Using Informatics to Address Five Major Challenges in Pathology
(Session API 1-18)

Bruce A. Friedman M.D.
Emeritus Professor of Pathology
University of Michigan Medical School
friedman@labinfotech.com
DISCLOSURE

In the past 12 months, I have not had any significant financial interest or other relationship with the manufacturers of the products or providers of the services that will be discussed in my presentation.
Overarching Theme of Our Two Lectures: Upcoming Major Changes

• All of dx medicine, particularly pathology & radiology, now in the midst of major changes
• Drivers behind changes are societal, financial, political, scientific, and technological
• These changes will have a significant effect on pathologists as well as patients/consumers
• You should prepare yourself to embrace them to extent you agree with ideas presented here
Five Top-Level Changes That Are Now Occurring in Healthcare

1. This is golden era of diagnostics, affecting primarily complex diseases like cancer
2. Decentralization of healthcare away from hospitals & toward consumers
3. Rising tide of consumerism; patients will need to be treated more like customers
4. Computer-driven analytics are changing the style and content of pathology reports
5. For-profit companies like CVS, Apple, & Google beginning to reshape healthcare
Stepping Through These Five Top Level Changes

• Will first step through *five top-level changes in healthcare*, commenting on relevance of each
• Sets stage for next discussion of how these changes present as *five challenges in pathology*
• Will complete presentation with ten suggestions about staying relevant in pathology
• Pathology informatics often at core of possible response to changes/challenges presented
1. We Are Now Embedded in the Golden Era of Diagnostics

- Arriving at a diagnosis is a major challenge for complex diseases such as most cancers.
- Therapy often then becomes standard and routinized based on generated diagnoses.
- External dx support will enable high quality care to be performed in all US hospitals, big and small.
- Provider-to-provider telemedicine as inexpensive and practical means to provide such dx support.
Consequences of Advances in Precision Medicine for Pathologists

- Cancer genomics & molecular pathology enable the reporting of actual diagnoses in reports
- Biomarkers driving choice of cancer drugs; companion diagnostics embraced by FDA
- DNA testing by genealogy web sites has fueled consumer interest in DNA-driven diseases
- Precision medicine also attracting best and brightest students into our clinical pathology
DMTs as Means to Improve the Quality of Diagnostics Overall

• Diagnostic management teams were developed by Mike Laposata to improve intra-hospital dx quality
• DMT national networks now offer possibility for lab diagnostic experts to share expertise more broadly
• Technology platform for DMT networks can be provided by provider-to-provider telemedicine
• Few existing precedents for compensation of such efforts; needs to be worked out to improve care
What Is the Problem with Financial Status of Smaller Hospitals?

• Many small hospitals in small towns are in dire financial straits or going bankrupt
• Reflection of major changes in economy with urban area prospering, towns decaying
• Small hospitals often linchpin of economy of small towns; key role in our healthcare system
• Quality & economic gains by pushing expertise into small hospitals; help them retain patients
2. Decentralization of Healthcare

- Healthcare moving toward ambulatory settings & ambulatory moving to consumers’ homes
- Health systems, understanding this trend, are now building “bedless” hospitals
- In aggregate, these movements can be described as a “decentralization of care”
- This will have a major effect on the hospital-based specialties of pathology & radiology
Move to Where the Patients Are or Will Be Located

• Lab testing of growing importance & interest to new generation of healthcare consumers
• Many of them now embracing use of health wearables, some supplied by health plans
• Challenge is that they won’t necessarily be present in healthcare settings for blood draws
• Up for grabs currently is technology to monitor health data generated by consumers at home
3. Rising Tide of Consumerism

• For about a decade, health strategists have promoted price transparency to control costs
• Unfortunately, consumers with health insurance have not been incentivized to shop for services
• However, high deductible health plans now provided ample incentives for such behavior
• In addition, easy access to web-based health information has reinforced power of consumers
How Will Consumerism Affect Lab Testing and Pathology?

• Direct access testing (DAT) enables consumers to order their lab tests on web for reduced prices
• Patient portals integrated with EHRs provide patients ready access to their own test results
• Apple, in concert with large health systems, enables copying of EHR records to iPhone
• Bottom line: hospital lab reports now have two audiences: test-ordering physicians and patients
4. For-Profits Begin to Reshape Nature of Healthcare

- Given that healthcare spend is 18% of GDP, industry is an attractive target for companies for new ventures.
- In particular, large IT companies like Apple, Google, and Microsoft want to capitalize on EHR inefficiencies.
- CVS with 9,800 stores is expanding its walk-in MinuteClinic business and is acquiring Aetna.
- UnitedHealth’s direct-to-patient subsidiary, OptumCare, currently employs or is affiliated with 30,000 physicians; largest employer of MDs in the country.
How Will Involvement of For-Profits Affect Lab Testing & Pathology?

• Generally speaking, organized medicine and pathology most interested in dx and rx of disease
• CVS and Aetna poised to profit from both treatment of disease as well as promoting wellness
• UnitedHealth, as health insurer, increases profits by referrals to OptumCare where can control costs
• Hospitals & pathology need to increase attention to wellness and seek to become lower priced provider
5. Computer-Driven Analytics

• Big data & deep learning paving the way for expanded predictive analytics in clinical labs
• Healthcare sitting on a mountain of data but doesn’t have all the tools/expertise to exploit it
• For labs, “operational analytics” provides unique info. to decrease waste & increase efficiency
• Predictive analytics changes lab reporting: diseases that patients will develop in future
How Will Analytics Affect Lab Testing and Pathology

• Quickly and importantly, operational analytics will enable labs to operate more efficiently
• Also need to be recognize that pathology databases have become increasingly valuable
• CP databases will become basis for developing algorithms on which predictive analytics based
• Current controversy at MSK: start-up Paige.AI insiders given exclusive access to AP database
The Five Major Challenges in Pathology on 3-5 Year Horizon

1. Translation of cancer genomic & molecular pathology test results into actionable information for clinicians
2. Deployment of predictive diagnostics results into most pathology reports
3. Total automation of anatomic pathology with integration of digital pathology into AP workflow
The Five Major Challenges in Pathology on 3-5 Year Horizon (cont.)

4. Conversion of most healthcare processes, including surgery, to ambulatory settings with the majority of interactions supported by telemedicine

5. Integration of lab data from "wearables" & home testing devices into LIS & EHR
Cancer Genomics & Molecular Pathology
Drive Actionable Items in Reports

• Traditional approach for clinical pathology reports has been to avoid making diagnoses
• Instead, the numeric results are reported, often in the form of dense, esoteric text
• In contrast, many clinicians desirous of having “actionable items” stressed in such reports
• We are entering an era when dx reports will become increasingly more prescriptive
Improving Communication with Test-Ordering Clinicians

• We have paid insufficient attention to ways to improve communication with clinicians
• Lab handbooks superb source of information but may be inefficient for time-stressed MDs
• Start to view such communications as two-way conversations about ordering/interpretation
• New apps that provide “live chat” options that integrate conversations into LIS/EHR
Predictive Diagnostics Integrated into Pathology Reports

• Most radical change in pathology reporting will be the introduction of predictive analytics

• Algorithms used to predict what diseases pts. will develop on basis of routine test results

• Academic depts. developing web sites to predict future disease based on uploaded DNA

• MDs & patients will need to adapt to idea of monitoring for development of future diseases
Challenges of Predicting Future Diseases

• Many patients will be unreceptive or hostile to prediction of future diseases for them
• Many clinicians also not be prepared to manage development of future diseases
• Are there therapeutic interventions in place to forestall predicted future diseases?
• Good news: this new approach in pathology reporting will open up new frontiers in research
Time Ripe: Automation of Anatomic Pathology and Digital Pathology

- Although lapse of multiple decades since CP automation, time ripe for AP automation
- Capital investment necessary; reduces operating cost of AP that is demanded of us
- Precedes and drives deployment of digital pathology and whole slide imaging
- Portability of pathology images opens up multiple new vistas (e.g., JIT consultations)
Why Is Digital Pathology a Necessary Companion to AP Automation?

- Digital pathology systems tightly linked to LIS which is “source of truth” for all AP cases
- Similarly, the LIS is a component of the EHR or interfaced to it; EHR is the key reporting engine
- Scanned surgical pathology images are now becoming a critical case documentation tool
- Make no sense to seek capital funding for AP automation w/o bundling with digital pathology
Increased Ambulatory Care Activity Supported by Telemedicine

• Telemedicine (virtual care) becoming important component of all ambulatory care
• Enables cost-effective care without rigidity of inflexible investments in bricks-and-mortar
• Requires training of a whole new cadre of MDs and nurses who are comfortable with approach
• Pathology will have a role to play in virtual care as emphasis moves to rx of chronic diseases
Integration of Test Data Generated by Wearables & Home Testing Devices

- Consumers asking for home/wearable generated data integration into their EHR records
- Removing lab data from oversight of clinical labs will prove to be both benefit & challenge
- Also questions about how health systems will be reimbursed for such data monitoring
- Certainty that such integration and surveillance will be major IT project for pathology
Relevance of Pathology Informatics for These Changes

• Obvious that IT is at the heart of many of the major changes occurring in healthcare
• Equally obvious that pathology needs to “beef-up” its IT expertise for new challenges
• For present, this means increasing pathology informatics expertise of all dept. personnel
• Given current trends, all pathologists & med techs will devote more time to IT projects
Ten Steps to Take to Stay Relevant in Pathology

1. Increase expertise in pathology informatics; hire newly trained informaticians in department
2. Lobby C-suite for capital for informatics projects at time of reduced health budgets
3. Promote virtual care in health systems with integration of lab data/images when relevant
4. Rapidly pursue total AP automation & adoption of digital pathology as means to reduce costs
Ten Steps to Take to Stay Relevant in Pathology (cont.)

5. Embrace predictive algorithms and introduction of risk scores into EHT

6. Promote IT collaboration with regional smaller hospitals to ensure their economic viability

7. Help to reduce the high cost of healthcare through increased lab automation

8. Reconsider purpose and goals of pathology reports; emphasize actionable items
Ten Steps to Take to Stay Relevant in Pathology (cont.)

9. Pursue projects with higher visibility within IT hierarchy; pursue relationship with CIO

10. Pursue new business opportunities (e.g., lab testing contracts for urgent care centers)
Questions?