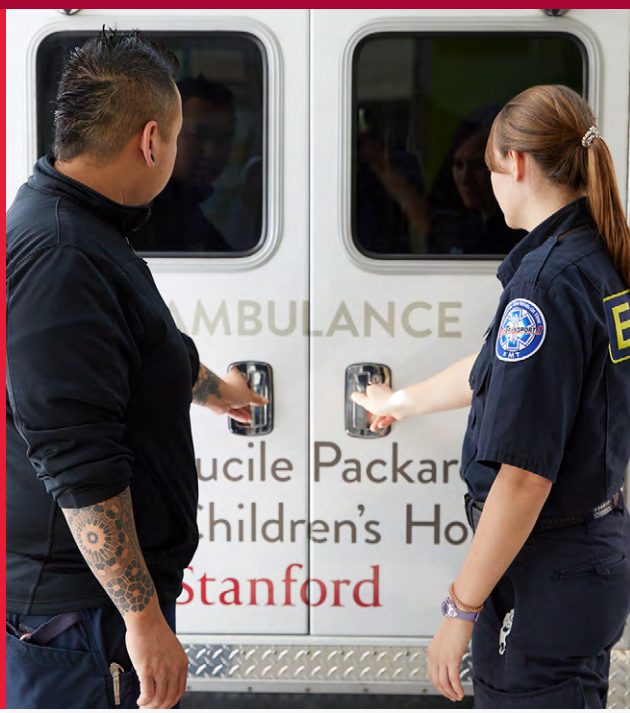
Stanford MEDICINE
Children's Health

Hospital Outreach Program (HOP)



Childhood Injury Prevention Program

—By Shelby Crespi, MPH, Childhood Injury Prevention Program

The Childhood Injury Prevention Program is dedicated to keeping our community's kids safe. Our bilingual staff addresses the leading mechanisms of injury facing children, through various education programs in communities across the region. We partner with local schools, public safety agencies, and family-serving organizations throughout the Bay Area to provide awareness and education on child passenger safety, safe sleep, bike and pedestrian safety, in-home safety, and other areas within the spectrum of childhood injury.

A main pillar of our work is to reach underserved populations throughout the Bay Area in our effort to achieve health equity. We do this through establishing and nurturing partnerships with child-serving organizations deeply embedded in communities. One such partnership is with the San Mateo County Nurse-Family Partnership Program.

Nurse-Family Partnership (NFP) is a national, evidence-based home-visiting program in which specially trained nurses

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regularly visit first-time expectant mothers who are experiencing hardship. Visits start early in the pregnancy and continue through the child's second birthday. Expectant moms benefit by getting the care and support they need to have a healthy pregnancy. At the same time, new mothers develop a close relationship with their nurse, who becomes a trusted resource for advice on everything from safely caring for their child to taking steps to provide a stable, secure future for both mother and child.

We partner with NFP to provide their clients free safety workshops in English and Spanish. Additionally, we provide families with car seats, pack-and-plays, sleep sacks, home safety kits, and window locks at no cost. Through the workshops, families obtain the knowledge and tools necessary to safely transport their children; provide them with a safe sleep environment; and implement safety measures necessary to prevent falls, poisonings, chokings, drownings, burns, and scalds in their home.

Our staff:

Melissa Burke, MPH, MPA
Director of Community Relations and Outreach

Salvador Vargas, CPSTI/SN
Childhood Injury Prevention Program Manager

Shelby Crespi, MPH, CPST

Childhood Injury Prevention Program Specialist

To reach us: carseat@stanfordchildrens.org

For safety information:
safety@stanfordchildrens.org

Let's Take a Closer Look... or Should We? Decreasing Chest CT in Pediatric Blunt Trauma

—By Katherine Alvarez, PA-C, Pediatric Trauma

Trauma is the leading cause of mortality in children in the United States. Blunt chest trauma resulting in clinically significant injury is uncommon but can have serious consequences if missed. So, how do we decide when to scan the chest? While chest computer tomography (CT) may be more liberally employed in adults due to the concern for aortic injuries, the use of chest CT must be employed more judiciously in children, in part owing to their different patterns of injury. With a less fixed mediastinum, the risk of blunt aortic disruption is significantly decreased. However, chest CTs are still often ordered as part of a "pan scan" when evaluating a pediatric patient with blunt trauma, increasing their radiation exposure.

Great-vessel injuries are rare in children. The majority of cases are identified with an abnormal chest x-ray (prominent aortic knob, widened mediastinum). They are most frequently seen with high-energy deceleration, compression, or crush to the torso but can be essentially ruled out with a normal chest x-ray. Chest CT is more sensitive in identifying the more common thoracic injuries, such as pulmonary contusions, pneumothorax, and rib fractures; however, they did not change management in 97% of patients in a study by Golden et al. (Pediatric Trauma Society, 2015). And while pulmonary contusions vary in severity, they are rarely fatal in children versus adults, in whom they can lead to acute respiratory distress syndrome.

The latest Trauma Quality Improvement (TQIP) best practices guidelines in imaging note the AP chest radiograph as the most valuable diagnostic study, with chest CT having no impact on subsequent management if only minor abnormalities are seen. Finally, if you are uncertain whether there would be benefit to the chest CT examination, reach out anytime to consult us by phone. Delayed imaging is also an option after a period of observation if there are no immediate concerns noted on your initial triage.

Key takeaway points:

1. Chest CT is rarely indicated in pediatric blunt traumatic injuries in the absence of findings on plain chest radiograph.
2. Consult your Level I pediatric trauma center for guidance if there is uncertainty.

> "The use of chest CT must be employed more judiciously in children, in part owing to their different patterns of injury."

Pediatric Vascular Injury

—Stephanie Chao, MD, and Melanie Stroud, MBA, RN, Pediatric Trauma

Severe vascular injuries in children requiring intervention are rare and more commonly associated with penetrating injury. Due to the rarity of pediatric vascular injuries, vascular spasm, and small vessel size, diagnosis and treatment can be challenging. Most vascular injuries in children occur in the extremity. Early identification and treatment are critical for successful limb salvage. Time to revascularization exceeding six hours increases the risk for amputation.

Adolescent males have the highest injury rates, with the upper extremity being the most common site of injury. Concurrent vascular injuries occur in less than 10% of cases. The most common vascular injuries were found in the brachial artery in the upper extremity and the superficial femoral artery in the lower extremity. Proximal injuries are associated with higher injury severity and mortality. Hemodynamically unstable children with a suspicion of peripheral vascular injury should undergo emergent surgical exploration. Blood loss from musculoskeletal injuries can be difficult to recognize. Limb perfusion assessment is key. Remember to use the "six Ps": pain, pallor, poikilothermic (variation in skin temperature and color), pulselessness, paresthesia, and paralysis. Comparison with the uninjured limb may provide valuable information. Initially, an injured limb may appear normal due to collateral circulation providing adequate flow; frequent reassessment is important. If hypotension limits the exam, a Doppler can assist in the physical examination. CT angiography may be a useful adjunct to evaluate the extremity, but it should not delay intervention to reestablish arterial blood flow.

At Stanford Medicine Children's Health, we are able to offer a unique partnership with one of the nation's leading adult vascular surgery teams. Because our children's hospital shares the same medical campus as our adult hospital, through a single point of entry via our emergency department, children with critical vascular injuries can receive immediate, state-of-the-art endovascular and traditional vascular surgical interventions. Serious vascular injuries are often optimally treated using technology found only in adult vascular surgical suites. Our pediatric patients

Table 3. Clinical signs of PVI

Hard Signs	Soft Signs
Pulsatile bleeding	Nonpulsatile bleeding
Expanding/pulsating hematoma	Nonexpanding/nonpulsating hematoma
Loss of distal pulses	Diminished pulse
Bruit/thrill	History of arterial (massive) bleeding hypotension
	Previously applied torniquet
	Neurologic deficit
	Wound in proximity to named vessel

AAST-WSES Guidelines (2020)

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requiring such care can be immediately brought from our pediatric emergency department to the adult vascular suites. A full complement of pediatric operating room staff (pediatric surgeons, pediatric anesthesiologists, registered nurses, and scrub techs) are immediately brought over from the children's hospital to join the team of adult anesthesiologists, nurses, and scrub techs. This allows Stanford Medicine to provide injured children with an unparalleled level of trauma care.

References

1) American College of Surgeons. (2018). Advanced Trauma Life Support. *Student Course Manual, 10th Edition. pp.* 148–166.
2) Corneille, M. (2011). Pediatric vascular injuries: acute management and early outcomes. *Journal of Trauma: Injury, Infection, and Critical Care*. Volume 70, Number 4.
3) Kobayashi, L. (2020). American Association for the Surgery of Trauma—World Society of Emergency Surgery guidelines on diagnosis and management of peripheral vascular injuries. *Journal of Trauma and Acute Care Surgery*. Volume 89, Number 6.
4) Perea, L. (2021). A 16-year institutional experience from a combined adult and pediatric trauma center. *Pediatric Emergency Care*. Volume 37, Number 8.
5) Prieto, J., et al. (2019). Evaluating surgical outcomes in pediatric extremity vascular trauma. *Journal of Pediatric Surgery*. Volume 55, Issue 2. pp. 319–323. http://www.elsevier .com/locate/jpedsurg 2019.

Pediatric and Adolescent Gynecology

—Nichole Tyson, MD, Pediatric and Adolescent Gynecology

The Pediatric and Adolescent Gynecology (PAG) service at Stanford Medicine Children's Health is the premier West Coast group caring for our youngest gynecology patients with medical and surgical conditions. PAG physicians are a subspecialty of OB/GYN who have extensive experience, specialized training, and board certification to care for patients from birth through adolescence and well into adulthood. Our PAG surgeons are well-recognized national experts in minimally invasive surgery using the most cutting-edge approaches to address childhood and adolescent gynecologic surgical conditions such as endometriosis, pelvic masses, gynecologic malignancies, congenital reproductive anomalies, anorectal malformations, disorders of sex differences (DSD), fertility preservation, and traumatic genital injuries.

Our PAG team also provides individualized approaches to hormone and contraception care in patients with complex medical conditions, including those with bone marrow and solid organ transplants, as well as those with complex genetic diagnoses.

The PAG physicians work closely in the clinic and inpatient setting to collaborate with other specialists across disciplines and partner closely with our patients and families to provide the ideal combination of compassionate and specialized care for our PAG patients and families. In addition, telehealth access has also flourished to help reach families that may be living far from Stanford Hospital and clinics.

The PAG division is committed not only to providing the gold standard of care to the young people we see but also to training the next leaders in the field. Stanford houses the only PAG fellowship on the West Coast, and its fellows work closely with each of our PAG team members and across specialties to deliver premier care to our patients.

As a team, our PAG specialists are also involved in a wide breadth of research, are active in educating our medical students and residents, and have prominent national voices in advocacy to help promote the reproductive health of our youngest gynecologic patients.

AAP Revises Clinical Guidelines for Hyperbilirubinemia in Newborns

—By Robert Castro, MD, and Cody Arnold, MD, Neonatal and Developmental Medicine

In September 2022, the American Academy of Pediatrics (AAP) updated its 2004 Clinical Practice Guidelines (CPG) for the diagnosis and management of neonatal hyperbilirubinemia.[1] Over 80% of newborns will have mild hyperbilirubinemia and jaundice. Although rare, a small number can experience severe jaundice leading to acute bilirubin encephalopathy and kernicterus, a type of permanent brain injury associated with cerebral palsy and movement disorders.

The new CPG include four different nomograms, guiding treatment with two thresholds, one for infants with neurotoxicity risk factors and another for those without such risks. Twenty-five Key Action Statements (KAS) are included as guidance for both inpatient and outpatient management. The main changes include:

- Universal pre-discharge transcutaneous (TcB) or total serum bilirubin (TSB) determination.
- Inpatient and post-discharge follow-up TSB recommendations based on "delta-TSB" (differences between measurements and phototherapy thresholds).
- Treatment thresholds based on week of gestation at birth.
- Separate treatment nomogram for infants with or without neurotoxicity risk factors.
- Phototherapy and exchange transfusion thresholds are slightly higher.
- Home phototherapy "permitted" ~1 mg/dl above phototherapy threshold in some circumstances.
- New decision rules for use of TcB measurements.
- Explicit guidelines for "Escalation of care"—TSB approaching exchange levels.
- Technical Report included reviewing the adverse effects of phototherapy.

A timely update included in the new CPG recommends removing race/ethnicity as a variable for risk stratification with a commentary published in the same issue of Pediatrics. The online tool, **BiliTool**, *has incorporated the new guidelines, providing a reference aid calculator and clinical support, including displays of thresholds for reflex testing with TSB, trending sequential bilirubin levels over time, and summarized results. Similarly, other online tools,* ***PediTools*** *and* ***BiliRecs****, are available and also have incorporated the new guidelines (https://peditools.org/bili2022/ and https://bilirecs.stanfordchildrens.org/).*

> "Over 80% of newborns will have mild hyperbilirubinemia and jaundice."

References

1) Kemper AR, Newman TB, Slaughter JL, et al. Clinical Practice Guideline Revision: Management of Hyperbilirubinemia in the Newborn Infant 35 or More Weeks of Gestation. *Pediatrics*. 2022;150(3):e2022058859.

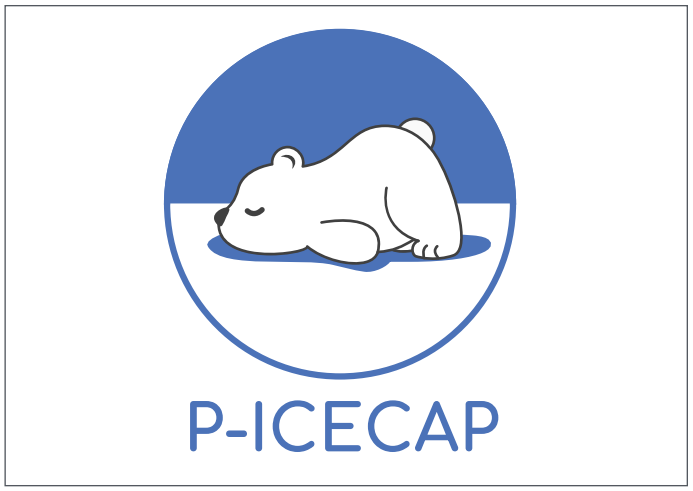
Out-of-Hospital Cardiac Arrest? New Multicenter Clinical Trial

—By Shelby Burk and Andy Wen, MD, Pediatric Critical Care

Approximately 20,000 children have a cardiac arrest annually in the United States. A minority of these are out-of-hospital cardiac arrests, and only a small percentage survive. Almost all survivors go on to develop new, severe neurological impairment.

Stanford has begun enrolling patients in a multicenter Phase II/III clinical trial: Pediatric Influence of Cooling duration on Efficacy in Cardiac Arrest Patients (P-ICECAP) out of the University of Michigan. The study objectives are to characterize the duration response curve for hypothermia and determine: 1. whether increasing durations of cooling are associated with better outcomes and 2. the shortest duration of cooling that provides the optimal treatment effect (based on a standardized neurobehavioral function test score and mortality one year later).

There are numerous inclusion and exclusion criteria (listed below), but it is important to keep in mind



that during cardiac arrest, the body is deprived of oxygen, and resultant stresses and toxic compounds are released. Timing is key, and in addition to providing high-quality CPR, it's important to quickly transport the patient to receive post-arrest care. We aim to enroll patients into P-ICECAP within six hours of return of spontaneous circulation (ROSC).

Inclusion Criteria	Exclusion Criteria
• Age 2 days to <18 years with corrected gestational age of at least 38 weeks • Coma or encephalopathy after ROSC following out-of-hospital cardiac arrest • Requiring mechanical ventilation • Definitive temperature control device started • Informed consent from legally authorized representative (LAR) including randomization within six hours of ROSC • Intent to maintain life support for 120 hours	• Glasgow Coma Motor Score (GCMS) of 6, severe hemodynamic instability • Preexisting condition confounding outcome determination, preexisting terminal illness • Planned early withdrawal of life support before 120 hours • Preexisting contraindication to cooling • CPR duration > 60 minutes • Prisoner • Pregnancy

When Transferring a Patient to Lucile Packard Children's Hospital Stanford:

Please call our Transfer Center at (650) 723-7342—ask about the P-ICECAP study and to contact our primary study coordinator, Shelby Burk.

Pediatric Emergency Department Visits for Mental Health Crises

—By Cherrelle Smith, MD, Pediatric Emergency Medicine

Patients and families seek help in an emergency department for various mental health concerns such as anxiety, depression, eating disorders, behavioral changes, acute psychosis, suicidal or homicidal thoughts, and suicide attempts.

At the Stanford Pediatric ED, Child Psychiatry is available via telemedicine to evaluate a child with an acute crisis. Those who are deemed a danger to themselves or others are placed on an involuntary hold until they can be transferred to a pediatric inpatient psychiatry unit.

Pediatric patients who present with a mental health concern, but do not meet criteria for inpatient psychiatric treatment, require outpatient support and resources. Some children have established care with a mental health professional, but many do not and are unaware of available resources.

San Francisco Bay Area public schools offer free mental health resources for their students and families. In addition, each school has a designated counselor. Counseling is available for students and families through services such as Care Solace, One Life Counseling Center, CalHOPE, Allcove, and Children's Health Council. If a child needs immediate attention, Uplift has a Mobile Response program. Uplift also has a 24-hour crisis hotline at **(408) 379-9085**.

Acknowledgments:
Special thanks to the Stanford iMPACt group for helping garner mental health resources for our community.

Resources

- Suicide Prevention Hotline: (800) 273-TALK (8255)
- California Department of Education
- CalHHS
- Pacific Clinics
- Care Solace
- One Life Counseling Center
- Children's Health Council
- CalHOPE
- Allcove

Upcoming Events

Pediatric Update Conference

28TH ANNUAL PEDIATRIC UPDATE

June 9–June 10, 2023
The Frances C. Arrillaga Alumni Center, Stanford, CA

2023 marks the return of the in-person 28th Annual Pediatric Clinical Update Conference, hosted in the Frances C. Arrillaga Alumni Center at Stanford University. In this two-day conference, renowned faculty will showcase updates and recent advances in mental health, newborn and infant treatment, and obesity. Utilizing keynote sessions and case studies, it aims to provide pediatricians and family physicians with up-to-date clinical information on various clinical issues encountered in daily pediatric practice.

Registration fee includes course materials, certificate of participation, breakfast and lunch.

- **Physician:** $550
- **RN/AHP:** $425
- **Fellows/Residents:** $225

Credits: *AMA PRA Category 1 Credits™* (11.00 hours), Non-Physician Participation Credit (11.00 hours), ANCC Contact Hours (11.00 hours)

Learn more >

Western Pediatric Trauma Conference

July 11 – 13, 2023
Omni La Costa, Carlsbad, CA

The conference features nationally renowned faculty in the fields of pediatric trauma, critical care, emergency medicine and pre-hospital care. The program content is targeted to surgeons, nurses and health care professionals from around the nation who care for injured children. This event is an unparalleled opportunity to make and solidify relationships through person-to person communications and marketing.

Registration fees:

- **Full conference, MD/DO:** $790
- **Single day, MD/D:** $450
- **Full conference for all other participants:** $500
- **Single day for all other participants:** $275

Credits: *AMA PRA Category 1 Credits™* (15.75 hours), Non-Physician Participation Credit (15.75 hours), NCPD (15.75 hours)

Learn more >

Inpatient Consults and Transfers

The Transfer Center at Lucile Packard Children's Hospital Stanford is standing by to help with inpatient consultations and interfacility transfers. Our team of transfer center specialists are available 24/7 to assist in coordinating neonatal, pediatric, and obstetrical transfers, as well as inpatient consultation needs.

To initiate a patient transfer and/or to consult with a Packard Children's specialist, please call **(650) 723-7342.**

Please have the following information available with the initial request:

- Patient's name and location
- Date of birth
- Chief complaint or diagnosis
- Referring physician's full name and best contact number
- Face sheet ready and available for faxing upon request to **(650) 498-6229**

Questions or concerns about the Lucile Packard Children's Hospital Stanford Transfer Center? Please contact:

Kat Cueto, MSN, RN-BC, CNS
Director of Clinical Access
(650) 721-5770
kcueto@stanfordchildrens.org

For questions or concerns related to our COVID-19 plan, please see our web page. Information is updated daily and includes content for families and providers. Covid.stanfordchildrens.org

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