



# The Pony Express

Improving emergency medical care for children all across Texas



Volume 6, Issue 4



By now, all kids from pre-K through college are back in school. My granddaughter Khloe is back at preschool and it is amazing how much she learns and absorbs in such a short amount of time. Personally, I think that happens at that age (she's 2) because they haven't had the chance to develop the bad attitudes and habits that we fall into as we get older.

For those of us who have grown older and hopefully wiser, you know that our education is continuous and we never stop learning. This is especially true in EMS as things are changing at such a rapid pace. I would urge all of you to keep an open mind to learning new things that could enhance your patient care.

One essential aspect of pediatric prehospital care is the ability to estimate a child's weight in order to determine proper weight-based medication doses and equipment sizes. There are several tools that exist to assist prehospital providers and emergency department staff in doing this. In this issue of the *Pony Express*, Washington County EMS describes its use of the [Handtevy Pediatric Resuscitation System](#). Though it is unclear if one weight estimation tool is better than another in providing decision support to prehospital and hospital-based emergency care providers, it is important to be aware of the tools that are being used to care for children. (Note: The EMS for Children State Partnership, Texas does not endorse the use of any specific product, but does endorse the use of any tool that accurately estimates a child's weight, as this practice has been shown to minimize medication dosing errors.)

You will also read an article about an innovative way to receive education that was developed through a collaboration of the [Oregon EMS for Children Program and ReelDX](#).

As the EMS world is moving to [Mobile Integrated Healthcare, or Community Paramedicine](#), you will learn that these programs are not just for adults.

If you have any questions, comments, or something you would like to see in future articles, please send it to Sam at: [emsctexas@bcm.edu](mailto:emsctexas@bcm.edu)

## Washington County EMS Instigates New Pediatric System

By Mark Rosenbaum

Any time you are dispatched to a pediatric call, there is always an increased level of anxiety. Couple that with the fact that a majority of EMS calls involve adults and it's no wonder that these low-volume, high-risk scenarios can cause even the most experienced medics stress. Adding to the anxiety is the real possibility of making a medication dosing error. One study demonstrated a medication dosing error rate of 34% among 5,547 pediatric patients treated in the field. Another study at a university-affiliated pediatric hospital found 252 tenfold medication errors were identified throughout a five-year period.

This summer, [Washington County EMS](#) (WCEMS) implemented a new system that helps staff better prepare for these situations. Using funds from community donations, WCEMS converted over to using the Handtevy system. Traditionally, rescuers have to wait to arrive on scene and use a Broselow tape to determine the child's size and subsequent medication requirements. The new system allows rescuers to estimate the child's weight and size based on age so that they can then begin to calculate the drug dosages that are going to be required. The initial calculations can be done while enroute, allowing rescuers to swiftly confirm and deliver accurate dosages of the correct lifesaving medications when they arrive on scene. Calculations are also volume based so that there is no time wasted on converting the actual milligrams needed into their respective volumes.

Moving to the new system involved converting the standard pediatric resuscitation bags to the Handtevy kits and learning the hand method for dosing calculations. Dr. Peter Antevy, a pediatric emergency physician, developed the system. His experiences working pediatric emergencies motivated him to develop an easier method to calculate the dosing of front line pediatric medications.



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[Mail Pouch](#)

## EMSC State Partnership, TX

**Check out the EMSC State Partnership website at  
[www.bcm.edu/pediatrics/emsc](http://www.bcm.edu/pediatrics/emsc)**

To remove your name from our mailing list, please [click here](#).



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## Pediatric Mobile Integrated Healthcare Models: Improved health outcomes are not just for adults

By Kacy Allgood, Tom Arkind, Andrew Stevens, MD, Elizabeth Weinstein, MD, and Nadia Krupp, MD

Recently, [Indianapolis EMS](#) and the [Indiana University School of Medicine](#) were awarded a nearly million dollar, three-year award, that focuses on improving outcomes for pediatric asthma patients. This grant is used to develop a community paramedicine model to reduce recidivism and improve healthcare access. We've partnered with [Riley Children's Hospital](#) to provide in-home care within 3-5 days post-discharge for patients aged 2-17 who have recently experienced an admission, observation stay or ED visit for asthma-related reasons. Community paramedic home visits involve medical, social and environmental assessments and interventions. Our first year of experience with this pediatric patient population has lead us to recognize some differences between the populations and program models of our existing Mobile Integrated Health (MIH) 911 superutilizer reduction program and our proactive asthma program.

Emerging MIH models often originate and grow from the desire to reduce the volume of 911 superutilizers. The primary population of superutilizers are almost always adults who end up in our MIH programs because they lack social support and resources from friends and family. Without this social support, these patients often need assistance from institutions to access appropriate care. Due to the inherent lack of social support in this population, interventions designed for this group are generally reactive and focus solely on the patient.

Children are inherently different from this adult superutilizer population. Kids almost always have (at least some) social support. Unlike adults, children lack authority and control over many lifestyle choices that affect their health. They are usually dependent upon caregivers to access health care resources. This dependency means that effective interventions may involve the entire family or household.

Our community paramedics have access to a wide variety of interventions designed to improve pediatric asthma patient outcomes.

Patient-focused interventions include:

- **Scheduling** same-day and next-day pulmonary and PCP appointments
- **Extending** the length of steroid prescriptions, and other immediate medication administration

Family-focused interventions include:

- **Instruction** on medication and medical device usage, early recognition of asthma symptoms and identification and avoidance of asthma/allergy triggers
- **Referral** to appropriate, local, non-medical resources

Preliminary results from the [Treat the Streets](#) program indicate that the interventions we use most frequently affect the entire household, not just the child. Nearly all of our patients and families require hands-on instruction on the use of medication or devices like inhalers, spacers and nebulizers. If the child is confused on proper medication administration, there is a very high likelihood the parents also need clarification. Therefore, instruction provided by community paramedics usually involves multiple household members.

Asthma exacerbations are heavily affected by environmental factors, both inside and outside of the home. Our second most frequently used intervention is a referral to the public health department for assistance with mold remediation and housing relocation. Much-needed household repairs or a move to a healthier home improves the lives of the entire family.

During our first year of pediatric home-visits, community paramedics have rarely utilized the available patient-focused interventions. Often, MIH program goals revolve around improving patient outcomes by slowing the progression of chronic disease, reducing recidivism and 911 usage, educating and empowering patients, increasing self-care or removing barriers to effective treatment. These same goals can easily be accomplished in pediatric populations by incorporating family-level interventions.

For more information about the grant, *Treat the Streets: Pre-Hospital Pediatric Asthma intervention Model to Improve Child Health Outcomes, Prevent Recidivism & Improve Healthcare Access*, please visit <http://indianaemsc.org/asthma/grant/> or email Kacy Allgood, Program Manager, at allgoodk@iu.edu.



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## ReelDx and Oregon EMS for Children Program Announce Partnership to Publish Videos from Emergency Medical Responders

By David Spiro, M.D.



ReelDx, launched the first online library of real-patient video case studies designed to train emergency medical first-responders. The project is sponsored by the [Oregon Emergency Medical Services for Children Program](#)

(EMSC), an initiative of the Oregon Health Authority to reduce child and youth mortality and morbidity caused by severe illness or trauma.

The library provides EMS professionals with short videos of real encounters in the field and in emergency rooms, substantial case data and imagery, and peer-authored and reviewed write-ups of each case. Education about best practices for emergency assessment and management is made vivid through real patients, real providers and real medical emergencies.

"This is a powerful learning tool for medical first responders," says Dr. David Spiro, co-founder and Chief Medical Officer of ReelDx. "It's critical for EMTs and paramedics to keep their skills current and their training fresh. However, their exposure to a broad range of conditions is dependent on the medical emergencies that happen to occur in the communities they serve. Especially in rural communities, this can limit the knowledge that pre-hospital providers have had recent chance to put to use. With ReelDx, they can review real cases from other first responders and get bullet-point takeaways for their own practice."

Each case includes a video of about 1 minute in length along with patient medical history, dispatch information, and first responder interventions used. Many cases also include rich supplemental materials, such as still pictures of trauma scenes; caregiver interviews; EKG and other test results; and an interactive quiz to test the viewer's knowledge.

The ReelDx and OR EMSC Prehospital Library will feature one new case weekly.

Contributors include providers and teachers from [Oregon Health & Science University](#), [Kaiser Permanente](#), [University of Louisville](#), [Yale-New Haven Hospital](#), and [Woodburn Ambulance Company](#) in Woodburn, OR. All cases are produced with full patient consent.

### About ReelDx:

Headquartered in Portland, OR, privately-held ReelDx provides online and mobile applications that enable the creation, storage, and sharing of Personal Clinical Video™. Personal video content can improve medical education, increase the effectiveness of patient communications, and allow providers to more efficiently and accurately record clinical encounters. The company partners with medical manufacturers, provider organizations, and educational systems to create and deliver specialized libraries of educational content and to innovate the use of video in clinical environments.



### About Oregon EMS for Children:

Oregon Emergency Medical Services for Children (EMSC) was established in 1984. EMSC is an initiative designed to reduce child and youth disability and death due to severe illness or injury. The goals are to ensure that state-of-the-art emergency medical care is available for all ill or injured children and adolescents; that pediatric services are well integrated into an emergency medical services (EMS) system; and that the entire spectrum of emergency services, including primary prevention of illness and injury, acute care, and rehabilitation, are provided to children and adolescents.

### Contact:

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### Did you know?

Did you know that the EMS for Children Program is the ONLY federal program solely focused on improving the quality of pediatric emergency care?



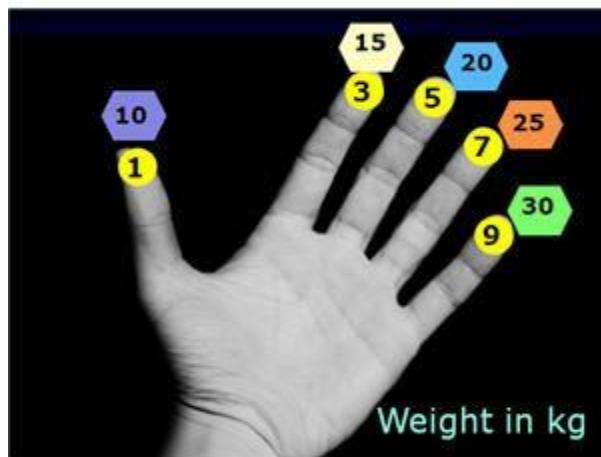
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## Washington County EMS instigates new pediatric system (cont. from page 1)



The Handtevy System adopted by Washington County, includes a customizable kit along with the hand method for dosing calculations. In addition, a customized medication booklet is included in each kit that has each of the agencies pediatric medications and the corresponding age based doses in an easy to reference format. It uses both age and length for pediatric resuscitation decisions, and allows providers to begin considering treatment decisions prior to patient contact.

The Handtevy Method is taught by first associating five ages with their corresponding weights in kilograms via

a finger counting method on your hand. To obtain the corresponding weight for each age, assign each finger a chronological odd number starting with 1: 1, 3, 5, 7, and 9. Each finger represents an age in years. Then, using the same fingers, count up in 5s starting with 10: 10, 15, 20, 25 and 30 to obtain the corresponding ideal body weight in kilograms. For example, a 1-year-old ideally weighs 10 kg, a 3-year-old 15 kg, etc. Once the weight has been determined, use the Handtevy Method to determine dosages for any of eight medications. For example, the pediatric dose for epinephrine 1:10,000 can be determined by moving the decimal point of the child's weight in kilograms over once to the left to determine the volume (mL) of the dosage. There are similar easy to remember methods for determining dosing on the other front line medications (epinephrine 1:1,000, amiodarone, sodium bicarbonate, dextrose, normal saline, lorazepam and diazepam). The kits still contain individual bags that have all the appropriately sized materials (IV Caths, ET Tubes, and Laryngoscopes) along with and easy to access front compartment that contains common consumables.

WCEMS Director, Kevin Deramus says, "The transition over to this new system has been straightforward because there were no substantial changes to our formulary or protocols. The pediatric medications and doses that we have been using remain the same." He went on to add "WECMS is excited to put a new and innovative tool into use that will help provide quicker and more precise care for our patients."

## A New Pediatric Approach – The Handtevy™ System

By Allison Antevy

Simply saying the words pediatric resuscitation evokes the feeling of fear and trepidation for the majority of healthcare providers, including emergency physicians themselves. Although resuscitation algorithms in adults and pediatrics are nearly identical, providers feel very different about their ability to execute them at the same level. Even the most experienced healthcare provider is unlikely to feel as comfortable as their adult counterpart, given the same clinical setting, etiology and treatment plan.

The [Handtevy™ Pediatric Resuscitation System](#) was developed to address this problem with one main goal in mind; to improve outcomes for sick and injured pediatric patients in the pre-hospital setting. To obtain this goal the creator of the Handtevy™ System recognized that the decision to stay on scene was made by paramedics prior to arrival. Meaning that unless the provider had a solid grasp of what they were going to do, it was unlikely that they would treat the child on scene and instead would rush to the nearest hospital before performing life saving measures. It is recognized nationally that the outcomes of cardiac arrest are dismal, yet can be improved with high quality on-scene care. A growing trend is for agencies to adopt an on-scene resuscitation policy for their adult patients with a demonstrable improvement in outcomes. With the right training, tools and improved provider confidence the same outcomes can be obtained for pediatric patients. The Handtevy™ System, now being used across the country, has rapidly changed culture and provider mindset with regards to the pediatric patient. Providers have gravitated to the Handtevy™ because they, for the first time, have the ability to determine drug volumes and equipment size prior to arrival on scene. (Continued on page 5)





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## A New Pediatric Approach – The Handtevy™ System (Continued from page 4)

The Handtevy™ Pediatric Resuscitation System utilizes a multifaceted approach to pediatric care that extends significantly past the basic tenets of length-based resuscitation. The Handtevy™ System offers a comprehensive approach in order for the provider to treat a child with confidence. An innovative, interactive training called the “Handtevy™ Method” educates providers on how to dose the eight most critically used drugs without any aids at all, taking the difficult math out of the equation. The Handtevy™ is also the first-of-its-kind hybrid age and length based system. It relies on age to determine weight followed by drug dosing with the intention that the provider will only require the Handtevy™ length based tape in specific situations as a secondary tool. The Handtevy™ System is also the only pediatric resuscitation system that offers customized medication books. All drug dosages in the medication book are customized to the specific agencies protocols using only the drugs and concentrations carried by that agency or hospital.

Recent evidence has demonstrated significant support for the Handtevy™ System. A [Colorado study](#) comparing the Handtevy™ with the Broselow system reported that the majority of participants perceived the Handtevy™ system as faster (91.1%), more accurate (88.2%) and preferable (91.1%). That same study demonstrated that dextrose administration was significantly more accurate using the Handtevy™ (85.2% vs. 31.8%, p<0.05). The deficiency in pre-hospital care was demonstrated in another study that looked at epinephrine rates in out-of-hospital pediatric arrest in 42 states. The authors reported that only 34% of children in cardiac arrest received epinephrine prior to arrival at the hospital; a significant disparity in treatment for a vulnerable cohort of the population.

The solution to the mystery of the critically ill pediatric is complex and requires more than just a “widget.” There is no singular fix; rather it’s a move towards a new strategy that allows paramedics to begin to discuss treatment considerations prior to arrival at the patient’s side. The blend of psychology and clinical acumen is greatly exaggerated on the pediatric call and the Handtevy™ System addresses each of these items in an easy to understand way.

Dr. Peter Antevy, creator of the Handtevy™ System, is a pediatric emergency medicine physician and an EMS medical director for several agencies in Broward County, Florida. It was the entry into the front lines of EMS that helped him understand how complex the pediatric problem really was and search for a better solution.

## The Dangers of Prescription Drug Abuse in Teens

By Melinda Crockom

Imagine you are talking to your significant other about a medication you take that makes you really drowsy. You don’t realize it, but your teenager is in the next room and overhears you. She hasn’t been sleeping well lately and she thinks maybe your medication can help her sleep better. She starts sneaking your medication at night when she has trouble sleeping.

*Would you consider this safe?*

It is important to know that it is NEVER safe to take a prescription medication that is not prescribed to you. These days, prescription medications are a lot easier to get a hold of than illegal drugs which makes teens more inclined to get them. But just because they might be easier to get does not mean that they are safe to take.

Prescription drug abuse is a major issue facing the United States today. Not only can it lead to drug poisoning but it can even cause an overdose. Prescriptions most commonly abused include opioids, central nervous system depressants, and stimulants. These drugs essentially act as poisons in the body depending on the amount a person ingests. This means abusing prescription medications can be fatal.

*Where are teens getting these drugs?*

Most teens are getting prescription medications from medicine cabinets of family, friends and acquaintances. A very small portion of teens are getting from doctors, pharmacists or over the internet.  
*What can you do to help prevent drug abuse/drug poisonings?*

If you are a parent, talk to your kids about teen drug abuse of medications and the dangers associated with misuse. Teens who learn about the risks of drug use are 50% less likely to use drugs according to drugfree.org. It is also a good idea to safeguard medications by keeping them in a secure place.

If you or someone you know becomes poisoned by medication misuse, please contact the Poison Control Center help line for assistance. The [Texas Poison Center Network](#) is available 24/7 to help with any questions or concerns. All calls are answered by a nurse or pharmacist and are free of charge. Program this number into your phone for when you need it” 1-800-222-1222.





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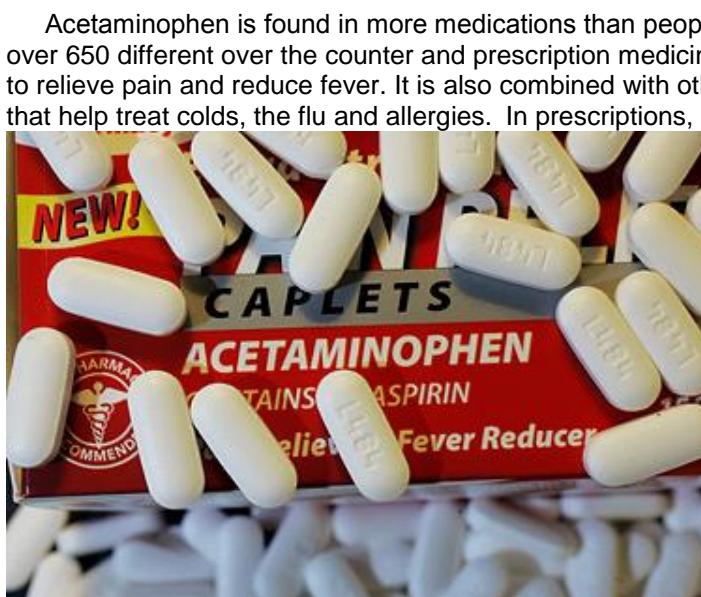
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## Using Too Much Acetaminophen Can Be Dangerous

By Melinda Crockom



Acetaminophen is found in more medications than people realize. It's the active ingredient in over 650 different over the counter and prescription medicines. This medication is primarily used to relieve pain and reduce fever. It is also combined with other ingredients in various medications that help treat colds, the flu and allergies. In prescriptions, you can find acetaminophen combined with other ingredients that help relieve moderate to severe pain. Recently, the FDA put out an alert to remind healthcare professionals to stop dispensing combination drug products that contain more than 325 mg of acetaminophen.

Many times, people will unknowingly take medications to treat other symptoms not realizing that several medications they might be taking all have acetaminophen as an active ingredient. This can cause SERIOUS complications including liver damage if more than

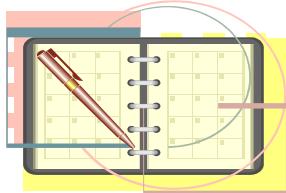
directed is ingested.

Acetaminophen overdose is now the most common cause of acute liver failure in the United States. Protect your health today by being aware of what medications you are putting into your body. If you ever think you or someone you know has taken too much acetaminophen or any other medication, please do not hesitate to contact the [Texas Poison Control Center](#) at 1-800-222-1222.

## Final Thought

The object of education is to prepare the young to educate themselves throughout their lives. ~Robert Maynard Hutchins

## Upcoming Events Mark Your Calendar



- [Preparedness Coalition Symposium](#): November 5 - 7 at the Galveston Convention Center, Galveston, TX
- [2014 CHAT Pediatric Nursing Conference](#): November 7 - 8 at the Hilton Fort Worth, Fort Worth, TX
- [EMS for Children Advisory Committee](#): November 21 via teleconference
- [Governor's EMS and Trauma Advisory Council \(GETAC\)](#): November 22 - 24 at the Omni Fort Worth, Fort Worth, TX
- [Texas EMS Conference](#): November 23 - 26 at the Fort Worth Convention Center, Fort Worth, TX