Framework for Evaluating Feasibility of a Digital Dermatopathology Platform

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BACKGROUND

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

ELAM

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

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)

Frist 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

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

ABSTRACT: 2022 ELAM Institutional Action Project

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

Name and Institution: Kristina Callis Duffin, MD, MS, University of Utah

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 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.