A Word From Our Program Manager

Well, 2017 is over and a new year is beginning. Personally, I usually make the same New Year resolutions each year, this year will be no different. However, I have been thinking about the past year especially as it pertains to the accomplishments of the EMSC program. I am pleased to say that the program did much better with goals than I did personally.

I think much of that success is attributable to the teamwork of the staff and the EMSC county coordinators.

The EMSC program had three major goals over the past five years:

1) Improve pediatric prehospital care by increasing training and preparedness for prehospital providers.

2) Improve pediatric emergency care in Utah Hospitals.

3) Improve pediatric care and pediatric preparedness in the prehospital setting.

Under each of the goals were the following objectives that were accomplished (and why we thought it was important):

1) Established a regulatory standard requiring ALS providers to be PEPP certified. (because 32 percent of Utah’s population is children).

2) Established requirements for pediatric equipment on ambulances. (because children are not little adults).

3) Maintained requirement for EMS agencies to submit NEMESIS data. (because we need to assess care to make improvements and to target injury prevention activities).

4) Acquired ASPR funding to support the pediatric disaster coordinator and UHERT. (because children has special needs in the event of a disaster).

5) Regionalized PEPP training throughout the state. (because its efficient and effective to share training limited resources).

6) Recognized and trained 45 EMSC county coordinators to provide courses and injury prevention activities. (because training the trainers and having points of contacts for pediatric care in each county/region is an efficient and effective way to communicate and rollout training and updates).

7) Trained over 600 EMS personnel in PEPP. (because training is needed to improve skill proficiency).

8) Published 60 monthly newsletters. (because it was another way to communicate with EMS providers to provide updates and education).

9) Maintained an EMSC advisory committee to look at various pediatric issues such as a pediatric facility recognition program. (because facilities meeting criteria for pediatric readiness are more capable of meeting the needs of pediatric patients).

10) Assessed the capabilities of all Utah hospitals to meet the needs of pediatric patients through the National Pediatric Readiness Assessment. (because it provides a baseline of the capabilities of hospitals to meet the medical and trauma pediatric needs).

11) Maintained pediatric representation on the state EMS Committee, Trauma System Advisory Committee and Licensure Subcommittee. (because system policies need to consider the needs of children).

12) Assessed the capabilities of EMS providers to take a full set of vital signs and saw marked improvements after statewide education. (because these are the medical conditions that adversely affect Utah Children, known as the Fatal Five).

13) Conducted pediatric training and exercises and incorporated pediatric considerations into disaster planning. (because children have special needs in the event of a disaster).

14) Conducted pediatric training and exercises and incorporated pediatric considerations into disaster planning. (because children have special needs in the event of a disaster).

15) Trained over 20,000 children through the bike rodeos. (because bike accidents are one of the leading causes of injury in younger children).

16) Provided Buckle Tough information to various communities. (because motor vehicle crashes are the leading cause of injury and death in older children).

17) Participated in the Utah Highway Safety Office Zero Fatalities Safety Summit (because traffic crashes and pedestrians hit by motor vehicles are leading causes of death in children).

18) Rolled out the Stop the Bleed training kits to the EMSC county coordinators. (because of school shootings, motor vehicle crashes, and sporting events, the public needs to be trained in how to stop the bleeding until EMS arrives).

19) Assessed the capabilities of our EMS agencies to be ready to treat children by participation in the national EMS assessment. (because having a pediatric emergency care coordinator available through each agency county and region can improve the availability of training and ultimately pediatric care).

So, these are some of the accomplishments of the EMSC program over the past five years. We look forward to remaining and making improvements for another five years if federal funding for the program continues.

Much of the success of the program has to be given to the outstanding staff, 45 EMSC county coordinators, Tia Dickson, RN, for pediatric care consultation and education; Hilary Hewes, MD, for medical direction; Chuck Cruz, RN, paramedic, for pediatric disaster preparedness; Bob Jex, RN for facility recognition; Yukiko Yonosaka, MS, for data analysis of patient care; Allan Lia, MBA, for coordination efforts, injury prevention and budget management; Janine Wihale, for administrative support; and last but certainly not least, Andy Ostler, Paramedic, for PEPP courses and bike rodeo coordination extraordinaires. It is with great sadness, that we announce Andy Ostler is leaving the EMSC program. He and his wife will be serving a two year mission for the LDS Church. We can’t thank Andy enough for his leadership, expertise, organizational contributions and knowledge over the past 20 years. He will be missed…. but we are secretly hoping when he returns that he will get involved with the program again. We wish Andy well in his new endeavor, thank him for his dedication and commitment to the program and look forward to his return.

As always, we would like to thank the EMS and hospital personnel who take care of the children of Utah. Your efforts are greatly appreciated. Best wishes for the New Year.

Jolene Whitney
Children face special risks from air pollution because their lungs are growing and because they are so active.

The largest portion of a child's lungs, their air sacs (ateoli) are not fully grown until they become adults. A child’s lungs are also at greater risk for infection because the body's defenses are still developing. Children have more respiratory infections than adults, which also seems to increase their susceptibility to air pollution.

Another consideration, children are outside for longer periods and are usually more active when outdoors than adults are. They inhale more polluted outdoor air than adults do. Children with underlying chronic lung diseases, particularly asthma and cystic fibrosis, are especially vulnerable. ¹

Our pollution has been in the news a lot lately. It is one of many triggers that will contribute to this “respiratory season”. Are you ready for it?

¹ Children and Air Pollution

**Expert Input**

**Utah Environmental Public Health Tracking (EPHT) Network**

Taken from the Utah Environmental Public Health Tracking (EPHT) Network website

This network provides information and data about how the environment affects human health.

**Air pollution** refers to any biological, physical, or chemical particle that is in the air that should not be there. Pollutants come from many human activities such as factories, power plants, dry cleaners, cars, trains, airplanes, and buses. They can also come from environmental sources like volcanic eruptions, fires and windblown dust.

**Air quality** measures how much pollution is in the air. On average, adults breathe over 3,000 gallons of air each day; there is no way to avoid breathing. If that air is contaminated, there is no way to avoid exposure to those pollutants. Furthermore, it damages trees, crops, plants, animals, rivers, and lakes. This damages ecosystems and alters natural processes. Poor air quality affects everything around us.

**Air pollution affects health** in a number of ways. They range from coughing and shortness of breath to exacerbating conditions such as asthma, emphysema, and bronchitis. Air pollution has also been linked to higher occurrence of heart attacks and strokes and low birth weight in infants. Air pollution affects everyone, but certain people are more susceptible to its effects. Sensitive populations include people with lung or heart issues, young children, and older adults. Two air pollutants of particular concern are ozone and PM2.5.

- **Ozone**: Ground-level ozone, not to be confused with the atmosphere's protective ozone layer, is created by reactions between environmental pollutants and light and heat. Ozone is the main component of smog and is dangerous to health and the environment. The creation of ozone is facilitated by warm weather and sunshine; therefore, ozone levels are usually higher in the summer and in the mid-afternoon.

- **PM2.5**: "PM" stands for "particulate matter," which is a mixture of extremely small particles and liquid droplets. PM has many different components like acids, organic chemicals, metals, and soil. PM is measured in micrometers, so PM10 refers to particulate matter that is 10 micrometers long and PM2.5, 2.5 micrometers long.

From Utah Appletree

Exposure to both ‘fine’ (PM2.5) and ‘coarse’ (PM10) particles is associated with a number of harmful health effects, particularly those involving the heart and lungs. In general, the size of the particles is directly linked to their potential for causing health problems. Smaller particles (PM2.5) are most dangerous as they can easily get deep into the lungs. They can enter the circulatory system or remain embedded for long periods.

**Populations sensitive to particulate matter air pollution**

People with preexisting heart conditions, including: Heart failure and Coronary artery disease (CAD)

People with preexisting lung conditions, including: Asthma, Chronic obstructive pulmonary disease (COPD)

Older adults, who may have undiagnosed heart or lung conditions

Children, whose hearts and lungs are still developing
Symptoms of exposure to particulate matter

<table>
<thead>
<tr>
<th>People with heart conditions</th>
<th>People with lung conditions</th>
<th>Healthy people may experience temporary symptoms</th>
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<tbody>
<tr>
<td>Chest pain</td>
<td>Coughing</td>
<td>Eye, nose, and throat irritation</td>
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<tr>
<td>Irregular heartbeat</td>
<td>Shortness of breath</td>
<td>Coughing</td>
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<tr>
<td>Shortness of breath</td>
<td>Decreased ability to breathe deeply or vigorously</td>
<td>Chest tightness</td>
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<tr>
<td>Fatigue</td>
<td>Increased susceptibility to respiratory infections</td>
<td>Shortness of breath</td>
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<tr>
<td>Heart attacks</td>
<td>Aggravation of existing lung conditions like asthma and chronic bronchitis</td>
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<tr>
<td>Coronary artery disease (CAD)</td>
<td>the most common heart problem related to long term exposure to PM2.5 (CDC, 2013a)</td>
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<tr>
<td>However, CAD is largely linked to risky lifestyle habits like poor diet, smoking, and lack of exercise</td>
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These cardiovascular and respiratory health effects can increase doctor and emergency room visits, hospital stays, absences from school and work, and deaths. Nationwide, studies have shown a 15% decrease in the risk of heart disease deaths with every PM2.5 decrease of 10 micrograms per cubic meter of air (µg/m3). Particle pollution has also been associated with lung cancer and adverse birth outcomes, such as low birth weight and preterm birth (CDC, 2013; Shah et al., 2011; UDOH, 2014a).

Ways to Reduce Exposure

The likelihood of being affected by PM increases as more time is spent outdoors during periods with high PM levels, and as more strenuous activities are performed.

Protect your health when PM levels are high

- Monitor PM levels in your area
- Since exercise is good for health, it is important to both stay active as well as know when to make changes
  - Reduce the amount of time spent on high exertion activities
  - Substitute a less strenuous activity (e.g., take a walk instead of jogging or running)
- Plan outdoor activities for days when PM levels are low
- Spend less time in areas likely to have higher PM levels, such as near busy roads

Reduce indoor PM

- Do not smoke indoors
- Reduce the use of particle sources like candles, wood burning stoves, and fireplaces
- Certain air filters can help reduce indoor PM. See the EPA's Guide to Air Cleaners for more information.

Even though we may assume that our individual choices do not affect air quality, they do.

Reducing air pollution and improving air quality is everybody’s responsibility:

- Conserve energy by turning off lights and appliances when you’re not using them
- Recycle paper, plastic, glass bottles, cardboard, and aluminium cans
- Avoid using paper and plastic bags
- Plan your trips with your automobile or use public transportation, ride a bike, or walk
- For more suggestions, please visit these websites for more ideas: - UCAIR Utah Clean Air Partnership, U.S. Environmental Protection Agency

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![PM2.5 levels](image)

Here are some tips to help you better understand the AQI chart:
- **Sensitive groups**: People who have certain underlying diseases or health conditions may be more susceptible to the effects of air pollution. This includes people with heart disease, lung disease, children, and the elderly.
- **Prohibited exercise**: Any activity done intermittently for several hours and makes you breathe slightly harder than normal, such as walking or yard work.
- **Avoid exercise**: Any intense activity that makes you breathe hard.

Winter has arrived and it’s never a bad idea to brush up on your pediatric airway care. This time of year is branded Respiratory Season because the cold weather forces us indoor where we share warmth and illnesses. Children are especially susceptible to respiratory illness because of their underdeveloped immune system and their tiny airways. Pollution is only one of many triggers that may lead to increased pediatric call volumes and ER visits in the next few months. Brush up on your knowledge of pediatric airway anatomy. Remember that bagging well is a super power in pediatrics, practice your bagging technique. Intubation should come only if bagging is unsuccessful. Restock your suction supplies. BBGs, deep nasal suctioning… these are your weapons in battling the secretion season.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Onset of Symptoms</th>
<th>Signs and Symptoms</th>
<th>Important Points</th>
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<tbody>
<tr>
<td><strong>Asthma</strong></td>
<td>Acute exacerbation, Chronic condition</td>
<td>Hx of exposures to triggers (like air pollution), Expiratory wheeze on auscultation, Prolonged expiratory phase, Bronchospasm, Coughing spells both productive and non-productive, Shortness of breath/breathless with speech, Chest tightness/pain, Hypoxia</td>
<td>About one in 20 children have asthma, At Primary Children’s Hospital Emergency Department, we see about 1,000 children with asthma each year, 500 children need to be hospitalized each year. If you are suspicious that a child with difficulty breathing has asthma, do not hesitate to treat as though they have asthma, A few important points: When the child is known to have asthma - The earlier they get steroids, the quicker they will recover and the less they will need hospital admission or more intense treatment - Albuterol should be given early and frequently to help open the lungs and improve respiratory distress - Supplemental oxygen should be given if the child is in distress or if oxygen saturation is &lt; 90%, When a child has not been diagnosed with asthma - A dose of albuterol should be tried to see if it improves the child’s work of breathing - If a child responds to albuterol, steroids should be given - Some children (especially infants) won’t respond to albuterol because wheezing with viral illnesses may not be because of asthma</td>
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<td><strong>Croup</strong></td>
<td>Rapid or gradual, Primarily in children ages 1-6 yrs.</td>
<td>Mild to severe nasal flaring and/or retractions, Noisy breathing (stridor), Barking cough, Hoarse voice, Fever</td>
<td>The respiratory distress of croup usually starts suddenly and frequently at night, The noisy breathing in a croup patient should be loudest when you listen to the patient’s neck, not lungs, Croup patients who are in significant respiratory distress will have supraclavicular retractions, whereas asthmatics tend to have more subcostal and intercostal retractions (*a child who is ill enough with either disease could have retractions in all 3 locations), Croup patients may have more trouble breathing in whereas asthma patients usually take longer to breathe out. A great way to evaluate this is to breathe with the patient, if you feel like you want to breathe in again and the patient is still breathing out, that is prolonged expiration and more likely asthma</td>
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<td><strong>Bronchiolitis</strong></td>
<td>Gradual, Often related to viral infections</td>
<td>Lots of secretions and nasal congestion, Coughing spells, Cyanosis, 1-4 day history of congestion with a low-grade fever, Parents of infants will often report poor feeding, lethargy or agitation</td>
<td>Respiratory Syncytial Virus (RSV) is the most common viral cause of bronchiolitis, many parents and providers use the terms interchangeably, but RSV is not the only cause of bronchiolitis, Occurs most often in children, 0 to 24 months, This is one of the few viral infections that can cause serious illness in newborns, Treatment includes supportive care - Ensuring adequate hydration and oxygenation - Careful monitoring for complications - Clearing secretions (think deep suctioning)</td>
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Protocols in Practice

RESPIRATORY DISTRESS

**ALL PROVIDERS**

- Focused history and physical exam:
  - Determine the need to treat under the *Allergic Reaction/Anaphylaxis Guideline*
  - Determine the need to treat under the *Congestive Heart Failure Guideline*
  - Assess blood glucose, temperature and oxygen saturation
- Cardiac monitor, ETCO₂, and pulse oximetry monitoring, when available
- Consider a 12 lead EKG
- Treatment Plan
  - Remove any obvious obstructions to the airway
    - For choking infants apply a sequence of 5 back blows and 5 chest thrusts until the item is dislodged
    - For choking adults and children, use the abdominal thrust ("Heimlich") maneuver.
  - Maintain airway, administer 10-15 bpm of oxygen via NRB
- Key Considerations
  - Recall that infants and small children are primarily nose breathers, consider oral and nasal suctioning for copious secretions
  - Keep patient NPO for any respiratory distress and if children have a RR >60

**ADULT**

PEDiATRIC (<15 years of Age)

NOTE: Pediatric weight based dosing should not exceed Adult dosing.

**EMT**

- Assist with administration of prescribed metered dose inhaler or nebulizer medication per dosing instructions. If MDI dosing instructions are not available, give second dose at 20 minutes if needed

**AEMT**

- Advanced airway, vascular access and fluid therapy per IV/IO Access and Fluid Therapy Guidelines
- For ANAPHYLAXIS:
  - See *Anaphylaxis/Allergic Reaction Guideline*
- For WHEEZING:
  - Albuterol 5 mg/2.5 cc NS nebulized
  - Repeat nebs as needed
  - Patient respiratory status must be reassessed after each dose to determine need for additional treatment
- For STRIDOR:
  - Epinephrine (1:1000) 2 ml (2mg) mixed with 3ml of normal saline nebulized

**EMT**

- Assist with administration of prescribed metered dose inhaler or nebulizer medication per dosing instructions. If MDI dosing instructions are not available, give second dose at 20 minutes if needed
- Allow the patient to achieve and remain in a position of comfort (the parents arms if desired) and keep them as calm as possible.

**AEMT**

- Advanced airway, vascular access and fluid therapy per IV/IO Access and Fluid Therapy Guidelines
- For ANAPHYLAXIS:
  - See *Anaphylaxis/Allergic Reaction Guideline*
- For WHEEZING:
  - Albuterol 5 mg/2.5 cc NS nebulized
  - For infants < 1yr: albuterol 2.5 mg/5cc NS nebulized if wheezing persists after nasal suctioning
- For STRIDOR (croup):
  - Epinephrine (1:1000) 2mL (2mg) added to 3mL of Normal Saline via nebulizer

**Note:** Patient respiratory status must be reassessed after each dose to determine need for additional treatment. Call OLMC for additional doses.
Andy Ostler has served with EMSC since before it was Utah EMSC. He has served as our Lead Course Coordinator since 1993. Chances are good that if you have attended a PEPP class in this state he was one of your instructors. Andy has lead our army of coordinators. He travels all over the state teaching. He works behind the scenes to ensure excellent pediatric training and he teaches PALS for Intermountain. Andy is the cornerstone of our program and so it is with great sadness that we announce he will be leaving us for a new adventure.

Andy was born in Nephi Utah. He joined the Salt Lake City Fire Department in 1973 and served as an EMT and then a Paramedic for 33 years when he retired. Retirement blurr… That was when he began working full force with EMSC. He is a certified PEPP Coordinator, PALS/BLS instructor, ACLS provider, a team lead for Central 1 in the pediatric strike team, a member of Utah DMAT-1, Unit Commissioner in the Boy Scouts of America, the father of 4, and grandfather of 10.

While we are excited for Andy’s new opportunity and grateful to his wife for letting us use (abuse) him for so long, we really don’t know what we are going to do without him. Best wishes Andy, you will be missed!

Happenings
# January 2018

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## Pediatric Education Around the State

**Pediatric Grand Rounds (PGR)** are educational/CME offerings webcast weekly (Sept-May) at 0800-0900 you can watch live or archived presentations. It is geared towards hospital personnel. But will qualify for BEMSP CME. Access at [https://intermountainhealthcare.org/locations/primary-childrens-hospital/for-referring-physicians/pediatric-grand-rounds/](https://intermountainhealthcare.org/locations/primary-childrens-hospital/for-referring-physicians/pediatric-grand-rounds/)

- **Jan 4**  Tracking infectious disease activity in Utah. It’s not “just a virus” anymore
- **Jan 11** Twenty-five years of the bronchiolitis care process at Primary Children’s Hospital
- **Jan 18** Helping individuals with autism negotiate the healthcare system
- **Jan 25** Gait abnormalities in children

**EMS Grand Rounds (EGR)** This offering alternates with Trauma Grand Rounds every other month, it is geared towards EMS. Live viewings qualify for CME credit.

**Peds EMS Lecture Series (PEL)** Free monthly pediatric CME/CEU presentations from Primary Children’s Emergency Department Attending Physicians to Utah’s EMS. For more information contact Lynsey.Cooper@imail.org *Currently on hold.

## PGR Schedule

1. Live real time viewing via the internet at: [www.emsgroundrounds.com](http://www.emsgroundrounds.com) If you would like to receive CME for viewing this presentation live, email Zach Robinson (zachary.robinson@hsc.utah.edu)
2. Delayed viewing at your personal convenience, a week after the presentation at: [www.emsgroundrounds.com](http://www.emsgroundrounds.com)

## Project ECHO Burn and Soft Tissue Injury (ECHO) has a pediatric and adult component. CME/CEU and MD CME available [https://crisisstandardsofcare.utah.edu](https://crisisstandardsofcare.utah.edu) click request access and follow instructions.

## Upcoming Peds Classes, 2018

- For PEPP and PALS classes throughout the state contact Andy Ostler Aostler@utah.gov
- For PALS and ENPC classes in Filmore, Delta and MVH contact Kris Shields at shields57@gmail.com

## Save the Date

- **February 16-17** Uintah Basin Emergency Care Conference [www.2018UBECC.eventbrite.com](http://www.2018UBECC.eventbrite.com) There is no cost to attend but you must register!
- **February 22-23** 40th annual Neonatal and Pediatric Transport Conference
- **April 11-12** Zero Fatalities Safety Summit
The Emergency Medical Services for Children (EMSC) Program aims to ensure that emergency medical care for the ill and injured child or adolescent is well integrated into an emergency medical service system. We work to ensure that the system is backed by optimal resources and that the entire spectrum of emergency services (prevention, acute care, and rehabilitation) is provided to children and adolescents, no matter where they live, attend school or travel.

Parting Shot ... Andy Ostler you are our hero!

I would just like to wish him luck and that he will be missed and say that he, and his truck that holds a million things, are irreplaceable.....

-Hilary

I wish him the best in all he sets out to do in the future.

-Mike Kilfoyle

All I want to say is that Andy will be missed around here. His wealth of knowledge, leadership, and kindness. I don't have a specific story. I wish him the best as he transitions to the next phase of his life. I'm sure for the most part it'll be a phase full of service, family, happiness, and travel.

-Raul

Andy, there are no words! You are irreplaceable.

-Tia

Words cannot describe Andy’s work ethic and drive in his endeavors to bring quality Pediatric education to all manner of responders and medical professionals in the intermountain west. I have never worked with anyone who has as much patience and passion for what he does. Andy is the epitome of professional and has no equal in his leadership. I wish him the best in all he sets out to do in the future.

-Mike Kilfoyle