, Laboratory Operations, and Management).

Responses from individuals currently working as a supervisor or manager were considered to be inappropriate for the entry-level CT certification category and were therefore excluded from the analysis. The responses from these individuals were included in the analysis for the Specialist in Cytotechnology exam category. Any individuals not currently practicing (e.g., retired, unemployed, or simply not working in cytotechnology) were removed from the practice analysis survey.

COMMITTEE REVIEW AND DISCUSSION

During the 2016 examination committee meeting, the Cytotechnology Committee reviewed the practice analysis results. They agreed that the demographic results accurately reflected the CT and SCT populations **(Appendices A & C)**.

In general, tasks performed by at least 40% of the respondents were retained on the task lists and considered valid to be on the examinations. The committee reviewed all tasks performed by less than 40% of the respondents. If the committee determined that these tasks were critical to patient care and/or were up-and-coming in practice, then the task was retained on the task list and considered valid for the examination. If the task was considered outdated or too esoteric, then it was removed from the task list and the exam. The committee decisions were compiled into the Final Task Lists for CT and SCT **(Appendices B & D)** which informed the exam content guideline and the content for the certification exams.

EXAM CONTENT GUIDELINE, STANDARD SETTING, AND EXAM PUBLICATION

The committee revised the CT and SCT exam content guideline to reflect the practice analysis results. They reviewed the exam content area percentages and decided where to set them based on the results of the practice analysis. The committee reviewed the exam databases according to the new content guideline and deleted or revised questions accordingly. They wrote new questions to fulfill the new content guideline, and reclassified questions according to the new guideline. After this work was completed, the committee set a new standard for each exam, and the new exam databases were published.

CYTOTECHNOLOGIST (CT) DEMOGRAPHIC ANALYSIS

Total respondents: 677

Total usable: 235

Usable individual respondents met the following criteria:

- Currently employed as a non-supervisory cytotechnologist

Summary:

- Certifications:
 - 100% are CT certified
- Education:
 - 6% have an associate degree or lower
 - 80% have a baccalaureate degree or post-baccalaureate program certificate
 - 14% have a master's degree or higher
- Experience:
 - 25% have less than 5 years
 - 13% have 6 – 10 years
 - 62% have 11 or more years
- Geographic Distribution: there are respondents from across the U.S., and states with the highest response rate include:
 - 6% each from California, Minnesota, and Texas
 - 5% each from New Jersey and Illinois
 - 4% each from Wisconsin and Pennsylvania
- Facility:
 - 64% work in hospitals
 - 33% work in independent labs
 - 3% work in other facilities
- Age:
 - 19% are younger than 30 years of age
 - 63% are 30 – 59 years of age
 - 14% are over 60 years of age
 - 4% chose not to answer this question
- Gender:
 - 77% are female
 - 19% are male
 - 4% chose not to answer this question

CYTOTECHNOLOGIST (CT)

FINAL TASK LIST (TOPICS KEPT ON EXAM BASED ON PRACTICE ANALYSIS RESULTS)

GENERAL KNOWLEDGE
Anatomy, physiology, and embryologic origins
Histology and normal cellular morphology
Pathology, cytopathology, and biologic behavior
Molecular mechanisms of disease
GYNECOLOGICAL CYTOLOGY
Conventional Pap Tests
Liquid-based Pap Tests
RESPIRATORY SYSTEM (Does not include FNA)
Sputum
Bronchial brush
Bronchial wash/secretion
Bronchioalveolar lavage (BAL)
GENITOURINARY SYSTEM (Does not include FNA)
Urine (voided and catheterized)
Bladder wash/brush
Renal pelvis/ureter/urethra: wash/brush
BODY CAVITY FLUIDS (Does not include FNA)
Pleural
Peritoneal
Pericardial
Cerebrospinal
Vitreous
Synovial

GASTROINTESTINAL SYSTEM (Does not include FNA)
Anal/rectal Paps
Oropharyngeal cavity
Esophagus, stomach, small/large intestine
Bile duct
FINE NEEDLE ASPIRATIONS (FNAs) and OTHER
Adrenal glands
Bone and soft tissue
Breast
Kidney
Liver
Lung
Lymph nodes
Pancreas
Salivary glands
Thyroid gland
Spleen
Ovary
Eye
Esophagus, stomach, small/large intestine
Bile duct
Skin/surface scrapings
LABORATORY OPERATIONS
SPECIMEN COLLECTION, PREPARATION, AND PROCESSING
Exfoliative specimens
FNA (Fine Needle Aspiration) slide preparation
Rapid on-site evaluation (ROSE) for adequacy and triage of superficial FNA
Rapid on-site evaluation (ROSE) for adequacy and triage of ultrasound/CT guided FNA
Rapid on-site evaluation (ROSE) for adequacy and triage of EUS (endoscopic ultrasound) FNA
Rapid on-site evaluation (ROSE) for adequacy and triage of EBUS (endobronchial ultrasound) FNA
Accessioning
Specimen triage and ancillary testing
Reagent preparation, labeling, and storage
Routine staining (e.g., Papanicolaou, Romanowsky)
Coverslipping
Direct smears

Touch preps
Cell blocks
QUALITY MANAGEMENT
Quality Control (e.g., stain check, temperature check)
Calculations and unit conversions (e.g., dilutions, reagent preparation, graphs, statistics)
Instrument setup, troubleshooting, and/or repair
Instrument maintenance and/or calibration
Evaluation/validation of new instrumentation, methodologies, or assays
10% negative rescreen
5-year retrospective review
Cytology-histology correlation
Quality assessment
Risk management
SAFETY AND COMPLIANCE
Personal safety (e.g., PPE, fire)
Chemical hygiene (e.g., SDS, NFPA)
Infection control activities
Lab accreditation and government regulations (e.g., CLIA, HIPAA, CAP, The Joint Commission)
OTHER LAB OPS
Reporting lab results
Communication with healthcare providers (i.e., internal and external clients)
Clerical functions (e.g., registration/data-entry, billing, and coding)
Telepathology (e.g., image acquisition and/or transmission to remote sites for consultation)
Training and education of residents, fellows, cytotechnology students
COMPANION DIAGNOSTICS
Preliminary interpretation of in situ hybridization (e.g., FISH , CISH)
Preliminary interpretation of histochemical special stains (e.g., mucin, GM)
Preliminary interpretation of immunochemical stains (e.g., keratin, S100, TTF-1)
HPV testing (e.g., Hybrid Capture II, Invader Technology, PCR)
Interpretation of cell blocks
Interpretation of touch preps
INSTRUMENTATION
Light microscope
Liquid-based – filter (e.g., ThinPrep®)
Liquid-based – sedimentation (e.g., SurePath™)
Computer-assisted screening devices (e.g., ThinPrep® Imaging System, BD FocalPoint™)
Centrifuge
Cytocentrifuge

Automatic stainer

Automatic coverslipper

SPECIALIST IN CYTOTECHNOLOGY (SCT) DEMOGRAPHIC ANALYSIS

Total Respondents: 677

Total usable: 222

Usable individual respondents met the following criteria:

- SCT certified
- Includes respondents who fit any of the following criteria:
 - Cytotechnologist (supervisory)
 - Laboratory manager/director
 - Clinical educator

Summary:

- Certifications: individuals may have multiple credentials
 - 93% are CT certified
 - 32% are SCT certified
 - 8% are MB certified
- Education:
 - 4% have an associate degree or lower
 - 69% have a baccalaureate degree or post-baccalaureate program certificate
 - 27% have a master's degree or higher
- Experience:
 - 2% have less than 5 years
 - 10% have 10 years or less
 - 88% have 11 years or more
- Geographic Distribution: there are respondents from across the U.S., and states with the highest response rate include:
 - 10% from New York
 - 7% each from California and Pennsylvania
 - 5% from Ohio
- Facility:
 - 75% work in hospitals
 - 20% work in independent labs
 - 5% work in other types of facilities
- Age:
 - 3% are younger than 30 years of age
 - 77% are 30 – 59 years of age
 - 15% are over 60 years of age
 - 5% chose not to answer this question
- Gender:
 - 70% are female
 - 27% are male
 - 3% chose not to answer this question

SPECIALIST IN CYTOTECHNOLOGY (SCT)

FINAL TASK LIST (TOPICS KEPT ON EXAM BASED ON PRACTICE ANALYSIS RESULTS)

GENERAL KNOWLEDGE
Anatomy, physiology, and embryologic origins
Histology and normal cellular morphology
Pathology, cytopathology, and biologic behavior
Molecular mechanisms of disease
GYNECOLOGICAL CYTOLOGY
Conventional Pap Tests
Liquid-based Pap Tests
RESPIRATORY SYSTEM (Does not include FNA)
Sputum
Bronchial brush
Bronchial wash/secretion
Bronchioalveolar lavage (BAL)
GENITOURINARY SYSTEM (Does not include FNA)
Urine (voided and catheterized)
Bladder wash/brush
Renal pelvis/ureter/urethra: wash/brush
BODY CAVITY FLUIDS (Does not include FNA)
Pleural
Peritoneal
Pericardial
Cerebrospinal
Vitreous
Synovial

GASTROINTESTINAL SYSTEM (Does not include FNA)
Anal/rectal Paps
Oropharyngeal cavity
Esophagus, stomach, small/large intestine
Bile duct
FINE NEEDLE ASPIRATIONS (FNAs) and OTHER
Adrenal glands
Bone and soft tissue
Breast
Kidney
Liver
Lung
Lymph nodes
Pancreas
Salivary glands
Thyroid gland
Spleen
Ovary
Eye
Esophagus, stomach, small/large intestine
Bile duct
Skin/surface scrapings
LABORATORY OPERATIONS
SPECIMEN COLLECTION, PREPARATION, AND PROCESSING
Exfoliative specimens
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Evaluation/validation of new instrumentation, methodologies, or assays
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Risk management
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Infection control activities
Lab accreditation and government regulations (e.g., CLIA, HIPAA, CAP, The Joint Commission)
OTHER LAB OPS
Reporting lab results
Communication with healthcare providers (i.e., internal and external clients)
Clerical functions (e.g., registration/data-entry, billing, and coding)
Telepathology (e.g., image acquisition and/or transmission to remote sites for consultation)
Research-related activities (e.g., clinical trials, IRB)
Process improvement (e.g., LEAN/Six Sigma)
Training and education of residents, fellows, cytotechnology students
Preparation of educational materials (e.g., slide study sets)
Digital photography
COMPANION DIAGNOSTICS
Preliminary interpretation of in situ hybridization (e.g., FISH , CISH)
Preliminary interpretation of histochemical special stains (e.g., mucin, GM)
Preliminary interpretation of immunochemical stains (e.g., keratin, S100, TTF-1)
HPV testing (e.g., Hybrid Capture II, Invader Technology, PCR)
Infectious non-HPV testing (e.g., GC/Chlamydia, vaginitis)
Interpretation of cell blocks
Interpretation of touch preps

INSTRUMENTATION
Light microscope
Liquid-based – filter (e.g., ThinPrep®)
Liquid-based – sedimentation (e.g., SurePath™)
Computer-assisted screening devices (e.g., ThinPrep® Imaging System, BD FocalPoint™)
Centrifuge
Cytocentrifuge
Automatic stainer
Automatic coverslipper
MANAGEMENT
Supervision/direction of department staff in daily operations
Direct Laboratory Information System (LIS) development, implementation, and maintenance
Regulatory compliance and lab accreditation maintenance
Departmental policy/procedure writing, review, and revision
Development and implementation of disaster or emergency procedures/preparedness
Quality Assurance Program oversight (e.g., peer group QC evaluation, cross-functional teams, outcome measures)
Evaluation of quality assessment/improvement activities
Financial management (e.g., budget preparation, accounting principles)
Personnel management (e.g., hiring, discipline, job description, evaluations)
Conducts and/or prepares sectional/institutional meetings
Development, implementation, and evaluation of a Competency Testing Program