




Laboratory Accreditation

An Overview

Argie P. Leach MHS,MT(ASCP)SH

Objectives




- Accrediting agencies
- CAP role in accreditation process
- CAP inspections
- Checklists
- Everyone's participation


2

History of Improved Health Care

Over 150 years ago



Ignaz Semmelweis
Pioneer of antiseptic procedures





Florence Nightingale
Founder of Modern Nursing

- 1846 – Ignaz Semmelweis
 - Assistant Professor at John Hopkins
 - Hand washing
 - required all his medical students to wash their hands with chlorine solution before doing OB exam. The students routinely switched from doing autopsy to giving birth causing 18% of women giving birth to die from puerperal fever (childbed fever).
- 1854 – Florence Nightingale
 - Public Health Pioneer saw that poor hospital sanitation resulted in a increase in fatalities among the wounded soldiers in the Crimean War
 - Developed practices which are still in existence today
 - Sanitizing surgical tools
 - Changing bed linens regularly
 - Promoter of good nutrition and clean air

Hand washing alone can prevent 40% of hospital infections!

3

Hospital Reform Timeline

- 1847 American Medical Association (AMA) – formed to standardize medical education
- 1917 American College of Surgeons (ACS) proposed the "End Result System" for its Hospitalization Standardization Program which set minimum standards for hospitals
 - In 1918 began implementing standards to inspect hospitals – only 25% met the minimum requirements
- 1951 The Joint Commission on Accreditation of Hospitals was formed by American College of Surgeons, American College of Physicians, the American Hospital Association, the American Medical Association and the Canadian Medical Association
- 1962 College of American Pathologist implemented a Laboratory Accreditation Program
- 1991 national attention was finally gained for hospital reform when it was reported that 18,000 people die yearly in hospitals due to preventable medical error.
 - To Err is Human: Building a Safer Health System

4

Agencies

Regulating Laboratories




- CAP – College of American Pathologists
- TJC – The Joint Commission
- COLA – Commission of Office of Laboratory Accreditation
- OSHA – Occupational Safety and Health Administration
- FDA – Federal Food Administration
- AABB – American Association of Blood Bankers
- OIG – Office of Inspector General
 - Oversees Billing Fraud
- OCR – Office of Civil Rights
 - Enforces HIPAA

5

CLIA


Clinical Laboratory Improvements Amendment



- 1967 Congress passes 1st CLIA Law
- To regulate costs and quality of health care
- Only required hospitals and large clinical laboratory
- Impetus for CLIA '88
- Pap Mills turning out inaccurate results
- 1987 Series of articles which appeared in Wall Street Journal
- Response of the public furor from one or more deaths due to False-Negative PAP smear reading
- Congress passed law 1988
- CLIA '88 purpose is to ensure that all laboratory testing is done accurately and according to good quality standards
 - Requires employee training and competency
 - Must assess the competency of all testing personnel who handle human specimens
 - Established the requirements for performance and documentation of initial training and on going competency

6


CLIA Clinical Laboratory Improvements Amendment Continued



- 1992 Centers for Medicare and Medicaid Services (CMS), published regulations to enforce the CLIA law
- Regulates all testing on humans for health purposes
- Labs which provide information for diagnosis, prevention or treatment of diseases
- Ensures accurate and reliable testing regardless of the lab and its location
- CLIA regulations place overall responsibility on the laboratory director
- CLIA '88 regulations are based on complexity of the testing the more complex the test the more stringent the standards for quality
- VA labs, research labs and forensic labs are exempted
- CMS enforces CLIA

7


CMS Centers for Medicare and Medicaid Services



- Federal Agency with the US department of Health and Human Services (DHHS) that administers Medicare
- Partially funds Medicaid
- Sets the Standards
- Supports CLIA in partnership with CDC and FDA
- Must follow CMS regulations or you cannot bill federally funded programs
- Gives deemed authority to CAP and TJC for inspecting and accrediting labs
- CMS inspects if compliant filed or randomly selects labs
- Formally known as Health Care Financing Administration (HCFA)

8


TJC The Joint Commission



- 1979 Started evaluating laboratories
- 1995 TJC was deemed by CMS to certify labs under Clinical Laboratory Improvements Amendments (CLIA '88) requirements
- Laboratory standard set by TJC include wide variety of labs
 - Hospitals
 - Clinics
 - Home care facilities
 - Reference labs
- Labs that are accredited by CAP do not have to be re-inspected when the hospital the lab is located in is inspected by the Joint Commission
- 2002 Joint Commission establishes the National Patient Safety Goals and Speak Up campaign™
- 2003 Universal Protocol for preventing Wrong Site, Wrong Procedure, Wrong Person Surgery™

9


Laboratory Accreditation Program College of American Pathologist



- Inspected and accredited laboratories since 1962
- Initially only hospital and private pathology labs were inspected
- Now inspects
 - University labs
 - Commercial reference labs
 - Physicians offices

10


Laboratory Accreditation Program College of American Pathologists (CAP)



- Program to improve the quality of Clinical Laboratory Services
 - Voluntary participation
 - Peer Review
 - Education
 - Compliance with performance standards
- 1967 CAP was deemed by Health Care Financing Administration (HCFA) now CMS as a certifying accreditation agency which meets or exceeds CLIA standards.
- Initially approved as an accrediting agency by CMS for 3 years in 1995
- 2015 CMS renewed CAP status as an accrediting agency for 6 more years

11

OSHA Occupational Safety and Health Administration

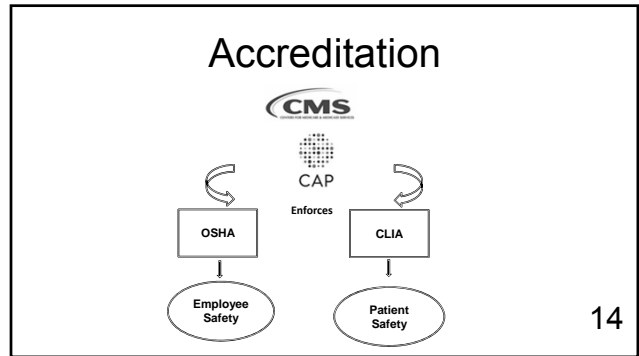
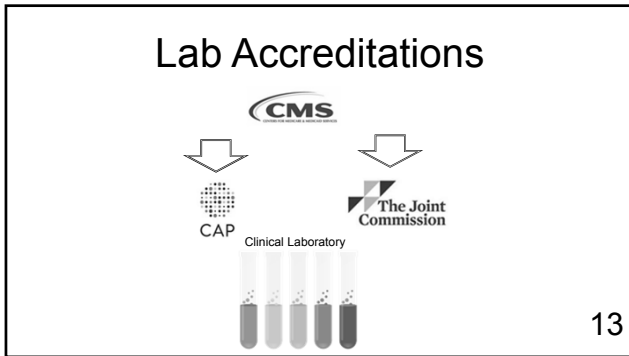


- Main federal agency which enforces workplace health and safety legislation for workers
- Regulations include
 - Blood Borne Pathogen
 - 1985 introduced Universal Precautions
 - 1996 became Standard Precautions to be used on all patients
 - Chemical exposure
 - Ergonomic injuries
 - Fire and Electrical Safety
- Prompts inspection:
 - Reported imminent danger in workplace
 - Fatalities or catastrophes
 - Employee complaint
 - Referral from other agencies
 - Targeted facilities
 - High hazard industries

Source: www.OSHA.gov

Criminal and Civil penalties against an organization or individuals if laws are not followed.

12



University Medical Center New Orleans

Clinical Laboratory

Main Lab

Blood Gases

15

- ### Standards for Laboratory Accreditation
- College of American Pathologist
- Core principles for CAP Laboratory Accreditation Program:
- **Standard I – Director and Personnel**
 - Medical Significance, Interpretation, Consultations, Correlation of Data, Quality Management, Personnel, Selection of Equipment, Delegation of functions and implementation of a safe environment.
 - **Standard II – Physical Resources**
 - Space, instrumentation, data processing, supplies, environment to permit effective performance of personnel
 - **Standard III – Quality Management**
 - Performance improvement, QC, Instrument maintenance, Proficiency testing, Clinical relevance
 - **Standard IV – Administrative Requirements**
 - Eligibility for participation in Laboratory Accreditation Program
 - Pathology and Clinical laboratory must submit to a complete periodic on-site inspection and self inspections
 - Laboratory and laboratory director must cooperate with the Commission on Laboratory Accreditation.
 - Each accredited lab must comply with the Terms of Accreditation listed in the official notice of accreditation sent to the lab by CAP.
- 16

- ## Inspections
- Every two years
 - Anniversary date onsite inspection
 - Self inspections on the off year
 - Anniversary date
 - Administered by lab
 - Deficiencies are noted
 - Should mimic actual inspection
- 17

Self Inspections

- "Treat Self Inspections as a real event"
 - Mock inspection
 - Identify and fix potential noncompliance which could result in deficiencies in a real inspection
- Prepare –
 - Review last inspections deficiencies and make sure the lab is doing what they say they are doing
 - Review all new checklist questions
- Conduct –
 - Should be performed in one day
 - Involve bench techs in process
- Improve –
 - Summation should also be held after the inspection is completed
 - Deficiencies should be reviewed and corrective action implemented
 - Documentation should be available for next on-site review.

18

On-site Inspection Process



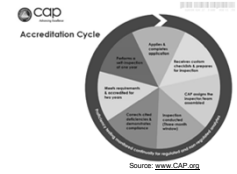
- Peer Review
- Avoid conflict of interest
 - Not having former colleagues or competitors inspect each other
- Team assigned by CAP
- Uses algorithm to match comparable labs
- CAP matches team with comparable lab
 - Test Volumes
 - University Lab Vs Reference Lab

Source: www.CAP.org

19

Ready or Not... Inspection Process begins

- 7 months before inspection window opens
 - Welcome packet in email with application link
 - Application and Organizational Profile must be completed online within 3 months
 - Application includes the following:
 - Lab Director
 - Administration
 - Staff List
 - Blackout Dates
 - Testing volumes
 - Activity Menu
 - Testing performed by each lab
 - Travel accommodations
- 3 months before anniversary date
 - CAP Custom Lab Specific Checklist sent and available online
 - Lab reviews checklist
 - Lab sections are responsible for these checklists:
 - General, Common and Lab Specific Checklist
- Inspection Unannounced - Held within 3 months of anniversary date



Source: www.CAP.org

20

Online Application



Source: www.CAP.org

21

New CAP Roster



- Personnel to include on CAP Roster:
 - High complexity testing
 - Non waived or moderately complex testing
 - Physicians who do PPM
 - Grossing Techs
 - Pathology Staff and Residents
 - Cytotechnologists
- Personnel who do not need to be included:
 - Waived Testing personnel
 - Phlebotomist
 - Histology Techs

Source: www.CAP.org

22

CLIA Roles



- Technical Supervisors
- General Supervisors
- Technical Consultant
- Laboratory Director
- All Staff Pathologists
- All personnel must be included in Staff List to be included in CLIA Role

Source: www.CAP.org

23

Non Laboratory Testing Personnel



Provider Performed Microscopy - Physicians
Nurses who perform non-waived testing

- Provider Performed Microscopy
 - Physicians
- Nurses or Techs who perform non-waived test
 - Respiratory Techs
 - Nurses who do competency evaluations
 - Waived testing personnel are not required

Source: www.CAP.org

24

Online Attachments



- Equipment List
- Organizational Chart
- Laboratory Director CV
- Personnel Roster – New process 2018
 - Names of all testing personnel
 - Template can be loaded only once
 - Updated every 6 months
 - Updated online
 - After initial template loaded all other testing personnel must be entered manually
- Level of testing complexity
- Licensure

25

Source: www.CAP.org

CAP Profiles



- All supervisors or direct participants in the CAP inspection must create a profile on the CAP website.
- This process is a requirement even if you are faxing in application
- Personnel forms are no longer included in with the CAP application packet.

26

Source: www.CAP.org

Laboratory Data



- Print out of all data which was entered in Organization Profile submitted to CAP
- Before submitting to CAP we are able to generate a PDF of all the data we provided.

27

Source: www.CAP.org

CAP Checklist

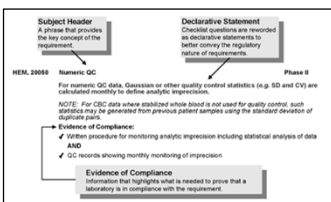


- First checklist compiled in 1965
- Helps lab focus on the important criteria
- Fulfill all the requirements set by CMS
- Updated annually
- Types of Checklist
 - General
 - All Common
 - Lab Specific
- Formats for Checklist
 - PDF or EXCEL
 - Master and Custom

28

Source: www.CAP.org

Checklist Components

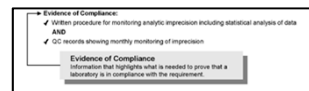


- Subject Header
 - Key concept
- Declarative Statement
 - Explanation of the regulation
- Evidence of Compliance
 - Needed to prove lab is in compliance
- Notes
 - Very important to follow
 - More important than Evidence of Compliance

29

Source: www.CAP.org

Evidence of Compliance



- Assist the lab in preparing for the inspection and in managing ongoing compliance
- Helps the inspector and laboratory consistently understand the requirements
- Provides examples of acceptable documentation

30

Source: www.CAP.org

Inspector Instructions

Read, Observe, Ask, Discover

Inspector Instructions:

READ Review a sampling of laboratory documents. Information obtained from this review will be useful as you observe processes and engage in dialogue with the laboratory staff. (Example of the comprehensive Inspector Instructions for Quality Management/Quality Control General Failure Section appearing across checklists)

- Sampling of QMS/CC process and procedures
- Incident/Reporting and corrective action

OBSERVE Laboratory practices by looking at what the laboratory personnel are actually doing and using Functional Analysis from the documented procedures/standards. (Example)

- Observe the workflow/CC range limits established in the laboratory LIS/MS to ensure that the laboratory's critical ranges are accurately reflected

ASK Open-ended, probing questions that start with phrases such as "tell me about..." or "what would you do if..." This approach can be a means to corroborate inspection findings that were suggested by other techniques, such as Read & Observe. Ask follow-up questions for verification, include a variety of staff levels in your communication process. (Example)

- Is a staff member, which is your communication with quality management?
- How do you select and correct laboratory errors?

DISCOVER is a technique that can be used to "fill in" or further evaluate areas of concern identified by the Inspector. Follow the question and "lead" that are in examples of Discovery. Utilizing this technique will allow for the discovery of pre-analytic, analytic, and post-analytic processes while reviewing multiple requirements simultaneously. (Example)

- Select several occurrences in which CC is out of range and follow documentation to determine if the steps taken follow the laboratory policy for corrective action

Source: www.CAP.org

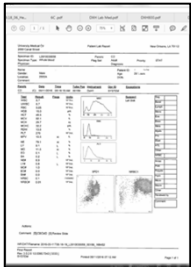
- Redesigned Accreditation Checklist in June 2010
 - Ensures compliance by making checklist easy to use with clear requirements
- CAP has established guidelines for inspectors
 - Streamlines inspections
 - Efficient, Consistent, Effective inspection process
- R-O-A-D- Inspection Techniques – enhanced approach for inspectors
 - Read
 - Observe
 - Ask
 - Discover
- Roadmaps with icons help inspectors focus on the items which are most important

31

Similar to Tracer Methodology used by The Joint Commission

Tracer Methodology

Follow the Specimen

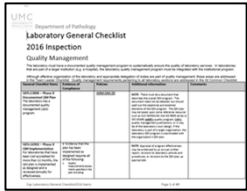


Source: www.CAP.org

- Begin tracer with test result
- Follow entire testing process
- Includes Pre-analytical, analytical, post analytical process
- Pre-analytical
 - Ordering
 - Collecting procedures
 - Identifying patient
 - Labeling in front of patient
 - Transporting of specimen
- Analytical
 - QC
 - Proficiency testing results for the analyte in question
- Post analytical
 - Computer print out
 - Reporting of panic values
- Personnel involved
 - Review Delegations
 - Review Competencies

32

CAP General Checklist




Source: www.CAP.org

- Quality Management
- Specimen Collection, Data Handling and Reporting
- Quality of Water and Glassware
- Laboratory Computer Systems
- System Maintenance
- Personnel
- Physical Facilities
- Lab Safety
- Numbering system – GEN.00000

33

Laboratory Administration is responsible for the Laboratory General Checklist compliance. Lab administrators may delegate duties to other laboratory areas.

CAP Common Checklist




Source: www.CAP.org

- Introduced 2011
- Consolidated items that were similar across disciplines
 - Proficiency Testing
 - Procedure Manual
 - Results Reporting
 - Reagents
 - Instruments and Equipment
 - Maintenance and Function Checks
 - Thermometers
 - Temperature Dependent Instruments, Equipment and Environments
 - Test Method Validation
 - Method Performance Specifications
 - Reference Intervals
 - Individualized Quality Control Plan (IQCP)
 - Numbering system – COM.00000

34

Laboratory Areas must review All Common for lab specific criteria.

Individualized Quality Control Plan (IQCP)



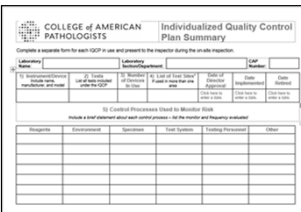
Source: www.CAP.org

- It was developed for non-waived testing in which QC is not performed on a daily basis
- Introduced in 2014 required implementation in 2016
- Customary QC plan developed for the laboratory specific to your environment to provide reliable and accurate patient testing
- Labs must continue to follow manufacturer's instructions for QC
 - A lab may not implement an IQCP that allows for quality control to be performed less frequently than indicated by the manufacturer
- Does not apply to waived testing
- If a lab does not follow IQCP guidelines it must run at least two levels of external QC each day of patient testing.

35

IQCP Program

Allows continued use of Electronic Quality Control

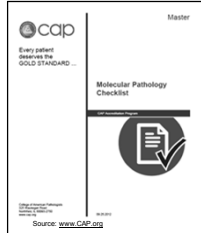


Source: www.CAP.org

- Risk Assessment
 - Identifies and evaluates potential failures in the testing process and must address all 5 areas listed through all 3 phases of testing
 - Specimen
 - Environment
 - Reagents
 - Test system
 - Testing personnel
- Quality Control Plan
 - Ensures accuracy and reliability of test results
 - Internal Controls
 - Electronic Controls
 - Calibration
 - Training and Competency
- Quality Assessment
 - Continuous process of monitoring effectiveness of QC program
 - QC review
 - FT review
 - Compliant reports

36

Laboratory Specific Checklist



- Collection requirements
 - Anticoagulants
 - Rejection criteria
- Procedural Manual
- Calibration Procedures
- Quality Control
- Validation Procedures
- Corrective Actions

37

Download checklist in EXCEL Format easier to concentrate on new and questions with evidence of compliance

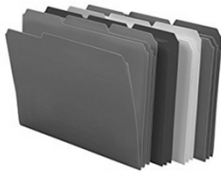
Day of Inspection



- Team Arrival
 - Arrival time usually 7:30-8:00
 - Team to meet at information desk
- Opening Conference
 - Team leader introduces inspectors to lab
 - Lab director introduces self and all lab personnel present to team
 - Lab supervisors are paired with inspectors
 - Inspectors are given a tour of the lab which lasts 15-20 minutes
- Inspection
 - Review of lab manuals / documents requested
 - Inspectors uses R-D-A-D and interacts with lab staff
 - Refer to the lab roster to determine staff personnel files for review
 - Interacts with staff with a FOCUS on lab policies, lab safety, QC, Proficiency testing procedures, and corrective actions
 - Inspector should discuss all deficiencies as they are found with lab supervisor
- Summation
 - Team thanks the lab for hosting them
 - Present deficiencies and how to improve

38

Summation



- Team will gather all information
 - Deficiencies
 - Recommendations
- Take all recommendations and deficiencies seriously
- Address all issues

39

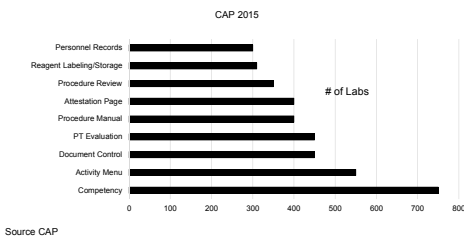
Deficiencies



- Must be submitted within 30 days of inspection
- All deficiencies must be sent together
- Contact CAP if you have any questions about response or challenging
- Be vigilant and look for any additional information about deficiencies responses submitted

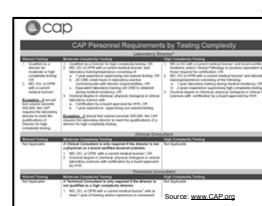
40

Most Commonly Cited Deficiencies



41

Most Commonly Cited Deficiencies



- Personnel Qualifications
 - Delegation
 - Continuing Ed
 - Licensure
- Competency
 - High Complexity Testing
 - 6 levels of competency
 - All Test Systems
 - Waived
 - 2 levels of competency
- Proficiency Testing
 - Stringent rules

CAP is very strict about these categories – are high priority standards set by CMS – accreditation can be pulled if lab is not in compliance!

42

Proficiency Testing

Source: www.CAP.org 1967 Proficiency Testing participation becomes a requirement for accreditation

- Samples **MUST** be performed with routine laboratory workload
- Samples **MUST** be analyzed by personnel who routinely test patient samples
- Samples **Must** be rotated among all testing personnel and **NOT** just dedicated operators or instruments
- Samples **MUST** be run like patient sample
 - No duplicate testing
- Lab personnel **MUST** notify CMS if it receives a PT testing request from another laboratory
- Personnel are **STRICTLY** prohibited from communicating with other testing labs about PT samples

49

Document Control



<http://www.medialabinc.net>

- All Documents must be included
 - Forms
 - Job aids or cheat sheets
- Make sure that only current documents or forms are in use
- All current documents are properly approved

50

Activity Menu

Source: www.CAP.org

- Make sure all testing in included in the Activity Menu
- If stopped testing – Remove
- If Started testing – Insert
- Make sure CAP is aware of all changes

51

Competency

Waived Testing only requires 2 levels of competency

- Non-waived
 - High Complexity
 - Moderately Complex
- Assessment Program
 - Defined set of skills/knowledge of job
 - Criteria for levels of acceptance
 - Process of re-evaluation
 - Six components of competency
- All 6 levels of competency must be assessed annually for each test system
 - Direct Observation
 - Recording/Reporting of Results
 - Review of QC
 - Direct Observation of Instrument Maintenance
 - Testing previously analyzed samples
 - Problem Solving

52

Six Levels of Competency

CLIA '88

All 6 levels must be assessed for each Test System a Tech is deemed Competent to perform. Must be re-evaluated if the method or instruments change.

1. Direct Observation of Routine patient test performance
 - Patient identification and preparation
 - Specimen collection, handling, processing and testing
2. Monitoring the recording and resulting of test results
 - Reporting of Critical Values
3. Review of intermediate test results or worksheets
 - QC records, Proficiency Testing results and preventive maintenance records
4. Direct Observation of instrument maintenance and function checks
5. Assessment of test performance
 - Using previously analyzed specimens,
 - Blind testing samples
 - External Proficiency Testing samples
6. Evaluation of problem solving skills

53

Staff Role in Maintaining Accreditations



- Familiarize yourself with all lab policies
 - Hospital Wide
 - Lab Administration
 - Safety
 - Lab-Specific policies
 - QC, critical values, corrective actions
 - QNS and Clotted Samples
- Wear required PPE for task performed
- Fire Exits, Eye wash, Showers
- Make sure your personnel file is up to date
 - Current Continuing Education
 - ASCP Certification is current
- Be able to locate
 - Specimen Collection Manual
 - Current policies using MediaLAB
 - MSDS

54

Laboratories in the news

Cleveland Clinic



- CMS validation inspection
- CMS found disparities in CAP inspection
- Using expired reagents
- Did not calibrate instruments
- No QC
- Floor procedures in Blood Bank
 - Not checking temperature of blood being returned from operating room
- Werent following PT rules
- Lab could not document that the techs met educational requirements for their job
- Demoted laboratory director, closed part of testing lab, terminated lab managers and testing personnel
- Fined \$769,000 for time they were out of compliance.
- Lab closed in September 2015
 - reopened in November 2015 after replacing it's operations and leadership that was in charge when violations occurred.

55

Laboratories in the news

Theranos

- Using the "nanotainer" collecting device (on analyte not approved)
- Only approved for herpes simplex 1 procedure for all of its testing
 - Costs less than other labs
- Running PT samples incorrectly
 - Not the same as patient
 - Not using laboratory routine methods
- Splitting samples and running on 2 different analyzers



56

Accreditation...

It's a good thing



- Internationally accepted for increasing test quality and reducing lab error
- Maintains accuracy of test results and ensure accurate patient diagnosis
- Provides improved patient care
 - Patient safety is preserved
 - Maintains employees are competent to do the job
- Protects employees and patients
- Promotes trust in laboratories and confidence in health care providers

57

Theranos

The Movie



<https://www.youtube.com/watch?v=VINibm10BU>

58



References

1. CLS Training and Competency Assessment, 4th Edition, CLS Quarterly 09/09, Phoenix, PA: Clinical and Laboratory Standards Institute; 2016.
2. Malone, BR. Compliance Assessment/Does the New CLIA Guidelines Mean a Big Change? Clinical Laboratory News (JUN 2015). Accessed AUG 2016.
3. West, R. Laboratory Accreditation. <http://www.clinical-lab.com/2016/06/01/laboratory-accreditation/>.
4. Ben-Jacob, S. Laboratory Inspection. The New York Times. <http://www.nytimes.com/2015/02/02/health/laboratory-inspection.html>. Accessed 10/10/16.
5. Yoon, J. Lab. Laboratory Inspection. The New York Times. <http://www.nytimes.com/2015/02/02/health/laboratory-inspection.html>. Accessed 10/10/16.
6. Clinical Chemistry. Laboratory Inspection: The View from CAP. <http://www.clinicalchemistry.com/2015/02/02/laboratory-inspection-the-view-from-cap/>. Accessed 10/10/16.
7. Clinical Laboratory Improvement Amendments (CLIA) Code.gov. <http://www.access.gpo.gov/nara/cfr/waisidx2014/42cfr160001.html>. CLIA Index West Accessed 10/10/16.
8. CAP - Laboratory Accreditation. Code of Federal Regulations. <http://www.ecfr.gov/g42cfr160001.html>. Accessed 10/10/16.
9. Oshiro, S., Borkovec, J., Kachur, J. Top Officials: Action Watchdog Agency. <http://www.actionwatchdog.com/2016/06/01/theranos/>. Accessed 10/10/16.
10. Cleveland Clinic's Management Had Chances to Report. Health System Paid \$750,000. Accessed 10/10/16.
11. Cleveland Clinic. History of Quality Improvement Movement. <http://www.clevelandclinic.com/history-of-quality-improvement/>. Accessed 10/10/16.
12. Health Care and Regulatory Inspection. <http://www.healthcareinspections.com/theranos-lab-inspection/>. Accessed 10/10/16.
13. CAP Standards for Laboratory Accreditation 2013 edition. <http://www.clinical-lab.com/2013/06/01/cap-standards-for-laboratory-accreditation-2013-edition/>. Accessed 11/02/16.
14. <http://www.clinical-lab.com/2013/06/01/cap-standards-for-laboratory-accreditation-2013-edition/>.
15. <http://www.clinical-lab.com/2013/06/01/cap-standards-for-laboratory-accreditation-2013-edition/>.
16. CLS. Clinical Laboratory Improvement Amendments (CLIA) Laboratory Director Responsibilities: What are my responsibilities as a Laboratory Director? <http://www.clinical-lab.com/2013/06/01/cap-standards-for-laboratory-accreditation-2013-edition/>. Accessed 10/10/16.
17. CAP Checklist All Content. <http://www.clinical-lab.com/2013/06/01/cap-standards-for-laboratory-accreditation-2013-edition/>. Accessed 10/10/16.
18. Lab Self-Inspection. <http://www.clinical-lab.com/2013/06/01/cap-standards-for-laboratory-accreditation-2013-edition/>. Accessed 10/10/16.
19. CAP Checklist All Content. <http://www.clinical-lab.com/2013/06/01/cap-standards-for-laboratory-accreditation-2013-edition/>. Accessed 10/10/16.
20. <http://www.clinical-lab.com/2013/06/01/cap-standards-for-laboratory-accreditation-2013-edition/>.

59