

AirWaves

A Publication of West Michigan Air Care



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www.AirCare.org

When Should I Call Air Care?

Acute patients need the best care possible, especially *early* in their course of care, to do well and survive. These complicated patients require extra resources immediately upon arrival, and the Air Care flight nurses are ready to help you.

What can the physician delegate to Air Care?

Air Care is much more than a transport agency. RSI, difficult airways, chest tube insertion, hemodynamic stabilization, and coordinating care via phone with the receiving physician are all part of what we do on a regular basis, collaborating and coordinating care. Air Care's flight nurses complete all these tasks independently, so the sending physician can continue care of other ER patients as they also oversee our work. No transport agency in Southwest Michigan has a better ongoing training program than our critical care nurses.

What patients should be transported by Air Care?

Read on for some examples of Air Care's transports. Each case is a real transport with all identifying information removed. Note how the Air Care nurses provide both a rapid response consult and teamwork with regional ED physicians!

Making a Difference in Critical Care

When very sick or injured patients need transport, the experienced critical care nurses of West Michigan Air Care are exceptional to collaborate with. Air Care's nurses see a high frequency of these patients compared to most healthcare providers. Our evidence-based protocols are targeted to provide the same stabilization measures the receiving hospital will provide in the first 15 minutes. Add to this Air Care's unmatched skills training program and professional customer service, and you'll understand why so many health care personnel love to see us coming.

Septic Shock

A septic patient with a presumed origin of pneumonia was requested to be flown to a larger center with a critical care intensivist. Upon Air Care's arrival, sending personnel had already intubated the patient, started antibiotics, and supported the patient's blood pressure with multiple vasopressor infusions. Air Care's nurses consulted with the sending hospital team and assisted by quickly initiating additional required

problems) is begun first. Common sources of infection include pneumonia, urinary tract infections, and post-operative incision sites.

Scene STEMI

A paramedic called Air Care directly to a residence for a patient having an ST-elevation myocardial infarction (STEMI.) The paramedic treated the heart attack with sublingual nitroglycerin, morphine, and aspirin before Air Care arrived. The medical crew continued care in transport by providing



Photo submission by Craig Nixon

treatments for sepsis, including large-volume fluid resuscitation and steroids for persistent low blood pressure. As the patient's blood pressure rapidly improved, the flight crew was able to remove all but one vasopressor infusion prior to transport.

This is a good example of using West Michigan Air Care as a rapid response team. Air Care transports many septic patients each year. These patients tend to deteriorate rapidly. Air Care can initiate and maintain the same protocols that the receiving hospital will use. Sepsis refers to a localized infection that has spread to the rest of the body. Widespread infection and the resulting inflammatory response cause multiple organ systems to shut down, and blood pressure to drop dangerously. The original infection must be identified, but treatment for life-threatening symptoms (low blood pressure and breathing

heparin and fentanyl while transferring the patient directly to a heart catheterization lab within the standard time recommended by the American Heart Association (AHA).

Air Care should be launched immediately when EMS providers print an ECG reporting "****STEMI****." Air Care nurses can provide medications en route and meet the time requirements outlined by the updated AHA Guidelines as of January 2013:

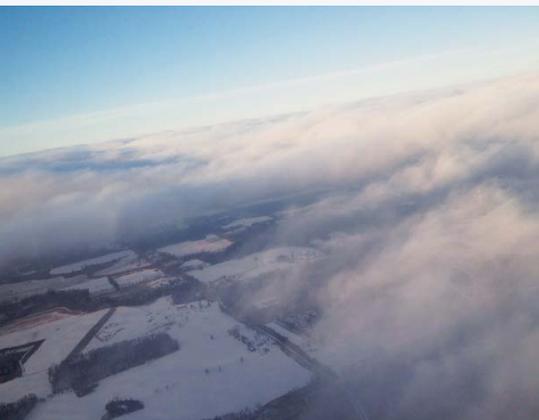
- » The clock starts with first medical (EMS) contact.
- » The patient's clogged artery must be re-opened within 120 minutes.

Air Care can meet the patient at the scene or rendezvous with EMS at a nearby hospital helipad. Remember that time is muscle! Shorter times mean better outcomes.

(continued on page 3)

Flying Blind: A Safe Way to Fly

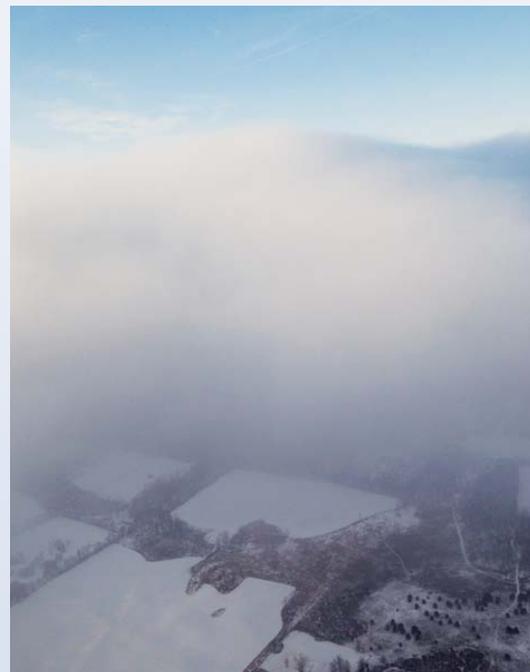
Clouds are often no problem when you have IFR-capable aircraft like the Eurocopter Dauphins at West Michigan Air Care. The photo series here demonstrates how Air Care pilot and Program Director, Rick Morley, engaged instrument flight rules (IFR) as our crew returns to Kalamazoo from the eastern side of Michigan.



1 A cloud layer is developing in our airspace and it's getting thicker as we travel west. We're flying at 150 knots and still have a long way to get home to Kalamazoo. VFR aircraft would normally have to turn around or land prematurely, but not West Michigan Air Care. It's IFR time!

The pilot begins the IFR sequence and we enter the cloud layer. As we fly directly into it, the world turns into a white sheet.

2



We gain altitude and surface above the clouds. IFR flying requires a higher-than-normal altitude for rotor wing aircraft. If the clouds fill our entire airspace, we'll "fly blind" in them with autopilot instruments and with Kalamazoo Air Traffic Control watching us on radar.

3



4 The autopilot is engaged, giving our pilot a moment to complete all IFR checks. As long as we're above the clouds, it's beautiful and sunny. But we'll have to come down through the clouds to land. The autopilot is programmed for our descent and the control tower in Kalamazoo follows us on radar as we approach their runway.



5

When we break out under the clouds, we request the towers to allow us to land at our downtown base, a short trip away.

Some weather conditions do prevent safe helicopter flying. Common poor flying conditions include:

- » "Low ceilings" (fog or low clouds) that may hide the ground or tops of tall towers. We have to be able to see the ground and potential obstructions to land safely.
- » Heavy snow, which can reduce visibility (much like fog) without warning. When you're flying at 150 miles per hour, you need to see much farther ahead to react than motorists on the ground.
- » Freezing rain at ground or flight level that may collect on the windshield or rotor system.

Safety comes first at West Michigan Air Care and based on our 20 years in business without a major incident, our approach is working.

West Michigan

AirCare
Air Medical Transport

When Should I Call Air Care? *(continued from page 1)*

PRBC and FFP for GI Bleeding

While flying to a regional hospital to pick up a patient with both upper and lower gastrointestinal bleeding, Air Care was informed via radio that administration of packed red blood cells (PRBC) had begun. The flight nurses immediately requested the sending hospital to begin thawing fresh frozen plasma (FFP.) The clotting factors in FFP are essential to help stop bleeding. When the flight nurses arrived, the patient was prepped for transport and kept warm. A second IV was started and the patient's blood pressure was supported with packed cells until FFP was thawed and handed to the Air Care crew to begin as they departed for the return trip.

PRBC deliver oxygen to tissues, but do nothing to stop bleeding. FFP, however, contains clotting factors to help stop bleeding. FFP becomes even more important in bleeding patients who take warfarin (Coumadin.) Air Care administers PRBCs and FFP in a 1:1 ratio, and carries 2 units of uncrossmatched PRBC on the aircraft, but not FFP due to 20-minute thawing requirement. Instead, the crew calls ahead to request FFP to be thawed at the sending or receiving hospitals when PRBC have been initiated.

Helipad Rendezvous with EMS

A head-injured patient was en route via EMS to a regional hospital. The ER physician listening to the EMS report recognized a trauma center was needed. **The physician coordinated a direct hand-off from ground EMS to Air Care at the hospital's helipad, so care would not be delayed.** Air Care nurses quickly intubated before departure using RSI protocol that prevents pressure on the brain. The patient maintained 100% oxygen saturations throughout the procedure and had no episodes of hypotension, which could further harm brain tissue. The physician was nearby but did not get involved with the transfer as per EMTALA regulations.

Air Care is trained to do the same interventions the ER does in the first 15 minutes to stabilize the patient. This makes Air Care a very useful resource for sending physicians and busy emergency departments. The helipad rendezvous is an excellent way to shave time off transport while assuring the patient receives appropriate stabilization measures.

Difficult Airway Assistance

Upon arrival at a regional hospital, the physician was aborting an attempt to intubate a head injured patient with a bloody airway.

The Air Care nurses assisted by suctioning the airway and providing oxygenation with a bag valve mask and OPA. C-spine was held as our nurses worked with the sending physician to establish an airway, but the initial drugs to relax the patient were wearing off. Air Care was ready with another round of RSI medications, and performed a successful AirTraq intubation.

West Michigan Air Care makes use of a number of airway intervention measures including the Glidescope, AirTraq, and surgical airway skills. Air Care's flight nurses frequently complete intubation procedures themselves or provide assistance to the sending physician.

Head Injury with Clenched Jaw (Trismus)

Air Care was called to the scene of a motor vehicle crash involving head trauma. The nurses arrived to find intubation attempts in progress for a patient with a head injury. EMS providers had made several attempts but could not fully open the patient's clenched jaw. Air Care's medical crew pre-oxygenated the patient with a bag valve mask and OPA, while administering RSI medications that both relaxed the patient's muscles and also prevented pressure on the brain. They intubated the patient on the first attempt with the Glidescope. Throughout the procedure, the patient's oxygenation level remained excellent at 97-100%. During the rapid flight to a trauma center, the patient's head was elevated (also called "reverse trendelenberg.") The patient was also kept well-sedated to prevent increased pressure in the brain.

In head trauma patients, the jaw is often clenched making oral intubation nearly impossible; this is a patient well-suited to Air Care's abilities and scope-of-practice. Air Care's RSI medications not only optimize intubating conditions, but also prevent pressure on the brain during the procedure. We have found EMS and Fire personnel to be excellent team players as we work together to establish an airway!

Diabetic Ketoacidosis (DKA)

A DKA patient at a regional hospital was intubated just before Air Care nurses arrived and had been placed on a ventilator with a "normal" respiratory rate of 12 breaths per minute. Since this is a common oversight, West Michigan Air Care anticipated and increased the rate upon arrival, educating the staff in the process. This is a good example of rapid response consulting and teamwork.

Before departure, the patient was transferred to West Michigan Air Care's ventilator (rather than bridged with a bag-valve mask) to assure the appropriate ventilatory rate would be maintained. In addition Air Care rechecked blood sugars hourly and provided controlled IV fluids to improve hydration, electrolyte- and sugar- balance, while preventing fluid overload that could cause brain swelling.

West Michigan Air Care transports multiple DKA patients each year. The most common scenario is a noncompliant diabetic who develops a severely elevated blood sugar and becomes unresponsive. This high blood sugar creates very acidic conditions in the body which will worsen until acid levels become incompatible with life and organs begin to fail. Unresponsive DKA patients reflexively breathe in a rapid, see-saw pattern to "blow off" the acid (carbon dioxide) in their systems. When these patients are intubated, and placed on a ventilator at a "normal" breathing rate with strong drugs, they are no longer able to "blow off" the acid, and may rapidly go into cardiac arrest. Placing the DKA patient on a high respiratory rate (say 25-30 breaths per minute in adults) with otherwise normal ventilator settings will assure the patient will continue to "blow off" acid safely while other treatments are working.

The collaborations and interventions West Michigan Air Care nurses provide can make a big difference for your critical patients. Call us to help with acute patients early in their care.

The **Air Care Beach Tote** leads a double-life as a market bag even during cold months. It's sturdy and HUGE! This popular design is irresistibly Air Care and only \$25. Pick one up to brighten your work days! It's at the Air Care Store, second floor of the Gilmore Center.



Inside this issue of AirWaves ...

When Should I Call Air Care?

Extra hands with extra experience—and a fast ride! See how Air Care's critical care nurses can help you make a difference in the hospital and on scene. (Page 1)

Flying Blind: A Safe Way to Fly

What's it like to fly IFR? Find out for yourself ... the weather's changing on Page 2.

Air Care Beach Tote

Take Air Care to the beach! See what's new at the Air Care Store. (Page 3)



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Please email comments to AirWaves Editor and Flight Nurse Dawn Johnston at dmjohnston@aircare.org.



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