

Aeromedical Transport Considerations for Rural and Tribal EMS Providers

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WE LIVE EVERY

AMT in the U.S.

Critical Care Transport in the United States

Platform

- Ground
- Fixed-wing
- Rotary-wing

Crew

- Paramedic
- Nurse
- Respiratory therapist
- APP
- Physician

Most common = PM + RN



International Air Medical Transport



Common Capabilities

- Advanced assessment
- Advanced care
 - Airway
 - OB
 - Cardiac
 - Trauma – blood, thoracostomy
 - Extensive pharmacology
- Rapid transport

Is there anything we can't fly?

- If potential danger to crew
 - But we can help make them less dangerous!
- If they weight too much
 - But we can drive in with you by ground
- If active CPR and no indication for ECMO
 - But we will help with resuscitation and difficult decisions on when to stop

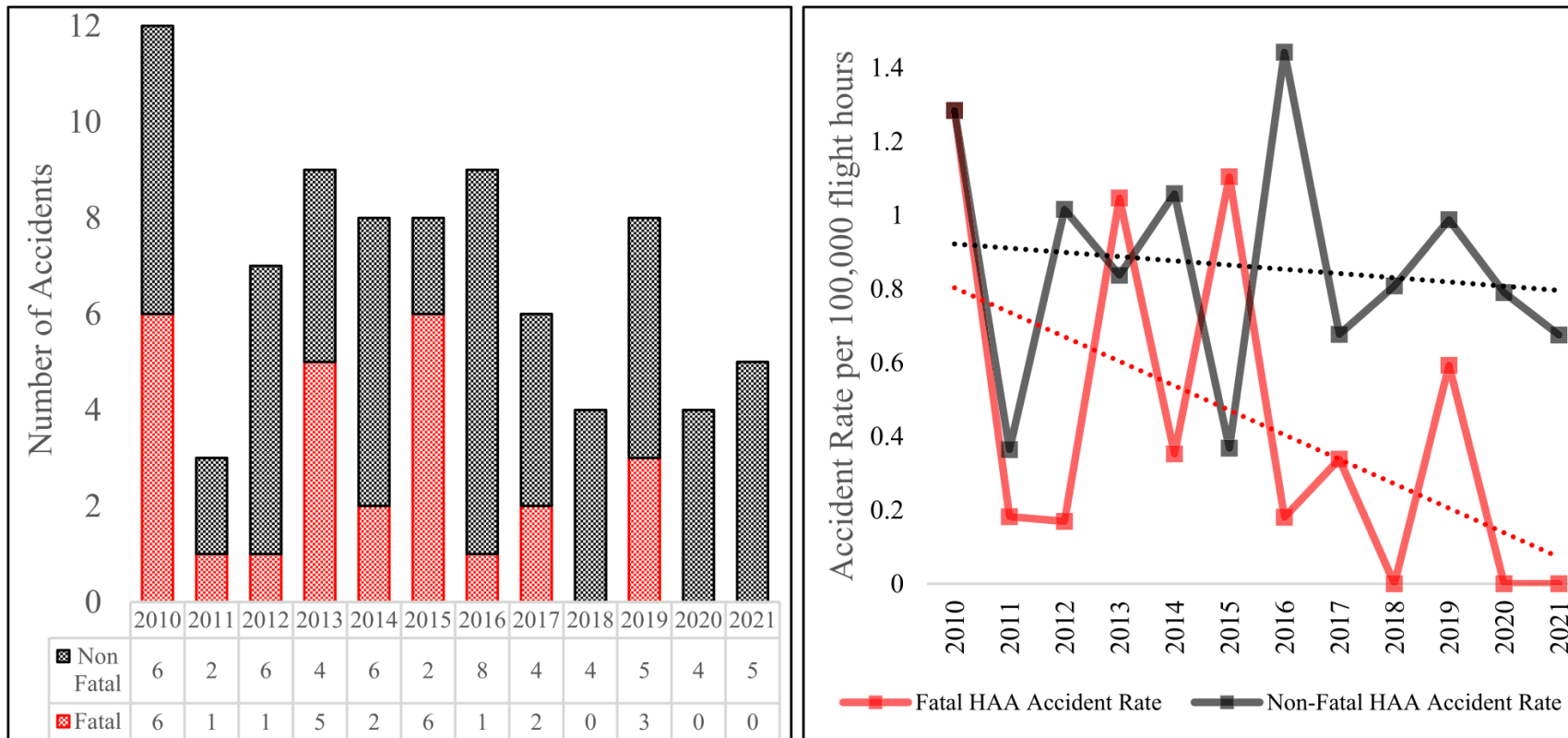
Aviation Considerations

- Distance
- Weight/Density altitude
- Space/equipment
- Airports – distance, lighting, weather reporting
- Proximity to hospital
- Ground transport availability
- Duty time
- Location of resource
- Oxygen supplies

Airway Watch...



How dangerous is AMT?



When to call

Appropriate utilization of air medical transport

Air Medical Utilization Variables

Local
guidelines

Local
medical
direction

Distance to
hospital

Level of
provider
training

Other
available
resources

Number of
patients



Consider Air Medical when...

- Time urgent condition + extended ground transport time
 - STEMI, Acute CVA, Shock, Trauma, ECMO
- Patient likely needs:
 - Blood products (not all programs carry blood)
 - RSI for airway
 - Special expertise: pediatrics, OB, post-cardiac arrest
- You're outnumbered (MCI!)

Consider if
transport > 20
minutes

National Guideline for the Field Triage of Injured Patients

RED CRITERIA *High Risk for Serious Injury*

| Injury Patterns | Mental Status & Vital Signs |
|--|---|
| <ul style="list-style-type: none">▪ Penetrating injuries to head, neck, torso, and proximal extremities▪ Skull deformity, suspected skull fracture▪ Suspected spinal injury with new motor or sensory loss▪ Chest wall instability, deformity, or suspected flail chest▪ Suspected pelvic fracture▪ Suspected fracture of two or more proximal long bones▪ Crushed, degloved, mangled, or pulseless extremity▪ Amputation proximal to wrist or ankle▪ Active bleeding requiring a tourniquet or wound packing with continuous pressure | <p>All Patients</p> <ul style="list-style-type: none">▪ Unable to follow commands (motor GCS < 6)▪ RR < 10 or > 29 breaths/min▪ Respiratory distress or need for respiratory support▪ Room-air pulse oximetry < 90% <p>Age 0–9 years</p> <ul style="list-style-type: none">▪ SBP < 70mm Hg + (2 x age in years) <p>Age 10–64 years</p> <ul style="list-style-type: none">▪ SBP < 90 mmHg or▪ HR > SBP <p>Age ≥ 65 years</p> <ul style="list-style-type: none">▪ SBP < 110 mmHg or▪ HR > SBP |

Patients meeting any one of the above RED criteria should be transported to the highest-level trauma center available within the geographic constraints of the regional trauma system

Consider if
transport > 40
minutes

YELLOW CRITERIA
Moderate Risk for Serious Injury

| Mechanism of Injury | EMS Judgment |
|--|--|
| <ul style="list-style-type: none">• High-Risk Auto Crash<ul style="list-style-type: none">- Partial or complete ejection- Significant intrusion (including roof)<ul style="list-style-type: none">▪ >12 inches occupant site OR▪ >18 inches any site OR▪ Need for extrication for entrapped patient- Death in passenger compartment- Child (age 0-9 years) unrestrained or in unsecured child safety seat- Vehicle telemetry data consistent with severe injury• Rider separated from transport vehicle with significant impact (eg, motorcycle, ATV, horse, etc.)• Pedestrian/bicycle rider thrown, run over, or with significant impact• Fall from height > 10 feet (all ages) | <p>Consider risk factors, including:</p> <ul style="list-style-type: none">▪ Low-level falls in young children (age ≤ 5 years) or older adults (age ≥ 65 years) with significant head impact▪ Anticoagulant use▪ Suspicion of child abuse▪ Special, high-resource healthcare needs▪ Pregnancy > 20 weeks▪ Burns in conjunction with trauma▪ Children should be triaged preferentially to pediatric capable centers <p>If concerned, take to a trauma center</p> |

Patients meeting any one of the YELLOW CRITERIA WHO DO NOT MEET RED CRITERIA should be preferentially transported to a trauma center, as available within the geographic constraints of the regional trauma system (need not be the highest-level trauma center)

Or we called you!

Essential ground transport from airport to hospital and back



\$\$\$\$

A \$52,112 Helicopter Ride: Coronavirus Patients Battle Surprise Medical Bills

Congress was close to a solution before getting hit with millions of dollars of ads from private-equity firms. Then the pandemic struck.



Air ambulance charges are often the most costly type of surprise medical bills. Andrew Burton for The New York Times

Rates

- Base/Lift-off and mileage
- Billable loaded miles

Factors

- RW vs. FW vs. Ground
- For-profit vs. not
- Regulated pricing vs. not

BILL OF THE MONTH

Taken For A Ride: After ATV Crash, Doctor Gets \$56,603 Bill For Air Ambulance Trip

By Alison Kodjak, NPR News
SEPTEMBER 26, 2018

REPUBLIC THIS STORY
DISPONIBLE EN ESPAÑOL



SIGN IN NPR SHOP DONATE

NEWS CULTURE MUSIC PODCASTS & SHOWS SEARCH



HEALTH INC.
Why Air Ambulance Bills Are Still Sky-High

June 14, 2019 · 5:00 AM ET

RACHEL BLUTH

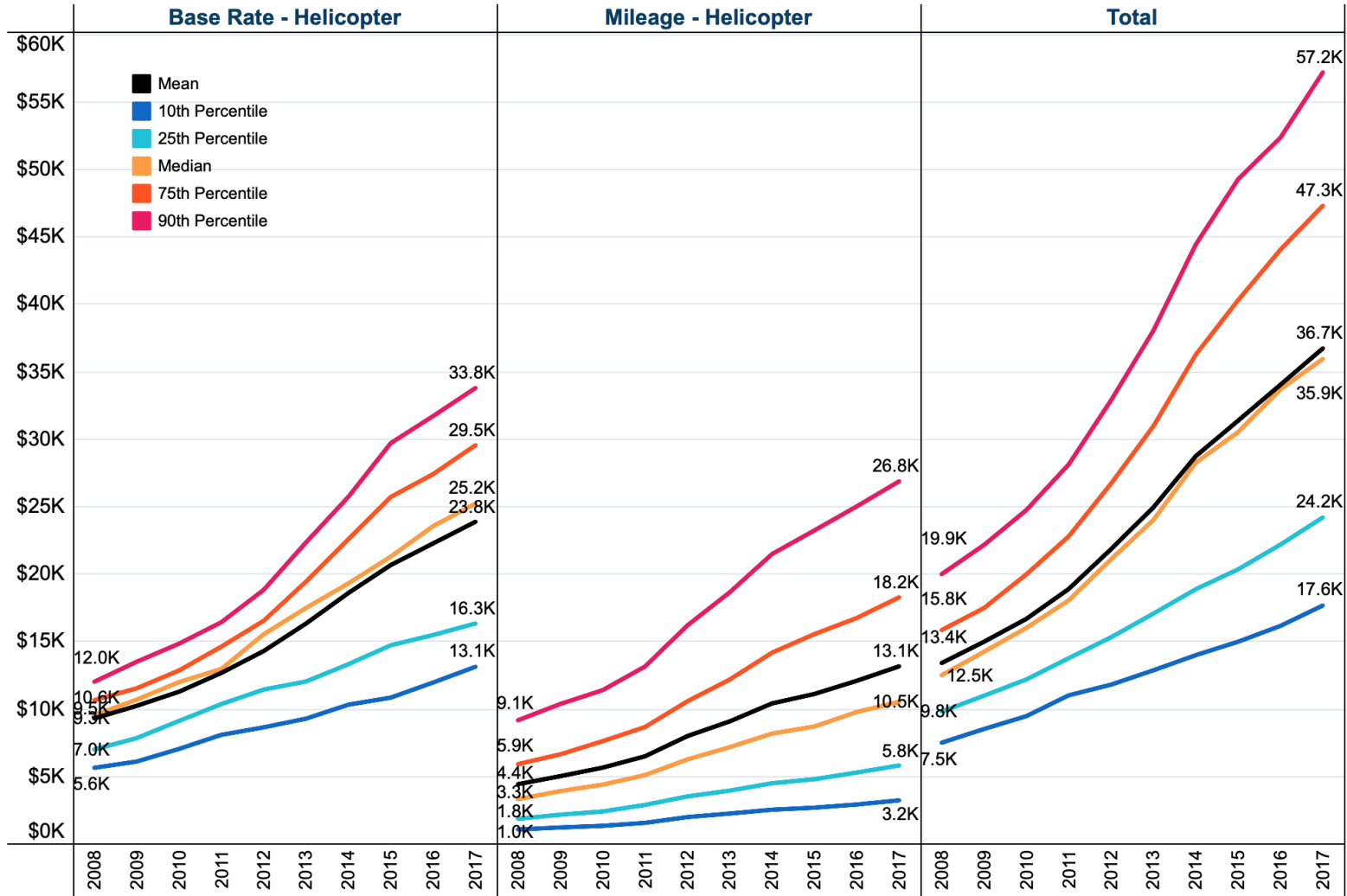
FROM **KHN**



Air Ambulance Prices and Charges - 10 Year Trends



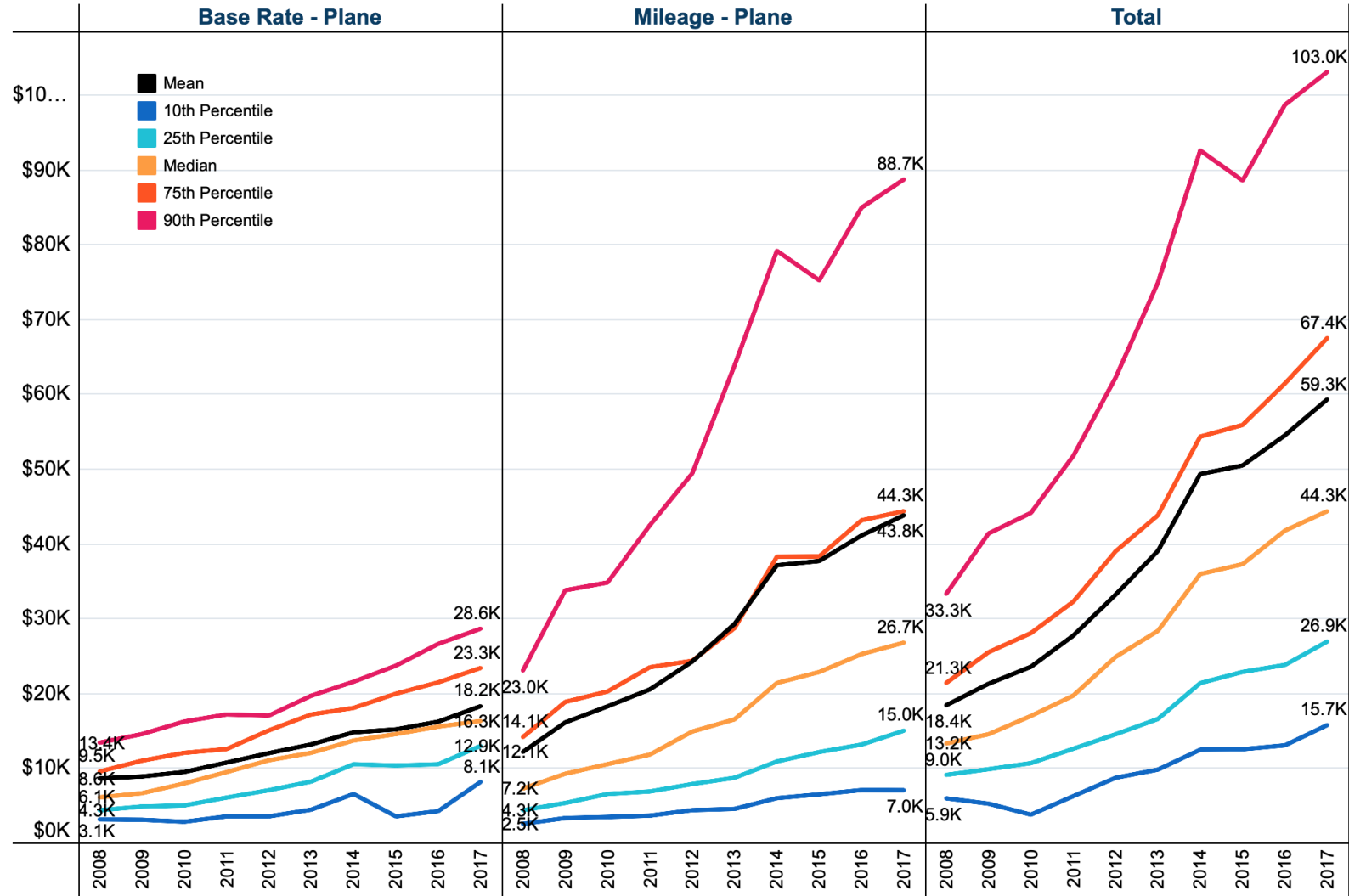
- Air Ambulance Type**
- Helicopter
 - Plane
- Measure**
- Charge
 - Price



Air Ambulance Prices and Charges - 10 Year Trends



- Air Ambulance Type**
- Helicopter
 - Plane
- Measure**
- Charge
 - Price



Airline deregulation

No Surprises Act

Landing Zone Considerations



Hazards and Obstructions

- Hazards

- Loose Debris
- Blowing dirt
- Animals
- People



- Obstructions

- Wires, wires, wires...
- Fence posts, road signs
- Trees, Poles
- Bushes Stumps
- Rocks Logs
- Buildings
- Towers, cables
- WIRES

Landing Zone

- Always **walk the LZ** before allowing a helicopter to land
- Check ground condition (sand, dirt, debris)
- Check for anything that could puncture or impact the aircraft



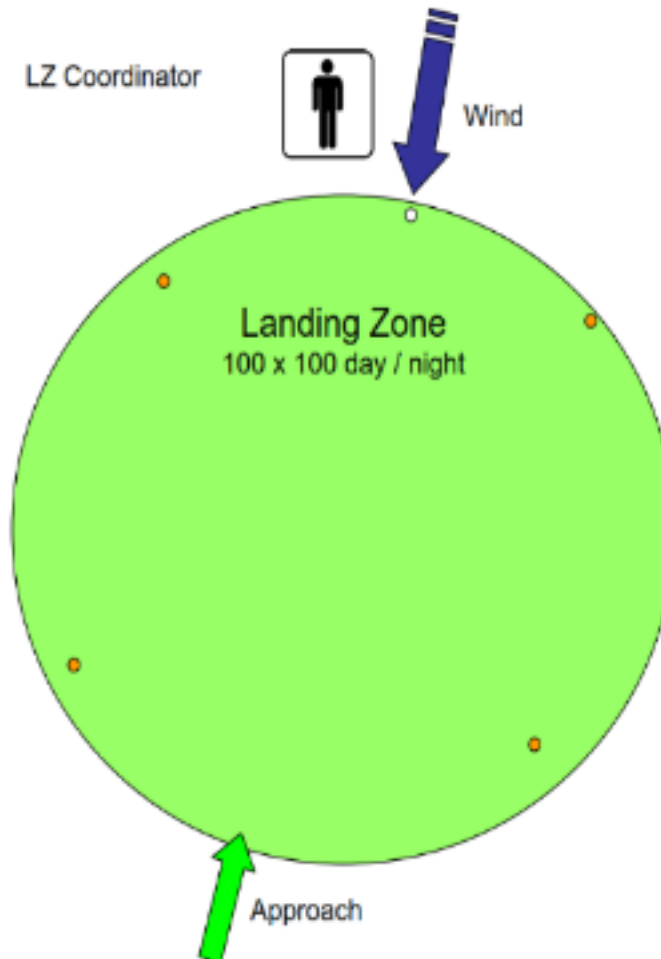
Landing Zone



- Flat
- 100' X 100'
- No Traffic
- No Obstructions

Recon

LZ Coordinator stands with the wind to their back



After 360° recon, pilot may ask LZ Coordinator to move behind barrier (e.g., vehicle) for their safety

What we like to hear from you...

LZ Description:

- Location (school, park, business, etc)
- Approximate size
- Surface type
- Wind
- Grade (if any)
- Hazards & Obstructions

Patient Weight & Condition



Communication

- Utilize frequency separate from scene communications
- Practice sterile communications
- Call out any safety concerns
 - **STOP! STOP! STOP!**
 - **GO AROUND! GO AROUND!**
- Remain on frequency until 3-5 min after aircraft has left the scene



Landing

- Once aircraft has landed, please maintain a secure LZ
 - Keep vehicles, people, animals away from the aircraft
- Establish a tail rotor guard
 - Protect aircraft and people from a deadly encounter
- Flight crew will determine whether to stay running or shut down

New Mexico Man Raises The Bar For Drunk Driving Sky High - By Hitting A Helicopter



by Jack Baruth

🕒 October 26th, 2016 2:57 PM

📄 Share



Highway 60 closed after helicopter and semitrailer crash

Fire officials said it appears the semitrailer hit one of the helicopter's rotors

Share   



Updated: 4:48 PM MDT Apr 7, 2023

Infinite Scroll Enabled

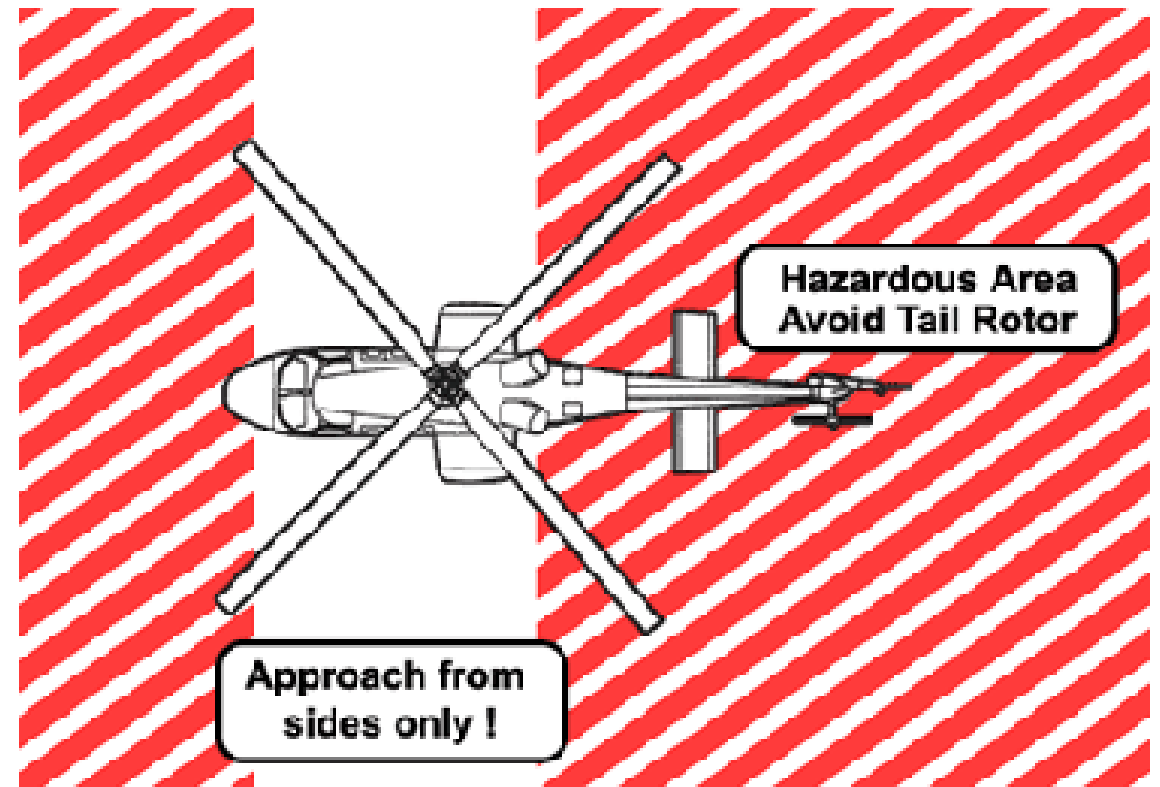


Nick Catlin

Digital Editor



- **Never approach aircraft without verbal or visual clearance by pilot**
- **Flight crew will brief you on aircraft approach and loading plan**
- **Follow crew into and out of the rotor disc area**



Patient Preparation

- We usually meet in the ambulance
- Mega-mover preferred
 - We avoid backboards
- Pre-oxygenate if likely RSI
- Two IVs if possible
- Determine patient weight
- Provide SAMPLE history and basic demographics on handwritten note
- Be available to help!



COLD Loading – most common

- Aircraft is shut down/rotors NOT spinning
- Follow crew instructions
- At least 4 people when possible

HOT Loading - rare

- Engine running, main and tail rotors spinning
 - Never approach aircraft without crew escort
 - Follow crew instructions
 - Maintain eye contact with crew or pilot
 - Remove or secure all loose clothing & equipment
 - e.g., hats, sheets, trash, etc.
 - Use chin strap if wearing helmet
 - Wear eye & ear protection
 - Keep your head low when entering/exiting rotor disc
 - Always enter and exit where you can see the pilot

Night Operations



Night LZ Operations

- Use your emergency lights to make your scene visible from a distance



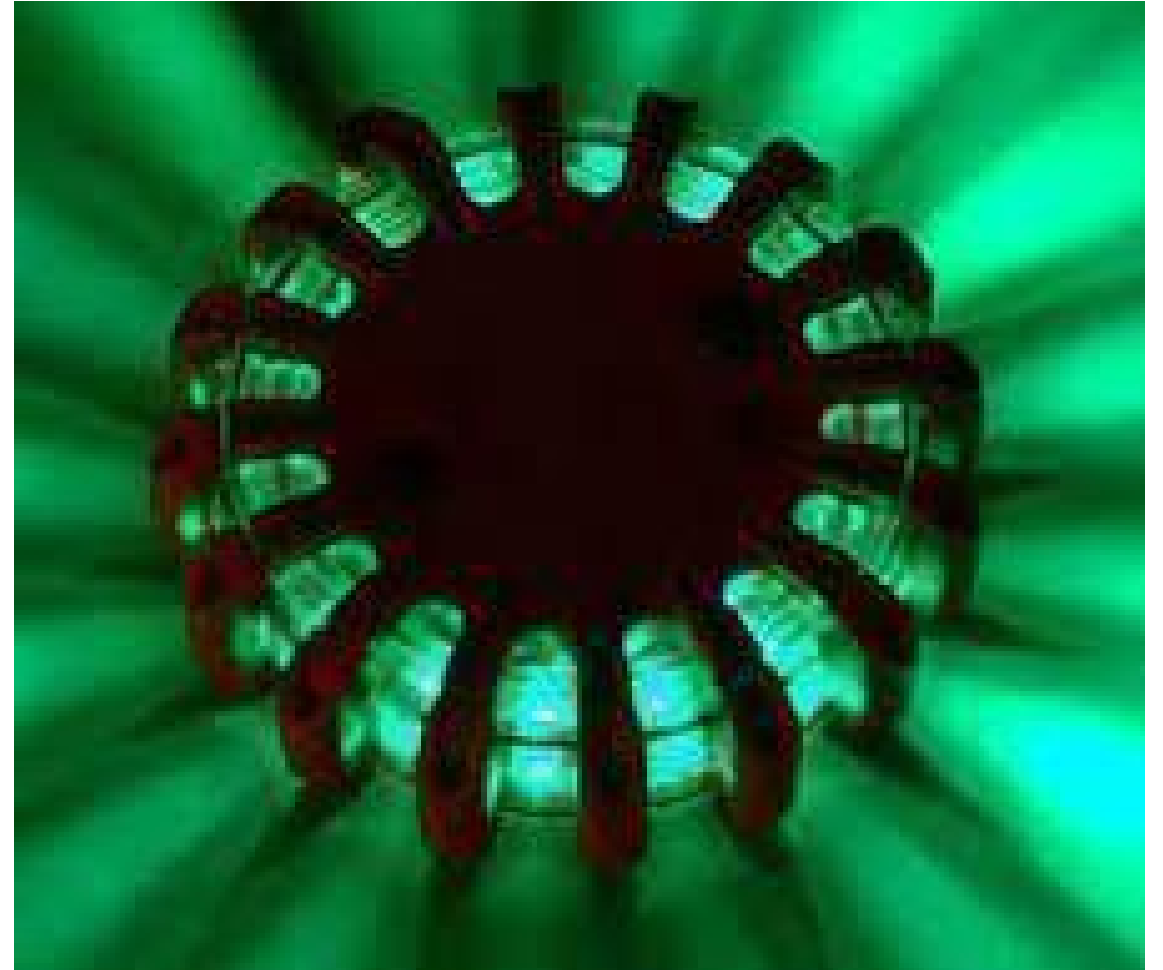
Night LZ Operations

Consider placing large box lights into traffic cones



Night LZ Operations

- There are commercial LZ lights available



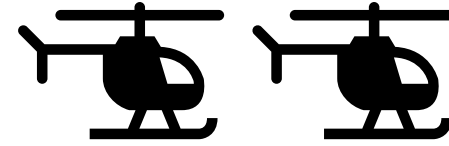
Night LZ Operations

- **PLEASE DO NOT:**

- Direct spotlights towards the aircraft!
 - It takes 30 minutes for the human eye to regain night vision
- No flares, unless specifically requested by the pilot
 - Flares can easily be blown away and cause a fire



Multiple Aircraft



Multiple Aircraft Requested:

- **Notify all responding aircraft dispatch centers** that other helicopters are inbound, too!
- Consider
 - Multiple LZ sites
 - One large LZ area

Avoid Aircraft Shopping



Calling multiple agencies after one has turned down for the flight for weather or other safety issues without advising each one of the turn down.

As long as we know it may still be safe for another agency if:

Conditions have changed

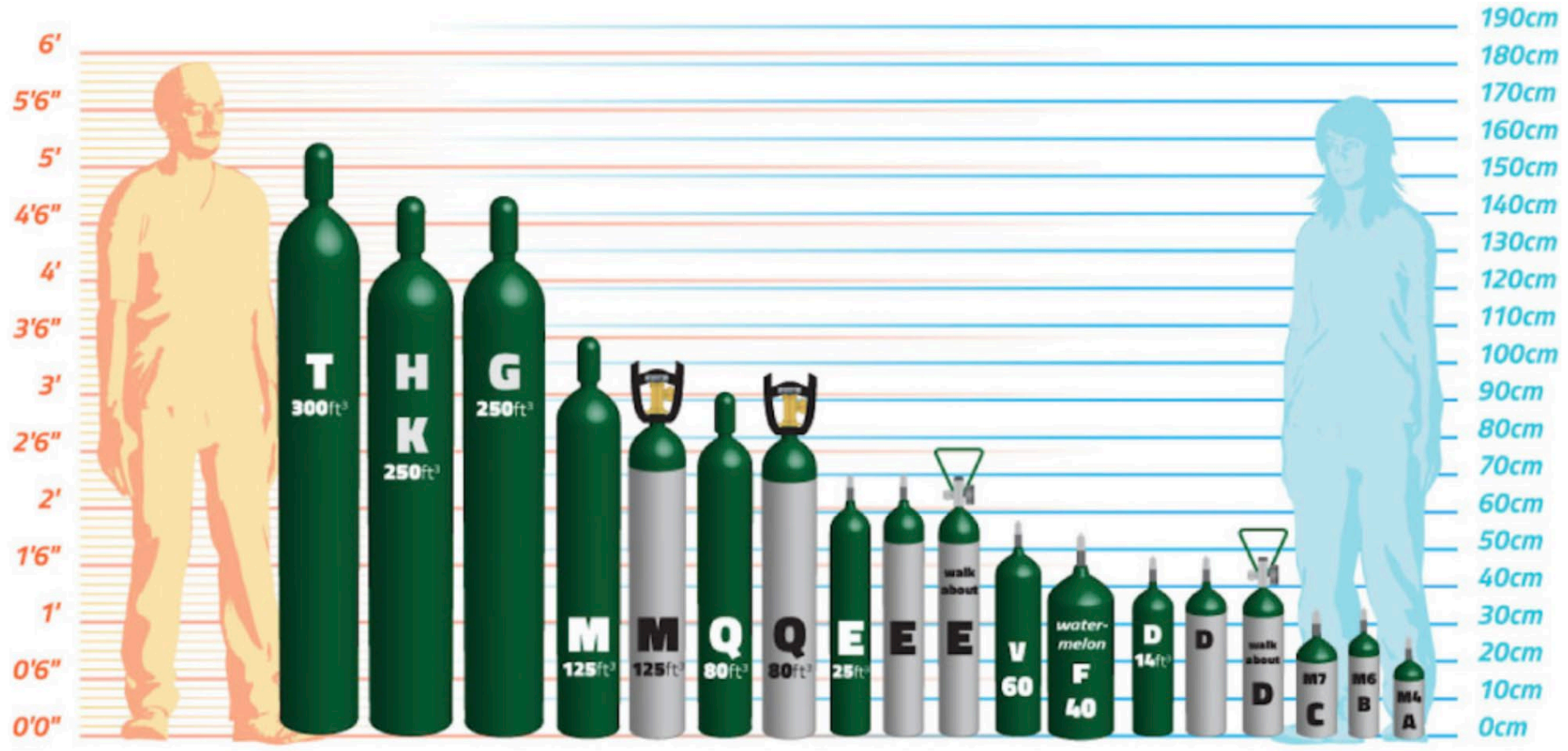
Different aircraft limitations

Coming from another direction

A few other thoughts...

Fixed wing scene flights

Oxygen Consumption



O2 TANK DURATION CALCULATION

TANK FACTOR X PSI (Tank Pressure)

LPM

= MINUTES

TANK FACTORS:

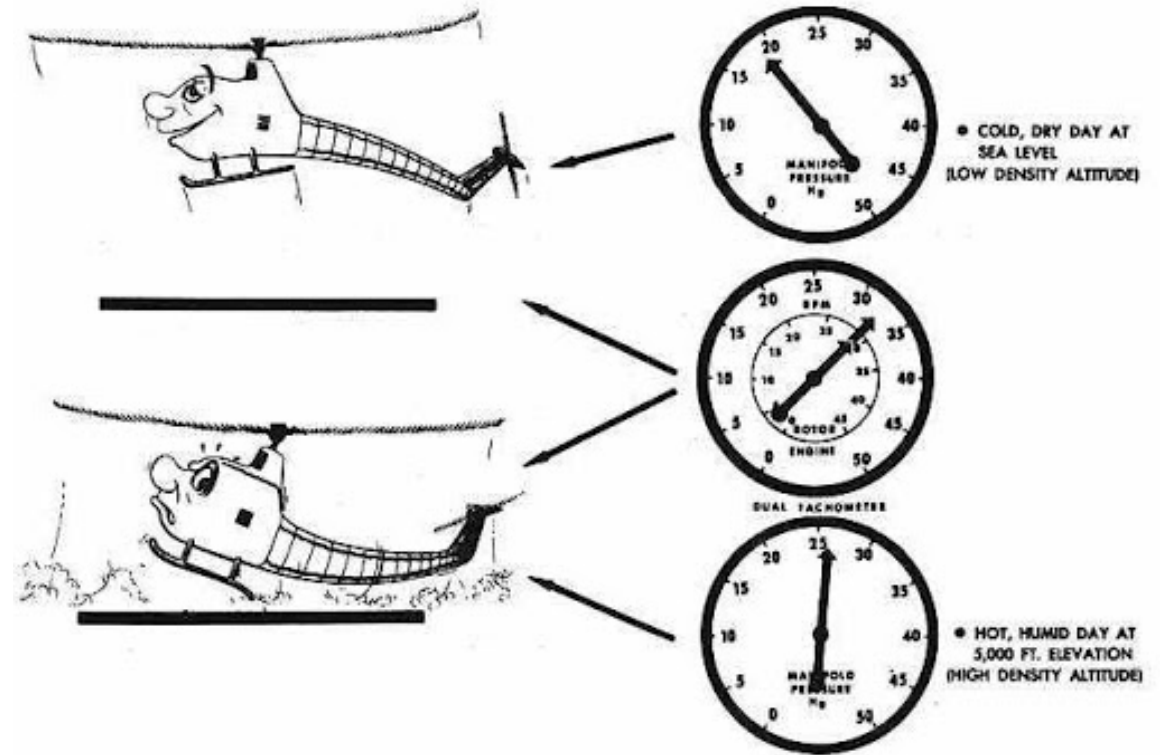
LG1=0.55 M=1.56 LG3 H=3.14

D=0.16 E=0.28

Isolette EE=0.56

Density altitude

Density Altitude



Attention Pilots: Here is an informative article from ZLC ARTCC Weather Service Unit's June newsletter. Density altitude can be an important takeoff and landing consideration in New Mexico. To see the whole newsletter, go to: <http://www.wrh.noaa.gov/zlc/aviation/zlc/June2017.pdf>



High Density Altitude



High density altitude accounts for 7.3% of all U.S. aviation weather-related accidents.

Density Altitude – The altitude in the standard atmosphere at which the air has the same density as the air at the point in question. An aircraft will have the same performance characteristics as it would have in standard atmosphere at this altitude.

High Density Altitude – A condition of the atmosphere that reduces an aircraft's performance capability to below a level of standard performance at a specified altitude.

Service Ceiling – The maximum density altitude where the best rate-of-climb airspeed will produce a 100 feet-per-minute climb a maximum weight while in a clean configuration with maximum continuous power.



Air density is determined by: Pressure, Temperature, and Humidity.

On a hot, muggy day, the air becomes “thinner” or less dense, and its density at a pilot’s location is equivalent to a higher altitude in the standard atmosphere.

- Thus the term “high density altitude.”

Pilots must determine if high density altitude will impact their flight by:

- Calculating density altitude
- Checking their aircraft performance charts.

High Density Altitude Hazards

- Reduced Power (engine ingests less air to support combustion)
- Reduced Thrust (propeller has less “grip” and jet exhausts less mass)
- Reduced Lift (air exerts less upward force on the airfoils)
- Longer takeoff roll is required
- Smaller rate of climb
- Lowers aircraft’s service ceiling
- Longer landing roll required

Pilot Duty Time – Very strict FAA rules

- 14 hours total time on duty
- 8 hours of flying

Example:

Pilot working 7a to 7p shift

First request comes in at 5pm. Total flight time is 3 hours but ground time expected to be 2 hours. That would 15 hour of duty time.

Must decline or wait for the 7pm pilot