



SWORBHP LINKS

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Summer Fun !



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High Risk Medication Error Reduction: What is an Independent Double Check?

The Institute for Safe Medication Practices Canada (ISMP) outlines a list of high alert medications that if given incorrectly, carry potentially devastating consequences to our patients (ISMP, 2012). When an Independent Double Check (IDC) is performed by healthcare providers, up to 97% of these errors can be prevented (Grasha, et al 2001, & Grissinger, M. 2006). Canadians experience approximately 185,000 adverse events while hospitalized annually and out of those, 6% are related directly to the administration of high alert medications where an IDC was not performed.

What is an Independent Double Check (IDC)?

An IDC is the process in which a high alert medication is drawn up by the healthcare provider, checking the most recent order and dosage. The provider then takes the medication and hands the patient's information along with the medication drawn up to an independent provider without telling them what they expect the second provider to find. The second provider independently goes through the process while checking that the first provider's dosage and medication are correct.

If 97% of Errors Can Be Eliminated, Why Aren't We Doing IDC's?

The process, although being proven effective, and not time consuming (taking an average of thirty seconds to complete), requires two healthcare providers. Major lethal medication errors have occurred in the prehospital environment, and the Southwest Region is no stranger to prehospital medication errors. Paramedics will have to be innovative in incorporating the safe practice benefits of an independent double check into their practice. This may mean consideration for PCPs checking ACP delivered medications, or in the middle of the night on an ACP first response another pair of eyes reading the vial. Can we arrange for pre-dose and pre-checked medications for all situations? Can we simplify pediatric dosing? Can we dispatch two ACP trucks to all pediatric arrests where we can? Paramedics work in an arduous and unforgiving environment. They will need to use all of the available resources to deliver the best and safest care to their patients, and avoid the significant annual harm caused by medication errors with high alert medications.

Diane Bradford, MN, RN
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Hotel-Dieu Grace Hospital, Windsor

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Just Culture

As shift workers, paramedics and emergency physicians alike, we work a lot of nights and are used to being tired. We all try to stretch the limits “post nights” to be able to make personal commitments or spend time with family. Personally, I always find myself making silly mistakes when I am “post nights”: bumping my head getting out of a car, hitting the door frame with my shoulder as I pass through it, spilling my 10th cup of coffee... These events used to frustrate me, but now I just chalk it up to being “post nights”.

Believe it or not, this got me thinking recently about mistakes of a medical nature. We are human, and we all make mistakes. No one sets out at the beginning of a shift to make a mistake, but we know that eventually it is going to happen to the best of us at one point in our career.

From the Base Hospital perspective, we know that paramedics (like physicians) make mistakes during the course of the care they provide patients, often in chaotic environments. Rather than living in the past and punishing the individual “offender” (the tried and true shame and blame technique), I think the larger question is to define how these mistakes happened, what other factors were involved (environment, operational limitations, failed communication strategies, etc.), and what can we do to prevent this from recurring in the future? If this happened to you once, those same factors if not identified and corrected, may lead to the same error in the future with a different patient.

Considering all factors that contributed to a patient safety incident in order to prevent a recurrence is one essential element as we move to a “just culture”. This is not to say that we are moving to a “blameless culture” and personal accountability no longer exists, it is more a recognition that in every “mistake/error/patient safety incident” there are other factors involved that need to be identified and addressed.

To that end, we want to hear from you. The “self-report hotline” is one essential element of this. If you recognize a patient safety incident, have identified a protocol “error”, or even had a “near miss”, please let us know as soon as possible. Through early awareness, we are able to complete remediation at the individual level more rapidly, and are then able to begin addressing any system factors that may have contributed. It is about moving forward, learning from the past, and building a safer system. It is about developing a just culture.

Michael Lewell, B.Sc., M.D., FRCP(C)
Regional Medical Director

Look for us on the Web
www.lhsc.on.ca/bhp

Patios, BBQs and Trauma!

Pack up your parka and boots...summer is here. Unfortunately, summer is a time when we see an increase in ‘seasonal’ injuries such as burns, drowning’s, and trauma (TBRHSC, 2012).

Normally, trauma calls can be considered ‘basic’, given the majority of the call relies on utilization of BLS skills. “Most summertime injuries happen during recreational hours—in the evening or on weekends” (Smith, 2007). Factor in the type of trauma, combined with patient location and hour of the day, and you now have the framework for an interesting and possibly challenging scenario. Imagine the patient who decided it would be ‘fun’ to rock climb at a local park, but fell into a crevice resulting in multiple fractures. It is 32° C outside and you are wearing your required gear (yes, even your helmet). Allied resources are nowhere near, so your critical decision making skills kick into high gear. Oh, the joys of summer!

Freskos (2011) noted, “With more cars on the road, people working and playing outside, spirited teenagers looking to celebrate the school year’s end and revelers whooping it up combine to foster an environment more conducive to bodily injury”. From dehydration to intoxication, summer is an interesting time for medics. We stock up on sun screen and water while ensuring our ventolin and trauma bags are always nearby.

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Patios, BBQs and Trauma!

Trauma calls shift from snowmobiles to motorcycles and snowboards to skateboards. Summer weather patients may shed layers of clothing making it easier to take vitals, but it can be tricky to determine where gravel ends and skin begins.

From the young at heart to those young in spirit; summer season truly is trauma season (Davis, 2012).

Tracy Gaunt, M.Sc., NCEE, CPSO
Professional Standards Specialist

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Recerts Are Coming: No Need to Stress!

Have you started to wonder what your recert will consist of this year? I still work part-time on the road and often get questions related to how the upcoming recerts will look, and if there will be a test. Understandably, this time of year presents with a certain sense of anxiety associated with the unknown, combined with the unavoidable need to evaluate paramedics' skills and knowledge.

Here is the truth about what to expect; expect to see what you've asked for. Remember the education surveys that were distributed electronically in February of this year? We asked for your feedback on what topics to teach and how to teach them, and we listened. In addition to recommendations from Professional Standards, Ask MAC questions, medical director input, and educator feedback, your survey results have been incorporated, allowing us to design a recert program that we believe will address everyone's needs.

You asked for practical scenarios and skills, so you'll be given the opportunity to practice many of your skills in a low-key and low-stress environment. You'll have the chance to work in teams to work through scenarios, building your critical assessment and thinking skills.

You'll see the educators in a new role this year as facilitators rather than teachers. In this new role we'll help you develop and enhance your skills and abilities, rather than sit back and simply grade them. We truly hope you find this new role one that encourages a comfortable learning environment and enables you to relax and focus on strengthening your skills.

In addition to the practical hands on portion of the recert, you'll have access to online pre-course materials where you'll find several requirements to complete, as well as a post-course in class evaluation much like that of two years ago.

As always, we're here for support and encouragement. If you're having any trepidation regarding your upcoming recert, please feel free to contact us; we're more than happy to assist you.

Stephanie Romano, MSc.Ed., HBSc., AEMCA, NCEE, CQPA
Education Coordinator

Look for us on the Web
www.lhsc.on.ca/bhp

Is There a Role for Tranexamic Acid in Preventing Blood Loss and Decreasing all Cause Mortality in Prehospital Trauma Patients?

Recent worldwide work in the field of massive transfusion and resuscitation of trauma patients points to a decrease in death of bleeding trauma patients with the use of tranexamic acid (Cyclokapron) in the first three hours (CRASH-2 trial collaborators, 2010). This low-cost drug was felt to work by reducing hyper-fibrinolysis or breakdown of clot in the multisystem trauma patient.

After massive trauma it is known that the coagulation cascade is automatically triggered in the body through a series of mechanisms, some still not fully understood, in which clots form preventing hemorrhage. At the same time, chemicals are released in the body which break down clots, necessary for continued blood flow.

"...it is known that the coagulation cascade is automatically triggered in the body through a series of mechanisms..."

It is felt that in massive trauma, clot breakdown becomes a problem to the point that no stable clots can form, leading to massive transfusions, disseminated intravascular coagulation, and death. In an international 20,000 patient trial, tranexamic acid was shown to reduce overall mortality, perhaps decreasing hyper-fibrinolysis. The Crash-2 trial demonstrated that the survival effect from tranexamic acid had no benefit when received three hours from the incident.

The drug protocol includes a loading dose of 1 g which is delivered in 100 ml of saline over 10 minutes, followed by an infusion of 1 g over eight hours. The data for early use is very compelling, and the drug has found its way into the special operations medic bags of militaries around the world, including Canada.

International experts have determined that trauma systems utilizing advanced prehospital services play an important role in successfully activating the massive transfusion protocol (Gruen & Biswadev, 2011). The Medical Council from SWORBHP will be working with our Provincial partners to consider initiating the use of tranexamic acid in the field which should enable more patients to receive the maximal benefit (under 3 hour group).

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Local Medical Director
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Gruen, R.L., Biswadev, M., (2011). Tranexamic Acid for trauma: Comment. *The Lancet*. Retrieved May 31, 2012. DOI: 10.1016/S0140-6736(11)60317-6

Upcoming CE Opportunities

There are currently no CE opportunities scheduled for the summer.

Remember to check our website regularly for information on upcoming Webinars and rounds.

[Click here](#) to visit our website and view the page dedicated to Continuing Education.

Analysis of Documentation Omissions Between April 2011 and March 2012

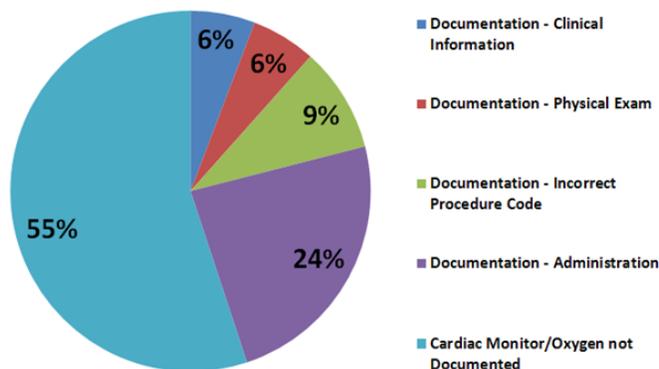
Utilization of electronic Ambulance Call Reports (eACRs) significantly increased within the region during the last fiscal year as two major urban services transitioned from paper Ambulance Call Reports (pACRs) to eACRs. Figure 1 shows that errors were found in the following documentation categories: cardiac monitor/oxygen, procedure code, administration, physical exam and clinical information sections of the ambulance call report. Technology and eACR platforms provide more flexibility to users. Paramedics can directly download vital signs parameters from the cardiac monitor. As a result (see Fig. 1), deviation in cardiac monitor/oxygen documentation occurred most frequently. Some examples and recommendations listed below can help paramedics effectively reduce these errors:

- When downloading data from the device, please ensure that it is captured under correct time sequence and procedure code and a full set of vitals should be entered under procedure code 10 only. Crew grid should reflect the provider performing the task, replace M/Dx or M/Dp from crew grid with actual provider information.
- In the administration section, final problem, return priority and inter-facility transfer codes had errors. For transfer calls, avoid using primary or final problem codes indicative of patient’s condition and instead use 90.5 or 93.
- Please consider obtaining a full list of problem and procedure codes applicable to your eACR platform from your Service Operator.
- Please consider completing physical exam and clinical information sections of the ACR utilizing the check boxes. Deviations were noted in documentation of history, medications, and allergies.

We continue to work with the Service Operators to standardize documentation across the region and share deviation information.

Adeel Ahmed, M.Eng, CQM/OE
 Coordinator, Professional Standards & Performance Improvement

Figure 1. Documentation Omissions by ACR Section



Trivia...fast facts!

- Hershey’s Kisses are called that because the machine that makes them looks like it’s kissing the conveyor belt.
- Laser stands for “light amplification by stimulated emission of radiation”. Developed 1950s—1960s.
- A human being loses an average of 40 to 100 strands of hair a day.
- Laughing lowers levels of stress hormones and strengthens the immune system. Six-year-olds laugh an average of 300 times a day. Adults only laugh 15 to 100 times a day.
- On a clear night in the Northern Hemisphere the naked eye can discern some 5,000 stars.

Retrieved from: www.corsinet.com/trivia

The Year of an EMS Resident

It's hard to believe that my year with SWORBHP has already reached its conclusion. Coming in as Base Hospital's second EMS resident, 'Davis 2.0', I had some idea about how this year would progress, but it absolutely exceeded each of my expectations and only furthered my strong interest for a career in prehospital medicine.

Throughout my twelve months with SWORBHP, I gained a vast amount of knowledge about the structure and function of EMS systems, not just in Ontario but internationally as well, along with learning some of the unique aspects of prehospital medicine. During the course of the year I was able to participate in each facet of Base Hospital's function, from education with recertifications, quality assurance, clinical work on ride-outs, and helping produce prehospital research. I had the opportunity to travel to the National Association of EMS Physicians (NAEMSP) and the Canadian Association of Emergency Physicians (CAEP) annual conferences to present research projects completed at SWORBHP/LHSC. I increased my knowledge of disaster medicine by attending introductory courses at the Centre for Disaster Preparedness (CDP) in Alabama, and to learn from arguably the most advanced EMS/disaster response system in the world, Magen David Adom (MDA) in Israel; the latter of which was an experience I will remember forever. Lastly, doing clinical work within a third world EMS system in Cape Town, South Africa really gave me a new perspective on the critical need that paramedics fill within health care systems around the world.

The hard work that SWORBHP has put into the development of an EMS area-of-interest year has been a huge addition to the Emergency Medicine residency program at Western, myself being a beneficiary. This year has provided me with a strong foundation upon which to build a career as an EMS physician and I hope to bring back some of what I learned to our region in the future. To all the paramedics I was fortunate enough to work with and my colleagues at SWORBHP around the region, I thank you greatly for making this year so valuable and memorable to me.

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PGY4 Emergency Medicine, UWO
EMS Resident—SWORBHP

Paramedic Practice — Part Two Why Base Hospitals Test the Way They Do

In the last article, I outlined the three components of practice; knowledge, skills and ability. Knowledge is acquired first as a student, from lectures, reading, group projects and from other people. Knowledge is retained in memory but gradually gets lost over time. It remains accessible if it is reinforced by use or review. Once someone enters practice, new knowledge is acquired and old knowledge retained by exposure to a variety of sources such as online material, journals, reading books, CE courses, etc. The aim of continuing education is to continue to learn new knowledge and reinforce the knowledge a person has learned in the past. This is why paramedics are encouraged to participate in continuing education. Knowledge is usually tested by written examination.

Skills are acquired through repetitive doing. There is a 'learning curve' that generally involves somewhere between 20 and 50 repetitions to acquire the ability to do a skill competently. The number of repetitions depends partially on the complexity of the skill, whether the person knows how to do similar skills, and the person themselves. Some people learn to do a skill in less repetitions and some require more to master it. Skill, like knowledge, also deteriorates over time and its practice must be reinforced to remain competent. The problem with determining skill competency is two-fold. How often does someone have to perform a skill to remain competent? The analogy is like riding a bicycle. Once you are a competent bicycle rider, do you forget how to ride a bicycle in 5, 10, 25 or more years? This is why setting arbitrary numbers to skill performance is so difficult. The second problem is how do you test skill competency? It needs to be demonstrated. Someone might be able to describe how to do a skill, but not be able to do it.

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Paramedic Practice—Why Base Hospitals Test the Way They Do

Ability is putting it all together. This is learned from experience, self reflection on that experience, case studies, and informally talking to others about their cases. Ability is very difficult to test. It is best accomplished through scenario testing, especially Objective Structured Clinical Exams (OSCEs).

In order to test the various aspects of practice, recert days generally consist of a combination of written testing of knowledge, skill demonstration, case presentations and scenario testing. This is why these components are part of the day.

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Look for us on the Web
www.lhsc.on.ca/bhp

Myth Busters: The Real Cause of Emergency Department Overcrowding

Providing acutely ill patients with rapid access to emergency care is the prime mission of emergency departments (ED) (Schull, Lazier, Vermeulen, Mawhinney, & Morrison, 2003). Timely access to emergency care has become a concern in Canada and has created a burning platform for improvement not only within the ED but throughout the entire system. In 2002 the Canadian Association of Emergency Physicians (CAEP) felt that emergency department overcrowding was a 'national epidemic' with 6% of Canadian patients waiting over 24 hours for admission (Alberti, 2004).

ED overcrowding has been defined by CAEP as "a situation in which demand for service exceeds the ability to provide care within a reasonable time, causing physicians and nurses to be unable to provide quality care" (Schull, Slaughter, & Redelmeier, 2002, p. 81). There are many contributing factors to ED overcrowding. Over the last 10 years, more focus has been placed on access to emergency care and it has been found that much of the overcrowding in the ED's in Canada goes much deeper than the department providing emergency care. In Canadian studies, the types of patients leading to overcrowding are those who require ED care anyway, not the lower acuity patients who could be seen elsewhere. Seasonal outbreaks of infectious disease can cause sporadic increases of volume, however access to homecare services and availability of alternate level of care (ALC) beds were seen to strongly influence ED overcrowding. Of importance as well are age, urgency based on Canadian Emergency Department Triage and Acuity Scale (CTAS) code, discharge diagnosis, disposition, and time and day of arrival in the ED. A number of studies have found that older and sicker patients contribute to

overcrowding by virtue of their higher acuity and higher admission rates (Schull, Slaughter, & Redelmeier, 2002).

In Ontario, an initiative called ED=ALC describes ED overcrowding as a result of not enough long-term care beds and community resources for patients who do not require acute care but do require alternate levels of care. The domino effect causes these patients to wait in acute care beds and the acutely ill newly admitted patients to wait in ED's. This then creates a back log of patients in the ED waiting rooms and ambulance offload areas increasing length of stay (LOS) for ED patients and contributing to a high left without being seen (LWBS) rate. By completing work further upstream from the ED, including the inpatient floors and community, it is expected that there will be improved access to ED care for those who require it.

"...much of the overcrowding in the ED's in Canada goes much deeper than the department providing emergency care."

Susan Kriening, RN, BScN, MHS, ENC(C)
Manager, Emergency Department
University Hospital, LHSC

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SWORBHP's Open Door Policy

Since the inception of SWORBHP in 2008, the staff and physicians have worked to be as accessible as possible to paramedics, despite the vast geography of the region. At a recent staff meeting the SWORBHP team thought it would be helpful to highlight the many lines of two-way communication that are available for paramedics to contact us.



Phone

- Self-Report Hotline — 1-888-997-6718
- Toll Free London Office — 1-866-544-9882
- Office phone #'s (general and individual lines) can be found in the Introduction section of your 2012 Medical Directives Paramedic Handbook, or by visiting the following link:
http://www.lhsc.on.ca/About_Us/Base_Hospital_Program/OpsLogistics/Contact_Information.htm

Email

- Individual staff email addresses can be found in the Introduction section of your 2012 Medical Directives Paramedic Handbook, or by visiting the following link:
http://www.lhsc.on.ca/About_Us/Base_Hospital_Program/OpsLogistics/Contact_Information.htm

Ask MAC

- Can be accessed by visiting the following link:
http://www.lhsc.on.ca/About_Us/Base_Hospital_Program/askmac.htm

In Person

- Regular office hours are kept at the London and Owen Sound Sites—Monday to Friday, 0800-1600 hours
- Recertification classes
- Live Rounds

Please remember, there is no reason to wait for your annual recert, upcoming rounds, or to cross paths with a SWORBHP team member to have your question answered! Please contact us by any of the above methods.

Adam Dukelow, M.D., FRCP(C), MHSC, CHE
Local Medical Director
Middlesex London, Elgin-St. Thomas, Lambton, Oxford, Oneida

Look for us on the Web
www.lhsc.on.ca/bhp

App Update

Since the release of the SWORBHP Apps, we have used the feedback we received to improve functionality. Many of the larger ACP protocols have been modified to allow faster loading and prevent crashing. Some smaller changes have been made to the PCP protocols in order to decrease loading times. In order to take advantage of these new updates you must download the newest versions, available from the same URLs as the original download:

http://www.sworbhp.com/mobile_app/

Please do not hesitate to contact us if you have any questions.

Alan Rice
Programmer, SWORBHP

Paramedic Recognition Awards

SWORBHP would like to acknowledge the following paramedics for their role in obtaining a prehospital return of spontaneous circulation (ROSC). Each patient survived to hospital discharge. Congratulations!

Perth County EMS

Andrew Lucas, Mark Crawford (May 7, 2012)

Middlesex London EMS

Jodi Brenndorfer, Dean Reffell (May 10, 2012)

Paul Keane, John Blaauw (May 15, 2012)

Shawn Peck, Paul Keane, Lee Nordstrom, Peter Desjardines, Brad McEachnie,

Karen Gray, Debbie Hunter, Terry Irwin (June 1, 2012)

Essex-Windsor EMS

Justin Lammers, Michelle Mollicone, Dean Wilkinson (September 2, 2011)

Andy Closs, Crista Alleva (September 27, 2011)

Brian Boismier, Corey Nelson, Charles Dawson, Tom Williams (November 4, 2011)

Donna Moss, Tom Lynk, Jackie Simpraga (November 4, 2011)

Isidor Cusumano, Wayne Russelo (November 18, 2011)

Trevor Lee, Mark Campeau, Mark Martin, Mike Lacroix (November 25, 2011)

Cathy Prowd, CQIA

Operations & Logistics Specialist

Recerts: We're Here to Support You!

It's no secret that some paramedics have felt unsupported in the past when it comes to annual recerts. Our goal this year is to provide you with several support mechanisms to ensure you not only come to recerts prepared, but leave knowing that Base Hospital is here to answer your questions, provide feedback, and help enhance your skills and knowledge. So how do we plan to do this?

We've been able to provide you with a number of resources, both knowledge and skill based, as well as support based. In the knowledge and skill department, we've developed videos, podcasts, and Webinars that will review material and prepare you for your recert day. We've developed short quizzes to be completed online before your recert that will enable you to see your answers, determine which ones you answered incorrectly, and provide you with tips on where to find the correct answer.

In the support department, you have been able to communicate with us via phone and email as well being able to ask the medical directors questions anonymously via Ask MAC. This year, we've added forums and live chats to the online pre-course website. Forums provide a small classroom-like message board where you can ask your Regional Paramedic Educator questions and have the answers posted for the group to see. The live chats will be scheduled monthly beginning in September and will be hosted by a Medical Director and Regional Paramedic Educator. In these sessions, paramedics will be able to pose written online questions and receive answers in live-time. This two to three hour block will be dedicated to answering online questions immediately in order to better prepare you for your upcoming recert.

We hope you find these additional methods to communicate with your Base Hospital effective and supportive. We encourage you to use them!

Stephanie Romano, MSc.Ed., HBSc., AEMCA, NCEE, CQPA
Education Coordinator

Self-Report Hotline
1-888-997-6718

Self-Report Email
selfreport@lhsc.on.ca

Self-Report Hotline Update

The SWORBHP self-report hotline has been in place since October 2010, allowing paramedics to submit documentation omissions, protocol variances and other concerns pertaining to patient care.

Within the next two weeks, SWORBHP will be initiating an alternative method for self-reporting. It is our self-report email. Paramedics will have a choice of using the hotline or email, depending on personal preference. All information received from an email will be treated as confidential and processed similar to phone reports.

Self-reporting is an important part of paramedic practice. Call or type...the choice is yours.

Tracy Gaunt, M.Sc., NCEE, CPSO
Professional Standards Specialist

“Good Job” Case Review—Ventricular Tachycardia with a Pulse

On May 19, 2012, paramedics Zia Khogyani and Anne Poirier were called for a 60 year old male in obvious distress, complaining of 6/10 chest tightness lasting 3 hours, despite 3 doses of nitro. The “tightness” was non-radiating, dissimilar to previous angina episodes and included palpitations. The patient was diaphoretic, short of breath with pulmonary edema present. Past medical history was significant for a prior cardiac arrest, coronary artery disease, CHF, hypertension and NIDDM.

The paramedics administered ASA, and obtained an ECG which was interpreted as VT at a rate of 211. VT is any rhythm of rate greater than 100 originating in the ventricles and is commonly caused by ischemic/structural cardiac disease or electrolyte deficiencies. It is associated with the elderly or those with concurrent cardiovascular disease (Compton et al, 2012). Paramedics should consider rates greater than 150 (in the absence of sinus tachycardia – a normal physiologic response) as an arrhythmia, and recognize that they are potentially lethal. Differentiation between VT and SVT with aberrant conduction can be difficult (Brady and Skiles, 1999). Obtaining a 12 lead is recommended (except in CTAS 1 patients) to assist with interpretation. For PCPs, this means getting your defib ready, prompt transport and notifying the ER. For ACPs, this means treatment based on the appropriate medical directive or transport (if treatment is delayed).

“Differentiation between VT and SVT with aberrant conduction can be difficult...”

While the treatment plan should never be based only on the ECG (Neumar et al, 2010), this VT was unstable (presence of chest pain, altered LOA, hypotension/signs of shock), and synchronized cardioversion was indicated. Zia and Anne chose rapid transport after being unable to patch or obtain IV access. Enroute, using his personal cell phone, Zia managed to reach the Base

Hospital Physician (BHP) but was cut off before orders could be obtained. Despite being unable to re-establish connection with the BHP, the ER was prepared upon their arrival and the patient was immediately cardioverted. Even though it is preferential to treat these patients on scene, the crew made a good decision to get the patient where extra hands

and better lighting would optimize care.

Paul Robinson, ACP, AEMCA, CPSO
Professional Standards Specialist

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Timely Access to Best Practice Stroke Care

In Ontario we are fortunate to have access to organized stroke care. We have 11 designated Regional stroke centres and 17 District stroke centres. Patients should be triaged to Regional or District stroke centers where they can receive timely stroke care and intervention.

Two timelines have been established to provide emergency medical services in Canada within the 4.5 hour window from symptom onset to the administration of: 1) the prehospital phase that starts with symptom onset and includes on-scene management and transport time, which should be 3.5 hours or less; and 2) the Emergency Department (ED) phase that includes diagnostic evaluation and consideration of treatment options, which should be 60 minutes or less (Canadian Best Practice Recommendations for Stroke Care, 2010). EMS plays a pivotal role in the provision of stroke best practices for the stroke client. It starts with EMS confirming information about the patient's symptom onset time, or last seen normal time and with EMS **ADVANCE** notification to the ED about an incoming stroke patient. This starts the crucial sequence of events in the ED: notification of the stroke physician on call, and targets of Door to Doctor: 15 minutes; Door to CT: 30 minutes; Door to Needle (tPA or thrombolysis): 60 minutes. These benchmarks are monitored and measured in order to evaluate performance.

All patients with suspected acute stroke or transient ischemic attack should undergo brain imaging (CT or MRI). Once in the ED, patients need to have a CT scan within 30 minutes of arrival. CT scans will help to rule out if the cause for the stroke is hemorrhagic, in which case the patient would not be a candidate for tPA. Physician expertise in stroke helps with careful evaluation of the CT scan or MRI.

Not only do Regional and District stroke centres provide access to time-dependent therapy, but for stroke patients outside the 4.5 hour window they provide access to:

- Physician expertise in stroke
- Stroke unit care, or areas within the hospital where stroke patients are clustered
- Care provided by an inter-professional stroke team (Medicine, Physiotherapy, Nursing, Occupational Therapy, Speech Language Therapy, Social Work, Pharmacy, Nutrition and Psychology. These disciplines will participate in the stroke survivor's recovery and care. The team will implement protocols, pathways, standardized assessment tools, and team meetings to effect the plan of care for stroke survivors.

The journey to wellness for stroke survivors is complex, and is supported by the participation of many health care providers commencing with the valued role of EMS.

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Therapeutic Hypothermia

Paramedic work is based on the concept of time. Once that pager goes off, the race is on and the clock starts ticking. Time, is muscle for the cardiac patient. Time, is memory for the stroke patient. And for the VSA patient, time is life. As we head to the scene of such a call, we know the patient has only a few minutes before the body suffers irreversible damage.

There is perhaps a way to buy some time. It may sound like science fiction, but the 'time saver' has been in motion for a long time, and that is therapeutic hypothermia. The process (which varies in invasiveness) is the application of cold to body in an attempt to slow down cellular metabolism (Wikipedia, 2012). Death from ischemia is now believed to be a result of apoptosis, which can be defined simply as cellular self-destruction (Wikipedia, 2012). The apoptotic pathway is in place as a protective mechanism. As cells get old, cancerous, or dysfunctional, they automatically 'commit suicide' to avoid propagation of flawed cells through the system (Kimball, 2011). During ischemia it is believed that apoptosis is triggered, which is a major contributor to poor outcomes after cellular insult. This pathway can be disrupted by the application of cold to the body.

I am reminded of a story I heard when I was young, but hesitate to corroborate because it is so interesting. The story is, that when Walt Disney died, his associates cut off his head and placed it in cryogenic suspension, so future scientists (when technology was advanced enough) could reattach it to another body. Cryogenics is based on the idea that at absolute zero (0 Kelvin or -273 degrees Celsius) all molecules are motionless (Porth, 2002). The problem is that when you decrease the temperature too slowly, water forms crystals (Brown et al, 2006). These crystals would have punctured the cellular membranes of every cell inside his head. The result (I was informed) would be similar to that of putting a tomato in the freezer (now you have to try it, don't you).

Like Walt Disney's associates, we cannot stop time; only slow it down. Therapeutic hypothermia is within the provincial medical directive which is a skill we may become more familiar with in the future.

Jason Angus, PCP
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Comments?

If you have comments or feedback on the newsletter, or have an article you would like to have considered for publication in a future edition of **LINKS**, please send to:

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