

Laboratory Developed Tests A Regulatory History and Update

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DISCLOSURES

- **University of Utah**
 - Associate Professor (Clinical)
- **ARUP Laboratories**
 - Medical Director, ARUP Automated Core Laboratory
 - Vice President | Section Chief, Clinical Chemistry
 - Oversight over LDTs

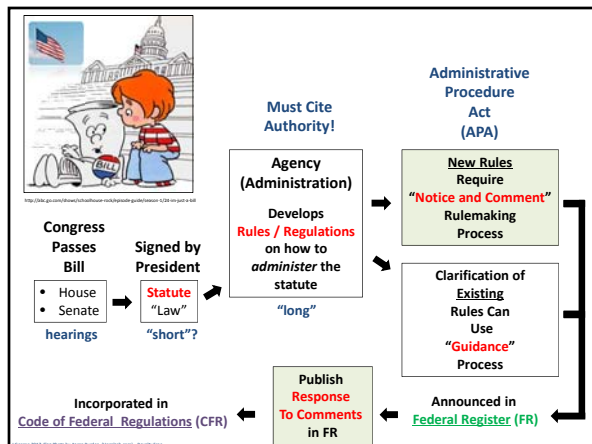
The views presented are my own and are not meant to be representative of my employer

OBJECTIVES

- Identify regulatory authority for reagents under the Medical Device Amendments (MDA)
- Assess the requirements for assay validations under the Clinical Laboratory Improvement Amendments of 1988 (CLIA'88)
- Appraise current regulatory efforts regarding LDTs at the federal level

OUTLINE

- **Background**
- **History of Federal Regulations**
 - *"How we got here"*
 - Medical Device Amendments of 1976 (MDA)
 - Clinical Laboratory Improvement Amendments of 1988 (CLIA'88)
- **LDT Turning Point (1992-1998)**
- **Possible Regulatory Oversight (2010-2017)**
 - *"What Now?"*



FDA

Federal Statutes

- 1906 Pure Foods and Drugs Act
- 1938 Federal Food, Drug, and Cosmetic Act (FDCA; "The Act")
- 1976 Medical Device Amendments (MDA)

Pure Foods and Drugs Act

1906 Pure Foods and Drugs Act

Prohibited misbranded and adulterated foods, drinks, and drugs in interstate commerce

"Wiley Act"



Dr. Harvey Washington Wiley

Chief Chemist
U.S. Department of Agriculture
Bureau of Chemistry

BUT - burden placed on the government to prove misbranding or adulteration

1937 - Sulfanilamide Tragedy

Plus Diethylene Glycol

U.S. Races Death to Save 700 From Elixir
Secretary of War Kermec, 1937. In: National Guard and Pacific News, March 28, 1937.

ONE FIFTY Elixir ONE FIFTY
SULFANILAMIDE
Each fifteen-grain capsule: 30 gr.
INDICATED FOR THE TREATMENT OF ALL CONDITIONS IN WHICH THE BACTERIAL SENSITIVITY APPEARS.
Dose: begin with 2 to 3 teaspoonfuls in water every four hours. Decrease to twenty-four to forty-eight hours to 1 or 2 teaspoonfuls and continue at this dose until recovery.
[Trade-mark]
THE S. E. MASSENGILL COMPANY
Manufacturing Pharmacists
BETHLEHEM, PENN.

Federal Food, Drug, and Cosmetic Act

1938 FDCA

Manufacturers were required to show that a drug was safe *before* it could be marketed

Regarding DEVICES

Prohibited misbranding and adulteration of "devices"

Defined **device** as:

"instruments, apparatus, and contrivances, including their components, parts, and accessories, intended (1) for use in the diagnosis, cure, mitigation, treatment, or prevention of disease in man or other animals; or (2) to affect the structure or any function of the body of man or other animals [Sec. 201(h)]"

Statute

BUT, it did **NOT** provide a comprehensive regulatory system for medical device safety, efficacy, or evaluation

Regulatory Standards (1940-1970)



1969 - Bacto-Unidisk Case



U.S. Supreme Court

United States v. Bacto-Unidisk
394 U.S. 784
(1969)



Chief Justice Earl Warren

Antimicrobial Susceptibility Disk

The Secretary of Health, Education, and Welfare **had the authority to regulate the device as a drug** such that the "Secretary can subject it to *pre-market clearance regulations*"

1977 Final Rule – Establishment Registration

Regulation

Persons **EXEMPT** from Registration

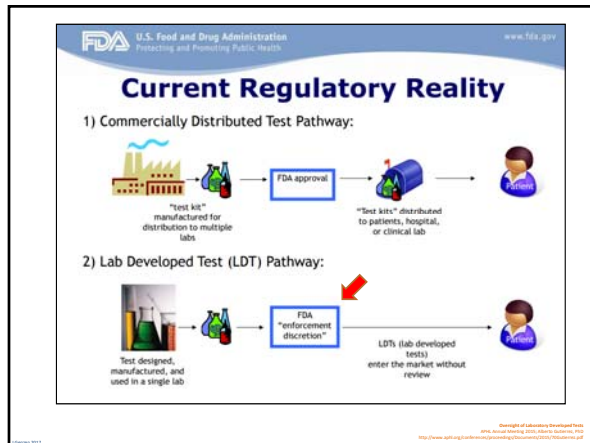
“(i) Persons who dispense devices to the ultimate consumer or whose **major responsibility is to render a service** necessary to provide the consumer (i.e. patient, physician, laymen, etc.) with a device or the benefits to be derived from the use of a device; for example, a...**clinical laboratory**”

“Is LDT Notification de facto registration?”

If YES, then **Draft Guidance** can't change this – requires **Notice and Comment Rulemaking**.

1976-1992

- For **16 years** after passage of the Medical Device Amendments, the **FDA did not** (at least publically) **assert any authority over LDTs**
- In practice, there were two “pathways” for laboratory testing:
 - **Commercially Distributed Pathway** (regulated by the FDA)
 - **LDTs** (not regulated by the FDA)



CLIA'88

1967 – Partnership for Health Amendments

Clinical Laboratory Improvement Act of 1967

- Licensing program for clinical laboratories involved in **interstate commerce**

“No person may **solicit or accept** in interstate **commerce**, directly or indirectly, any specimen for laboratory examination or other laboratory procedures, unless there is in effect a license...”
[p536]

CLIA'67 - Consequences

- **Fragmented** system
- Didn't apply to ALL clinical laboratories
- **Physician office laboratories** were excluded

Different **quality requirements** for different types of laboratories led to **growing national concern over laboratory quality** (e.g. PAP smears)

1988 – House of Representatives #1




U.S. House - 1988
Hearings before the Subcommittee on Regulation and Business Opportunities of the House Committee on Small Business

“Deadly Mistakes: Are Laboratory Results Reliable”

LDTs not discussed! 


Deadly Mistakes: Are Laboratory Results Reliable. Hearings before the Subcommittee on Regulation and Business Opportunities of the Committee on Small Business, House of Representatives, One Hundredth Congress, Second Session, March 10 and 11, 1988. Serial 108-108. U.S. Government Printing Office, Washington, 1988.

1988 – House of Representatives #2




U.S. House - 1988
Hearings before the Subcommittee on Oversight and Investigations of the House Committee on Energy and Commerce

“Clinical Laboratories”

LDTs not discussed! 

Clinical Laboratories. Hearings before the Subcommittee on Oversight and Investigations of the Committee on Energy and Commerce, House of Representatives, One Hundredth Congress, Second Session, March 10 and 11, 1988. Serial 108-109. U.S. Government Printing Office, Washington, 1988.

1988 – Senate Hearings




U.S. Senate - 1988
Hearings before the Subcommittee on Oversight of Government Management of the Senate Committee on Governmental Affairs

“Health Care Financing Administration's Management of Medical Laboratories”

LDTs discussed **once** in testimony!
12 years after MDA passage!

Health Care Financing Administration's Management of Medical Laboratories. Hearings before the Subcommittee on Oversight of Government Management of the Committee on Governmental Affairs, United States Senate, One Hundredth Congress, Second Session, March 23 and 24, 1988. Serial 108-107. U.S. Government Printing Office, Washington, 1988.

1988 – Senate Hearings



U.S. Senate - 1988
Hearings before the Subcommittee on Oversight of Government Management of the Senate Committee on Governmental Affairs

Written testimony of **Dr. Herbert W. Dickerman**
Director of the New York State Wadsworth Center for Laboratories and Research

Describing the Federal program for laboratory regulation...

“while FDA requirements must be met if a kit or reagent is to be commercially marketed, labs that use their own techniques and reagents need no approval” [p235].

Testimony / Opinion

Hearings before the Subcommittee on Oversight of Government Management of the Committee on Governmental Affairs, United States Senate, One Hundredth Congress, Second Session, March 23 and 24, 1988. Serial 108-107. U.S. Government Printing Office, Washington, 1988.

Clinical Laboratory Improvement Amendments of 1988 (CLIA '88)

“An amendment to the Public Health Services Act [PHSA] in which Congress revised the federal program for certification and oversight of clinical laboratory testing”

- Quality standards
- Certification program



- **“All facilities** in the United States that perform **laboratory testing on human specimens for health assessment or the diagnosis, prevention, or treatment of disease** are regulated under [CLIA]”

Regulation of Clinical Tests in Hospitals (P22) Clinical Laboratory Improvement Amendments of 1988. © 1988. U.S. Government Printing Office, Washington, DC.

CLIA – PERFORMANCE SPECIFICATIONS

42 CFR 493.1253 - Standard: Establishment and verification of performance specifications

(2) Establishment of performance specifications. Each laboratory that **modifies an FDA-cleared or approved test system, or introduces a test system not subject to FDA clearance or approval** (including **methods developed in-house** and standardized methods such as text book procedures), or uses a test system in which performance specifications are not provided by the manufacturer **must, before reporting patient test results, establish for each test system the performance specifications for the following performance characteristics, as applicable:**

- (i) Accuracy.
- (ii) Precision.
- (iii) Analytical sensitivity.
- (iv) Analytical specificity to include interfering substances.
- (v) Reportable range of test results for the test system.
- (vi) Reference intervals (normal values).
- (vii) Any other performance characteristic required for test performance.

Regulation NOT Statute

REGULATIONS IN TITLE 42, PART 493, SUBPART 1253, FEDERAL REGISTER, 1988, 48 FR 28222, 28223, 28224, 28225, 28226, 28227, 28228, 28229, 28230, 28231, 28232, 28233, 28234, 28235, 28236, 28237, 28238, 28239, 28240, 28241, 28242, 28243, 28244, 28245, 28246, 28247, 28248, 28249, 28250, 28251, 28252, 28253, 28254, 28255, 28256, 28257, 28258, 28259, 28260, 28261, 28262, 28263, 28264, 28265, 28266, 28267, 28268, 28269, 28270, 28271, 28272, 28273, 28274, 28275, 28276, 28277, 28278, 28279, 28280, 28281, 28282, 28283, 28284, 28285, 28286, 28287, 28288, 28289, 28290, 28291, 28292, 28293, 28294, 28295, 28296, 28297, 28298, 28299, 28300, 28301, 28302, 28303, 28304, 28305, 28306, 28307, 28308, 28309, 28310, 28311, 28312, 28313, 28314, 28315, 28316, 28317, 28318, 28319, 28320, 28321, 28322, 28323, 28324, 28325, 28326, 28327, 28328, 28329, 28330, 28331, 28332, 28333, 28334, 28335, 28336, 28337, 28338, 28339, 28340, 28341, 28342, 28343, 28344, 28345, 28346, 28347, 28348, 28349, 28350, 28351, 28352, 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Time	Source	Verbiage
Pre-CLIA'88	Examples: 39 C.F.R. § 403.1317 (1974); 42 C.F.R. § 74.20 (1987); 42 C.F.R. § 405.1317 (1988)	Test Standards: general. Quality controls imposed and practiced by the laboratory must provide for and assure: (1) ... validation of methods."
Pre-CLIA'88 1988	Proposed rule: Medicare, Medicaid and CLIA Programs; Revision of the Laboratory Regulations for the Medicare, Medicaid, and Clinical Laboratories Improvement Act of 1967 Programs. 53 Fed. Reg. 78590 (August 5, 1988) (to be codified at 42 C.F.R. pt. 493).	Proposed § 493.235 "The laboratory must have a written protocol and documentation of the validation of each method that verifies that the method produces test results within the laboratory's stated performance characteristics... (C) A medical used by the laboratory must be validated before it is used and documentation of the validation must be available..."
CLIA'88 1988	Clinical Laboratory Improvement Amendments of 1988. Pub. L. 100-578. 102 Stat. 2903. 31 October, 1988.	Authorization: "(f) Standards; (1) In General - The Secretary shall issue standards to assure consistent performance by laboratories... of valid and reliable laboratory examinations... (A) to maintain a quality assurance and quality control program adequate and appropriate for the validity and reliability of the laboratory examinations and other procedures of the laboratory..." "The laboratory must have a written protocol and documentation for the validation of each method that verifies that the method produces test results within the laboratory's stated performance characteristics. Method validation must be performed before a test procedure is placed into routine use. "
1990	Final rule with comment period: Medicare, Medicaid and CLIA Programs; Revision of the Laboratory Regulations for the Medicare, Medicaid, and Clinical Laboratories Improvement Act of 1967 Programs. 55 Fed. Reg. 9538 (March 14, 1990)	"The laboratory must have a written protocol and documentation for the validation of each method that verifies that the method produces test results within the laboratory's stated performance characteristics. Method validation must be performed before a test procedure is placed into routine use. "
1992	Final rule with comment period: Medicare, Medicaid and CLIA Programs; Regulations Implementing the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 57 Fed. Reg. 7002 (February 26, 1992) (codified at 42 C.F.R. § 493.1213 (1992))	"After September 1, 1992 , a laboratory that introduces a new procedure for patient testing using a method developed in-house; a modification of the manufacturer's test procedure; or a method (instrument, kit, or test system) that has not been cleared by the FDA or meeting the CLIA requirements for general quality control, must, prior to reporting patient test results..."
2003	Final rule: Medicare, Medicaid and CLIA Programs; Laboratory Requirements Relating to Quality Systems and Certain Personnel Qualifications. 68 Fed. Reg. 3640 (January 24, 2003) (codified at 42 C.F.R. § 493.1253 (2003))	"Each laboratory that modifies an FDA-cleared or approved test system , or introduces a test system not subject to FDA clearance or approval (included methods developed in-house and standardized methods such as text book procedures , Gram stain, or potassium hydroxide preparations), or uses a test system in which performance specifications are not provided by the manufacturer must, before reporting patient test results, establish for each test system the performance specifications for the following performance characteristics..."
2003	Final Rule: correction: 68 Fed. Reg. 50722 (August 22, 2003) (to be codified at 42 C.F.R. pt. 493).	Deleted "Gram stain, or potassium hydroxide preparations" from above text.

Summarizing FDA vs CMS "Roles"

FDA

- **Authority:** FFDCRA / MDA
- **Safety and Effectiveness** of Devices / Reagents
- **Quality of Design and Manufacture**
- **Analytical and Clinical Validity**

CMS

- **Authority:** CLIA
- **Quality of Clinical Testing Process**
- **Quality of the Laboratory**
- **Requirements to Assess Performance**
- **Analytical Validity**

Regulation of Clinical Tests in vitro Diagnostic (IVD) Devices, Laboratory Developed Tests (LDT), and Device Tests, Congressional Research Service, 1-17-2016
Revised: 08-01-2016 (CRS-10547) (CRS-10547) (CRS-10547) (CRS-10547) (CRS-10547)



1992 – FDA Draft CPG

Aug 3, 1992 - FDA released **draft Compliance Policy Guide (CPG):**
"Commercialization of Unapproved In Vitro Diagnostic Devices Labeled for Research and Investigation"

It has **come to the attention** of the FDA that laboratories have been **manufacturing**, "home brew" products, either from products already on the market, or from components, and utilizing these unapproved products for diagnostic purposes. **These products are subject to the same regulatory requirements as any unapproved medical device** not identified in Attachment A".

Commercialization of Unapproved In Vitro Diagnostic Devices Labeled for Research and Investigation Draft Compliance Policy Guide, Draft and Final Compliance Guides for Research and Investigation, August 3, 1992, Revised, 8/1/2016

1992 – Citizen Petition to CPG

October/December 1992 – **Citizen Petition** filed by **Hyman, Phelps & McNamara** (law firm representing "laboratories that would be affected")

"...request that the Commissioner of Food and Drugs not regulate as medical devices assays developed by clinical reference laboratories strictly for in-house use"

Grounds

- **Inconsistent with CLIA**
- FDA lacks **Statutory Authority** to Regulate In-House Assays
- CPG Would Violate the **Administrative Procedure Act**
- CPG Would **Diminish the Quality of Health Care**

68 FR 19820 (April 15, 2003) (to be codified at 42 C.F.R. pt. 493.1253)

1997 – Analyte Specific Reagent (ASR)

Federal Register 21 CFR Parts 809 and 864; Medical Devices;
Classification / Reclassification; Restricted Devices; Analyte Specific Reagents (FINAL RULE)

III. Response to Comments

General Comments, Comment 9 (about device classification)

"FDA...appreciates the concerns raised about the **development of in-house tests** and the current marketing of test services based on tests that have not been reviewed independently for safety and effectiveness. **FDA believes that clinical laboratories that develop such tests are acting as manufacturers** of medical devices and are subject to FDA jurisdiction under the act."

Response to Comment in Federal Register

Federal Register / Vol. 62, No. 225 / Friday, November 21, 1997 / Rules and Regulations 62249

Audience Questions

How many of you work in clinical laboratories?

How many of you work in manufacturing facilities?

Does your lab offer laboratory developed tests?

2010

2010 – July 19-20th, FDA Public Meeting

Jeffrey Shuren, Director of the Center for Devices and Radiological Health, announced that **FDA intends on regulating all LDTs**

- Moving from “enforcement discretion” to “exercise oversight”
- FDA plans to issue **Guidance Document** instead of **Notice and Comment Rulemaking**

RATIONALE PROVIDED

- Volume and types of LDTs have **grown**. Now commercial labs and/or biotechnology companies.
- LDTs have **evolved** to be more like commercial *in vitro* devices. Not just regional with direct contact to ordering clinician.
- LDT route to market presents a favorable **business model** and driving venture capital funding for clinical diagnostics; competitive disadvantage to FDA premarket review.
- Some LDTs **aggressively marketed** directly to clinicians via Internet.
- Public needs assurances** that LDTs are sound and reliable.

Draft Guidance vs Notice and Comment

(5) DR. SHUREN: Sure. The reason why

(6) not for notice and comment rulemaking is

(7) because the requirements actually already

(8) apply now. The law is in effect. We have

(9) simply, as a matter of policy, determined not

(10) to exercise or not to enforce that authority

(11) as of right now.

2010

**Policy
VS
Practice**

Timeline {

- Clearly had a **practice** of not exercising oversight
- Claim that authority existed since 1976
- Did not **recognize issue** until 1992
- Did not **announce intention** until 2010

Therefore **Guidance Process** Since Not Creating “New Rules”

2010-2014

- 2010** onward – FDA Created Draft Guidelines
- August 2013** – Nine Democratic Congressmen wrote letter to **OMB** urging release:

“We have reached a critical point in the development of advanced diagnostics at which it has become essential that FDA move this guidance forward to ensure appropriate and efficient oversight of safe and effective diagnostics.”
- July 11, 2014** – Five Democratic Senators wrote letter to **OMB** urging release, stating

“for years this draft guidance has languished at OMB causing continued unpredictability and uncertainty”
- July 31, 2014** – FDA Notified Congress of its intent to release the Draft Guidance documents

OMB review not publically available

October 3, 2014

Draft **Guidance** for Industry, Food and Drug Administration Staff, and Clinical Laboratories

Framework for Regulatory Oversight of Laboratory Developed Tests (LDTs)

DRAFT GUIDANCE

This guidance document is being distributed for comment purposes only. Document issued on October 3, 2014.

Draft **Guidance** for Industry, Food and Drug Administration Staff, and Clinical Laboratories

FDA **Notification** and Medical Device Reporting for Laboratory Developed Tests (LDTs)

DRAFT GUIDANCE

This guidance document is being distributed for comment purposes only. Document issued on October 3, 2014.

→

Framework for Regulatory Oversight

- **“Notification”** to FDA of all LDTs
- **Medical device reporting** (e.g., adverse events)
- **Enforcement discretion** for **forensic LDT** and **HLA/transplant**
- **Enforcement discretion** (with respect to premarket review requirements) for **low-risk LDTs**, “Traditional LDTs”, LDTs used for rare diseases, and “LDTs for Unmet Needs”
- **Risk-based**, phased-in approach to enforcing the premarket review requirements for other **high-risk** and **moderate-risk LDTs**
- Use of **clinical literature** to support a demonstration of clinical validity
- **Third-party review** for many moderate risk LDTs
- Phased-in approach to enforcing the **Quality System (QS)** regulation

January 8-9, 2015 – FDA Public Workshop

“Laboratory Developed Tests”

FDA Public Workshop (Bethesda, MD)

- Overview of Proposed Framework
- Components of a Test and LDT Labeling Considerations
- Clinical Validity and Intended Use
- Categories for Continued Enforcement Discretion
- Notification and Adverse Reporting
- Public Process for Classification and Prioritization
- Quality System Regulation
- **Public Comments (~40 different individuals/organizations)**

U.S. House of Representatives

THE ENERGY AND COMMERCE COMMITTEE

Subcommittees: Commerce, International Trade, Energy, Health, and others.

Timeline:

- Sep 9, 2014: Hearing on FDA Draft Guidance
- Dec 2014: White Paper Seeking Feedback for 21st Century Cures (11 Q's)
- Jun 2015: Draft Bill Circulated for IVCT Regulation (i.e. **DTWG**)
- Oct 2015: Updated IVCT Draft Bill (would create new FDA center for IVCT)
- Nov 17, 2015: FDA* - Jeffrey Shuren**

Other: CMS - Patrick Conway, Dep. Admin, CMS Office Admin

**** “The FDA is committed to developing a final policy for oversight of LDTs...”**

*24 hrs prior released “20 Case Studies”

U.S. SENATE COMMITTEE ON Health, Education Labor & Pensions (HELP Committee)

04.06.16
Senate Health Committee Approves Last of 19 Bipartisan Bills,
Completing Work on Companion to House-Passed 21st Century Cures Act

Lamar Alexander (R, TN; Committee Chair)

“I would like to take the proposals we’ve passed here, along with a bipartisan agreement on the NIH Innovation Fund with Senator Murray, and put them in Senator McConnell’s hands as the Senate’s contribution to a 21st Century Cures Act.

We’ll have an opportunity for more debate on the floor, including...[t]he issue of lab developed tests, which are vitally important to get right to ensure precision medicine and cancer moonshot are a success.”

The U.S. House of Representatives
COMMITTEE ON APPROPRIATIONS
Chairman Hal Rogers

Mr. ABERNETHY, from the Committee on Appropriations, submitted the following
REPORT
(To accompany H.R. 3333)

The Committee on Appropriations submits the following report in explanation of the accompanying bill making appropriations for Agriculture, Rural Development, Food and Drug Administration, and Related Agencies for fiscal year 2017.

April 19, 2016 Non-Binding

Laboratory Developed Tests.—The FDA’s draft guidance issued on October 3, 2014, titled “Framework for Regulatory Oversight of Laboratory Developed Tests” (LDTs), puts forth a proposed regulatory framework that is a significant shift in the way LDTs are regulated. Such a shift deserves input from the public, and Congress has been working with stakeholders, constituencies, and the FDA to find common ground on regulating LDTs. **The FDA’s guidance circumvents the normal rulemaking process and changes expectations for patients, doctors, and laboratories for the first time since the Clinical Laboratory Improvement Amendments Act was passed in 1988. The Committee directs the FDA to suspend further efforts to finalize the LDT guidance and continue working with Congress to pass legislation that addresses a new pathway for regulation of LDTs in a transparent manner.**

CAP www.cap.org

AMP Association for Molecular Pathology www.amp.org

AACC Better Health Through Laboratory Medicine www.aacc.org

ASCP American Society for Clinical Pathology www.ascp.org

ACLA American Clinical Laboratory Association

DTWG Diagnostic Test Working Group

