ADVERSE EVENTS

IN A NEONATAL INTENSIVE CARE UNIT IN SOUTH AFRICA

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Background

Adverse event: injury caused by medical management (not the underlying disease)[1]

- 30 – 50% of admitted neonates (South America[2], Europe[3])
- 0,74 - 0,91 AE/patient (USA[4], Egypt[5])

Severity: Different classifications

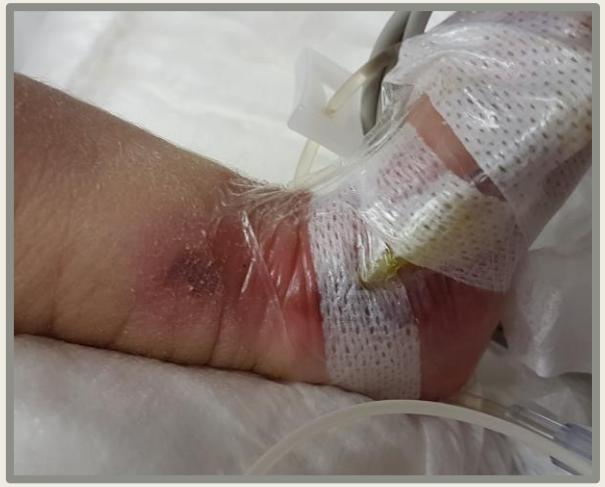
- France[3]: 29% - severe, resulting in disability, death or extended hospital stay
- North America[4]: 23% resulted in permanent harm, 10% contributed to patients' death

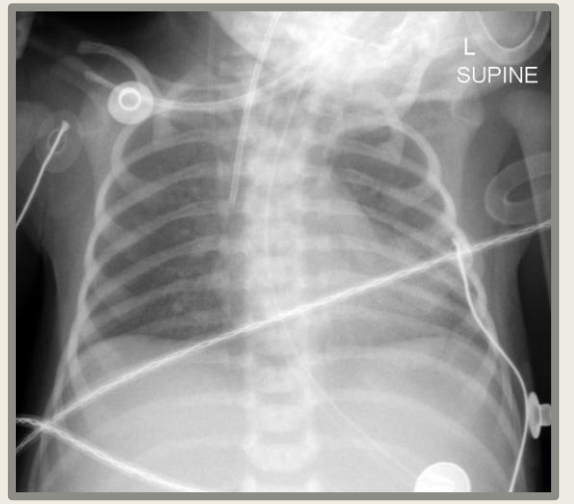
Preventable: avoidable based on available knowledge and accepted practices [3]

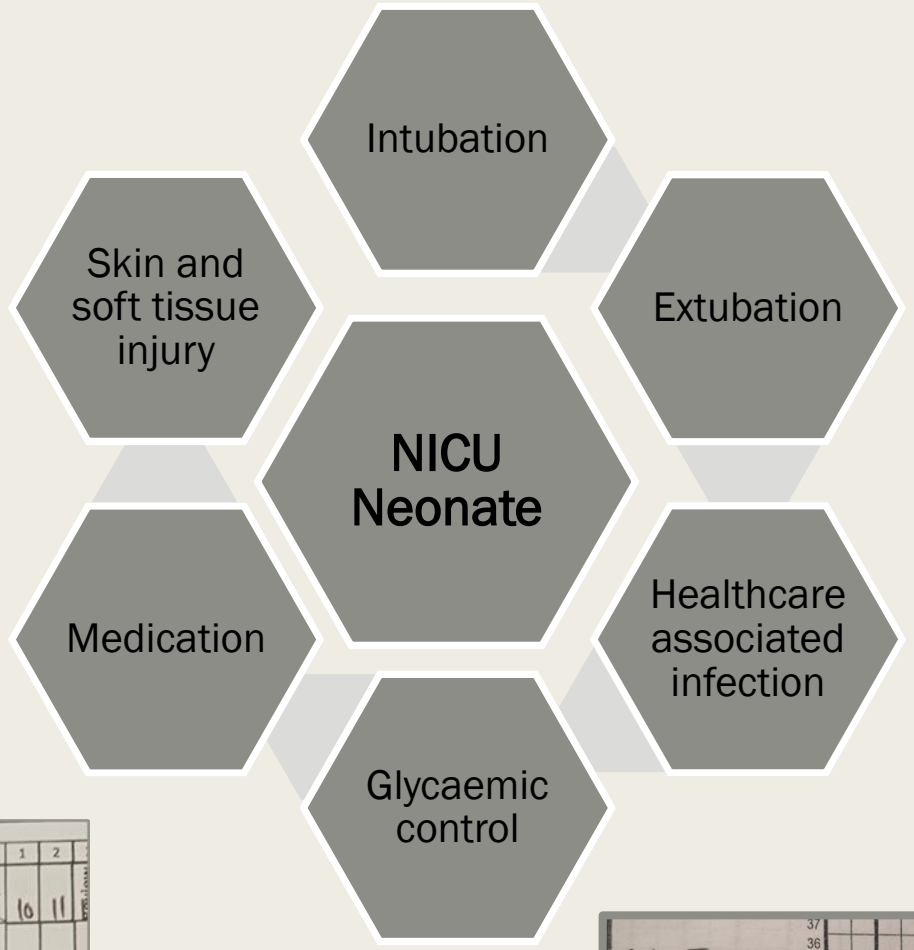
- 34 – 93% - Europe [3]
- 95% Egypt [5]

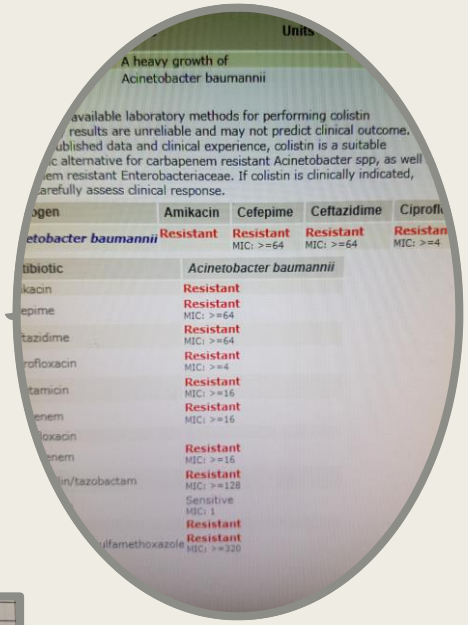
[1] Brennan et al, NEJM 1991. [2] Bragança Albanese et al, Frontiers in Pharmacology 2025, [3] Ligi et al, Lancet 2008, [4] Sharek et al, Pediatrics 2006, [5] EL-Kalioby et al, Egyptian J of Hospital Medicine, 2023

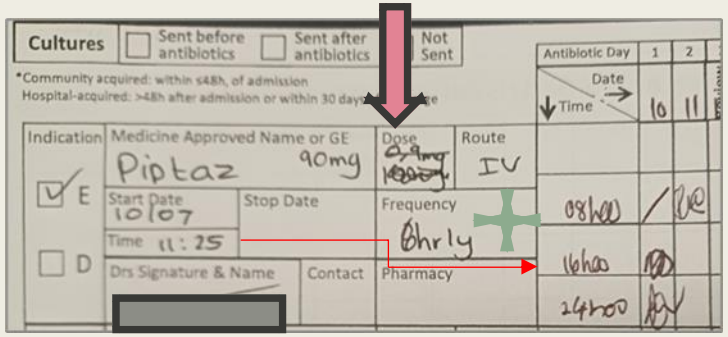
Types of adverse events

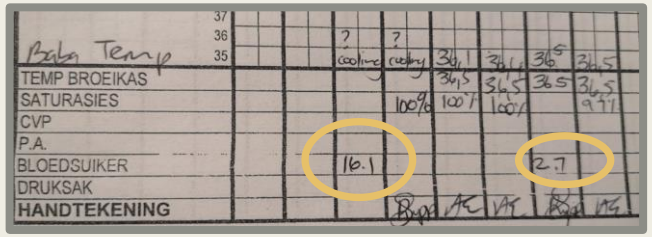












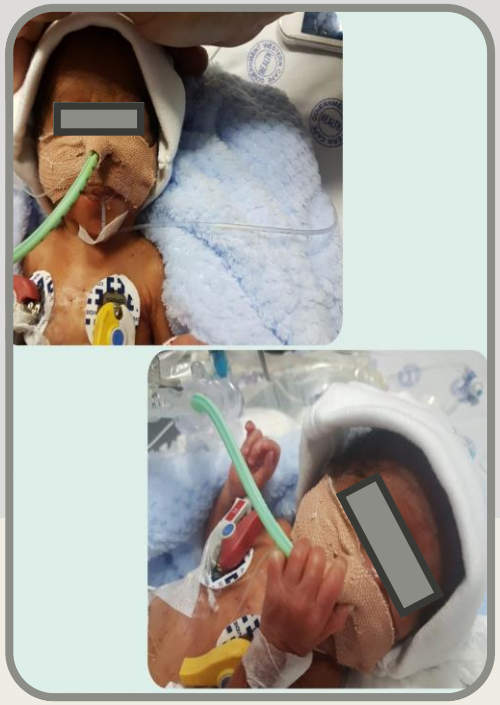
Risk Factors - Neonate

Prematurity (Esp <28 week)
Low birth weight (esp <1500g)

KMC intubated patients

Airway difference

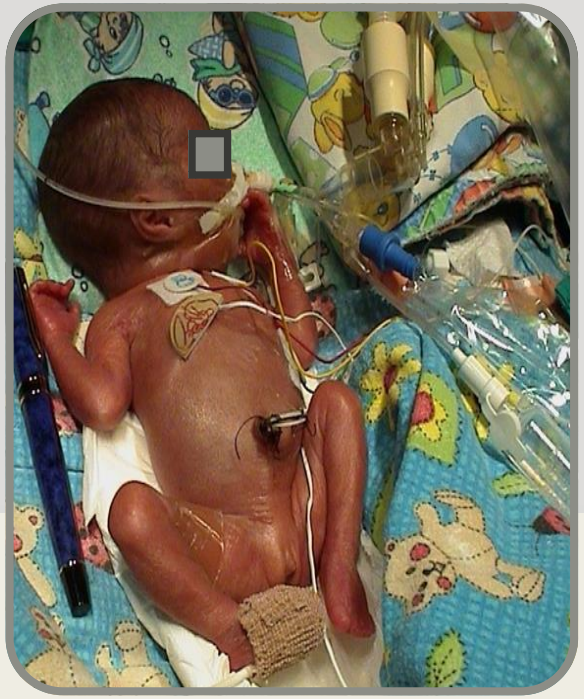
Un-cuffed ETT



Less sedation

No paralysis

Strapping, Securing (ETT, IV lines)



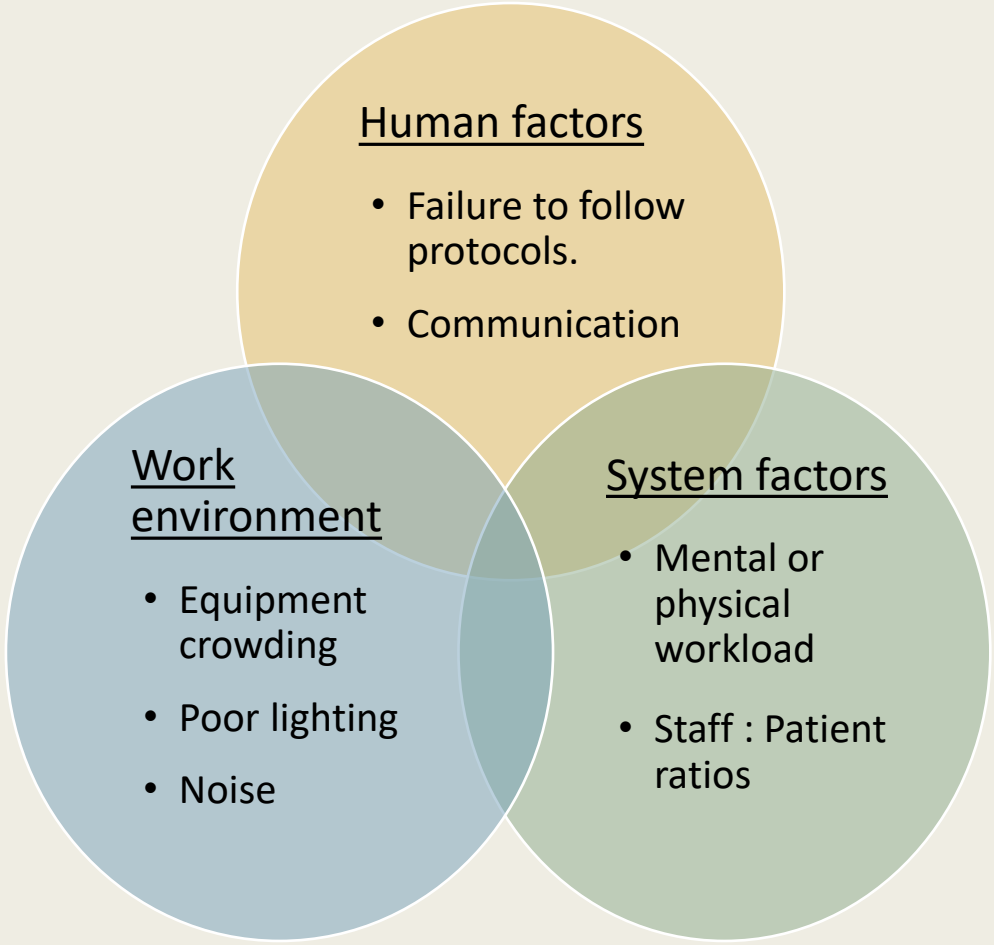
Fragile skin

Longer hospital stay

Drug dose calculations

Why do adverse events occur

Causative factors



AE Surveillance

Trigger tool guided folder review

Voluntary reporting

- Anonymous
- Non punitive

Appendix A: Patient Safety Incident Reporting Form

Section A: (notification) - to be completed by the staff who witnessed the incident that occurred. Submit section A and B to next level for notification for SAC 1 incidents.

Section B: (Account of the event by patient, staff or other witnesses) – to be completed by staff, patients or other that were directly involved while the incident took place.

Section C: (investigation) - to be completed by investigator(s) of the incident, in most cases this would be the manager(s) of section where the incident took place.

SECTION A – Notification of event

Ref no:

1. Date of PSI		2. Time of PSI								
3. Event identified by	Reported by health professional	Research studies	Surveys on patient experience of care	Inpatient medical review	Review of record on follow-up	External sources: Complaints	External sources: Media	External sources: Public	Safety walk rounds	Focused teams	Use of data

4. Provide a short overview of the Patient Safety Incident

What happened/went wrong?

What is the initial outcome or harm?

5. Describe immediate actions taken to minimise harm

What happened to minimise harm?

Who led that action?

What was the outcome of the minimising action?

6. Provide a description of communication and escalation (initial disclosure)

What and how was the incident communicated with patient? (if appropriate)

What and how was the incident communicated with patient's family? (if appropriate)

What and how was the incident escalated to management within the facility? (if appropriate)

7. Type of patient safety incident (PSI): Mark with an X (review this once the investigation has been finalised)

No harm | Near miss | Harmful (Adverse Event)

8. SAC rating: Mark with an X	1 Serious	2 Moderate	3 Minor	4 None	9. Date SAC 1 reported to next level	10. Time SAC 1 reported to next level	11. No of days to report PSI with SAC = 1

12. Patient and ward information		13. Staff witnesses		
Patient name and surname		Name and surname	Contact detail	Department
Patient file number				
Patient Id number				
Location (department/ward)				
Age				
Gender				
Final diagnosis				
Number of patients in the ward/head count				
Name of facility patient was referred from (where applicable)				
Name of facility patient was down referred to (where applicable)		14. Number of staff on duty		
Compiled by:	Designation:	Signature:		Date:

SECTION B- Account of the event by patient, staff or other witnesses

1. Account by staff, patient or significant other: (Add sections for additional statements and information as needed)

Account 1:

Account 2:

Compiled by:	Designation:	Signature:	Date:

SECTION C – Investigation including classification

1. Classification according to incident type – mark appropriate one with an X

1.Clinical administration	3. Healthcare-associated infections	5. Blood and blood products	8. Patient accidents and self-inflicted injury
Medical procedure performed without valid consent	Central line associated Blood Stream Infection	Acute transfusion reactions	Falls – Bedside
Communication/ confidentiality	Non-device related (Primary) blood line blood infection	Delayed transfusion reactions/ events (including Transfusion Transmitted Infections)	Falls – Toilet/bathroom
Patient incorrectly identified and recorded	Peripheral line blood infection	Errors- wrong blood/ blood products	Falls – Stretcher
Missing patient record	Surgical site infection	**6. Medical device/equipment**	Falls – Therapeutic equipment
Unclear/ ambiguous/ illegible/ incomplete information in patient record	Hospital acquired pneumonia	Not available	Patient injury
	Ventilator associated pneumonia	Failure / malfunction	Self-inflicted injury
2. Clinical process/ procedure	Catheter associated urinary tract infection	Not used correctly	Suicide Attempted suicide
Not performed when indicated	Communicable diseases	Incorrect medical device/ equipment used	**9. Pressure ulcers acquired during/after admission**
Performed on wrong patient	**4. Medication / IV fluids**	**7. Behaviour**	Grade I
Clinical procedure errors	Incorrect dispensing	Sexual assault by staff member	Grade II
Surgical procedure errors	Omitted medicine or dose	Sexual assault by fellow patient or visitor	Grade III
Clinical assessment error	Medicine not available	Physical assault by staff member	Grade IV
Failure to act on test results or report	Adverse drug reaction	Physical assault by fellow patient or visitor	**10. Infrastructure/ Buildings/ Fixtures**
Incorrect treatment provided/ clinical decision made	Incorrect medicine	Exploitation, verbal abuse, aggression, neglect or degrading treatment by fellow patient or visitor	Damaged/ faulty/ warn
Missed or delayed diagnosis	Incorrect dose/ strength administered	Exploitation, verbal abuse, aggression, neglect or degrading treatment by staff member	Non-existent
Performed on wrong body part/ site/ side	Incorrect patient	Patient abscond	Inadequate/inappropriate
Retention of foreign object during surgery	Incorrect frequency	Missing patient	Back-up electricity not functional/available
	Incorrect route	Absconding while under 72-hour observation	Back-up water supply not available
	Prescription error		**11. Other**
	Incorrect dispensing label		Any other incident that does not fit into categories 1 to 10
	Medicine expired		
	Incorrect technique		

2. Framework for root cause analysis and implementation of action plans

a. Contributing factors – Mark with an X

1. Staff	Lack of knowledge of clinical processes/ guidelines/ protocols	Human error- clinical	Human error - Admin	Risky/reckless behaviour	Communication Factors	Condition/ disease related factor	Social factors	Leadership
2. Patient	Behaviour	Communication factor	Condition/ disease related factor	Social factors				
3. Work/ environment	Physical environmental / infrastructure	Remote/ long distance from service	Equipment (faulty due to no maintenance)	Consumables	Environmental risk	Current Code/ specifications/ regulations	Security/ safety	
4. Organisational/ service	Clinical Protocols/ policies/ procedures not available/ up to date/ approved	Non - Clinical Protocols/ policies/ procedures not available/ up to date/ approved	Organisational management/ decisions/culture	Organisation of teams	Staffing	Political unrest	Package of service	Bed utilisation
5. External	Natural event or disaster	Equipment, products malfunctioning due to manufacturer's fault	Services, systems and policies of external providers	Delays in emergency medical services transport				
6. Other	Not specified in classification 1 to 5							

b. Root cause analysis - These are the most fundamental underlying factors contributing to the incident that can be addressed

Contributing factor	Describe the factor that contributed to the event	Describe the action plan to rectify the identified problem	Person responsible for implementing the action plan	Date for implementation

3. Findings and recommendations of the investigation

What were the key findings (why did the incident occur)?

What are the key recommendations? (Note: Recommendations should address all the root causes and lessons learned, be designed to significantly reduce the likelihood of recurrence and/or severity of outcome; be clear and concise and kept to a minimum wherever possible; be Specific, Measurable, Achievable, Realistic and Timed (SMART) so that changes and improvements can be evaluated; be prioritised wherever possible; be categorised as: those **specific** to the area where the incident happened; those that are **common** only to; the organisation involved; those that are **universal** to all and, as such, have provincial/district significance.)

4. Type of behaviour according to Just Culture: mark with a X	No error	Human error	At–risk behaviour	Reckless behaviour

5. Provide a description of final communication to patient/family (final disclosure)

What and how was the incident communicated with patient? (if appropriate)

What and how was the incident communicated with patient's family? (if appropriate)

6. Date of closure of PSI case	7. No days to close PSI case	8. Type of closure: mark with an X	PSI case concluded	Litigation	Referred to labour relations

9. Patient outcome according to degree of harm: Mark with an X	No harm	Mild	Moderate	Severe	Neonatal trauma	Obstetric trauma	No longer classified as a PSI after investigation
	Child death	Adult death	Neonatal death	Maternal death	Still birth	Deaths due to hospital associated venous thromboembolism	Deaths due to health care associated sepsis	Perioperative death (30 days after surgery)

10. Organisational outcome: Mark with an X	Property damage	Increased length of stay	Admission to special care area (e.g., high care or ICU)	Additional treatment/tests	Additional staff required	Additional equipment required	Media attention
	Formal complaint	Damaged reputation	Legal ramifications	None	Other	No longer classified as a PSI after investigation	

Compiled by:	Designation:	Signature:	Date:

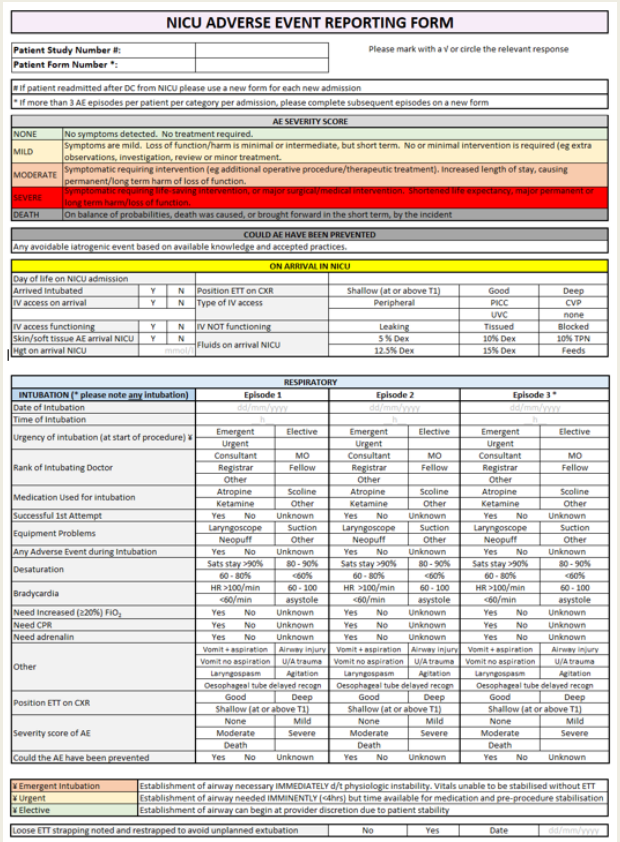
Aim and Objectives

- PRIMARY
  - To determine the incidence and nature of adverse events occurring in our NICU
- SECONDARY
  - To determine any predictors for the development of AEs
  - To determine the severity of the AEs
  - To determine whether AEs occurring in our NICU are preventable

- 5 categories of AE
  - Intubation related
  - Extubation related
  - Skin and soft tissue injuries (SSTI)
  - Hypoglycaemia
  - Healthcare associated infection (HAI

Methods

Prospective observational study



NICU ADVERSE EVENT REPORTING FORM

Patient Study Number #:	
Patient Form Number *:	

Please mark with a √ or circle the relevant response

If patient readmitted after DC from NICU please use a new form for each new admission
* If more than 3 AE episodes per patient per category per admission, please complete subsequent episodes on a new form

AE SEVERITY SCORE

NONE	No symptoms detected. No treatment required.
MILD	Symptoms are mild. Loss of function/harm is minimal or intermediate, but short term. No or minimal intervention is required (eg extra observations, investigation, review or minor treatment.
MODERATE	Symptomatic requiring intervention (eg additional operative procedure/therapeutic treatment). Increased length of stay, causing permanent/long term harm of loss of function.
SEVERE	Symptomatic requiring life saving intervention, or major surgical/medical intervention. Shortened life expectancy, major permanent or long term harm/loss of function.
DEATH	On balance of probabilities, death was caused, or brought forward in the short term, by the incident

COULD AE HAVE BEEN PREVENTED

Any avoidable iatrogenic event based on available knowledge and accepted practices.

ON ARRIVAL IN NICU

Day of life on NICU admission						
Arrived Intubated	Y	N	Position ETT on CXR	Shallow (at or above T1)	Good	Deep
IV access on arrival	Y	N	Type of IV access	Peripheral	PICC	CVP
					UVC	none
IV access functioning	Y	N	IV NOT functioning	Leaking	Tissued	Blocked
Skin/soft tissue AE arrival NICU	Y	N	Fluids on arrival NICU	5 % Dex	10% Dex	10% TPN
Hgt on arrival NICU	mmol/l			12.5% Dex	15% Dex	Feeds

RESPIRATORY

INTUBATION (* please note any intubation)	Episode 1		Episode 2		Episode 3 *	
Date of Intubation	dd/mm/yyyy		dd/mm/yyyy		dd/mm/yyyy	
Time of Intubation	h		h		h	
Urgency of intubation (at start of procedure) ¥	Emergent	Elective	Emergent	Elective	Emergent	Elective
	Urgent		Urgent		Urgent	
Rank of Intubating Doctor	Consultant	MO	Consultant	MO	Consultant	MO
	Registrar	Fellow	Registrar	Fellow	Registrar	Fellow
	Other		Other		Other	
Medication Used for intubation	Atropine	Scoline	Atropine	Scoline	Atropine	Scoline
	Ketamine	Other	Ketamine	Other	Ketamine	Other
Successful 1st Attempt	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown
Equipment Problems	Laryngoscope	Suction	Laryngoscope	Suction	Laryngoscope	Suction
	Neopuff	Other	Neopuff	Other	Neopuff	Other
Any Adverse Event during Intubation	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown
Desaturation	Sats stay >90%	80 - 90%	Sats stay >90%	80 - 90%	Sats stay >90%	80 - 90%
	60 - 80%	<60%	60 - 80%	<60%	60 - 80%	<60%
Bradycardia	HR >100/min	60 - 100	HR >100/min	60 - 100	HR >100/min	60 - 100
	<60/min	asystole	<60/min	asystole	<60/min	asystole
Need Increased (≥20%) FiO_2	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown
Need CPR	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown
Need adrenalin	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown
Other	Vomit + aspiration	Airway injury	Vomit + aspiration	Airway injury	Vomit + aspiration	Airway injury
	Vomit no aspiration	U/A trauma	Vomit no aspiration	U/A trauma	Vomit no aspiration	U/A trauma
	Laryngospasm	Agitation	Laryngospasm	Agitation	Laryngospasm	Agitation
	Oesophageal tube delayed recogn		Oesophageal tube delayed recogn		Oesophageal tube delayed recogn	
Position ETT on CXR	Good	Deep	Good	Deep	Good	Deep
	Shallow (at or above T1)		Shallow (at or above T1)		Shallow (at or above T1)	
Severity score of AE	None	Mild	None	Mild	None	Mild
	Moderate	Severe	Moderate	Severe	Moderate	Severe
	Death		Death		Death	
Could the AE have been prevented	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown

¥ Emergent Intubation	Establishment of airway necessary IMMEDIATELY d/t physiologic instability. Vitals unable to be stabilised without ETT
¥ Urgent	Establishment of airway needed IMMINENTLY (<4hrs) but time available for medication and pre-procedure stabilisation
¥ Elective	Establishment of airway can begin at provider discretion due to patient stability

Loose ETT strapping noted and restrapped to avoid unplanned extubation	No	Yes	Date	dd/mm/yyyy

AE reporting form

EXTUBATION *please note any extubation)	Episode 1		Episode 2		Episode 3 *	
Date of extubation	dd/mm/yyyy		dd/mm/yyyy		dd/mm/yyyy	
Time of extubation	h		h		h	
Extubation planned	Y	N	Y	N	Y	N
Reason Unplanned Extubation	Poor sedation	Xray	Poor sedation	Xray	Poor sedation	Xray
	Loose strapping	ETT High	Loose strapping	ETT High	Loose strapping	ETT High
	Blocked ETT	Oral ETT	Blocked ETT	Oral ETT	Blocked ETT	Oral ETT
	Procedure	Other	Procedure	Other	Procedure	Other
Any Adverse Event after extubation	Y	N	Y	N	Y	N
Desaturation	Sats stay >90%	80 - 90%	Sats stay >90%	80 - 90%	Sats stay >90%	80 - 90%
	60 - 80%	<60%	60 - 80%	<60%	60 - 80%	<60%
Bradycardia	HR >100/min	60 - 100	HR >100/min	60 - 100	HR >100/min	60 - 100
	<60/min	asystole	<60/min	asystole	<60/min	asystole
Need Increased (≥20%) FiO_2	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown
Need CPR	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown
Need adrenalin	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown
Post extubation stridor	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown
Need reintubation within 24 hours	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown
Severity score of AE	None	Mild	None	Mild	None	Mild
	Moderate	Severe	Moderate	Severe	Moderate	Severe
	Death		Death		Death	
Could the AE have been prevented	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown

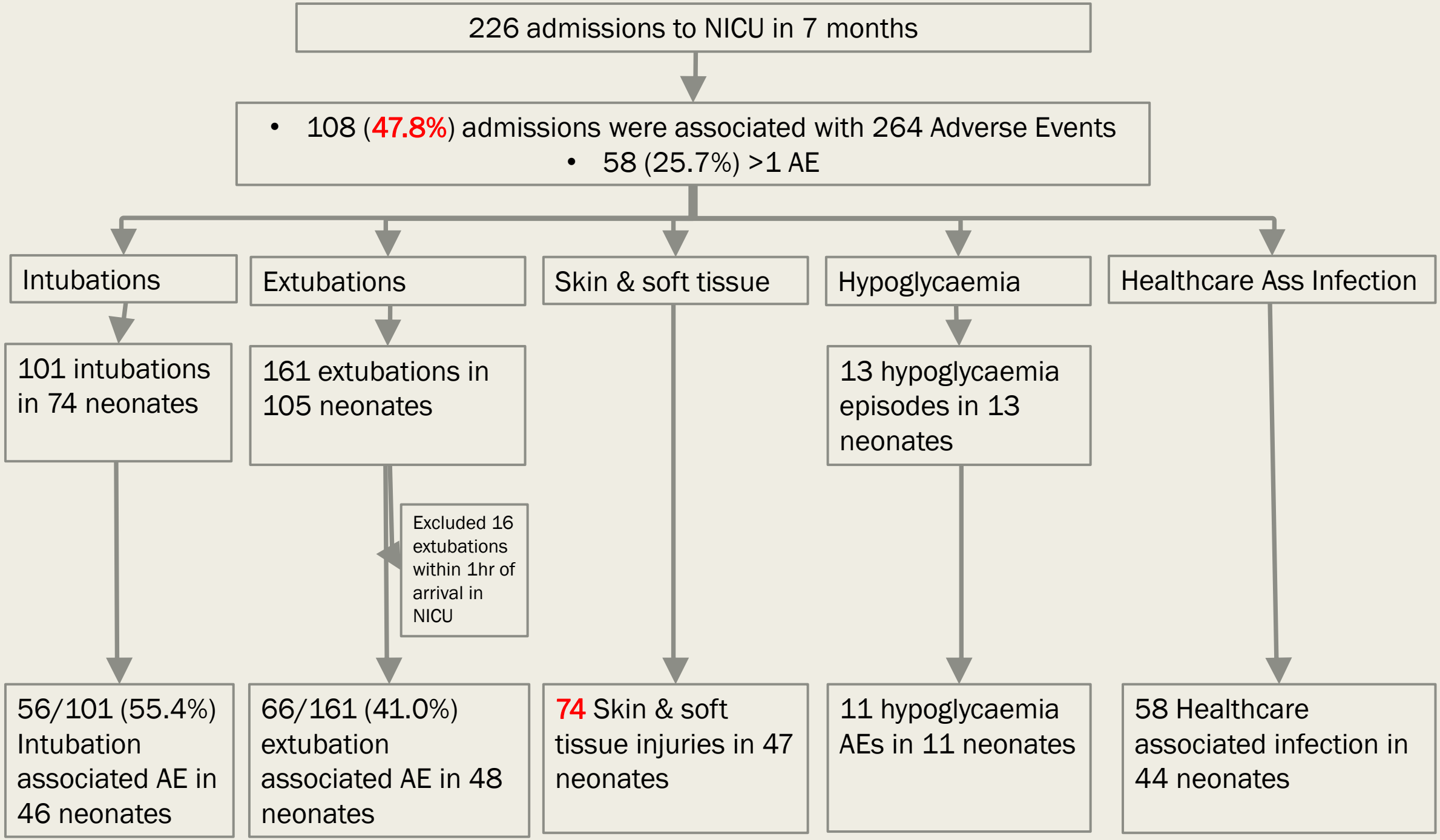
SKIN & SOFT TISSUE	Episode 1		Episode 2		Episode 3 *	
Any IV/Skin/Soft tissue AE whilst in NICU	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown
Mechanism of injury	Extravasation	Pressure	Extravasation	Pressure	Extravasation	Pressure
	Adhesive	Moisture	Adhesive	Moisture	Adhesive	Moisture
Cause of skin/soft tissue AE	Sats probe	IV	Sats probe	IV	Sats probe	IV
	Temp probe	nCPAP	Temp probe	nCPAP	Temp probe	nCPAP
	Other	ETT	Other	ETT	Other	ETT
Site of Skin/soft tissue AE	Upper limb	Trunk	Upper limb	Trunk	Upper limb	Trunk
	Lower limb	Face	Lower limb	Face	Lower limb	Face
	Scalp		Scalp		Scalp	
Type of skin/soft tissue injury	Thrombophlebitis	Ulcer	Thrombophlebitis	Ulcer	Thrombophlebitis	Ulcer
	Threatened limb	Abscess	Threatened limb	Abscess	Threatened limb	Abscess
	Excoriation	Other	Excoriation	Other	Excoriation	Other
Treatment required	Dressings	Surgery	Dressings	Surgery	Dressings	Surgery
	Antibiotics	None	Antibiotics	None	Antibiotics	None
Severity score of AE	None	Mild	None	Mild	None	Mild
	Moderate	Severe	Moderate	Severe	Moderate	Severe
	Death		Death		Death	
Could the AE have been prevented	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown

GLYCAEMIC CONTROL	Episode 1		Episode 2		Episode 3 *	
Any HgT <1mmol/l	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown
2 consecutive Hgt <2mmol/l	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown
HgT <2.6mmol/l on any 3 or more days	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown
Lowest Hgt in mmol/l	mmol/l		mmol/l		mmol/l	
Any hgt <2.6mmol/l with clincal signs	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown
Cause	Faulty/No IV access	No feed	Faulty/No IV access	No feed	Faulty/No IV access	No feed
	Fluid restriction	Insulin	Fluid restriction	Insulin	Fluid restriction	Insulin
Management needed	≥15% DW + cvp/picc	12.5% DW	≥15% DW + cvp/picc	12.5% DW	≥15% DW + cvp/picc	12.5% DW
	Glucagon	Dex bolus	Glucagon	Dex bolus	Glucagon	Dex bolus
	Steroids	Other	Steroids	Other	Steroids	Other
Severity score of AE	None	Mild	None	Mild	None	Mild
	Moderate	Severe	Moderate	Severe	Moderate	Severe
	Death		Death		Death	
Could the AE have been prevented	Yes No	Unknown	Yes No	Unknown	Yes No	Unknown

Definition Healthcare Associated Iinfection **	Blood stream infection occuring at or after 72 hours of age					
HEALTHCARE ASSOCIATED INFECTION **	**Episode 1**		**Episode 2**		**Episode 3 ***	
Date	dd/mm/yyyy		dd/mm/yyyy		dd/mm/yyyy	
Any sepsis diagnosis req ABO	Culture Positive	Culture Neg	Culture Positive	Culture Neg	Culture Positive	Culture Neg
Indwelling devices at time of sepsis diagnosis	PICC	CVP	PICC	CVP	PICC	CVP
	Urine catheter	ETT	Urine catheter	ETT	Urine catheter	ETT
	Other (eg ICD)	UVC	Other (eg ICD)	UVC	Other (eg ICD)	UVC
Highest CRP	mg/l		mg/l		mg/l	
Escalation of care needed for HAI	Mech Ventilation	Inotropes	Mech Ventilation	Inotropes	Mech Ventilation	Inotropes
	Incr Resp Support	Surgery	Incr Resp Support	Surgery	Incr Resp Support	Surgery
	Device removal		Device removal		Device removal	
Severity score of AE	None	Mild	None	Mild	None	Mild
	Moderate	Severe	Moderate	Severe	Moderate	Severe
	Death		Death		Death	

- Ethics:
  - Approved by Stellenbosch University HREC
  - waiver of individual informed consent
- Training:
  - all staff trained on use of the form
  - PI visited the unit frequently for support
- Inclusion:
  - All neonates admitted to TBH NICU 1 Feb – 31 August 2024

Chart Review


226 admissions to NICU in 7 months
• 108 (47.8%) admissions were associated with 264 Adverse Events
• 58 (25.7%) >1 AE
Intubations
Extubations
Skin & soft tissue
Hypoglycaemia
Healthcare Ass Infection
101 intubations in 74 neonates
161 extubations in 105 neonates
13 hypoglycaemia episodes in 13 neonates
Excluded 16 extubations within 1hr of arrival in NICU
56/101 (55.4%) Intubation associated AE in 46 neonates
66/161 (41.0%) extubation associated AE in 48 neonates
74 Skin & soft tissue injuries in 47 neonates
11 hypoglycaemia AEs in 11 neonates
58 Healthcare associated infection in 44 neonates

Results

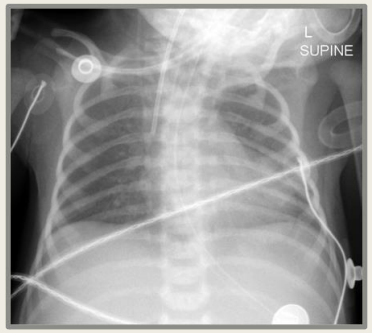
Median (IQR) birth weight: 1940g (1170 – 2975g)
Median (IQR) birth GA: 33weeks (29 – 38 weeks)
Median (IQR) age on admission: 2days (1 – 8 days)

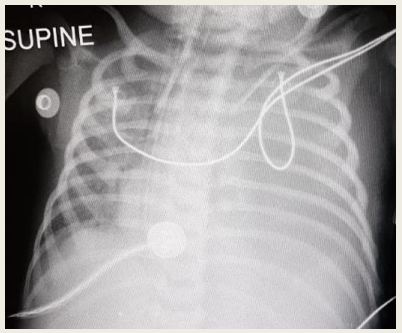
Characteristics	Total: n = 226	Any Adverse Event: n = 108	No Adverse Event: n = 118	P value
Birth Weight Categories, n (%) <1500g ≥1500g	 84 (37.2) 142 (62.8)	 50 (59.5) 58 (40.8)	 34 (40.5) 84 (59.2)	0,007
Birth Gestational Age, median (IQR)	33.5 (29 – 38)	31 (29 – 37)	35 (30 – 39)	0,005
Admission Category, n (%) Medical only Any Surgical	 162 (71.1%) 64 (28.3)	 70 (43.2) 38 (59.4)	 92 (56.8) 26 (40.6)	0,028
Mechanical ventilation at any time during admission, n (%)	145 (64.2)	89 (61,4)	56 (38,6)	<0,001
Outcome				
Length of NICU stay, days, median (IQR)	6 (3 – 12)	10 (6 – 19)	4 (2 – 7)	<0,001
Mortality, n (%)	62 (27.4)	36 (58.1)	26 (41.9)	0,057

Adverse Events Per Category

Intubation: n = 56 (21.1%)

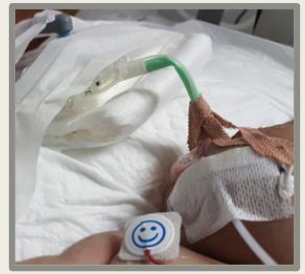
Incorrect ETT position on CXR Deep Shallow	46 (82%) 22 (39%) 24 (43%
Equipment problems	20 (36%)
Laryngospasm	6 (9%)
Upper airway injury	4 (6%)
Other	7 (11%)





Extubation: n = 66 (25%)

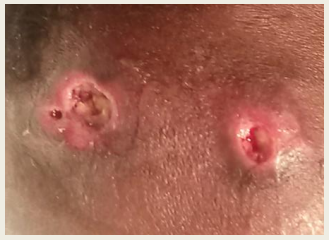
Unplanned extubation Blocked ETT Procedure Loose strapping Poor sedation Shallow ETT position Other	56 (86%) 20 (36%) 10 (18%) 8 (14%) 11 (20%) 9 (16%) 7 (13%)
Post extubation Stridor	9 (14%)
Reintubation within 24 hours	51 (77%)
Need CPR +/- adrenalin post extubation	6 (9%)

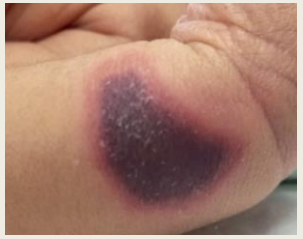


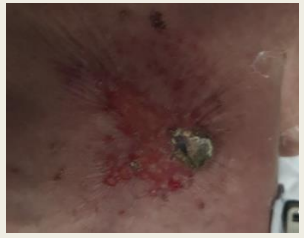
Adverse Events Per Category

SSTI: n = 74 (28%)

Mechanism		
	Extravasation	30 (41%)
	Pressure	15 (20%)
	Adhesive	11 (15%)
Type		
	Excoriation	15 (20%)
	Ulcer	15 (20%)
Site		
	Upper limb	22 (30%)
	Lower limb	17 (23%)
	Face	15 (20%)







Hypoglycaemia, n = 11 (4.2%)

No Intravenous access	5 (45%)
Fluid restriction (low glucose delivery)	5 (45%)
Combined	1 (9%)

Adverse Events Per Category

Healthcare associated infection: n = 58 (22%)

Blood culture positive sepsis	27 (47%)
Gram negative	16 (59%)
Gram positive	12 (44%)
Fungal	3 (11%)
Clinical sepsis	31 (53%)

Effect of other AE on HAI

Factor	IRR	95% CI	P value
Any intubation	1,94	1,11 – 3,41	0,021
Any Intubation AE	1,77	1,01 – 3,08	0,044
Any unplanned extubation	1,83	1,07 – 3,15	0,028
Any SSTI	1,42	0,83 – 2,44	0,203
Hypoglycaemia AE	1,92	0,80 – 4,60	0,142

Results

PREVENTABLE

TOTAL	69%
Intubation	41%
Extubation	67%
SSTI	93%
Hypoglycaemia	64%

SEVERITY: DEATH

TOTAL	4,5%
HAI	19%

SEVERITY: SEVERE

TOTAL	18%
Extubation	61%

RISK FACTORS:

GA	Intubation Extubation SSTI
LOS	SSTI Hypoglycaemia HAI

AE DOCUMENTATION

	Dr Notes	AE form
ETT tip	49%	62%
SSTI	28%	92%
HAI	100%	22%

Summary & Way Forward

- Incidence of AE comparable to reported literature
- Skin & soft tissue injuries are the most common
  - *Mostly preventable*
  - *Poorly documented*
- Healthcare associated infection most serious
  - *Contributes to NICU mortality*
- Other AE may increase risk of HAI
- Increased length of stay ($$$)

- Quality improvement strategies need to be implemented to reduce AEs
  - *Cost effective*
  - *Not labour intensive*
  - *Sustainable*
  - *Multidisciplinary buy - in*
- Ongoing surveillance
  - *Reporting nonpunitive*
  - *anonymous*

Thank you

- Prof Dramowski – supervisor
- Prof Bekker – co –supervisor
- Dr Greybe & Dr Maposa – statistical support
- Doctors and nurses in the NICU
- Patients of TBH NICU & their parents
- SAMRC & USDP research funds

Pictures used with permission from the mother of the neonate