

# Deterioration of the Newborn Response

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National Patient Safety  
Improvement Programmes

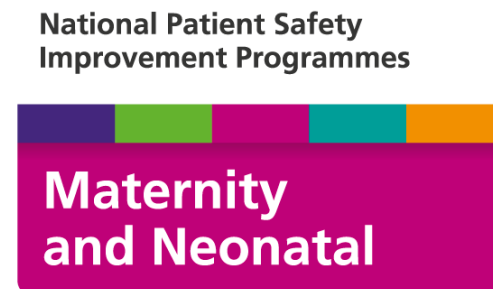
Maternity  
and Neonatal



# Response to a deteriorating baby should be:

- Timely to prevent further deterioration
- Achievable given demands on healthcare professionals
- Standardised to prevent variation between shifts, hospitals and networks
- Carried out as a team
- Inclusive of parents and care givers

} Shared  
responsibility



# What does this framework add?

- Encourages a multidisciplinary response
  - Collaboration
  - Shared responsibility
- Reminds us to keep parents updated
- Response tools
  - Review record
  - Joint escalation and review record
    - Paper or digital



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## NEWTT2 Review Record

Date: \_\_\_/\_\_\_/\_\_\_ Time: \_\_\_:\_\_\_

Risk factors: \_\_\_\_\_

Parental concerns? Yes / No

### Are any of the following indicated?

Pre- and post-ductal SpO<sub>2</sub> [ ]

Chest X-ray [ ]

Blood glucose [ ]

Septic screen [ ]

Blood gas / lactate [ ]

Blood pressure [ ]

### Plan:

Is baby unwell Yes / No

If yes, inform senior [ ]

Parents updated [ ]

Admit to NNU [ ]

Time of next review: \_\_\_\_\_

Frequency of obs: \_\_\_\_\_

Full plan documented and handed over to \_\_\_\_\_ (name of staff)

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Grade : \_\_\_\_\_

NMC/GMC: \_\_\_\_\_

MDT

Parents

Ongoing  
plan

## NEWT2 Joint Escalation and Review Record

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Time: \_\_\_\_:\_\_\_\_

Total NEWTT2 score \_\_\_\_\_

Escalation Level:

Score 1-3 (Request Tier 1 review within 1 hour) ☐

Score 4-5 (Request Tier 1 review within 15 minutes) ☐

Score ≥ 6 (Request Tier 1 review within 15 minutes & inform Tier 2) ☐

Critical observations? Consider a 2222 call and Request Tier 1 AND Tier 2 review ☐

Escalation completed:

Shift Leader Informed ☐

Referral to Paediatric/Neonatal Team ☐

Referral Accepted by: Tier 1 Doctor / ANNP ☐ Tier 2 Doctor / ANNP ☐

S:

B:

A:

R: I have already done \_\_\_\_\_

Please will you \_\_\_\_\_, and  
review within \_\_\_\_\_

Referrer Name: \_\_\_\_\_ Signature: \_\_\_\_\_

Grade: \_\_\_\_\_ NMC: \_\_\_\_\_

### NEWT2 Review

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Time: \_\_\_\_:\_\_\_\_

Gestation: \_\_\_\_ Age: \_\_\_\_ Birth Weight: \_\_\_\_ kg Delivery Mode: \_\_\_\_\_

**History:** (Sepsis risk factors, maternal medications, feeding, parental concerns etc)

### Examination:

Heart rate: \_\_\_\_ Resp rate: \_\_\_\_ Temperature: \_\_\_\_°C

Name.....  
Date of birth.....  
Time of birth.....  
Hospital No.....  
NHS No.....

### Investigations:

☐ Blood glucose \_\_\_\_\_ mmol/L

☐ SpO<sub>2</sub>: Pre-ductal: \_\_\_\_\_% Post-ductal: \_\_\_\_\_%

☐ Capillary blood gas:

pH pCO<sub>2</sub> BE Bicarb Lactate

☐ Consider chest X-Ray and pre/post ductal BP measurement (Do you need to inform tier 2?)

**Impression:** (Is baby unwell? Could this be sepsis? Cardiac? Metabolic?)

### Plan:

Senior review required? ☐ Frequency of observations: \_\_\_\_\_

Parents updated ☐ Next review: \_\_\_\_\_

Plan handed over to: \_\_\_\_\_ (midwife caring for mother and baby)

Name: \_\_\_\_\_ Signature: \_\_\_\_\_

Grade: \_\_\_\_\_ GMC / NMC no.: \_\_\_\_\_

### NEWT2 Re-review

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Time: \_\_\_\_:\_\_\_\_

Heart rate: \_\_\_\_ Resp rate: \_\_\_\_ Temp: \_\_\_\_°C SpO<sub>2</sub>: \_\_\_\_ % Blood glucose: \_\_\_\_ mmol/L

Name: \_\_\_\_\_ Signature: \_\_\_\_\_

Grade: \_\_\_\_\_ GMC / NMC no.: \_\_\_\_\_

## NEWTT2 Joint Escalation and Review Record

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Time: \_\_\_\_:\_\_\_\_

Total NEWTT2 score \_\_\_\_\_

Escalation Level:

Score 1-3 (Request Tier 1 review within 1 hour) ☐

Score 4-5 (Request Tier 1 review within 15 minutes) ☐

Score ≥ 6 (Request Tier 1 review within 15 minutes & inform Tier 2 ) ☐

Critical observations? Consider a 2222 call and Request Tier 1 AND Tier 2 review ☐

Escalation completed:

Shift Leader Informed ☐

Referral to Paediatric/Neonatal Team ☐

Referral Accepted by: Tier 1 Doctor / ANNP ☐ Tier 2 Doctor / ANNP ☐

S :

B :

A :

R : I have already done \_\_\_\_\_

Please will you \_\_\_\_\_, and

review within \_\_\_\_\_

Referrer Name: \_\_\_\_\_ Signature: \_\_\_\_\_

Grade: \_\_\_\_\_ NMC: \_\_\_\_\_

**NEWTT2 Review** Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Time: \_\_\_\_:\_\_\_\_

Gestation: \_\_\_\_\_ Age: \_\_\_\_\_ Birth Weight: \_\_\_\_\_ kg Delivery Mode: \_\_\_\_\_

**History:** (Sepsis risk factors, maternal medications, feeding, parental concerns etc)

**Examination:**

Heart rate: \_\_\_\_\_ Resp rate: \_\_\_\_\_ Temperature: \_\_\_\_\_ °C

Name.....

Date of birth.....

Time of birth.....

Hospital No.....

NHS No.....

Shared  
responsibility

Standardised  
review

<b>Investigations:</b> <input type="checkbox"/> Blood glucose _____ mmol/L <input type="checkbox"/> SpO <sub>2</sub> : Pre-ductal: _____ % Post-ductal: _____ % <input type="checkbox"/> Capillary blood gas: pH    pCO <sub>2</sub> BE    Bicarb    Lactate <input type="checkbox"/> Consider chest X-Ray and pre/post ductal BP measurement (Do you need to inform tier 2?) <b>Impression:</b> (Is baby unwell? Could this be sepsis? Cardiac? Metabolic?)  <b>Plan:</b>     Senior review required? <input type="checkbox"/> Frequency of observations: _____ Parents updated <input type="checkbox"/> Next review: _____ Plan handed over to: _____ (midwife caring for mother and baby) Name: _____    Signature: _____ Grade: _____    GMC / NMC no.: _____ <hr/> <b>NEWT2 Re-review</b> Date: ____/____/____    Time: ____:____ Heart rate: ____    Resp rate: ____    Temp: ____ °C    SpO <sub>2</sub> : ____ %    Blood glucose: ____ mmol/L          Name: _____    Signature: _____ Grade: _____    GMC / NMC no.: _____		Name..... Date of birth..... Time of birth..... Hospital No..... NHS No.....
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Prompt to  
consider  
investigations

Ongoing plan  
Handover  
Parents

Further review

# Rose

Rose is born at 38+3 weeks by Category 2 Cesarean section for non-reassuring CTG and thick meconium liquor at 6cm cervical dilation

Rose started grunting at birth

**Record NEWTT2 observations for  
thick meconium (NICE)**





# Rose

*Rose has a total NEWTT2 score of 1 at 1 hour because she is still making grunting noises. She has had skin to skin and an early latch at the breast and sucked well.*

*You inform the shift leader who confirms to repeat Rose's observations within another 1 hour as stated in the NEWTT2 escalation tool.*

Thresholds and Triggers					
<ul style="list-style-type: none"><li>The grade of team member indicated as the primary contact for each level of clinical concern is a guide and may need to be adapted depending on the local skill mix within that care setting or organisation.</li></ul>					
	<b>Score 1</b>	<b>Score 2-3</b>	<b>Score 4-5</b>	<b>Score ≥6</b>	<b>Any critical observation</b>
	Inform shift leader - Consider SpO <sub>2</sub> +/- blood glucose if not done already				
Primary escalation and response (use SBAR framework)	Repeat observations in <1 hour.	Refer to paediatric/ neonatal Tier 1 doctor/ANNP.	Refer to paediatric/ neonatal Tier 1 doctor/ANNP.	Refer to paediatric/ neonatal Tier 1 doctor/ANNP. The Tier 2 doctor/ ANNP should be informed.	Refer to paediatric/ neonatal Tier 1 doctor/ANNP AND Tier 2 doctor/ANNP.
Review timings	Escalate as for score 2-3 if the repeat score remains 1.	Request a review within 1 hour.	Request a review within 15 minutes.	Request immediate review.	Immediate review and consider neonatal emergency call (2222).
<b>Take steps to manage/address any obvious concerns/problems</b>					
Secondary contact	If no review within expected time frame, escalate to Tier 2 doctor/ANNP and inform shift leader.			If no review within expected time frame, escalate to consultant and inform shift leader.	
	If still no response within required time frame, escalate to consultant.				
<ul style="list-style-type: none"><li>When the primary team member(s) contacted is unable to attend or fails to attend within the expected time for the level of clinical concern, escalation to the secondary contact is required</li><li>The secondary contact would be expected to attend within the initial review timing, calculated from the documented time of primary escalation.</li></ul>					

NEWTT2 score	0	1	2
ANY critical (PURPLE)			
Reason for observations	Meconium-1		
Frequency & duration	At 1+2h, then 2hrly		
Date	Delivered 31.12.21		
Time	Delivered 23:55		
Temperature °C	39.0	38.0	37.0
	36.0		
Temperature alert: T			
Respirations Breaths/min	80	70	60
	50	40	30
	20		
Grunting present?		Y	
Heart rate Beats/min	180	170	160
	150	140	130
	120	110	100
	90	80	70
	60		
Colour	SpO <sub>2</sub> <90% (or very pale / Blue)		
	SpO <sub>2</sub> 90-94%		
	SpO <sub>2</sub> ≥95% (or Pink / Normal)		
Neuro	Unrrousable / Floppy / ?Seizure		
	Jittery / Lethargy / Irritable / Poor tone		
	Responsive / Good tone		
Feeds	Not feeding		
	Feeding reluctantly		
	Feeding well		
Care	High parental concern		
	Some parental concern		
	No parental concern		
Glucose	< 1.0 mmol/l		
	1.0 - 1.9 mmol/l		
	2.0 - 2.5 mmol/l		
	≥ 2.6 mmol/l		
Glucose when measured - Should be considered in any baby feeding rel			
NEWTT2 TOTAL	1		
Monitoring frequency	<1h		
Escalation of care YES/NO	Y		
Initials	AN		
Refer			

# Rose

By 2 hours of age Rose's parents are concerned because Rose is still making grunting noises. You measure all observations and note that Rose's heart rate is plotting just over 160 beats/min in the yellow box.

You calculate the total NEWTT2 score and it is 3, that's 1 each for grunting, heart rate and parental concern.

You refer to the NEWTT2 escalation tool and escalate to the Tier 1 requesting a review within 1 hour.

Thresholds and Triggers					
• The grade of team member indicated as the primary contact for each level of clinical concern is a guide and may need to be adapted depending on the local skill mix within that care setting or organisation.					
	Score 1	Score 2-3	Score 4-5	Score ≥6	Any critical observation
	Inform shift leader - Consider SpO <sub>2</sub> +/- blood glucose if not done already				
Primary escalation and response (use SBAR framework)	Repeat observations in <1 hour.	Refer to paediatric/ neonatal Tier 1 doctor/ANNP.	Refer to paediatric/ neonatal Tier 1 doctor/ANNP.	Refer to paediatric/ neonatal Tier 1 doctor/ANNP. The Tier 2 doctor/ ANNP should be informed.	Refer to paediatric/ neonatal Tier 1 doctor/ANNP AND Tier 2 doctor/ANNP.
Review timings	Escalate as for score 2-3 if the repeat score remains 1.	Request a review within 1 hour.	Request a review within 15 minutes.	Request immediate review.	Immediate review and consider neonatal emergency call (2222).
Take steps to manage/address any obvious concerns/problems					
Secondary contact	If no review within expected time frame, escalate to Tier 2 doctor/ANNP and inform shift leader.			If no review within expected time frame, escalate to consultant and inform shift leader.	
	If still no response within required time frame, escalate to consultant.				
• When the primary team member(s) contacted is unable to attend or fails to attend within the expected time for the level of clinical concern, escalation to the secondary contact is required					
• The secondary contact would be expected to attend within the initial review timing, calculated from the documented time of primary escalation.					

NEWT2 score	0	1	2	A score
ANY critical (PURPLE) obs				
Reason for observations	Meconium-thick			
Frequency & duration	At 1+2h, then 2hrly until			
Date	Delivered 31.12.21	1/1/22	1/1/22	
Time	Delivered 23:55	00:55	01:55	
Temperature °C	39.0			
	38.0			
	37.0			
	36.0			
Temperature alert: Thermal				
Respirations Breaths/min	80			
	70			
	60			
	50			
	40			
	30			
	20			
Grunting present?		Y	Y	
Heart rate Beats/min	180			
	170			
	160			
	150			
	140			
	130			
	120			
	110			
	100			
	90			
	80			
	60			
Colour	SpO <sub>2</sub> <90% (or very pale / Blue)			
	SpO <sub>2</sub> 90-94%			
	SpO <sub>2</sub> ≥95% (or Pink / Normal)			
Neuro	Unroutable / Floppy / ?Seizure			
	Lethargy / Irritable / Poor tone			
	Responsive / Good tone			
Feeds	Not feeding			
	Feeding reluctantly			
	Feeding well			
Carer	High parental concern			
	Some parental concern			
	No parental concern			
Glucose	< 1.0 mmol/l			
	1.0 - 1.9 mmol/l			
	2.0 - 2.5 mmol/l			
	≥ 2.6 mmol/l			
Glucose when measured - Should be considered in any baby feeding reluctantly				
NEWT2 TOTAL	1	3		
Monitoring frequency	<1h	2h		
Escalation of care YES/NO	Y	Y		
Initials	AN	AN		
Refer to b				

# Rose

*The Tier 1 arrives, and Rose's grunting has settled so her parents are no longer concerned. Rose's heart rate is assessed as 149 beats/min on the pulse oximeter reading and her saturations are 96%.*

*Together with Rose's parents, you, your shift leader and the Tier 1 agree to continue the 2 hourly sets of observations as per NICE guidance and for the Tier 1 to be called again to review if there are any concerns from the parents, the maternity staff, yourself or the NEWTT2 score requires escalation using the NEWTT2 escalation tool.*

*As a team you document all discussions, review history, examination and observations, and the agreed action onto the patient record using the NEWTT2 response form.*

# Rose

All appeared to be progressing, but Rose is now not feeding as well at 12 hours of age. Rose is grunting again and appears to be working harder to breathe. Yourself, the shift leader and the parents are concerned. Rose's total NEWTT2 score is 8.

You escalate immediately to the Tier 1 and call the Tier 2 yourself as you are concerned given Rose's total NEWTT2 score, her sudden change and she just doesn't look right.

Rose is reviewed promptly and requires admission to the neonatal unit for on-going care.

You are informed later that Rose was initially thought just to be clearing retained lung fluid but after a chest X-Ray there are signs of meconium aspiration. Rose progresses well on the neonatal unit and is discharged home after a stay in high-dependency. Rose establishes breast-feeding.

ANY critical (PURPLE) observation = immediate escalation. Consider 2222												
Reason for observations		Meconium-think						Signed		Print name & GMC/NMC No.		
Frequency & duration		At 1+2h, then 2hrly until 12h						A Nyone		A.Nyone 0000000		
Date	Delivered 31.12.21	1/1/22	1/1/22	1/1/22	1/1/22	1/1/22	1/1/22	1/1/22	1/1/22			
Time	Delivered 23:55	00:55	01:55	03:55	05:55	07:55	09:55	11:55				
Temperature °C	39.0								39.0			
	38.0								38.0			
	37.0								37.0			
	36.0								36.0			
	35.0								35.0			
	34.0								34.0			
Temperature alert: Implement thermal control measures and re-check temperature within 1 hour.												
Respirations Breaths/min	80								80			
	70								70			
	60								60			
	50								50			
	40								40			
	30								30			
Grunting present?	Y	Y	N	N	N	N	1	Y				
Heart rate Beats/min	180								180			
	170								170			
	160								160			
	150								150			
	140								140			
	130								130			
Colour	SpO2 <90% (or very pale / Blue)								SpO2 <90% (or very pale / Blue)			
	SpO2 90-94%								SpO2 90-94%			
	SpO2 ≥95% (or Pink / Normal)								SpO2 ≥95% (or Pink / Normal)			
	Unrousable / Floppy / ?Seizure								Unrousable / Floppy / ?Seizure			
	Lethargic / Irritable / Poor tone								Lethargic / Irritable / Poor tone			
	Responsive / Good tone								Responsive / Good tone			
Feeds	Not feeding								Not feeding			
	Feeding reluctantly								Feeding reluctantly			
	Feeding well								Feeding well			
	High parental concern								High parental concern			
	Some parental concern								Some parental concern			
	No parental concern								No parental concern			
Glucose	< 1.0 mmol/l								< 1.0 mmol/l			
	1.0 - 1.9 mmol/l								1.0 - 1.9 mmol/l			
	2.0 - 2.5 mmol/l								2.0 - 2.5 mmol/l			
	≥ 2.6 mmol/l								≥ 2.6 mmol/l			
	n/a								n/a			
	n/a								n/a			
Glucose when measured - Should be considered in any baby feeding reluctantly/poorly, where jittery/irritable or other observations suggest unwell.												
NEWTT2 TOTAL		1	3	0	0	0	0	8	TOTAL			
Monitoring frequency		<1h	2h	2h	2h	2h	2h	NNU	Monitoring			
Escalation of care YES/NO		Y	Y	N	N	N	N	Y	Escalation			
Initials		AN	AN	AN	AN	AN	AN	AN	Initials			
Refer to back page for thresholds and triggers												

Thank you

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