Maternal and Infant Sepsis Prevention in NYS: Home Care’s Unique Role

Maternal Sepsis is the Second Leading Cause of Maternal Death. Let's End That.
Introduction

END SEPSIS
The Legacy of Rory Staunton

END SEPSIS was founded in 2012 by Ciaran and Orlaith Staunton following the death of their 12-year-old son, Rory, from undiagnosed, untreated sepsis.

Rory's death has fueled a movement to end preventable deaths from sepsis, led by families like ours who have paid the ultimate price to this indiscriminate killer. Together, we relentlessly challenge policymakers to implement programs to drastically reduce the 350,000 deaths from sepsis that occur each year in the United States. Our public awareness campaigns arm families with lifesaving information about the signs of sepsis and how it can be prevented. We know that together we can win this fight.

HCA is a statewide nonprofit health care association comprised of health care providers (hospitals, nursing homes, and free-standing agencies), health plans and organizations, that are federally and/or state licensed to provide home health care, hospice, managed care, and consumer directed services, as well allied support services. HCA is also a 501(c)(3) charitable organization providing education and research, and leading statewide initiatives in health care innovation, delivery and public health. A priority focus of HCA has been to support sepsis intervention in home health, community, and across the continuum of care.

HCA's mission is to “promote the quality and accessibility of health care and support at home”. HCA is a partner organization to END-SEPSIS and to Sepsis Alliance.
Today's Presenters

Sabine Horner
END SEPSIS

Al Cardillo
President and CEO

Kaylee White
Associate for Public Health & Policy

George Stathidis, MPH
Office of Patient Quality and Safety

Stephen Goins, MPH
Office of Patient Quality and Safety

Jennifer Mane
Director of Maternal and Child Health Policy
Office of Health Insurance Programs

Meghan Zysik, MD
Department of Obstetrics and Gynecology

Shayhaan Shaik, MBA
Doctor of Medicine Candidate
HCA Medical Intern
About END SEPSIS

END SEPSIS was established following the death of 12-year-old Rory Staunton from preventable, treatable sepsis.

END SEPSIS seeks to end the 350,000 deaths and hundreds of thousands of lifechanging disabilities that occur each year from sepsis.

Through major state and national policy initiatives and public education, we work to ensure that every hospital in the country has an evidence-based sepsis protocol and that all families can recognize the signs of sepsis.
The United States has the highest rate of maternal death of any wealthy country. Maternal sepsis is the second leading cause of maternal death.

In 2019, END SEPSIS was awarded a contract by HHS to develop a public awareness campaign to educate new and expectant mothers about maternal sepsis.

END SEPSIS contracted the NYSDOH Office of Quality & Patient Safety to analyze NYS maternal sepsis data and identify demographic and obstetric risk factors associated with maternal sepsis.

Informed by NYSDOH’s findings, END SEPSIS developed public awareness materials targeting those most at risk for maternal sepsis.
Background to the Grant

END SEPSIS is now engaged in a nationwide digital media campaign to educate new and expectant mothers across the state about maternal sepsis, with a special focus on those most at risk.

This campaign and our work with HCA is funded by the Mother Cabrini Health Foundation. We thank them for generous support for this important work.
Public Service Announcement

Speak Up
Public Service Announcement
Module Content

I. Overview and Objectives
II. Perspective from an OB/GYN
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VI. Home Care’s Role in Addressing Sepsis & Maternal Sepsis
VII. HCA Sepsis Screening Tool Training Session
VIII. Maternal Case Studies – Applying the Sepsis Tool
IX. Resources for Providers & Clinicians for Maternal Sepsis Education
Overview and Objectives

Learn from expert faculty about:

- Critical facts on sepsis and maternal sepsis
- New York State standards for maternal care in relation to home and community-based maternal services provided by home health agencies
- HCA’s home health sepsis screening and intervention tools for adults and infants, and maternal sepsis education zone tool
- Best practices and resources for all home and community health provider types and health plans for maternal sepsis education, prevention and intervention, and for education and support of maternal patients, their families, and caregivers.
Perspective from an OB/GYN

Meghan Zysik, MD
Dept of Obstetrics and Gynecology
Albany Medical Center
Maternal Mortality and Maternal Sepsis Critical Information
Critical Maternal Mortality & Maternal Sepsis Facts

In 2021, **1,205 women died** of maternal causes in the United States compared with 861 in 2020 and 754 in 2019.¹

The rate for non-Hispanic Black women was **69.9** per 100,000 live births, 2.6% the rate for non-Hispanic White women, **26.6**.¹

Sepsis is currently the **SECOND** leading cause of maternal mortality, and likewise impacts infants and children, with horrific yet preventable results. **87%** of sepsis cases originate in home and community settings.

Women in the United States are MORE likely to die as a result of pregnancy and childbirth than women in ANY other developed nation.

They said I was "just anxious about being a new mother." I almost died.

- April, Survivor

If you feel unwell after giving birth, **speak up.**

It could save your life.

Learn more at [endsepsis.org/mothers](http://endsepsis.org/mothers)
Maternal Sepsis

Courtesy of END SEPSIS

**Maternal sepsis** is a potentially life-threatening medical condition that can develop during pregnancy or after giving birth. It can result from any type of infection. Maternal sepsis can lead to death and can also cause serious physical, mental, and emotional harm to those who survive the condition.

**Maternal sepsis** can develop during the prenatal period, or post-partum such as in the days and weeks after giving birth when a C-section incision or other wounds from childbirth becomes infected. However, any kind of infection during pregnancy or after childbirth can lead to sepsis—including a urinary tract infection, a skin wound, or a throat infection.
**How does maternal sepsis develop?**

Courtesy of END SEPSIS

Any kind of infection during pregnancy or after childbirth can lead to sepsis. Sources can include pneumonia, strep throat, urinary tract infections, C-section incisions, tears, or other wounds from childbirth that become infected in the days or weeks after giving birth, and more.

**The risk of infection and sepsis increases as a result of:**

- Diabetes and other chronic illnesses
- C-section delivery
- Mastitis (breast infection)
- Being pregnant with twins or other multiples
- Invasive procedures before and during pregnancy, including IVF & Amniocentesis

**Even minor interventions and complications during childbirth can lead to infections, including:**

- Having a long labor or if your water breaks more than 18 hours before delivery
- Having multiple vaginal examinations during labor
- Using forceps or a vacuum during delivery
What are the warning signs?

Signs and symptoms can vary. Contact a healthcare provider immediately if you have any of the following:

- Fever, chills and feeling generally unwell
- Dizziness, confusion
- Feeling like your heart is racing
- Foul-smelling vaginal discharge
- Back or lower abdominal pain
- Chesty cough
- Pain/burning on passing urine or not passing urine in a day

Clinical Signs

Any of these abnormal criteria, sustained for >20 minutes:

- Systolic BP (mmHg) <90 or >160
- Diastolic BP (mmHg) >100
- Heart Rate <50 or >120
- Respiratory Rate <10 or >24
- O2 Sat on room air; % <95
- Oliguria, mL/hr x 2hrs <35
- Temperature <36 C or >38 C
- WBC <4,000 or >15,000
- Maternal agitation, confusion, or unresponsiveness; patient with hypertension reporting a non-remitting headache or shortness of breath.

How is maternal sepsis treated?

Maternal sepsis needs to be treated early and aggressively. It often requires hospital admission for intravenous antibiotic treatment.
Can maternal sepsis be prevented?

YES. Maternal sepsis is preventable and treatable.

Learn more next about steps community health providers and patients can take to prevent sepsis, and to mitigate it as quickly as possible if it should occur.

Courtesy of END SEPSIS
Questions for Dr. Zysik?
Maternal Sepsis in NYS: Analysis and Risk Factors

George Stathidis, MPH
Office of Patient Quality and Safety

Stephen Goins, MPH
Office of Patient Quality and Safety
Maternal Sepsis in New York State: Analysis and Identification of Risk Factors
This work was supported by:
Background
Maternal Sepsis

• Maternal mortality has increased in the United States over the past 20 years
• Infections are a leading cause of pregnancy-related mortality
• Associated with increased rates of preterm labor, preterm delivery and other adverse outcomes
• Maternal population is historically not readily identifiable in DOH-collected sepsis clinical data

Maternal Sepsis Analysis

- Goal: Identify opportunities for targeted education of vulnerable persons and their providers
  - Understand potential risk factors
- Establish a dataset of clinical sepsis data, SPARCS data and vital statistics data for obstetric events, maternal sepsis, severe sepsis and septic shock from 2016-2018.
- Using the linked dataset, identify associations between hospitalizations for maternal sepsis and hospital and patient characteristics to identify at-risk target populations.
Methods
Identifying Obstetric Events

• Events identified from SPARCS claims
• Discharged (claim end date) in CY2016-2018
• Identify with ICD-10 CM/PCS or CPT/HCPCS
• Obstetric event type:
  – Live Birth
Capturing Maternal Sepsis

• Identifying sepsis claims
  – ICD-10-CM coding in SPARCS
  – Severe sepsis clinical data submitted to DOH

• Maternal windows
  – Pregnancy
    • Date of last menses —> Admission for obstetric event
  – Obstetric Event/Delivery
    • Date of admission for obstetric event —> Date of discharge
  – Postpartum
    • Day after infant date of birth —> 42 days after infant date of birth
Findings
• 2,097 total sepsis events among persons with a live birth
• Most sepsis events occurring at or following delivery
Risk Factor Analysis

• Unadjusted associations (Odds Ratios and 95% Confidence Intervals) calculated between each risk factor and sepsis
  – Bivariate logistic regression model
  – Associations calculated separately for sepsis in each maternal window

• Risk Factor Groups
  – Demographics
  – Comorbidities
  – Obstetric Risk Factors and Maternal Morbidities
Odds of Maternal Sepsis by Mother’s Demographics Summary

• Significantly higher odds of maternal sepsis in all maternal windows
  – Age Group
    • Persons <20 years old at delivery vs persons aged 20-35
  – Race/Ethnicity
    • Black or Hispanic vs White
  – Education
    • Persons with any education level below a Bachelors Degree vs persons with a BA or higher education level

*Associations may not be unique to maternal population
Notable Comorbidities

- 58 of 61 comorbidities found significantly associated with maternal sepsis in at least one window
- Potentially modifiable risk factors
  - Illegal Drug Use, Tobacco Use
- Prevalent comorbidities
  - Obesity, Deficiency anemia, Asthma, Depression, Sickle cell disease
- History of sepsis within 1 year of pregnancy
- Protective effects of Group B Strep Carrier at Delivery
Prevalent Maternal Morbidities/Obstetric Risk Factors

- 22 of 39 (56%) obstetric risk factors were found to be statistically significantly associated with post-partum maternal sepsis.
- Present in at least 1% of live birth cohort:
  - Induction of Labor
  - Cesarean Delivery
  - Nulliparity
  - Premature rupture of membranes
  - Preterm Delivery
  - Postpartum hemorrhage
  - Blood products transfusion
  - Multiple Gestation
Limitations

- Analysis is primarily based on institutional administrative data
  - Dependent on coding
  - No capture of office visits, pharmacy
- Unknown timing of sepsis during delivery hospitalization
  - Sequelae may be captured as risk factors in delivery window
- Measure of association are unadjusted
  - Other factors may confound associations
- Self-reported risk factors from birth certificate subject to bias
Potential Targets for Intervention

• Post-discharge planning and monitoring
  – Persons with complicated deliveries
  – Cesarian Deliveries

• Younger persons and racial/ethnic minorities

• Medically compromised persons
  – Potentially modifiable risk factors
    • Drug, tobacco use
  – Prevalent comorbidities
    • Obesity, Anemia, Asthma
Questions for DOH?
NYS Medicaid Perinatal Care Standards: Home Visit Policy Overview

Jennifer Mane
Director of Maternal and Child Health Policy
Office of Health Insurance Programs
This policy, effective August 1, 2022, for New York State (NYS) Medicaid fee-for-service (FFS) and October 1, 2022, for Medicaid Managed Care (MMC) Plans replaced the former Medicaid Prenatal Care Standards. This policy is applicable to all Medicaid perinatal care providers who provide prenatal/antepartum care, intrapartum care, and/or postpartum care. This includes medical care facilities or public or private not-for-profit agencies or organizations, physicians, licensed nurse practitioners, and licensed midwives practicing on an individual or group basis, and managed care plans that contract with these providers.

Policy covers:
• Provider Practice Guiding Principles
• Principal Maternal Care Provider Training and Credentials
• Access to Care
• Medicaid Coverage/Presumptive Eligibility
• Comprehensive Prenatal Care Risk Assessment
• Care Plan
• Coordination of Care
• Home Visits
• Initial and Comprehensive Postpartum Visits
• Breastfeeding/Chestfeeding

With this update, Medicaid provided clarifying guidance and requirements on perinatal care for all Medicaid providers serving pregnant and postpartum individuals, with an explicit focus on health equity, health disparities, and racial bias. Medicaid benefit and program designs support the implementation and adherence to this policy.

NYS Medicaid Perinatal Care Standards

Home Visits

- ALL postpartum persons are eligible for one initial postpartum home visit after they give birth

- Pregnant/postpartum persons are also eligible for home visits in pregnancy and additional postpartum visits if determined to be medically necessary

- All principal maternal care providers and/or birthing hospitals must offer and arrange for the initial postpartum home visit with all postpartum persons. All birthing hospitals must have a system in place to arrange and schedule the postpartum person’s first/initial postpartum home visit prior to discharge.

- The Medicaid reimbursable visit is a skilled nursing home visit provided by agencies that are certified or licensed under Article 36 of the PHL and are either a Certified Home Health Agency (CHHA) or a Licensed Home Care Service Agency (LHCSA).
  - Other home visit providers may include, but are not limited to, Nurse-Family Partnership Programs, local health departments, and community health worker programs, which may or may not be covered as a Medicaid benefit.

- The home visit findings must be sent to the principal maternal care provider for management of any identified issues.

NYS Medicaid Perinatal Care Standards

Initial Postpartum Home Visit

The purpose of the initial postpartum visit is to address acute postpartum issues, as per ACOG/AAP postpartum recommendation.

If a postpartum person agrees to receive the initial postpartum home visit, then the birthing hospital is responsible for arranging and scheduling the initial postpartum home visit for the postpartum person, and the postpartum home visit should take place 36 to 72 hours after the postpartum person’s discharge.

The postpartum home visit must include:

1. An assessment of the health of the parent and newborn;
2. An assessment of the labor and delivery care history;
3. An assessment of any current pregnancy-related problems;
4. An assessment of the postpartum person’s psychosocial and environmental risk factors (such as unsafe environment, and inadequate resources, including shelter, food/nutrition, and social supports);
5. Nutrition education;
6. Infant feeding, including breastfeeding/chestfeeding education;
7. Family planning counseling to ensure optimal birth spacing;
8. Parenting guidance; and
9. Guidance regarding the identification and treatment of early warning signs that occur up to one year after pregnancy.

https://www.health.ny.gov/health_care/medicaid/standards/perinatal_care
Additional Home Visits

Prenatal Home Visits

Prenatal home visits must be provided to pregnant persons if ordered by the principal maternal care provider and if they are medically necessary for managing the pregnant person’s prenatal course or prenatal issue at hand. Criteria for medical necessity:

1. High medical risk pregnancy as defined by the ACOG and the AAP Guidelines for Perinatal Health (Early Pregnancy Risk Identification for Consultation); or
2. Need for home monitoring or assessment by a nurse for a medical condition complicating the pregnancy; or
3. Pregnant person otherwise unengaged in prenatal care (no consistent visits); or
4. Need for home assessment for suspected environmental or psychosocial risk including, but not limited to, intimate partner violence, substance use, unsafe housing, nutritional risk, unstable mental health, and inadequate resources or parenting skills.

Additional Postpartum Home Visits

Additional postpartum home visits may be covered if one of the medical necessity criteria is met:

1. History of a high medical risk pregnancy as defined by ACOG and AAP Guidelines for Perinatal Health (Early Pregnancy Risk Identification for Consultation); or
2. Need for home monitoring or assessment by a nurse for a medical condition complicating postpartum care; or
3. Postpartum person otherwise unengaged in postpartum care; or
4. Need for home assessment for suspected environmental or psychosocial risk including, but not limited to, intimate partner violence, substance use, unsafe housing, and nutritional risk.

NYS Medicaid: Maternal Policy Updates 2022-2024

✓ NYS Medicaid Perinatal Care Standards (8/2022)

✓ Postpartum Medicaid coverage period increased from 60 days to 12 months (3/2023)

✓ Improve and Expand Access to Prenatal and Postnatal Care
  • Coverage of Community Health Worker services for pregnant/postpartum people (10/2023)
  • Coverage of Nutrition Services for pregnant/postpartum people provided by Registered Dietitians (1/1/2024)
  • Increase in reimbursement rates for midwifery services (7/2022)
  • Expansion of remote patient monitoring service coverage for pregnant/postpartum people (10/2022)
  • Expansion of reimbursement of Noninvasive Prenatal Screening to include coverage for all pregnant Medicaid members (7/2022)
  • Addition of lactation counselor certifications covered by Medicaid (effective 6/2022)

✓ Advancing Comprehensive Maternal Care in Managed Care (MMC)
  • Quality incentive payment for reduction of low-risk cesarean deliveries (4/2023)

✓ Expand Medicaid Coverage of Preventive Care
  • Statewide Coverage of Doula Services (1/2024)
  • Expansion of Coverage for Spinal Muscular Atrophy Carrier Screening (10/2023)
Questions for DOH?
Home Care’s Role in Maternal Sepsis Prevention, Screening & Intervention
Home Care’s Role in Addressing Sepsis & Maternal Sepsis

Home care is in a unique position and has the credentials to make its role even more compelling in sepsis prevention, screening, and intervention. Home health agencies directly and through state prenatal/post-natal programs provide visits and skilled care, wound and post-partum physical and psychosocial care, management, teaching, and intervention with various core partners. Home health clinicians play a key role in providing care to mothers who are faced with health disparities including socioeconomic, cultural, and familial challenges and difficulty accessing services.

- Home care clinicians are in homes and in communities—where pregnant women and post-partum women live and need the support
- Home care clinicians are expert educators, screeners, evaluators, interveners, and system navigators—critical in sepsis effectiveness
- Home care is a patient and culturally centered, and cost-effective vehicle, and the high-risk maternal population suffers from gaps, barriers, and disparities associated with cultural/racial/ethnic/religious/diversity challenges that need alignment with caregivers in order to overcome
- Home and community is the growing and future milieu of care. It only makes sense to leverage the intervention of this service as fully as possible
Clinical and Educational Tools for Home & Community Health Providers to Use to ACT
HCA Sepsis Screening Tool
A Resource for Clinical Maternal Sepsis Screening, Prevention, Intervention & Patient Education

In 2014, HCA undertook efforts to determine if and how home care could collaborate in sepsis prevention and intervention. Research across the country indicated there was no models of sepsis screening, assessment and intervention tools for home health care. HCA engaged sepsis clinical experts and state national leaders to develop a strategic work plan.

In March 2017, the HCA sepsis tool was officially launched, and HCA convened the Sepsis Steering Committee comprised of state and nationally renowned experts. Providers across NYS begun using the tool and reported positive feedback and user experience.

As of March 2023, 58 out of 62 NYS counties have at least one home care agency that has trained and been authorized for the sepsis tool. Following the implementation of the HCA Adult Sepsis Tool, HCA began to explore the development of a pediatric home care sepsis tool, and over 2021-2022 developed and piloted this tool with 4 major health systems with pediatric home health programs in the state, and have since launched the peds tool.
Home health providers are positioned to make a critical impact in addressing maternal sepsis using the HCA Sepsis Screening and Intervention tool and the maternal patient education zone tool ....

... and by acting on the unique role that home care plays in the health system.
Prerequisites

• Orientation and training on the tool and on sepsis substantively are prerequisites for provider use of the tool.

• Authorized use of the tool is granted to providers via user agreement (sepsistool@hcanys.org) that confirms the prerequisites and strict adherence to use standards.

Prerequisites in user agreement include:

  o Completion of HCA Training.
  o Agreement to use the tool and protocol as provided, included in embedded EHR format.
  o Agreement not to distribute the tool to unauthorized users.
  o Participation in data/experience sharing.
Sepsis Tool

Screening Tool

Algorithm

Zone Tool

Protocol

Authorized Use

To control for quality and use standards, the authorized access to or use of the HCA sepsis tool is permitted only via use agreement with HCA. Please note that it is illegal to use, copy and/or distribute the tool for clinical or business use without the express written permission of the Home Care Association, Inc.
Sepsis Tool Questionnaire

Authorized Use

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### Sepsis Tool – Follow-up & Interventions

**The Patient Meets Criteria for Infection**
- If the answer to #1 is “Yes” and the answer to #2 and #3 are “No”:
  - Educate the patient and/or caregiver with education sheet “Adult Sepsis Zone Tool: Early Signs and Symptoms of Sepsis.”

**The Patient Meets Criteria for Provider Notification**
- If the answers to question #2 and/or #3 are “Yes”:
  - Educate the patient and/or caregiver with education sheet “Adult Sepsis Zone Tool: Early Signs and Symptoms of Sepsis”
  - Notify provider of findings
  - Document

**The Patient Meets Criteria for Sepsis**
- If the answer to questions #1 and #2 are “Yes,” but the answer to question #3 is “No” then the patient meets criteria for Sepsis.
  - Notify provider of findings
  - Obtain provider order to draw CBC
  - Educate the patient and/or caregiver with education sheet “Adult Sepsis Zone Tool: Early Signs and Symptoms of Sepsis” and on treatment
  - Document

**The Patient Meets Criteria for SEVERE Sepsis**
- If the answer to questions #1, #2, and #3 are all “Yes,” then the patient meets screening criteria for severe Sepsis.
  - Notify provider of findings
  - Educate the patient and/or caregiver with education sheet Adult Sepsis Zone Tool: Early Signs and Symptoms of Sepsis” and on treatment
  - Have patient transported to emergency department for evaluation
  - Contact receiving emergency department to provide report
  - Document

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### Complete this section for all patients that received “Follow-Up” actions.

Select all that apply:

- The patient and/or caregiver has been educated with education sheet “Adult Sepsis Zone Tool: Early Signs and Symptoms.”
- The interventions in the protocol are clinically contraindicated (provider determined).
- Education has been completed with the patient and/or caregiver on symptom recognition and management of sepsis.
- The patient meets Sepsis criteria. Patient and/or caregiver educated, provider notified, antibiotics may be initiated, and non-skilled nursing visit to be completed within 24 hours.
- The patient has met all criteria for severe Sepsis and requires immediate intervention. Patient and/or caregiver educated. Provider notified, patient transported to emergency department, and report called to the receiving emergency department.
- The patient has advanced directives in place at this time which precludes any of the protocol interventions (e.g., an order in place for “comfort measures only”). Education has been completed with the patient and/or caregiver on symptom management of Sepsis.
- The patient and/or caregiver declined or is unwilling to consent to protocol interventions. Provider has been notified of the decision not to receive acute intervention. Education has been completed with the patient and/or the caregiver as to the risks and benefits of declining intervention.
- Document any follow-up actions completed that are not listed.

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**FOLLOW-UP**

**INTEVENTIONS**

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**Note:**

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**Time criteria met and provider notified:**

**Date/Time:**

**Provider Notified:**

**Provider’s Name:**

**Signature:**

**Provider’s RN:**

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**Note:**

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**Please note that this Home Care Services Adult Sepsis Screening Tool is the proprietary tool of the Home Care Association of New York State, Inc. (HCA). It is illegal to use, copy and/or distribute this tool in whole or in part without the express written permission of HCA. HCA makes no warranty associated with the use of this tool with respect to detection of sepsis risk, sepsis at any stage, clinical procedure or outcome, nor any implied warranty on behalf of any entity using this tool. Any use of the tool is subject to the terms of the license agreement between HCA and the authorized licensee under that agreement.**
Home Care Sepsis Screening Tool Algorithm

PATIENT VISIT

Clinician completes sepsis screening assessment at each patient visit. Based on patient’s age, determine appropriate tool to use.

- 0 to 1 year = Infant
- 2 to 5 years = Toddler
- 6 to <18 years = Child
- >18 years = Adult

1. Does the patient have a suspicion for infection?
2. Does the patient have 2 or more systemic criteria present for Sepsis?
3. Is there at least one new Sepsis-related organ dysfunction criteria present?

FOLLOW-UP
Patient Education Zone Tool – IPRO

**Adult Sepsis Zone Tool: Early Signs & Symptoms of Sepsis**

Has your healthcare provider diagnosed you with an INFECTION? You could be at risk for SEPSIS. Know the signs!

**What is Sepsis?** Sepsis is your body’s life-threatening response to an infection anywhere in your body. Anyone can get sepsis!

**SEPSIS IS A MEDICAL EMERGENCY**

**GREEN Zone: ALL CLEAR – Feeling well**
- No fever or feeling chilled
- No confusion or sleepiness
- Easy breathing
- No increase in pain

**RED Zone: Call your doctor or nurse immediately if you have INFECTION and...**
- Fever or feeling chilled
- Confusion/sleepiness (recognized by others)
- Fast heart rate
- Pale or discolored skin

If you are unable to reach your doctor or nurse, CALL 911 OR HAVE SOMEONE TAKE YOU TO THE EMERGENCY DEPARTMENT.

**Key Contacts:**
- HCA
- ENDSEPSIS
- The Legacy of Rory Staunton

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Pediatric Sepsis Zone Tool

**Pediatric Sepsis Zone Tool: Early Signs and Symptoms**

If your child has an infection or potential infection, they could be at risk for sepsis. Know the signs!

**What is Sepsis?** Sepsis is the body’s life-threatening response to an infection anywhere in the body.

**GREEN ZONE**
- Happy & playful child
- No immediate action needed.

**YELLOW ZONE**
- Fever
- Chills
- Low temperature
- Decreased appetite
- Fewer wet diapers
- Less urine output
- More irritable

**RED ZONE**
- Vomiting
- Breathing fast
- Fast heart rate
- Fear of death
- No urine output
- Weak or irritable
- Inconsolable crying
- Uncontrolled sweating
- Disclosed dusky or pale skin

**CALL YOUR DOCTOR OR NURSE IMMEDIATELY.**

If unable to reach them, call 9-1-1 or take your child to the Emergency Department.
Authorized Use

To control for quality and use standards, the authorized access to or use of the HCA sepsis tool is permitted only via use agreement with HCA. Please note that it is illegal to use, copy, and/or distribute the tool for clinical or business use without the express written permission of the Home Care Association, Inc.
Infant Screening Tool

Background & Development

• The Pediatric Sepsis Tool is modeled after the Adult Sepsis Screening Tool but requires greater specificity to infants, toddlers, and children

• The Pediatric Sepsis Tool is specific to symptoms for each age category including most accurate temperature method, resting heart rate, symptoms, etc.

• Values for diagnostic criteria from the Severe Inflammatory Response Syndrome (SIRS) criteria
  • Pediatric Advanced Life Support (PALS) criteria, Sepsis Alliance resources, and other sepsis literature was also evaluated

• SIRS is the more conservative criteria and thus more appropriate for home care setting with the goal of prevention
**Authorized Use**

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Maternal Sepsis Case Studies: Using the Tool
Maternal Case Study #1
Patient Scenario

A 28-year-old maternal patient was admitted to home care for nursing care after a c-section delivery. Upon the nurse’s visit, the patient reported to the nurse that the incision has been causing some discomfort and has now become painful. Checking her vitals, the nurse notes a Temp of 101.1, Pulse 124, Respirations 13 and BP 116/70. The incision appeared red around the entire incision extending several centimeters circumferentially. The area around the incision feels firm and tender to the touch. The patient is alert and oriented, explains that she is starting feel pressure breathing, and feels like her heart is racing. As the nurse’s examination continues, she observes the patient starting to shiver. The patient says she is “feeling the chills.”
Maternal Case Study #1
Application of the HCA Sepsis Tool-- Question 1

**Home Care Services Adult Sepsis Screening Tool**
For use in conjunction with Home Care Adult Sepsis Screening Tool Protocol.

1. Does the patient's history, physical examination, or other findings suggest an infection or potential source of infection? Yes [x] No [ ]
   - [ ] Respiratory tract infection
   - [ ] Genitourinary infection (UTI)
   - [ ] Gastrointestinal infection
   - [ ] Acute abdominal infection
   - [ ] Meningitis
   - [ ] Bone or joint infection
   - [ ] Bloodstream infection
   - [ ] Active treatment
   - [ ] Invasive or implanted device
   - [ ] Endocarditis
   - [ ] Recent Chemotherapy/Immunocompromised
   - [ ] Wound infection or skin infection

Patient's Name: ____________________________
Medical Record #: ________________________
Date Completed: ________________________
Maternal Case Study #1
Application of the HCA Sepsis Tool-- Question 2

2. Are any 2 (or more) of the following systemic criteria present?  
- Yes  
- No  
- If Yes, check all that apply:
  - Fever (oral temperature >38.3°C [100.9°F] or hypothermia (core temperature <36.0°C [96.8°F])
  - Tachycardia (heart rate or pulse >90 beats/minute)
  - Tachypnea (respirations >20 breaths/minute)
Maternal Case Study #1
Application of the HCA Sepsis Tool-- Question 3

Is at least one new (since the last screen) Sepsis-related organ dysfunction criteria present from the following list? ☑ Yes ☐ No

If yes, check all that apply:

Neurological
☐ New onset acutely altered mental status/difficult to arouse

Respiratory
☐ New onset saturation <90% by pulse oximetry, on supplemental oxygen SPO2 other than baseline

Renal
☐ New onset urine output decreased from the patient’s baseline with adequate fluid intake (and not due to ESRD)

Cardiovascular
☐ New onset hypotension (systolic blood pressure <90 or decreases by >40 mm Hg)

Pain
☑ New onset pain/general discomfort
# Maternal Case Study #1

Application of the HCA Sepsis Tool—Follow-up

## FOLLOW-UP

Positive findings for ANY of the 3 Screening Questions requires follow-up

Each Follow-Up item provides direction for the clinician’s follow up.

**The Patient Meets Criteria for Infection:**
If the answer to #1 is “YES” AND the answers to #2 and #3 are “NO.”
- Educate the patient on the signs and symptoms of sepsis and provide the patient with “Early Signs and Symptoms of Sepsis” education sheet (Attachment C).

**The Patient Meets Criteria for MD Notification:**
If the answers to question #2 and/or #3 are “YES.”
- Educate the patient on the signs and symptoms of Sepsis and notify MD of your findings and document.

**The Patient Meets Criteria for Sepsis:**
If the answers to questions #1 and #2 are “YES,” and answer to #3 is “NO,” the patient meets criteria for Sepsis.
- Notify provider
- Educate the patient on the signs and symptoms of Sepsis and treatment
- Obtain MD order to draw CBC
- Document

**The Patient Meets Criteria for SEVERE Sepsis:**
Answers to questions #1, #2 and #3 are “YES.” Patient has met criteria for infection, systemic involvement and sepsis-related organ dysfunction.
- Notify provider
- Educate patient on signs and symptoms of Sepsis and treatment
- Have patient transported to emergency department for evaluation
- Contact receiving emergency department to provide report
- Document
An 18-year-old, single mom was admitted post-partum to home care for follow-up after a preterm delivery. During the nurse’s visit, the patient reports pain and burning when passing urine. The nurse notes her vital signs to be: Temp 101, Pulse 80, Respirations 21, and BP 122/80. The patient holds her head while reporting dizziness and shows signs of confusion. When the nurse further asks the patient about her pain, she appears confused and unable to answer the question. The patient reports that she has felt the need to urinate frequently.
Maternal Case Study #2

Application of the HCA Sepsis Tool-- Question 1

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Home Care Services
Adult Sepsis Screening Tool

For use in conjunction with Home Care Adult Sepsis Screening Tool Protocol.

1. Does the patient’s history, physical examination, or other findings suggest an infection or potential source of infection? □ Yes □ No

If Yes, specify source or potential source of infection and select one or more below:

- Respiratory tract infection
- Genitourinary infection (UTI)
- Gastrointestinal infection
- Acute abdominal infection
- Meningitis
- Bone or joint infection
- Bloodstream infection
- Active treatment
- Invasive or implanted device
- Endocarditis

Other source of infection (describe):

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Patient’s Name: 
Medical Record #: 
Date Completed: 

Recent procedure

Other source of infection (describe):
Maternal Case Study #2
Application of the HCA Sepsis Tool-- Question 2

2

Are any 2 (or more) of the following systemic criteria present?  □ Yes  □ No  
If Yes, check all that apply:

- Fever (oral temperature >38.3° C [100.9° F] or hypothermia (core temperature <36.0° C [96.8° F]))
- Tachycardia (heart rate or pulse >90 beats/minute)
- Tachypnea (respirations >20 breaths/minute)
Maternal Case Study #2
Application of the HCA Sepsis Tool—Question 3

Is at least one new (since the last screen) Sepsis-related organ dysfunction criteria present from the following list?  
☐ Yes  ☐ No

If yes, check all that apply:
Neurological
☐ New onset acutely altered mental status/difficult to arouse

Respiratory
☐ New onset saturation <90% by pulse oximetry, on supplemental oxygen SPO2 other than baseline

Renal
☐ New onset urine output decreased from the patient’s baseline with adequate fluid intake (and not due to ESRD)

Cardiovascular
☐ New onset hypotension (systolic blood pressure <90 or decreases by >40 mm Hg)

Pain
☐ New onset pain/general discomfort
Maternal Case Study #2

Application of the HCA Sepsis Tool—Follow-up

FOLLOW-UP
Positive findings for ANY of the 3 Screening Questions requires follow-up

Each Follow-Up item provides direction for the clinician’s follow up.

The Patient Meets Criteria for Infection:
If the answer to #1 is “YES” AND the answers to #2 and #3 are “NO”:
• Educate the patient on the signs and symptoms of sepsis and provide the patient with “Early Signs and Symptoms of Sepsis” education sheet (Attachment C).

The Patient Meets Criteria for MD Notification:
If the answers to question #2 and/or #3 are “YES”:
• Educate the patient on the signs and symptoms of Sepsis and notify MD of your findings and document.

The Patient Meets Criteria for Sepsis:
If the answers to questions #1 and #2 are “YES,” and answer to #3 is “NO,” the patient meets criteria for Sepsis.
• Notify provider
• Educate the patient on the signs and symptoms of Sepsis and treatment
• Obtain MD order to draw CBC

The Patient Meets Criteria for SEVERE Sepsis:
Answers to questions #1, #2 and #3 are “YES.” Patient has met criteria for infection, systemic involvement and sepsis-related organ dysfunction.
• Notify provider
• Educate patient on signs and symptoms of Sepsis and treatment
• Have patient transported to emergency department for evaluation
• Contact receiving emergency department to provide report
Maternal Case Study #3

Patient Scenario

A 35-year-old patient recovering from a post-partum hemorrhage was discharged home with home health nursing care. The patient’s husband provides daily in-home support for her care and recovery, and for their new child. The patient and husband have been instructed to watch for key signs or changes in condition related her complications following delivery.

Upon the nurse’s visit, the nurse determines the patient’s vitals to include a Temp of 98, Pulse 80, Respirations 17, and BP 117/70. The nurse checks for complaints of discomfort or changes in pain levels; none are reported. The patient is oriented, and the husband confirms no observable changes or concerns in physical or mental status.
Maternal Case Study #3
Application of the HCA Sepsis Tool-- Question 1

**Home Care Services**
**Adult Sepsis Screening Tool**

For use in conjunction with Home Care Adult Sepsis Screening Tool Protocol.

1. Does the patient’s history, physical examination, or other findings suggest an infection or potential source of infection? □ Yes □ No

If Yes, specify source or potential source of infection and select one or more below:

- Respiratory tract infection
- Genitourinary infection (UTI)
- Gastrointestinal infection
- Acute abdominal infection
- Meningitis
- Bone or joint infection
- Bloodstream infection
- Active treatment
- Invasive or implanted device
- Endocarditis
- Recent Chemotherapy/Immunocompromised
- Wound infection or skin infection

**Patient’s Name:** ____________________________
**Medical Record #:** ____________________________
**Date Completed:** ____________________________
Maternal Case Study #3
Application of the HCA Sepsis Tool -- Question 2

Are any 2 (or more) of the following systemic criteria present?

- Fever (oral temperature >38.3°C [100.9°F] or hypothermia (core temperature <36.0°C [96.8°F])
- Tachycardia (heart rate or pulse >90 beats/minute)
- Tachypnea (respirations >20 breaths/minute)

☐ Yes ☐ No

If Yes, check all that apply.
Maternal Case Study #3
Application of the HCA Sepsis Tool-- Question 3

Is at least one new (since the last screen) Sepsis-related organ dysfunction criteria present from the following list? □ Yes □ No

- Neurological
  - New onset acutely altered mental status/difficult to arouse

- Respiratory
  - New onset saturation <90% by pulse oximetry, on supplemental oxygen SPO2 other than baseline

- Renal
  - New onset urine output decreased from the patient’s baseline with adequate fluid intake (and not due to ESRD)

- Cardiovascular
  - New onset hypotension (systolic blood pressure <90 or decreases by >40 mm Hg)

- Pain
  - New onset pain/general discomfort
Maternal Case Study #3
Application of the HCA Sepsis Tool—Follow-up

FOLLOW-UP

Positive findings for ANY of the 3 Screening Questions requires follow-up

Each Follow-Up item provides direction for the clinician’s follow up.

The Patient Meets Criteria for Infection:
If the answer to #1 is “YES” and the answers to #2 and #3 are “NO:”
• Educate the patient on the signs and symptoms of sepsis and provide the patient with “Early Signs and Symptoms of Sepsis” education sheet (Attachment C).

The Patient Meets Criteria for MD Notification:
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• Obtain MD order to draw CBC
• Document

The Patient Meets Criteria for SEVERE Sepsis:
Answers to questions #1, #2 and #3 are “YES.” Patient has met criteria for infection, systemic involvement and sepsis-related organ dysfunction.
• Notify provider
• Educate patient on signs and symptoms of Sepsis and treatment
• Have patient transported to emergency department for evaluation
• Contact receiving emergency department to provide report
• Document
Questions for HCA?
Additional Areas of Intervention

**Increased vigilance** when caring for those women identified as being at increased risk of developing sepsis and those who experience complications during delivery.

**Appropriate discharge planning**
- Listen carefully to the concerns of new mothers who may articulate symptoms that indicate possible sepsis
- Provide close follow-up after discharge
- Ensure families are familiar with the signs of maternal sepsis

**Targeting emergency department providers** with education
- More than half of all maternal sepsis cases were preceded by an ED or inpatient hospital visit
Putting these Resources into ACTION
Next Steps for YOU to Take:

Adopt into your agencies best practices for maternal sepsis – vigilance, education, prevention, screening and intervention for sepsis.

If you are a health plan, encourage and support your provider networks in taking this action.
Next Steps for YOU to Take:

Educate your staff and patients about maternal sepsis using this module, the resources provided at www.endspesis.org, and the additional resources referred to throughout.
Next Steps for YOU to Take:

Adopt HCA’s home health sepsis screening and intervention tool for adults and infants and the maternal sepsis education zone tool. Explore this with HCA at [www.sepsistool.org](http://www.sepsistool.org) immediately following this module.
Next Steps for YOU to Take:

Work with physicians, hospitals, EMS, health plans, and other community organizations to coordinate on maternal sepsis response, awareness and intervention.
Next Steps for YOU to Take:

Be a key partner in NYS goals and standards for maternal care provided by home health agencies and health plans.
Maternal Patient & Family Education Tools & Resources
Speaking up can be challenging, but you know your body best. If something doesn’t feel right to you, tell a doctor, nurse or midwife and don’t let anyone dismiss your concerns.
Advise Patients to Act to Prevent, and to Speak up when there are signs and symptoms

**Tell your patients**

It’s important to speak up to a healthcare provider if you feel unwell so that you can be treated as quickly as possible. Speaking up can be hard, but if something doesn’t feel right, tell your healthcare provider. Make sure your questions are answered and don’t let anyone dismiss your concerns.

**During pregnancy:**

- Contact your healthcare provider if you think you have an infection of any kind.
- Be up to date on routine vaccinations, especially flu vaccinations.
- If a C-section is recommended, ask your healthcare provider how to avoid infection following a C-section.

**After childbirth:**

- Wash your hands often to prevent the spread of infection.
- Keep C-section incisions, vaginal or perineal tears and other wounds clean.
- Ask your healthcare provider how to prevent infections if you have a c-section.
- Avoid using tampons.
- Use your voice, it could save your life.
Learn More: Materials For Patients

What is Maternal Sepsis?
Sepsis is a life-threatening condition caused by an infection. The body attacks its own organs and tissues, leading to tissue damage, organ failure, and sometimes death. Sepsis that occurs during pregnancy, childbirth, after an abortion, or in the days and weeks following childbirth is called maternal sepsis.

Who are the signs and symptoms of Maternal Sepsis?
Signs and symptoms can vary. Contact a healthcare provider immediately if you have any of the following:
- Fever and chills and generally feeling unwell
- Slightness and confusion
- Rapid or shallow breathing
- Fever or elevated temperature
- Feeling like your heart is racing
- Chest pain
- Pain/Discomfort passing urination or not passing urination in a day

Who is at most risk?
Any woman who is pregnant, has miscarried or aborted, or has delivered a baby can develop maternal sepsis.

Can Maternal Sepsis be prevented?
Yes, Maternal sepsis is preventable and treatable.
It is important to speak up to a healthcare provider if you feel or believe that you can be treated as quickly as possible. Speaking up can be hard, but if something doesn’t feel right, tell your healthcare provider. Make sure your symptoms are answered and don’t let anyone dismiss your concerns.

During pregnancy:
- Contact your healthcare provider if you think you have an infection of any kind
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After childbirth:
- Wash your hands often
- Keep C-section incisions, vaginal or perineal tears and other wounds clean
- Avoid using tampons

What is Maternal Sepsis?
Maternal sepsis is a dangerous medical condition that can develop during pregnancy or after giving birth. It is the result of an infection that isn’t properly treated. Maternal sepsis can lead to death and can also cause serious problems including damage to the brain, kidneys, and other organs and tissues.

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Materials For Patients
Learn More:
- Materials For Patients
- EndSepsis
- HCA Healthcare

MATERNAL AND PEDIATRIC SEPSIS PREVENTION
The Legacy of Rory Stauton

Next Page
Additional Resources & Tools for Providers
Learn More: For Providers

Maternal Sepsis

Sepsis is a life-threatening medical condition caused by infection. The body attacks its own organs and tissues, leading to tissue damage, organ failure, and eventually, death. If not treated promptly, Sepsis can lead to a series of complications that can be fatal. Therefore, early recognition and treatment are crucial.

Demographic Risk Factors
- Women of color have significantly higher rates of developing maternal sepsis compared to white women.
- Hispanic women have 2.5 times the odds of developing maternal sepsis compared to White women.
- Black women have 2.5 times the odds of developing maternal sepsis compared to White women.
- Asian women have 3 times the odds of developing maternal sepsis compared to White women.

Obstetric Risk Factors
- Women have been shown to develop maternal sepsis up to 100 times more often than men.
- Women with an education level below a Bachelor’s degree experience significantly higher rates of maternal sepsis.
- Women with a prior history of maternal sepsis are at higher risk for developing it again.

Maternal Sepsis Provider Fact Sheet

The United States has the highest rate of maternal mortality of any wealthy country, and three times have risen over the past 30 years. As defined by the World Health Organization, sepsis is "a life-threatening condition arising when the body’s attempt to fight infection causes an overreaction that can lead to organ failure and death." Through new research and a focus on developing new sepsis treatments, maternal sepsis can be prevented.

Maternal Sepsis: A step-by-step guide to diagnosis and treatment

The New York State Department of Health (NYSDOH) has developed a set of guidelines to help healthcare providers identify and treat the underlying condition.

Possible areas of intervention
- Appropriate discharge planning for those women identified as being at increased risk for maternal sepsis.
- Targeting emergency department providers with education on maternal sepsis for women who visit during pregnancy.
- Women with an elevated temperature or signs of infection should seek medical attention immediately.
- If pregnant and experiencing sepsis symptoms, seek medical attention immediately.
- Women with an elevated temperature or signs of infection should seek medical attention immediately.

Comorbidities
- The majority of women who develop sepsis are also at risk for cardiovascular disease, diabetes, and obesity.
- Women with a history of pre-existing medical conditions are at higher risk.

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Resources for Providers & Clinicians for Maternal Sepsis Education

Global Maternal and Neonatal Sepsis Initiative: Know, Prevent, Suspect & Manage
Any questions?

"I worried who would comfort my baby without me."

- Laura, Survivor

Most maternal deaths occur in the days after giving birth.

Learn the warning signs.

endsepsis.org/mothers
Important Links

END SEPSIS: https://www.endsepsis.org/
Maternal Sepsis Module Information Available Here: https://www.endsepsis.org/mothers/

HCA: https://hca-nys.org
HCA Stop Sepsis at Home: https://hca-nys.org/stop-sepsis-at-home/

Get in touch!

Orlaith Staunton
Co-Founder
Phone Number 917-523-8467
Email ostaunton@endsepsis.org

Al Cardillo
President & CEO
Phone Number 518-810-0663
Email acardillo@hcanys.org