Paediatric Sepsis Form

Sinéad Horgan
SSWHG Sepsis Lead
www.hse.ie/sepsis
Definition

• ‘A life-threatening organ dysfunction due to a dysregulated host response to infection’
  o No confirmatory test
  o Blood cultures are positive in 40% cases
  o Presentation is variable

• Infection

• Acute organ dysfunction
Number of Paediatric Sepsis Cases

Year 2011-2016

Number of cases

- Series 1
**Paediatric Sepsis Form**

**Paediatric Sepsis Form**
For early recognition, treatment and referral (APLIMS USE CLINICAL JUDGMENT).

Complete this form if there is a clinical suspicion of infection and the child appears unwell. When complete, sign and place in child’s healthcare record. Seek senior expert help early if sepsis is suspected.

<table>
<thead>
<tr>
<th>Identity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
</tr>
<tr>
<td>Signature:</td>
</tr>
<tr>
<td>Designation:</td>
</tr>
<tr>
<td>NICEH TELECOM:</td>
</tr>
<tr>
<td>DATE:</td>
</tr>
<tr>
<td>TIME:</td>
</tr>
</tbody>
</table>

**Risk factors**
Certain conditions will increase risk of sepsis – use lower threshold for initiation of Sepsis 6. These include:
- Age <3 months
- Chronic disease
- Immunocompromised (haematology/oncology guidelines for children with cancer)
- Recent surgery
- Break skin (including chickaplasty)
- Signs of infection in a wound (including chickaplasty)

**Presentation**
- Core of <36°C or >38.5°C
- Inappropriate tachycardia (if caused by fever/pain/injury should resolve)
- Inappropriate tachypnoea (if caused by fear or anxiety, if tachypnoea is not sustained with measurement and time)
- Altered mental status (e.g., severe leg pain or inability to walk/crawl in the unwell child)
- Reduced peripheral perfusion/prolonged central capillary refill
- Non-irritating skin
- Parental/carer concerns (in particular of deteriorating condition or behaviour change)
- Repeated attendances
- Other:

**Refer**
Refer for urgent medical review. Time:

**After Medical Review**
- Document site of infection:
  - Respiratory Tract
  - Intra-abdominal
  - Urinary Tract
  - Osteo-articular
  - Central Nervous System
  - Skin
  - Other
  - Unknown
- No clinical suspicion of INFECTION: terminate form and sign at bottom

**Decision to Start Paediatric SEPSIS 6 bundle**
- **YES,** Likely infection and risk of sepsis due to risk factors and/or presentation
- **NO,** not infection or uncomplicated presentation → continue with usual infection treatment as clinically indicated. Review diagnosis if clinically indicated.

**Working Diagnosis**
- Time Zero:
  - **Doctor’s Name:**
  - **MCRN:**
  - **Date:**
  - **Time:**

---

**Paediatric Sepsis Form**
Ongoing clinical review and interpretation of results (ALWAYS USE CLINICAL JUDGMENT).

**TREAT**
- Blood cultures (FBC)
- Blood cultures (FBC)
- Blood cultures (FBC)
- Intravenous antibiotics
- Oxygen and ventilator support if needed

**GIVE**
- Fluid resuscitation
- Oxygen (if necessary and not contraindicated)
- Intubation and ventilation
- Pain relief

---

**Reassess the child as clinically indicated and complete within 1 hour**
- Do not delay additional investigations, interventions, or treatments.
- **NOT SEPSIS**
- **YES SEPSIS**
- **NO SEPSIS**

---

**Filial document in the child’s healthcare record.**
Epidemiology

- 80% arise in the community
- 78% occur in children with co-morbidities
  - Congenital heart disease
  - Neurological disorders
- Source
  - 57% community acquired
  - 43% healthcare factors – antibiotics in preceding 7 days
- Site
  - Respiratory tract
  - Abdominal
  - 53% pathogen was isolated
Clinical signs of organ dysfunction

- **Brain**
  - Acute confusion
    - Floppy, poor feeding, weak or absent cry
  - Altered functional state
    - Leg pain, unable to weight bear
- **Lungs**
  - Requiring oxygen or respiratory support
  - Hypoxia
- **Heart**
  - Inappropriate tachycardia or bradycardia
  - Prolonged central capillary refill
  - Lactate >2mmol/L
  - Hypotension a late sign
- **Kidneys**
  - Oligourea < 1ml/kg/hr
  - Creatinine doubled
- **Skin**
  - Purpuric rash
  - Mottling
Clinical aims

• Recognise the unwell child with infection
• Identify risk factors and deterioration
• Complete the sepsis 6 bundle within 1 hour of recognition
• Escalate the patient who requires organ support to critical care
• Source control
• Prevent or abort the sepsis response by:
  o Aiding the host in killing the infecting organism
    • Appropriate antimicrobial therapy
    • Source control
  o Restoring homeostasis
    • Supplementary O2 to achieve sats ≥ 94% (ECJ)
      o May require ventilatory support
    • Restoring tissue perfusion with fluid resuscitation +/- pressors
      o Invasive monitoring
      o Serial lactate measurement
      o Urinary output measurement
  • Renal replacement therapy
Sepsis diagnosis

- Pattern recognition
- Multiple variables
- Each variable can be caused by other conditions
- Data available at different time points
  - Minutes, hours, days
- Easier to recognise as clinical course progresses
  - But harder to treat!
- Effective treatment is time-dependant
  - Sepsis is a medical emergency!
Sepsis Screening

Paediatric Sepsis Form
For early recognition, treatment and referral (ALWAYS USE CLINICAL JUDGEMENT)

Complete this form if there is a clinical suspicion of infection and the child appears unwell. When complete, sign and place in child’s healthcare record. Seek senior expert help early if sepsis is suspected.

Infection
- Non-specific eg SIRS
- Localising ie to site of infection

Unwell
- Alteration in functional status
YOU, THE PATIENT AND THE RELEVANT SITUATION FOR SCREENING

Identify

Print name:
Signature:
Designation:
NMBI or MCRN:
Date: Time:

There is a clinical suspicion of infection
☐ Yes

Addressograph
Risk Factors

78% OF SEPSIS CASES HAD RISK FACTORS
Unwell

Parents/caregivers know the normal function status of patients with disability/chronic disease – listen to them.
What to do

Screen is positive if there is a suspicion of infection (including gastroenteritis) and the patient has risk factors and/or presents with one of the characteristic presentations listed.

When referring ensure you communicated the information you have gathered and say **COULD THIS BE SEPSIS?**

Make sure the form is accessible for the doctor.
## Medical Review

### After Medical Review

**Document site of infection:**
- □ Respiratory Tract
- □ Catheter/Device Related
- □ Unknown
- □ Intra-abdominal
- □ Osteo-articular/Bone
- □ Other
- □ Urinary Tract
- □ Central Nervous System
- □ Skin
- □ Toxic Shock Syndrome

### Decision to Start Paediatric SEPSIS 6 bundle

**☐ YES,**
Likely infection and risk of sepsis due to risk factors and/or presentation

**Time Zero:** __________

**☐ NO,** not infection or uncomplicated infection presentation → continue with usual infection treatment as clinically indicated. Review diagnosis if clinically indicated.

**Working Diagnosis:** __________

**Doctor (Print Name):** __________  **Doctor Signature:** __________

**MCRN:** __________  **Date:** __________  **Time:** __________
**Paediatric Sepsis 6 – complete within 1 hour**

**TAKE 3**

- IV access
- IO access

**Tick samples taken:**
- Blood cultures
- Glucose (treat if low)
- Coag
- U&E
- Lumbar puncture (if necessary and not contraindicated)
- Urinalysis

- Urine output measurement

- Early senior input (essential) as per local escalation policy

**GIVE 3**

- **Oxygen** to achieve saturations ≥94% titrating to effect or as appropriate in chronic lung or cardiac disease

- **IV/IO fluids**
  - Call anaesthetics/critical care in haemodynamic collapse
  - Consider early inotropic support
  - Aim to restore circulating volume
  - Titrate 20mls/kg isotonic fluid over 5-10min, repeat as necessary
  - Caution for fluid overload, monitor for crepitations or hepatomegaly

- **IV Antimicrobials** according to the site of infection and following local antimicrobial guidelines.
  
  Drug name:  
  Dose:  
  Time given:  

- Laboratory tests should be requested as EMERGENCY, aiming to have results available and *reviewed within 1 hour*.
- Review the child and record observations on PEWS chart regularly as clinically indicated and escalate as appropriate.
- Document all decisions, interventions, results and continuing treatment plan.
Sepsis Form Completion

Reassess the child as clinically indicated and complete form within 3 hours of initiating the Sepsis 6 bundle.

Record if:
• Sepsis
• Not sepsis
• Septic Shock
Reassess the child as clinically indicated and complete form within 3 hours of initiating the Sepsis 6 bundle

Look for signs of new organ dysfunction

- Respiratory: Proven need for FiO₂ ≥ 0.5 to maintain saturations ≥ 94%
- Respiratory: Need for nonelective invasive or noninvasive mechanical ventilation
- Central Nervous System: Glasgow coma score (GCS) ≤ 11 or poorly responsive
- Central Nervous System: Acute change in mental status with a decrease in GCS ≥ 3 points from usual baseline
- Coagulation: Platelet count ≤ 80,000/mm³
- Coagulation: International normalised ratio (INR) ≥ 2
- Renal: Serum creatinine ≥ 2 times upper limit of normal for age or 2-fold increase in baseline creatinine
- Liver: Total bilirubin ≥ 38 micromoles/dl (not applicable for newborn)
- Liver: ALT 2 times upper limit of normal for age

Any new organ dysfunction due to infection: ☐ This is SEPSIS
Inform Consultant and Anaesthetics/PICU. Reassess frequently in the first hour. Consider other investigations and management +/- source control if child does not respond to initial therapy

No new organ dysfunction due to infection: ☐ This is NOT SEPSIS:
If infection is diagnosed proceed with usual treatment pathway for that infection.

Look for signs of septic shock

(following administration of fluid bolus of up to 40ml/kg in first hour)

- Hypotension
- Prolonged central CRT
- Core to peripheral temperature gap ≥3°C
- Unexplained metabolic acidosis
- Oliguria: ≤1ml/kg/hour up to 11 years or ≤0.5ml/kg/hour in the 12+ age group

☐ This is SEPTIC SHOCK
In addition to senior clinical support at the bedside early involvement of PICU support is encouraged. Where PICU support is not on site a national 24 hour hotline is available for urgent referrals providing advice and arranging transfer – 1890 213 213.
Sign and file

If signed it can be coded
60% adult sepsis cases identified
Protects you, your hospital and your community
Audit results 2016
n = 1489

<table>
<thead>
<tr>
<th></th>
<th>With form</th>
<th>Without form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis made and documented</td>
<td>87%</td>
<td>44%</td>
</tr>
<tr>
<td>Risk stratification correct</td>
<td>74%</td>
<td>24%</td>
</tr>
<tr>
<td>1st dose antimicrobials within 1 hour</td>
<td>74.5%</td>
<td>46.5%</td>
</tr>
</tbody>
</table>

Only 56% of sepsis cases were documented as sepsis in the case notes.
Sepsis Pilot Phase 1

- Joint project with National Paediatric Programme and National Sepsis Programme.
- Paediatric sepsis form designed by expert multidisciplinary team – Paediatric SPR, Lead Paediatric Nurse from Clinical Advisory Group, Practice Nurse, Dr Vida Hamilton, Sepsis ADON.
- Signed off by Paediatric Clinical Advisory Group.
- 1st Pilot Spring 2018.
- Feedback to Expert multidisciplinary group April 2018.
- 2nd Pilot Summer 2018.
- Plan for Education programme and roll out in Autumn.
ANY QUESTIONS?

www.hse.ie/sepsis