THE COVENANT Chart

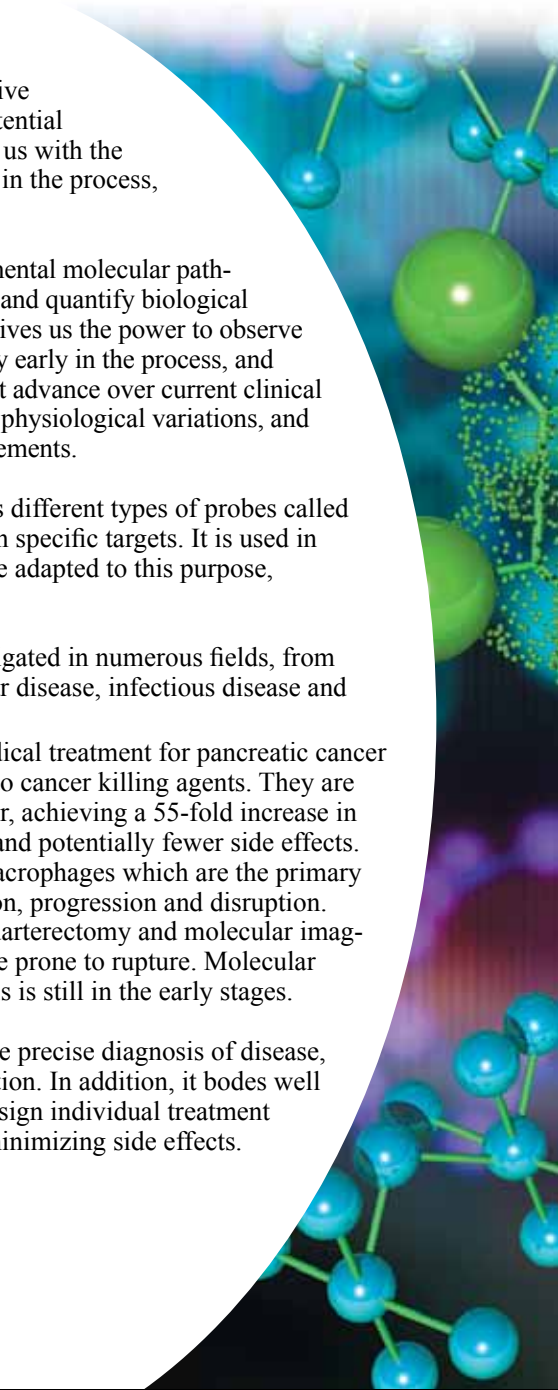
COVENANT HealthCare

COVENANT MEDICAL STAFF NEWSLETTER | JUNE 2012

CONTENTS

Molecular Imaging: A New Frontier

Dr. Kristin M. Nelsen, Chief of Staff



You've probably heard about an emerging, noninvasive technology called molecular imaging that has the potential to revolutionize patient care. It will not only provide us with the capability to diagnose and treat disease much earlier in the process, but also to personalize medicine.

How? By enabling us to better understand the fundamental molecular pathways in living subjects, and to visualize, characterize and quantify biological processes at the cellular and subcellular levels. This gives us the power to observe disease mechanisms and molecular abnormalities very early in the process, and quite possibly in the predisease state. It is a significant advance over current clinical imaging, which looks at macroscopic anatomical and physiological variations, and evaluates the late manifestations of molecular derangements.

Molecular imaging is complex but put simply, it uses different types of probes called biomarkers to observe very fine molecular changes in specific targets. It is used in combination with various imaging modalities that are adapted to this purpose, including nuclear, sound, magnetism and light.

Applications for molecular imaging are being investigated in numerous fields, from psychiatry, neurology and oncology to cardiovascular disease, infectious disease and drug resistance. A few examples include:

- In the field of interventional radiology, a new radical treatment for pancreatic cancer involves gold nanoparticles, which are attached to cancer killing agents. They are directly injected through a catheter into the tumor, achieving a 55-fold increase in concentration over traditional delivery methods and potentially fewer side effects.
- For atherosclerosis, unstable plaque increases macrophages which are the primary inflammatory cell mediator of atheroma formation, progression and disruption. Nanoparticles have been injected pre-carotid endarterectomy and molecular imaging has been used to determine which plaques are prone to rupture. Molecular imaging to investigate post-angioplasty restenosis is still in the early stages.

Molecular imaging may allow for an earlier and more precise diagnosis of disease, more meaningful monitoring and better characterization. In addition, it bodes well for personalized medicine, enabling physicians to design individual treatment regimens that maximize therapeutic benefits while minimizing side effects.

Sincerely,

Kristin M. Nelsen

Dr. Kristin M. Nelsen, Chief of Staff

Taking on Tinnitus

GUEST AUTHOR
Dr. Robert Borenitsch, Otorhinolaryngologist

In today's world, the human ear is exposed to much more noise than ever before. This is primarily why we are seeing more and more patients complain about tinnitus – a swishing, ringing, clicking or other type of noise that emanates from the ear or head.

According to the American Tinnitus Association, more than 50 million Americans experience these symptoms. Roughly 16 million Americans seek medical attention and about 2 million are affected to the point where they cannot function day-to-day.

Research continues into tinnitus, but if the inner ear is damaged, the problem is permanent. This is why prevention should be reinforced at every turn with patients, starting at a young age.

Even with prevention, however, unintended or accidental exposures, occur from loud concerts, fireworks, dental drilling, back-firing cars, gunfire and television – to name just a few. Continuous exposures such as loud workplaces, noisy bars, blow-dryers, iPods and cell phones, can also build up and cause problems down the road.

Causes

The exact cause of tinnitus is unknown, but key triggers include:

- Loud noises, which account for about 90% of tinnitus cases and are usually preventable. Loud noises damage or destroy the inner ear cilia in the cochlea, sending faulty sound impulses to the brain when there is no sound. These cells cannot be renewed or replaced.
- Excessive earwax buildup which can make tinnitus louder.
- Ototoxic medications, namely salicylates (aspirin), non-steroidal anti-inflammatory drugs (NSAIDs), certain diuretics and antibiotics.
- Physical trauma to the head and neck.
- Abnormal blood flow in arteries or veins close to the inner ear.
- Tumors or calcium deposits.
- Jaw misalignment (TMJ).
- Allergies and sinus issues (middle ear mucous accumulation).
- Genetics, to a lesser extent.

Diagnosis

When patients complain about head noise, it's important to perform a patient history. For example:

- Ask them to describe the sound they are hearing, and if it is unilateral or bilateral – does the noise pulsate?
- Ask if anything makes it better or worse, such as rolling the eyes or biting down.
- Ask how long they have been suffering from this head noise and discuss their exposure to loud noises, such as loud music or ongoing cell phone use.
- Ask if they are experiencing any other symptoms, such as vertigo.
- Verify the medications they are taking and check for ototoxicity.
- Check for earwax build-up.

A key goal is to rule out pulsatile tinnitus – a rare form of tinnitus associated with poor carotid blood flow and other structural abnormalities. This condition accounts for about 10% of tinnitus cases, and is usually (but not always) associated with dizziness and fainting spells. If the sound is described as "pulsing" like a heartbeat, the patient should be further evaluated with a carotid doppler study and possible other tests, such as a CT or MRI to identify tumors or other issues. In such cases, subsequent surgical procedures can actually cure the tinnitus while also saving a life.

You may want to consider consulting with an ENT for an audiogram to validate the level and type of hearing loss and to determine the treatment path. In general:

- High-pitched ringing is usually due to damage from the outer area of the cochlea while lower tones mean damage to the inner area.
- Clicking sounds are typically due to inflammation or fluttering of the Eustachian tubes.
- Bilateral damage (ringing in both ears) is typically due to damage from loud noises or ototoxic drugs.

ENTs can perform the personal history for you and take steps to both relieve the symptoms of tinnitus and prevent further hearing loss.

Treatments

As mentioned, when inner ear cilia are damaged, tinnitus cannot be cured but it can be treated to manage the symptoms. Most patients will fall into this group.

Experienced ENTs will perform or validate the patient history and help the patient understand the science behind the sounds they are hearing. Treatment is centered on increasing the external background noise to offset the internal head noise. This includes:

- Safely removing ear wax.
- Prescribing hearing aids to address hearing loss.
- Programming hearing aids to amplify background noise or add white noise.
- Suggesting the addition of white "masking" noise in the external environment.

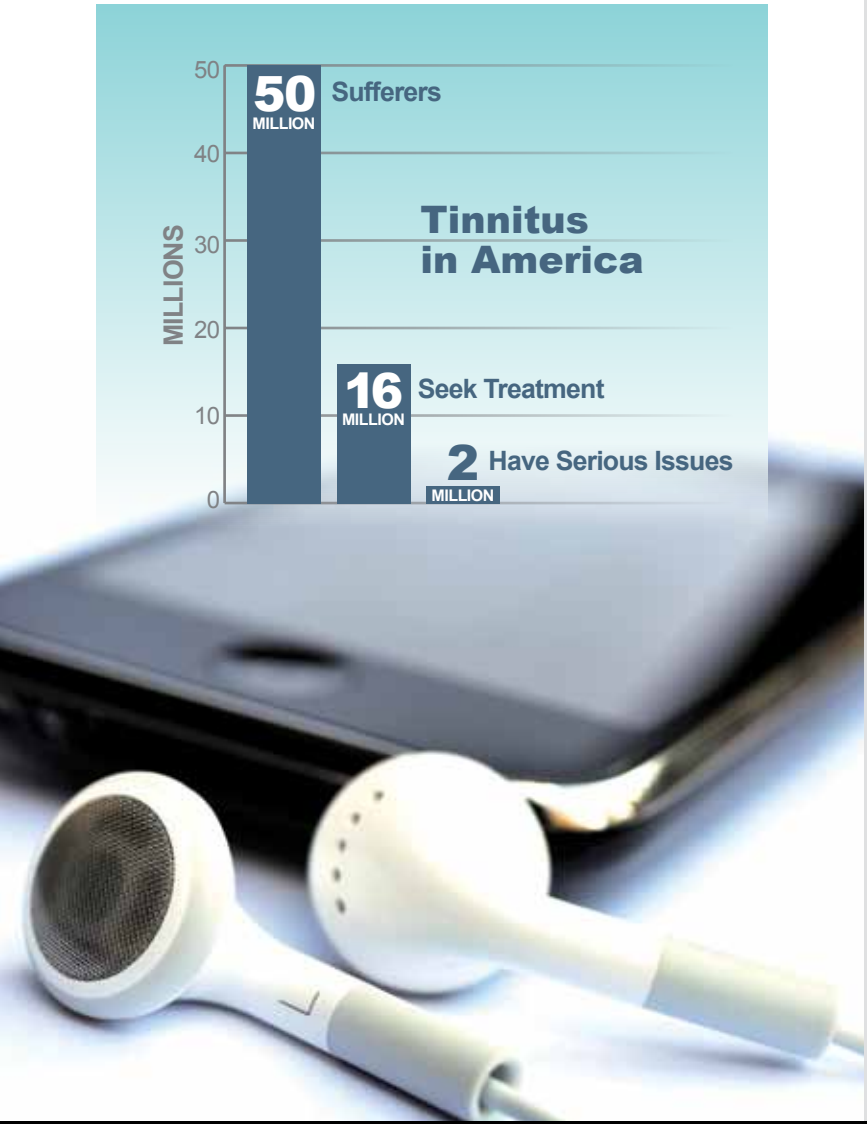
- Referral to a TMJ specialist if TMJ appears to be an underlying cause.
- Cochlear implants for the severely deaf.

There are also alternative treatments that may not be covered by insurance. These include vitamin supplements and herbal preparations (including bioflavonoids), homeopathy, acupuncture, magnetic therapy, hypnosis and biofeedback. In biofeedback, for example, experts "train" the brain to ignore the tinnitus using various techniques. While various alternative treatments have positive anecdotal evidence, scientific research has not validated these claims.

Summary

Tinnitus is a common auditory disorder for which there is generally no cure. Prevention is essential in order to avoid and minimize hearing loss which is strongly linked to tinnitus. Research continues to determine the underlying causes for tinnitus and to explore and validate treatments. Meanwhile, with expert guidance, patients can find relief through various coping strategies.

For more information, contact Dr. Borenitsch at 989.793.6138.



Keeping ICD-10 in Sight

Dr. Michael Schultz, Chief Medical Quality and Informatics Officer

The International Classification of Diseases Tenth Revision (ICD-10) continues to be important as we prepare for the revision's mandatory rollout. ICD-10 is a new, more comprehensive diagnosis and procedure coding system. The ICD-10 rollout was initially slated for October 1, 2013, but has been pushed back one year by the U.S. Department of Health and Human Services to October 1, 2014, which is a tentative date.

ICD-10 is much more comprehensive than previous revisions. ICD-9 had 17,000 diagnosis codes whereas ICD-10 has 141,000. This dramatic increase in codes will cause an initial administrative burden on healthcare professionals who are not prepared, therefore, Covenant HealthCare is staying ahead of the curve with continued preparation for the ICD-10 rollout, despite the delay.

ICD-10 Benefits

Reimbursement Processes

Because the ICD-9 code set has been exhausted, new procedures cannot be properly coded nor accurately billed. ICD-10 will encompass all existing procedures as well as allow for new procedures to be added as they are developed. This will enable fewer rejected claims and greater efficiency in the billing process. Increased accuracy of the codes also allows for better comparison of reported codes with clinical documentation. We will have the ability to check for consistency between diagnosis and procedure codes, and check for illogical combinations of diagnoses – which will help eliminate existing coding "gray areas."

Public Health

The rest of the developed world (other than Italy) is using ICD-10. With the U.S. operating on ICD-9, it makes it difficult to share disease data internationally, which can inhibit global public health.

Research

More detailed and specific codes will reduce coding errors and lead to more accurate, cleaner data. This allows for more precise correlations and conclusions to be derived from research data.

Long-Term Reduction in Administrative Costs

More accurate coding allows for more automated processes and less manual review of health records, which will cut down on administrative costs.

Continued on page 5

Personalizing Cancer Treatment

GUEST AUTHOR
Dr. Ernie P. Balcueva, Division of Medical Oncology and Hematology

This is Part 1 of a Targeted Cancer Therapy Series

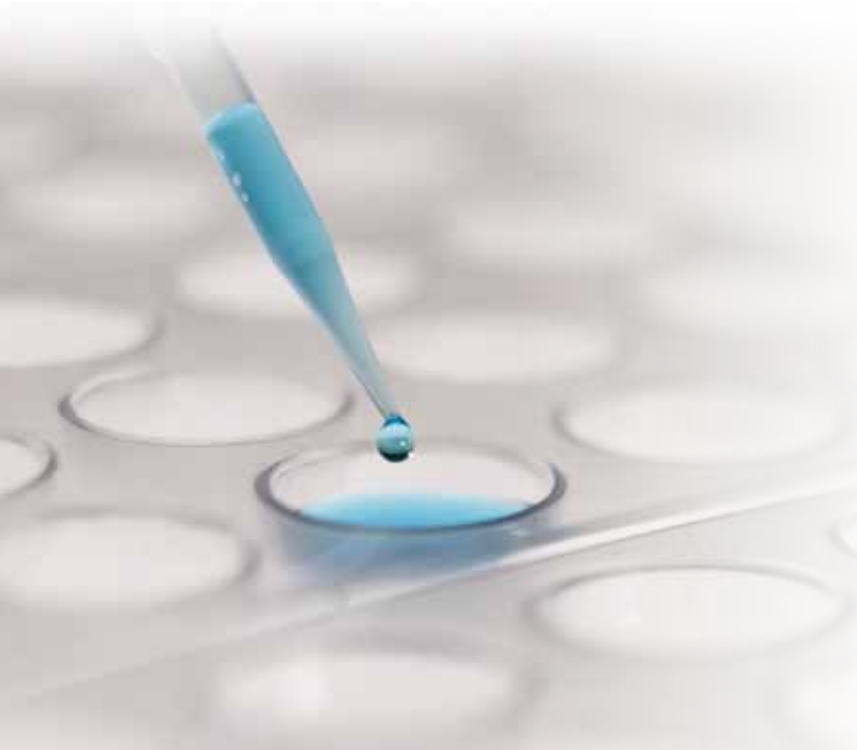
When someone talks about anti-cancer drugs, we immediately think of chemotherapy. The word "chemotherapy," which generally refers to cytotoxic agents, gets a very negative image due to the attendant adverse effects and toxicities, poor response rates in certain types of cancer, and many other reasons. The pharmaceutical industry, in fact, is trying to relegate the word "chemotherapy" and the bad press on this so-called "weapon of mass destruction" to the past.

As an industry, we need to focus on the **whole range** of cancer drug treatment options now available to patients.

Key Cancer-Fighting Drugs

Thanks to advances in research, many treatment options are now available to cancer patients, allowing for a more tailored and personalized treatment approach. These include:

- **Cytotoxic Chemotherapy,** which acts upon the DNA to prevent cell replication, such as anthracyclines (doxorubicin/Adriamycin, alkylating agents (cyclophosphamide/Cytoxan); platinum compounds (cisplatin/Platinol, carboplatin/Paraplatin); anti-metabolites (5-flourouracil/5-FU, methtrexate); taxanes (docetaxel/Taxotere, pacilataxel/Taxol); and a host of others. These treatments can't differentiate between cancer cells and normal cells, which is why they are called "cytotoxic."
- **Steroids,** which are used as part of the chemotherapy regime (i.e., Prednisone); to stimulate appetites and a sense of well-being (i.e., megestrol acetate/Megace); to reduce the side effects of chemotherapy (i.e., Prednisolone); and/or to reduce pleural effusions and increased intracranial pressures (i.e., dexamethasone/Decadron).
- **Hormone Therapies,** which stop hormones from reaching cancer cells. Hormones such as estrogen and progesterone are needed by cancer cells to grow or are implicated as an inducer or promoter. Therapies include serum estrogen receptor modulators (SERMs) such as tamoxifen (Nolvadex), raloxifene (Evista), toremifene (Fareston) and nafoxidine (Richem); estrogen receptor down-regulators such as fulvestrant (Faslodex); aromatase-inhibitors such as anastrolozole (Arimidex), Letrozole (Femara) and exemestane (Aromasin); pituitary hormones such as goserelin (Zoladex), leuprorelin (Lupron) and triptorelin (Trelstar); anti-androgens such as flutamide (Eulexin/Drogenil), bicalutamide (Casodex) andcytoproteron acetate (Cyprostat). All of these hormone agents are selectively active in the treatment of breast and prostate cancers.
- **Bisphosphonates,** which are drugs that can protect our bones against the effects of cancer, such as bone pain and weakness. They help recalcify and heal bones damaged by cancer. These are available orally and intravenously such as clodronate (Bonefos); ibandronic acid (Bondranat); pamidronate (Aredia); zoledronic acid (Zometa) and denosumab (XGeva).
- **Biological Therapies or Immunotherapy,** which are naturally occurring substances in our body that fight and destroy cancer cells via different mechanisms.



The Promise of Immunotherapy

Immunotherapy has been the focus of cancer therapeutic exploration for over a century, but it is only in the last decade or so that a host of antibody-based products and immunoconjugates have been introduced in both the cancer diagnostic and therapeutic arenas.

Currently, this is one of the most active areas of bench and clinical research. The search for the elusive mechanism to target diseases selectively was first realized when resistance to infectious disease could be transferred from one animal to another through the serum, or so-called passive serotherapy. In 1895, Hericourt and Richet immunized dogs with human sarcoma and then transferred the serum to patients, and in 1980, Paul Ehrlich conceptualized this so-called "magic bullet" approach, postulating that "toxins" could be targeted to cancer and other diseases. It took another half-century before antibodies were identified as serum substrates and responsible for these effects.

The subsequent parallel works and discovery of very complex and multiple extra-/intracellular receptors and intracellular signaling pathways have also made possible the relevance and applications of these antibodies and immunoconjugates.

Classes of Immunotherapies

There are several classes of immunotherapies based on different mechanisms of action at sites of cellular protein receptors and intracellular signaling pathways:

- **Monoclonal Antibodies:** The natural ability of our body to fight infection through the production of antibodies working with our immune system helps the body prepare, recognize and fight an infection upon re-exposure (which is why they are used to make vaccines). Monoclonal antibodies are made from a single cell and work by recognizing the cancer cell surface protein and locking onto it, triggering the immune system to attack and destroy the cancer cell. Drugs that end in the suffix MAB are monoclonal antibodies that target specific cell surface protein receptors or their ligands to prevent receptor activation. Examples of "naked" or unconjugated monoclonal antibodies include trastuzmab (Herceptin); rituximab (Rituxan); alemtuzumab (Campath -1H); bevacizumab (Avastin) and cetuximab (Erbitux).
- **Cancer Growth Blockers:** This therapy blocks or inhibits the enzyme tyrosine kinase, also known as Tyrosine Kinase Inhibitors (TKIs). Drugs that end in the suffix NIB are small molecules binding directly to the intracellular kinase domain. They act within the cell as a competitive inhibitor of ATP binding, blocking the messenger activity of tyrosine kinase (which is part of the signaling process within the cell) and preventing cell division or mitosis and growth. Examples, some of which are multi-targeted, include erlotinib (Tarceva); imatinib (Gleevec); gefitinib (Iressa); desatinib (Sprycel); sorafenib (Nexavar); sunitinib (Sutent) and pazopanib (Votrient).
- **Proteasome/Protease Inhibitors (PIs):** These inhibitors target the proteasomes that are found within all cells. The role of proteasomes is to break up the proteins, essential in normal cellular processes such as gene expression and message carrying. Inhibiting ubiquitin-proteasome pathway and activity in cancer cells can block cell proliferation and increase apoptosis (programmed cell death). Examples are brotezomid (Velcade) and carfilzomib (still in Phase II and III trials).
- **Interferons and Interleukins:** These are natural substances that are part of our normal immune systems; they stimulate the production of "killer cells" which will fight the cancer cell. Examples are aldesleukin (Proleukin); interleukin -2 (Interking) and alpha=2b interferon (Intron A).
- **Immunoconjugates:** These are monoclonal antibodies in the MAB category with both diagnostic and therapeutic usage that may be sub-classified as:
  - **Radioconjugates** such as tositumomab (Bexxar); ibritumomab tiuxetan (Zevalin); and the diagnostic radioconjugates capromab pendetide (ProstaScint); arcitumomab (CEA-Scan); nofetumomab merpentan Verluma) and satumomap pendetide (OncoScint).
  - **Drug Conjugates** such as gemtuzumab ozogamicin (Mylotarg).

Progress and Barriers

The last decade has seen the proliferation and integration of targeted agents in diagnostic and therapeutic applications. To a smaller degree, they have improved the accuracy of diagnosis and staging and to a larger degree, they have improved the treatment of cancers to a more personalized level than the shotgun approach of the past.

Targeted agents have also improved overall survival and cure rates, and more importantly have enhanced the quality of life with less adverse events and toxicities along the way. These successes, however, come with a large price tag, plus the cost of cancer diagnosis and therapy continues to soar at a time when the economy may not be able to sustain and support successes, or fund further research.

In the last issue of *The Chart*, Dr. Kristin Nelsen encouraged physicians to engage as leaders and to advocate for medical advances. Continued cancer research is one key area worthy of our attention and support if we ever want to achieve the goal of preventing and curing cancer.

For more information, contact Dr. Balcueva at 989.583.6500.

Keeping ICD-10 in Sight, continued from page 3

Your Role

When ICD-10 rolls out, all healthcare professionals will be affected as proper codes will need to be used. Please stay aware and up-to-date on developments, education approaches and how the rollout will specifically impact you and EMR. More news will be coming your way as progress is made.

Although our information systems will be ICD-10 ready by the time rollout occurs, individual physician training will be necessary in advance. Prior to the recent one-year delay proposed by CMS, we had been planning for physician education to begin in early 2013. But stay tuned because that timeline will likely change as we recalibrate plans and take strategic advantage of the extension to pursue clinical documentation improvement.

For more information, contact Dr. Schultz at 989.583.4103 or mschultz@chs-mi.com.

Diagnosing Type One "Juvenile" Diabetes

GUEST AUTHOR
Dr. Daniel Elsholz, Pediatric Endocrinologist, Synergy Medical Education Alliance

Picture yourself at the height of the flu season. A child presents in your office with nausea, vomiting, fatigue and weight loss. Everything looks like the flu, but before you make this diagnosis, you may want to dig a little deeper as your patient could have Type 1 Diabetes (T1D).

For some reason, T1D – also called juvenile diabetes – is on the rise and occurring at younger ages. About 10 years ago in the Great Lakes Bay Region, the mean age was around 12 to 13 years old. Currently it is around 8 to 9 years old and we are seeing more cases in children as young as 2 and 3 years of age.

Of the nearly 26 million people afflicted with diabetes in the U.S., an estimated 5% have T1D, according to the American Diabetes Association (ADA). The rate of T1D incidence among children under 14 is estimated to be increasing by 3% annually in the U.S. and worldwide.

The direct cause of T1D is unknown. Diet and lifestyle are not known to be causitive, but family history, genetic and environmental factors are known to play a role. Other causes under investigation include exposure to more resilient infections, low vitamin D levels, drinking water containing nitrates, types of baby formulas, or the timing of when cereal is introduced to a baby's diet.

Diabetes research continues to investigate both causes and cures. While there is no means to prevent or cure T1D, it can be treated quite effectively depending on patient and family commitment to strict medical management.

Checking for Type 1

Although T1D is usually diagnosed in children, it occasionally presents in adults too. Physicians should look for:

- Nausea
- Vomiting
- Frequent urination
- Extreme thirst
- Rapid weight loss
- Lethargy
- Cessation of normal activities
- Increased appetite
- Sudden vision changes
- Fruity breath
- Difficulty breathing

If a patient is exhibiting these symptoms, you may want to order a random blood sugar check to indicate if T1D is the cause. A level of 200 mg/dL or higher in the presence of the above symptoms is diagnostic for diabetes. The presence of ketones in the urine suggests T1D versus Type 2. Alternatively, fasting glucose measurement can be used to screen for T1D. A fasting morning blood sugar of 126 mg/dl or greater on more than one occasion is also diagnostic for diabetes.

Although home meters are used regularly for management of diabetes, data from meters should not be used for the diagnosis of diabetes. Hemoglobin A1C of 6.5% or greater is an ADA criterion for diagnosis of diabetes as is weight-adjusted, two-hour glucose tolerance testing.

Proper Treatment

As soon as the patient is diagnosed, you will want to refer the child and family to a pediatric endocrinologist that can meet the following qualifications:

- Is located as nearby as possible, since visits will be frequent.

- Has a child-friendly, multi-disciplinary practice capable of accommodating all T1D needs under one roof, from insulin management and nutrition to education, support groups and individual or family counseling.
- Collaborates with the primary care physician to reinforce the treatment program.

Often, the child diagnosed with T1D will be immediately hospitalized for three key reasons:

1. To administer an insulin drip for immediate improvement in patients with acidosis.
2. To receive initial education about T1D and the tools to treat it.
3. To arrange appointments with the pediatric endocrinologist and staff.

Covenant HealthCare provides in-hospital counseling and training for the child and family, and sends them home with a backpack "emergency" kit of insulin, syringes, ketone strips, pager numbers and a diabetes care booklet. This kit is designed to meet all the child's insulin needs between discharge and their first appointment at the Covenant HealthCare Pediatric Endocrinology Clinic, which includes a multi-disciplinary team of professionals. The team is comprised of a pediatric endocrinologist, nurse, dietitian and social worker who provide the full range of diabetes self-management services.

Staying Diligent – What You Can Do

Kids are kids, and it's not much fun being tied down to insulin injections, meal plans and exercise regimens. It can, in fact, be so embarrassing to some children that they avoid taking their insulin or checking their blood sugars. Sometimes, they simply forget, just like they forget their chores.

Setbacks usually occur when they don't follow the prescribed treatment or when parents give them too much responsibility, too early. Often a child who is very diligent at a younger age will begin to have difficulties adhering to their regimen as they enter adolescence. This can be exceedingly frustrating for the child, the parents and the caregiver, even though it is very common behavior.

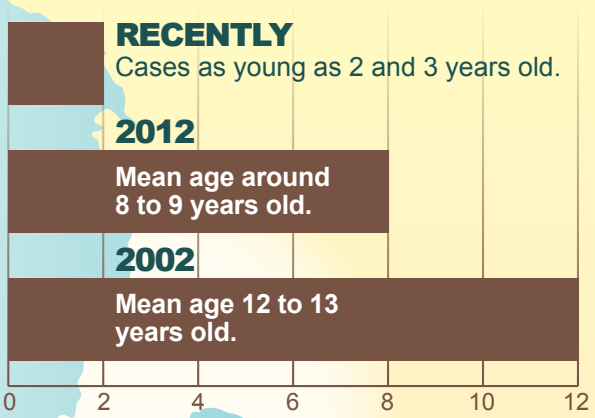
When seeing a patient with T1D, remind the patient and the parents about the importance of staying diligent, even around friends, at school or playing sports. The more reinforcement they get, the better. Don't just focus on A1C but on what is going on with the treatment process. For example, are they checking sugars? Are they counting carbohydrates when they eat? Be prepared to do some sleuthing as well if the patient's history and the A1C don't make sense together. Often reviewing the glucose testing history (or lack thereof) in the patient's meter can be very revealing.

While there is currently no cure for T1D, treatment options continue to be improved, such as continuous monitors , new types of insulin and insulin pumps. Patients with T1D can enjoy long lives and active lifestyles with proper monitoring and care.

For more information, please contact Dr. Elsholz at 989.583.5191) or delsholz@synergymedical.org.

The Etymology of Diabetes

The word Diabetes comes from the Greek derivative Diabinen which means "to straddle" or "to funnel." Mellitus, as in Diabetes Mellitus, comes from a Latin derivative that means "sweetened as if with honey." This word choice is not so strange when one considers early medical research. Ancient physicians observed that some patients urinated a lot and after tasting the urine, they noticed that patients with sweet-tasting urine generally wasted away and died, while those with dull or tasteless urine, or "insipid" as in Diabetes Insipidus, did not. In ancient times, Type 1 Diabetes was literally described as "the melting of the flesh into the urine."



Carpal Tunnel Surgery Options

GUEST AUTHOR
Dr. Arno Weiss, Plastic Surgeon

Carpal Tunnel Syndrome (CTS) has been a recognized medical condition for quite some time and as you know, it is typically related to repetitive movements that put too much stress on the median nerve in the wrist. Left untreated, this can cause severe and debilitating pain so it's important for physicians to stay familiar with symptoms and treatments, including surgical options.

A Growing Problem

With the advent of computers, the incidence of CTS started to grow rapidly, primarily due to lack of ergonomic knowledge and accessories. Now, with the popularity of Smartphone texting, gaming and other high-tech communications tools, we are seeing CTS at much younger ages. While it usually strikes at ages 30-60, and in women more than men, the condition is presenting in patients as young as three years old.

While it usually strikes at ages 30-60, and in women more than men, Carpal Tunnel Syndrome is presenting in patients as young as three years old.

Typical Symptoms
Most physicians recognize the symptoms of numbness, tingling, weakness in the thumb, fingers or palm. Pain usually occurs in the wrist and hand and can extend up to the elbow. Occasionally, some deterioration of the muscle may be observed. Physicians can perform standard tests, such as:

- Tapping the median nerve at the wrist to see if it causes hand pain (Tinel's sign).
- Bending the wrist forward for 60 seconds to observe symptoms (Phanel's test).
- Wrist x-ray (to rule out fractures or arthritis).
- Electromyography.
- Nerve conduction velocity.

Standard Treatments
Unless the condition is severe and nerve damage has already occurred, conservative treatments include wearing a splint at night and/or day, and applying hot and cold compresses. This treatment can also be combined with occupational therapy and anti-inflammatories.

Of key importance, however, is to look at the root cause of CTS and make a related change in lifestyle. This does not necessarily mean giving up an activity permanently. The "cure" could be as simple as improving the ergonomics of a workstation to relieve stress on the wrist. Taking frequent breaks from the activity can also relieve symptoms. This, combined with exercises and other treatments, could help avoid surgery.

Surgical Options
Candidates for surgery include patients with moderate to severe CTS who do not respond to conservative treatments, have symptoms lasting several months or longer, or are showing signs of muscle atrophy. Surgery involves cutting the transverse carpal ligament from the median nerve to permanently relieve pressure. While some wrist strength may be lost, function is rarely compromised.

The good news is that surgical options are available, including open release surgery and a minimally invasive technique called Endoscopic Carpal Tunnel Release.

- **Open Release Surgery** has the advantage of providing a full view of the structures in the hand, but it takes more time to perform, leaves a scar and recovery is longer. A "mini-open" approach is also available, requiring only a one-inch incision and slightly shorter recovery times. Results are about the same.
- **Endoscopic Carpal Tunnel Release** is an alternative surgical option that is less invasive. Most patients experience less post-operative pain and scarring and a faster recovery rate. This enables an earlier return to normal everyday activities, often in about half the time. It is also a more convenient choice for patients having surgery on both wrists or who depend on wheelchairs and walking aids.

The Endoscopic Procedure
In this technique, thin endoscopic tubes are inserted into two half-inch incisions on the wrist and palm. A tiny camera located at the tip of the endoscope is used to view the anatomy of the hand on a monitor. A knife inserted into the tube enables the surgeon to release the carpal ligament from below the ligament rather than above. There is rarely any bleeding and because the incisions are so small, only one or two stitches are required and the scars fade in a few months.

Risks and Outcomes
Risks and outcomes for endoscopic surgery are found to be about the same as the open release approach when performed by experienced surgeons. However, not all patients are candidates, including those with underlying health issues like severe arthritis or prior wrist fractures.

To ensure a successful surgery and long-term results, key factors include:

- Not waiting until CTS becomes too severe.
- Having decent muscle strength.
- Being in general good health.
- Having very slow nerve conduction results.
- Not returning to heavy manual labor, especially occupations involving vibrating tools.
- Following proper post-surgery protocols.

For more information, please contact Dr. Weiss at 989.753.2061.

Tackling VTE Through Collaboration
Making Changes for the Better

GUEST AUTHOR
Dr. Anu Gollapudi, Hospitalist and Chairperson of the VTE Collaborative

As healthcare institutions seek to improve quality and reduce costs, they are sharply focused on prevention. One key area of prevention is pulmonary embolism (PE) due to deep venous thrombosis (DVT), which is collectively referred to as VTE (venous thromboembolism) or blood clots.

The Consequences of VTE

VTE has significant consequences in terms of morbidity and cost.

From a morbidity standpoint, VTE is the most common cause of hospital death and the most preventable. According to the American College of Physicians:

- PE accounts for 5-10% of all in-hospital deaths and 200,000-300,000 hospitalizations per year.
- Most in-hospital patients have at least one risk factor for VTE which continues after discharge.
- Studies show that 26% of patients with undiagnosed and untreated PE will have a fatal embolic event, whereas another 26% will have a nonfatal event.

From a cost standpoint, the incremental length of stay and costs of treating VTE are substantial. According to the Agency for Healthcare Research and Quality, each DVT event costs $10,000 and each PE event costs $20,000.

As a result, alarm bells are ringing. Patient safety advocates and hospitals want to improve patient outcomes, and the Centers for Medicare and Medicaid Services (CMS) may add hospital-acquired DVT and PE to the list of events for which hospitals will no longer be reimbursed.

Collaborating for Success

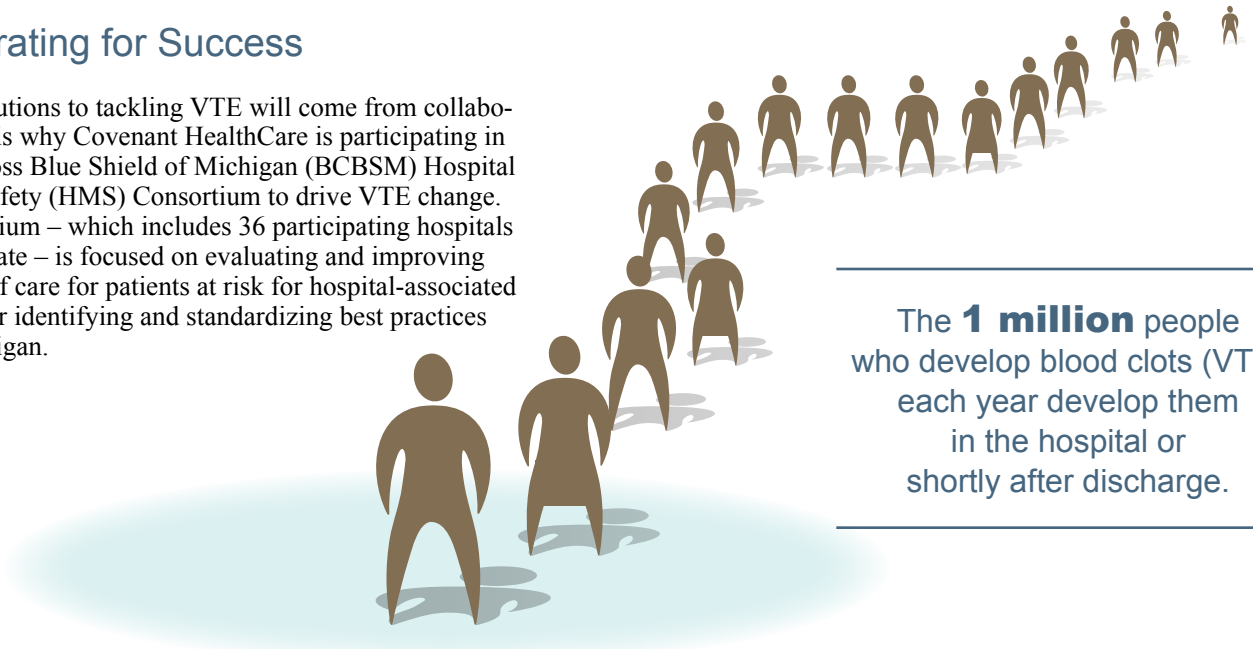
The best solutions to tackling VTE will come from collaboration. This is why Covenant HealthCare is participating in the Blue Cross Blue Shield of Michigan (BCBSM) Hospital Medicine Safety (HMS) Consortium to drive VTE change. The Consortium – which includes 36 participating hospitals across the state – is focused on evaluating and improving the quality of care for patients at risk for hospital-associated VTE, and for identifying and standardizing best practices across Michigan.

Objectives & Goals

The HMS Consortium's VTE Prophylaxis Project is designed to identify, develop and implement systems-based strategies to significantly decrease VTE events in hospitalized general medical patients (this excludes ICU, surgical and observation patients). It has two key objectives:

- **The first objective** is to collect data from all participating hospitals to determine patterns, leverage knowledge and develop goals and best practices. This is currently underway.
- **The second objective** is to sustain the gains. The Consortium will continue to collect data to track the rate of change in performance and identify predictors to further improve quality and efficiency. Each participating hospital will be assessed based on three performance goals:
  1. 100% of eligible medical inpatients have a VTE risk assessment documented upon hospital admission. It is based on individual factors, such as age and medical condition.
  2. Over 90% of high-risk patients have appropriate pharmacological prophylaxis ordered and administered for patients with a risk assessment score of 2 or more within 24 hours of admission, unless there is a contraindication – which must be documented.
  3. Over 90% of high-risk patients with contraindications to pharmacological prophylaxis receive an alternate form of mechanical prophylaxis.

Continued on page 11



The **1 million** people who develop blood clots (VTE) each year develop them in the hospital or shortly after discharge.

Surviving Sepsis Alert!

GUEST AUTHOR
Dr. Iris Mangulabnan, Medical Director, Hospital Medicine Program

Sepsis has varying stages, and can progress from an uncomplicated disease to severe sepsis with organ failure, septic shock and death.

In the U.S., sepsis ranks as the 10th leading cause of death. Each year, over 750,000 cases occur and of those, 200,000 people die. These numbers are increasing, largely due to an aging population, immunosuppression and multi-drug resistant infection. In fact, it is estimated that cases of severe sepsis will double over the next 25 to 30 years.

Early Diagnosis Is Key

The initial diagnosis of sepsis can occur in the emergency room, the ICU or elsewhere in the hospital. With limited resources and varying levels of experience, healthcare professionals may be ill-equipped to identify the symptoms, reach a timely diagnosis and provide proper treatment.

This is why, in 2008, a global organization called the Surviving Sepsis Campaign (SSC) released international guidelines for managing severe sepsis and septic shock, and has been building awareness ever since.

Sepsis Resuscitation Bundle

A "bundle" is a group of interventions or therapies for a disease. Implementing a bundle of interventions together is proven to produce better outcomes than implementing each intervention individually. To some physicians, this may seem like cookbook medicine. However, the science for each intervention is so well established that the bundle should be accepted as best practice.

As shown in the visual, the SSC identified five intervention elements in the sepsis bundle, and an additional three elements for severe sepsis and shock. For severe sepsis, it's

Sepsis Resuscitation Bundle Elements

1. Measure serum lactate.
2. Obtain blood cultures prior to antibiotic administration.
3. Administer broad-spectrum antibiotics within three hours from time of presentation for ECC admissions and one hour for non-ECC ICU admissions.
4. As part of early goal-directed therapy, in the event of hypotension and/or lactate >4 mmol/L (36 mg/dL):
   a. Deliver an initial minimum of 20 ml/kg of crystalloid (or colloid equivalent), and
   b. Apply vasopressors for hypotension not responding to initial fluid resuscitation to maintain mean arterial pressure (MAP) ≥65 mm Hg.
5. In the event of persistent hypotension despite fluid resuscitation (septic shock) and/or lactate >4 mmol/L (36 mg/dL):
   a. Achieve central venous pressure (CVP) of ≥8-12 mm Hg, and
   b. Achieve central venous oxygen saturation (ScvO2) of Surviving Sepsis Campaign >70%.

(Note: Achieving a mixed venous oxygen saturation [SvO2] of 65% is an acceptable alternative.)

Added Bundles for SEVERE Sepsis

- Consider low-dose steroids for septic shock in accordance with a standardized ICU policy.
- Maintain glucose control lower limit of normal, but <180 mg/dL (10 mmol/L).
- Maintain a median inspiratory plateau pressure (IPP) of <30 cm H2O for mechanically ventilated patients.

Fast Facts

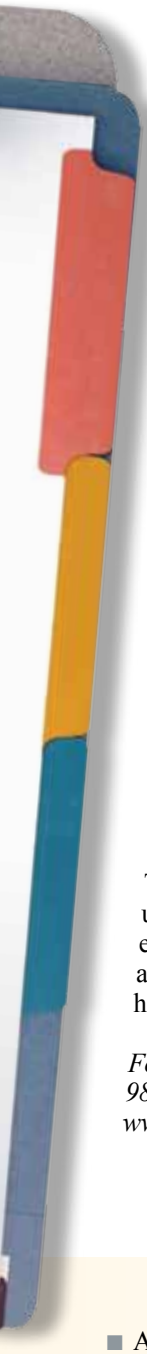
Sepsis
A condition that stems from a poorly regulated inflammatory response to infection. It exists if two or more of the following abnormalities are present, along with either a **culture-proven or visually identified infection.**

- Fever >101.3º F (38.5º C) or <95º F (35º C)
- Heart rate >90 beats/minute
- Respiratory rate >20 breaths/minute (or PaC02<32 mmHg)
- WBC >12,000 cells/mm3, <4,000 cells/mm3, or >10% immature (band) forms

Severe Sepsis
Sepsis plus at least one of the following signs of hypoperfusion or organ dysfunction:

- Mottled skin
- Slow capillary refill (>3 seconds)
- Significantly lower urine output or the need for renal replacement therapy
- Abrupt change in mental status
- Lower platelet count <100,000
- Lactic acid >2 mmol/L

More people die in one year in North America from severe sepsis than from breast cancer, lung cancer and colon cancer combined.



possible that some of the interventions may not be completed if the clinical conditions described do not prevail in a particular case, but clinicians must still assess for the conditions. **The goal is to perform all indicated tasks 100% of the time within the first six hours of severe sepsis diagnosis.**

Goals and Actions

The goal of the SSC is to achieve a 25% reduction in mortality rate by following the timing and sequence of each element in the bundle. That said, a great deal of success also rests in building awareness of sepsis, educating healthcare professionals and creating critical pathways for success. This is vital to recognizing the signs of sepsis faster (see sidebar of symptoms), diagnosing the condition earlier and treating the patient appropriately.

As an organization, Covenant HealthCare has not only adopted these bundles, but has also built them into "order sets" on Epic, our EMR system. First responders can easily pull up the order set for sepsis, and foremost in the order set is Early Goal-Directed Therapy (EGDT). These order sets are updated as needed, with the latest update implemented in April. Meanwhile, plans to better educate physicians and nurses about sepsis and EGDT are underway to improve rapid response to this critical health condition.

For more information, contact Dr. Mangulabnan at 989.583.6222 or imangulabnan@chs-mi.com. Also visit www.survivingsepsis.org.

- Acute lung injury or acute respiratory distress syndrome (ARDS)
- Cardiac dysfunction (i.e., left ventricular systolic dysfunction)

Septic Shock
Severe Sepsis with one or both of the following:

- Systemic mean blood pressure is <60 mmHg (or <80 mmHg if the patient has baseline hypertension) despite adequate fluid resuscitation.
- Maintaining systemic mean blood pressure requires the use of vasopressors.

Tackling VTE Through Collaboration, continued from page 9

Meanwhile, physicians are asked to continue to follow the standard VTE Prophylaxis Guidelines from the American College of Chest Physicians (ACCP):

- For acutely ill medical patients admitted to a hospital with congestive heart failure or severe respiratory disease, or who are confined to bed and have one or more additional risk factors, including active cancer, previous VTE, sepsis, and acute neurologic disease, we recommend thromboprophylaxis with LMWH (Grade 1A), LDUH (Grade 1A), or fondaparinux (Grade 1A).
- For medical patients with risk factors for VTE and for whom there is a contraindication to anticoagulant thromboprophylaxis, we recommend the optimal use of mechanical thromboprophylaxis with GCS or IPC (Grade 1A).

Pulmonary embolism accounts for
5 -10%
of all in-hospital deaths and
200,000 - 300,000
hospitalizations per year.

What You Can Expect

Currently the HMS VTE Prophylaxis Project is in the planning and development stage. Moving forward, this is what can be expected:

- In the coming months, changes will be made to current order sets at Covenant HealthCare to achieve the Consortium's objectives and ensure 100% compliance with VTE Prophylaxis.
- As the HMS identifies VTE strategies and best practices, hospital protocols will be adjusted further.
- Physicians and nurses will be kept informed and educated to ensure a smooth and successful transition.
- Data collection for the Consortium will start in July.

If you have questions, contact Dr. Anu Gollapudi at 989.583.4220 or agollapudi@chs-mi.com or Jessica House, RN, Patient Safety and Quality, VTE Collaborative at 989.583.6604 or jlhouse@chs-mi.com.

Improving Cross-Talk Between EMR Systems

Dr. Nicholas Hruby, Laboratory Medical Director

The goal of Electronic Medical Records (EMR) is to save time and improve quality. There are many EMR systems from which to choose, such as Epic, Allscripts, Amazing Charts, iPatientCare, Endosoft, eMedicalNotes, Orchard Harvest, CPSI and Nextgen, to name a few of hundreds.

Having so many choices can present problems when disparate EMR systems need to talk to each other. Smooth connectivity is critical, especially in an era of even greater collaboration between healthcare organizations and a growing demand for quality, safety and reliability.

Case in Point: If a laboratory and a physician's office are using two different systems, it can be difficult to exchange information about lab orders and results electronically. This, of course, can defeat the value of EMR if you have to resort to writing manual orders and scanning lab results into your own EMR system.

This is where integrated software solutions like Lifepoint enter the picture. They enable two systems to interact with each other as if they were one. Lifepoint offers two models:

1. The **EMR interface solution** enables physicians to directly place lab orders and receive lab results in their own system. It acts as the "middleman," seamlessly reading, interpreting and processing clinical messages between different systems.
2. The **web portal solution** allows physicians to access a website to place lab orders electronically. Lifepoint automatically schedules the lab results to be sent to a designated printer in the physician's office, at the desired time. The results are provided in a user-friendly, easy-to-read format, but will still need to be scanned into the patient's EMR.

In both models – especially the EMR interface – workload is reduced, efficiency is improved, order histories can be easily tracked, and the accuracy of orders and patient records is ensured. There is also flexibility built right in. For example, if a physician's office prefers to handwrite lab orders, but receive results electronically or via the printer, it can choose to do so.

Both models also provide access to a useful Advanced Beneficiary Notice (ABN) checker to help satisfy Medicare requirements.

Covenant HealthCare is finding growing success with Lifepoint as a hassle-free, cost-effective interface with other EMR systems. Currently, eight physician offices use the EMR interface service and 15 offices use the web portal to automate laboratory requests and results.

Implementing a software solution takes an average of four to six months. It begins with an evaluation of needs, followed by administrative agreements, training, a pilot program and then launch.

For more information, contact Dr. Nicholas Hruby's staff at 989.583.6727 or nan.hruby@chs-mi.com.

Smooth connectivity is critical, especially in an era of even greater collaboration between healthcare organizations and a growing demand for quality, safety and reliability.

The Transformation to Transradial

Guest Author
Dr Scott Martin, Cardiology, Covenant Center for the Heart

In the late 1980s, a transformation in cardiac catheterization began. Lucien Campeau, MD, a French-Canadian physician, performed the first transradial diagnostic catheterization. By 1993, a research team in Amsterdam began using the transradial technique for interventional procedures.

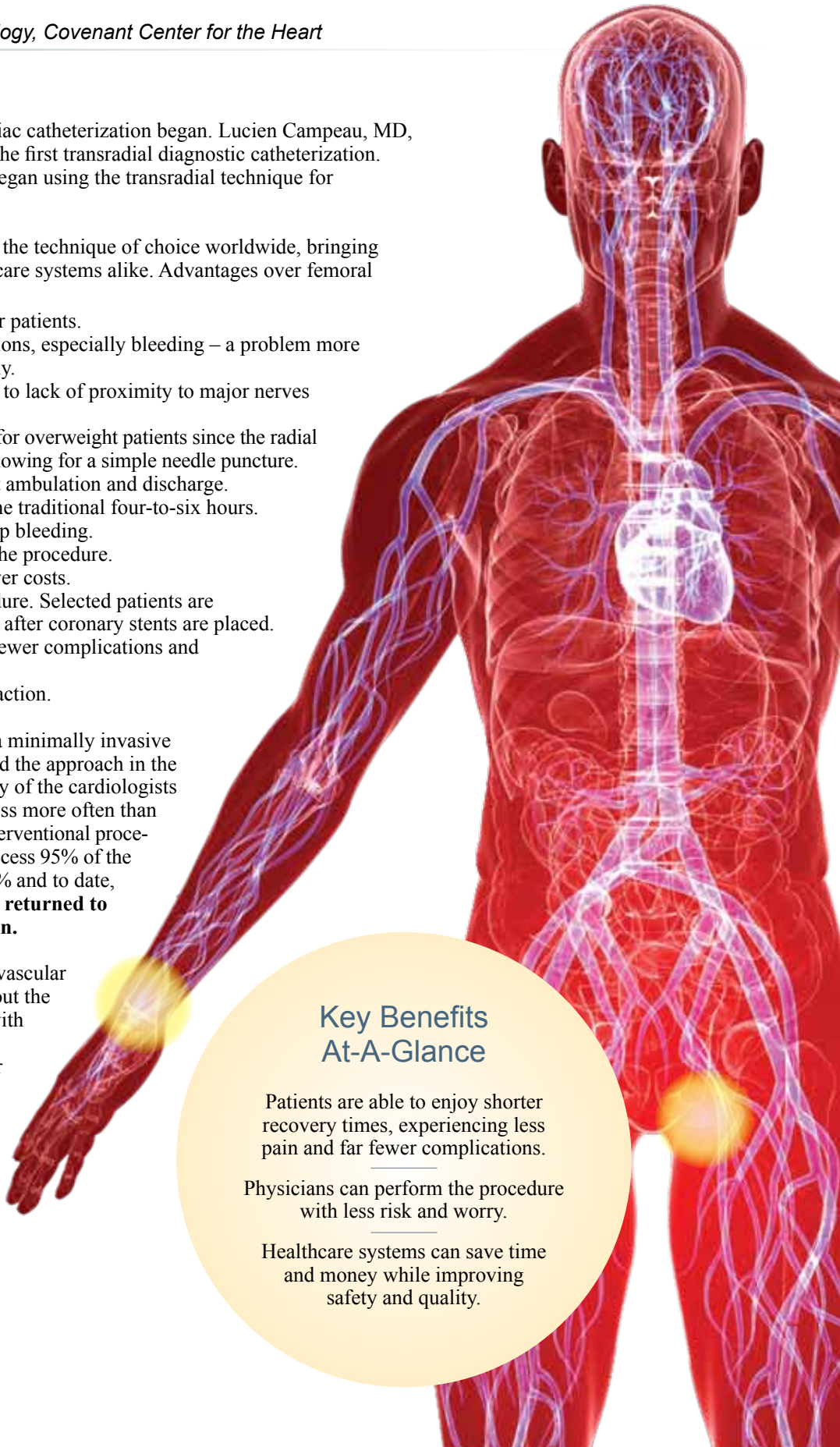
Today, transradial access is fast becoming the technique of choice worldwide, bringing benefits to patients, physicians and healthcare systems alike. Advantages over femoral access include:

- Shorter recovery time and less pain for patients.
- Far fewer major access site complications, especially bleeding – a problem more common among women and the elderly.
- Much lower risk of nerve damage due to lack of proximity to major nerves (e.g., the femoral).
- Easier vascular access and hemostasis for overweight patients since the radial artery rests close to the skin surface, allowing for a simple needle puncture.
- Significantly decreased time to patient ambulation and discharge.
- No need for the patient to lie flat for the traditional four-to-six hours.
- No need for groin compressions to stop bleeding.
- Patients become mobile shortly after the procedure.
- Shorter hospital stays, resulting in lower costs.
- Greater potential for outpatient procedure. Selected patients are starting to be discharged the same day after coronary stents are placed.
- Reduced post-procedural cost due to fewer complications and follow-up visits.
- Enhanced patient outcomes and satisfaction.

Transradial access is proving its value as a minimally invasive procedure. Covenant HealthCare pioneered the approach in the Great Lakes Bay Region in 2009 and many of the cardiologists who practice there choose transradial access more often than femoral access for both diagnostic and interventional procedures. In fact, some are using transradial access 95% of the time versus the nationwide average of <10% and to date, **not a single patient treated this way has returned to the hospital with a vascular complication.**

If you have patients suffering from cardiovascular disease, you may want to inform them about the transradial procedure and also discuss it with the cardiologist. It's safer, faster and less painful than femoral access, enabling your patients to get back on their feet and on with their life – which is what our job is all about.

For more information, contact the Covenant Center for the Heart Physician Office at 989.497.9395.



Key Benefits At-A-Glance

Patients are able to enjoy shorter recovery times, experiencing less pain and far fewer complications.

Physicians can perform the procedure with less risk and worry.

Healthcare systems can save time and money while improving safety and quality.

"Covert" Technology: A Camera in a Capsule

GUEST AUTHOR
Dr. Ramesh Naram, Gastroenterology

It sounds like something James Bond would do – swallowing a covert device encased in a capsule for the sole purpose of gathering information.

That's exactly what Wireless Capsule Endoscopy (WCE) is all about. In this noninvasive diagnostic procedure which is available at Covenant HealthCare, patients are asked to ingest a camera enclosed in an easy-to-swallow capsule. The device records what is happening deep inside the gastrointestinal (GI) tract, revealing hidden sources of bleeding and abdominal pain.

WCE is unique in that it allows physicians to visualize areas in the small intestine that are not accessible by other forms of endoscopy, including colonoscopy and esophagogastroduodenoscopy (EGD).

Physicians typically use WCE to evaluate or screen for the following potential conditions:

- GI bleeding from the small bowel in patients with negative gastroscopy and colonscopy
- Crohn's disease
- Celiac disease
- Small bowel polyps and tumors
- Lesions in inherited syndromes

The procedure is simple, safe and effective:

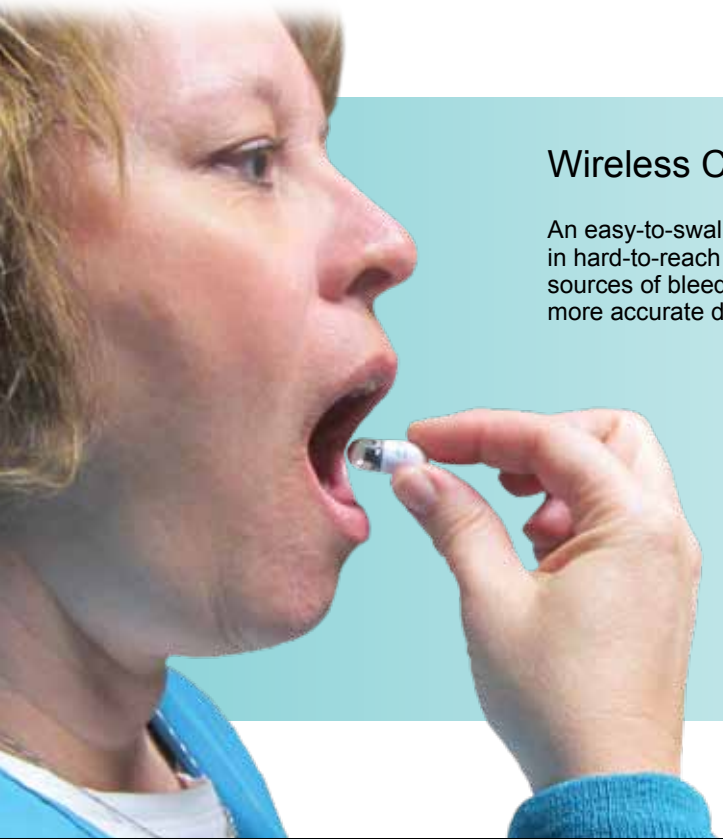
- Patients must fast for 12 hours in advance.
- The camera takes pictures for 8 hours, transmitting them to an external device worn by the patient.
- Patients follow strict protocols related to food, drink, medications and exercise.
- The camera passes out of the body the same day or within a few days and is safe to flush.
- The patient returns the external device to the gastroenterologist who views the pictures.

Limitations include:

- It cannot be used on patients who are fitted with pacemakers or defibrillators, due to transmission interference.
- It should not be used in patients with swallowing disorders.
- About 1% of patients might not be able to pass the capsule, which is why patients with prior small bowel surgeries or suspected obstructions should not use WCE. If necessary, the capsule can be recovered endoscopically or rarely, with surgery.
- It is a diagnostic tool only; tissue sampling and intervention are not possible.

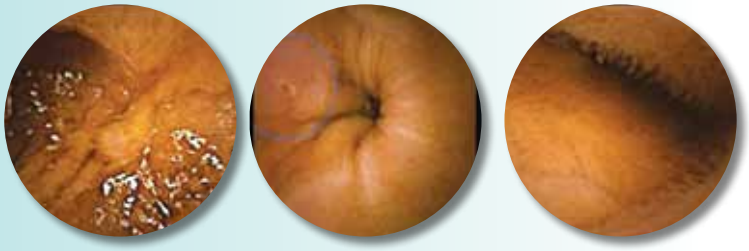
WCE provides up to 60,000 digital images per procedure. It is a proven method for diagnosing problems in hard-to reach areas, enabling physicians to make precise diagnoses.

For more information, contact Dr. Naram at 989.791.2022.



Wireless Capsule Endoscopy

An easy-to-swallow capsule records what is happening in hard-to-reach areas of the GI tract, revealing hidden sources of bleeding and abdominal pain, and enabling more accurate diagnoses.



Polyp or Lymphoid Hyperplasia

Ulcer

Normal Small Bowel

Vanquishing Varicose Veins

GUEST AUTHOR
Dr. Brian R. Beeman, Vascular Surgeon, Mid Michigan Vascular Surgery

Approximately, 30 million Americans, half of all Americans over the age of 50 and two-thirds of women over 60 are affected by Chronic Venous Insufficiency (CVI), which is commonly referred to as varicose veins.

If you have patients with this condition, you may want to consider consulting with a vascular surgeon trained to identify and treat CVI and its complications. Although the number of people seeking treatment is a small percentage of those affected, a growing number are taking action. This is not only due to better treatments, but also to more expansive insurance coverage that now considers CVI a medical necessity.

Diagnosis

Most experts agree that varicose veins are caused by defective or damaged valves within the vein itself. When vein valves function improperly, blood can flow in the wrong direction and pool up in the vein, resulting in varicosities.

The screening procedure is simple. With the patient placed in the trendelenburg position, a specialist compresses the varicose vein. The specialist then has the patient stand while observing the blood flow through the vein. Next, a duplex ultrasound is typically used to produce images of the vein structure so that a clear diagnosis of CVI and treatable varicose veins can be given.

Treatment

Prior to any medical procedure, insurance companies require patients to wear compression stockings for 6-12 weeks. As for the procedure itself, the days of "vein stripping" are behind us, thanks to many technology advances. The preferred method of treatment today is the radiofrequency (RF) ablation endovenous procedure.

RF ablation is a minimally invasive procedure performed by vascular surgeons, usually in a hospital treatment room for added safety. The surgeon inserts a catheter with an RF-radiating element – along with an injection of saline and lidocaine - into the affected vein. A 20-second blast of RF delivers 120°C of heat to a segment of the vein. The patient cannot feel this process due to the lidocaine, and the required heat is much lower than the older laser catheters, minimizing tissue trauma and discomfort.

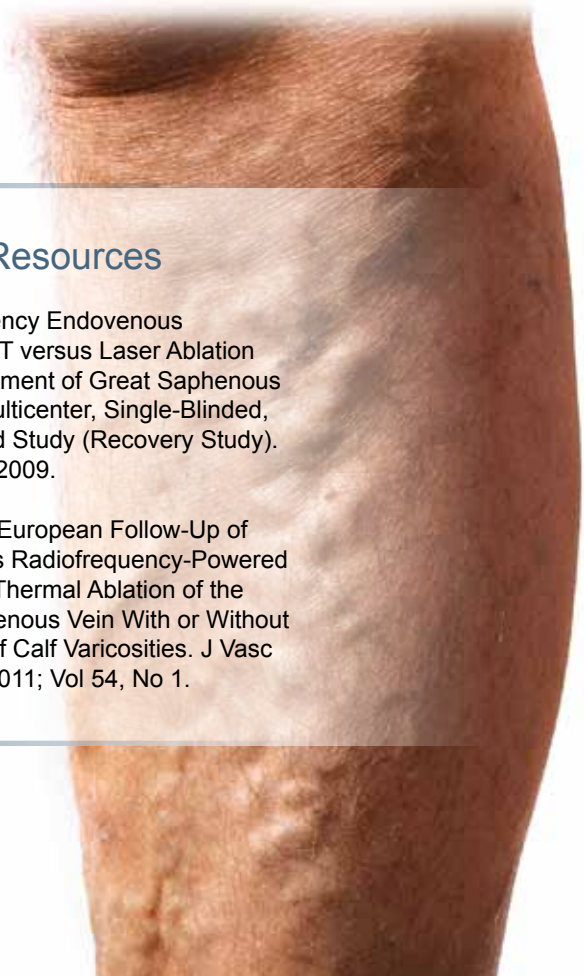
Between each RF blast, the catheter is repositioned to the next untreated portion of the vein until the entire vein has been ablated. The heat from the catheter contracts collagen in the vein walls, which results in the vein sealing itself closed. Blood is rerouted back to the heart through healthy veins.

Outcomes and Post-Procedure Care

The RF procedure has a rapid recovery with almost instant results. Patients are encouraged to walk immediately after the procedure and are back to normal within three days. Some patients feel improvement within minutes after the procedure, while others may take a few days to notice changes. Equally important, the vast majority of patients see long-term relief. A three-year study has shown, in fact, that 97% of veins in treated legs remained closed.

There is no question that the RF procedure is an excellent treatment for many CVI cases, with a minor risk of deep vein thrombosis and nerve damage. However, approximately 20% of patients will require a micro-phlebectomy instead, which requires the vein to be removed in segments through multiple small incisions. Vascular surgeons will have the expertise to minimize complications and maximize patient outcomes, working closely with referring physicians to drive results.

For more information, contact Dr. Beeman at 989.790.2600 or bbeeman@chs-mi.com.



Useful Resources

Radiofrequency Endovenous ClosureFAST versus Laser Ablation for the Treatment of Great Saphenous Reflux: A Multicenter, Single-Blinded, Randomized Study (Recovery Study). JVIR; June 2009.

Three-Year European Follow-Up of Endovenous Radiofrequency-Powered Segmental Thermal Ablation of the Great Saphenous Vein With or Without Treatment of Calf Varicosities. J Vasc Surg; July 2011; Vol 54, No 1.

COVENANT HealthCare

Extraordinary Care for Every Generation

Covenant HealthCare
1447 North Harrison
Saginaw, Michigan 48602

The Chart is published four times a year.
Send submissions to Maryvonne DeSmyter
at the Office of Physician Relations.

mdesmyter@chs-mi.com

989.583.4036 **Fax**

989.583.4040 **Tel**

Non Profit Org.
U.S. Postage
PAID
Saginaw, MI
Permit No. 447

CMU Medical School Status

Dr. John Kosanovich, Vice President of Medical Affairs and Network Development

In 2008, Central Michigan University (CMU) founded the CMU College of Medicine and in 2011, a partnership was formed between Covenant HealthCare, St. Mary's of Michigan and CMU to take medical education to new levels of excellence across the Great Lakes Bay Region.

As part of the partnership, the East Campus of the CMU College of Medicine will be located in Saginaw. There will be a presence on both partners' campuses, including a cutting-edge facility on the Covenant HealthCare campus to accommodate clinical and academic programs.

According to Ernest Yoder, Dean of the CMU College of Medicine, "We are excited to bring university-based medical education to the region and to form strategic partnerships for success," he said. "Our goal is to provide the full continuum of medical school education, residency training and continuing education and to build a reputation for quality and innovation."

Such a commitment will help make an already strong hub of healthcare in the region even stronger, attracting and retaining top talent while meeting the growing need for health providers. This, in turn, will not only improve access to healthcare, but also revitalize the economic base of local communities.

Key Updates

- **Accreditations:** The CMU College of Medicine has achieved two key accreditations. In early April, it received confirmation from the Higher Learning Commission, which accredits programs and degrees, that it achieved preliminary accreditation, putting the college on track for full accreditation by 2013. In March, the college also received preliminary accreditation from the Liaison Committee on Medical Education (LCME), which accredits medical schools. This is the third of five LCME accreditation steps with final accreditation expected by 2016.
- **First Student Class:** Both of these preliminary accreditations will enable the CMU College of Medicine to open its doors in Mount Pleasant in 2013. Recruiting for its first class of 60 students will begin this summer for candidates having a 3.25 grade point average or higher (a 24 or above on the MCAT). Students must also pass a rigorous interview process that judges character and other important skills.
- **Site Planning:** Site and facility planning for the Covenant HealthCare campus and St. Mary's continues. Architectural plans will be initiated later this year, with construction in the 2013-2015 timeframe and a grand opening of the East Campus in Saginaw in 2015.

Physicians can expect more updates as the project unfolds.

For more information, contact Dr. Kosanovich at 989.583.6047 or jkosanovich@chs-mi.com.