

Use of Digital Pathology to Drive Revenue to Labs

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pull-through” requests for consults and global reads. Now with the introduction of Artificial Intelligence (AI) algorithms applied to image analysis, laboratories implementing digital pathology systems will realize even greater return on investment of this technology.

Keywords: Digital pathology; Laboratory revenue; Dermatopathology; TC/PC model

Introduction

To date, the primary value proposition of digital pathology systems in clinical laboratories has centered on efficiencies. Efficiencies in digital pathology include error reduction, turnaround time improvement, flexibility in slide sharing, and digital storage of archived specimens. Expenses related to the implementation of a digital pathology laboratory are often cited as the cost of doing business. With the recent advancement of FD] of FD] under Clinical Amendments (CLIA) guidelines at a CLIA approved location [1].

Improve laboratory revenue by

increasing the number of referral skin biopsies for technical slide processing, special stains and immunohistochemistry (IHC) orders, increased numbers of second opinion consultation requests, and requests for full global reads for complex cases and vacation coverage.

Methods

Clearpath™ laboratory information software developed over a 2-year period with input and beta testing by laboratory dermatopathologists and selected referring dermatologists.

Laboratory dermatopathologists publish results of largest dermatology specific validation study (499 cases) showing equivalency between Whole Slide Imaging (WSI) diagnoses and traditional glass slide reads [2].

Interested new client dermatologists buy Clearpath™ software license and independently purchase recommended tablet for viewing images (Apple’s Ipad Pro most popular). Client dermatologists are provided instructions for WSI validation following the latest guidelines from the College of American Pathologists (CAP) for reading WSI for primary diagnosis [3].

Referring dermatologists send skin biopsies to lab for technical component (TC) slide processing followed by generation of 20X or 40X magnification WSI scan. WSI is immediately available to remote dermatologists via the Clearpath™ viewer. Glass slides are also sent back to the referring physicians for

Results

Table 1 below shows the revenue and related expenses associated with the digital TC/PC model resulting in an additional \$1M of lab revenue within the first year of launching the program. The revenue represents a blend of TC billed, additional stains ordered, and some global and consulting requests. Fixed expenses for the slide scanner and annual maintenance, and addition of two FTE for IT support and customer service are not included in the analysis. As slide referrals increase, the economies of scale dramatically impact both the fixed and some variable costs. In addition, as more WSI systems are FDA approved for primary diagnosis, shipping costs associated with slides sent back for confirmation will be eliminated. Shipping costs currently represent almost 18% of the total variable cost.

Variable expense	\$ Cost/slide	Revenue/slide	Gross margin
Technical prep	\$8.57		
Logistics/shipping	\$4.28		
Billing	\$0.78		
Sales	\$0.97		
Scanning	\$0.5		
Other	\$1.75		
Total	\$16.85	\$26-\$32*	35%-47%

Table 1: The revenue and related expenses