Barcode Location Information for Pathologists (BLIP), an Innovative Glass Slide Tracking Program

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Background:

Slide tracking and management plays a major role in laboratory workflow efficiency, timeliness of diagnosis, and quality assurance. Laboratory information systems often lack an efficient way to track glass slides after delivery to the pathologist, and require specialized equipment (e.g. handheld scanner). Recognizing a need for a more efficient slide management software, we prototyped a mobile glass slide management program designed to close the loop and enable tracking of barcoded glass slides in possession by staff and faculty.

Technology:

Barcode Location Information for Pathologists (BLIP), utilizes Data Matrix barcode reading technology based on Scandit SDK software (Zurich, Switzerland), running on iPhone 8, iOS 13.3 (Apple Inc., Cupertino, CA), and Google Sheets (Alphabet Inc., Mountain View, CA). Honeywell 1900G-HD, 2D Barcode Scanner was used as a reference.

Methods:

We initially surveyed anatomic pathology laboratory staff, faculty, and residents on the time spent locating glass slides. We then developed BLIP as a website consisting of a DataMatrix barcode scanner from the Scandit Barcode Scanner SDK for the Web and an input field for the user to enter their name. BLIP's HTML form transmits the user's name, scanned barcode ID(s) and timestamps to a Google Form and ultimately into a Google Sheet. We then compared the relative scan speed of 1000 slides using BLIP versus traditional handheld barcode scanners.

Results:

Surveyed end-users (N=19) endorsed inefficiency and difficulty in locating glass slides. Most users spent 1-3 hours/week locating slides. BLIP has a scan rate of 23.17 slides/minute, with an error rate of 5/1000 scans as compared to the traditional scan rate of 60.98 slides/minute with an error rate of 2/1000 scans using the Honeywell handheld scanner (**Table 1**).

Table 1

Scanning method	# Slides scanned	Time	Rate	Error rate
BLIP	1000	43.2 min	23.17 slides/min	5/1000
Honeywell scanner	1000	16.4 min	60.98 slides/min	2/1000

Conclusion:

BLIP demonstrates a proof-of-concept mobile platform for closed loop tracking of bar-coded assets in the laboratory, including glass slides. In addition, this competitive performance and capability can be broadly deployed, even in low resources settings given the universality of mobile phones and networked computers. This platform has the potential to improve workflow efficiency and patient safety by aiding in the timely and complete tracking of glass slides, with cost-effective and easy-to-use hardware and software.