CoolCuddle Standard Operating Procedure (SOP)

CoolCuddle is a process and technique developed in Bristol to enable parents to cuddle their babies during therapeutic hypothermia and intensive care. The following SOP includes the group of babies who can be offered CoolCuddle, steps and monitoring involved in CoolCuddle and when to consider stopping the Coolcuddle. CoolCuddle has been investigated for a maximum of 2 hours per cuddle. Parents may choose to stop the cuddle earlier than 2 hours.

Which babies are suitable for CoolCuddle?

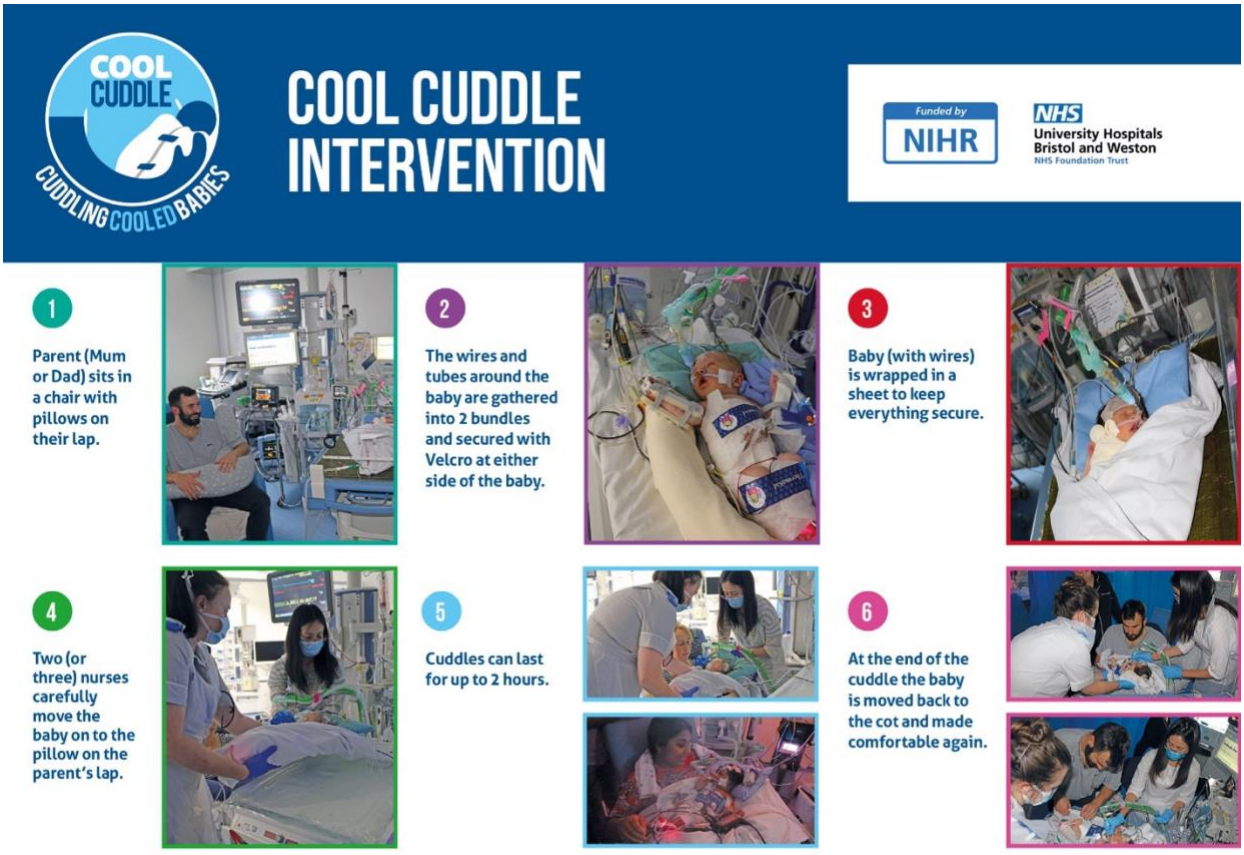
Infants ≥35 weeks' gestation undergoing therapeutic hypothermia using a servo-controlled cooling machine and intensive care for HIE.

Which babies are not suitable for CoolCuddle?

At the time of planned cuddle, any baby receiving cooling therapy who is requiring any of the following:

- high-frequency oscillation
- mean airway pressure >15cm H_2O
- oxygen requirement >70%
- chest drain in-situ
- needing ≥3 inotropes
- status epilepticus

Steps involved in Coolcuddle



CoolCuddle checklist

Before cuddle:

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Is the baby stable for a cuddle		No pending investigations/procedures Make sure medical team is happy for the baby to have a cuddle Need blood gas?
Parent(s)		Explain the process Make sure parent(s) has eaten/ has enough drinks/ been to toilet/ maternal pain is under control (not due for medications in the next few hours or inform midwifery team if necessary) Make sure the parent(s) is positioned near the ventilator Make sure enough space around the chair for easy access for staff Offer a pillow / footstool
Nursing staff		Identify 2nd nurse (one nurse to look after airway) Do you need 3rd person? Identify the role (who will be leading the move)
IV infusions/lines		Enough slack? Move lines to one side – on opposite side to where parent(s) is – so that lines don't lie between the baby and the parent(s) Bundle together and clip to jacket - one Velcro clip close to line insertion site and the 2nd one near the baby's head level and clip onto cooling wrap or cotsheet.
Monitoring cables		Enough slack? Group the monitoring cables on the side close to the parent Bundle together and clip to cooling wrap (may need 2 or more Velcro clips) Peripheral arterial line transducer should be clipped separately and keep the insertion site visible at all the time
Ventilator tubing (including end tidal CO_2 monitoring line)		No tangles Enough slack
Cooling machine		Position closer to the parent for easy access
Cerebral Function Monitor (CFM)		Electrodes secure? Headbox clipped to the cot sheet Enough slack with the electrodes?
Endotracheal tube (ETT)		ETT secure? ETT length at ____cm at lips
Umbilical Venous Catheter (UVC), Umbilical Arterial Catheter (UAC)		UAC ___cm UVC ___cm Secure? (Longline secure?)
Rectal Probes		Secure at 6cm? Cables have enough slack?
Urinary catheter		Secure at insertion site? Urine collection container moved to the side, near to the parent(s)

		If not long enough for a transfer, clip onto cot sheet making sure the collection bag stays lower than the baby
Airway		Check and set Neopuff – If decide to use neopuff, make sure the baby tolerates Neopuff (oxygen saturation stable) Stethoscope - check air entry Need suction (oral/ETT)? If inline suction is used, disconnect inline suction from the suction tubing Clear water from ventilator tubing if necessary
Vital signs including end Tidal CO_2		Pre-cuddle set of observations and record observations every 30 minutes as a minimum. Also check ventilation requirement
Baby		Mark baby being prepared for cuddle on CFM monitor Midline position Bring the baby's hands to midline position over the chest Swaddle the baby with cot sheet
Medical staff		Available for a move?
Cooling machine		Set on Standby Wait for 20 seconds Clamp hosepipes Disconnect hose from the wrap Or Make sure the cooling machine is close to the parent and if there is adequate slack in the hosepipe that will allow moving the baby to the parent, above steps are not necessary
Surroundings		Make sure the pathway is clear Cables and lV lines are not obstructing the pathway – potential trip hazard Make sure other staff in the room is aware the baby is about to be moved

Immediately after a transfer:

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Airway		Visible chest wall movement Equal air entry Check End Tidal CO_2 and its waveforms (if used) Check ventilation requirement and ventilator waveforms Secure ventilator tubing to parent's top (position the tube in such a way making sure it does not obstruct the parent's view of the baby) ETT still secure and taped at ___cm at lips
Vital signs		Stable?
Baby		Midline position Comfortable Unwrap the cotsheet which was used to swaddle Make sure the cooling wrap is not digging into the baby
Cooling machine		Connect hoses to the cooling wrap Unclamp Restart cooling Or If the hoses were not disconnected from the cooling machine before the move, above steps are not necessary and ensure the rectal temperature is within the target range

IV lines / monitor cables		Make sure not digging into the baby Re-clip onto parent's pillow if necessary Make sure arterial line transducer is maintained at the level of the heart and arterial line insertion site is clearly visible All the infusion pumps are running
CFM		Make sure head box is secure and place it on the cot or shelf closer to baby's head Mark 'start of cuddle' on CFM Check EEG electrodes are secure and the EEG signal is acceptable
Parent(s)		Make sure the parent is comfortable Reassure the parent(s)

Transferring back:

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Parent|(s)		Explain the process If the parent is happy to move the baby back into the cot, support the parent
Nursing staff		Identify 2nd nurse (one nurse to look after airway) Do you need 3rd person? Identify the role (who will be leading the move)
Airway		Unclip the ventilator tubing Make sure tubing is free from tangle ETT secure? ETT length at ____cm at lips Check ventilation requirement
Vital signs		Stable?
IV lines/cable		Make sure they are clipped onto the cooling wrap or the cot sheet as before the transfer Secure? Free from any tangles
CFM		Ensure the EEG electrodes are secure Headbox clipped to the cot sheet Enough slack with the electrodes?
Baby		Mark on the CFM monitor baby being prepared to be moved back to the incubator Midline position Bring the baby's hands to midline position over the chest Swaddle the baby with cot sheet
Medical Staff		Available for a move?
Cooling machine		Set on Standby Wait for 20 seconds Clamp hosepipes Disconnect the hose from the cooling wrap /blanket Or If there is enough slack in the cooling machine hosepipes for the move back to the cot, above steps are not necessary
Surroundings		Make sure the pathway is clear Cables and lV lines are not obstructing your pathway – potential trip hazard Make sure other staff in the room is aware the baby is about to be moved

Post transfer:

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Airway		Visible chest wall movement Equal air entry Check end tidal CO_2 and waveforms (if used) Check ventilation requirement / ventilator waveforms ETT still secure and taped at ___cm at lips
Vital signs		Stable?
Cooling machine		Connect hoses to the cooling jacket Unclamp Restart cooling Or If the hoses were not disconnected from the cooling machine before the move, above steps are not necessary and ensure the rectal temperature is within the target range
IV lines/cable		Unclip all the IV lines and monitoring cables
Baby		Midline position Comfortable?
CFM		Unclip the head box Mark 'end of cuddle' on CFM
Safe to leave		Check vital signs again Ventilating well Infusion pumps running Cooling in progress CFM

When to consider stopping a CoolCuddle

Cuddle will be stopped, and the baby transferred back to the cot, if any of the following occurs continuously for 5 to10 minutes during cooling without responding to any potential resolvable causes:

1. Rectal temperature < 30.0°C or >35.0°C
2. Mean blood pressure < 30mmHg or > 75 mmHg
3. Heart rate < 50 beats per minute
4. Heart rate >180 beats per minute
5. Oxygen saturation < 80%
6. Fraction of inspired oxygen >70%
7. Electroclinical or electrical status epilepticus

If any of the following occurs for greater than 20 minutes after any remediable causes are attended to:

- Rectal temperature between 30.0 and 32.9°C or between 34.1 and 34.9°C
- Mean blood pressure 10 mmHg below or above the pre-cuddle period
- Heart rate <20 beats per minute above or below pre-Cuddle period
- Oxygen Saturation 80-88%
- Increase in Fraction of inspired oxygen by 20% above the pre-CoolCuddle period or
- Medical or nursing concern that the infant is not adequately supported

Patient safety

Possible adverse events	**Preventive factors**	**Mitigating factors**
ETT dislodgement	Ensure the ETT is secure; have end tidal Co_2 monitoring; note the length of ETT at the lip before and after each move. Hold the ETT and the ventilator tubing during each move.	If ETT dislodged, move the baby back to the incubator and provide appropriate airway support.
Vascular catheter dislodgement	Check the catheters are secure before each move. Ensure the insertion sites are clearly visible after each move.	If vascular catheters are dislodged, control the bleeding at the site with pressure.
EEG electrodes displacement	Ensure the EEG electrodes are secure before each move.	If displaced during move, carefully handle the EEG electrodes to avoid needle stick injury. Consider moving the baby back to cot and reinsert and secure the electrodes.
Urinary catheter dislodgement	Ensure the urinary catheter is secure before each move and the collection system is on the side where parent is sitting.	If dislodged, discuss with clinician whether the catheter needs reinsertion and consider reinserting it after the cuddle.

Data to be monitored before, during and after cuddle

Pre Cuddle Data:						
Date Cuddle started (DD/MM/YY)						
Time Cuddle started (HH:MM)						
Carer Cuddling (Mother/Father/Other)						
Drugs at start of cuddle	**Units (e.g. mg/min or mcg/kg/min)**	**Approved name**				**Dose**
Approved Drug Name and Dose #1						
Approved Drug Name and Dose #2						
Approved Drug Name and Dose #3						
Approved Drug Name and Dose #4						
Approved Drug Name and Dose #5						
Approved Drug Name and Dose #6						
Approved Drug Name and Dose #7						
Approved Drug Name and Dose #8						
Approved Drug Name and Dose #9						
Approved Drug Name and Dose #10						
Variable	**Pre-cuddle***	**During cuddle**				**Post cuddle***
		30 mins$	**60mins**	**90mins**	**120min**	
Respiratory Parameters						
PIP cmH_20						
PEEP cmH_20						
MAP cmH_20						
FiO_2 %						
SaO_2 %						
T_I seconds						
ET-CO_2 kPa						
Tidal Volume (ml)						
Respiratory Rate						
Cardiovascular						
Mean BP mmHg						
Heart Rate beats/min						
Blood Gas Measures (if done)						

pH						
pCO2						
pO2						
Lactate						
Glucose						
Neurology						
Seizures						
aEEG status						
Normal						
Moderately abnormal						
Severely abnormal						
Lower margin voltage µV						
Upper margin voltage µV						
Sleep Wake cycling (Yes/No)						
$rSCo_2$% (regional cerebral oxygenation)						
Pain score						
Temperature						
Peripheral /skin Temp °C						
Rectal Temp°C						
End of Cuddle Summary						
Date Cuddle stopped (DD/MM/YY)						
Time Cuddle stopped (HH:MM)						
Adverse Events				Yes/No		
Accidental extubation						
Dislodgement of vascular catheters						
Dislodgement of aEEG electrodes						
Needle-stick injury from aEEG electrodes						
Cuddle Stopped early for clinical concerns				Yes/No		

If ‘Yes’ please expand	*** at least 15 minutes before moving the baby** **$ if cuddle ends before 30 mins, please input the data in this column before ending the cuddle**