IMPROVING PEDIATRIC SEPSIS OUTCOMES

A multi-year collaborative for children’s hospitals to reduce sepsis mortality and morbidity across all levels of care.

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EXECUTIVE SUMMARY

Time to Take Action
Join a new sepsis initiative exclusively for children’s hospitals that will save more than a thousand lives and hundreds of millions of dollars in costs every year. Our opportunity for impact is enormous because the sepsis problem is enormous.

Sepsis is the leading cause of death in hospitalized children, killing almost 5,000 children annually in the U.S., more than cancer. Sepsis is expensive; costs to treat severe sepsis range from $65,000-$85,000. It accounts for 16 percent of all pediatric health care spending – around $5 billion. As many as 80,000 children are hospitalized annually for sepsis and 65 percent of those children are treated in children’s hospitals. Children’s hospitals are at ground zero of the sepsis crisis.

Sepsis is treatable, sepsis deaths are preventable and the high costs of advanced treatment are avoidable. This collaborative will accelerate your progress to improved outcomes.

Children’s Hospitals Respond
Through an ambitious collaboration of children’s hospitals, we will reduce sepsis deaths by 75 percent and hospital-onset severe sepsis by 75 percent by 2020.

The Improving Pediatric Sepsis Outcomes (IPSO) collaborative will prevent hospital-onset severe sepsis and sepsis deaths through timely and reliable implementation of evidence-based diagnostic and care processes, not just in the Emergency Department or intensive care settings, but across the hospital.

Whether your organization is getting started in the fight against sepsis, or has an in-house sepsis program in place, this collaborative will accelerate your progress to improved outcomes. Children’s hospitals both large and small can benefit and contribute. Participating hospitals gain access to top pediatric sepsis experts, the experience of children’s hospitals working at the leading edge to improve sepsis outcomes, and the largest pool of clinical pediatric sepsis data available.

THANK YOU
IPSO is made possible by the leadership of national co-chairs

Richard Brilli, MD, FAAP, MCCM
Chief Medical Officer
Nationwide Children’s Hospital

Charles Macias, MD, MPH
Chief Clinical Systems Integration Officer
Texas Children’s Hospital

and

Matthew Niedner, M.D.
Director of Quality and Safety, PICU
University of Michigan C.S. Mott Children’s and Von Voigtlander Women’s Hospital

with more than 60 pediatric sepsis experts on the IPSO National Expert Advisory Committee.

CHA extends appreciation to these committed clinicians and hospitals.
**Full Service Program**
IPSO is a complete program package. The 60-plus experts who have been planning the collaborative are designing bundles based on the best evidence and measures that are both robust and feasible. IPSO’s data infrastructure will flex to customize and simplify data submission for each hospital and make it easy to track performance. Virtual learning and interaction activities and face-to-face workshops will support collaborators. Training, tools and implementation resources are all part of the program.

**Results You Can Expect**
When participating in the IPSO collaborative, clinicians in your hospital will have the knowledge to:
- Prevent avoidable deaths from sepsis
- Prevent escalation to severe sepsis in vulnerable patients
- Prevent avoidable long-term disabilities
- Create effective sepsis response systems across the hospital
- Master appropriate and timely diagnosis and treatment of severe sepsis
- Avoid the high costs of advanced care

**Commitment**
Submit a letter of commitment to enroll in IPSO. Executive engagement and sponsorship is critical to achieving hospital-wide results. To achieve IPSO’s ambitious aims, plan to participate for two to three years and work across the hospital, rather than within one or two units.

**Participation Criteria**
The collaborative is open to any hospital that is a member of Children’s Hospital Association (CHA).

**Fees**
Enrolled hospitals pay an annual fee based on number of operating beds and have access to all program resources to support the work. Fees range from $10,000-$45,000.

**Enrollment Information**
Email or call Cherie Thomas  |  cherie.thomas@childrenshospitals.org  |  913.981.4199
**WHAT IS IPSO**

It’s the most ambitious initiative by children’s hospitals to combat this deadly condition. The potential is in its design to engage clinicians across the health care continuum, broadening awareness and impact.

The IPSO collaborative builds on a substantial body of research, guidelines, national campaigns, collaboratives, and local implementation efforts. More than 60 pediatric sepsis experts from more than 40 hospitals are bringing together the best evidence and practices to create an initiative that is innovative in both scope and methods.

- In addition to improving diagnosis and treatment of severe sepsis, IPSO is breaking new ground by targeting the prevention of hospital-onset severe sepsis in any hospital setting. Preventing escalation to severe sepsis is key to preventing associated avoidable long-term health consequences, as well as reducing sepsis mortality rates.

- Integrating what has worked in specific subspecialties or settings, IPSO’s interventions cross subspecialty and care setting boundaries, from the Emergency Department (ED), to any inpatient unit, and ultimately to pre-hospital and ambulatory settings. To adapt to specific needs the core interventions are extended with components appropriate for the patient population, such as cancer patients.

**PHASE ONE**

- ED
- PICU
- Hematology/Oncology
- Bone marrow transplant units
- General care units

**PHASE TWO**

- NICU
- Pre-hospital units

- IPSO engages the front-line of patient care, hospital leaders, family advisors, pharmacy, labs, and infection prevention to establish the coordinated and reliable care essential for timely diagnosis and treatment.

- Using a proven model distinguished by all-teach-all-learn collaboration combined with rigorous methodologies, standardized bundles, and rich large data sets of process and outcome metrics, participating hospitals will achieve improvements at lower cost, more efficiently, and faster than any single hospital can achieve working independently.
**BENEFITS OF PARTICIPATION**

Working closely with peers to drive improvement can change outcomes for all pediatric patients with sepsis. Through this unique collaborative, your team will learn and test effective ways to:

- Improve patient outcomes and patient experience of care
- Improve faster and at lower cost than working independently
- Solve small sample size/rare event problems
- Implement what works and reduce trial and error
- Reduce costs by sharing infrastructure, avoid design and development costs
- Physicians earn maintenance of certification credit, nurses earn continuing education credit
- Expand staff QI know-how and experience

**ACTIVITIES, SERVICES AND MEASURES**

**IPSO Activities**

This collaborative is comprehensive, providing your team with multiple opportunities to improve surveillance, diagnosis, and treatment.

**Mobilize** During the mobilization phase, you will create partnerships from the front lines to family advisors to medical staff and hospital leadership, and beyond patient care settings, with pharmacy, labs, and infection prevention services. Build a core leadership team and unit teams, incorporate family advisors, and develop an implementation plan. Use the IPSO Readiness Inventory to assess your existing practices and resources, so you can map out process changes, prepare to collect data, and train teams.

**Implement** Focus on the ED, PICU, general care, Hem Onc and BMT units initially. In IPSO’s next phase, the NICU and pre-hospital settings will also implement. Adopt the IPSO bundles addressing diagnosis and treatment, and work toward 90-day aims with small tests of change. The bundles include screening, monitoring and structured assessment; therapeutic interventions tailored for special patient populations, de-escalation, patient and family engagement, and optimizing performance.

**Measure** Submit process and outcomes data to a shared database each month, and get back monthly analyses in charts and reports. Data submission methods are flexible to minimize data burden. Hospitals can extract from the electronic medical record, use a web-based data capture system, or export data from RedCap or similar form-based applications. Analyses and reports are available through IPSO’s secure web portal.

**Collaborate** Accelerate improved outcomes through collaboration. Exchange what works, tools, questions, and experiences with collaborating hospitals. Monthly webinars provide bundle training, data interpretation, shared learning, and special interest topics. Workshops twice a year offer an intensive collaboration and learning experience. Access the IPSO online discussion group, professionally moderated and exclusively for participants.

**Participating hospitals will achieve improvements at lower cost, more efficiently, and faster than any single hospital can achieve working independently.**
**IPSO Services**
When your hospital invests in the IPSO collaborative, you gain access to a large number of resources that will support your efforts.

- Leadership from national experts
- Diagnosis and treatment bundles based on best evidence and practice
- Measures for outcomes and processes
- Flexible data submission via EMR export, local data collection form systems, or web data entry
- Secure web portal for aggregate and custom reports
- Monthly data analysis
- Custom performance reports
- Monthly aggregate benchmarking
- Webinars
- Workshops
- Bundle training materials
- QI methodology training
- Repository of tools and resources, including trigger tools, evidence tables, and bibliography
- Access to collaborative data assets for analysis, research and publication
- Online discussion group

**Aims and Measures**
The Improving Pediatric Sepsis Outcomes collaboration aims to reduce sepsis mortality by 75 percent and reduce hospital-onset severe sepsis by 75 percent. This effort will help you plan and implement process changes that ensure the best outcomes when dealing with sepsis in your hospital.

**Key drivers**
- Sensitive and timely recognition of sepsis syndromes
- Appropriate diagnostic evaluation
- Appropriate, timely and effective resuscitation/stabilization
- Appropriate, timely de-escalation of care and initiation of rehabilitative care
- Engage patients and families
- Optimize performance

**AIMS**
Reduce sepsis mortality by 75%
Reduce hospital-onset severe sepsis by 75%

**IPSO OUTCOME MEASURES**
- Mortality from Severe Sepsis
- Incidence of hospital-onset Severe Sepsis

*Measures to be finalized soon*

**IPSO PROCESS MEASURES**
- Screening – trigger tool
- Antibiotics (timing, appropriateness)
- Fluids (timing)
- Vasoactive agents
- Treatment de-escalation
FEES

The costs to develop IPSO have been seeded by all CHA member hospitals through dues. Implementation will also be supported by member hospital dues, and by participation fees that are tiered based on hospital size, ranging from $10,000-$45,000. The major costs for the collaborative are development, data infrastructure, staff, and participant events.

While the cost of developing, running, and participating in the sepsis initiative are considerable, they are dwarfed by the impact this collaborative can make: saving the lives of thousands of children and hundreds of millions of dollars in costs.

Sepsis Collaborative Cost Breakdown

Preventing one case of severe sepsis saves $65,000-$85,000.
Preventing three cases of severe sepsis protects a child from a permanent disability.
Preventing ten cases of severe sepsis saves a child’s life.

COLLABORATIVE LEADERSHIP

Experts from children's hospitals have been working closely with the CHA team for over a year to carefully evaluate and develop all aspects of the new collaborative.

Co-Chairs
Richard Brilli, MD, FAAP, MCCM * | Chief Medical Officer
Nationwide Children’s Hospital

Charles Macias, MD, MPH * | Chief Clinical Systems Integration Officer
Texas Children’s Hospital

Matthew Niedner, MD * | Director of Quality and Safety, PICU
University of Michigan C.S. Mott Children's and Von Voigtlander Women’s Hospital
National Expert Advisory Committee
More than 60 individuals have been working to design the collaborative.

Boston Children's Hospital
Leslie Lehmann MD  |  Hematology/Oncology
Elliot Melendez MD  |  Intensive Care Units
Greg Priebe MD  |  Intensive Care Units

Children's Healthcare of Atlanta
Jim Fortenberry MD  |  Intensive Care Units

Children's Hospital Colorado
Halden Scott MD *  |  Emergency Department
Beth Wathen RN *  |  Intensive Care Units

Children's Hospital of Pittsburgh of UPMC
Joe Carcillo MD  |  Intensive Care Units

Children's Hospital of San Antonio
Ricardo Quinonez MD  |  General Care

Children's Hospital of Wisconsin
Wendi Redfearn RN  |  Intensive Care Units

Children's Mercy Kansas City
Leslie Hueschen MD*  |  Emergency Department

Children's National Medical Center
Kathy Brown MD  |  Emergency Department

Cincinnati Children's Hospital Medical Center
Holly Depinet MD *  |  Emergency Department
Erika Stalets MD  |  Intensive Care Units

Cook Children's Medical Center
Rhiannon McDonnell RN *  |  Hematology/Oncology

Dell Children's Medical Center of Central Texas
Dory Collette RN  |  General Care
Mark Shen MD  |  General Care
Toni Wakefield MD *  |  General Care

Golisano Children's Hospital at the University of Rochester Medical Center
Julie Gottfried RN  |  General Care
Elise Van der Jagt MD  |  General Care

Helen DeVos Children's Hospital
Ed Beaumont MD  |  Neonatal Intensive Care Units
Beth Huizinga RN  |  Neonatal Intensive Care Units
Lynn Stachel RN  |  Hematology/Oncology

Johns Hopkins Children's Center
Allen Chen MD  |  Hematology/Oncology
Chris Gamper MD  |  Hematology/Oncology

Lucile Packard Children's Hospital Stanford
Cassandra Bergero RN  |  General Care

Lurie Children's Hospital
Raina Paul MD *  |  Emergency Department

Mattel Children's Hospital UCLA
Kerry Gold-Tsakonas RN *  |  Emergency Department
Theresa Kirkpatrick RN  |  Intensive Care Units

Mayo Clinic Children's Center
Charlie Huskins MD *  |  Infectious Disease

Me Fine Foundation
Lori Lee  |  Patient and Family Engagement

Monroe Carell Jr. Children's Hospital at Vanderbilt
Amy Potts MD  |  Pharmacy
Tanya Boswell RN  |  Infection Prevention

Mt. Washington Pediatric Hospital, Inc.
Erica Jones RN  |  Infection Prevention
MUSC Children’s Hospital
Elizabeth Mack MD * | Intensive Care Units

Nationwide Children’s Hospital
Jeff Auletta MD * | Hematology/Oncology
Brian Kenney MD | Surgeon

North Carolina Children’s Hospital
Leah Hatfield PharmD | Pharmacy
Philip Roehrs MD | Hematology/Oncology
Tina Willis MD | Intensive Care Units

NYU Langone Hassenfeld Children’s Hospital
Amanda Carr RN | NICU
Annie Yang PharmD | Pharmacy
Juliette Schlucter | Patient and Family Engagement

Our Children’s House at Baylor
Li Ern Chen MD | Surgeon

Phoenix Children’s Hospital
Toni Gross MD | Pre-hospital

Primary Children’s Hospital
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Gitte Larsen MD * | Intensive Care Units

Riley Hospital for Children at Indiana University Health
Kelly Tran RN | Hematology/Oncology

Seattle Children’s
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St. Jude Children's Research Hospital
Aditya Gaur MD | Infectious Disease

Cohen Children’s Medical Center
Joel Brochstein MD | Hematology/Oncology
Pete Silver MD * | Intensive Care Units

Texas Children’s Hospital
Yahaira Colorado RN | Emergency Department
Eric Williams MD | Intensive Care Units
Liz Wuestner RN | Emergency Department

The Children’s Hospital of Philadelphia
Fran Balamuth MD * | Emergency Department

Twin Lakes Regional Medical Center
Deb Campbell RN * | Intensive Care Units

UH Rainbow Babies & Children’s Hospital
Kristin Hackeman RN | Emergency Department
Hellene Speicher PharmD | Pharmacy

Upstate Golisano Children’s Hospital
Melissa Schafer MD * | General Care

Valley Children’s Hospital
Faisal Razzaqi MD * | Hematology/Oncology

* Steering committee member