

PHYSICIAN REPORT



**Rocky Mountain
Hospital for Children**

At Presbyterian/St. Luke's

Located at
20th and
High St. in
Denver, CO



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WINTER 2018

When parents come together with the doctors, nurses, and staff at Rocky Mountain Hospital for Children, we can make amazing things happen.

#AMAZINGTOGETHER

EXECUTIVE LETTER



Article submitted by:
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Focus on Serving the Community

We are here to serve you! At Rocky Mountain Hospital for Children, we provide you and the families in your community with a choice in pediatric care. In this edition, we have some amazing new resources to tell you about.

First is the Rocky Mountain Hospital for Children Mobile Training Center. It's a custom built, simulation vehicle with four high fidelity simulation manikins, including a preemie. The purpose is to take the vehicle across the region to offer clinical training for pediatric emergencies in a simulation environment. There is no other vehicle like this in the entire country and we are excited to tell you about it.

Secondly, we have new secure cameras in our Neonatal Intensive Care Unit (NICU) allowing

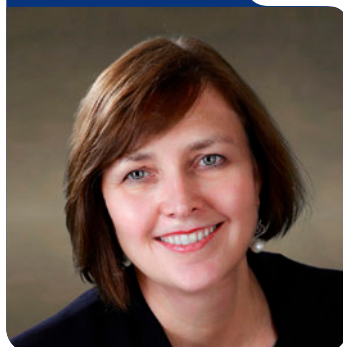
parents to check in on their baby while away. Many of our tiny patients come from all over the Rocky Mountain region. Now their parents can log into a secure app on their mobile device or computer and see a live video stream of their baby.

Also in this edition, we look at what to expect as influenza cases increase in our area. There are new recommendations for anti-viral medications for children. We will take a look at all the current information available.

Finally, our pediatric orthopedic specialists are seeing more and more children with ACL injuries. We review some of the causes of these injuries and the latest treatments. In addition, we offer advice physicians can give to parents for prevention.



TRAINING ADVANCES



Article submitted by:
Chris Darr, MD

New Mobile Training Center Coming to Your Community

Rocky Mountain Hospital for Children has a new tool in its arsenal to help clinicians across the Rocky Mountain region care for pediatric patients. We are very excited to announce the arrival of our Rocky Mountain Hospital for Children Mobile

Training Center.

There is nothing like this RV in the entire country and we are excited to bring it to you and your community. The Mobile Training Center has the capability to program technically advanced simulation

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Influenza: Who is at Risk and the Need to Vaccinate

Every year, influenza causes infection worldwide, affecting people from all ages and walks of life. It can cause serious illness or even death, particularly in members of high risk populations. Those considered high risk include those at the extremes of age (children < 5 and adults > 65), pregnant women (and up to two weeks postpartum), residents of long term care facilities, and those with a high risk medical conditions.

From 1976 to 2007, the death rate for children was greater than 100 annually due to influenza and related complications. Infants and children under 2 years of age are a special high-risk category for hospitalization and death. This led to ACIP (Advisory Committee on Immunization) to make a drastic recommendation to give annual influenza vaccination to all children over 6 months old, regardless of any

other medical condition. Patients with influenza who were vaccinated also have lower rates of ICU admission, complications and death.

Antiviral medication is available, but is of limited effectiveness. It is also unlikely that all influenza infected patients will receive treatment in a timely manner (less than 48 hours after symptom onset to get maximum benefit) because of delayed presentation to care, false negative antigen testing in clinical setting (up to 30-50% in the infected cases will test negative) and not all the infected cases are tested.

FDA had approved the treatment with oseltamivir orally for infant down to the age of two weeks, though current AAP recommendations for the 2017-2018 season indicate that antiviral treatment may be of benefit for newborns <2 weeks old (including preterm infants.) Discussion with an expert in pediatric infectious disease regarding treatment of neonates may be helpful. A newer antiviral medication, intravenous peramivir, is only FDA approved for adults 18 years or older and is reserved for severe cases.

For these reasons, the best way to protect the vulnerable infants, chil-

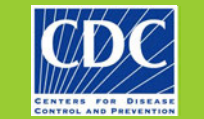
dren and others who are at high risk is to use influenza vaccine to prevent them and their families and communities from contracting influenza in the first place.

There is no vaccine approved for young infants less than 6 months old, thus we have to rely heavily on the mother during pregnancy and other family members or friends to get the vaccine to protect the newborn infants (who are at the mercy of protection by people around them). There are many studies that delve into the protective effect of maternal influenza vaccination during her pregnancy and how it carries on for many months after the baby is born.

Children under two years old and PREGNANT WOMEN can ONLY have the inactivated Influenza NOT the Live Attenuated Influenza vaccine.

The selection of vaccine strains now includes two influenza A and two influenza type B strains (quadrivalent vaccine.) This has been the process since 2015 for both the live and attenuated vaccines. The addition of a second type B influenza (compared to trivalent vaccine) is intended to improve overall vaccine coverage.

The use of the intranasal vaccine (Flu Mist) is NOT recommended currently due to poor efficacy.



REPORTS

more than
7,000
influenza
cases in the
U.S.
through
November
2017

Current Year Influenza Rate in Australia Compared to Last Season

2.5 times the number of hospitalizations
Twice the mortality rate
Particularly high rates for:

- Children age 5-9 years old
- Older adults



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NICVIEW Cameras Provide Comfort to Families

Imagine a family has gone through the experience of having a child three months earlier than their expected due date. Imagine the emotions and stress several days later when the mother is discharged and they have to leave the hospital without the newest addition to their family. Often families have arrived at the Rocky Mountain Hospital for Children Neonatal Intensive Care Unit from outside the metro area and have older children and other family members, including pets, back home

in a region that stretches from Durango, CO to Gillette, WY to Colby, KS. Now imagine the relief when you discover that you can see your newborn anytime, day or night, anyplace that you have access to the internet on a phone or computer. NICVIEW cameras in patient rooms stream a secure image of infants in their crib or incubator, so families can be reassured that their daughter or son is doing well. Whether a family is in Nebraska or a suburb of Denver, the cameras ease the emotional stress

caused by separation from their child.

Though the technology used to stream video has existed for several years, the NICVIEW system has added the security features needed to use this technology in a hospital environment where privacy is essential. Technology that brings families closer may be unusual in the age of the smartphone, but looking for ways to decrease families' stress and improve their experience is essential to our mission at the Rocky Mountain Hospital for Children.



NICU Cameras Provide a Comforting, Watchful Eye from Afar

Chris Darr, MD story continued from page 1

manikins designed to teach doctors, nurses and EMS providers pediatric resuscitation skills. It will allow us to serve your community by providing high-intensity clinical training for caregivers locally throughout Colorado and the Rocky Mountain region. The four high fidelity simulation manikins include Ryan, our 16-year-old full body adolescent; Max, our 6-year-old full body child; Hope, our 1-month-old full body newborn and Chloe, our 25-week premature infant. Chloe is a realistically proportioned 25-week preterm infant that can help healthcare professionals learn proper care and necessitation techniques for preterm infants. As the largest Level IV NICU in the region, unparalleled maternal and newborn care

our passion.

These manikins offer a wide-range of clinical functionality to teach the stabilization skills for airway, breathing and circulation management. They can be programmed to simulate a wide range of pediatric emergency scenarios that are high risk but often infrequent in reality. These scenarios can include severe respiratory distress, cardiac arrhythmias and arrest, seizures. The type of clinical scenarios that can be simulated is unlimited. Allowing physicians, nurses and EMS providers to rehearse the response to a pediatric resuscitation helps immensely to improve performance during a real event.

The RV was custom built to include an ambulance room and an ER or hospital room. Physicians, nurses

and EMS providers can train together to practice transfers of patients from the ambulance to an ER or hospital setting.

The Rocky Mountain Hospital for Children Mobile Training Center will offer healthcare providers an opportunity to train in a high stress, realistic environment to improve the outcome of pediatric patients. The simulation RV is also equipped with live broadcast capability to train others who are not able to be there in person.

If you would like to schedule a training visit, please contact Rebecca Petersen at 720-754-6638 or go to www.RMHCO Outreach.com.

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RMHC's New, One-of-a Kind, State-of-the-Art Mobile Training Center

PEDIATRIC SURGERY


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ACL Injuries on the Rise for Pediatric and Adolescent Athletes: Prevention and Treatment

The knee is the most frequent site of musculoskeletal injury in the pediatric athlete. In the last decade, there has been an increase in the incidence of anterior cruciate ligament (ACL) injuries in adolescent and pediatric patients. This is in large part due to higher participation rates of these patients in competitive sports. Several retrospective reviews have reported that children and adolescents account for 0.5–3% of all ACL injuries. The management of an ACL deficient child remains a controversial subject with debates surrounding operative timing and surgical technique.

ACL reconstruction is routinely performed on young patients because if they continue to be active in recreational play or competitive sports with an ACL-deficient knee, there is a high risk of chondral or meniscal injury, which can lead to early osteoarthritis. The ACL functions as a major stabilizer of the knee, preventing anterior translation of the tibia relative to the femur and acting as a restraint to tibial rotation. Without it, attempting to participate in pivoting and cutting sports results in buckling episodes that can result in the aforementioned meniscal and cartilage injuries. ACL reconstruction provides the benefits of improved knee function, avoidance



of strict activity modification and reduction of intraarticular injuries due to instability episodes.

The presence of open growth plates presents technical challenges when performing an ACL reconstruction on a young patient. The physes of the distal femur and proximal tibia are the primary contributors to lower extremity growth providing 70% and 60% of the growth of their respective bones. Drilling tunnels across open physes during ACL reconstruction can potentially injure the physis leading to premature closure, leg-length discrepancies and angular deformities. In an attempt to minimize the potential risk of growth disturbance, pediatric orthopaedic surgeons utilize specialized techniques to avoid physeal injury. The specifics of the techniques vary according to age but all focus on minimizing the

risk of physeal damage and consequent growth disruption.

There is evidence supporting the efficacy of ACL injury prevention programs, including neuromuscular and proprioceptive training programs. These programs may be most appropriate for those at highest risk for sustaining an ACL injury, including adolescent female athletes, patients with previous ACL injury, generalized ligamentous laxity, or family history of ACL injury.

Management of pediatric ACL injuries requires understanding of bone growth, mechanisms of physeal injury, as well as the natural history of delayed versus acute surgical management. With the current trends of increased sports participation and single sport specialization, it will continue to present a challenge to all those that work with and treat young athletes.

Rocky Mountain Pediatric Orthopedics Youth Sports Medicine Center for Concussion

offers expert care when your child needs it most.
Call 303-861-2663 to speak with one of our concussion specialists

