Grifols Erytra: Implementation of a New Automated System at Duke Regional Hospital

Significant Improvement in Turnaround Time, Efficiency, and Productivity

TYPING

Duke Regional Hospital

- Established in 1998 following the merger of laboratories from 3 entities:
  - The 3 affiliated hospitals
  - Employing about 12,000 people in Clinical Laboratory Medicine throughout the health system
- Mid-sized with 360 beds
- Over 500 staff physicians
- Affiliated with Duke University Schools of Medicine and Nursing
- Level 3 Trauma Center; University Hospital Level 1 Trauma Center
- 100,000 ED visits /year
- 200-300 obstetrical deliveries/month
- 3,000 surgeries/month
- Blood bank data (monthly)
  - 1350 to 1500 type & screens
  - 550-650 crossmatches
- 100 antibody identifications

Introduction

Duke Regional Hospital is one of the three hospitals comprising the Duke University Health System. With 360 beds and over 500 dedicated physician staff members, Duke Regional Hospital is a Level 3 trauma center that provides the Durham, NC community every possible medical service in a convenient community hospital environment. Patients at DRH have access to Duke University Health System expertise including a Level 1 trauma center, burn care, and transplant service, located at the affiliated Duke University hospital nearby.

Debie Lynn DeCrescenzo, laboratory supervisor of transfusion services, joined the Duke University Health System in late 2015 with an immediate need to update the laboratory's aging gel processor, which had been in use at DRH for over 12 years. Debie's previous experience managing multiple blood banks (and more recently working as consultant in Texas) meant that DRH had vast experience in the first generation of automated blood bank platforms. "I had a very good idea of what instrumentation I wanted to pursue before arriving at Duke," explains Debie. Looking back on the previous system specifically at DRH, Debie identified that technicians initially loved it. However, the longer they worked with it, its functional limitations became increasingly frustrating. Additionally, when considering other automated systems, Debie was keen to avoid false positive and negative results and increased disposable costs that she had observed previously with solid phase platforms.

After performing extensive research on new automation, Duke Regional Hospital identified that they needed to move to a gel-based, cost-effective solution that could meet their services' testing needs. DRH, along with their affiliate Duke Raleigh Hospital, standardized their pretransfusion testing by selecting the Grifols Erytra as the next generation of automation for their transfusion services at both sites. *(continued on back)*

The Erytra Key Attributes:

Advantages:

- Flexibility for different lab configurations
- Scalability with Erytra Eflexis and manual stations
- Very quiet: 45 dBA
- Optimizes STAT sample management
- Small footprint: 43″ x 28″ x 69″ (w x d x h)

Features:

- Capacity: 350 cards
- Sample loading capacity: up to 96
- Throughput: T&S 48 samples/hr (3C)

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Grifols Erytra Impact on Productivity at DRH

In the fall, immediately prior to the delivery of the Grifols Erytra, DRH lost a blood bank technician to another department at Duke University Health System, with no option to replace the headcount. Staff at DRH initially had reservations about the extra workload. Although additional stress was placed on the transfusion service throughout the installation and validation of the Erytra, once go live occurred, several features of the Erytra allowed DRH to streamline their workflow. The net effect from the loss of headcount was absorbed and, simultaneously, DRH reduced turnaround time for testing and increased throughput (see Table 1).

One area the Erytra had an enormous impact on at DRH was patient care, specifically with oncology and dialysis patients. "Since the Erytra was installed at DRH, blood products are now available to these patients within 40 minutes or less. Previously this was 70 minutes," stresses Debie. When laboratory testing reveals these patients require transfusion, DRH reports that patients will not need to make an extra trip to the hospital, and providers are happy that their patients leave the clinic without symptomatic anemia or other health concerns.

DG Gel Detected Antibodies Previously Not Detected

DRH reports that validation of the Erytra was exceedingly straightforward. Each validation specimen was tested on the Erytra using DG Gel and reagents. On the previous system, each was tested using the lab's current gel and reagents. In addition, samples were tested in manual tube and manual gel using both the lab's current gel and Grifols DG Gel. "We performed this massive validation and obtained 100% concordance," explains Debie. "Surprisingly, we had a few specimens where Grifols reagents detected antibodies previously not detected in evidence." During validation, DRH reported that low frequency antibodies anti-Kpa, anti-Lua, and anti-Cw were detected using Grifols DG Gel system, but had not been detected during initial antibody screenings. DRH transfusion service identified Grifols reagent red cells to be the key in detecting these low frequency antibodies. Debie states, "Initial antibody screenings had not detected these antibodies because the screening cells we'd been using didn't encompass these antigens. It's nice to have a clear, clinical picture."

Partnership Drives Laboratory Efficiencies

Purchasing, installing, and validating a new analyzer is a large undertaking for laboratories. Selecting the right partner—beyond just reagents and automation—is also very important. "I've purchased many different pieces of equipment, but this is the first time where a company helped us organize absolutely everything," Debie states. Grifols project management allowed DRH to streamline training, validation, procedure generation, and optimize standing orders.

Table 1: Advantages and Features of the Erytra as reported by the DRH lab personnel

FEATURES	PREVIOUS SYSTEM	ERYTRA
Blood product availability	60-90 minutes	40 minutes
Efficiency: comparison	First sample of 12 T&S still pending at 29 minutes	12 T&S completed in 29 ½ minutes
Loading	Batching of samples required	Continual loading possible shortening turn-around times
STAT	Routine sample interruption	No process interruption
Wash buffer	Prepare frequently	Prepare once a day - the analyzer can hold much larger volumes
Reagent wastage - RBCs	High for red cells	Probe is able to aspirate the last drop of red cells due to the tilted block holding the reagent red cell vials

Product registration and availability vary by country. Ask your local Grifols representative for more information.

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Grifols Diagnostic Solutions Inc.
4560 Horton Street
Emeryville, CA 94608 USA
Tel: +1 888 244 7667
diagnostic.grifols.com