



POINT-OF-CARE-TESTING

by David Kissin, BS, RRT

Healthcare in the 20th century put the impetus on specialized care away from the home in a range of expandingly more complex facilities, from physician offices and local hospitals through the gamut to tertiary care trauma centers, each with its own medical niche, expertise and specialized personnel and equipment. Late in the century, the movement shifted to the development and expansion of specialized centers with the majority of care placed in the home. Along with this newer thinking came a parallel shift in laboratory services from in-house hospital traditional laboratories to off-site and reference labs. This latter shift was based on technological innovation at the patients' needs. This distance of testing site to patient and caregiver leads to increased errors in result reporting and miscommunication. To have the availability of relatively immediate results on which to act in real time is essential to quality patient care. Point-of-Care testing (POCT) fits that niche.

The advancement of technology in healthcare is a continuous process that enhances diagnostic and treatment of our clientele. With the ever-increasing impetus for hospital discharge and subsequent homecare, the in-roads made with POCT equipment allows

for the availability of the same intricate lab studies, such as blood gases and electrolyte analyses, as in the traditional hospital lab with accurate results. No longer is POCT simply a bedside glucometer used for trending purposes. Today's apparati can perform blood gas analysis on minimal blood samples. Many controversial aspects arise with this expanding technique, both within the hospital and with homecare use.

Misconceptions abound with POCT use. The myths of a lack of accuracy, increased cost and unreliability all stem from early incarnations of POCT equipment. As with any new technique or equipment, the learning curve and technical augmentations improve the utility of the devices. Perpetuations of some of these concerns may also be attributed to revenue concerns of laboratory service facilities. Are these criticisms valid??

Today we need a lab service that can provide quick accurate results; one that fits the Institute of Medicine's 6 aims for health-

care. It must be safe, effective, evidence-based, patient centered, timely, efficient and equitable. Challenges to POCT rest with the need for quality assurance for the operation and maintenance of the sophisticated equipment by operators with limited technical skills. Redundant result and report capabilities for the patient record are also a must. Ensurance that the right patient gets the right test at the right time using the right sample and that the correct result is given to the appropriate caregiver who then makes the correct decision and takes the appropriate action thereon will lead to the best outcome. Once testing becomes optimized, the impetus can shift back to caregiver focus of attention on the patient. In other words, POCT can facilitate patient triage, optimal treatment options, convenience and value.

Blood gas analysis has been an important medical diagnostic and monitoring tool since its invention in 1957, with an explosive impact on medical care since the 1960's, considered, according to Dr. John Severinghaus, "the most important lab test for critically ill patients." Blood gas POCT can be performed on as little as 90 microlitres of blood with results in as little as 2 minutes. Blood gas testing with a POCT device can be performed using any sample type, be it arterial or venous blood from a syringe or capillary samples from a heelstick. When tested side by side with

continued on page 81

POCT can facilitate patient triage, optimal treatment options, convenience and value



"It's called online banking. It tells us how much we're overdrawn 24 hours a day."

Point of Care Testing... *Continued from page 54*

"traditional" blood gas analyzers, the accuracy of the results is unquestioned. Whereas end tidal CO₂ monitors are useful for trending but have intrinsic failings in certain circumstances, POCT of blood gases is a treatable, accurate result on which decisions can be made. The minimal blood volume necessary for accurate testing makes it especially useful in the neonatal population. Indeed, many out of hospital transports would be hard pressed to deliver as optimal care as possible without the POCT devices. Manipulation of therapies to stabilize the patient for transfer to tertiary facilities is greatly enhanced by accurate lab results and POCT further enables optimal care to be given. These minimal sample sizes also facilitate accuracy in that there is less interaction of the sample to ambient air and thusly less equilibration of the sample between the sampling and the testing. The larger the sample size, the more surface area affected by ambient air. Such immediate results lead to more timely intervention at less cost, both monetarily as well as physically as far as blood loss and sampling discomfort, than traditional testing. Many studies have shown the accuracy of POCT comparable to traditional laboratories with less preanalytical errors and smaller specimen sizes. Labeling and sample mishandling are minimized. Minimal sample transport will minimize clotting, hemolysis and degradation of the sample.

The remaining drawbacks to POCT are the training of non-laboratorians in the function, handling and maintenance of the devices. Whereas sample testing is relatively easy to learn, some of the nuances of the devices themselves are less so. In addition, result reports appear on the device's screen and usually produce a temporary paper printout. These can easily be misplaced. An active interface with the patient record is needed.

Point of care testing is one of the most useful tools for clinicians. Quick, easy, portable and not exceptionally cost prohibitive, POCT is an excellent adjunct for bedside care and triage, especially useful when on out of hospital transport or when testing in a traditional lab is not feasible.

Student Papers... *Continued from page 77*

tion to our educational program...was the multiple direct mailings we do each year."

In the current study, the majority of the students had not heard of respiratory therapy before but had heard of physical therapy, as indicated on the survey. The problem is apparent: the average middle school student does not know what respiratory therapy is or what a respiratory therapist's job consists of in the hospital. The knowledge of respiratory therapy needs to be made more available. One such method would be the visitation to schools by respiratory therapists in order to get the message out to prospective college bound students at an earlier time. Years ago, students did not decide on a career until high school. However, students are being exposed to more career options at younger ages and it is imperative that respiratory therapy is one of these options. The Bureau of Labor Statistics projects a "42.3% increase in demand with 5,000 new respiratory therapists needed per year through 2008" (Shelledy, 2002). Recruitment strategies such as presentations to middle school children will help begin to fill this void.

ATTENTION EDUCATORS

Encourage your students to submit their class project paper or case study report to Focus!

If chosen, they will see their work published in the #1 circulated magazine serving Respiratory Care & Sleep Medicine while winning cash prizes for themselves and their school

Here's the Scoop...

Focus Journal has a regularly appearing column in its magazine called *Student Papers*. One student submission per bi-monthly issue of Focus will be published with the chosen student receiving a cash prize of \$100 as well as a fully gratis registration to the annual Focus Conference. The student's school also receives a donation of \$100 specifically earmarked for the RC program.

Papers should be between 900 and 1250 words and should be submitted, along with contact information as an MS Word file to our Craig Baker at bakerct78@yahoo.com

July/Aug Issue
Sept/Oct Issue
Nov/Dec Issue

Papers Due by June 5th
Papers Due by Aug 5th
Papers Due by Oct 5th

See your student earn national recognition, free registration to a great conference, and a cash prize for themselves and your program

This button might do more for the Sleep profession than anything else!

Hi
I'm Your
Poly-som-nog-ra-pher

3" x 2"

\$2 per button

Outfit your entire staff with these friendly, professional and memorable (to patients and their families) buttons. Order directly from FOCUS by calling 800-661-5690
*(minimum order 5 buttons)