

Child O

Triplet pregnancy
Antenatal steroids

PD 6.16

14.24 Em CS

Male

33/40

2020g

Apgars 8, 9, 9 at 1, 5, 10 minutes

Oxygen, CPAP

Antibiotics, caffeine, iv glucose

22.6.16

Optiflow

Donor EBM

Normal blood gas values

23.6.16

05.32 Normal blood gas values

Antibiotics discontinued

13.15 Vomiting, abdominal distension, mixed acidosis, tachypnea, tachycardia.
AXR no NEC. NBM

14.40 Desaturation, bradycardia. Mask ventilation, sodium chloride, cefotaxime

15.00 Intubated, ventilated, good air entry, colour change capnograph

15.51 Desaturation, bradycardia.

16.01 Reintubated, good air entry, colour change capnograph

16.15 Desaturation, bradycardia. Hand ventilated

16.19 Chest compressions, adrenaline, sodium bicarbonate, dopamine, high ventilator
pressure, 100% O₂

16.30 Return circulation

Difficult venous access

dw transfer team

Baptised

17.15 Bradycardia. Cold light no pneumothorax, increase dopamine, sodium chloride,
sodium bicarbonate, IO needle, metabolic acidosis, needle decompression
abdomen

17.43 Severe metabolic acidosis, adequate CO₂ removal

17.47 CPR discontinued. RIP

Referred to coroner, no PM report in records

Blood cultures negative

| |
|----------------|
| Child O |
|----------------|

| | Quality of care | Relevance | What | Who |
|--------------------------------------|--------------------|-----------|------|-----|
| 23.6.15 | | | | |
| Delay cefotaxime | 2 | 1 | RA | ? |
| 15.51, 16.51 no cold light | 2 | 0 | RA | ? |
| Duct dependent CHD not considered | 2 | 1 | RA | ? |
| 17.15 failed resuscitation | ? | 3 | | |

In absence of recorded cause of death, further comment on quality and relevance of care not possible

Quality of care

- 0 No suboptimal care
- 1 Minor suboptimal care
- 2 Significant suboptimal care
- 3 Major suboptimal care

Relevance of grade of care to outcome

- 0 Not relevant
- 1 Possibly relevant
- 2 Probably relevant
- 3 Almost certainly relevant

What

- R Failure to recognise problem
- A Failure to act appropriately
- C Communications failure
- S Failure to supervise
- H Any lack of human resource
- E Any lack or failure of equipment
- O Other

Child E

MCDA twin pregnancy
 Oligohydramnios, dilated bowel loops, reversed end diastolic flow
 IUT from LWH for capacity
 Antenatal steroids, magnesium sulphate
PD 7.15
 17.53 El CS
 Male
 29/40
 1327g
 Heart rate >100, no respiratory effort
 Mask ventilation, no chest wall movement. Increased inspiratory pressure and jaw thrust.
 Chest wall movement and spontaneous breathing
 Spontaneously breathing in air
 Antibiotics, iv glucose, caffeine
 22.30 Desaturations. CPAP

30.7.15
 11.10 Long line inserted
 13.00 CPAP discontinued
 Normal blood gas values
 Antibiotics discontinued
 Hyperglycaemia. Insulin

31.7.15
 EBM

1.8.15
 Hyperglycaemia. Insulin

2.8.15
 Oxygen requirement, quiet on handling. Infection screen, antibiotics

3.8.15
 Hyperglycaemia. Insulin
 22.10 Gastric bleed. Ranitidine
 22.21 Respiratory acidosis
 23.00 Gastric bleed, desaturation. Intubation planned
 23.40 Desaturation and bradycardia, abdomen purple
 23.45 Intubated, 100% O₂

4.8.15
 00.25 Consultant attended
 00.36 Desaturation, cardiac arrest. Full resuscitation attempt. Severe mixed acidosis.
 01.23 Resuscitation discontinued, RIP

Child E

| | Quality of care | Relevance | What | Who |
|------------------------|-----------------|-----------|------|-----|
| Birth not in NICU unit | 1 | 1 | O | |
| Delayed intubation | 2 | 1 | RA | SpR |

In absence of recorded cause of death, further comment on quality and relevance of care not possible

Quality of care

- 0 No suboptimal care
- 1 Minor suboptimal care
- 2 Significant suboptimal care
- 3 Major suboptimal care

Relevance of grade of care to outcome

- 0 Not relevant
- 1 Possibly relevant
- 2 Probably relevant
- 3 Almost certainly relevant

What

- R Failure to recognise problem
- A Failure to act appropriately
- C Communications failure
- S Failure to supervise
- H Any lack of human resource
- E Any lack or failure of equipment
- O Other

Child D

Prolonged rupture membranes

PD 21.6.15

16.01 Em CS

Female

37/40

3130g

Apgars 8, 9 at 5, 10 minutes

16.13 Apnoea in father's arms. Mask ventilation

Grunting

17.30 Reviewed by SHO. Grunting

? Called by midwife as poor colour, not responsive to im injection, not feeding

19.30 NNU admission, saturation 48%, poor respiratory effort. Mask ventilation

19.47 Severe respiratory acidosis

20.00 Antibiotics, CPAP, sodium chloride, iv glucose

Bilirubin on exchange transfusion line. Phototherapy

20.52 Mild respiratory acidosis

21.45 O₂ requirement 48%, tachypnoea, respiratory distress

22.00 Intubated at 3rd attempt, ventilated

23.00 Surfactant

23.25 Normal blood gas values

21.6.15

01.50 Normal blood gas values

09.00 Extubated, in air

10.30 Respiratory acidosis. CPAP

18.44 Normal blood gas values

13.25 UVC

DEBM

22.6.15

01.14 Mild metabolic acidosis

01.40 Mottled, discoloured lesions on trunk. Sodium chloride. Increase penicillin, add cefotaxime

02.22 Mild metabolic acidosis

02.35 Abnormal clotting. Discolouration improved.

03.15 Desaturation, skin discolouration, distressed. CPAP discontinued

03.45 Desaturation, apnoea.

03.52 Mask ventilation

03.55 SpR on paed ward, called to NNU

Cardiorespiratory arrest. Chest compressions. Consultant called

03.58 Intubated, adrenaline, sodium chloride, sodium bicarbonate

04.07 Consultant attended

04.21 Resuscitation discontinued, RIP

Referred to coroner, no PM report in records

Child C

IUGR, reverse EDF

Antenatal steroids

PD 6.15

16.01 El CS

Male

30/40

800g

No resuscitation required

Respiratory distress

17.00 Intubated, surfactant. iv glucose. Not for antibiotics. Dw LWH, to remain at
COCH. UVC

18.00 Antibiotics

18.00 Extubated, CPAP

Tachypnoea, normal blood gas values

11.6.15

07.45 Lactic acidosis. Sodium chloride

Caffeine

Tachypnoea, normal blood gas values

12.6.15

07.00 UVC displaced, hypoglycaemia

Long line

Bilious aspirates

Neutropoenia, thrombocytopenia

Tachypnoea, normal blood gas values

13.6.15

Tachypnoea, normal blood gas values

14.45 Optiflow

23.00 0.5ml EBM

23.28 Cardiorespiratory arrest. Mask ventilation, chest compressions. Intubation
unsuccessful, adrenaline, sodium chloride, sodium bicarbonate, calcium
gluconate.

23.35 Consultant attended, intubated

Cold light no transillumination

Baby baptised

00.45 Resuscitation discontinued

06.00 RIP

Post mortem report

Placenta multiple infarcts and other pathologies.

Acute hypoxic-ischaemic injury to heart, brain and other organs

Immaturity of lung listed as cause of death

Summary of cases.

The cases may be divided into 2 groups and I have assigned each case to a likely group.

1. The death/collapse is explained but may have been prevented with different care, and learning may improve outcome for other babies (date of first collapse is noted).

| | |
|---------------------------|----------|
| I&S | 11.12.15 |
| Child H (?outcome) | 21.9.15 |
| Child Q (survived) | 25.6.16 |
| Child E | 3.8.15 |
| I&S | 27.1.15 |
| Child C | 10.6.15 |
| I&S | 18.2.16 |
| I&S | 8.1.16 |
| I&S (survived) | 6.4.16 |
| I&S | 6.3.16 |
| I&S (survived) | 9.14 |
| I&S | 3.9.15 |

2. The death/collapse is unexplained. It is the investigation of these cases which would potentially benefit from local forensic review as to circumstances, personnel etc (date of first collapse is noted).

| | |
|------------------|----------|
| Child O | 23.6.16 |
| Child A | 7.6.15 |
| Child P | 24.6.15 |
| Child D | 22.6.15 |
| Child I * | 22.10.15 |

*Cause of death as given in post mortem report should be reviewed given baby stable in air in days preceding collapse

Recommendations.

1. If COCH is to continue to serve as a local neonatal unit which provides intensive care for “up to 48 hours” and if there is continued cross-cover by doctors of neonatology and general paediatrics, the criteria for birth at or transfer from this local neonatal unit should be reviewed, supported by the network and the transfer service.
2. There should be review of criteria for consultant attendance out of hours, and junior doctors and nurses should be empowered to apply these.
3. A quality improvement programme to improve birth/decision to needle time for antibiotics should be considered.
4. If not already in place a “difficult airway pack” should be prepared in conjunction with Alder Hey Hospital paediatric anaesthetists and ENT surgeons.
5. Although no death in the series was known (subject to outstanding post mortem reports) to be secondary to undiagnosed pneumothorax or duct dependent congenital heart disease, consideration should be given to training and check lists in the event of unexpected collapse to consider these.
6. Subject to coroner’s post mortem reports, there should be broader forensic review of the cases described in category 2 above as after independent clinical review these deaths remain unexpected and unexplained.

October, 2016