In the Wake of the Great War: How Pathology Became a Clinical Discipline in America?

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No Conflicts of Interest to Declare

Learning Objectives

• Describe the nature of laboratory services provided to the American Expeditionary Forces during WWI.
• Describe how pathology/laboratory medicine became a hospital-based specialty in the wake of WWI.

To Accomplish These Requires Context:

• WWI Time Table.
• 19th Century Pathology & Laboratory Medicine.
• Late 19th Century Autopsy Pathology.
• Early 20th Century (i.e., pre-war) Pathology & Laboratory Medicine.
• Pathology of War Prior to WWI
• Pathology & Laboratory Medicine During WWI.
• Early 20th Century Surgery.
• Early 20th Century Hospitals.
• American College of Surgeons (ACS).
• ASCP.
• ACS Minimum Standards for Hospital Movement.
• Lab Services & Autopsies in Standardized Hospitals.

World War I Time Table:

• Began during the summer of 1914.
• The major European combatants entered the War over a ~6 week long period.
• Aug 4, 1914 - Great Britain declared war on Germany and the United States declared its neutrality.
• April 6, 1917 - the United States declared war on Germany
  – The arrival of the American Expeditionary Forces (AEF) in France greatly changed the balance of power.

World War I Timeline, continued:

• Between the Spring of 1918 and the Spring of 1919, the Great Influenza Pandemic struck North America and Europe in three waves.
  – The worst was in the Fall of 1918, crippling war efforts on all sides.
• November 11, 1918: The hostilities ended with Germany signing the Armistice of Compiègne.
• Mid 1919: Germany and the Allies signed the Treaty of Versailles.

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The United States involvement in the war lasted less than 18 months. However, this brief involvement in the War had dramatic effects on medicine and surgery at home.

19th Century Pathology
- Pathologists worked in medical schools.
- They taught students, performed autopsies, and did bacteriological research for the advancement of science.
- Their goal was to describe and understand disease – not to aid clinicians with patient management.
- Clinicians often did their own autopsies.
- Surgical “specimens” were not examined.

For about the first seven decades of the 19th Century, laboratory tests did not even exist!

This talk will focus on how the practice of pathology in North America changed drastically in the wake of the Great War. The “Roaring Twenties” were very good to pathology!

Before 1850s

Wine Tasting Scorecard

<table>
<thead>
<tr>
<th>SIGHT</th>
<th>SMELL</th>
<th>Taste</th>
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<tr>
<td>Clarity</td>
<td>Depth of Color</td>
<td>Color</td>
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<td>Thin, pale, medium, deep, dark</td>
<td>Describe shade, color and concentration</td>
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<td>Aroma</td>
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<td>Weak, nice, complex, brawny, powerful</td>
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<tr>
<td>Flat, fresh, tart, sour</td>
<td>Taste</td>
<td>Oak, fruit, spice, floral, wood, veggie, chemical</td>
</tr>
<tr>
<td>Body</td>
<td>Balance</td>
<td>Light, medium, full, huge</td>
</tr>
<tr>
<td>Light, medium, full, huge</td>
<td>Finish</td>
<td>None, short, long, never-ending</td>
</tr>
</tbody>
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The Dropical Woman - Gerrit Dou (Louvre, Paris)

The Village Doctor - David Teniers the Younger (Musees Royaux des Beaux-Arts de Belgique, Brussels)
In the last two decades of the 1880s:

• The few laboratory tests that existed were simple enough that they could be performed on the wards by an internist or his resident.
• These included:
  — Microscopic urinalysis
  — Blood smears
  — Gram stains

Autopsy Pathology in Late 19th Century America

• Ironically, even autopsy pathology had not flourished in the hand of academic pathologists.
• They viewed themselves as academicians who performed autopsies for the advancement of science.
• Clinicians often did their own autopsies to obtain optimal clinic-pathological correlation and improve their patient care skills.
• Some played pretty loosely with autopsy consent regulations.
“...Dr. Osler had a patient at the Montreal General Hospital, with Addison’s disease. He was extremely anxious to obtain the specimens of the supra renals, after the man died; but could not persuade the family to allow an autopsy. He enlisted the aid of the family priest, who was a liberal-minded, scientific sort of man. But he too was unable to get permission for an autopsy.”

“The joke of it was, that early next morning the priest sought out Dr Osler, quite jubilantly, with permission for an autopsy, if he (the priest) were allowed to be present. Dr Osler had the time of his life performing the autopsy, with the interested priest looking on, & covering up the work of the previous night... the specimens were for years in the medical museum of McGill”.

“Then the night before the funeral was to be held, Dr Osler is said to have gone to the morgue of the General Hospital, greased his arm thoroughly, dilated the sphincter ani, broke through the bowel & obtained the coveted specimens, without anyone being the wiser”.
To make matters worse, clinicians were sometimes at odds with institutional pathologists over who should perform autopsies when inpatients died. For instance, at Blockley Hospital (Philadelphia General Hospital), William Osler had ongoing battles with the two Blockley pathologists, E.O. Shakesphere and H.F. Formad.

Why Was it Ok to Break Autopsy Consent Laws and Perform Covert Autopsies?

- Pathological teaching specimens were critical for teaching medical students.
- 19th Century medicine was highly paternalistic and it just seemed wrong to let important teaching specimens decompose, simply because the family did not consent to an autopsy.
- International Association of Medical Museums formed in 1907 (predecessor to the IAP)

20th Century

Pathology’s scope was quickly broadening from medical school-based autopsies into Pathology & Laboratory Medicine – But many pathologists did not recognize this.

At the beginning of the 1900s:

- The number of possible laboratory tests and the number of hospitals were both increasing exponentially.
- Many of these new tests were too complex to be performed by an internist on the wards.
- 1910s - the magnitude of testing had created a potential niche for a specialist to provide these services and two competitive models arose in large American cities:
  - Hospital-based clinical pathologists: smaller and less efficient, but provided personalized service and ease of consultation with the clinical pathologist
  - “Mail in” private commercial laboratories: larger and more widely available, provided faster turnaround times, advertised low prices in medical journals and elsewhere, but were often run by technologists with unknown qualifications.
- Neither model really met the needs of rural physicians.
- Quality assurance was almost non-existent.

Chicago had at least 8 different private commercial laboratories competing for the clinician’s laboratory testing business.
While a basic understanding of pathophysiology was widely recognized as a necessity for physicians to practice scientific medicine and while it was recognized that teaching pathology to medical students was a critical element of medical education, pathology, as a medical specialty, was “in a mess” when America entered WWI.

“War Pathology” before WWI

In previous American wars, pathology-related services had been overseen by the Army Medical Museum, which was established in 1862 with a circular sent from the Surgeon General’s Office telling medical officers to send it:

“all specimens of morbid anatomy, surgical or medical, which may be regarded as valuable ... in the study of military medicine or surgery.”

American Civil War:
- “Hygiene” was a strong focus.
- The field of bacteriology was not yet well-established.
- Laboratory tests did not yet exist.
- By the end of the war, the Army Medical Museum had collected 7,630 specimens that could be instructive in the study of camp fevers, diarrheas, gunshot/battle wounds, gangrene, typhoid fever, and parasitic diseases.
- The study of “instructive” pathological museum specimens was expected to pay a dividend of enhanced troop readiness.

Spanish-American War (1898)
- Bacteriology was well-established.
- Deaths due to infection out-numbered deaths due to battle wounds by a 7:1 ratio.
- Typhoid fever was the major cause of mortality but yellow fever, malaria, and other maladies also adversely affected troop readiness and the war effort.
- The Typhoid Commission of the Army Medical Museum, led by Walter Reed, greatly improved understanding of the disease and minimized its effects on troops.
- As a result, typhoid vaccines were produced.
**WWI Pathology**

**The United States entered WWI in April 1917**

Problems that could be addressed by pathology and laboratory medicine were strikingly different because of the new field of Clinical Pathology, geographic differences, and changing war tactics.

WWI was the first major foreign war in which “clinical pathology” would play an important role!

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“Clinical Pathology” had a different meaning 100 years ago:

- In the 19th Century, pathology was not a clinical specialty and played no role in patient care.
- By the early 20th Century, both surgical pathology and laboratory tests were becoming critical components for the provision of science-based medical and surgical care.
- “Clinical Pathology” simply meant “patient-oriented pathology.”
- Its scope included both Anatomical Pathology and what we today call Clinical Pathology.

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**New Lab Tests:**

- Wassermann complement fixation test for syphilis.*
- Widal agglutination test for typhoid fever.*
- Agglutination tests for diseases other than typhoid,
- Bacteriological culture.
- Examination for parasites.
- Measurement of iron and hematocrit.
- Blood morphology. Blood counts with differential counts
- Blood and serum specific gravity.
- Urine glucose.
- Urine urea,
- Ammonia, Creatinine, Uric acid, Total nitrogen, Phosphorus, Chloride, Total sulfate.
- Microscopic examination of crystals in urine and sputum.
- Fecal fat measurements
- Gastric and fecal chemistries.
- Etc.

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Clinical Pathology was deemed to be so important for promoting “Troop Readiness” in WWI that all of the major warring factions created and utilized mobile laboratories, allowing laboratory testing to be done to support troops near the front.
No. 2 Mobile Lab, the Princess Christian

Below: Inside of the Mobile Laboratory. The laboratory was fitted out by Bred & Temlock of London. The door in the back represents the entrance to the main laboratory, which contained the sinks, cabinets, desk, etc. The main compartment contained a "glass-covered bench top, sink, cabinets, hot water, water cock, etc..."

A.E.F. Division of Laboratories & Infectious Disease

- April 1917: USA entered WWI.
- October 1917: established by Col. Joseph Siler, a bacteriologist specializing in typhoid vaccines.
- Originally — one of the Surgeon General’s "Professional Services" Divisions.
- Org Chart restructured constantly!!!
- Lab was downwardly mobile - eventually a Section of the Sanitation Division.

Joseph Franklin Siler, MD

“The demotion” was a Key to Success

- Moved to Dijon and, thus, physical separation from the Surgeon General’s Office in Neuchateau.
- Poor communication, the high degree of disorder, and excessive bureaucracy necessitated further autonomy.
- Simply “ignored” the demotion and continued to call themselves “Division of Laboratories & Infectious Disease” throughout the War.

Louis B Wilson, MD

- Assistant Director of the “Division” in early 1918.
- Civilian Pathologist with broad expertise in AP/CP.
- Formerly a bacteriologist at the Minnesota State Department of Health.
- On LOA from position as Director of Pathology Laboratories at the Mayo Clinic.
- Academician - published multiple papers about his experience in the A.E.F.

L.B. Wilson on “Inappropriate Utilization of Laboratory Tests”

“Not all hospitals in the A. E. F. were manned by such officers well trained in the selection of cases in which clinico-pathologic examinations might be of assistance, nor were they all sufficiently trained in interpreting the results once they were obtained. In some instances serious diagnostic errors were made which might have been prevented by even a urinalysis; in others the laboratory was called upon to make large numbers of difficult examinations in the search for the specific cause of a disease which was scarcely even suggested by the symptoms.”

Wilson on “Appropriate Utilization of Surgical Pathology”

“the routine examination of material from surgical operations by pathologists was (often) ... neglected... in civil life many surgeons had not previously learned the importance of the review of operative material by a pathologist for obtaining information which might be of value in the subsequent treatment of other cases or in the treatment of the same case .... Commanding officers ... should realize the importance of having operative material reviewed by a competent pathologist as a routine procedure, and not just occasionally on request of the surgeon.”
Wilson: Need for Autopsies:
“The need of a routine autopsy service, amounting in fact to professional inspection of the diagnostic and therapeutic measures of medical and surgical officers, became rapidly apparent during the summer of 1918. Surgeons were called upon to diagnose and treat, with little time for study or reflection, many gunshot wounds the like of which they had had little or no previous experience. Even those who were well grounded in the general principles of surgery were forced to make decisions and institute treatment thereon without sufficient basis or study. As a result, there were errors in diagnosis and errors in treatment. The worst of these could be determined only by the pathologist.”

Wilson on “Inappropriate Utilization of Bacteriology testing”
• For bureaucratic reasons, Wilson was not allowed to report on infectious disease, as this fell under the purview of another Section.
• Instead, “the number of ‘positive’ examinations in certain diseases was given merely to aid the reviewer in determining whether the clinician was under-using or over-using the laboratory.”
• First use of physician “report card”?

How was Louis B. Wilson, a famous Mayo Clinic pathologist and not a career military medical officer, appointed Assistant Director of the “Division” of Laboratories and posted in France?

Answer: Very Indirectly!
• January 1918: the Surgeon General sent an Army Medical Museum unit to France to collect pathologic materials to be sent to Washington, D.C.
• Col. Wilson was selected as its Director.
• Wilson’s museum and medical art collection service was placed under the direction of the Division of Laboratories.
• Wilson needed to improve the autopsy service to achieve his initial primary mission.
• Col. Siler recognized that Wilson’s many talents could be better used as Assistant Director of the Division and that he could handle his primary Museum Director position through multitasking.

In the chaotic organizational structure surrounding laboratory services, who would even notice that Wilson’s primary role had changed as long as he was sending some specimens to Washington, D.C.?
Both Siler and Wilson were awarded Distinguished Service Medals, which were first authorized by Congress and then personally presented by the President, for organizing and providing outstanding laboratory services that were of “inestimable value to the medical and surgical services” and were delivered “in a manner not believed possible.”

AEF physicians and surgeons had much higher expectations related to laboratory services when they returned home!

Pathology at Home in the Immediate Wake of the War

Coming out of the War, Clinical Pathology was still a mess.

Hospital-based Clinical Pathologists were in a Fight for their Professional Lives with Private Commercial Labs

- Only ~450 clinical pathologists in the USA in 1922.
- Many believed that hospital-based pathology practice would soon be extinct.
- In large American cities, there were often multiple commercial laboratories which advertised their low prices.
  - Some labs were run by unsupervised technologists.
  - Others by technologists who advertised meaningless associations with famous academic pathologists (“honorary directorships”).
  - Some functioned on a “chain of stores” plan.
  - Others were well run legitimate operations where the work was directly overseen by well-trained clinical pathologists.

Some commercial labs were good, but without standardization, how could clinicians tell?
Commercial Labs were promoting out-sourcing of hospital lab services

The American Medical Association
- Allowed commercial labs to advertise their services and prices in JAMA.
- Deemed that lab tests were “commodities” rather than medical services, that these services could be provided by any competent person with minimal training (i.e., did not require medical training), and that, as commodities, it was not unethical, in fact was entirely appropriate, to advertise prices.
- Alienated laboratory physicians by saying they were “not the same as internists and surgeons,” and called them “manipulators of test tubes and inanimate substances.”

Routine Surgical Pathology Did Not Exist
- Specimens removed at surgery were normally discarded.
- If a surgeon wanted a particular specimen examined, he could send it to a “mail order commercial laboratory or to the State Public Health Laboratory
- Turnaround Times were slow.

A Few of the Commercial Labs Offered Histology Services ($5.00)

Over Half of State Public Health Labs Offered Histology Services for Free, but with Slow Turnaround Times

In the early 20th Century, surgery was also “in a mess” and better trained surgeons wanted to begin policing surgical practice in North America.
Early 20th Century Surgery
- An oversupply of medical practitioners and the quality of their training was highly variable.
- Formal residency training programs and board examinations did not exist, and so there was no way for patients to carefully select a surgeon.
- The separation of surgical and medical practice was incomplete and many physicians also practiced surgery, often with very bad results.
- This oversupply of surgical practitioners caused:
  - The surgical profession having a very poor reputation.
  - Adversely affected incomes.

American College of Surgeons (ACS)
- Formed in 1913 as an elite specialist guild with the goal of elevating the practice of surgery.
- Membership in the ACS required a minimum level of competency which must be documented.
- Members of this elite guild naturally assumed that patients needing surgery would flock to them rather than "surgeons" of lesser ability and training.

ACS Issues:
- Most hospitals allowed any medical practitioner to operate regardless of qualifications.
- The ACS wanted autopsies performed on hospital patients who died and wanted all surgical specimens, which up until this time were usually thrown in the garbage can, to be examined (i.e., new forms of surgical quality assurance).
- Elite surgeons believed that QA would eventually limit competition from poorly trained surgical practitioners.
- Pathologists had not recognized and/or seized this opportunity.
- In some top centers, surgeons were taking on this role and it appeared as if Surgical Pathology might develop as a subspecialty within Surgery Departments rather than within Pathology Departments.

In the early decades of the 20th Century, Hospitals were also “in a Mess”!
- Until the end of the 19th Century, there were few hospitals in North America.
- Wealthy patients were treated at home.
- Numbers of “community hospitals” were increasing exponentially.
- There were no hospital standards.
- A.E.F. WWI hospitals were much better!!!

Ernest Avery Codman
- Surgeon at MGH c1900.
- Fascinated by time-motion studies and industrial efficiency.
- Developed a lifelong interest in hospital efficiency and standardization.
- Vigorously pushed his visionary “end results system” of hospital organization.

Codman’s “end results system”
“...This system is perfectly simple, the only difficulty with it being its revolutionary simplicity. It requires straightforward truthful answers to these questions: What was the matter with the patient? What did the doctor do to him? What was the result? If the result was not good, what was the reason? Was it the fault of the doctor, the patient, the disease, or the hospital organization or equipment? Heretofore, in hospital organization there has never been a bona fide attempt systematically to fix the responsibility for the success or failure of each case treated. I claim our record system should enable us to fix responsibility, and that it should be used for this purpose.”
Codman’s “end results system” Principles

- Detailed hospital records with end results for every admission (based upon follow up one year after discharge)
- Generate outcome scores for hospitals and for practitioners for each type of disease or procedure, allowing practitioners to perform only surgical procedures for which they had high enough outcome scores
- Promotion of surgeons based upon their outcome scores rather than seniority or popularity.
- Oversight by hospital trustees, which he believed should accept responsibility for “the quality of the Product which their Hospital factories give to the Public.”
- Publication of individual hospital’s and surgeon’s results to allow potential patients to make informed decisions related to future surgical and hospital care.

Codman felt so strongly about his ideas that he resigned from the staff of the MGH, started his own small hospital where he implemented his full system on a small scale, and then he published his results.

Codman’s ideas were too controversial and could never have been implemented but he is now widely recognized as a pioneer in “Outcome Research.”

ACS Minimum Standards for Hospitals - 1

- The ACS had begun to roll out its plans to introduce Minimum Standards just as the USA was entering the War.
- This ACS Minimum Standards campaign went into full swing immediately after the War.
  - Several top ACS surgeons (ACS Board of Regents members) who had played major roles in establishing efficient A.E.F. hospitals in France, brought home practical knowledge.
- But, the ACS leadership had no authority to impose any kind of regulations on hospitals and so it needed to tread lightly at first.
- The ACS initially approached the American Medical Association (AMA), which also recognized the need to improve hospitals.
  - But the AMA did not want to participate as this might alienate its membership.
  - ACS took on this tricky task on its own.

ACS Minimum Standards for Hospitals - 2

- The ASC conducted an internal fund-raising program raising ~$1 Million from its membership.
- The ACS hired John Bowman, the former Secretary of the Carnegie Foundation for the Advancement of Teaching, to oversee the project.
- The ACS developed an expensive engagement process seeking input from a wide variety of stakeholders (internists, other specialists, medical societies, hospital administrators, hospital trustees, hospital organizations).
  - Standards Committees established in every State and Province.
- The stakeholders were asked to develop the standards.
- By taking this highly consultative approach, the ACS Minimum Standards were so reasonable that it was difficult for any parties to publically oppose them.

ACS Board of Regents
The 1918 Minimum Standard Hospitals need to have:

• A Medical Staff Organization that meets regularly.
• Qualified, Competent, and Ethical MDs.
• Maintain Accessible Patient Case Records.
• Diagnostic and Therapeutic Facilities under Competent Supervision.*

* No staffing requirements or the minimum qualifications for staff (e.g., technician or an intern)

ACS Minimum Standards for Hospitals - 3

• Compliance was entirely voluntary.
• Compliance or deficiencies were documented by ACS Visitors with Visitor Cards.
• Were widely adopted throughout the United States and Canada throughout the 1920s.

ACS Minimum Standards for Hospitals - 4

• Only 89 of the 692 large (100+ bed) hospitals in the United States and Canada, met the Standards in 1918 and several of North America’s most prestigious hospitals failed.
• The pressure (mostly competition with hospitals) was so great that the percentage of compliant large hospitals exceeded 80% by 1922 and approached 100% before the end of the 1920s.

1918 Minimum Standards

• Only one page long – BUT to be expanded.
• Importance of laboratories recognized, but this was not its major focus.
• ACS wanted “adequate laboratories” but did not have sufficient content knowledge to really know what that meant (n.b., this term reflected establishing Minimum Standards).
• In such an overall consultative process, the ACS wanted help in this arena.
• They turned to:
  – The American Society for Clinical Pathologists.

American Society for Clinical Pathologists

• 1922 - Denver pathologists Philip Hillkowitz and Ward Burdick organized pathologists in the City of Denver, followed by the State of Colorado, and finally the whole country over a period of only 13 months.
• 1923- Established the American Society of Clinical Pathologists (n.b., the organization changed its name to the American Society for Clinical Pathology in 2001).
• Hillkowitz became first president, and Burdick became the ASCP’s Secretary for the rest of his short life.

Louis B. Wilson – Mayo Clinic

• 1922- asked by ACS leadership to serve on a five person ACS standardization of laboratories committee tasked with designing “adequate laboratory” services for the standardized hospital (“eminent lab technologists”)
ASCP Founders

- Dr. Ward Burdick
- Dr. Philip Hilkowitz

ASCP - 2

- Their first task was to fight the powerful AMA over its advertising practices which prevented hospital-based clinical pathologists from earning a decent living, because without winning this battle the new specialty of clinical pathology appeared rapidly to be on its way to extinction.
- The ASCP Executive quickly recognized that they had a potential powerful partner, the ACS.
- Even though the ASCP leadership were mostly chemists, hematologists, and microbiologists, they astutely recognized that the ACS wanted surgical pathology, autopsies, intraoperative frozen sections – All were services that “mail order” commercial laboratories could not easily provide.

1926 ACS Minimum Standards Document was generated with extensive input from Wilson and the ASCP

1926 Minimum Standards Document

- Much more detailed -- ASCP pathologists were heavily involved in shaping the “adequate laboratory.”
- Had a 1 ½ pages of explicit standards addressing qualifications for the laboratory director, types of testing, laboratory and hospital record keeping, and mandatory pathologist participation in quality assurance by attending monthly medical staff conferences.
- The proclamation that “all tissue removed at operations shall be examined in the laboratory and reports rendered thereon ...” created the field of surgical pathology.
- Hospitals were expected to have high autopsy rates, as this was a quality indicator for “modern hospitals.”
Pathology & Laboratory Medicine were highly dynamic fields in the 1920s
- Tumor grading, introduced by Mayo pathologist Albert C. Broders in the early 1920s, had become state-of-the-art for cancer prognostication.
- Many new chemistry tests were introduced.
- Test sensitivities improved and volumes of blood required per test decreased.
- The War had resulted in important advances in transfusion technologies which soon evolved into new roles for clinical pathologists.
- By the late 1920s, after a 60 year hiatus, a new era in the use of exfoliative cytology had begun.

ACS Minimum Standards for Hospitals
- Was an important regulatory framework for hospitals for 32 years.
- Evolved into:
  - the Joint Commission on Accreditation of Hospitals in 1951.
  - the Joint Commission on Accreditation of Healthcare Organizations in 1987.
  - the Joint Commission in 2007.

The development and implementation of the ACS Hospital Standardization program is perhaps the best example of successful continent-wide change management initiative in the history of health care, and it is worthy of study even today!

Standardized Hospitals & Autopsy Rates
- The ACS was concerned that autopsy rates were too low in standardized hospitals.
- The Standardization process had shied away from setting a minimum autopsy rate.
- The ACS wanted hospitals to quickly succeed in meeting their standards.
- The ACS believed that requiring a specific autopsy rate might prevent many hospitals from meeting the Standard.
By the end of the 1920s, the ASCP and the AMA had made friends and were now working together.

AMA, ASCP, & Approved Laboratories

- In 1929, the ASCP and AMA agreed to a brief AMA document entitled *Essentials of an Approved Clinical Laboratory.*
- The *Essentials* required Laboratory Directors to be physicians who have “specialized in clinical pathology ... for at least three years subsequent to graduation.”
- Although the AMA never publically reversed its earlier decision favoring the advertisement of prices for laboratory tests, the *Essentials* required that “publicity of an approved clinical laboratory should be in professional good taste.”
- The AMA took credit for putting many technician-run laboratories out of business.
- The AMA issued a list of 174 approved laboratories.

AMA & Autopsy Rates

- In 1920, the AMA, regretting that it had not played a role in Hospital Standardization, decided to rename its Council on Medical Education.
- The new name was the AMA Council on Medical Education and Hospitals.
- The renamed Council required hospitals wanting to train interns or residents meet their own standards.
- In 1927, this Council announced that no hospital could continue to be approved as a training site if they did not perform autopsies on at least 10% of hospital deaths starting in 1928 and 15% in 1929 and thereafter.
- This drastically increased autopsy rates (in 1927, it was projected that >36% and >55% of training hospitals would not meet the 1928 and 1929 requirements).

Registry of Medical Technologists

- Established by ASCP in 1928 in conjunction with the ACS and AMA.
- Schools for Medical Technologists must be accredited.
- Raised quality of technical training allowing pathologists to delegate work under their supervision.
- ASCP strongly opposed licensing technologists.
- Hillkowitz was Chair of the Registry until the early 1940s.

Pathology Societies thrived in the Wake of the Great War

- There were now 4 major pathology societies:
  - American Association of Pathologists & Bacteriologists established in 1901.
  - International Association of Medical Museums established in 1907.
  - American Society of Experimental Pathologists established in 1913.
  - ASCP established in 1922.

Pathology Journals thrived in the Wake of the Great War

- The *Bulletin of the International Association of Medical Museums*, edited by Maude Abbott.
- Two new pathology journals were formed:
  - *American Journal of Pathology*, edited by F.B. Mallory (1925)
  - *Archives of Pathology and Laboratory Medicine*, by Ludwig Hektoen (1926)
- The ASCP’s first "affiliated" journal was the *Journal of Laboratory and Clinical Medicine*, edited by Victor C. Vaughan, BUT in 1931 the ASCP established its own *American Journal of Clinical Pathology*. 
In summary, the decade in the wake of the Great War was very good to Clinical Pathology and it was during this period that Pathology and Laboratory Medicine evolved into a model similar to what we practice today.

Thank You