



## A Note From the Editor

Welcome to another wonderful edition of Air Waves. We have some very informative and important articles in this issue. Please be sure all members of your team get the opportunity to read them. I would like to encourage each of you to send me a note at anytime. I truly would love to hear your opinions, suggestions or ideas. You can send me an email at [lkirley@aircare.org](mailto:lkirley@aircare.org) at any time and please make the SUBJECT: Air Waves. Also, I would like to remind you that all issues of Air Waves are available for viewing on our website [www.aircare.org](http://www.aircare.org).

## STEMI Alert: West Michigan Air Care gets STEMI patients to the Cath Lab fast and with full critical care support



By Kevin Ferguson,  
Flight Nurse, RN, MSN,  
NP-C, CFRN, NREMT-P

Mr. Harley is doing yard work at his home in rural southwest Michigan when he develops sudden chest pain and shortness of breath. His wife immediately calls 911 and paramedics arrive 12 minutes later to find Mr. Harley sitting in a chair with continued complaints of chest pain. After assessing Mr. Harley's condition, the paramedics transport him emergently to the local emergency department, establishing an IV and providing oxygen and sublingual nitroglycerin en route. At the hospital, a 12-lead EKG is quickly completed and read by the emergency physician within 5 minutes. The physician diagnoses an ST-Elevation Acute Myocardial Infarction (STEMI) and calls either Borgess PATH or Bronson First to start the transfer process, which includes launching Air Care. Upon notification,

Air Care is airborne within 8 minutes. Meanwhile within the first 10 minutes since Mr. Harley's arrival, the ED staff has completed and documented a full set of vital signs and drawn initial labs including CBC, chemistry, coagulation studies and cardiac enzymes. The staff also assures that all components of the chest pain protocol are addressed, which include oxygen, aspirin, sublingual nitroglycerin, heparin bolus and morphine.



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» Air Care Awarded MIOSHA's  
Star Award for Safety – Again!

Air Care arrives at Mr. Harley's bedside 30 minutes after his ED arrival, planning to have him ready for transport in 6-10 minutes. One crewmember receives report from the physician and nurses, reviews the patient's medical record and completes a brief history and physical while a second crewmember places Mr. Harley on our monitor and prepares him for transport. During the 15-minute flight to the cath lab, Mr. Harley's condition is continuously monitored and any changes are treated utilizing Air Care's critical care protocols or via direct contact with the receiving institution. Mr. Harley receives Zofran for nausea and Fentanyl for breakthrough pain while his nitroglycerin and heparin drips are continued. Upon arrival at the cath lab, the Air Care team delivers Mr. Harley along with full report to the cardiovascular lab staff. The time since his initial presentation is 73 minutes... well within the American Heart Association's recommended 90-minute door-to-balloon time frame.

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The phrase “Time is Muscle” describes the need to eliminate delays in definitive care for STEMI’s and the importance the STEMI Chain of Survival, which is divided into 4 components:

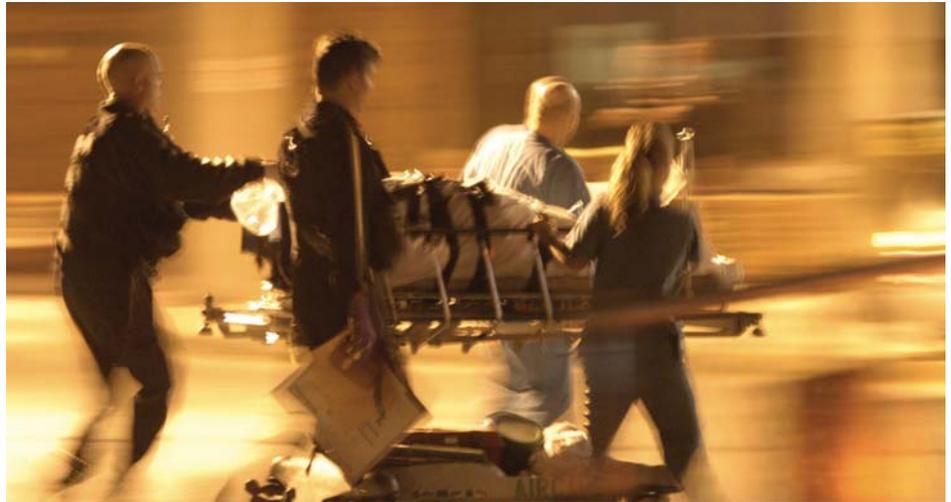
- 1) Patient recognition and seeking medical attention;
- 2) EMS activation, evaluation, treatment and transport;
- 3) Emergency department evaluation and initiation of a reperfusion strategy; and
- 4) Pharmacological or mechanical reperfusion therapy.

The goals of reperfusion therapy in STEMI patients are to prevent or minimize myocardial damage, prevent major adverse cardiac events and

***STEMI: Signs and symptoms of acute coronary syndrome with clinical signs on a 12 lead EKG tracing of ST segment elevation greater than or equal to 1mm in at least two contiguous leads or new left bundle branch block***

complications such as serious or fatal cardiac arrhythmias, congestive heart failure, rupture of the heart, and death, and anticipate and treat life-threatening complications.

The mortality from STEMI increases with delays to reperfusion therapy,



regardless of the method of reperfusion (i.e., fibrinolytic therapy or primary percutaneous intervention). When performed swiftly and routinely at high-volume percutaneous intervention hospitals such as Borgess and Bronson, primary percutaneous intervention is superior to fibrinolytic therapy for treatment of STEMI, resulting in higher rates of cardiac artery patency and lower rates of reinfarction, stroke, and death. Under certain circumstances, transfer may remain a better option than fibrinolysis for reperfusion even when slightly prolonged times to primary percutaneous intervention are anticipated. Primary percutaneous intervention is recommended for patients who are ineligible for fibrinolytic therapy or patients in cardiogenic shock. (Pollack 2008)

What else could EMS and regional ED departments do to help meet the AHA goal of 90 minutes door to balloon time? Ongoing public health education describing the signs and

symptoms of acute coronary syndrome (ACS) and STEMI have shown to be prudent in a comprehensive STEMI system of care. The National Heart, Lung and Blood Institute’s “Act in Time to Heart Attack Signs” is one such program that has shown benefits with patient education.

Early detection by EMS with field 12-lead EKG analysis could significantly reduce the door-to-balloon times with earlier activation of the STEMI pathways, including calls to Borgess PATH, Bronson First and Air Care. Preliminary Stat Heart data suggest that a STEMI diagnosed before presentation to a rural STEMI-referral hospital ED with use of prehospital 12-lead ECG acquisition can reduce interhospital transport-associated delays to a STEMI-accepting facility by up to 20 minutes. This strategy similarly conforms to current ACC D2B alliance recommendations aimed at reducing door-to-balloon times.

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American College of Cardiology/American Heart Association Task Force on Practice Guidelines: developed in collaboration With the Canadian Cardiovascular Society endorsed by the American Academy of Family Physicians: 2007 Writing Group to Review New Evidence and Update the ACC/AHA 2004 Guidelines for the Management of Patients With ST-Elevation Myocardial Infarction, Writing on Behalf of the 2004 Writing Committee. *Circulation*. 117(2), 296-329.

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If confirmed and universally applied, this technology could contribute to the expansion of interhospital STEMI transfer programs in many rural US communities. (Aguirre 2006)

In the ED, the use of standardized physician orders for STEMI management will simplify the delivery of patient care and reduce errors and omissions. For patients that are transferred by Air Care, completion of the transfer

packets including consents for transfer and copies of available medical records will facilitate the transfer of care. If some records such as pending lab values are not available at the time of transfer, these results can be faxed to Air Care Communications and pertinent information can be relayed to the Air Care Medical Crew and the receiving cardiovascular lab.

There is a short window of time when appropriate STEMI therapy

can optimize recovery and long-term prognosis. Rapid reperfusion of the patient with STEMI, optimal adjunctive treatment, interdisciplinary care and optimal discharge medical therapy improve the outcome of patients with acute coronary syndromes. Timely reperfusion of the STEMI patient is an interdisciplinary responsibility, a system challenge and an individual provider's priority.

## New Air Care Associate

### Please Join Us in Welcoming Our New Pilot and Safety Manager

Shawn grew up on the east side of Michigan. His first 12 years his family lived in Detroit. In early 1976 the Maxwell family moved to the small town of Linden, 20 miles south of Flint. After Shawn graduated from Linden High School in 1982, he moved to Kalamazoo to attend Western Michigan University (WMU).

Shawn's aviation career started at WMU. From 1982 to 1989 Shawn attended WMU, studied two years at University of Michigan, joined the Michigan Army National Guard (as an enlisted Cavalry Scout) and returned to WMU. During this time he received his Airplane Commercial, Instrument, Multi-Engine and Certified Flight Instructor ratings. Shawn was a member of the National Intercollegiate Flight Association (NIFA) Team and later the Coach of the NIFA Team.

From 1987 to 1988 Shawn attended the Army Officer Candidate School (OCS) and graduated as a 1st Lieutenant. June 1989 Shawn received a Bachelor of Science Degree in Aviation Technology from WMU.

After graduation from WMU, Shawn's first aviation job was as a Flight Instructor at Brooks Field in Marshall, Michigan.

It was here that Shawn received Airplane Instrument and Multi-Engine Instructor ratings. He was sent to the Army's Initial Entry Rotary Wing Aviator Course at Fort Rucker in the fall of 1990. Shawn graduated as the Distinguished Honor Graduate, having flown the UH-1 and AH-1 Helicopters. Shawn held several positions as a member of the Michigan Army National Guard. His first was a Scout Platoon leader followed by a Gun Platoon Leader. Upon reaching the rank of Captain Shawn was assigned as a Gun Company Commander. He was in charge of the Night Vision Goggle Company. Shawn served on the Battalion staff as the S1, Asst S3, S3, S4 and Battalion Executive Officer for an Attack Battalion. Shawn followed those positions with the S3 and Executive Officer positions for a Medical Evacuation Battalion. He flew the AH1, OH58 and UH1 aircraft.

During this time, Shawn's civilian career started to take off. From 1991 to 1993 he was the Chief Pilot of Neon Air, a corporate flight department here in Kalamazoo. During 1994 Shawn flew for 3 airlines, he was a Beech 1900 pilot for America West Express, a Beech 1900 pilot for US Air Express, and an ATR pilot for American Eagle. Shawn remained with American Eagle until 1997 when he landed his first jet job with DHL. Shawn has flown for DHL for the last 12 years as a pilot on the Boeing 727 and AirBus 300 aircraft.

Shawn returned to the area in 1998. He now lives in Portage where he met his wonderful and beautiful wife Kristen (Mansfield of Portage Central). Shawn and Kristen have 1 child, a daughter, Annabella. Shawn retired from the Army as a Major in 2005. He was an On-Call Fire Fighter and Medical First Responder for the City of Portage Fire Department. Shawn, Kristen and Annabella enjoy the four seasons of Michigan and all its outdoor activities. Shawn is looking forward to teaching Annabella to water and snow ski. The Maxwells are Red Wings, Tigers, Lions and Wolverine fans. Shawn will be starting a Master of Aeronautical Science degree from Embry-Riddle Aeronautical University this fall.



# On and Off Road

## Caring for victims of motorcycle accidents



*By Darby Brauning,  
Flight Nurse, RN,  
NREMT-P*

You and I know the risks; but, we ride anyway! Or maybe one of your family members does. And we've lost count of the number of times we've heard, "Those things are dangerous." As a healthcare provider you also probably know the statistics. In 2007, there were 3,821 motorcycle crashes in Michigan, which was up 12.8% from the previous year. The number of bikers injured in 2007 totaled 3,026, again up almost 12% from 2006. Motorcycles were involved in 1.2 percent of all traffic crashes in Michigan in 2007 and injuries suffered by bikers in these accidents were often more severe than in regular motor vehicle accidents. Keep in mind, these statistics do not include off road cycles and ATV's.

The hazards associated with riding motorcycles are obvious, given the lack of external protection. We can't ride in a bubble, right? Protective clothing, safety equipment and a sharp mind can help (see sidebar "Quick Tips"), but once an accident occurs, it's up to all of us, at the scene, to move quickly for the best patient outcome. Here's a quick refresher on responding to MCCs. Your training and quick-thinking can help save my fellow rider's life.

### Be Aware of Common Motorcycle Injury Patterns

Motorcycle accidents often involve contact with another vehicle, trees and /or good'ol mother earth. Collisions with shifty woodland creatures like deer are surprisingly frequent

and fatalities occur from this type of accident as well. A victim of a serious motorcycle accident is almost always thrown off the bike and can land on a variety of surfaces such as pavement, dirt, gravel or the hood/windshield of a car. During this airborne period, the patient is essentially a projectile. They can sustain loss of limbs, or other significant bodily injury, if they encounter stationary objects like signs, telephone poles, trees, etc. In a head-on or ejection-type of motorcycle crash, head, chest, abdomen, pelvic and femur fractures can result dependant on where the rider's impact point is. If the motorcycle collides with an

rash", or abraded skin from sliding to a stop on pavement or gravel can often be prevented with protective clothing. Burns are also possible if fuel leaks ignite or if the patient's skin contacts a hot tail pipe or parts of the engine.

### Rapid Rescue

Once the scene is safe, a primary survey should be done to quickly rule out immediate life-threatening injuries. This includes the ABCs: Airway, Breathing and Circulation and examples of life threats can include airway obstruction from facial trauma, inadequate breathing, pneumothorax, and internal or external bleeding.



object at an angle, the resulting crushing mechanism can cause injuries to the upper or lower extremities and the abdominal organs as a result of energy exchange. Internal injuries should often be suspected given the kinematics of the event and can be rapidly fatal, especially in the case of an aortic tear or other arterial bleeding. "Road

Once these are either managed or ruled out, a more thorough secondary survey should be done. This can sometimes be complicated due to the rider's personal protective equipment, which hopefully they are wearing. In addition, be aware that with this equipment, the rider may or may not have superficial damage to the skin. But a

keen assessor is always suspicious of underlying injuries due to the blunt force trauma sustained. The patient can be fully immobilized during this assessment and individual extremity circulation should be assessed and managed as well. Individual injuries that are not life-threatening can be addressed after the patient is stabilized, but transport to an appropriate trauma center should not be delayed for this. Splinting and pain management should be addressed throughout care.

### Do I Have to Remove Their Helmet?

Patients who are wearing full face helmets must have the helmet removed early in the assessment process. Two providers are required for this maneuver to protect the patient's cervical spine. Removal of the helmet provides immediate access to assess and manage the patient's airway and ventilatory status. It also ensures that hidden bleeding is not occurring into the posterior helmet and prevents the c-spine from assuming a flexed position instead of neutral alignment during immobilization efforts. In an additional note, cervical spine braces



*The author, Darby, at full speed with full protective gear!*

are becoming very popular in motorcycling, especially in the off road arena. These devices offer unique challenges with regards to assessment/treatment and immobilization. I encourage healthcare providers to take a moment and familiarize themselves with those products via the internet. Especially with regards to function and removal.

### Final Word

Motorcycling is an ever growing activity (sort of like taxes). More and more individuals experience the thrills each

year. It only stands to reason that we will likely see the accident rates climb as well. Especially with the onslaught of gadgets taking our focus off driving (side note: did you know there are a number of motorcycle helmets that are Bluetooth capable? No comment.) Manufactures also continue to develop new and technologically advanced safety equipment to better protect the riders. Again, I highly recommend that we keep abreast of these and enhance your already outstanding care for your patients.

Take care and to my fellow motorcyclists', Ride with a sharp mind and keep the rubber side down.



*Darby Brauning, Flight Nurse – racer, instructor and motorcycle safety advocate.*

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### Reference:

Reprintable safety tips sidebar by MSF:  
[http://www.msf-usa.org/downloads/If\\_you\\_ride\\_a\\_motorcycle.pdf](http://www.msf-usa.org/downloads/If_you_ride_a_motorcycle.pdf)

# A Bird's Eye View of West Michigan Air Care



By Dawn Johnston,  
Flight Nurse, RN,  
NREMT-P

*Without a doubt Air Care is a unique working environment and lately I've received lots of questions from the region about our award-winning program. It's with great pleasure that I invite you to take a closer look at our world.*

Air Care is the result of a cooperative effort between Bronson Methodist Hospital and Borgess Medical Center. We have high standards like our sponsoring hospitals and became one of the first air medical agencies in the nation to achieve accreditation status through the Commission of Accreditation of Medical Transport Systems (CAMTS). This designation indicates our achievement of the highest standards in the industry. In the years since, we have continued to maintain these standards that encompass the highest possible quality service in patient care and safety in the transport environment.

For 16 years Air Care has extended critical care transport throughout southern lower Michigan, northern Indiana and northwestern Ohio. Safety is always Air Care's highest priority. Weather limitations, routine maintenance and specific pilot training schedules are all determined by strict industry standards. Our commitment to safety is reflected in every aspect of our program. We've been repeatedly recognized for our dedication to safety by the Michigan Occupa-

tional Safety and Health Administration (MIOSHA), achieving their Star award for safety multiple times.

## Operations

From our base in Kalamazoo, Michigan, Air Care's twin engine American Eurocopter Dauphin is fully equipped and ready to launch within 8 minutes of a request. The Dauphin can travel 180 mph and is available 24 hours a day, 365 days a year for both interfacility transports and for trauma patients at the scene of an accident. The flight operations are located primarily at Bronson and our Business Office operates out of the Borgess complex.

## Medical Crew

Air Care's medical crew have won numerous awards, published articles, contributed to texts, and have always

transport medicine. All medical decisions and procedures performed by the medical flight crews are based on time dependent evidence-based protocols. These protocols are continually updated according to the latest medical literature and research currently available.

## Pilot Staff

West Michigan Air Care helicopter pilots are veterans of the challenging air medical environment and come from a variety of military, commercial and air medical backgrounds. The pilot in command of the aircraft is the final authority for the safe operation of the aircraft. The pilot's responsibilities include weather radar interpretation, risk assessments for each flight, aircraft weight and balance considerations, and

selection and acceptance of landing zones at emergency scenes.

## Communication Center Specialists

Air Care's communication specialists have extensive training and experience in map reading and radio communication. The communication specialist dispatches and monitors the flight progress of the helicopter utilizing established air medical flight following protocols.

They also manage Kalamazoo County Med Com and the Michigan 5th District communication system.

## Maintenance Staff

Our aircraft maintenance staff performs a number of regular inspections and is available 24/7. All routine and unscheduled maintenance is completed in strict accordance with the aircraft manufacturer's maintenance programs and the federal aviation regulations.



instructed regularly in many arenas. Most often you will find us teaching ACLS and PALS for Bronson and Borgess. Medical crew requirements include licensure as a registered nurse and paramedic, plus substantial background in critical care and/or emergency care. Our medical crew participates in ongoing educational training as well as surgical skill labs to maintain proficiency in emergency

## Business Office

Our business office team at Borgess provides invaluable administrative support. Their efficient operation of our financial nerve center keeps the rest of Air Care running smoothly.

## Patients Who Benefit Most from Air Care Transport

Air transport should be considered in the following patients with life-threatening illnesses or injuries:

- » Acute myocardial infarction/  
Acute coronary syndrome
- » Multiple trauma
- » Severe head injury
- » Acute neurologic emergencies
- » Acute vascular emergencies
- » Major burn injuries
- » Critical pediatric illness or injury
- » Near-drowning injuries

Some operational situations warrant the consideration of air transport including:

- » **Mechanism of Injury**
  - » Vehicle rollover with unbelted passengers
  - » Vehicle striking pedestrian at >10 mph
  - » Falls from greater than 10 feet
  - » Patient ejected at >20 mph
  - » Multiple critical patients
  - » Death of another individual involved in the incident
- » **Difficult access situations**
  - » Poor road conditions, weather or traffic
  - » Remote scene location
- » **Time/distance factors**
  - » Prolonged extrication time
  - » Prolonged transport time by ground ambulance

I hope this has been an enlightening tour of West Michigan Air Care and the services we provide. If you still have questions, check out our website at [www.aircare.org](http://www.aircare.org) or email me at [dmjohnston@aircare.org](mailto:dmjohnston@aircare.org). Have a safe summer!

## Air Care Awarded MIOSHA's Star Award for Safety – Again!



By Nick Wright,  
Flight Nurse, RN,  
EMT-P

*West Michigan Air Care is the only air medical transport service in the State of Michigan to achieve the Star award for safety from the Michigan Occupational Safety and Health Administration (MIOSHA). According to the Department of Labor and the Occupational Safety and Health Administration (OSHA), West Michigan Air Care is the first, and only air ambulance in the nation to obtain this acknowledgement of outstanding efforts to promote safety.*

Safety and exposure control cannot be overemphasized in the air medical industry. West Michigan Air Care has always focused on the safety of our operations and promotes a “culture of safety” among its employees. As evidence of this, West Michigan Air Care recently underwent a rigorous inspection by MIOSHA for recertification in the Michigan Voluntary Protection Program (MVPP). MIOSHA awards a select number of qualifying agencies with the prestigious Star Award, their highest designation of safety achievement. Air Care was the first air ambulance in the nation to obtain this award in 2001 and has proudly maintained the designation since that time, recently receiving the award once again.

The Voluntary Protection Program (VPP) was established by OSHA to recognize the “best of the best” in safety and health across all indus-

tries. All states with approved OSHA programs offer the VPP. Michigan is in this category. The MVPP has a number of basic requirements to meet Star standards, but also looks to see what agencies have done to advance safety at their programs. Air Care has instituted a number of policies for safe operations and has an active safety committee. Before any policy is implemented, a risk assessment is done formally and informally through out its operations. All air crew members take responsibility for safe missions creating a shared “culture of safety” which benefits the patient, the crew and all our healthcare colleagues in the field.

Besides the company’s own safety initiatives, the MVPP requires the following elements: hazard prevention and control, safety and health training, employee involvement, management commitment and work-site analysis. Currently MIOSHA honors 27 companies in Michigan with Star certification status and West Michigan Air Care is proud to be in this select group!



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A Cooperative Program of  
Bronson Methodist Hospital and  
Borgess Medical Center

1535 Gull Road, Suite 100  
Kalamazoo, Michigan 49048-1628  
(269) 337-2505 Phone  
(269) 337-2506 Fax

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