## West Hertfordshire Hospitals MFS

**NHS Trust** 

# **Reducing Antibiotic Use In Newborn Infants By Correctly Identifying At Risk Maternal Sepsis**

#### **Dr Suraj Shah and Dr Renton L'Heureux**

Department of Paediatrics, West Hertfordshire Hospitals NHS Trust, Watford General Hospital, Vicarage Road, Watford, UK.

### Introduction

Maternal sepsis is a risk factor for suspected neonatal sepsis. Therefore, correctly identifying maternal sepsis decreases both the commonest causes of direct maternal death and provides a targeted approach to the efficient management of suspected neonatal sepsis. Despite national uptake of the adult sepsis tool, a tool specifically designed for maternal sepsis is not widely used. Our quality improvement project and audit was performed to identify neonates screened for sepsis as a result of suspected or confirmed sepsis in pregnant women at Watford General Hospital (WGH) in the month

## Results

- 14 neonates were treated for sepsis due to suspected maternal or • confirmed sepsis.
- 100% were screened and treated correctly as per national guideline.
- None of the neonates had confirmed sepsis. •
- None of the maternal cases had used the local adult sepsis tool (Figure 1) and none had positive blood cultures.
- MEWS scoring rather than NEWS scoring for maternal sepsis

### of November 2016.

## Aims

- 1) To identify whether pregnant mothers were correctly identified as having sepsis and how sepsis was confirmed.
- 2) To analyse if neonates were subsequently correctly screened and treated as a result of the maternal sepsis status.

### **Standards**

- 1) In 100% of cases of suspected maternal sepsis, the WGH adult sepsis proforma should be used for maternal sepsis diagnosis.
- 2) In 100% of cases, neonates of screening tool positive mothers should also be screened and treated for suspected sepsis (NICE guidance) CG149).

## **Methods**

#### **Fig. 2** Below the updated maternal sepsis tool used at WGH



Patient de

1. Has

OR d

OR is

2. Coul

Yes, but Chorioan

Urinary 7

Infected Influenza

Abdomina Breast ab

Other (sp

3. ls 0

Responde Systolic

> Heart rat Respirate

Needs ox Non-blan

Not pass Urine out \_actate ≥

Inpatient Maternal Sepsis Tool

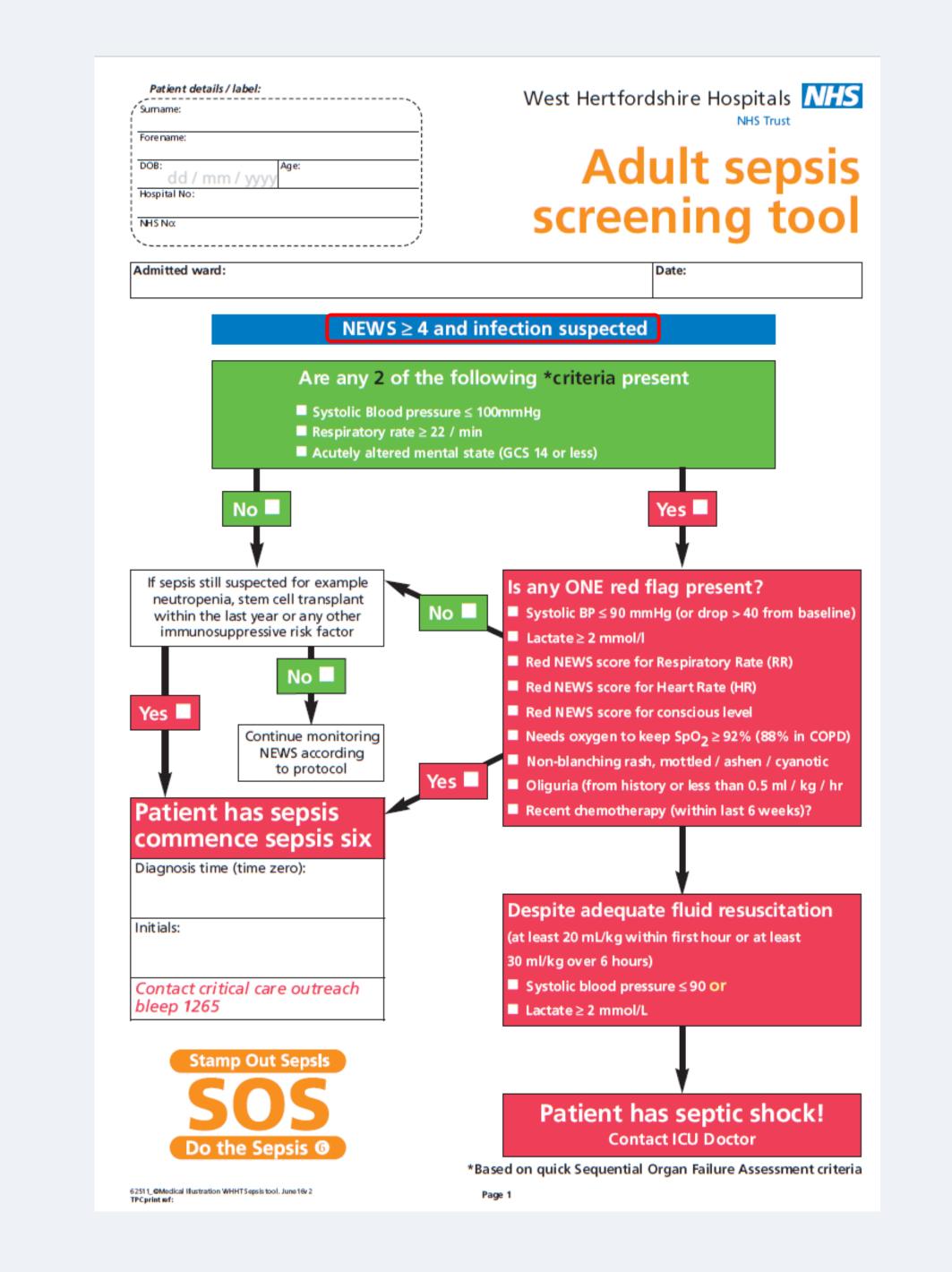
al Sepsis Tool	NHS
gnant or up to six weeks postpartum	West Hertfordshire
nancy did not end in a birth) who	Hospitals
al observations outside normal limits	NHS Trust

tails (affix label):		Staff member completing form:	
		Date (DDMM/YY):	
		Name (print):	
		Designation:	
	_	Signature:	
MEOWS triggered?		Low risk of sepsis. Use standard protocols, consider	
pes woman look sick?		discharge with safety netting. Consider obstetric needs.	
foetal tachycardia present (≥160 bpm)?		TN	
v		4. Any Matemal Amber Flag criteria?	
<b>+</b> '		Relatives concerned about mental status	
d this be an infection?	Tick	Acute deterioration in functional ability	
source unclear at present		Respiratory rate 21-24 OR breathing hard	
nionitis/ endometritis		Heart rate 100-130 OR new arrhythmia Systolic B.P 91-100 mmHg	
ract Infection		Not passed urine in last 12-18 hours	×
aesarean or perineal wound		Temperature < 36°C	
severe sore throat, or pneumonia		Immunosuppressed/ diabetes/ gestational diabetes	
al pain or distension		Has had invasive procedure in last 6 weeks	
scess/ mastitis		(e.g. CS, forceps delivery, ERPC, cerclage, CVs, miscarriage, termination)	
ecify):		Prolonged rupture of membranes	
Y		Bleeding/ wound infection/ vaginal discharge	
<b>•</b>		Non-reassuring CTG/ fetal tachycardia >160	
<b>IE</b> maternal Red Flag present?	Tick		
only to voice or pain/ unresponsive		Time complete Initials	
$P \le 90 \text{ mmHg}$ (or drop >40 from normal)		Send bloods if 2 criteria present, consider if 1	
> 130 per minute		Include lactate, FBC, U&Es, CRP, LFTs, clotting	
ry rate ≥ 25 per minute		Shift Leader For review within 1hr	
ygen to keep SpO₂ ≥92%		Time clinician/ Midwife attended	
hing rash, mottled/ ashen/ cyanotic			
d urine in last 18 hours			
but less than 0.5 ml/kg/hr		Is AKI present? (tick) YES NO	
2 mmol/l			
nay be raised in & immediately after normal labour & delivery)		Clinician to make antimicrobial	
Y		prescribing decision within 3h	
•	+		
ed Flag Sensis!! Start S	Sensis	6 pathway NOW (see overleaf)	

Use of MEOWS triggering sepsis screening rather than NEWS as reflects abnormal maternal parameters better

Presence of a single maternal red flag prompts immediate sepsis screening whereas presence of amber flags prompting further time to consider diagnosis

Case notes and laboratory results for neonates started on antibiotics for suspected maternal sepsis in 1 month (November 2016) were analysed. The maternal notes of these infants were also scrutinised for adherence to the standardised adult diagnostic tool.



Outlining the Sepis Six actions with more specific maternal considerations e.g. vaginal swabs, caution of fluids in pre-eclampsia

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Prompting importance of informing neonatal team as suspected maternal sepsis is a red flag risk factor to screen neonates for sepsis

	(or after the end of pregnancy if p	Are pregnant or up to six weeks postpartum pregnancy did not end in a birth) who have dinical observations outside normal limits Consultant informed?
	Inform Consultant Obstetrician & Obstetric Anaesthetist; OR consider transfer to Obstetric Unit. State patient has Red F	Time zero     (tick)     Initials       Flag Sepsis
_	Action (complete ALL within 1 hour)	Reason not done/variance
	1. Administer oxygen Aim to keep saturations > 94%	Time complete
	<b>2.</b> Take blood cultures At least a peripheral set. Consider e.g. urine, sputum,	Time complete
	vaginal swabs, breast milk culture, throat swabs Think source control & timing of delivery of baby- start CTG!	Initials
	3. Give IV antibiotics	Time complete
	Refer to the WHHT Antibiotic Prophylaxis and Treatment guidelines for Obstetrics and Gynaecology policy Consider allergies prior to administration	Initials
1	<b>4. Give IV fluids</b> If hypotensive/lactate >2mmol/l, 500ml stat (can repeat up to 30ml/kg). Ask doctor regarding fluids if not hypotensive and lactate normal. Ask Anaesthetist regarding fluids if patient has pre-eclampsia	Time complete Initials
	5. Check serial lactates	Time complete Not applicable- initial lactate
Ŋ,	Corroborate high VBG lactate with arterial sample If lactate >4mmol/l, call Critical Care and recheck after each 10ml/kg challenge	Initials
	<b>6.</b> Measure urine output May require urinary catheter	Time complete
	Ensure fluid balance chart commenced & completed hourly	Initials
	If after delivering the Sepsis Six, patient still has: • systolic B.P <90 mmHg	WHHT intranet.
	reduced level of consciousness despite resuscitation	<ul> <li>If suspecting maternal sepsis, notify neonatal team to screen baby for sepsis.</li> </ul>
	<ul> <li>respiratory rate over 25 breaths per minute</li> <li>lactate not reducing</li> </ul>	- Maternal cardiac arrest: (>20 weeks gestation) a "Maternal Cardiac Arrest" call must be activated. Adult,
	Or if patient is clearly critically ill at any time	paediatric and obstetric emergency teams to respond.

### **Fig. 1**

Note how WGH sepsis tool is an adult sepsis tool requiring NEWS >4 to trigger sepsis screening. Maternal observations are measured as MEOWS (Maternal Early Obstetric Warning Score) therefore use of the tool on maternity was not applied.

### Conclusion

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Maternal physiology is known to be different to that of non-pregnant adults. For this reason, the adult sepsis tool is not used in maternity. However, had this tool been used, none of the cases would have scored as suspected maternal sepsis. Therefore, WGH has adapted parameters for maternal sepsis from non-pregnant adult sepsis guidelines and contemporaneous obstetric guidelines. A local maternal sepsis screening tool was adapted from The UK Sepsis Trust (Figure 2). The anticipated benefit is that of a targeted approach to the diagnosis of maternal sepsis and subsequent efficient screening and treatment of suspected sepsis in the newborn. This project identifies a need for specific maternal rather than generic adult sepsis screening tools as management of the mother affects the subsequent management of the neonate

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