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Commission on Accreditation of Medical Transport Systems

"BEST PRACTICES"

of the

Commission on

Accreditation of

Medical Transport Systems

GLOBAL **camts**

Commission on Accreditation of Medical Transport Systems

Seventh Edition

October 2020

COMMISSION ON ACCREDITATION OF MEDICAL TRANSPORT SYSTEMS
BEST PRACTICES 2020 INDEX

Items included in this Sample of the Best Practice 2020 are highlighted

DOCUMENTS	COMPLIMENTS

A. COMMUNICATIONS

1.	Communications Fatigue and Sleep Deprivation	Enloe FlightCare *Chico, CA*
2.	Competency Training	University of Mississippi Medical Center - AirCare *Jackson, MS*
3.	Communication Specialist Duties and Responsibilities	AirLife Denver *Denver, CO*
4.	Initial Communications Specialists Training	Air Evac Lifeteam *O'Fallon, MO*
5.	Psychomotor Vigilance Testing for Communications	PHI Kentucky *Lexington, KY*
6.	Request for Activation of a Transport	AirLIfe Denver *Denver, CO*
7.	Risk Assessment for the Communications Center	Carilion Clinic Life-Guard *Roanoke, VA*

B. COMMUNITY INTERFACE

1.	Community Heliport Review Committee	Ann & Robert H. Lurie Children's Hospital of Chicago Transport Team *Chicago, Illinois*
2.	Community Search and Rescue Poster	Flight for Life Colorado *Lakewood, CO*
3.	First Hands Program	University of Mississippi Medical Center - AirCare *Jackson, MS*
4.	Keeping Our Air Space Safe	Carilion Clinic Life-Guard *Roanoke, VA*

C. CREW WELLNESS

1. Debriefing Guidance after difficult calls

   Embrace Yorkshire & Humber
   Infant &Children's Transport Service
   Barnsley, South Yorkshire UK

2. Emerging Infectious Diseases

   Global Medical Response
   Greenwood Village, CO

3. Get Fit

   Med-Trans Corporation
   Denton, TX

4. Health and Well-being Guidelines

   Embrace Yorkshire & Humber
   Infant & Children's Transport Service
   Barnsley, South Yorkshire UK

5. Medical Crew Physical Requirements

   Dartmouth-Hitchcock Advanced
   Response Team (DHART)
   Dartmouth Hitchcock Medical
   Center – *Lebanon, NH*

6. Resilience During Times of Change

   Eileen Frazer, RN, CMTE
   ASK CAMTS – Air Medical Journal

7. Rest/Readiness Requirements

   Children's Mercy Critical Care
   Transport, Children's Mercy Hospital
   Kansas City, MO

8. Work/Rest Hours

   Carilion Clinic Life-Guard
   Roanoke, VA

D. EDUCATION and TRAINING

1. Airway Risk Assessment Tool

   Air Methods Corporation
   Englewood, CO

2. Chaplains' Orientation to Transport Crews

   Association of Professional Flight
   Chaplains - *Denver, CO*

3. Crew Competencies

   Shock Trauma Air Rescue Service
   (STARS) – *Calgary, Canada*

4. Crew Resource Management Simulator Training

Dartmouth Hitchcock Advanced Response Team (DHART) Dartmouth Hitchcock Medical Center – *Lebanon, NH*

5. Didactic Orientation and Continuing Education

EHS LifeFlight *Enfield, Nova Scotia*

6. Green-on-green Summary for Medical Personnel

STAT Medevac *Pittsburgh, PA*

7. Human Factors Training for Maintenance

Pilot Landing LLC *Dallas, TX*

8. Initial Training for Flight Nurses

Survival Flight *Ann Arbor, MI*

9. Instrument Proficiency Training – Pilots

Pilot Landing LLC *Dallas, TX*

10. Mishap Related Learning Opportunities Learning Tool

UCAN *Chicago, IL*

11. Ongoing Clinical Exposure

EHS LifeFlight *Enfield, Nova Scotia*

12. Orientation and Continuing Education in Transport

EHS LifeFlight *Enfield, Nova Scotia*

13. Rapid Sequence Intubations Risk Tool

Air Methods Corporation *Englewood, CO*

14. Recurrent Education Summary

Survival Flight *Ann Arbor, MI*

15. Survival and Emergency Procedure Training

Enloe FlightCare Chico, CA

16. Tip to Tail Simulation Program

UCAN *Chicago, IL*

17. Trauma Course Alternative to ATLS

CareFlight *Grand Junction, CO*

18. Tools to recognize training needs for low volume medical procedures

Tobin Miller, DNP, MSN/ED, PhD *San Diego, CA*

19. Simulation Scenarios

    High Risk OB   Flight for Life Colorado
                                                   Denver, CO

    Neonatal Simulation Scenarios   UAB Critical Care Transport
                                                   Birmingham, AL

    Simulation Scenarios - Pediatrics   Children's Mercy Critical Care
                                               Transport, Children's Mercy Hospital
                                               Kansas City, MO

E. HELIPAD

1. ==Helipad PAIP Drill==   ==Air Link at Regional West Medical==
                                               ==Center, *Scottsbluff, NE*==

2. Heliport Risk and Liability Assessment   HeliExperts International LLC
                                                   and Five Alpha LLC
                                                   Long Branch, NJ

3. Helipad Safety Rooftop Training   University of Iowa AirCare
                                                   Iowa City, IA

4. Helipad Safety Officer Checklist   University of Iowa AirCare
                                                   Iowa City, IA

5. Safe Helipad Tool to Track Changes   MedCenter Air, Atrium Health
                                                   Charlotte, NC

F. INTERNATIONAL and MEDICAL ESCORT

1. Flight Risk Assessment Policy   Air Med International LLC
                                                 Birmingham, AL

2. Flight Risk Assessment Tool   Air Med International LLC
                                                 Birmingham, AL

3. International Transport Guidelines   UAB Critical Care Transport
                                                 Birmingham. AL

4. Medical Escort Basic Coordination Checklist   Rescue Nurse at On Call
                                                   International
                                                   Salem, NH

5. Medical Escort Duty Time Assessment

Rescue Nurse at On Call International
Salem, NH

6. Medical Escort Pre-Transport Checklist

Rescue Nurse at On Call International
Salem, NH

7. Rest Policy for International Flights

Air Med International LLC
Birmingham, AL

G. POLICIES AND PRACTICES

1. Base Crossover Checklist

REACH Air Medical Services
Sacramento, CA

2. Blood Products Policy

MedCenter Air, Atrium Health
Charlotte, NC

3. Blood Product Storage

MedCenter Air, Atrium Health
Charlotte, NC

4. Color Coding Pediatric Bags

Collier County MedFlight
Naples, FL

5. Departure Checklist

Ann & Robert H. Lurie Children's Hospital of Chicago Transport Team
Chicago, Illinois

6. Drone-Unmanned Aerial System Reporting

Flight For Life
Milwaukee, WI

7. Fair Culture Decision Guide

San Juan Regional Medical Center
Farmington, NM

8. Flight Paramedic to Flight Nurse Bridge

EXAMPLE – NOT A STANDARD

9. Green-On-Green Policy for Medical Personnel

Mercy Flight Central, Inc.
Canandaigua, NY

10. Green-on-Green Decision Matrix to Reach Level 4

Mercy Flight Central Inc.
Canandaigua, NY

11. Helmet Inspection Policy	Air Methods Corporation *Englewood, CO*
12. Interview packet and Pre-Hire Assessment	UCHealth LifeLine *Aurora, CO*
13. Never Events Policy	Boston MedFlight *Boston, MA*
14. Patient Adverse Events Policy	Boston MedFlight *Boston, MA*
15. Pre-Hire Assessment Tool	UCHealth LifeLine *Aurora, CO*
16. Sentinel Events	Boston MedFlight *Boston, MA*
17. Social Media Policy	Flight For Life *Milwaukee, WI*
18. Team Meeting Minutes Format	Air Methods Corporation *Englewood, CO*
19. Tool Accountability Policy	Travis County *STAR* Flight *Austin, TX*
20. Trauma Triage Guidelines (Adult)	Mayo Clinical Trauma Center Southern Minnesota Regional Trauma Advisory Committee (AMRTAC) - *Rochester, MN*
21. Trauma Triage Guidelines (Pediatric)	Mayo Clinical Trauma Center Southern Minnesota Regional Trauma Advisory Committee (AMRTAC) - *Rochester, MN*

H. QUALITY and UTILIZATION MANAGEMENT

1. High Reliability Organization	San Juan Regional Medical Center *Farmington, NM*
2. PDSA for Ventilation Management	Flight For Life Colorado *Lakewood, CO*

3. QI Program Summary

For Life Colorado
Lakewood, CO

4. QM Plan with Filters and Thresholds

Flight for Life Colorado
Denver, CO

5. Quality Management Plan

UAB Critical Care Transport
Birmingham, AL

6. Quality Management Plan – International

BDMS Emergency Services
Bangkok, Thailand

7. Quality Metrics

UAB Critical Care Transport
Birmingham, AL

8. QM Minutes

UAB Critical Care Transport
Birmingham, AL

9. Staff Review of Meeting minutes by Clinical Staff

AirLIfe Denver
Denver, Colorado

10. Semi Annual Utilization Management Review

Air Link at Regional West Medical
Center, *Scottsbluff, NE*

11. Understanding GAMUT Metrics

Linda Meiner
Clinical Manager - PHI

12. Utilization and Performance

Boston MedFlight
Boston, MA

13. Utilization Management Review

Air Link at Regional West Medical
Center, *Scottsbluff, NE*

14. Utilization Summary

UAB Critical Care Transport
Birmingham, AL

I. SAFETY

1. Aircraft Shopping (Helicopter/Weather Shopping)

Air Link at Regional West Medical
Center, *Scottsbluff, NE*

2. Air Medical Resource Management (AMRM)

Pilot Landing LLC
Dallas, TX

3. Change Management Risk Assessment Tool

Air Evac LifeTeam
O'Fallon, MO

4. & 5. Circle of Safety

Children's Mercy Critical Care
Transport, Children's Mercy Hospital
Kansas City, MO

6. Creating a Safe Culture

San Juan Regional Medical Center
Farmington, NM

7. Employee Safety Toolkit

San Juan Regional Medical Center
Farmington, NM

8. Flight Data Monitoring (FOQA)

Arkansas Children's Hospital
Angel One – *Little Rock*

9. Laser Strike – UAV Encounter PAIP

REMSA – Care Flight
Reno, NV

10. Life Saving Thinking

PHI Air Medical LLC
Phoenix, AZ

11. Maintenance Risk Tool (Baldwin)

Life Flight of Maine
Bangor, ME

12. Mechanic Duty Time

PHI Air Medical LLC
Phoenix, AZ

13. Night Flight PAIP Drill

Life Flight of Maine
Bangor, ME

14. Overdue Aircraft After Action Report

AirLink
Scottsbluff, NE

15. PAIP Drill

AirLink
Scottsbluff, NE

16. PAIP Procedures

Flight For Life Colorado
Denver, CO

17. Post- Crash Instructions

Flight For Life Colorado
Denver, CO

18. Pre-Flight Risk Assessment

Arkansas Children's Hospital
Angel One – *Little Rock*

19. Risk Assessment Policy

Metro Life Flight
Cleveland, OH

Initial Communication Specialist Academy

Air Evac Lifeteam Communication Specialists begin with a 4 week, classroom based training academy. During the first three weeks, new Communicators will learn the policies, procedures, and programs that they will be using during their time on the Comm. This training is a combination of assigned readings from a 100+ page guide, weekly homework, classroom lecture, and scenarios conducted on simulated work stations in the training classroom. During the fourth week, the students are required to pass a series of examinations with an 80% required on each module. The written examination is typically given on the first day of the fourth week. The skills modules include:

- 2 Non-Patient Flight request scenarios which may include maintenance flights, public relations, new pilot orientation flights, or reposition flights;
- 1 scene flight request;
- 1 Inter-facility Transfer flight request; Demonstrating
- proficiency with the radio program; Demonstrating
- proficiency with Google Maps; Demonstrating proficiency
- with the tracking program; Demonstrating proficiency with
- the CAD in modifying a unit.

For the skills modules, each new Communicator will have the opportunity to test up to three times, with feedback given after each attempt. Only one attempt is given for the written examination.

Post-Academy Precepting

Following the successful passing of all modules, the new Communicator will begin *precepting* in the actual Communication Center. Here, a seasoned Communicator is paired with the trainee and monitors all their activity providing feedback after calls, imparting region knowledge and quirks, and taking over if the trainee encounters a situation they cannot process. The preceptor(s) are also responsible for filling out a score card for each call processed, along with a daily evaluation form. These forms, along with any additional feedback, are given to the Communication Educators to review and monitor the progress of the trainee.

During this precepting phase, the Communication Educators will conduct bi-weekly evaluations with the trainee based on preceptor feedback, radio and phone recordings, and documentation. These evaluations allow the Communication Educators to communicate with the trainee on the expectations moving forward and what progress is required for the trainee to be released to work independently.

Post Release Training

Once released to work independently, the new Communicator will continue to have their calls periodically monitored by the Communications Supervisor to ensure that progress continues after being released to work independently. This period also sees the new Communicator attending an Operations Control Specialist (OCS) training course, an FAA approved 80 hour course followed by a written, oral, and practical test over the material.

Initial Communicator Academy
Schedule

Week	Day	Topic	CAMTS Standard 04.03.02.01
Week 1	Day 1	Introductions & Expectations Outline	
		Phone System	d. Customer service/public relations/phone etiquette. b. Computer literacy and software p. Types of radio frequency bands used in medical and ground EMS. b. Computer literacy and software training.
		Radio System	h. Knowledge of national aviation regulations and Federal Communications Commission or AHJ regulations or equivalent as pertinent to medical transport service. (RW/FW)
	Day 2	CAD Introduction	b. Computer literacy and software training.
		Ground Agency Daily Radio Checks	
		Reporting Radio Issues CAD Review	b. Computer literacy and software training. j. Navigation techniques/terminology and map skills – including an understanding of GPS navigation and approaches. (RW/FW)
		Mapping Systems	b. Computer literacy and software training.
	Day 3	Flight Following: Position Checks, OPS Checks, On Final	j. Navigation techniques/terminology and map skills – including an understanding of GPS navigation and approaches. (RW/FW)
		Flight Following: Lifts, Lands, Flight Plans, Additional	j. Navigation techniques/terminology and map skills – including an understanding of GPS navigation and approaches. (RW/FW) h. Knowledge of national aviation regulations and Federal Communications Commission or AHJ regulations or equivalent as pertinent to medical transport service (RW/FW)
	Day 4	RA Acknowledgments (FAR 135.617, 135.619)	
		Hospital Contacts	
		Ground Transport of Patient	
		Reroutes	
Week 2	Day 1	Hazmat	a. Assistance with the hazardous materials response and recognition procedure using appropriate reference materials.
		Declines, Cancels, and Aborts	
		Weather Turndown	
		Patient Continuing by Ground with AEL Crew	
		Directives	
	Day 2	Post-Accident Incident Plan	k. Post Accident/Incident Plan (PAIP). f. General safety rules and emergency procedures pertinent to medical transportation and transport-following procedures.
		OCC/Weather Overview	q. Understanding weather interpretation and how to retrieve current and forecasted weather to assist the pilot during a transport if other means are not in place within the organization.
		Medical Terminology/Equipment	i. Medical terminology and obtaining patient information. e. Familiarization with equipment used in the field and inter-facility
			n. State and local regulations regarding EMS
	Day 3 Day 4	EMS Systems	g. Knowledge of EMS – roles and responsibilities of the various levels of training – BLS/ALS, EMT/Paramedic
		Non-Patient Flights: Introduction and Practice Review	
Week 3	Day 1	Call Receiving: Introduction	i. Medical terminology and obtaining patient information.
		Processing Scene Flights without CAD	
		PRACTICAL SKILLS TESTING: Mapping Programs, Radio, and Updating Units	
	Day 2	Call Receiving Review	i. Medical terminology and obtaining patient information.
		Interfacility Flights	i. Medical terminology and obtaining patient information.
		Standard Documentation	l. Quality management.
	Day 3	Direct Dispatch and Aircraft Launch	
		Individual Call Processing	
		Non-Standard Flight Directives	
		Roll Over Procedures	
		Ground Request Call Processing Review	
	Day 4	PRACTICAL SKILLS TESTING: Non-Patient Flights	
Week 4	Days 1-4	Written and Practical Testing (Scene Flights, Interfacility Flights, retesting on previous	l. Quality management.

Initial OCS Training

		Topic	CAMTS Standard
Week 1	Day 1	Basic Indoctrination	
	Day 2	AMRM Aviation Weather	c. Crew Resource Management (CRM) pertinent to communications. m. Sleep deprivation, sleep inertia, circadian rhythms and recognizing signs of fatigue. q. Understanding weather interpretation and how to retrieve current and forecasted weather to assist the pilot during a transport if other means are not in place within the organization.
	Day 3	Aviation Weather	q. Understanding weather interpretation and how to retrieve current and forecasted weather to assist the pilot during a transport if other means are not in place within the organization.
Week 2	Day 1	Aviation Weather Air Traffic Control	q. Understanding weather interpretation and how to retrieve current and forecasted weather to assist the pilot
	Day 2	Air Traffic Control Navigation	j. Navigation techniques/terminology and map skills – including an understanding of GPS navigation and
	Day 3	Navigation Aircraft Systems Aircraft Performance	j. Navigation techniques/terminology and map skills – including an understanding of GPS navigation and approach
	Day 4	Aircraft Performance Aviation Flight Monitoring	
	Day 5	Aviation Policy and Regulations	h. Knowledge of national aviation regulations and Federal Communications Commission or AHJ regulations or
Week 3	Day 1	CRM	c. Crew Resource Management (CRM) pertinent to communications. m. Sleep deprivation, sleep inertia, circadian rhythms and recognizing signs of fatigue.
	Day 2	Exam	

Annual Recurrent Training

Module	Topic	CAMTS Standard
1	PAIP	b. Post Accident/Incident Plan (PAIP).
2	Call Receiving	
3	Stress Sleep Fatigu e CISM	c. Sleep deprivation, sleep inertia, circadian rhythms and recognizing signs of fatigue. d. Stress recognition and management to include resources for Critical Incident Stress Debriefing or other type of post critical incident counseling.
4	Medical Terminology	
5	Radio Etiquette	a. AMRM or Crew Resource Management (CRM) pertinent to communications.
6	Flight Following	
7	Attendance	
8	Non-Standard Flight Requests	
9	Cold Weather Operations	
10	Interfacing with Other Air	
11	Standby/Early Activation	
12	Ground Ambulance Requests	

Example Skills Exam Sheets		
PR Facility	Start End	
	Points Possible	Points Awarded
Answers Phone Correctly	1	
Stamped Card at time of call	1	
Maintained Control of Call	1	
Readback Crew, Tail, RA	1	
Confirmed Manifest	1	
Confirmed Hospital Name, City, State	1	
Checked and Followed Hazards/Alerts	2	
Obtained contact information	1	
Confirmed Checklist Reviewed	1	
Offered Card Number	1	
Obtained Rider name and documented in Manifest	2	
Initial Documentation includes base, type of flight, destination, tail, ra, checklist	6	
Additional Steps are documented	1	
Notes Field has type of flight and destination	1	
Advised recorded line when calling out	1	
Correct Card Type	1	
Caller information (top left) filled out correctly	1	
Total Points	24	
New Pilot Orientation	Start End	
	Points Possible	Points Awarded
Answers Phone Correctly	1	
Stamped Card at time of call	1	
Maintained Control of Call	1	
Readback Crew, Tail, RA	1	
Confirmed Manifest	1	
Obtained/Confirmed Destination	1	
Asked about availability/delay	1	
Obtained contact information	1	
Offered Card Number	1	
Removed medcrew and added new pilot to manifest	2	
Initial Documentation includes base, type of flight, destination, tail, ra	5	
Additional information properly documented	1	
Correct Card Type	1	
Caller information (top left) filled out correctly	1	
Total Points	19	

Scene Flight Request	Start	
	End _____	
	Points Possible	Points Awarded
Initial Call	10	
Answers Phone Correctly		
Stamped Card at time of call		
Maintained Control of Call		
Verified City, County, State		
Checked/Followed Hazards/Alerts		
Advised Caller of correct base, location and response time		
Asked if any other air service declined for weather		
Asked if any other air service is responding		
Crew Notification	5	
Notified Correct Crew		
Advised Crew of Scene Flight		
Advised Crew of city, county, state		
Provided Heading and Distance		
Relayed Card Number		
Readback Crew, Tail, RA		
Confirmed Manifest		
Followup Information	10	
Advised Accepted/If Declined, offered another aircraft		
Obtained Nature of Call		
Obtained LZ		
Obtained Ground Contact and Frequency		
Obtained Caller Agency, Name, Callback		
Ended Call by re-advising Crew/Response Time		
Documentation	5	
Located correct LZ and documented coordinates (first)		
LZ and exact documented in Waypoints		
Documented initial base offered and response time		
Documented base accepting - tail, ra		
Information entered in correct locations		
Caller information accurate		
Total Points	30	

Transfer Flight Request	Start	
	End	
	Points Possible	Points Awarded
Initial Call	10	
Answers Phone Correctly		
Stamped Card at time of call		
Maintained Control of Call		
Obtained Sending and Receiving Hospitals		
Verified Full Name, City, State for each hospital		
Checked and Followed Hazards/Alerts appropriately		
Advised Caller of correct base and response time		
Obtained Chief Complaint and Patient Weight		
Asked if any other air service declined for weather		
Asked if any other air service is responding		
Crew Notification	5	
Notified Correct Crew		
Advised Crew of Transfer Flight		
Advised Crew of sending hospital, city, state		
Advised Crew of receiving hospital, city, state		
Provided Heading and Distance		
Advised Patient Weight		
Advised Chief Complaint if applicable		
Relayed Card Number		
Readback decline info/ Crew, Tail, RA		
Confirmed Manifest and marked accepted		
Followup Information	10	
Advised Accepted/If Declined, offered another aircraft		
Obtained Vent Status and Pickup Dept.		
Obtained Patient Name		
Obtained Caller Name, Callback		
Ended Call by re-advising Crew/Response Time		
Documentation	5	
Documented initial base offered and response time		
Documented base accepting - tail, ra		
Documented any additional steps taken (i.e. Confirmed Ground)		
Added Requesting Facility		
Information In correct locations		
Filled out Arrange Transport		
Total Points	30	

WAVE Radio

	Points Possible	Points Awarded
Demonstrated adding a tower to the main tab from the left-hand side. (turned off prior/turned back on after)	2	
Demonstrated correct use of "Group Select" feature	2	
Used correct radio verbiage and technique (i.e. keying up, talking with flight crew)	2	
Turned patch on & dragged tower into patch	1	
Called entity using (9+1), identified self, & explained the patch procedure	2	
Added entity to phone patch and advised flight crew to go ahead with patient report	1	
Facilitated phone patch for entitiy (mute caller/unmute caller)	1	
Dragged both parties out of the patch (half points if only one party was removed)	2	
Total Points	13	

Google Map

	Points Possible	Points Awarded
Located landmark	1	
Used streetview to confirm location	1	
Measured the correct distance between two defined points	1	
Converted coordinates into Degree:Minutes format using Skyweb/DeLorme and placed a coordinate marker (half points if incorrect location)	2	
Read coordinates correctly	1	
Total Points	6	

Skyweb

	Start End	
	Points Possible	Points Awarded
Located Address/Coordinates	1	
Asked "Where should that take me?" (half points if prompted)	2	
Confirmed City, County, State	1	
Placed Coordinate marker (half points if incorrect location)	2	
Read coordinates correctly	1	
Identified Closest Base	1	
Offered Correct Response Time	1	
Advised Crew of Scene Flight	1	
Advised Crew of city, county, state	1	
Provided Heading and Distance	1	
Advised Card number unknown at this time	1	
Total Points	13	

Modifying a Unit	Start	
	End	
	Points Possible	Points Awarded
Answers phone correctly	1	
Confirms Weather Status	1	
Adds Weather Status quickly and accurately	1	
Confirms Tail Number	1	
Enters Tail Number correctly	1	
Confirms Licensed States, Lift Time, Balloon Pump	1	
Documents the lift time in the ETLO field.	1	
Documents States and Balloon Pump in Pilot Notes accurately	1	
Confirms Crew	1	
Enters Crew Correctly	1	
Enters unit quickly and accurately	1	
Total Points	11	

Examples of Preceptor Call Score Sheets

CARD NUMBER				
Trainee Name				
Preceptor name				
Date Shift Began				
Initial Call: Non Patient	Not Applicable	No	Partial	Yes
Obtained Contact Information (name, number, secondary if needed)				
Confirmed destination (city, county, state or name, city, state of facility)				
Checked and followed hazard/alerts				
Confirmed Additional Information (PR Checklist, Mx Ctrl Approved, Rider information, etc)				
Confirmed Crew in Crew Manifest and readback Crew, Tail, RA				
Relayed Card Number				
Documentation	Not Applicable	No	Partial	Yes
Documented and Confirmed rider name in Manifest				
Initial documentation includes base, type of flight, destination, RA, additional information confirmed				
Flight Card is filled out correctly (alternate contact, caller information, etc)				
PR Only: Notes includes type of flight and destination and is "cleaned up"				
PR Only: Secondary Contact documented in Ground Contact Field				
Comments				

CARD NUMBER				
Trainee Name				
Preceptor name				
Date Shift Began				

Initial Call: Transfer	Not Applicable	No	Partial	Yes
Obtained and confirmed Name, City, State of sending				
Obtained and confirmed Name, City, State of receiving				
Checked/Followed alert appropriately				
Offered Correct A/C (Base, City, Response, Weather)				
Obtained Pt Weight and Chief Complaint				
Asked if any other air service declined for weather				
Asked if any other air service is responding				

Crew Notification	Not Applicable	No	Partial	Yes
Advised crew of transfer from sending hospital name, city, state				
Advised crew of receiving hosptial name, city, state				
Provided heading and distance				
Advised patient weight				
Advised STEMI/STAT/Code Stroke (if applicable)				
Relayed Safety Issues (if applicable)				
Gave Card Number				
Confirmed Crew and read back acceptance information				

Followup	Not Applicable	No	Partial	Yes
Advised caller of acceptance/decline offered another aircraft				
Asked vent/special equipment status and patient location				
Obtained pt name				
Obtained requestor name/callback number				
Ended call by readvising base and response time				

Documentation	Not Applicable	No	Partial	Yes
Documented initial base offered and response time				
Documented accepting information				
Documented additional steps taken (i.e. Confirmed ground)				
Time Stamps Accurate				
Filled out Arranged Transportation				

Comments

CARD NUMBER				
Trainee Name				
Preceptor name				
Date Shift Began				
Initial Call: Scene	**Not Applicable**	**No**	**Partial**	**Yes**
Confirmed City, County, State				
Read and followed alert/hazard if present				
Offered Correct A/C (Base, City, Response Time, Weather)				
Asked if any other air service declined for weather				
Asked if any other air service is responding				
Crew Notification	**Not Applicable**	**No**	**Partial**	**Yes**
Advised crew of flight request, city, county, state of scene				
Provided heading and distance				
Relayed Safety Issues				
Gave Card Number				
Confirmed Crew and read back acceptance information				
Followup	**Not Applicable**	**No**	**Partial**	**Yes**
Advised caller of acceptance/decline, followed rollover procedure				
Obtained Nature of Call and Scene Safety if needed				
Obtained LZ information				
Obtained ground contact and frequency				
Obtained requestor name/agency/callback number				
Ended call by readvising base and response time				
Documentation	**Not Applicable**	**No**	**Partial**	**Yes**
Located correct LZ, updated coordinates, documented LZ description/exact				
Documented initial base offered and response time				
Documented base acceptance/decline information				
Documented Additional steps taken				
Comments				

Example of Daily Preceptor Checklist

Trainee Name			
Preceptor Name			
Date Shift Began			
Do you feel the trainee is ready to work independently?			

Flight Following Duties	Not Applicable	Needs Improvement	Acceptable
Actively monitored aircraft on Skyweb			
Accurately copied and documented flight plan information			
Verified Skyweb status and notified pilot of positive or negative Skyweb			
Updated Times to match Skyweb wheels on/off			
Set destinations on Skyweb			
Notified pilots of any other aircraft in their area or inbound to same location			
Relayed patient information to crew after liftoff, without prompting			
Quickly and accurately entered all necessary position checks			
Made and documented appropriate contact in a timely manner			
Perform 15 minute Ops Checks, verifying status in Skyweb and advising Tracking Status when appropriate			
Created flight record when necessary and entered all necessary info (PR, MX, Training, Direct Dispatch)			
Completed necessary ARRANGE TRANSPORTATION information			
Properly followed REROUTE procedures when necessary			
Appropriately processed ABORTED, CANCELED OR DECLINED cards			
Documented correctly in WEATHERTURNDOWN.COM			
Check and completed card when necessary			
Correctly modified a unit			
Placed an aircraft on delay or In/Out-of-Service			
			Continued

	Not Applicable	Needs Improvement	Acceptable
Reference OOS Board to Region Board			
Demonstrated knowledge of Cisco Phone			
Complete radio patch (upon crew request)			
Identified PAIP event; followed appropriate procedure, and notification process			
Overall Evaluation	**Not Applicable**	**Needs Improvement**	**Acceptable**
Answers incoming calls in 3 rings or less			
Demonstrates critical thinking and decision making skills			
Processes flight requests independently			
Demonstrates ability to multi-task			
Retains information			
Assists co-workers without prompting			
Shares information with partners and other regions			
Demonstrates strong listening skills			
Self reports			
Interacts positively with co-workers and supervisors			
Willingly accepts challenging tasks			
Resolves conflict effectively			
Demonstrates self-directed/proactive actions			
Remains calm in stressful situations			
Carries share of workload/uses time wisely			
Demonstrates professionalism in all interactions			
Does not engage in damaging or negative behavior			

Keeping Our Shared Air Space a Safe Air Space

A Presentation about HEMS for
the UAS Community

CARILIONCLINIC

Carilion Clinic Life-Guard Overview

- Established in 1981, Life-Guard 10 was the first aeromedical program in Virginia

- Currently fly critical and time sensitive medical and trauma patients via 3 EC 135's (based in Westlake, Radford, and Lexington).

- Fly patients from both hospitals and scenes, landing at helipads, roads, fields and other areas.

CARILIONCLINIC

Why This is Important to Us

- The nature of the HEMS business naturally puts us at risk for mid-air collisions with any other low-level aircraft due to the fact that we have:
  - On demand / unscheduled take-offs and landings with
  - Time sensitive emergencies in
  - Landing areas with limited security, resources, and communications
- Additional concerns:
  - Delays
  - Patient privacy
- Number of drone operators are increasing faster than HEMS and the FAA can provide awareness education and / or safety recommendations / regulations.

FAA Database

CARILION CLINIC

Why This is Important to Us

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- Number of drone operators are increasing faster than HEMS and the FAA can provide awareness education and / or safety recommendations / regulations.

CARILION CLINIC

What happens when a drone collides with a helicopter?

Why This is Important to Us

- Example of a towel in a tail rotor.....
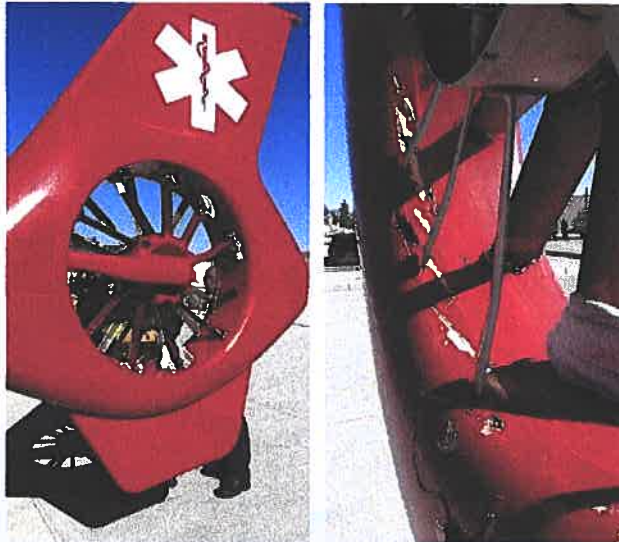
So what kind of damage could a drone do??

CARILION CLINIC

Why This is Important to Us

- Examples of a bird strike.....

So what kind of damage could a drone do??

CARILION CLINIC

Why This is Important to Us

MEDIA RELATIONS

FSO Helicopter EAGLE One Almost Hits Drone

FSO deputy and Tactical Flight Officer, Richard Corkingly holds the drone

Hospital: Drone delayed helicopter from picking up patient

DRONES POSING RISK FOR EMERGENCY PATIENTS

Fox 13 News

CARILION CLINIC

Real-Life Examples of our Personal Encounters with Drones

CARILION CLINIC

Keeping Our Shared Air Space a Safe Air Space
Laws, regulations, and guidance regarding UAVs

CARILIONCLINIC

Classes of Drone Operators

- Rules are different, depending on the purpose for which the drone is being flown.
  - Hobbyists / Recreational (Section 336 of PL 112-95)
  - Business (compensated) Operators (Part 107)
  - Public Use (COA)

- Note that the same drone can be flown by the same operator for different purposes and that rules are dependent upon the purpose of each flight.

CARILIONCLINIC

Section 336 of PL 112-95

- Known as the FAA Modernization and Reform Act of 2012)

- Guidance for the Recreational Users

- Least stringent of all the rules for the different classes

Section 336 of PL 112-95

- States that non-commercial drone operators must contact the airport operator or the airport air traffic control tower prior to flying within 5 miles of an airport.
  - https://www.faa.gov/uas/model_aircraft/

- **NOTE** 49USC defines airports as "landing area(s) used regularly by aircraft for receiving or discharging passengers or cargo"
  - http://www.gpo.gov/fdsys/pkg/USCODE-2011-title49/html/USCODE-2011-title49-subtitleVII-partA-subpart-chap401-sec40102.htm

- Therefore, based on the legal interpretation of the Carilion General Counsel confirmed through an inquiry with the FSDO, helipads are being considered airports with regards to the requirement to notify prior to flying within 5 miles. For Carilion helipads, drone operators are advised to contact the Life-Guard Flight Operations Center.

- Also, be aware of FAA AC 91 57-A (Model Aircraft Operating Standards) as it references 112-95 and urges (not required) drone operators to fly in accordance with a community-based set of safety guidelines and within the programming of a nationwide community-based organization (CBO)
  - http://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_91-57A_Ch_1.pdf

Section 336 of PL 112-95

- Fly below 400 feet and remain clear of surrounding obstacles
- Keep the aircraft within visual line of sight at all times
- Remain well clear of and do not interfere with manned aircraft operations
- Don't fly within 5 miles of an airport unless you contact the airport and control tower before flying
- Don't fly near people or stadiums
- Don't fly an aircraft that weighs more than 55 lbs
- Register your drone if it weighs more than 0.55 lbs (about 2 sticks of butter)
- Can be fined for endangering people or other aircraft

KNOW BEFORE YOU **FLY**

CARILION CLINIC

Part 107 (Small Rule)

- Released June 21, 2016

- More stringent than the rules for recreational users

- Applies to non-hobbyist operators

Part 107 (Small Rule)

- What has changed for business owners as a result of 107:
  - Pilot's license is no longer required
    - Now, easier to obtain, so expect to see a sharp increase
    - Knowledge-based exams will not ensure proficiency (no practical exams)
  - Second person no longer required as the visual spotter
    - Increased the risks, especially to low flying aircraft such as HEMS

Part 107 (Small Rule)
Comparing to Rules for Recreational Users

- **Commercial Operators**
  - Required to pass a knowledge-based test

  - Day time use only

  - Waivers available for "visual line of site" rule

  - Minimum age to fly (16 years)

- **Recreational Users**
  - No tests required

  - No restrictions on time of day

  - Must maintain visual line of site

  - No minimum age to fly

KNOW BEFORE YOU **FLY**

CARILION CLINIC

Public Use (COA)

- Certificate of authorization or waiver

- Allows for public use aircraft operations in the national airspace system.

- A means for entities to perform operations outside the allowances of Part 107 and 14 CFR

- Allows public use entities to apply to request to self certify UAS pilots

KNOW BEFORE YOU **FLY**

CARILION CLINIC

Keeping Our Shared Air Space a Safe Air Space
Education and Collaboration

CARILION CLINIC

Educational Initiatives
For Drone Operators and LZ Commanders

Save a Life, Land the Drone PART 4

Life-Guard

Channel settings

407 views

Drone Safety

CARILION CLINIC

Educational Initiatives
For Drone Operators and LZ Commanders

- ASSESS
    - In addition to assessing scene safety around the perimeter, a 3-dimensional approach should be taken, ensuring that the area above the scene is safe as well. A standard assessment includes a review of wires and other obstacles in and around an LZ, as well as drones.

- COMMUNICATE
    - Do not assume that the pilot has a visual on the drone. Maintain open communications with the pilot via radio so that you can report drone sightings as soon as possible to maximize reaction time, even if the drone is stationary.

- IDENTIFY
    - Identify the drone operator if possible and engage them. Inform them of the boundaries and the requirement to communicate their intent to operate a drone prior to doing so.

- LAND
    - When in doubt, have the operator LAND THE DRONE. It is always better to err on the side of caution. No video footage is worth the potential risk of an avoidable incident.

CARILION CLINIC

Educational Initiatives
For Drone Operators and LZ Commanders

- Consider using apps to identify safe areas for flying your drone
    - Some drones have an associated app with geofencing (DJI phantom 2 and above)
        - Don't forget to update your software!
    - FAA app B4UFly (shows safety areas around helipads):
        - https://www.faa.gov/uas/b4ufly/
    - Hover app (does not show safety areas around helipads):
        - http://www.hoverapp.io/

- Take the time to identify areas with TFRs
    - http://www.aopa.org/Flight-Planning/Tfrs

- "Eyes out of Cockpit" concept - Use a "co-pilot" (spotter) to handle distractions such as by-standers and to watch your UAV while you are watching the camera.

- Be aware of environmental conditions (wind) and bystanders; both of which can inhibit your ability to fly safely!

CARILION CLINIC

Educational Initiatives
For Drone Operators and LZ Commanders

Industry Articles and Presentations
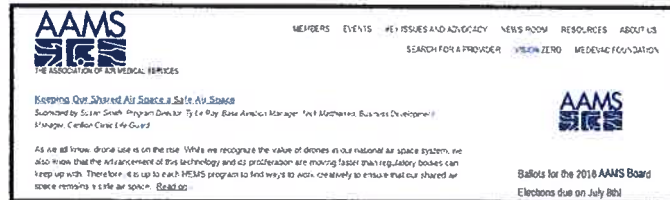
Legislative Initiatives

2017 SESSION

1   **VIRGINIA ACTS OF ASSEMBLY — CHAPTER**

2   *An Act to amend and reenact § 27-15.1 of the Code of Virginia, relating to the authority of a fire chief*
3   *over unmanned aircraft at a fire, explosion, or other hazardous situation.*

4   [S 873]
5   Approved

6   **Be it enacted by the General Assembly of Virginia:**
7   1. That § 27-15.1 of the Code of Virginia is amended and reenacted as follows:
8   **§ 27-15.1. Authority of chief or other officer in charge when answering alarm; penalty for**
9   **refusal to obey orders.**
10   While any fire department or fire company is in the process of answering an alarm where there is
11   imminent danger or the actual occurrence of fire or explosion or the uncontrolled release of hazardous
12   materials that threaten life or property and returning to the station, the chief or other officer in charge of
13   such fire department or fire company at that time shall have the authority to (i) maintain order at such
14   emergency incident or its vicinity, *including the immediate airspace*; (ii) direct the actions of the
15   firefighters at the incident; (iii) notwithstanding the provisions of §§ 46.2-888 through 46.2-891, keep
16   bystanders or other persons at a safe distance from the incident and emergency equipment; (iv) facilitate
17   the speedy movement and operation of emergency equipment and firefighters; (v) cause an investigation
18   to be made into the origin and cause of the incident; and (vi) until the arrival of a police officer, direct
19   and control traffic in person or by deputy and facilitate the movement of traffic. The fire chief or other
20   officer in charge shall display his firefighter's badge or other proper means of identification.
21   Notwithstanding any other provision of law, this authority shall extend to the activation of traffic control
22   signals designed to facilitate the safe egress and ingress of emergency equipment at a fire station. Any
23   person or persons refusing to obey the orders of the chief or other officer in charge at that time is guilty
24   of a Class 4 misdemeanor. The chief or other officer in charge shall have the power to make arrests for
25   violation of the provisions of this section. The authority granted under the provisions of this section may
26   not be exercised to inhibit or obstruct members of law-enforcement agencies or emergency medical
27   services agencies from performing their normal duties when operating at such emergency incident, nor to
28   conflict with or diminish the lawful authority, duties and responsibilities of forest wardens, including
29   but not limited to the provisions of Chapter 11 (§ 10.1-1100 et seq.) of Title 10.1. Personnel from the
30   news media, such as the press, radio, and television, when gathering the news may enter at their own
31   risk into the incident area only when the officer in charge has deemed the area safe and only into those
32   areas of the incident that do not, in the opinion of the officer in charge, interfere with the fire
33   department or fire company, firefighters or emergency medical services personnel dealing with such
34   emergencies, in which case the chief or other officer in charge may order such person from the scene of
35   the emergency incident.

Collaboration:
#LandTheDrone Campaign Nationwide

Keeping Our Shared Air Space a Safe Air Space

Save a Life & Land the Drone
#LandTheDrone

Drone Operators and HEMS Working Together
#SolidarityForSafety

⁄⁄⁄ Dartmouth-Hitchcock

Dept. Policy Title:	Medical Crew Physical Requirements Policy - DHART	Policy ID:	390
Keywords	physical, requirements		
Department	DHART		

I. Purpose of Policy

To outline minimum physical and mental requirements to insure all "on-duty" medical crew members function in a safe manner to deliver in highly diverse environments.

This policy will address:

Prevention of stressors that impact safety and wellbeing,

Essential elements of fitness and practices that cannot be modified,

Maximum allowable crew weights with regards with current aircraft performance criteria,

Harmful medical crew illnesses, physical conditions, or injuries that could impact operational safety. (note: treatment and care of medical crew should take precedence over other operational concerns)

Safety and physical wellbeing promotion (e.g. DHMC Health Improvement Programs offered by Occupational Health)

Elements of fitness necessary to perform essential functions of a medical crew member.

II. Policy Scope

This policy applies to DHART medical crew

III. Definitions   N/A

IV. Policy Statement

A. Prevention of stressors that affect safety and wellbeing of the medical crew:

Report to work capable of performing their duties.

Reasonable staffing schedules will be maintained. Employees are encouraged to take pre-approved Earned Time.

Communicate illness/inability to work as soon as possible.

Medical crew members shall evaluate themselves and each other for signs of mental or physical impairment to prevent an unsafe work environment.

Avoid consuming medications or substances that will impair judgment or performance of essential job duties.

Crew members will immediately inform the DLOC (DHART Leader On-Call) of any illness or condition that impact fulfilling essential job functions.

B. Essential elements of fitness and practices that cannot be modified:

Initial Pre-Placement Screening

Annual tests

Audiogram

Tuberculosis testing if indicated.

C. Evaluation for immunity as required by Occupational Health

Sufficient sight (at least 20/40 acuity Snellen in each eye with or without correction, hearing (must perceive forced whispered voice > 5 feet with or without hearing aid or average hearing loss in better ear < 40dB) 1, flexibility, manual dexterity and mobility to function effectively in confined environments as outlined by policy in conjunction with and testing provided by Occupational Health evaluations.

Maximum personal weight limits as outlined by maximum allowable aircraft operating weight.

Meeting lifting, loading, carrying, flexibility, endurance requirements as dictated by DHART Transport practices.

Timely notification of pregnancy to ensure the health and safety of the medical crew member, patients, and passengers.

Timely notification of any illness temporary or permanent to insure the health and safety of the medical crew member and DHARTs patient population.

Strict adherence to DHMC Substance Abuse Policy.

D. Maximum allowable crew weight 100 kg as based on EC 135 aircraft performance criteria (See Appendix)

Medical Crew will weigh in wearing a flight suit excluding helmet the first week of every calendar quarter.

Weights will be recorded by the DHART Pilot Staff in the weight log

Weights will be reviewed by the DHART Program Director, Lead Pilot and Medical Director the second week of every calendar quarter.

All staff weighing greater than maximum weight will be referred to Occupational Medicine for development of a safe, healthy reduction plan.

All staff weighing greater than maximum weight in the first week of said quarter will submit an action plan with measurable goals and timeline in writing to the DHART Program Director by the first week of the second month of the quarter.

All staff weighing more than 100 kg in the first week of any quarter will be required to weigh in the first week of every month until they have achieved the 100 kg requirement.

Staff will have 1 month for every 2 kilograms over 100 kg to reach the weight requirement.

Failure to comply with weight requirements and the reduction plan as outlined by DHMC Occupational Medicine will result in required transfer or termination from the DHART Program

E. **Identify harmful medical crew illnesses, physical conditions, or injuries that could impact operational safety.** Due to criticality of this issue, treatment and care of medical crew will take precedence over other operational concerns. If necessary, crew safety concerns should be confidentially directed to the Program Director, Chief Flight Nurse, or Operations Manager for further evaluation. Limitations include:

Reasonable suspicion of Drug or Alcohol use.

Temporary illnesses

Communicable illnesses and other conditions as per infectious disease policies and Occupational Medicine that threaten patient and crew safety

F. **Employees using medications that cause drowsiness or otherwise impair functioning** should consult their prescribing provider about potential impact and their fitness for duty and consult DHMC Occupational Medicine whenever there is any question.

G. **Suspension of flight duty until 24 hours after:**
Blood Donation
Scuba/Deep sea diving
Dental filling placement
Medical reasons that include illness or injury such that a Medical Crew member cannot perform the essential job duties
If excused medical reasons persist, the crew member will be directed to HR P&P section 4 for further assistance.

H. **Permanent Illnesses**
Any employee who requires extended periods of leave due to illness or injury will be evaluated under the DHMC Employee and HR P&P. The Program Director will work closely with HR to accommodate the employee based on DHMC Employee policies.

I. **Pregnancy**
Duty status during pregnancy is addressed to maintain health and safety for the crew member, patients and passengers. Periodic assessment of her ability to perform essential functions, perform patient care, and assure maximal safety for the patients in the helicopter must be performed. As with any medical reason that limits the ability to perform essential functions of the job description, the Medical Crew member is asked to

review and sign an informed consent form that outlines stressors and exposures (Appendix 2). The pregnant crew member will be responsible for the following:

Notify the Program Director of the pregnancy status as soon as it is known.

Consult with her physician re: any accommodations requested with respect to her pregnancy.

Be evaluated by her physician for ability to perform essential duties of transport care on the following schedule

- o Initial evaluation during 1st Trimester
- o During the 2nd Trimester
- o During the 3rd Trimester at 28 weeks and subsequently at the physician's discretion.
- o The pregnant crew member work duties will be assessed based on her physician's recommendation of limitations. The Program Director will work closely with HR to accommodate the employee based on DHMC Employee policies.

J. Safety and physical wellbeing promotion to include:

DHMC Health Improvement Programs offered by Occupational Health

Scheduling to maximize employee time for proper sleep wake cycles

K. Protective clothing requirements:

Black Leather Boots above the ankle
Flame-retardant flight suits
Helmets
Nomex outerwear

L. Professional appearance by medical crew members in regards to jewelry, hair and personal effects which may interfere with patient care and sepsis.

M. Elements of fitness necessary to perform essential functions of a medical crew member:

Ability to lift a 150 pound person on a stretcher with an assistant from level ground, carry 6 feet and lift into the aircraft.
Carry trauma pack (45 pounds) on back up 2 flights of stairs
Climb 4 flights of stairs in under 2 minutes
Perform CPR continuously for 5 minutes
Crouch for 1 minute
Perform 20 deep squats
Climb up and down a 6-foot ladder

The aerobic/cardiovascular fitness, muscular strength and endurance, and flexibility of the crew member will be evaluated and monitored annually and after any extended leave or disability.

Crew members who are unable to meet the elements of fitness will be afforded three months to prepare for re-evaluation.

Failure to comply with weight requirements and the reduction plan as outlined by DHMC Occupational Medicine will result in required transfer or termination from the DHART Program.

Appendix 1 - Weight Calculations

In order to calculate the maximum allowable crew weight, the most demanding scenario regarding aircraft performance has been considered. This would be a local area response request with a patient at our maximum allowable litter weight of 350 lbs.

Departing the DHMC helipad with standard aircraft operating weight and fuel load, five minutes of fuel burn is subtracted. The patient weight was then added. Completion of the calculation results in a remainder of 300kg. Thus, 100 kg for each the member of the three person team: Pilot; Nurse and Paramedic or Respiratory Care Practitioner.

Aircraftmaximumgrossweight	2835Kg
Aircraft Operating Weight	2030 Kg
Standard Fuel load	+392 Kg
Maximum patient weight (350 lbs.)	+158Kg
Total	2580 Kg
Twelveminutefuelburn	-45Kg Total
payload excluding crew	2535 Kg
Aircraft maximum gross weight	2835 Kg
Totalpayloadexcludingcrew	-2535Kg
Maximum crew weight	300 Kg

V. References

1.49 Code of the Federal Register 391.41 (10/2003) Physical Qualifications for Drivers. Medical Examination Report for Commercial Driver Fitness Determination 649-F. Printed by J.J. Keller & Associates, Inc. Neenah, WI

CAMTS 10th Ed. Standards; Reference October 2015

CAMTS: 01.08.00

Responsible Owner:	DHART Leadership	Contact(s): email	Troy Madigan
Approved By:	Office of Policy Support - Organizational Policies Only	Version #	1
Current Approval Date:	02/05/2018	Old Document ID:	DHART.0007
Date Policy to go into Effect:			
Related Polices & Procedures:	SubstanceAbuseandDrug-FreeWorkplacePolicy-Employees,Covered Individuals		
Related Job Aids:			

STAT MedEvac Crew Compatibility

Third Person Orientation Phase

- 9-12 weeks.
- In addition to completing orientation assignments, successful completion knowledge assessments occur prior to moving on to next phase.
  - Capstone skills phase test.
  - Medical Director oral protocol knowledge assessment

Second Person Transition Phase

- 4 Weeks.
- Only scheduled with clinical coach.
- Successful completion of phase assessment prior to moving on to next phase.
  - 4 high acuity simulation scenarios.

Second Person Restricted Phase

- Remainder of first year of orientation.
- Final clinical rotations must be completed during this phase.
- Only scheduled with medical crew that are off restriction.
  - Restricted staff cannot work with restricted staff.
- Crew limitations are clear and defined. They know who can and cannot work together. Additionally, we have their role type designated in the scheduling software. The software will not permit anyone with restricted status to be scheduled with another restricted crew member.

Off Restriction Status

- Around the 1 year mark the manager will request an off-restriction review.
  - Education team validates all rotations and required education modules are complete.
  - Number of transports assessed.
  - Prior cases/incident reports reviewed and assessed for trends/concerns.
  - Candidate presented to Medical Directors and Quality review panel for discussion. If no issues, the manager is given permission to remove restriction.
- We have recently incorporated a clinical activity report. This new scorecard provides a comprehensive overview of the individuals performance. We have started using this as a tool to assess beyond number of transports. Our goal is to move to a benchmark process where this is the indicator of when to present for off restriction review. Example- a high performer may be ready in 8-9 months, whereas a casual employee may need 13-15 months to achieve similar criteria.

Clinical Coaches

- Typically, multiyear employees.
- In good standing.
- Complete clinical coach/preceptor training.

camts

Survival Flight Nurse Initial Training Program

Purpose:

1) Match quality prospective flight nurse candidates with an appropriate initial training plan.
2) Prepare a proficient emergency / critical care nurse for practice within Survival Flight
3) Make education pertinent, by preparing prospective nurses for how Survival Flight trains and ultimately, for how Survival Flight practices clinically.
4) Create a fiscally responsible model training program consistent with the Mission, Vision and Value system of Survival Flight and Michigan Medicine.

Motivation:

Applicants that meet Survival Flight's rigorous requirements for interview and subsequent hire come from a variety of backgrounds and experiences. With this in mind, a training / onboarding plan must become as unique as the individual. What has ensued is a paradigm shift in order to match motivated individuals to a successful flight nurse initial training program at Michigan Medicine.

The following template has been developed to prepare a potential candidate for Survival Flight practice. Its intent is to provide a stimulating, challenging and fiscally responsible program in keeping with Survival Flight's and Michigan Medicine's Mission, Vision and Core Values.

Definitions:

- **Canvas:** The Learning Management System (LMS) utilized by the University of Michigan. Survival Flight utilizes it for the purpose of housing documents, books, manuals and other references; providing didactic information and interactive eLearning exercises, linking to informational videos and websites, and providing overall structure for the initial training process.
- **Educational Nurse Coordinator (ENC):** The individual in charge of initial and recurrent education for Survival Flight. This individual is responsible for the creation and maintenance of all clinical education as it pertains to Survival Flight's current clinical guidelines and scope of practice. Synonymous with *Clinical Educator*.
- **Flight Nurse in Training:** That individual who has been offered a position as a flight nurse and must successfully complete the Initial Training Program in order to function as a practicing flight nurse within Survival Flight. Synonymous with ***Candidate, Orientee, Novice Flight Nurse, Intern***
- **HPS Scenario:** The use of Human Patient Simulation (HPS) in its various forms in which to provide realistic, value-added clinical education for, or evaluation of a flight nurse in training.

- **Initial Training:** Synonymous with *Orientation, Internship, On-boarding.* That period of initial education for the Flight Nurse in Training in order to acquire the requisite knowledge and skills to practice at a minimum level of competence as a flight nurse within Survival Flight.
- **Preceptor:** An experienced clinician (in this case, flight nurse) who provides supervision during clinical practice and facilitates the application of theory to practice for the flight nurse in training. A preceptor works with the learner for a defined period of time to assist the learner in acquiring new competencies required for safe, ethical, and quality practice. They assist the learner by setting expectations, providing effective feedback about their performance, and providing appropriate opportunities to meet their learning objectives.
- **Professional Framework:** The clinical ladder developed in conjunction with Michigan Medicine's Professional Development and Education (PD&E) for Nursing department and the University of Michigan Professional Nursing Council (UMPNC). It provides opportunities for advancement within professional nursing at Michigan Medicine. Survival Flight is under the Role Specific Advancement Model (RSAM) with the following clinical levels (from lowest to highest: Competent, Expert, Mastery and Mastery+.

Process / Implementation:

Current Flight Nursing Requirements:

1. Current licensure to practice in the State of Michigan.
2. Minimum of 5 years current staff nursing experience (within the last 5 years).
3. Minimum five years critical care/emergency department experience in a tertiary setting or Level I or II trauma center. Minimum two years' experience in a pediatric intensive care or pediatric emergency department setting at a Level I or II trauma center or regional referral/tertiary care center.
   Ability to demonstrate critical thinking skills and autonomous practice as evidenced by successful completion of selective testing tools in areas of advanced practice nursing including hemodynamically unstable patients, critically ill pediatric patients, patients with airway or respiratory compromise, acute trauma, multi organ system failure patients, etc...
4. Demonstrated leadership abilities as evidenced by peer review and annual evaluation (including clinical education, charge nurse role and/or preceptor experience).
5. Demonstrated problem solving skills and independent decision making in working with peers, residents and/or attending physicians within and outside institutional boundaries(specific examples with references required).
6. Demonstrated outstanding interpersonal skills as evidenced by feedback from others/evaluation and interview process.
7. Current Michigan Paramedic Licensure.
8. Current ACLS/PALS/NRP certification.
9. CCRN Certification (Adult, Pediatric or Neonate)

Depending on available candidates at the time a position is posted, we may or may not be able to find a suitable applicant that meets all of the requirements for a "traditional" flight nurse position. Our interview process and scoring system may or may not place the candidate with the most clinical experience or certifications at the top of the list. Because of this, the algorithm below will assist the clinical educator in tailoring an appropriate initial training program. These "alternate but parallel" pathways have been introduced as outlined in the following diagram:
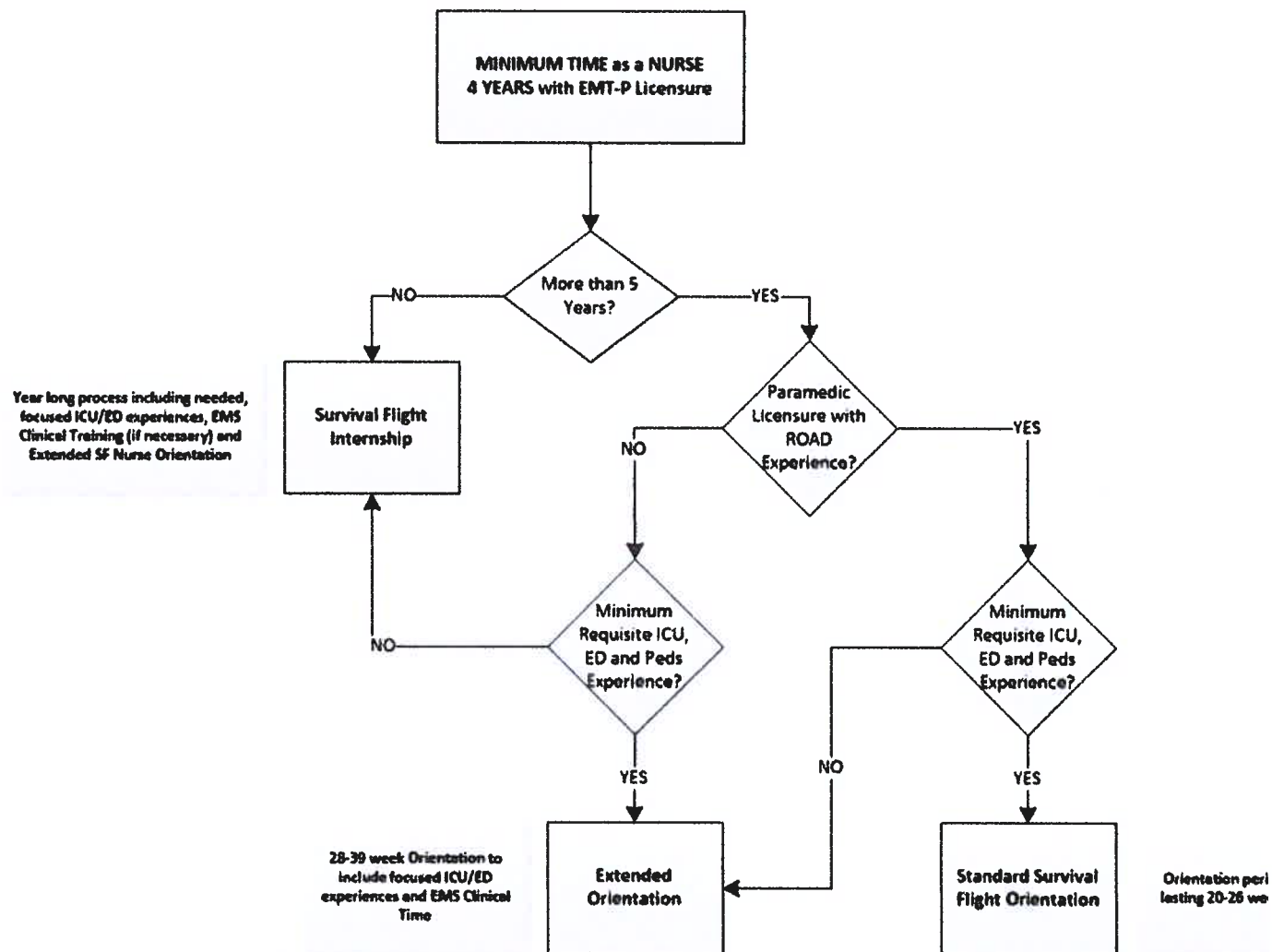
Each one of these pathways are designed to equally prepare the flight nurse candidate for practice within the "COMPETENT" domains of the UMHS Nursing Role-Specific (RSAM) Framework

Standard Survival Flight Orientation:

- For those candidates hired who have met Survival Flight's current requirements:
  o RN ≥ 5 years
  o Michigan Paramedic Licensure
  o Minimum ICU and ED clinical practice requirements
  o CCRN Certification (Adult, Pediatric or Neonate)
- Orientation lasts 20-26 weeks in 3 phases

<u>Extended Survival Flight Orientation:</u>

- For those candidates with 5 years or more as an RN but lack either requisite EMS or Clinical Nursing experience
- Orientation lasts 28-39 weeks and will include:
    - Extended but focused ICU / ED time based upon needs
    - Paramedic Clinical Training (if not done already)

<u>Survival Flight Nurse Internship:</u>

- For those candidates who have either
    - 5 or more years as an RN but lack the requisite ICU / ED clinical requirements
    - Nurse less than 5 years but 4 years as an RN with ICU / ED experience in any combination

<u>Survival Flight Nurse Intern Requirements:</u>

Candidates will be interviewed prior to training. The following will be required for consideration:

1. Current licensure to practice Nursing in the State of Michigan (plans for minimum degree requirement of BSN will be consistent with UMHS plans with respect to candidates being hired externally).
2. MINIMUM 4 years ICU/ED (in any combination) experience
3. Michigan Paramedic Licensure
4. Current BCLS and either ACLS or PALS certification
5. CEN or CCRN certification

Time Commitment and Appointment Fraction:

- The novice flight nurse (i.e. "flight nurse in training") will be considered a Survival Flight Employee for the duration of his / her training. Orientation to various patient care areas within UMHS will be focused based upon needs.
- Training will last as previously outlined above and will consist of self-directed eLearning, discussion forums, competency and clinical training, and evaluation within the following format:

Training and Education Components:

<u>Core Learning Modules:</u>

There are ten (10) training modules that will guide the intern through training. These will include:

1. Safety, Transport Operations and Introduction to the Transport Environment
2. Basic and Advanced Airway Management
3. Emergency and Trauma Care
4. Adult Critical Care
5. Ventilatory Management of the Critically Ill Child and Adult
6. Pediatric Critical Care
7. Neonatal Critical Care

8. High Risk Obstetrics
9. Imaging and Diagnostics
10. Transition to Practice (TTP)

Didactic Education:

1. Core Objectives for each module
   a. Based upon the following standards:
      i. CAMTS
      ii. FAA / FAR
      iii. AACN Examination blueprint for CCRN (Adult, Pediatric and Neonate)
      iv. BCEN Examination blueprint for CEN and CFRN
      v. Current National Paramedic Standards
2. Didactic education through:
   a. web-based eLearning
      i. Based upon core objectives and critical behaviors
      ii. Self-paced
      iii. Pre- and post-testing
   b. Discussion Forums and / or Journal Clubs
      i. Facilitated discussion with a subject matter expert (SME)
      ii. Preparation through current evidence (journal articles or other assigned media).

Clinical Education:

1. Survival Flight Third-Riding experience
2. Applicable, focused ICU or other patient care area(s):
   a. Focused refers to precepted clinical time utilized to meet specific learning objectives
   b. Based upon needs identified prior to training
   c. Additionally, this will be based upon needs identified during training.
3. Clinical Skill Labs (Clinical Simulation Center, ASOR Surgical Skills, etc…)
4. Scenario and Competency-Based Education
   a. Human Patient Simulation (HPS) with high-fidelity models
      i. Partnered with a practicing flight nurse
      ii. Various settings (aircraft, ambulance, ED/ICU etc…)
      iii. Evaluated utilizing specific and measurable scoring tools
      iv. Immediate debriefing (video and facilitated)
      v. Scenario specific to core objectives for a particular module
         1. Mid- and post- to evaluate learning and progression of decision making abilities
   b. Equipment, skill and context-specific competencies (eg., airway mgmt., ventilators, infusion pumps, drip calculations, cardiac assist devices, etc…)

Evaluation for Success:

At Interview: (rationale is to assess candidate's current level of critical thinking)

1. Written evaluation tool in order to assess background and critical thinking skills

eLearning Modules: (rationale is to assess baseline prior to module and retention of material associated with a particular module)

1. Pre- and post-testing for each module

Clinical Practice: (rationale is to assess the intern's ability to translate didactic material to clinical practice)
1. HPS
   a. Mid-module
   b. Validation for module completion
   c. Validation for program completion

Periodic and Final Evaluation:

1. 3,6 and 9 month assessments (as applicable)
   a. Progress (no surprises)
   b. Areas for improvement
   c. Progress to next phase of training or release from program?
2. Final Cumulative Evaluation to determine preparation for practice as a Survival Flight Nurse

Monitoring and Tracking Responsibilities:

Flight Nurse Candidate:

- Self-directed and precepted learning. Individual will be an active participant in his/her training.
- Daily Goals and Objectives will be tracked at beginning and end of each shift.
- Responsible for module completion. Education and evaluation will be tracked throughout
- Attendance at all required and scheduled educational and clinical opportunities.
- Debriefing for all patient care scenarios

Survival Flight Nurse Preceptor:

- Evaluation of precepted performance
- Mentorship and report to Survival Flight ENC, performance and progress
- Assist in the development of individualized and / or remediation training plans should they become necessary.

Survival Flight Educational Nurse Coordinator (ENC):

- Scheduling of training activities
- Provide an avenue for tracking completion of the ongoing education requirements within MLearning
- Track module completion and completion of HPS scenarios / evaluation
- Training and onboarding of qualified preceptors
- Frequent meetings to discuss progress, challenges and plans for success
- Facilitate periodic and final progress evaluations
- Follow up with any flight nurse trainee becoming delinquent in any of the aforementioned clinical education requirements, and develop a plan with the flight nurse for remediation if necessary.
- Report progress of all initial education requirements to the Clinical Director of Critical Care Transport and Survival Flight Medical Director

Director, Critical Care Transport:

- Assist in monitoring of the aforementioned education requirements
- Initiate disciplinary proceedings, should they become necessary, for an individual flight nurse failing to provide requisite mentorship or any candidate becoming delinquent in education requirements. This will be enacted per existing UMHS disciplinary policies and contract language of the UMPNC.

Survival Flight Medical Director:

- Approval of all scenarios
- Evaluation of validation scenarios
- Additional examination / evaluation
- Monitoring as previously mentioned

Upon Successful Completion:

- Entrance into Professional Framework as a Flight Nurse at the *Competent* level
- Minimum 2-year commitment to Survival Flight

Failure to Complete Training (or any of its core components):

- Transfer to a unit that the candidate is qualified to work in within the UMPNC parameters

Program Layout:

There are 10 modules that the candidate must successfully complete as part of initial training. These modules are housed in the Canvas Learning Management System (LMS). Each module contains didactic material, relevant competencies and critical behaviors that are required for successful module completion. The didactic material has been written to follow the core objectives for initial training. As the objectives are revised, so is the didactic material contained in Canvas.

The candidate begins each module by reviewing the Critical Behaviors Checklist. This is a checklist of every requirement that must be completed in order to successfully complete the module. These include clinical time in the ICU, ED, Ambulance or procedural area, associated equipment and procedural competencies, computer / web-based eLearning exercises and validation scenarios (2 per module). The candidate fills out the checklist and each item is marked as complete when accompanying paperwork is turned in to the Clinical Educator (ENC). Examples of this paperwork include competencies, clinical objectives on a patient care unit and certificates of completion for various eLearning exercises. An example of a Critical Behaviors Checklist is below.

University of Michigan Survival Flight Nurse Initial Training

Critical Behaviors Checklist: Emergency and Trauma Care

Purpose: Management of the Critically Ill and Injured patients encompasses a large proportion of the Survival Flight Transport Volume. It is therefore imperative that the flight nurse be able to effectively manage this population, regardless of diagnosis or physiologic status. In addition to understanding clinical presentation and management priorities, having a sound foundation in the transport process, and how it affects the critically ill and injured patient is of equal importance. While certainly not all inclusive, this module is designed to provide that foundation.

Instructions: Initial and date in the appropriate box upon completion of each individual behavior, competency or individual educational unit.

Educational Category	Required Activity	Location	Date of Completion	Intern Initials
ED Shadow	ED 1	Individual Objective Set		
ED Shadow	ED 2	Individual Objective Set		
ED Shadow	ED 3	Individual Objective Set		
CES Shadow	CES 1	Individual Objective Set		
CES Shadow	CES 2	Individual Objective Set		
EMS Shadow	EMS 1	Individual Objective Set		
EMS Shadow	EMS 2	Individual Objective Set		
MLearning Module	NURS-10069 Blood Administration	Online Module		
MLearning Module	ANES 28048 Moderate Sedation for Non-Intubated Patients	Online Module		
MLearning Module	ANES 20023 Deep Sedation for Non-Intubated Patients	Online Module		
MLearning Module	NURS-62022 Stroke Education for In-Patient Nursing	Online Module		
MLearning Module	NURS-52391 tPA Administration	Online Module		
Competency	Chest Tube Placement	Canvas Site		
Competency	Needle Decompression	Canvas Site		
Competency	Femoral Access (Venous and Arterial)	Canvas Site		
Competency	Intraosseous Line Placement	Canvas Site		
Competency	Radial Arterial Line Placement	Canvas Site		
Competency	CAT Tourniquet Placement	Canvas Site		
Competency	Pelvic Binder Placement	Canvas Site		
Presentation	"Teach us Something"	Grand Rounds		
Cumulative Knowledge Exam	Comprehensive "Written" Exam (≥ 80% to Pass)	Canvas Trauma and Emergency Care Module		
Clinical Scenario	Validation Scenario #1 (SIGNED SCENARIO SHEETS)	Clinical Setting (MEDICAL DIRECTOR REVIEW)		
Clinical Scenario	Validation Scenario #2 (SIGNED SCENARIO SHEETS)	Clinical Setting (MEDICAL DIRECTOR REVIEW)		

Each shift, the candidate will fill out a Daily Goals and Objectives form in order to create a plan for the day. This plan is mutually created by the candidate and his / her preceptor. At the end of the shift, the candidate and preceptor review what was accomplished, collaborate on improvement needs (for both the preceptor and the candidate) and discuss areas of focus for subsequent shifts. See below to review this form.

Survival Flight Daily Goals and Accomplishments (To Be Completed EVERY Shift)

Date:

Goals for the Shift: (Identified learning needs, areas of module to be covered, competencies, etc...)
1.
2.
3.

End of Shift Report (i.e., what you accomplished today with respect to your goals)

Perceived learning and / or clinical needs that have surfaced from this shift

Preceptor for this shift: _____

Printed Name and Signature

The culmination of module completion is with the successful navigation of 2 validation scenarios. Each scenario is vetted and approved by the Survival Flight Medical Director

Duration of Initial Training and Completion of the 10 Training Modules:

Depending on the candidate's experience, initial training will last from 6 to 12 months. The training program will be individual based upon a "gap analysis" of current clinical acumen to Survival Flight's

core objectives. Based upon this, the candidate must either complete all 10 modules in their entirety or be given the opportunity to "test out" of certain portions of modules through successful completion of the validation scenarios. Every candidate will successfully complete all competencies and the following modules in their entirety, regardless of previous experience:

- Safety and Transport Operations
- Airway Management
- Ventilator Management
- Imaging and Diagnostics
- Transition to Practice (TTP)

Canvas LMS Layout:

The Canvas Learning Management System (LMS) is designed to provide the architecture for initial training. It is a central hub for all the requirements that the candidate must complete in order to be successful during this period. There are 10 modules required for the completion of initial training. Since each individual's training program is specific for them and structured, the candidate has access to only ONE (1) uncompleted module at a time.

Syllabus: The page that the candidate lands on upon logging on is the *Syllabus* or *Home Page*. It provides the introduction to Survival Flight, directions on site navigation and a springboard to the initial training module. After the candidate becomes acclimated to the site, this page will simply serve as the launch page to access a particular module (red circle on the left) or the page where the "Frequently Used Forms" are housed (red circle on the right). The big yellow box in the middle directs practicing flight nurses to their recurrent education requirements and tracking.

Frequently Used Forms: When the Blue Box in the upper right corner of the Syllabus is clicked, it directs the candidate to the forms that they will be required to complete on a daily to weekly basis. The candidate receives several days of training in Canvas to ensure that he / she can fluently navigate the site. Preceptors also receive extensive training in order to assist the candidate as well.

Module Navigation Page: When the candidate clicks on the *Module* link (at the left margin of any page), he / she is directed to the Module Navigation Page, allowing access to any modules that the individual currently has access to. Clicking on any of the module tabs will expand the menu of pages / table of contents for each separate module, allowing access to a particular page within that module. Prerequisites for each module are also listed.

Content: The content within the Survival Flight Education Canvas site comprises of the majority of information housed. Each individual module has an introductory page to lay the groundwork and expectations for the module. Content consists of a variety of print, videos, links to eBooks and manuals, and interactive eLearning exercises. All of this material is simply used as reference and the content is consistent with the Survival Flight Core Clinical Objectives. Any required piece to this content is annotated on the Critical Behaviors Checklist on the module's *Introduction* page.

Introduction to Airway Management

Rationale

Airway management is a cornerstone therapy for Survival Flight nurses. The importance of having exceptional skills, a good knowledge base, and excellent problem solving abilities cannot be overemphasized. The flight nurse, regardless of experience, needs to have a firm foundation in the area of basic and advanced airway management and continually improve upon his /her established skill set. Appropriate airway management is one of the main responsibilities of the medical transport team. This module is designed to lay a foundation.

The purpose of this 4-week program is to train a proficient, well-rounded, intelligent clinician in the area of emergency airway management. The flight nurse is expected to competently manage the patient's airway, regardless of pathology or patient age and size. This module is the initial process for that end goal.

Methods

Instruction for this module will consist of a hybrid approach including information found in these pages, interactive eLearning and assigned reading from the *Manual of Emergency Airway Management* (5th ed., Walls, 2018) that you were issued when you started training at Survival Flight. In addition to this module, your airway training will consist of time in the UH and Mott OR's with Anesthesia Providers. In order to schedule for this time, you must first complete this module.

Airway management at Survival Flight is a combination of psychomotor mastery, decision making and problem solving. As you work through the sections of this module, the intent and instructional goals are geared towards all 3 of the above mentioned facets. Understanding the rationale for doing something, the ability to do it with proficiency and deciding when it is the right time to do something are equally important when it comes to managing the airway of a critically ill / injured person, regardless of age or body habitus. As you complete each component of the *Critical Behaviors Checklist*, keep this in mind and think about how each skill and topic can become part of your overall emergency airway action plan. For Survival Flight, this plan has been formulated into our Airway Management Clinical Guideline (A-1.1 and A-1.2 BELOW). Review these # and come back to them often as you learn about, and begin to understand the individual components of this overall plan. As part of your professional development, you will be asked to contribute in their revision (you might as well start thinking about this now!).
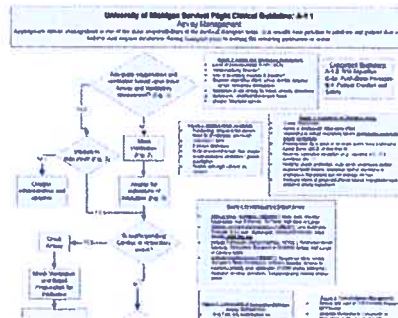
SURVIVAL FLIGHT A-1.1 (Airway Management) (CLICK ON ICON TO DOWNLOAD .pdf)

INTRODUCTION PAGE: LINKS TO APPLICABLE SURVIVAL FLIGHT CLINICAL GUIDELINES (i.e., PROTOCOLS)

Basic Periodynamic management. These objectives are referenced and revised on a recurrent basis and represent the body of knowledge for Survival Flight as it pertains to this subject. You should reference and review them often, and adjust your performance to them.

Keeping Track of Progress

For EACH and every airway procedure that you perform (live patient in the OR, on transport, clinical scenario or manikin training), you will be asked to track your progress utilizing this AIRWAY PROCEDURE PROGRESS TRACKING ☜ sheet. You are encouraged to keep this up to date because your progression to the next phases of your training depend upon it.

CRITICAL BEHAVIORS CHECKLIST

Click on the icon below to download a hard copy to print and fill out (hard copy includes core objectives for the module) OR annotate in the eFrom ☜A underneath the icon! As you fill out completion dates, remember to have accompanying documentation (e.g. competencies signed by your preceptor, record of eLearning course or quiz completion, etc...) to turn in or show record of. "Hard Copies" of required documents are below the Critical Behaviors Checklist.

Educational Category	Required Activity	Location	Date of Completion
On-Line Unit	Anatomy	Canvas Airway Module	
On-Line Unit	Decision Making and the Difficult Airway	Canvas Airway Module	
On-Line Unit	BVM and Laryngoscopy	Canvas Airway Module	
On-Line Unit	Video Laryngoscopy and "Video Enhanced" Direct Laryngoscopy	Canvas Airway Module	
On-line Unit	Extraglottic Devices (EGD)	Canvas Airway Module	
On-Line Unit	"Can't Intubate / Can't Oxygenate" (CI / CO)	Canvas Airway Module	
On-line Unit	Rapid Sequence Intubation (RSI)	Canvas Airway Module	
Competency	Direct Laryngoscopy	Download in Canvas	
Competency	GVL	Download in Canvas	
Competency	EGD	Download in Canvas	
Competency	RSI	Download in Canvas	
Competency	Needle Cricothyrotomy / TTJV	Download in Canvas	
Competency	Surgical Airway	Download in Canvas	
Competency	Mechanical Ventilation Basics	Download in Canvas	
Presentation	"Teach us Something"	Grand Rounds	
FINAL Validation	Comprehensive Exam (90% or better required to pass)	Canvas	
FINAL Validation	Airway Validation Scenario #1	Preceptor Scored	
FINAL Validation	Airway Validation Scenario #2	Medical Director Scored	

CLICK ON THE IMAGE TO DOWNLOAD THIS DOCUMENT

DOWNLOAD REQUIRED COMPETENCIES HERE

1. Direct Laryngoscopy (DL) Competency ☐
2. STORZ C-MAC IM-file "GVL" Competency ☐
3. ...

BOTTOM of INTRODUCTION PAGE: CRITICAL BEHAVIORS and COMPETENCY LINKS

INTRODUCTION TO an INTERACTIVE eLearning Exercise (ALL material is SCORM 1.2 Compliant and uploaded in HTML5)

<u>Cumulative Exam for the Module</u>: Each module has a cumulative knowledge exam consisting of 10-20 questions. Questions are written in the same format as the CFRN exam and based upon applicable Survival Flight Core Objectives.

Evaluation Throughout Training

- Daily: through competency completion, daily goals and objectives discussion at the end of the shift, and clinical performance feedback using the following rubric-based tool:

Survival Flight Clinical Performance Feedback Tool
To be filled out by preceptor for EVERY patient encounter (actual or simulated)

INSTRUCTIONS: Circle or highlight score in each individual category based on orientee / intern performance. A score of 1 or 4 will REQUIRE additional comment (space provided below rubric).

NAME: _____   DATE: _____   TRANSPORT # (if Applicable): _____

Category	1 Below Expectations	2 Meets threshold of MINIMUM Expectations	3 Meets Expectations of Competent Level Flight Nurse	4 Exceeds Competent Level Flight Nurse Expectations
Data Collection and Interpretation -Pre-arrival information (dispatch, patient report) -Labs, Imaging and Other -Diagnostics -Pertinent PMH	Collects little to no data. Unable to interpret data that was provided. Has little to no understanding how data should be incorporated into treatment plan	Able to obtain some data with prompting. Shows some challenges in interpretation. Understands how data incorporated into treatment plan with additional discussion	Collects enough data without prompts to assist in formulating an acceptable management plan. Gaps filled with assistance of partner / preceptor	Independently collects data without prompting. Able to formulate plan for treatment and transport ahead of patient contact and makes appropriate adjustments with patient contact in collaboration with partner
Assessment Skills -Initial Assessment -Secondary Assessment -Ongoing Assessment post-intervention	Significant and obvious deficiencies in trainee's assessment skills.	Assessment Skills consistent with preceptor's expectations at this level of orientee's / intern's training	Shows ability to independently provide appropriate assessment in all facets of transport.	Thorough and appropriate initial and ongoing assessment with no prompting from preceptor
Problem Solving -Formulation of Differentials -Working Primary Diagnosis Identified -Troubleshooting	Lacks understanding of how conditions change during transport process. Unable to articulate why decisions are being made. Managing patient based on wrong working diagnosis.	Verbalizes some understanding of how conditions change during transport and with preceptor can troubleshoot potential pitfalls and clinical needs	Displays clinical thinking and problem-solving skills that positively contribute to the overall management plan (may require limited assistance from preceptor)	Orientee's / trainee's autonomous problem-solving and troubleshooting skills ensure safe transport from a care and logistics perspective.
Patient Management -Formulation of Treatment Plan -Prioritization of Care -Timely Implement Appropriate Care -Proficiently Performs Psychomotor Tasks -Avoids Harmful Actions	Struggles with prioritizing care. Challenges with skills, procedures and tasks at a minimum level of competence. Independent action would possibly result in patient harm	Competently implements care, establishes priorities and performs psychomotor tasks with close coaching.	Understands priorities, makes best use of bedside time and safely performs procedures / tasks with supervision	With all available information, efficiently develops and implements an appropriate management plan. Handles complex medical equipment and performs procedures with little or no assistance
Use of Available Resources -Resources Identified / Utilized to Maximize Outcomes (equipment, resources, personnel, etc.)	Unable to identify available resources or why such resources might be important	Understands what resources are available and their importance when prompted to ascertain	Resources identified and utilized with preceptor assistance	"Big Picture" approach allows trainee to independently identify and appropriately utilize any logistical / clinical resource available
Professional Behavior -Appearance and Demeanor -Appropriate Communication with patients, family and other healthcare providers	Neither appearance nor behavior emulate standards established by Survival Flight or Michigan Medicine.	Appearance meets minimum standards. Communication strategies adequate but require interjection from preceptor.	Appearance meets current Survival Flight / Michigan Medicine standards. Therapeutic communication strategies utilized, mirroring preceptor actions.	Appearance meets and/or exceeds current Survival Flight / Michigan Medicine standards. Autonomous use of therapeutic communication strategies consistent in all phases of transport.
Comprehension of Pathophysiology -Application to Decision-Making & Treatment Plan	Shows no understanding of disease process, importance or basis for management strategies	Trainee appreciates significance of patient disease process following coaching / discussion	Shows understanding of patient disease process following discussion with preceptor	Advanced knowledge of patient disease process clear and incorporated in management plan

ADDITIONAL COMMENTS:

- Progress Evaluations: The candidate will have two (2) progress evaluations during his / her initial training. This will be in the form of equipment / competency demonstration, aviation safety and knowledge in one of the transport vehicles, and an evaluative HPS scenario. Potential topics will be anything that the candidate has covered during the orientation period in question. Performance on this evaluation will determine if the candidate will progress to the next phase of orientation, be required to enter into a remediation program prior to advancing or be dismissed from the initial training program.
- Final Evaluation: The cumulative summative evaluation for the flight nurse in training. It will consist of one to two (1-2) HPS scenarios evaluated by senior preceptors, the ENC, Clinical Director and Survival Flight Medical Director. Evaluation includes clinical performance during the scenario, communication with partner, other medical staff and confederates, professionalism, decision making and knowledge of the transport environment and logistics. The scenario ends with the candidate completing a medical record in Survival Flight's documentation program. Performance on this evaluation will determine if the candidate will progress to the Competent Flight Nurse level, be required to enter into a remediation program prior to advancing or be dismissed from the initial training program.
- Trainee's Evaluation of His / Her Experience: The candidate is not the only individual being evaluated. Following module completion, the candidate will formally evaluate the module just completed in order to allow editing and revision to better meet learning needs. Additionally, the candidate will meet with the ENC monthly to evaluate his / her clinical experience for that time period and the results are shared at the monthly preceptor meeting. The intent of this is to foster transparency from both the preceptor and trainee.

Communication:

- Preceptors: There is a preceptor communication tool to allow for communication between preceptors on differing shifts for the purpose of ensuring continuity of instruction and identification of acute needs. Preceptors meet monthly to discuss candidate progress, needs and planning. When there is no flight nurse in training, the monthly preceptor meeting is utilized for preceptor growth and development. The clinical director, or a representative is present for these meetings.

The Final Piece of Initial Training:

The transition from *flight nurse in training* to *competent flight nurse* is purposefully blurred in order to allow for the individual to become fully acclimated to the team. Prior to being considered for advancement from initial training, the candidate must complete AT MINIMUM, five (5) transports as a fully-functioning crew member (i.e., NOT as a third person) with a senior preceptor. This and successful completion of the final evaluation will complete this transition.

The final module in Canvas that is to be completed is the Transition to Practice (TTP) module. It is designed to guide the new competent flight nurse in expectations related to daily operations, recurrent education and advancement of clinical practice, the nurse's place in the unit with respect to projects and

contribution, and preparation for the CFRN exam (an expectation within the first year of competent practice). A final cumulative exam of 50 questions is provided to assess cumulative knowledge and in the spirit of preparing for the CFRN exam. Mentorship continues for at least the first year after initial training in order to assist the newly competent flight nurse in progression of his / her clinical practice.

HELIPAD PAIP DRILL

After-Action Report/Improvement Plan

February 20, 2019

Regional West Medical Center

EXERCISE MATERIAL ONLY

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EXERCISE OVERVIEW

Exercise Name	Helipad Relocation
Exercise Dates **Scope**	**February 20, 2019** This exercise is planned for 20 minutes at Regional West Medical Center to test Air Link's response to a missed check-in after relocation to helipad
Mission Area(s)	Response
Core Capabilities	Response – Exercise Response – Operational Communications
Objectives	Test response of dispatch to a missing aircraft during relocation to the RWMC helipad. Test response of security to missing aircraft the RWMC helipad
Threat or Hazard **Scenario**	Missing aircraft Air Link medical crew to advise communications of relocation to RWMC helipad for training. Air Link crew to lift and relocate to airport and cease communication to dispatch at required check-in at helipad. Dispatch will follow appropriate PAIP plan for missed check-in, Transfer Center Supervisor will be in transfer center to monitor PAIP and ensure that it does escalate past a drill.
Sponsor **Participating Organizations**	Air Link Air Link Med-Trans Regional West Medical Center
Point of Contact	Ryan W. Gochoel Director, Air Link and Transfer Center Regional West Medical Center 4021 Avenue B Scottsbluff, NE 69361 (308) ▮▮▮▮

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Homeland Security Exercise and Evaluation Program (HSEEP)

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ANALYSIS OF CORE CAPABILITIES

Aligning exercise objectives and core capabilities provides a consistent taxonomy for evaluation that transcends individual exercises to support preparedness reporting and trend analysis. Table 1 includes the exercise objectives, aligned core capabilities, and performance ratings for each core capability as observed during the exercise and determined by the evaluation team.

Objective	Core Capability	Performed without Challenges (P)	Performed with Some Challenges (S)	Performed with Major Challenges (M)	Unable to be Performed (U)
Test response to a missed check-in of SOD at the RWMC ED helipad.	Response – Organizational Communication		S		
Test PAIP Plan	Response- Exercise				U
Ratings Definitions:					

Ratings Definitions:
- Performed without Challenges (P): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws.
- Performed with Some Challenges (S): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws. However, opportunities to enhance effectiveness and/or efficiency were identified.
- Performed with Major Challenges (M): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s), but some or all of the following were observed: demonstrated performance had a negative impact on the performance of other activities; contributed to additional health and/or safety risks for the public or for emergency workers; and/or was not conducted in accordance with applicable plans, policies, procedures, regulations, and laws.
- Unable to be Performed (U): The targets and critical tasks associated with the core capability were not performed in a manner that achieved the objective(s). * - Not tested.

Table 1. Summary of Core Capability Performance

The following sections provide an overview of the performance related to each exercise objective and associated core capability, highlighting strengths and areas for improvement.

Objective 1. Test response to a fire on the RWMC helipad.

The strengths and areas for improvement for each core capability aligned to this objective are described in this section.

Core Capability 1. Response – Organizational Communication

Strengths

The partial capability level can be attributed to the following strengths:

Strength 1: The flight follower followed protocol by watching the flight path of the aircraft and checked in at a 15 minute position check

Strength 2: The training event was passed along from night shift to day

Strength 3: The flight follower contacted the pilot to confirm the location of the training

Areas for Improvement

The following areas require improvement to achieve the full capability level:

Area for Improvement 1: The flight follower did not follow intuition to check with pilot about lack of information prior to flight

Analysis: There is a history of lack of information to dispatch when doing training flights

Recommendation: Need a confirmation of information regarding the details of all training events prior to lift off

Point of Contact: Colin McGurk, Ryan W. Gochoel, Haelee Brown.

Anticipated Completion Date: 3/14/219

Area for Improvement 2: Flight follower hesitated to communicate with aircraft prior to 15 minute interval

Analysis: Lack of communication between flight staff and dispatch has created confusion as to when it is appropriate to contact the pilot

Recommendation: Education from flight crew on proper times to communicate with pilot

Point of Contact: Colin McGurk, Haelee Brown

Anticipated Completion Date: 3/14/2019

Area for Improvement 3: Security did not respond to lift off or landing

Analysis: Perception from security team that they do not respond to training events for Air Link

Recommendation: Supervisor education on the process for responding to all lift of and landings for aircraft at hospital helipads

Point of Contact: Christopher Alfaro, Ryan W. Gochoel

Anticipated Completion Date: 3/14/2019

Core Capability 2. Response -- Exercise

Strengths

The unable to perform capability level can be attributed to the following strengths:

Strength 1: While the drill did not actively test the PAIP in real time, it is the catalyst for improved communication between the flight crew and dispatch

Strength 2: The debrief of the drill identified areas of complacency in the details surrounding training and drill exercises

Strength 3: The post drill table top PAIP highlighted what events needed to occur had the drill gone according to plan

Areas for Improvement

Area for Improvement 1: Due to a lack of information at lift off and confusion in dispatch as to the training, the PAIP was not drilled in real time but after the completion of the drill as a tabletop exercise

Analysis: The PIC was intentionally vague in giving information on the relocation. Due to a previous history of lack of information regarding training flights this caused the flight follower to question whether they were landing on the ED helipad or doing training in the air.

Recommendation: Another PAIP drill will need to be planned and executed to properly drill the PAIP in real time

Point of Contact: Colin McGurk, Ryan W. Gochoel, Tracy Meyer, TJ Krajewski, Haelee Brown

Anticipated Completion Date: April 2019

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This IP has been developed specifically for Regional West Medical Center as a result of this PAIP drill. While the drill did not test the PAIP as planned, it created the avenue to discuss complacency in the flight following process and is the catalyst to improving communication with dispatch and the Flight crew. Another PAIP drill will be planned at future date.

Core Capability	Issue/Area for Improvement	Corrective Action	Capability Element[1]	Organization POC	Start Date	Anticipated Completion Date	Actual Completion Date
Response – Communications	Flight follower information gathering	Better communication of training plan with flight crew and dispatch prior to lift off	Organization	Ryan W. Gochoel	2/20/219	3/14/2019	
Response – Communications	Flight follower contacting pilot sooner	Improved education with flight crew and dispatch on when to communicate with the pilot	Training	Ryan W. Gochoel	2/20/2019	3/14/2019	
Response – Communications	Security did not respond to lift off or landing of aircraft	Education to security officers about response to lifting and landing of any aircraft on a RWHS helipad	Training	Christopher Alfaro	2/20/2019	3/14/2019	
Response – Exercise	PAIP drill not performed in real time	Another PAIP drill will need to be performed	Exercise	Ryan W. Gochoel	2/20/209	4/2019	

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[1] Capability Elements are: Planning, Organization, Equipment, Training, or Exercise.

Appendix A: Improvement Plan

A-1

Regional West Medical Center

APPENDIX B: EXERCISE PARTICIPANTS

Participating Organizations
Regional West Medical Center
Air Link
Regional West Security

ON CALL
INTERNATIONAL

Risk Assessment Tool

Purpose: To assess and track travel risk while integrating physical necessity for rest for Rescue Nurse missions

Scope: Transportation Assistance Coordinators (TAC's) for all Rescue Nurse commercial patient transports.

Details:

o   Risk Assessment Software is integrated into On Call International's Case Management/Travel Management Systems and disseminated to individual nurses via travel tracking and our security team. Specific notifications originate through "Crosscheck" for safety and security specific concerns and "World Travel Alerts" to notify travelers of changes to flight schedules, delays and cancelations.
   ï   This tool will evaluate
      o   Fatigue risks based upon factors which could result in stress and increase risk
         o   Clinical risks (acuity of patient / traveling companion's risk)
            o   Travel Time – to reach the Pt and with the Ot
            o   Layovers- in route to the Pt and with the Pt
         o   Travel Advisories – international, political, health and safety
            o   Cultural Risks
               ▪   Language
               ▪   Tradition & Customs
            o   Political Risks
               ▪   Safety to self or others
            o   Weather Risks –potential, active or recent
            o   Natural Disaster Risks – potential, active or recent

Patient Location:

Patient Destination:

Rescue Nurse Assigned:

Severity	Frequent	Probable	Occasional	Remote	Improbable
I-Catastrophic	20	19	18	14	13
II-Critical	17	16	11	9	7
III-Marginal	15	10	6	5	3
IV-Neglible	12	8	4	2	1

Based on a scale from 0-5, 5 being the highest risk.

SCORE: _ _ _ _ _ _ _ _ _ _

Duty Period / Rest Period Table

DUTY PERIOD	REQUIRED REST PERIOD	SUBSEQUENT REST PERIOD
1 TO 14 HOURS	9	RRT +2
14 TO 17 HOURS	18	RRT +3
17 TO 20 HOURS	20	RRT +4
20 HOURS +	24	RRT +6

Are there any travel advisories?
http://travel.state.gov/content/passports/english/alertswarnings.html
Are there any recent CDC advisories in this area?
http://www.cdc.gov
Have you advised and received any specific advisories from our in-house security team regarding the area?
Have they made any recommendations which need to be followed?
Has the Security team assessment been sent to the Rescue Nurse assigned to the case?

Do the duty hours meet required rest period? (Chart above)
Does the RN Medical Escort assigned feel comfortable going into this area?

Final Score: _____

MERCY FLIGHT CENTRAL, INC.
POLICIES AND PROCEDURES

PROCEDURE:	Clinical Operations	POLICY
TITLE:	Clinical Advancement	CO-6

Purpose:

To outline the procedure for a Flight Nurse or Flight Paramedic to move through the clinical advancement system.

Procedure:

- All decisions to change levels will be approved by Chief Medical Director (CMD) with input from Clinical Leadership Team (CLT).
- The advancement of clinical levels will be the responsibility of the AMP.
- Process for advancement of clinical level:
    - Gather documentation (from emsCharts) that shows minimum criteria have been met:
        - See attached chart for minimum requirements and goals for advancement
        - If AMP is deficient in (1) area the CLT may arrange for simulation of that skill
    - Send letter to Clinical Supervisor/Program Director summarizing interest and justification for proceeding to the next clinical level
    - Clinical Leadership Team (including CMD) will discuss overall performance
    - Prior to final decision AMP will meet with CMD.
    - CMD will make final determination
- Demotion of a level will be at the discretion of the CMD with input from the CLT.
- Any air-medical personnel is deemed a Level 1 upon completion of Phase 2 of Orientation

Minimum to advance	Total Flights	RSI's	Pt encounter with Ventilator Mgmt	Pt encounter with Vasopressor Mgmt	Cardiac Team Transports	Pediatric Team Transports
Level 2	30	2	5	5	1 (ideal)	1 (ideal)
Level 3	80	4	10	10	1	1 (ideal)
Goals - Level 2	Up to date with all training requirements					
	Demonstration of good work ethic (including being productive with downtime)					
Goals-Level 3	All goals stated for level 2					
	Competence in front seat to include:					
	o Assisting pilot with aviation needs and emergency procedures, etc.					
	o Operating the GPS and aircraft radios					

APPROVED BY:	*[signature]*	EFFECTIVE DATE:	03/28/17
TITLE:	Program Director	LAST REVIEW:	02/01/19

New England Life Flight, Inc
d/b/a Boston MedFlight
Practice, Education, and Performance
Boston MedFlight

Never Events

Boston MedFlight personnel will never

1. transport a patient with an undetected esophageal intubation

   *See BMF Airway management protocol, BMF mechanical ventilation protocol, BMF airway documentation standard of care.

2. operate in a transport vehicle without Communications having clear and immediate knowledge of the personnel onboard the vehicle.

   *See BMF Comms Manual, §§ 3.8, 4.3

3. transport a patient to the wrong destination.

   *See BMF Comms Manual

4. arrive at the wrong sending location for either a scene response or interfacility transport.

   *See BMF Comms Manual

5. be on duty while under the influence of an intoxicant.

   *See BMF Code of Conduct

6. deliver a baby during the transport leg of a patient encounter.

   *See BMF Obstetrical protocols

7. knowingly misrepresent information in a BMF document or medical record, whether by falsification, obfuscation, or omission of information.

   *See BMF Code of Conduct, BMF Standard of Care -- Documentation

8. cause patient death or disability associated with a medication error (e.g., errors involving the wrong drug, wrong dose, wrong patient, wrong time, wrong rate, wrong preparation, or wrong route of administration).

   *See BMF Safe Medication Practices policy, BMF Medication Unusual Occurrence protocol

9. cause patient death or disability associated with a hemolytic reaction due to the administration of ABO/HLA-incompatible blood or blood products.

*See BMF Blood products administration protocol

10. drop or have a patient fall during BMF care.

11. cause patient death or disability associated with the use of contaminated drugs, devices, or biologics.

    *See BMF Safe Medication Practices policy, BMF Medication Unusual Occurrence protocol

12. cause patient death or serious disability associated with hypoglycemia, the onset of which occurs while the patient is being cared for by BMF.

    *See BMF metabolic/endocrine protocol

The occurrence of a Never Event is reported as described in the Sentinel Event chapter and is followed by a Root Cause Analysis. The Service Line Manager and Chief Quality Officer are accountable.

3/2019

PDSA Worksheet

Dept: Flight For Life Colorado

ABG/VBGs and Ventilation Management

Aim: Flight For Life Colorado medical crewmembers will make appropriate ventilation changes in response to ABGs/VBGs that are obtained in transport.

Describe your goals you want to accomplish:	Person responsible	When to be done	Where to be done
1. When transporting acutely* intubated, ventilated patients, FFL medical crewmembers will ensure an ABG/VBG has been drawn on the current ventilator settings and record these results in the patient chart.	Medical crewmembers	Upon receiving patient and/or during transport	At sending facility or during transport
2. If no ABG/VBGs have been drawn on current ventilator settings, a FFL medical crewmember will draw a set of gases to assess ventilation.			
3. FFL medical crewmembers will make appropriate ventilator changes based on ABG/VBGs obtained.			
4. All ventilator changes will be accurately documented in the patient's chart with a justification of or why the ventilator change was made.			
5. Repeat ABG/VBG will be obtained after significant ventilator changes or 30 minutes after change made.			
*Acutely: • Intubated in the last 4 hours • Intubated due to loss of airway • Intubated due to inadequate ventilation • Intubated due to hypoxia/hypoventilation • Intubated for acute critical illness/injury			

Plan

We plan to:	Person responsible	When to be done	Where to be done
What is the objective of this improvement cycle? 1. To ensure FFL medical crews are delivering appropriate ventilation to patients who are intubated. 2. To ensure appropriate ventilation management strategies are being applied during transport of ventilated patients during transport.	All RNs and Paramedics	. On transport	

PDSA Worksheet

Dept: Flight For Life Colorado

		David Kearns, Data Outcomes	Monthly
		Teresa Elder, Chief Flight Nurse	Monthly
		Teresa Elder, Chief Flight Nurse	Quarterly

Questions (what are the questions that we want this cycle to answer):

1. Do flight crewmembers document ABG/VBG results on all intubated patients?
2. Do flight crewmembers make appropriate ventilator adjustments in relation to ABG/VBG results?
3. Do the patient care records of intubated patients reflect ventilation strategy knowledge by the FFL crewmembers.

Predictions (what do we expect to happen):

1. FFL crewmembers will ask if an ABG/VBGs was obtained on intubated patients prior to FFL arrival
2. ABG/VBGs will be obtained at the sending facility or in transport if to time constraints did not allow drawing an ABG/VBG prior to transport.
3. FFL crewmembers will make appropriate ventilator changes, if needed, based on ABG/VBG results
4. Supporting documentation of reason for ventilator change will be present.
5. On longer transports, ABG/VBG will be repeated as necessary in relation to ventilator changes.

What is to be changed:

1. Ensuring ABG/VBG obtained to ensure appropriate ventilation
2. Ventilator changes made based on ABG/VBG result versus EtCO2 alone.
3. Documentation of reasoning for ventilator change

Collection of data will be done as follows:

1. Monthly report from emsCharts on all patients that were intubated
2. All intubated patient transports will be reviewed for appropriate ventilator settings, ventilator changes and documentation of ABG/VBG results by Clinical Program Chief Flight Nurse
3. Data will be reviewed by the Clinical Leadership Team every quarter.

PDSA Worksheet

Dept: Flight For Life Colorado

Predict what will happen when the test is carried out:

1. Not all intubated patients will have had an ABG/VBG obtained prior to our arrival by the sending facility.
2. FFL crewmembers will not always have the time to obtain an ABG/VBG on time critical, short transports.
3. When FFL crewmembers have access to a prior ABG/VBG or have time to obtain an ABG/VBG, appropriate ventilator settings will be delivered to the patient
4. Documentation will support that appropriate ventilator changes were made in relation to ABG/VBGs that were obtained.

State the 'Measures' to determine if prediction succeeds:

1. 75% of intubated patients will have an ABG/VBG documented that was drawn prior to the arrival of the FFL crew.
2. 80% of the intubated patients transported by FFL will have a current ABG/VBG drawn and documented in their chart
3. 100% of the ventilator changes that are made by the FFL crew will be appropriate based on the patient's ABG/VBG results

_Do_   Implement actions described in the Plan.

Describe what happened when you ran the test.

- Crew members were able to ensure an ABG/VBG had been drawn on acutely intubated patients and if not, drew an ABG/VBG, >75% of the time.
- Discovered that 1 – 2 charts per month revealed that crews did not document ventilator changes being made when abnormal ABGs/VBGs were obtained.
- Discovered that <75% of the time crewmembers failed to repeat an ABG/VBG after significant ventilator changes were made.

What was observed? Record observations:
- **Refer to Monthly Summary Report**

Document the revisions or adjustments made to the plan.
- No revisions were made.
- Addressed lack of compliance with staff education

PDSA Worksheet   Dept: Flight For Life Colorado

Study (Describe the measured results and how they compared to the predictions. Analyze the data.)

What did you learn? List the new knowledge gained by this cycle:

- Discovered that most acutely intubated patients did have ABGs/VBGs drawn either by the referring facility or the flight crew were able to draw them.
- Discovered that crew members fail to always accurately document vent changes that are made during transport in relationship to abnormal ABG/VBG results.
- Discovered that crew members forget to repeat an ABG/VBG when vent changes are made.

Were the measured goals met/not met?

1. Obtaining an ABG/VBG on all acutely intubated patients = Goal **met** 9 months in a row
2. Appropriate ventilator changes made based on ABG/VBG = Goal **not met** 7 months out of 9
3. Repeat ABGs/VBGs done 30 minutes after changes = Goal **not met** 50% of the time

Act (Describe modifications taken as a result of this cycle. **Implement new process and document**)

What was concluded from initiating the actions?

- When staff are reminded of required documentation and care, compliance improves. Staff education through placing QA flags on their charts helps improve compliance.

- Discovered that many of the "missed" opportunities is due to poor documentation.

What is the next action? (Education...next improvement opportunity) Adjust the process and continue PDSA cycles if results were not as desired.

1. Continue to monitor
2. Continue to place QA flags on charts that are out of compliance
3. Continue staff education through weekly newsletter, staff meetings, and one on one meetings.

AIR LINK

AIR LINK SEMI-ANNUAL UTILIZATION MANAGEMENT REVIEW REPORT

(Medical Case Review-Concurrent)

██ ██ – ██████ ██

██ flights were completed from ██████████████████████. A structured review of transports (to determine transport appropriateness or that the mode of transport enhanced medical outcome, safety or cost-effectiveness over other modes of transport) was conducted on all ██ flights by Dr. Peter Meyer, Medical Director and Tracy Meyer, Chief Flight Nurse. Of the ██ flights, 18 flights triggered a review of the record to determine the medical appropriateness of the transport based upon Utilization Management Review Criteria, which is 5.6% (target is less than 10%).

Additionally, 1 flight out of ██ rotor wing flights was downgraded to ████████ (ground transfer) coding by Patient Accounts/Utilization Review.

Note: ████████ *Patient Accounts/Utilization Review is not tracking fixed wing ground transfer downgrades at this time.*

The 18 flights evaluated for Utilization Management Review and their outcomes are listed below.

Flight #██**:** "Air transport more than once, for the same illness or injury within 24 hours." Patient had ESRD (End Stage Renal Disease) and was dialysis dependent. The patient was flown from a remote scene to ████████████████ after cardiopulmonary arrest. Following resuscitation, the patient required dialysis. The family insisted the patient be taken to ██████████████████████ where the patient had established Nephrology service. Contact with the receiving Nephrologist was made. Cardiology services at sending facility was consulted and felt patient was stable for transfer. Dialysis urgently needed and patient was transferred to ██████████████████████. Case closed, no further action required.

Flight #██**:** "CPR in progress on scene or at referring location." Called to respond to a pediatric drowning at nearby lake. Upon flight crew arrival, noted failed intubation attempt by ground crew. CPR was in progress. Flight crew successfully secured airway and continued CPR. Decision was made to transport by ground to continue high quality CPR. Flight time would have been 5-6 minutes, 15 minutes by ground. Arrived at hospital with successful resuscitation. Excellent decision making to avoid interruption of CPR. Case closed. No further action required.

Flight #⬛⬛: "Air transport more than once, for same illness or injury within 24 hours." 4 y/o drowning patient successfully resuscitated and required Pediatric Specialty Care not available at sending facility The sending pediatric service contacted Level I Trauma Center and agreed to transfer. Patient's family withdrew care several days later after Pediatric Neurology consult. Case closed. No further action required.

Flight #⬛⬛: "CPR in progress on scene or at referring location." MVC Trauma Code in remote location with BLS responders. ALS was also dispatched and arrived on scene prior to flight team. Multi-system trauma to include head, abdomen, and open femur. CPR in progress for 40 minutes upon flight team arrival. Once patient was assessed, Medical Control was contacted and orders for discontinuing CPR were received. Chart reviewed with entire flight team at monthly Flight Critiques. Reviewed protocols for in field pronouncing of patient and discontinuance of care. Case closed. No further action necessary.

Flight #⬛⬛: "CPR in progress on scene or at referring location." Patient presented to sending facility unresponsive with an ECG suggesting Inferior MI. Patient was intubated and on several pressors for hypotension. Patient was being sent to cardiac center as services were unavailable at sending location. Upon flight team arrival, patient's BP was 60 systolic and ETCO2 was decreasing.   CPR initiated shortly after flight team's arrival. Flight crew stayed and assisted with resuscitation. Family requested stopping additional efforts. Patient pronounced dead, not transported. Case closed. No further action required.

Flight #⬛⬛: "CPR in progress on scene or at referring location." Called to a remote location by BLS service for cardiac arrest. CPR had been in progress for 30 minutes prior to ALS ground arrival. ALS ground intubated patient, defibrillated x1 and Epinephrine was administered x4.   Upon flight team arrival, ALS ground was speaking with their medical control to discontinue CPR. Flight crew assessed patient and agreed with ALS ground to discontinue care. Reviewed ACLS protocols with flight team and review of actions performed. No further recommendations. Care appropriate. Case closed. No further action necessary.

Flight #⬛⬛: "Air transport more than once for the same illness or injury within 24 hours." NSTEMI being transported to cardiac services not available at sending facility. RW experienced unforeseen weather and had to return to sending location. En-route, RW crew contacted FW service at sending location to have them check weather minimums to see if they could complete the fight. FW accepted the flight and RW landed at the airport. The patient was transferred to the FW who then completed the transfer to the cardiac center. Reviewed flight with entire crew at Flight Critiques. Good coordination of services, and dispatch played an important role. Cased closed. No further action needed.

Flight #⬛⬛: "Patient discharged home directly from ⬛⬛⬛ ED (over-triage in mode of transport)." Called to remote location (1 ½ hour by ground) for a scene flight, MVC with +LOC. BLS responded and called RW for transport. Upon flight crew

arrival, patient was confused and was c/o chest wall pain. Following evaluation in ED, patient suffered a concussion and several fractured ribs. Patient refused to stay and was discharged. Usually contact is made with BLS service and flight criteria is reviewed. This was a very remote area on a ranch in the ███████ with difficult terrain. The long distance and pulling valuable resources from this area is appreciated. Mechanism of injury was warranted. In addition, this ████████████ did require admission, but refused. Case closed and no further action is necessary.

Flight #███: "Air transport more than once for the same illness or injury within 24 hours." RW responded to medical scene flight to remote location (████████████) for H/A and weakness. Upon arrival to ██████, patient was diagnosed with a non-hemorrhagic CVA. Due to the rapid transfer, patient met criteria for clot retrieval, however this was not available at sending facility. Patient was then flown to ██████ ████████████████████████ for intervention. Case closed and no further action required.

Flight #███: "Pt discharged home directly from ████████ ED (over-triage in mode of transport)." Flight request to semi rollover in remote location (████████████). BLS on scene and report patient confused with chest wall pain. Upon arrival, patient confused, lethargic, and had pain to anterior chest wall. Patient fully evaluated in ED, confirmed concussion and multiple rib fractures. Patient refused to be admitted. Discharged from ED. Usually contact is made with requesting BLS service to review criteria for flight; however this patient did meet criteria and should have been admitted. Cased closed. No further action required.

Flight #███: "Pt discharged home directly from ████████ ED (over-triage in mode of transport)." Request to transfer 15 y/o female with the "worst H/A of her life" from critical access hospital for lumbar puncture and to rule out meningitis (significant concern as patient's 14 y/o friend had meningitis 1 week ago). After full evaluation at ██████, patient was diagnosed with strep throat and discharged home.
Feedback/Follow-Up #███:
Diagnosis and closed loop communication conducted via telephone with sending provider, Dr. ████████. With recent exposure to meningitis and time sensitive need for lumbar puncture, flight request was appropriate. Sending facility felt "uncomfortable" performing lumbar puncture and lab would have been a "send out" of the cerebral spinal fluid. Cased closed. No further action necessary.

Flight #███: "CPR in progress on scene or at referring location." Called to transport patient involved in a MVC, ejected, prolonged exposure to the cold. Arrived at sending facility with pulse and spontaneous breathing. Flight time was 40 minutes. Upon flight crew arrival, patient had deteriorated and CPR was in progress. Flight crew assisted in resuscitation efforts. Sending provider pronounced patient dead. Case reviewed with flight crew, reviewed ACLS and procedures. Case closed. No further action required.

Flight #███: "Requests that should have been denied for specific transport mode (RW when ground would have been appropriate." Patient was a 74 y/o male with unstable

angina, and abnormal stress test. Patient had an unsuccessful cath attempt, and was being sent to a cardiac center to complete catheterization. Patient had sheath in place and was to lay supine for 5 hours. Patient had no pain and no medications infusing. It was determined patient would have been better served by ground ALS transport.

Feedback/Follow-Up #████:
Dr. ████ (Cardiology sending physician) was contacted by phone to discuss need for air transport. Both sending and receiving cardiology services felt this was time sensitive and both had asked that patient be transported by air. Ground transport = 3 hours, air transport = 50 minutes. Case closed. No further action required.

Flight #████: "Air transport more than once for same illness or injury within 24 hours." MVC multi- system trauma patient, flown from critical access hospital to ████ Level II Trauma center by ████████████ rotor wing service. Once evaluated by trauma services, noted complex pelvic fracture requiring higher level of care. Patient was then transported via air medical to ████████████████████. Case closed. No further action required.

Flights #8001, #8002, #8003: "Transported inter-facility, and receiving facility is not a higher level of care than referring facility." 3 patients each requiring emergent renal dialysis. Inpatient emergent renal dialysis was not available at sending facility (████) that weekend due to no staffing available.

Feedback/Follow-Up #████, #████, #████:
████ hospital administration was notified of situation and plan is in place to employ travelers and add additional staffing with dialysis expertise. Closed loop with administration. Will continue to monitor.

Flight #████: "Request that should have been denied for specific transport (RW when ground would have been appropriate." 56 y/o COPD patient on day 8 of hospitalization. Patient still has high O2 demands and in requiring increased O2. Staff pulmonologist (Dr. ████) had anticipated discharge, locums pulmonologist (Dr. ████) requested transfer to higher level of care. Although continuing to require 10 liters O2, patient was dressed and walked off the FW to awaiting ambulance for transport to receiving hospital.

Feedback/Follow-Up #████:
Followed up with staff pulmonologist upon his return to work. Dr. ████ agreed that patient had planned discharge and was to follow-up as an outpatient. Dr. ████ also agreed transfer was inappropriate. Unable to contact Dr. ████ (locums) as he no longer provides coverage at ████.

Tracking and trending of the ████ through ████ flights did not reveal a concerning pattern. The two most common triggers (5 each) for the semi-annual period were "CPR in progress on scene or at referring location" and "Air transport more than once for the same illness or injury within 24 hours." All 10 of the flights which triggered a further review were found to be appropriate.

LifeFlight Eagle Flight Risk Assessment

The LifeFlight Eagle Flight Risk Assessment helps crews evaluate their fatigue awareness, as well as to enforce periods of rest when their fatigue reaches a level at which they are more likely to make errors. When that happens, a crew is immediately taken out of service until adequate rest is achieved. The tool LifeFlight Eagle utilizes for the assessment is called the Fatigue Matrix.

The Fatigue Matrix was designed by LifeFlight Eagle Director of Safety, Joe Coons, with input from a variety of fatigue and human-factors experts. Based on input from crew members and the LifeFlight Eagle Safety Advisory Group, it receives periodic updates and revisions.

The assessment is completed by staff at the beginning of each shift, following any base education activities, at the conclusion of each flight, and at the end of each shift.

It begins with the employee navigating to a URL on their work computer or mobile device. They log in using their single-sign-on credentials, which connects them with our business systems and allows for some information to be auto-populated and auto-calculated. Once completed, they are shown their score and provided with information they can use to be vigilant or to mitigate their fatigue.

In addition, the assessment collects additional non-scored data like 12-hour vs 24-hour shifts, shift start time and base location (related to travel distance from home), which provides data to the leadership team that allows for tracking trends and ensuring that scheduling models are appropriate and are not resulting in increased fatigue-related risk.

Beginning in March 2020, we began utilizing the fatigue matrix form as a screening tool for COVID-19 related symptoms as well. These do not impact the fatigue score, but if symptoms are identified, an automated alert is sent to the leadership team and the employee sees a warning with instructions to isolate or leave the base immediately and contact the manager on call.
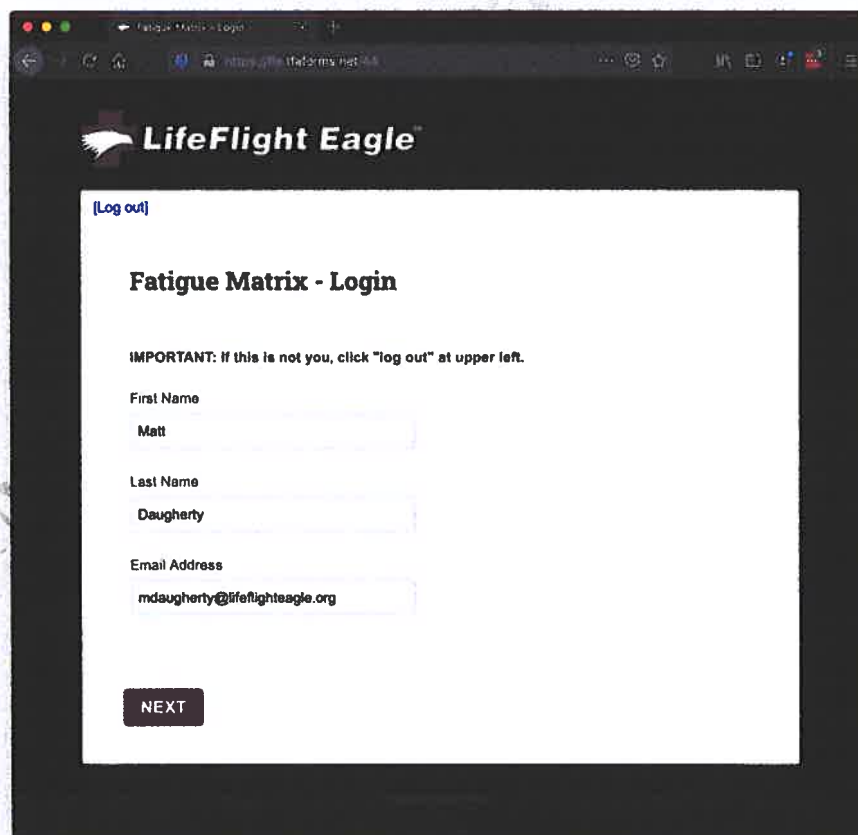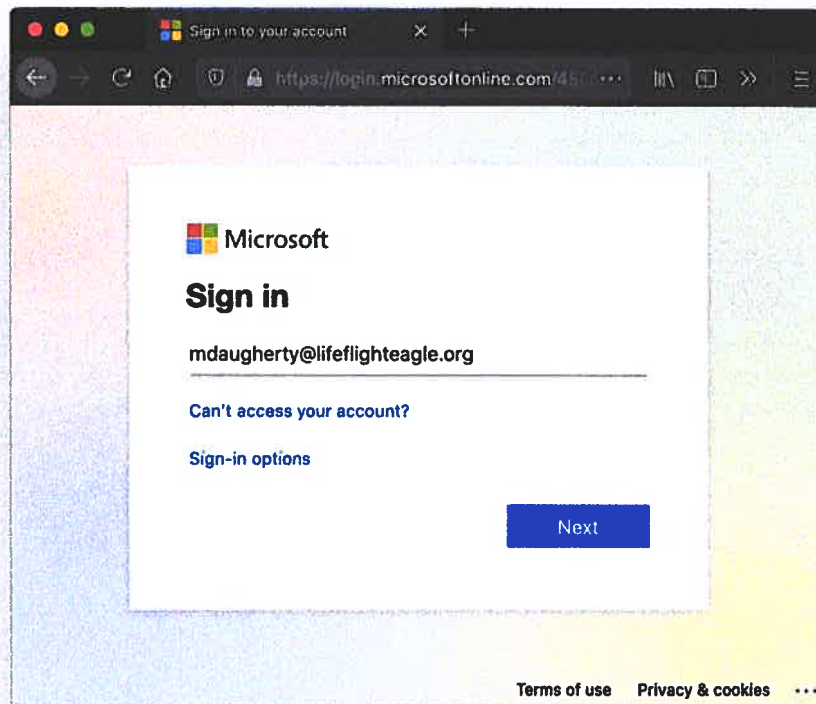
Appendix 1 displays a series of screenshots showing matrix appearance, as well as four progressive score pages.

Appendix 2 shows in-line warnings crews see if they enter values indicative of higher risk factors.

Appendix 3 show a series of four progressive Fatigue Matrix scores and related messages.

Appendix 4 shows a summary of scored questions and related point values.

Appendix 1 – Fatigue Matrix Screenshots

Microsoft

Sign in

mdaugherty@lifeflighteagle.org

Can't access your account?

Sign-in options

Next

Terms of use   Privacy & cookies

LifeFlight Eagle

[Log out]

Fatigue Matrix - Login

IMPORTANT: If this is not you, click "log out" at upper left.

First Name

Matt

Last Name

Daugherty

Email Address

mdaugherty@lifeflighteagle.org

NEXT

LifeFlight Eagle

Fatigue Matrix

COVID-19 SCREENING UPDATED
An additional COVID-19 screening question has been added.

--- Shift-Long Fatigue Information ---

Base *

| Please select... ▾ |

Shift Start Date *

| 07/20/2020 |

Shift Start Time *

| 07:00 ▾ |

12- or 24-Hour Shift? *

| Please select... ▾ |

Sleep Prior to Shift *

| Please select... ▾ |

Select an answer based on the number of consecutive hours of sleep you obtained prior to arrival

--- Variable Fatigue Information ---

https://fs.tfaforms.net/4675H/FT=a1S3200000008oc8C

Variable Fatigue Information

How long have you been awake? *

Please select...

Select an answer based on the number of awake hours.

Illness/Stressors *

Please select...

Subjective score to how you physically feel or any stressor that may be a distraction.

What does the temperature feel like? *

Please select...

Select one option based on temperature including heat index and wind chill as reported by pilot in Fahrenheit.

Total Sleep During Shift *

Please select...

Select an answer based on the total hours of sleep you obtained during your shift

Flights & Charting

Flights & Charting

Previously Reported Transport Hours

| 0.00 |

Previously Reported Charting/Education Hours

| 0.00 |

Note:
The fatigue matrix calculation is being adjusted to account for the additional fatigue generated by the use of a respirator, gown and full PPE. To do this, we are now separating flight/transport time from time spent charting or doing base education.

Initially transport fatigue is being increased by 50%, but we will monitor and adjust based on your feedback.

Please report your time accurately. The calculations to increase your fatigue score accordingly will occur in the background and will be reflected in your fatigue score. You will still see actual reported times in the previous flight/charting hours.

As always, if you do not feel your fatigue score accurately reflects the way you feel, contact the MOC and take yourself out of service.

New Flight/Transport Hours

| |

round to the nearest quarter hour

What, if any PPE items did you use on this transport?

☐ Respirator
☐ N95 mask
☐ Gown
☐ Protective goggles

New Charting/Education Hours

| |

COVID-19 Screening

https://tfaforms.net/46?SHIFT=a1S3Z90C00Buc8C

COVID-19 Screening

What is your temperature? *

Do you have any of the following symptoms?
- [ ] Shortness of breath
- [ ] New or change in cough
- [ ] Sore throat

Have you been advised to self-quarantine because of exposure to someone with COVID-19? *
- Yes
- No

Submit

Appendix 2 – Inline Warnings

LifeFlight Eagle

Fatigue Matrix

COVID-19 SCREENING UPDATED
An additional COVID-19 screening question has been added.

Variable Fatigue Information

How long have you been awake? *

17-18 hours awake

Select an answer based on the number of awake hours

Illness/Stressors *

A lot

Subjective score to how you physically feel or any stressor that may be a distraction.

*** If you are not well physically, are feeling ill, or under significant stress, please re-evaluate whether you should be staffing today.

What does the temperature feel like? *

Please select...

Select one option based on temperature including heat index and wind chill as reported by pilot in Fahrenheit

Total Sleep During Shift *

Please select...

Select an answer based on the total hours of sleep you obtained during your shift.

Flights & Charting

LifeFlight Eagle

Fatigue Matrix

COVID-19 SCREENING UPDATED
An additional COVID-19 screening question has been added.

Variable Fatigue Information

How long have you been awake? *

| 17-18 hours awake ▾ |

Select an answer based on the number of awake hours.

Illness/Stressors *

| Extreme ▾ |

Subjective score to how you physically feel or any stressor that may be a distraction.

*** If you are feeling extreme stress, physical discomfort or illness, you need to contact MOC and take yourself out of service.***

What does the temperature feel like? *

| Please select... ▾ |

Select one option based on temperature including heat index and wind chill as reported by pilot in Fahrenheit.

Total Sleep During Shift *

| Please select... ▾ |

Select an answer based on the total hours of sleep you obtained during your shift

Flights & Charting

Appendix 3 – Fatigue Matrix Score

LifeFlight Eagle

Fatigue Matrix Score

Your New (PPE-Adjusted) Fatigue Matrix Score is:

5.00

GREEN

Your Fatigue Matrix status is currently GREEN.

A green score is anything from 1-10.

Your risk of errors are low, but not absent in this level.

Remember to update your score after each transport, charting, or after a rest period during your shift, and at the conclusion of your shift.

Your Previous Fatigue Matrix Score Was:

Update Your Fatigue Matrix Regularly Throughout Each Shift

LifeFlight Eagle™

Fatigue Matrix Score

Your New (PPE-Adjusted) Fatigue Matrix Score is:

11.38

YELLOW

Your Fatigue Matrix status is currently YELLOW.

A yellow score is between 10 and 20.

You should take mitigation efforts such as napping since you are more prone to errors particularly in the higher end.

Remember to update your score after each transport, charting, or after a rest period during your shift, and at the conclusion of your shift.

Your Previous Fatigue Matrix Score Was:

5.00

Update Your Fatigue Matrix Regularly Throughout Each Shift

LifeFlight Eagle

Fatigue Matrix Score

Your New (PPE-Adjusted) Fatigue Matrix Score Is:

18.88

YELLOW

Your Fatigue Matrix status is currently YELLOW.

A yellow score is between 10 and 20.

You should take mitigation efforts such as napping since you are more prone to errors particularly in the higher end.

Remember to update your score after each transport, charting, or after a rest period during your shift, and at the conclusion of your shift.

Your Previous Fatigue Matrix Score Was:

11.38

Update Your Fatigue Matrix Regularly Throughout Each Shift

LifeFlight Eagle

Fatigue Matrix Score

Your New (PPE-Adjusted) Fatigue Matrix Score Is:

20.88

R E D

Your Fatigue Matrix status is currently RED.

A red score is anything greater than 20.

The risk of error due to fatigue is high.

- **This is an indicator that the aircraft needs to go out of service for a minimum of 2 hours.**

- **The MOC must be notified.**

- **Do not use this time for charting. It is for resting only. Biohazard cleanup and restock may be done prior to starting the rest period.**

*** IMPORTANT: You must go out of service and contact the manager on call. ***

Remember to update your score after each transport, charting, or after a rest period during your shift, and at the conclusion of your shift.

Your Previous Fatigue Matrix Score Was:

18.88

Update Your Fatigue Matrix Regularly Throughout Each Shift

LifeFlight Eagle

Fatigue Matrix Score

Your New (PPE-Adjusted) Fatigue Matrix Score Is:

5.00

!! ALERT !!

ISOLATE YOURSELF AND CONTACT THE MOC IMMEDIATELY

Because your COVID-19 screening indicated possible symptoms, you must immediately isolate yourself from other crew members and contact the MOC.

Your Previous Fatigue Matrix Score Was:

Update Your Fatigue Matrix Regularly Throughout Each Shift

LifeFlight Eagle℠

How many years of experience do you have?

Automatically calculated at single-sign-on login

Less than 2 years	3
2-5 years	2
>5 years	1

How much sleep did you get prior to the start of your shift?

Completed 1 time per shift

Greater than 8 hours	0
6-8 hours	2
Less than 6 hours	4

How many hours have you been awake?

completed each time form is submitted

Less than 12 hours	0
12-16 hours awake	2
17-18 hours awake	3
19-20 hours awake	4
21-24 hours awake	6

Illness/Stressors - Subjectively score how you physically feel or any stressor that may be a distraction.

completed each time form is submitted

None	0
Slight	1
Moderate	2
Quite a bit	3
A lot	4

Total sleep during shift

completed each time form is submitted

None	0
1 hour	-1
2 hours	-2
3 hours	-3
4 hours	-4
5 hours	-5
6 hours	-6
7 hours	-7
8 hours	-8

Time Spent Charting or on Education

completed each time form is submitted

Time	Actual

Flight/Transport Hours

completed each time form is submitted

Time, with infectious disease PPE	Actual * 1.5
Time, without infectious disease PPE	Actual

What does the temperature feel like outside (including wind chill/heat index)

completed each time form is submitted

Less than 0 degrees F	4
0-20 degrees F	2
20-90 degrees F	0
90-100 degrees F	2
Greater than 100 degrees	4

Total Score

total of all scored fields

10 or less	Green
Greater than 10 and less than 20	Yellow
20 or greater	Red

| 9 hours | -9 |
| 10 or more hours | -10 |

Weather Reporting/Weather Turn Down Procedure

Quick Look

To define the communications between pilots, CCT EMT's, and the Communications Center, to identify current weather status for base vehicles.

Communication Specialists will notify the pilot/EMT/medical crew of any weather information/turndown notifications that they receive in the Communications Center.

To assist in improving crew/vehicle safety for AirLife and neighboring programs, by ensuring that transports and standbys declined by AirLife Denver are communicated in a timely, efficient, and standardized manner, per Commission on Accreditation of Medical Transport Systems (CAMTS) requirements.

When a request for transport or standby is declined or aborted due to weather conditions, either at an AirLife Denver base, enroute, or at the destination, a message will be paged out via www.weatherturndown.com indicating that the flight/transport has been declined or aborted.

Communication Specialists will document each transport with an applicable risk assessment, based on weather conditions and other applicable safety factors.

Use and De}nition

Procedure:

Weather Reporting:

1. At each shift change, during the Daily Brief (0730/0930/1930/2130), Pilots/EMTs will give a weather forecast for the day. This may be very detailed or limited to an In-Service status, depending on weather conditions.

   a. The AirLife Daily Program Summary will be updated, as the weather forecast is updated, to ensure that all crew members and administration have accurate and current program status information.
   b. Pilots/EMTs will identify whether weather is forecasted to not be a factor, or when weather may be a factor and there is potential for extended weather checks.

2. Communication Specialists will document weather status in the EMSystem database as either In-Service or Call-to-Call for all air resources. Out-of-Service is reserved for maintenance issues and should not be used for weather reporting.

3. Communication Specialists will review email notifications and check weatherturndown.com for any weather or hazard (Reference Hazard Database/Hazard Notifications policy) updates that may impact potential transports. Flight crew will also receive weather turndown notifications on their Verizon phones.

Transport Requests:

1. All calls for service will be requested to the appropriate base/vehicle, regardless of forecasted weather. Pilots/EMT will update the Communications Center with weather updates as it changes, or they become aware of potential weather related issues.

2. When a request for transport is aired to the pilot/EMT, they will evaluate the current and forecasted weather conditions that will impact the transport, prior to accepting/declining the request.

3. Weather status for CCT transports, is as follows:

    a. EMTs will evaluate all requests utilizing their current risk assessment tool (Reference Risk Assessment policy).

    b. EMTs will communicate the transport's risk assessment score to the Communication Specialists and it will be recorded, under a Non-Big 6 OCC time, in GH when the EMT accepts/declines the transport.

4. Weather status for Rotor/Fixed Wing transports, is as follows:

    a. Pilots will evaluate all requests utilizing their current risk assessment tool (Reference Risk Assessment policy, Weather Minimums policy, Air Methods General Operations Manual).

    b. Pilots will communicate the transport's risk assessment score to the Communication Specialists and it will be recorded in the call, under the appropriate drop box in Golden Hour (GH), when the pilot accepts/declines the transport.

    c. Communication Specialists will also document risk assessments on the Air Methods Flight Log (FLOG), for every transport.

5. For all air response requests, Communication Specialists will ask requestors, *"Have you contacted another air service in regards to this transport?"* This question will assist in deconfliction and identify potential helicopter "shoppers". Document this response in Golden Hour CAD on the Brief page. "Helicopter shopping" is when requestors continue to seek a helicopter response, despite already having been turned down by another service, due to weather conditions. Requestors should be notified that air programs in their service area share weather information and turn-downs for safety reasons to decrease "shopping" prevalence.

6. When another flight program has turned down a flight, due to localized weather at their vehicle base, and a requestor is now asking AirLife to respond to the original request location, the Communications Specialist will immediately notify the appropriate AirLife team. The pilot will be advised that another program has already turned down the request due to weather, be informed of the weather location, and given the vehicle type that turned down the request. If the pilot feels that the request can be handled safely, he/she can accept the request. At no time will any pressure to accept a mission be placed on the pilot, EMT, or flight crew.

7. If AirLife is unable to handle a request due to localized weather at a vehicle base, the pilot will reach out to other AirLife pilots on-duty, at base locations where they feel that they could handle the request. If other AirLife aircraft/vehicles are unavailable, Communication Specialists will immediately attempt to find an acceptable alternative vehicle/agency to handle the call for the requestor.

8. If AirLife is unable to handle a request due to weather at the requested location, or enroute to the requested location, the Communications Specialist will determine with the requestor how they would like to proceed, without attempting to activate other resources of the same vehicle type.

9. If the call is turned down by the pilot/EMT for weather, note the call in GH as "Missed" for weather (Reference Missed Cancelled Aborted Requests/Transports policy) and immediately place the notification on Weatherturndown.com.

Weather Turndown:

1. When a pilot has aborted or declined a transport or standby due to weather, the Communication Specialists will obtain the following information:

    a. Where the weather of concern is located (base, enroute, scene, sending location/facility, or receiving facility).

    b. The type of weather that is causing concern (fog, snow, ice, rain, thunderstorms, wind or other causes).

2. The Communications Specialist will page the transport origin, destination, type of vehicle that declined the transport, the weather location, and the type of weather that caused the flight to be declined. If AirLife does the transport by another method (Rotor turned Fixed-Wing or Fixed-Wing turned Ground), this information will also be included on www.weatherturndown.com using the precanned messages or the following syntax:

    a. AL Denver has declined (or aborted) a flight/transport (or standby) from (city, state) due to (wx type) at (wx location). The vehicle that declined the flight was a (AC vehicle type). A pilot is available @ 1-877-243-8247 if you have any questions. Thanks. (Initials).

b. This information should be sent out as soon as possible.

3. If a pilot from another agency calls AirLife Communications to discuss the weather situation, he/she will be placed in contact with the AirLife pilot that made the decision using the conference call procedure on a recorded line.

4. If a request is aborted or turned down due to weather at the requested location, the Communications Specialist will inform the requestor that AirLife is unable to handle the request due to weather, after checking on alternative methods of transport (RW, FW, and CCT).

   a. No referrals to other air transport programs will be made in this situation. AirLife will continue to check weather conditions for improvement that would allow for safe completion of the transport.
   b. If the aircraft/CCT must divert to an alternate landing zone/ receiving facility due to weather or other circumstances (mechanical issues, patient condition), the Communication Specialists will assist in arranging alternative means of transportation whenever possible (Reference PAIP guideline).
   c. If AirLife is unable to complete the transport, the Communication Specialists will assist the requestor in finding any other available program that may be able to handle the request safely (i.e. different type of vehicle, weather is not a factor at their base location, etc.).

Special Notes

Related Guidelines

Post Accident Incident Plan (PAIP)

Air Methods General Operations Manual (File Size Too Large; Located on the V Drive)

Hazards Database/Hazard Notifications

Missed Cancelled Aborted Requests/Transports

Risk Assessment

Weather Minimums

Administrative Information

Original date: 01/06

Effective date: 01/06

Review dates: Annually

Clinical practice guidelines are systematically developed statements to assist the flight crew with patient decisions about appropriate health care for specific clinical circumstances. These guidelines are not fixed protocols that must be followed, but are intended for health care professionals and providers to consider. While they identify and describe generally recommended courses of intervention, they are not presented as a substitute for the advice

of a physician or other knowledgeable health care professional or provider. Individual patients may require different treatments from those specified in a given guideline. Guidelines are not entirely inclusive or exclusive of all methods of reasonable care that can obtain/produce the same results. While guidelines can be written that take into account variations in clinical settings, resources, or common patient characteristics, they cannot address the unique needs of each patient nor the combination of resources available to a particular community or health care professional or provider. Deviations from clinical practice guidelines may be justified by individual circumstances. Thus, guidelines must be applied based on individual patient needs using professional judgment.

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Decreasing Usage of Lights and Sirens in an Urban Environment: A Quality Improvement Project

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Abstract

Introduction: The risk of lights and sirens use in emergency medical services has been well documented. Our critical care transport team performs over 1,800 interfacility nonemergency medical services transports annually into a dense urban environment. Historically, we have utilized lights and sirens to navigate traffic patterns. The use exceeded industry standards. This quality improvement project was undertaken to decrease the use of lights and sirens. **Methods/Results:** The baseline use of lights and sirens in 2011 was 76% en route and 73% on return to the facility. We revised the internal policy guiding the appropriate usage of lights and sirens. In 2012, without an improvement in usage, a use justification process was implemented. By 2013, the use of lights and sirens was still high en route, but had decreased to 53% on the return trip. In 2014, we added accountability measures requiring justification, with a subsequent drop in 2015 to 14% en route and 13% on return. In the following 3 years, the transport teams have sustained lights and sirens use to 20% or below. **Conclusions:** This quality improvement initiative impacted team behavior and decreased the use of lights and sirens over 5 years, with sustained improvement at or below 20%. This improvement was accomplished through ongoing evaluation, education, data gathering, and open communication. There was no negative impact on patient outcomes during this time. Lights and sirens continue to be used when indicated. *(Pediatr Qual Saf 2020;2:e279; doi: 10.1097/pq9.0000000000000279; Published online March 30, 2020.)*

INTRODUCTION

The use of lights and sirens is well established in the emergency medical services (EMS) community. However, there are risks associated with their use. Thousands of emergency vehicle accidents occur each year because of lights and sirens usage.[1-4] Ambulance use of lights and sirens is associated with increased risk of ambulance crashes, resulting in more severe injuries and more fatalities.[2,3] Restraints provide a significant form of protection for ambulance occupants involved in an accident. However, rear compartment passengers are at the greatest risk of death or serious injury when an ambulance is involved in a crash while utilizing lights and sirens.[4] Although this risk has been well communicated, practice within the EMS community remains variable. An analysis utilizing the 2016 National Emergency Medical Services Information System database found that the average use of lights and sirens was 77% in the response phase (to the patient) and average usage of 23% in the transport phase (to the receiving facility).[2] Another study utilizing the 2010 National Emergency Medical Services Information System data only looked at the use of lights and sirens in the response phase to the patient, not the transport phase to the receiving hospital. This earlier dataset showed that the average use of lights and sirens in the response phase was 75.8%.[5]

Lights and sirens usage for transport teams that do interfacility transport exclusively is not well documented. The American Academy of Pediatrics Section on Transport Medicine guidelines for lights and sirens usage states that the use of lights and sirens is a hazard and that teams

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should have policies for appropriate usage.[6] Additionally, the use of lights and sirens has been included as a quality metric in a consensus statement for neonatal and pediatric critical care transport.[7] However, there are no published data on the use of lights and sirens for interfacility transport teams.

In reviewing the use of lights and sirens by a critical care transport team, investigators found that the use appeared excessive.[2,5] Our transport team is a Chicago-based neonatal and pediatric specialty critical care transport team, completing over 1,800 interfacility ground transports annually. It is a hospital-based team utilizing a contracted service with our neonatal-pediatric team-branded ambulances. The ambulance service provides dedicated Emergency Medical Technician-Basic (EMT-B) drivers for our team. We transport patients from hospitals 3–40 miles away into a densely populated urban environment. Given the location, traffic delays are inevitable and have been an issue for over 30 years. Lights and sirens had become a means of navigating traffic.

We initiated a quality improvement project to address this issue. The objective of this project was to decrease the use of lights and sirens. Given the increased risk associated with lights and sirens, we intended this project to impact team performance while still allowing for clinical decision-making and patient safety so that lights and sirens were used only when clinically indicated.

METHODS/RESULTS

Initial review of lights and sirens usage in 2011 showed that they were utilized in over 70% of pediatric interfacility transports and had become standard operating procedure. Lights and sirens were used to navigate traffic and minimize the out-of-hospital time for most patients transported. These rates were higher than those of EMS providers in the return phase to the receiving hospital.[2] Lights and sirens usage was tracked to the referring hospital (en route) and returning to the receiving hospital (on return) for all transports.

In 2011, the use of lights and sirens was at 76% while en route to the referring facility and 73% on return (Figs. 1 and 2). The first intervention was to revise the internal policy guiding the appropriate usage of lights and sirens. The new policy defined appropriate use of lights and sirens as when utilization would positively affect patient outcomes. The policy further defined the appropriate use when a patient was categorized as unstable or having a time-sensitive illness or injury (Table 1). The team could decide about the use of lights and sirens based upon the policy without medical control approval. Education regarding the appropriate use of lights and sirens was disseminated to all team members (nurses and respiratory care practitioners) at semimonthly team education days, staff meetings, daily huddles, and annual safety days. During this time, one way driving time ranges were 10–60 minutes, depending on the location of the referring hospital and time of day.

The transport team raised concerns regarding the definition of the patient who would be affected by lights and sirens usage. The phrase, "unstable, or time-sensitive illness or injury," was felt to be subjective and introduced variation in practice. The team requested a further definition of appropriate use. The decision was made to retain the language for 2 reasons—it permitted team members to exercise clinical judgment, and allowed them to adapt to the change in practice at a rate and in a context consistent with their personal experience and comfort.

In 2012, we implemented a standard debrief form (Table 2) to identify and discuss any safety concerns and equipment issues on each transport. The debrief form was designed to be completed for every transport by all team members collaboratively. Our second intervention was to include the use of lights and sirens and asking for rationale on this debrief form. In 2012, there was a slightly higher use of lights and sirens, and further insight regarding this trend was sought (Figs. 1 and 2).

The third intervention was a review of the policy (Table 1) and the reinforcement of the policy on team education days. There was discussion regarding expectations as to appropriate use. There was open dialogue regarding the team's concerns with longer out-of-hospital times directly affecting the team's availability for subsequent transports, weighed against the risks associated with the use of lights and sirens. The policy remained as written, and the team was left to determine whether the patient was unstable or had a time-sensitive illness or injury based on their clinical judgment.

In 2013, a review of data indicated that the use of lights and sirens was still high en route to the referring facility; however, on the return leg, the team's use decreased to 53% (Figs. 1 and 2). We attributed this decrease to the increased awareness of the risks of lights and sirens.

In 2014, we began our fourth intervention by adding direct accountability to the process by requesting a specific justification for the usage of lights and sirens. Team members were asked to provide a rationale for the use of lights and sirens for each transport as part of the debrief form. If none was provided, the team Safety Coordinator sent an email requesting the rationale and included the statements of appropriate and inappropriate use from the policy. To encourage appropriate use and transparency in reporting, we established a nonpunitive policy regarding the use of lights and sirens outside of policy, or to receiving a reminder to provide a rationale for their use.

Throughout 2014, a more significant impact was seen. The use of lights and sirens en route to a referring facility decreased to 27%, and use on the return decreased to 18% (Figs. 1 and 2). In 2015, there was a continued reduction in the use of lights and sirens to 14% en route to the referring facility and 13% on the return (Figs. 1 and 2). In the following 3 years, teams have sustained lights and sirens usage at or below 20%. In the time since implementing an accountability process in 2014, we have
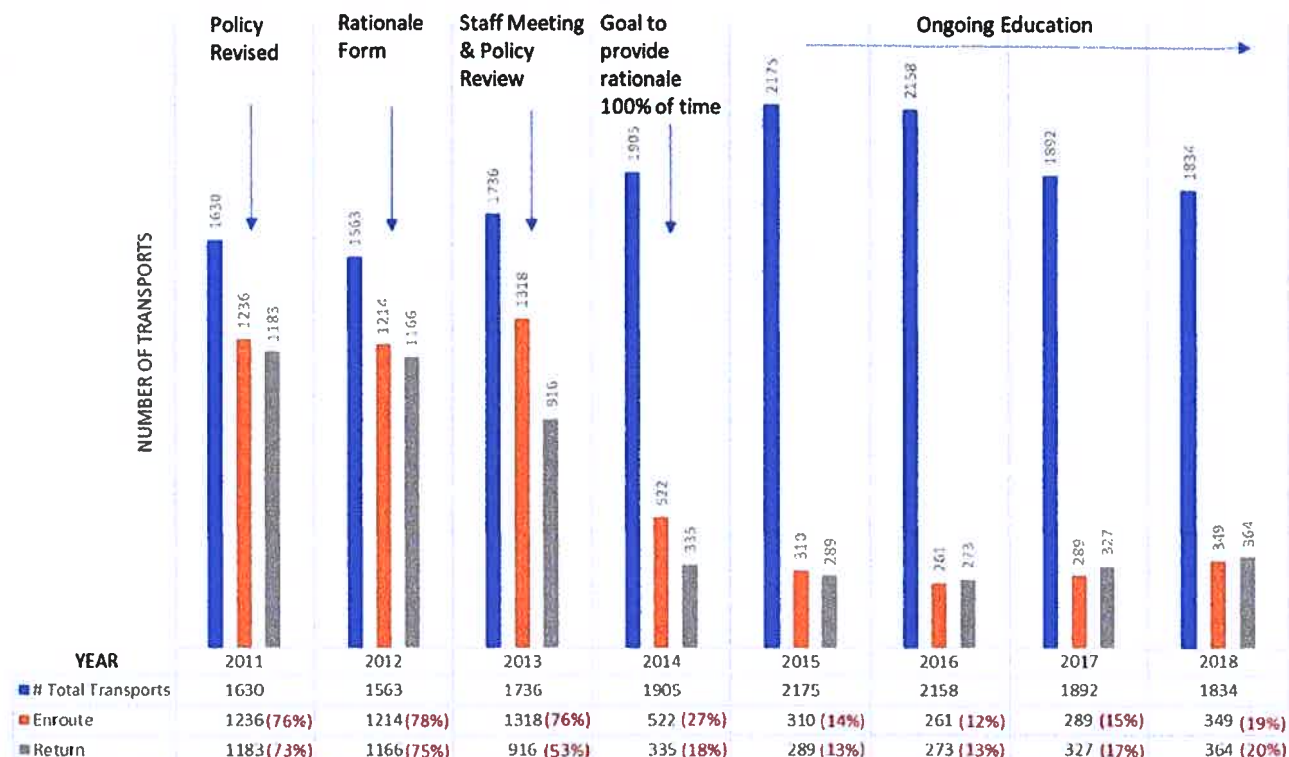
Fig. 1. Use of Lights and Sirens 2011–2018. This graph includes the total number of transports, the total number of times lights and sirens were used (%) en route to the patient at the referring hospital, and the total number of times lights and sirens were used (%) during the return to the receiving hospital.
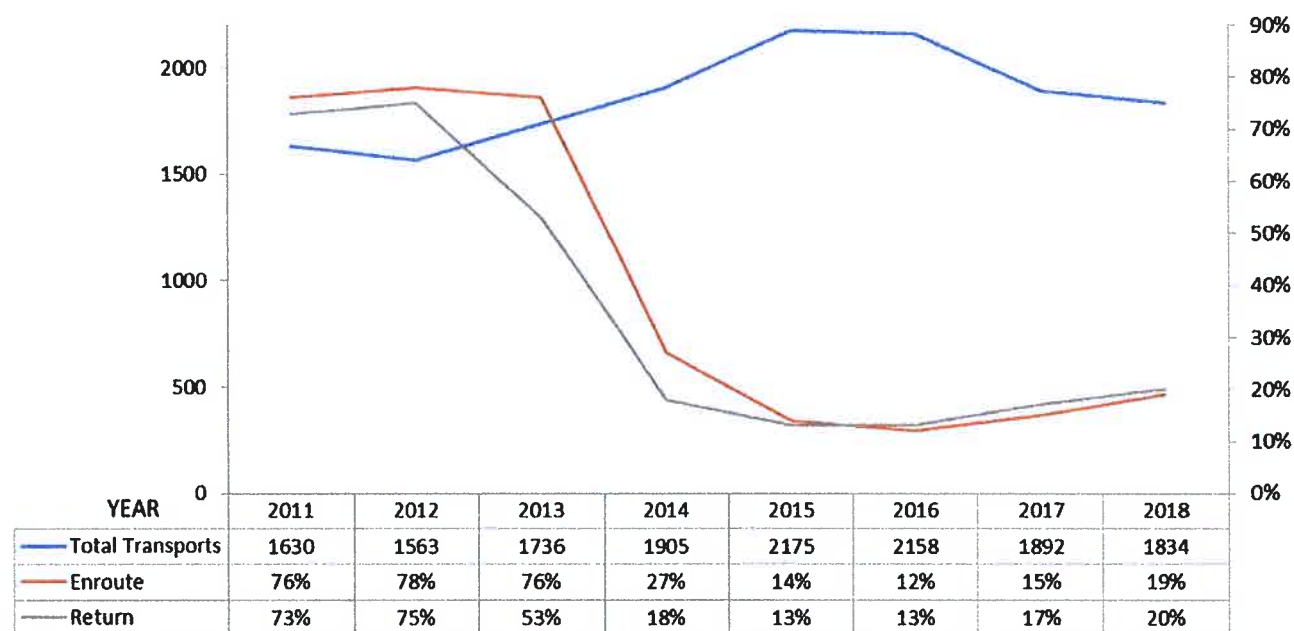

YEAR	2011	2012	2013	2014	2015	2016	2017	2018
Total Transports	1630	1563	1736	1905	2175	2158	1892	1834
Enroute	76%	78%	76%	27%	14%	12%	15%	19%
Return	73%	75%	53%	18%	13%	13%	17%	20%

Fig. 2. Percent Usage of Lights and Sirens 2011–2018. Multifaceted approaches to the improvement project began in 2011. Baseline use was 73%–76%. By 2013, there was a 20% improvement in use on the return trip. The following year with the request for the rationale for use statement, use dropped to 20% or less over the next five years. During this time, the transport team realized a 2% growth in volume annually. In 2014, as the use of lights and sirens most dramatically decreased, transport volume also increased most dramatically 9%–12%.

consistently shown lower rates than in previous years (Figs. 1 and 2). We have continued to provide ongoing education during team education days and safety days.

In 2018, with the decrease in lights and sirens usage, one way driving time ranges were 20–125 minutes depending on referring hospital location, time of day, and traffic.

Table 1. Use of Lights and Sirens Policy

Lights and Sirens May Be Considered in the Following Situations	Lights and Sirens Will Not Be Utilized For
Critical care admission, traffic impeding forward movement of vehicle	Return transport
Patient transported has unstable or time sensitive illness or injury	To facilitate the next transport
Patient requiring therapy unavailable in the transport environment	Public relations/educational events

Table 2. Transport Team Debrief Form

Date		If Yes, Please Comment Below
Time of departure		
Referral hospital		
Team members		
Team concerns	Yes	
	No	
Communication	Yes	
Center concerns	No	
Equipment	Yes	
Concerns	No	
Safety	Yes	
Concerns	No	
Ambulance	Yes	If yes, brief description here and incident form completed: yes
Concerns	No	No
Ambulance #___	N/A	
Lights and Sirens	Yes: there, back, round trip	If yes, why:
	No	
Helicopter concerns	Yes	Debrief with helicopter team completed: yes/no
	No	
	N/A	
Referral hospital	Yes	
Concerns	No	

There have been several mechanisms in place to assure any decrease in use would not result in negative patient outcomes. There was a debriefing tool in use since 2012. It included comments related to the justification of the use of lights and sirens per team protocol; however, no concerns or adverse events were noted. There were, however, several notations regarding weather affecting the team's decision-making. Second, the team had access to a safety event reporting process within the organization. Safety events are reported organizationally, and these assure leadership follow up within 72 hours. The only safety event noted during this timeframe was reported in July of 2016. The incident included a minor vehicle collision, no injuries to staff or patients. No lights and sirens were in use at the time of the incident. Last, data were followed, and rates of use were reported to the team monthly. In summary, there were no ill effects noted in the team's decision-making overall.

DISCUSSION

The risk of lights and sirens usage has been well documented with increased risk of ambulance crashes and fatalities.[1–4] Several studies in the EMS literature have evaluated the time saved due to the use of lights and sirens with a range between 43.5 seconds and 3.63 minutes.[8–13] Many studies have shown that the time saved is not clinically significant for the patient.[12–14] Two studies have looked at pediatric EMS calls. One found that in

39.4% of the calls, lights and sirens were used inappropriately.[15] The other found that 19.6% of lights and sirens usage was unnecessary.[16] The National Association of Emergency Medical Services Physicians and the National Association of State EMS Directors published a position paper stating that written protocols and guidelines should delineate when to use lights and sirens during scene response and patient transport, as it is not a risk-free practice despite the long-established history of frequent use.[17] The American College of Emergency Physicians EMS Committee also recommends the development of policies to limit lights and sirens operations.[1] Two studies have reviewed the utilization of protocols to guide lights and sirens usage.[14,18] In both, the presence of the protocol significantly reduced the use of lights and sirens by EMS services, but did not impact patient disposition or result in adverse patient outcomes.his quality improvement project demonstrates that the creation of and the awareness of a policy are insufficient. A significant change in lights and sirens usage in this project occurred with policy implementation, accountability, case auditing, personal reflection, and ongoing education. Changing a long-standing practice within an established and experienced transport team is never easy. Any change should start with open communication to identify the problem, a review of the evidence, data collection, and then follow up with education and re-education.

The most significant change in behavior occurred when mandatory accountability was added. When team members had to justify their use of lights and sirens, the practice changed. During this time, there were no patient adverse events associated with the change in practice-based upon review of transport team debrief forms, medical director chart reviews, and hospital safety event reports.

Some team members have raised concerns that team members are now "afraid" to use lights and sirens. These fears have provided the opportunity to reinforce that lights and sirens are appropriate and effective for the unstable patient. We have reinforced that the goal is not 0% use, but appropriate use in concordance with industry standards.

The team's quality improvement work has progressed over the years. At the time of our efforts to minimize the use of lights and sirens, the work was not driven by key driver diagrams, control charts, or balancing measures. In retrospect, control charts would have been a valuable tool to quickly identify progress during initial stages as well as practice variance once the lower rates had been reached. The use of control charts is reflective of the team's progression in their quality journey. The team's progress

might have been expedited, given our current quality improvement tools within the organization.

CONCLUSIONS

This quality improvement initiative impacted team behavior and decreased the use of lights and sirens over 5 years, with sustained improvement at or below 20%. We accomplished this improvement through ongoing evaluation, education, data gathering, and open communication. There was no negative impact on patient outcomes during this time. Lights and sirens continue to be used when clinically indicated.

DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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