Maternal, Newborn, and Children's Simulation
Obstetric-Neonatal Scenario: Maternal PPH/Arrest with Neonatal hypovolaemia

Set Up:

Mannequin /Confederate	Moulage	Equipment available	Drugs available
SimNewB	IV (in SimMan)	IV with drainage bag for SimMan	Adrenaline 1:10,000
SimMan 3G	Blood for haemorrhage	Maternal ECG leads + oxygen saturation probe	Normal Saline 3 X 1 L bags
1 Confederate-midwife	Blood stained sheets	Adult self-inflating bag	
Mama Natalie	Female wig & genetalia	Maternal urinary catheter	
	Clamped Umbilical cord in manikin	Oxygen mask& tubing/flow meter (mother)	Vitamin K ampoule
	Blood in newb umbi	Intubation equipment: 0 + 1 Miller blade + laryngoscope + 3.5 ETT with introducer	4 Blood packs (mother + baby)
Confed: Neonurse/midwife		Neonatal self-inflating bag + mask	Syntocinon/ergometrine
	Powder on baby to look pale	UVC + paed pack Neonatal & adult stethoscope	5% dextrose
		Neonatal resuscitaire & neopuff + blender	10% Dextrose
		26g needle + 1 /10/30/50ml syringes	curosurf
		Maternal blood pressure cuff	
		defibrillator	
		Maternal PPH kit	

Monitor: **Mother:** Basic, Oxygen saturation, then ask for ECG leads (SIM MON).
Baby: Basic: Oxygen saturation, allowing a HR

Paperwork Required: Cord Blood gas - venous
Maternity obs chart (partogram)

Learning Objectives:

(1) *Medical*

- Recognition & Management of Maternal Peri-partum haemorrhage
- Recognition of Maternal PEA requiring BLS
- Instigation of basic neonatal life support-midwifery team
- Instigation of advanced neonatal life support- neonatal team
- Management of neonatal severe hypovolaemia

(2) *CRM*

- Demonstrate effective handover & communication between midwifery and neonatal team, and within teams

Synopsis of Scenario

Infant has delivered just as the scenario commences. Mother has a concealed haemorrhage in the final stages of labour- becomes unconscious immediately after delivery. Bleeds during the delivery. Mother arrests: requires fluid resuscitation and basic life support. Infant requires fluid resuscitation and advanced life support.

Patient Demographics

Patient Name:	Sheri Davis	DOB/Age:	24/9/1989	
Medical Record#:	6566666	Weight:	62 kgs	
Allergies:	penicillin	Female	x	
Dx/Procedure:	G2 P1, 39+4 weeks pregnant,			
Other:	IVF pregnancy			

Introductory information given to team:

- G2 P1 39/40
- IVF Pregnancy
- Spontaneous onset of labour,
- Just arrived- in final stages of labour, after 32 hours of labouring at home

Method of bringing team into the simulation

- Confederate Midwife caring for mother calls for 2 midwives as mother bleeds as she delivered
- Comments: Baby has delivered and comments that mother just become unconscious
- Conf midwife asks the midwife to look after the mother & asks another midwife/ obstetric Dr to come in
- If the midwife does not ask for an obstetric doctor, Conf midwife suggests they be called,
- Conf midwife delivers the baby and gives it to 2nd conf midwife to take to the resuscitaire-comments on the palor and poor respiratory effort and asks for help from other midwife.
- Once the midwife has taken over care of the baby, the 2nd confed midwife stays to help neonatal team

ISBAR HANDOVER (for mother)

I I am x, and this is Sheri Davis
S She has delivered and is unconscious
B She is G2P1 39 weeks, has had a normal pregnancy, and has bled
A I think she is in hypovolaemic shock
R I have started normal saline, but think she needs additional assessment and management urgently

ISBAR HANDOVER (Neonate)

I I am X, and this is baby Davis
S She is just born, and is very pale, with a fast heart rate
B Her mother has been bleeding, and is hypotensive
A I am concerned the baby has lost blood as well
R I need help with the resuscitation

Initial Observations:

Mother

	↑, N, ↓, absent	Description
Appearance	Mother pale CR 4-5 sec (midwife to cue)	
HR	absent	Mother pulseless PEA on monitor
RR	absent	0
Temp – peripheral	Normal	
Saturation	absent	
Non- invasive BP – upper limb		Pulseless until fluid resuscitation
Neuro		unconscious

Newborn

	↑, N, ↓, absent	Description
Appearance	Baby pale, mottled (midwife delivering baby to cue) Baby floppy, not crying	
HR	↑	Baby 190/min then drops to 80 over 30 sec as Paediatric team arrive
RR	↓	Baby RR 20/min, shallow, then apneic after paediatric team arrive
Temp – peripheral	↓	Baby feels cool peripherally- need to cue
Saturation	**Absent**	Baby not picking up due to poor perfusion
Non- invasive BP		40/25 (give only if try to measure)
Pupils	small	2mm difficult to elicit reaction

Progression Good Mother	
Examination	**Ideal Management**
DRS ABC	Recognises PV bleeding + asystolic arrest Oxygen Start CPR Assess rhythm- recognises PEA +/- adrenaline
CR Capillary refill 4 sec initially, then worsens to 5 sec	Rubs up the uterus Calls for help for mother
HR asystolic	Gives 1 litre of fluid (NSaline),
RR apnoeic	syntocinon given, suggest ergometrine,
BP remains pulseless until volume given	Call for 4 L O neg blood, gives another Litre of saline Sends bloods for coags, FBC
	Delivers placenta
	Calls another obstetric reg/consider theatre/anaestestist
	Communicates with Neonatal team re: bld loss

If mother given synto & ergo, + adequate fluid, HR/output returns
BP increases to 100/80, & becomes more vocal. Cries, asking how her baby is.
If not- continues in PEA

Progression Good Newborn	
Examination	**Ideal Management**
DRS ABC	Checks resuscitaire
HR ↑200/min- comes down	Resuscitate in air, recognises tachycardia
RR↓20/min	Looks for chest rise-poor effort : Starts IPPV
Temp – peripheral cool	Recognises peripartum haemorrhage
Saturation Absent	Calls Neonatal code blue Continues IPPV until paed reg/fellow arrives
Non- invasive BP – upper (or lower) limb	Handover to paediatric reg Reassess ABC Takes over IPPV (fellow and NICU nurse late to arrive)
Pupils small	hands over to fellow & NICU nurse – may consider intubation
	Fellow discusses plan of management (cue CR 5 sec)-to suggest insertion of UVC + intubation
	Gives volume 20 ml/kg + 20ml/kg + 20ml/kg Saline or blood May allow to intubate depending on progress
	Asks about communication with family Calls NETS/NICU

If IPPV commenced &adequate volume given, neonate increases respiratory effort (RR 45) 2 minute after atleast 40ml/kg given, HR to 170/min, Oxygen saturation 90%, RR 45 although poor effort,

Progression Poor

Mother	
Prompt	**if Poor Management**
DRS ABC	Recognises PV bleeding Oxygen pulseless Recognises PEA- commences CPR +/- adrenaline
CR Capillary refill 4 sec initially, then worsens to 5 sec	Rubs up the uterus Calls for help for mother (another midwife)
HR pulseless	Gives 1 litre of fluid (NSaline),
RR apneic	assesses respiratory status: continue CPR syntocinon given, suggest ergometrine, needs to give volume
BP remains pulseless if no volume given	Suggest Call for blood (4L Oneg), gives another Litre of saline Sends bloods for coags, FBC
	Delivers placenta
	Calls another obstetric reg/anaesthetist/consider theatre
	Communicates with Neonatal team re: bld loss Communicates with mother

Scenario finishes when above management takes place or after 15 minutes

Newborn	
Prompt: intial conf midwife	**if Poor Management**
DRS ABC	Does not Check resuscitaire
HR ↑200/min	Or Resuscitates in 0xygen
RR↓	Hr drops(50) if does not Start IPPV
comments peripheral cool	Should commence CPR
Saturation Absent **Comment palor** **Prompt if not calling code blue**	Calls Paediatric code blue Continues IPPV until paed reg arrives
Non- invasive BP – upper limb	Handover to paediatric reg Reassess ABC Takes over IPPV (fellow and NICU nurse late to arrive)
Pupils small	hands over to fellow & NICU nurse
Continues bradycardia if no volume or not intubated **NICU nurse/NeoFellow to prompt poor perfusion & palor-allow reg to come up with decisions**	Fellow asks plan of management (cue CR 5 sec if not suggesting insertion of UVC & volume Reg to suggest insertion of UVC Gives volume 20 ml/kg + 20ml/kg + 20ml/kg Saline or blood If does not consider or give volume- HR < 60 and remains apneic-should commence CPR
Scenario finishes after 15 minutes or after team have intubated & inserted UVC, given N Saline, and asked for Blood.	

Resources:
RWH Clinical Practice Guidelines Management of Post-partum Haemorrhage
2010 ARC guidelines-Basic and advanced Neonatal Life Support