Table 1: Audit criteria and audit guide

Audit criterion	Audit guide	Sample	Method used to measure % compliance with best practice
1.Healthcare providers attending to deliveries have received training and maintain competencies in relation to newborn resuscitation	The auditor administered a questionnaire to find out if the healthcare providers had been trained in basic newborn resuscitation, using the national ETAT+ guidelines. Auditor marked as 'Yes' for trained and 'No' for no training	55 health care providers	A questionnaire to healthcare providers (refer to Appendix I) Certification provided on completion
2. Availability of functional equipment and supplies for basic newborn resuscitation in the labour ward and maternity theatre	The auditor used a simple tool to check availability of equipment in the maternity theatre and labour ward, and marked as 'not available', 'partially available' or 'available'.	Warming device for room or resuscitaire. Two warm dry towels. Hand washing facilities or hand sanitizer. Bag-valve mask. Suction machine and catheters. TEO available for eye prophylaxis. Cord clamps. Resuscitation starts within one minute of birth if needed. Chlorhexidine available for cord care. Baby placed skin to skin with mother.	All supplies present in the resuscitation tray – 'Yes'. Equipment partially or not available in the resuscitation tray – 'No'. Refer to Appendix II
3. Availability of evidence-based newborn resuscitation protocols in the labour ward and maternity theatre	Audit team marked as: 'Yes' if available 'No' if unavailable or not updated	A current evidence-based protocol	Presence of printed protocol in the 2 rooms (maternity theatre and labour ward). Refer to Appendix V
4. All newborns are assessed correctly and assigned an APGAR score	Audit team looked at the patient case notes and marked as: 'Yes' if APGAR score documented 'No' if empty	Baseline – conducted retrospectively on 300 case notes (from mothers) from May 2016. Follow-up – October 2016	Refer to Appendix III for audit tool
5. All newborns with perinatal asphyxia, are correctly	Audit team looked at the patient case notes and marked as:	Baseline - 15 case notes of newborns in May 2016.	Refer to Appendix IV for audit tool

assessed and managed according to the WHO guidelines	'Yes' if APGAR score was documented and the resuscitation efforts documented. 'No' if resuscitation efforts not documented	Follow-up – October 2016	

Table 2: GRIP matrix

Barrier	Strategy	Resources	Outcomes
1. **Some of the healthcare providers were resistant to change** – e.g. • More experienced midwives insisting on outdated practices	• We held meetings to understand why these healthcare providers felt passionately about some of these outdated practices. Thereafter, we used evidence from best practice to demonstrate the outcomes of these harmful practices. • Identifying 'champions' for this cause, to carry this new message.	• Used evidence from studies done in similar settings and their outcomes. • Projector and laptop provided for by the hospital administration	Surpassed expectations as the team embraced the skills taught and became familiar with best practice.
2. **Lack of incentives**: Most health providers attend meetings and trainings if there is an incentive or motivation attached to it e.g. money, food or certification	• Provided tea and snacks during the trainings to boost attendance. • Certification provided for by the Kenya Paediatric Association (KPA).	• Provided for by the hospital administration • The certificates provided for by KPA	Increased attendance
3. **Poor collaboration among the maternity nurses, and between the maternity and paediatric units**	• Enhance teamwork through joint meetings (e.g. going forward we plan to hold monthly newborn audits together) • Assigning roles to specific people e.g. ensuring that resuscitation equipment is available and functional before each shift / morning	• Monthly meetings are held every first Tuesday of the month in the classroom. • Projector and snacks provided by the hospital administration	Staff collaboration improved
4. **Knowledge gaps amongst healthcare providers**	• Education – held three continuous medical education sessions and several demonstrative skills stations in the maternity units to the healthcare providers. This was individualized. • Used the ETAT+ lectures to	• Printed notes, projector and laptop availed by the hospital administration • The equipment for	Staff became more familiar with current best practice in newborn resuscitation. Staff encouraged

	train the health providers in CMEs. This information was additionally printed out and/or sent out via e-mail to the participants. • Appreciate and reinforce positive change	skills training was provided for by the hospital.	when they know their input is appreciated
5. Time constraints to provide education and training: • Healthcare providers work during specified time periods • Labour ward and maternity theatres are extremely busy units • Few trainers	• All skills trainings were conducted during work hours (8-9am, or 2-3pm) • We had approximately 3 participants per 1 hour training session. We arrived at these periods as they are usual change over times, hence will have more participants available • Any healthcare provider who needed an extra session was rescheduled for the same at their convenient time • The paediatrician incorporated the services of one of the Medical Officers and midwife who were trained in ETAT+, to help conduct the trainings	• With the help of the midwife in charge, we drafted a rota during staff work hours around their time schedule. This ensured flexibility and voluntariness of the whole project. • Other team members	Increased the education and training
6. Sustainability of the project. The excitement of the project tends to wear down with the conclusion of a project	We identified champions to ensure that this goes on, even after the conclusion of this current audit cycle	We intend to conduct a follow up audit in 6 months' time (April 2016)	

Table 3: Baseline and Post audit results

	Baseline Audit				Follow up Audit			
Audit Criteria	**Y**	**N**	**N/A**	**%Y**	**Y**	**N**	**N/A**	**%Y**
1. Healthcare providers attending to deliveries have received training and maintain competencies in relation to newborn resuscitation	9	46	0	**16%**	55	0	0	**100%**
2. Availability of functional equipment and supplies for basic newborn resuscitation in the labour ward and maternity theatre	9	2	0	**82%**	11	0	0	**100%**
3. Availability of an evidence-based newborn resuscitation protocol in the labour ward and maternity theatre	0	2	0	**0%**	2	0	0	**100%**
4. All newborns are assessed accurately and assigned an APGAR score	287	13	0	**96%**	300	0	0	**100%**
5. All newborns with perinatal asphyxia, are correctly assessed and managed according to the WHO guidelines	6	9	0	**40%**	9	1	0	**90%**