Other Headlines

ER Docs Should Trust Their Gut Instincts, Study Finds
Emergency physicians should trust their "gut instincts" when evaluating patients who report chest pain, says Abhinav Chandra, M.D., who is director of acute care research and clinical evaluation at Duke University Medical Center.

This One's Positively Positronic!: a GE Advance NXi PET Camera/Scanner
There's also a PHILIPS V60-HP SPECT Camera now up for bid, and a wide range of other great used systems that you can get for cents on the dollar!

Philips and Glygenix Therapeutics Team on Ultrasound Research
The effort is aimed at ultrasound-mediated gene therapy.

Free Webinar Answers Questions About Pending Health Reform Bills
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Sun Exposure May Trigger Certain Autoimmune Diseases in Women
New insight into a mysterious connection.

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Medical Equipment: It's Not Just for Hospitals

July 29, 2009
by Regina Tan, DOTmed News Writer

This report originally appeared in the July 2009 issue of DOTmed Business News

Medtronic LIFEPAK CR Plus AED

Medical equipment can sometimes appear in numerous places outside of hospitals, from airports, to health clubs, community pools to research institutes and certainly on military bases.

Some venues have different uses for medical technology and equipment. Others have more traditional functions. As a whole, they are a reflection of how medical technology and "equipment" can transcend the boundaries of health care facilities for a more universal, public usage. Oftentimes, we may take for granted that such equipment is there for medical emergencies or for safety and security purposes.

For example, airports use X-rays similar to their X-ray counterparts used in health care, both are used to search for potential hazards, except health care X-rays aren't usually searching for explosives or weapons (sometimes just the resulting damage from them). Public pools and health clubs are outfitted with AEDs and automatic chair lifts specifically chosen for their facilities. Research institutes use MRIs equipped with cutting-edge technology for biomedical engineering applications.

Airports

North America has more than 50% of the world's 20 busiest airports, according to the Airports Council International - North America (ACI-NA) web site. In the ACI-NA 2008 final traffic count, the airports with the most number of passenger traffic are: Atlanta, Chicago O'Hare, Los Angeles, Dallas/Ft. Worth, and Denver. In 2008, Atlanta had 90,039,280 passengers, Chicago had 69,353,876 passengers, and Los Angeles had 59,497,539 passengers.

Given these massive numbers, it is important that airport X-ray screening machines and other detection equipment are able to handle traffic quickly and accurately.

There are a myriad of approaches used by the Transportation Security Administration (TSA) to address this need: Advanced Technology (AT) systems, biometrics, whole body imaging, trace portals, threat image projection, explosives trace detection, explosive detection systems, CastScope, and bottled liquid scanners. AT systems and CastScope systems are most similar to commonly-used medical X-rays.

AT is a catch phrase for a group of advanced X-ray technologies that will improve carry-on bag screening and enhance airline passenger security, according to the TSA. ATs provide clear, high-definition X-ray images that improve TSA security officers' (TSOs) ability to detect potential threat items. Some AT units also employ multiple X-ray angles, provide high-definition zoom and/or have automated detection capabilities that will further enhance the TSOs' effectiveness. Current technology depends on a single, top-down X-ray view.

Also, AT X-ray systems are built to be upgradeable and programmable. Simple software upgrades can bring AT equipment up-to-speed on the latest emerging threats. Finally, AT systems are highly cost-effective and can be widely deployed in a few years. AT training is relatively easy, as the interface is either very similar or identical to current X-ray equipment.

Two of the AT systems currently being used are the Rapiscan 620DV and

More Industry Headlines

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Sun Exposure May Trigger Certain Autoimmune Diseases in Women New insight into a mysterious connection.

Researchers Effectively Treat Tumors With Nanotubes By injecting man-made, microscopic tubes into tumors and heating them with a quick, 30-second zap of a laser, scientists have discovered a way to effectively kill kidney tumors in nearly 80 percent of mice. Researchers say the finding suggests a potentially exciting cancer treatment.

Health Care Reform Round Up: President and AMA Support Revised Bill Kaiser poll shows that the public supports reform efforts, but negativity does have an effect.

EarthMed Medical Mission to Mongolia a Success Volunteer medical team performed cardio/thoracic surgical procedures, trained medical staff, and set foundations for continued support and development.

Supplier Bidding Starts in October for DMEPOS The Medicare Competitive Bidding Program for durable medical equipment, prosthetics, orthotics, and supplies (DMEPOS) to begin roll out. Get the details on affected equipment and regions.

New AHIMA Hub Office Opens in Belgium The American Health Information Management Association (AHIMA) opened a Global Services Office in Brussels, Belgium to serve as a hub for decision-making for leading health information management (HIM) institutions.

CMS: Recovery Act Funds Will Improve Care in ASCs Funding announced for 12 states to reduce infections in same-day facilities.

UAMS First to Use Device to Unclog Patient's Veins in Brain University of Arkansas for Medical Sciences clinicians make a breakthrough using a new catheter with ultrasound.

Next Generation Pharmaceutical (NGP) Summit Focusing on Swine

Smiths Detection's HI-SCAN 6040aTiX (Image courtesy of Smiths Detection)

The Smiths Detection HI-SCAN 6040aTIX uses several independent generators, each of which is connected to its own X-ray sensor technology. The two X-ray views support the quick and reliable evaluation process and automated explosives detection flags potential threat items on-screen.

The CastScope screening system uses backscatter technology to produce an X-ray image, allowing the TSA to quickly and non-invasively identify any potential threats. It is currently being piloted in 11 airports, including San Antonio, Denver, Washington-Dulles, JFK, and Los Angeles.

Backscatter technology scans a narrow, low-energy X-ray over the body surface. The reflection, or backscatter, of the beam is detected, digitized and displayed on a monitor. The high contrast image generated allows TSA to differentiate between articles such as braces, prosthetics, and external medical devices - and prohibited devices.

In comparison to medical X-rays, backscatter X-rays only penetrate approximately ¼" before the rays are scattered, rather than completely penetrating an object. The CastScope emits less than 10 microRem of radiation per scan versus the typical medical X-ray, which emits 10,000 to 100,000 microRem per scan.

The TSA follows federal acquisition regulations (FAR) for the purchase of new equipment, according to Lara Uselding, a spokesperson for the TSA and the U.S. Department of Homeland Security. Such considerations include: detection capability, space requirements at the checkpoint, speed, cost, integration capability, and ease of use.

AEDs

AEDs, or automated external defibrillators, are commonly found in restaurants, health clubs, community pools, and airports. An AED is a battery-driven device used to administer an electric shock through the chest wall to the heart of a person who has gone into cardiac arrest.

The leading manufacturers of automated external defibrillators (AEDs) are: Cardiac Science (G3 Automatic, Powerheart Pro, and FirstSave G3), DefibTech (Lifeline), Hewlett-Packard (Heartstream), Medtronic (LifePak CR Plus, LifePak 500), Philips (HeartStart FR2+, XLT, MRX, OnSite), HeartSine (Samaritan), Welch Allyn (Welch Allyn AED 10 and AED 20), and Zoll (Zoll AED Plus).

There is currently no federal law mandating the purchase of AEDs for health clubs. The International Health, Racquet, and Sports Club Association (IHRSA) outlines three prime considerations for health clubs that decide to use AEDs: staffing requirements, adequate compliance time and liability protection.

The basic concern is health clubs with AEDs should have trained personnel to handle cardiac arrests with the equipment. However, providing AED training can be a lengthy process, which proves difficult for health clubs that employ part-time staff. Yet, some newer training courses, four-hour crash courses in AED use and cardiopulmonary resuscitation (CPR), are designed to allow anyone to use an AED.

Finally, many club owners and employees are concerned that having an AED on the premises will increase their responsibility, thereby increasing their risk of liability. Although federal law (the Cardiac Arrest Survival Act of 2000) and "Good Samaritan" laws provide some protection, there is still uncertainty as to whether an employee or club owner could be held liable for the injury or death of a club member.

Yet, all these worries take a backseat when there is a life-or-death situation.

"We had a heart attack [at DHAC]," Stephen Lampert, general manager of Dedham Health and Athletic Complex (DHAC) in Dedham, MA, told DOTmed Business News. "He coded inside the ambulance [and survived the attack]. He might not be here if we didn't have the AED onsite. The one time you use it [the AED], makes it all worthwhile."

The DHAC has four AEDs that are checked for battery-life on a biweekly basis, according to Mr. Lampert. The AEDs are chosen based on cost and quality - Phillips and Medtronic are used at their center - and the pads

necessary liability protection for using AED's.

Public Pools

Commercial swimming pools may have handicap-accessible lifts installed to aid the disabled or injured. Such aquatic lifts are designed to meet national codes, e.g., the National Electric Code (NEC), and the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

RehaMed International, based in Homestead, FL, is one provider of aquatic lifts - selling products to a network of intermediaries that carry a variety of institutional pool products as part of the company's wares.

The RehaMed PAL is a completely portable aquatic lift, requiring no mounting to the pool deck.

"We make three basic types of lifts: the access lift, which is geared more toward the hospitality market; the portable lift and the splash lift, which is geared toward institutional and larger pool markets," said Tom Saldarelli, the COO of RehaMed International, in a phone interview. RehaMed is a twelve-year-old aquatic lift manufacturer.

"We have come up with lifts to satisfy any situation. As the needs of the individual pool change, we develop lifts to satisfy any [situation]," he said.

Such adaptability also proves useful at research institutes, which adopt the most up-to-date MRI technology for biomedical applications.

Research Institutes

At the Robarts Research Institute (RRI) in Ontario, Canada, researchers and students conduct engineering research using cutting-edge technology. The RRI - also known as the Center for Functional and Metabolic Mapping at the University of Western Ontario - focuses on physics and engineering research and applied cognitive neuroscience research. One of the center's main goals is to map how the brain works in response to various stimuli.

"We need to buy the most up-to-date technology at the time of purchase that can possibly be applied to medicine in the future," said Joy Williams, the head MRI technician at the Robarts Research Institute.

Suppliers of such highly-specialized MRIs are very limited - in fact, only two manufacturers, Varian and Bruker, carry what the Institute needs, according to Williams.

"We have three magnets here: a 9.4T animal system; a 7T human system (Varian 7T human-head-only) with a Siemens gradient coil, which has outperformed others; and a 3T Siemens Total Energy Matrix (TIM) Trio, which is used for brain mapping," she said.

Usually, these MRIs are purchased with specific software packages issued by the manufacturer, tailored toward neuroscience or advanced cardiac applications. Most of the systems are programmed by the Institute's staff themselves, specific to the research at hand.

Likewise, equipment training is all done in-house, with graduate students being taught the in's and out's of certain machines by their mentors or colleagues. The MRIs already have built-in safety systems for correct positioning and gradient flow rate monitoring.

Military Bases

Military bases have begun to take advantage of the benefits of computerized axial tomography (CT) scan technology - gathering data from these scans the same way scientific researchers cull data from MRI scans of brain functioning.

Since 2004, every service man and woman killed in Iraq or Afghanistan has been given a CT scan, according to a New York Times article published in May 2009.

Such records of the dead are unprecedented and have provided a plethora of data. Improvements such as increasing the length of intravenous tubing

Agency (DARPA), which is part of the Defense Department, adopted the Swiss method of performing "virtual autopsies" using CT scanners - about 10 years after the Swiss piloted the approach.

Creativity and adaptability are key when using medical technologies "outside the box." From the most predictable of places to the most unlikely of locales, medical equipment is finding its niche - as humans continue to seek practical uses for machines equipped with both form and function.