Advance/Laboratory Webinar

ADD-ON APPLICATIONS AND TECHNOLOGIES THAT CAN ENHANCE YOUR LIS

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Add-On Applications and Technologies That Can Enhance Your LIS

- RFID Specimen Tracking and Management
- EMR/PPMS Connectivity
- Mobile Outreach Communications

RFID Specimen Tracking and Management

What is RFID?
- The term RFID (Radio Frequency Identification) describes a wireless identification technology that communicates data by radio waves.
- The RFID tag serves the same purpose as a bar code on a specimen label; it provides a unique identifier for that object.
- RFID tags placed on specimens uniquely identify the sample and maintain a record of each instance the specimen is handled.
- Just as a bar code or magnetic strip must be scanned to get the information, the RFID device must be scanned to retrieve the identifying information.
- Can scan multiple specimen labels from a distance - Big advantage over barcoding
- Like most electronic technologies, RFID unit costs have fallen dramatically within the past few years.
How RFID Works

How does RFID work? A Radio-Frequency Identification system has three parts:

- A scanning antenna
- A transceiver with a decoder to interpret the data
- A transponder - the RFID tag - that has been programmed with information.

The scanning antenna puts out radio-frequency signals in a relatively short range. The RF radiation does two things:

- It provides a means of communicating with the transponder (the RFID tag)
- It provides the RFID tag with the energy to communicate (in the case of passive RFID tags).

- The scanning antennas can be permanently affixed to a surface; handheld antennas are also available. They can take whatever shape you need; for example, you could build them into a door frame to accept data from persons or objects passing through.

- When an RFID tag passes through the field of the scanning antenna, it detects the activation signal from the antenna. That “wakes up” the RFID chip, and it transmits the information on its microchip to be picked up by the scanning antenna.

- RFID tags do not need to contain batteries, and can therefore remain usable for very long periods of time (maybe decades).

RFID vs. Barcodes

- A significant advantage of RFID devices is that the RFID device does not need to be positioned precisely relative to the scanner. We're all familiar with the difficulty that users sometimes have in making sure that a barcode can be read, e.g. label positioning and curvature, close proximity to reader.

- In contrast, RFID devices will work within a few feet to a hundred feet or more of the scanner. For example, you could just put all of your specimens in a container, and place the bag in proximity to the scanner. It would be able to query all of the RFID devices and log-in all the specimens in the container without need for their removal.

- RFID technology has been available for more than fifty years. It has only been recently that the ability to manufacture the RFID devices has fallen to the point where they can be used as a “throwaway” inventory or control device.

- One reason that it has taken so long for RFID to come into common use is the lack of standards in the industry and unit cost of RFID tags. In addition, the use of barcodes is so widespread, time-tested and relatively inexpensive that hospitals are reluctant to make the transition.

A Single Solution For Real Time Operational & Safety Net with RFID

RFID system links all patient, clinician, equipment, blood and specimen to create an “intelligent safety bubble” around the patient.

- Specimens are collected and tagged at the point of collection.
- Specimens are stored in racks. Automated catalog and manages stored specimens.
- RFID tag is read at the workstations.
- Date accessioning with voice dictation and audio specimen/phase.
- Locate specimen in real time. Decision maker can access trace specimen movement, chain of custody and inventory reports.
Extended Uses of RFID?

• Combined RFID tags with sensors of different kinds. This would allow
  the tag to report not simply the same information over and over, but
  identifying information along with current data picked up by the
  sensor.  
  – For example, an RFID tag attached to environmentally sensitive
  specimens could report on the temperature readings of the past 24 hours,
  to ensure that specimen was transported and/or stored properly.
• Positive patient identification wristbands
• Real-Time Patient location
• Supplies Inventories
• Locating/Tracking biomedical equipment
• Medication and/or blood unit locating, tracking, monitoring

RFID EQUIPMENT COSTS

Price for tags vary from $0.03 to $0.15 depending on quantity
and specifications

Readers range from $100 to $2000 depending on size
(desktop, shelf reader, or handheld mobile reader)

Printer to print barcode + RFID tags  approx $2000

Reader is required at each point where we want to track or
locate the specimen. e.g. At various points along the transfer
process or each place where the specimen bag/box are
unloaded/received/shipped etc.

Shelf readers can be put inside the refrigerator/storage to track
specimen location.

RFID COST BENEFITS MODEL

• “Bar codes, after all, cost less than half a cent each, while the
  electronic tags used in RFID can cost more than 5 cents each.”

  Saying bar codes are cheaper than RFID tags is like saying a wood-
  handled hammer is cheaper than a nail gun. But it takes a mere
  fraction of the time to finish a job with a nail gun than it would with
  an old-fashioned hammer.

• The cost tradeoff should consider the relative personnel time that it
takes to perform a task, e.g. how long to scan, track and locate
specimens individually using bar codes compared to “bulk” scanning
with RFID.
  – Logging “in transit” specimens in “bulk”
  – Locating specimens at “checkpoints”
  – Logging specimens received in “bulk”
  – Locating specimens in storage
Example of RFID Usage

Since 2007, the division of anatomic pathology at Mayo Clinic (Rochester, Minn.) has been using RFID to track pathology slides and paraffin-embedded tissue blocks, finding huge gains in quality, workflow, and cost savings as a result.

The RFID system has also brought significant cost savings, Sanderson noted. "Back in 2006, we took a quick measurement of how much time we spent just trouble-shooting labeling errors, and just gift specimens alone, that was about $125,000. We've done some more recent calculations, and we look at our future version of this system as offering an internal rate of return of about 30 percent." The pathology labs using RFID have now gone to only single-digit errors per month since publishing the paper and those errors are captured and corrected immediately.

Even with these significant savings, Sanderson still believes the biggest impact has been on patient safety. "It would be easy to say that cost is the most significant benefit, but that's not completely true, because we really have experienced such a tremendous quality improvement," he said. "We were willing to spend a little extra money up front to get a high quality product and truly benefit patient safety and patient care overall."

SUMMARY

- Will RFID ultimately surpass bar coding as the primary auto-ID, specimen tracking/management technology in healthcare?
  - It is more likely that bar coding and RFID will complement each other, based on relative functionality, cost and ease of use.
  - Hospitals will be reluctant to abandon their investments in bar coding simply to introduce a newer replacement technology—particularly if there is no substantial gain in utility, and certainly not if the ROI equation doesn’t add up. Implementing multiple RFID applications will improve ROI.
  - RFID will continue to make inroads into healthcare via track-and-trace solutions, as asset and inventory management tools, then towards tracking specimens, patients and clinical monitoring devices.
  - RFID may be most applicable in specimen tracking when there are multiple collection and processing sites.

Quote from CLN Article

"RFID is definitely going to hit the clinical lab and will be a very important technology for us; it's just a question of price right now," said Charles Havker, PhD, adjunct professor of pathology at the University of Utah School of Medicine and scientific director for automation and special projects at ARUP Laboratories in Salt Lake City. "The good news is that companies are now developing technologies that should be able to break the current price barrier."
EMR Connectivity

- Make It Easier For Clients To Do Business With Your Lab
- Your LIS <-> Your Client’s EMR/PPMS
- Easy-to-Use Connectivity for:
  - Orders
  - Inquiries
  - Reports
  - Alerts
  - Supplies
  - Test Information

Internet Connectivity To/From Laboratory Clients

For Labs

Web-Based Services

The Physician’s Expectation

Setup
- Load flow-sheet views
- Load test order categories
- Load custom lists, panels, ..
- Complete the testing

Operations
- All labs look the same
- Single order list (not 3)
- Route to the right lab
- Results to same flow-sheet
Client Communication

- Web-based laboratory portals (Orders, results, supplies)
  - Include interfaces to MD Office instruments and manual results
- Transparent interface with Clients’ EMRs, Practice Management Systems
  - Part of portal or as separate product
- All major LIS vendors and over 23 third party companies offer Internet laboratory portals of varying scope
- 3rd party Portal offerings -
  - Atlas
  - CareEvolve
  - MiteBlue Iris
  - 4Medica
  - Halfpenny
  - + many more (See CAP Today POLL survey April, 2011)

Bi-Directional Communications With Clients – Via the Web

- Based on a 2009 User Survey of Hospital, Independent and Physician Office Laboratories (Washington G-2), the following were the most significant overall responses:
  - Expected Payback of Investment <5 years (69%)
  - ROI Primarily from New Business with New Clients (68%)
  - Helped Sales & Marketing Get New Clients (46%)
  - Results Reporting Most Common Service Provided (65%)
  - Most Common Benefits: Improved Client Retention (36%) Less Phone Calls (34%)
  - If Not Installed-Why not? (22%) Too costly/Not in budget

Mobile Outreach Applications

- Lab Order Entry
- Inbox presentation of lab results, AP reports, radiology reports, and clinical messages
- On-the-go lab results, AP reports, radiology reports and clinical messages
- Visual and audio alerts of critical values
- Push model eliminates waiting for synchronization
- Ready-to-view results
- Physician configurable alerts and result filters
- HIPAA compliant security model
- Dynamic result value trending
- Ability to add physician notes to test results
- Secure forwarding of test results
- Supported devices: iPhone, iPad, Android, Blackberry and others
Mobile Outreach Services
• Support of Various iPhones, Androids, Blackberrys, iPads, Xooms other PDAs to provide accessibility to/from clients wherever they may be.
• Some Vendors Include:
  – 4Medica
  – Atlas
  – Brunston
  – CareEvolve
  – VitalAxis
  – ARUP
  – Medplus
  – CenturyLink (Gazelle)
  – Labcorp (Beacon)
  – Many More....

FDA OVERSIGHT OF MOBILE MEDICAL APPLICATIONS
• In July 2011, the FDA published a draft guidance document describing what mobile applications the FDA felt should be under its regulatory guidance.
• The FDA is soliciting comments from affected organizations
• The document can be accessed at the following link:
  http://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/GuidanceDocuments/ucm263280.htm

APPLICATIONS CONSIDERED FOR GUIDANCE
• Extension of one or more medical device(s) by connecting to such device(s) for purposes of controlling the device(s) or displaying, storing, analyzing, or transmitting patient-specific medical device data, e.g. remote display of data from bedside monitors, display of previously stored EEG waveforms, and display of medical images
• Transform the mobile platform into a medical device by using attachments, display screens, or sensors similar to those of currently regulated medical devices, e.g. a transducer to a mobile platform to function as a stethoscope, attachment of a blood glucose strip reader to a mobile platform to function as a glucose meter, attachment of electrocardiograph (ECG) electrodes to a mobile platform
• That allow the user to input patient-specific information and - using formulas or processing algorithms - output a patient-specific result, diagnosis, or treatment recommendation to be used in clinical practice or to assist in making clinical decisions, e.g. a questionnaire for collecting patient-specific lab results and compute the prognosis of a particular condition or disease, perform calculations that result in an index or score, calculate dosage for a specific medication or radiation treatment, or provide recommendations that aid a clinician in making a diagnosis or selecting a specific treatment for a patient.

APPLICATIONS NOT CONSIDERED FOR GUIDANCE
• Electronic "copies" of medical textbooks, teaching aids or reference materials, used to provide clinicians with training or reinforce training previously received.
• Solely used to log, record, track, evaluate, or make decisions or suggestions related to developing or maintaining general health and wellness, not intended for curing, treating, or diagnosing a specific disease
• General office operations with functionalities that include billing, inventory, appointments, or insurance transactions.
• Generic aids that assist users but are not commercially marketed for a specific medical indication.
• Functionality of an electronic health record system or personal health record system.
Summary

• If your LIS does not meet all of your needs
  – You might just “live with it”
    • painful, counter-productive
  – You might replace it
    • Expensive
  – You might acquire one or more supplemental applications
    • RFID, EMR/PPMS Connectivity, Mobile Outreach
    • Also: Courier Management, Client Services, Business Intelligence, Billing/AR, Synoptic reporting, Voice recognition, etc., etc.
  • Many to choose from- Which? Why? How?

The End