The dermatopathology service at University of Utah Health (UUH) uses a traditional light microscopy platform to read cases and render diagnoses. Innovative start-ups are gaining market share using digital platforms with whole slide imaging and artificial intelligence (AI)-assisted diagnosis. A digital platform has the potential to transform the clinical, research, and educational opportunities within dermatopathology and anatomic pathology. The short- and long-term implications of investing in the infrastructure are uncertain.

**OBJECTIVES**

1. Develop a framework for evaluating the feasibility of developing a digital dermatopathology platform
2. Create phased process to meet the short and long term clinical and innovation needs of our department and institution

**METHODS: FRAMEWORK**

**OBJECTIVES**
- Working group formation to execute model, define and refine objectives and priorities

**STAKEHOLDERS**
- Dermatologists/dermatopathologists/clients, IT, technology/commercialization, leadership

**KNOWLEDGE**
- Interviewing stakeholders, consultation with private sector

**CHOICES**
- Expand/Refine models, brainstorming sessions

**EVALUATION**
- Assess short and long-term trade-offs, consensus in working group and stakeholders

**EXECUTION**
- Proforma, phased implementation

**DECISION**
- Who decides, execute

**IMPACT**

1. Framework for AMC to evaluate strategy for digital pathology
2. Model for short- and long-term projections on financial and operational impact
3. Potential improvement in diagnosis, workflow efficiency, innovation, and educational enhancement

**RESULTS**

- **Investment**: to achieve at private sector level is tens of millions of dollars
  - Less expensive whole slide imaging = less acceptable, still > $1M investment
  - Clinical reimbursements alone do not justify the investment
  - Future payer networks may substantially disrupt small laboratories
  - Technical expertise: unlikely to compete with private sector (we’re behind)
  - First priority is to establish interfaces between electronic health record systems
  - ROI for platform development, R&D investment is uncertain
  - Will require synergizing partnerships within institution (informatics, computer engineering)
  - Consultation with private sector startups is essential
  - Partnership will require trust and contractual agreements
  - R&D collaborations may be best opportunity for academic pathologists
  - Public-private partnerships should be considered to leverage AI, payer contracts
ABSTRACT: 2022 ELAM Institutional Action Project

Project Title: Framework for Evaluating Feasibility of a Digital Dermatopathology Platform

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Collaborators and Mentors: Amy Boyack, Michael Bird, Aaron Secrest, and John Zone MD

Topic Category: Clinical

Background/Significance of Project: The dermatopathology service at the University of Utah Health (UUH) uses a traditional light microscopy platform to read cases and render diagnoses. Innovative start-ups are gaining market share using digital platforms with whole slide imaging and AI-enabled diagnosis. A digital platform has the potential to transform the clinical, research, and educational opportunities within dermatopathology and anatomic pathology, but the short and long-term implications of investing in the infrastructure are uncertain.

Objectives: The objective of this project was 1) to develop a framework for evaluating the feasibility of developing a digital dermatopathology platform and 2) establish a phased process to meet the short and long-term clinical and innovation needs of our department and institution.

Methods/Approach/Evaluation Strategy:
A working group made up of departmental administrative and laboratory leadership was formed to develop and execute a 7-attribute model to inform decisions on transitioning to a digital dermatopathology platform.

- OBJECTIVES: develop and iterate objectives of the project
- STAKEHOLDERS: Engage dermatologists, dermatopathologists, referring clients (community dermatologists), IT and institutional leadership. Identify key consultants to develop final business modeling (technology and commercialization office)
- KNOWLEDGE: conduct series of meetings and brainstorming sessions to determine what we know/what we do not know, including consultation with outside collaborator(s) to further expand understanding of possible models and partnerships.
- CHOICES: based on above findings, revise an informed set of possible choices for evaluation.
- EVALUATION: establish questions to assess short and long-term financial and operational trade-offs.
- EXECUTION: identify project phases and create proforma to present to final decision makers, including financial analysis, modeling, and timelines. (in progress)
- FINAL DECISION: identify who will make final decisions.

Results
In applying the model, we identified important factors that impact decisions around developing or partnering with collaborators on a digital platform:

- Start-up costs to develop a digital platform comparable to those established already in the private sector are exceptionally high (estimated in the millions of dollars).
- The technical expertise needed to develop an institutional digital platform would require substantial partnerships with other departments.
- Clinical reimbursements alone do not justify the investment. ROI for research and development is uncertain.
- Partial laboratory integration with an external partner is technically challenging and not feasible.
- Partnership with an external startup will require trust and clear formal agreements.
- Public-private partnerships, and research engagement with industry, may be the best opportunity for academic pathologists to engage with start-ups in the AI space.

Discussion/Impact
Digital pathology may ultimately improve the efficiency of clinical-pathologic correlation and enhance educational and research opportunities using AI. However, it is very important for AMCs to carefully consider the short and long-term financial and operational impact. The findings of this project may serve as a framework to facilitate decision around development and implementation of a digital pathology infrastructure.