Executive Summary:

- Every day about 800 women die from the complications of pregnancy. Most deaths occur in low and middle income countries (LMICs)
- Niger has a maternal mortality ratio of 553/100,000 live births
- Common causes of death include hemorrhage, sepsis, pre-eclampsia and eclampsia
- Access to safe anesthesia is often not available to pregnant women
- The SAFE-OB Course has been developed to improve the anticipation of, preparation for, and management of critical issues in obstetric anesthesia
- We ran a Train the Trainers Course in Niger for 6 anesthesiologists and 7 obstetricians
- Following that, we worked together to run a SAFE-OB Course for 14 anesthesia providers, 9 midwives and 1 obstetrician from across the country
- At the conclusion of the course, we presented all of the training equipment and materials to the Society of Anesthesia and Reanimation of Niger, the SONARMU, so they can continue to run SAFE-OB courses throughout the country

Background:
At the invitation of the SONARMU (société nigérienne d'anesthésie, réanimation et de médecine d'urgence - Society of Anesthesia of Niger), a SAFE –OB course was planned for September 2017. Dr Abdou Idrissa, President, and Dr Maman Sani Chaibou, General Secretary of SONARMU, were the local organizers. Financial support came from WFSA, Lifebox, the Nigerien Ministry for Health, the World Health Organization (WHO) and the SONARMU itself. In addition, the SARMU-B (the Society of Anesthesia of Burkina Faso) assisted us by finding lecturers to come to Niamey to teach the course.
SAFE-OB is a predesigned course aimed at improving the level of obstetric anesthesia. SAFE is an acronym for Safer Anesthesia From Education and is a programme supported by the Association of Anaesthetists of Great Britain and Ireland (AAGBI) and the World Federation of Societies of Anaesthesiologists (WFSA) http://www.aagbi.org/international/safer-anaesthesia-from-education. It consists of a three day programme with 6 plenary lectures and 40 small group sessions. The focus is on hands-on learning and involves the use of mannikins, scenarios, discussions and role-playing. It has been taught all over the world. In Niger, it was taught in French.

**Course Dates:**
The course was held in Niamey from September 18-21st. The Train the Trainers course took place on September 18th and the participant course from September 19th through 21st.

**Course location:**
The location of the course was in Africa House which provided adequate, if not great, facilities. We had 1 plenary room and 3 breakout rooms. There was a covered outside patio where all meals were served.

**Course faculty:**
Dr Angela Enright, Canada, Course Director  
Dr Bertille Ki, Burkina Faso, Co-Course Director  
Dr Youssouf Bande, Burkina Faso  
Dr Mariam Kaboré, Burkina Faso  
Dr Awa Dipama, Burkina Faso

**Course participants:**
Because of my experience in Bangladesh with including obstetricians on the course, I suggested to Dr Chaibou that they consider inviting some of their colleagues. I could not have anticipated the response. They invited an obstetrician, a midwife and an anesthetist from every centre where obstetric cases are managed. Thus we had teams from all over the country, some driving as far as 1500 km to take the course. We had 7 obstetricians and 6 anesthesiologists take the TTT course and 14 anesthetists (non-physicians), 9 midwives and 1 obstetrician take the full course. (Appendices A and B). The interactions and dynamics were very interesting. I was somewhat concerned that the obstetricians and midwives would not be interested in the pure anesthesia portions of the course but they were and participated fully in all of it.
Course documents:
All the course documents were printed in Canada except the instructor manuals. These were printed locally by WHO. They are much too heavy to be carried out. I also made and brought out 16 USB keys containing the entire course materials. These were given to the faculty. (Appendix C)

Course equipment:
With 40 small group sessions, much equipment is required. Most LMICs do not have such equipment and Niger was no exception. With list in hand, I scoured every available source including eBay, Amazon, vendors, local hospitals, donors etc and so arrived at the airport with several large suitcases, containing intubating heads, resuscitation models, neoNatalies, laryngoscopes, laryngeal mask airways, endotracheal tubes, bougies, stylettes and on and on. This was all presented to the SONARMU at the end of the course to enable them to carry on with teaching SAFE – OB throughout the country. Unfortunately the bags did not arrive with me in Niamey so I was relieved when they arrived safely the next day, in time for the course. The list of equipment is appended as Appendix D.

Courses:
Our TTT course had to be shortened because funding would only allow us four full days of teaching, 3 days supported by WHO and 1 day supported by the Ministry for Health. However all our Nigerien anesthesiologists had been through our Lifebox TTT course so had a very good idea of our teaching methods. I decided that our obstetricians could take a little extra time to catch up since we had our Burkinabé and Nigerien teachers to carry things for the first few days.

We had a formal Opening Ceremony on the 1st morning attended by M. Ismaguil Anar, Directeur de Cabinet de la Ministre de la Santé, and Dr Balkissa Adamou, Administrateur Santé maternelle et néonatale Santé des jeunes et adolescent/Gerre. They thanked WFSA
and Lifebox for their support now and in the past. Dr Balkissa Adamou is a pediatrician and she was particularly interested in the course content. In fact, she returned on another day informally to watch the course. I spoke to her about SAFE Paeds and I suspect that funding might be forthcoming to run a course.

The participant course ran fairly smoothly. It takes the participants a day to pick up the rhythm of the course which is very fast paced. By Day 2, everyone was on track and we kept fairly well to time. I think the obstetricians and midwives had the greatest problems as the teaching system was completely new to them. Most of the anesthetists had been through the Lifebox course which runs in a similar fashion. Some of the participants were reticent to speak up but gradually relaxed and participated fully.

Pre-test and post-test:
Part of the SAFE-OB method is to begin with a pre-test of knowledge and skills. Everyone takes the same knowledge test but, for the skills test, they are divided into 4 groups each of whom takes a different test of skill. The 4 areas tested were
1. Maternal CPR
2. Neonatal resuscitation
3. Management of an eclamptic patient
4. Rapid sequence induction of anesthesia for an emergency Cesarean Section.

The post-test of knowledge is the same as the pre-test. Each person then takes the same skill test as before the course. The results of these are then reviewed. The average knowledge score rose from 34.75 (range 11-44) to 36.08 (range 27-43) out of 45. The median knowledge score rose from 32 to 36.5. The average skill score rose from 4.97 (range 1.5-8) to 8.35 (range 5-10) out of 10. The median skill score rose from 5.25 to 8.75. The list is attached as Appendix E

Feedback and evaluation:
All instructors and participants were given feedback forms to fill out. Almost all of the scores were 4 or 5 with just a few 3s, 1 being the lowest and 5 being the highest rating. In the narrative comments, the commonest complaint was around the time pressure during
the course. Everyone wanted more time for everything – longer plenary sessions, longer small group sessions and a longer total duration overall. Narrative comments included – great for amalgamating theory and practice, great organization, excellent teaching, great material. The list is attached as Appendix F

Success and relevance of the course:
It was clear that all participants enjoyed the course in spite of its fatiguing effects. The confidence of both the teachers and the delegates grew and they felt empowered to speak up and ask questions. The obstetricians became very enthusiastic and several were excellent teachers as were several of the anesthesiologists. I believe that participants will be able to utilize what they have learned in order to function better as a team when they return home. They now at least share a common understanding of the problems faced by the different members of the team and should be able to assist each other to better manage parturients at risk. I hope they will also be empowered to pass on their new knowledge to their colleagues at home. The SONARMU is now in possession of the equipment for the course and hopefully will be able to organize and run SAFE OB courses in Niger. We have talked quite a bit about using this equipment and knowledge as a basis for developing a simulation centre in Niamey.

Closing ceremony:
Following all of the educational activities, we held a very nice closing ceremony at which all those who had taken the TTT course and all participants in the SAFE-OB course received their certificates. It is always so gratifying to see their pleasure in that.

Recommendations:
It will be good to follow up on the SAFE-OB course in Niger within the next year to encourage the faculty to run their own courses. They may need some help to do so. Also I am very interested in assisting them to develop a simulation centre which would be an
excellent way to continue the team development which we have begun with this SAFE course.

Acknowledgements:
We are immensely grateful to all of the following for their support of the course. Without such support, the course could not take place.

WFSA
Lifebox
Ministry of Health, Niger
World Health Organization
SONARMU
SARMU-B (Burkina Faso)

I am also indebted to our hosts in Niger, especially Dr Chaibou, who made heroic efforts to make this educational course a reality.

Respectfully submitted

Angela Enright
October 2nd 2017
Appendix A

SAFE OB – NIGER – SEPTEMBRE 2017
LISTE DES FORMATEURS

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NB : MAR = Médecin Anesthésiste Réanimateur
      GO = Gynécologue Obstétricien
### Appendix B
SAFE OB – NIGER – SEPTEMBRE 2017
LISTE DES PARTICIPANTS

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NB : TSAR = Technicien Supérieur en Anesthésie Réanimation  
SF = Sage femme  
GO = Gynécologue Obstétricien
Appendix C

List of printing

Timetables TTT
Timetables participants
Course outline
Laminates for course
Copies of laminates for participants
Pre-tests, Post-tests, Answer sheets
Pre-skills, Post-skills
Evaluation forms
Feedback forms TTT and participants

Instructor manuals printed by WHO
Appendix D

List of equipment

2 intubating heads plus silicone spray
2 Neonatalies complete
5 CPR models
2 bag, mask ventilators
2 laryngoscopes
1 bougie
Stylettes
2 cricothyrotomy models
Endotracheal tubes various sizes
LMAs various sizes
Oral airways various sizes
Nasal airways
Oxygen masks and tubing
Nasal prongs and tubing
Yankauer suction tips
Suction catheters
2 scalpels
1 spine model
IV catheters
Syringes
Needles
Spinal needles
Epidurals needles
Intraosseous models
Stethoscope
Alcohol swabs
Alcohol hand sanitizer
Kleenex
Paper towels
Pens for participants
Notebooks for participants
Sharpies
Dry erasers
Blue tac
Scotch tape
Stapler
Paper clips
Chalk
Folders
Name tags
## Test de compétence

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Appendix F

Evaluations (Translated from the French)

Instructors:
What did you like in the course?
Excellent organization of the modules
The rigour of the execution
Discussion and practical sessions
The mannikins
Practical teaching approach
The different teachers

Were the materials useful?
The materials were indispensable to our understanding of the course

What parts of the course did you not like and why?
Trouble keeping the plenary sessions on time
The schedule is too busy
The teachers should have more experience
Late arrival of the manuals for the instructors (WHO)
The departure of the foreign teachers (They left Thursday afternoon)
The convulsions – too theoretical

How can we improve the course?
Increase the length
More experienced teachers
Review a module together
More support at the beginning
3 workshops per day
Start a simulation centre in Niger
Include the pediatricians

Participants:
Evaluation of modules: 1 least useful 5 most useful
Talk on General Anesthesia and airways:  22 x 5, 3 x 4
Workshop on airway:  21 x 5, 4 x 4, 1 x 3
Workshop on GA:  23 x 5, 3 x 4, 1 x 3
Workshop on Spinal anesthesia:  22 x 5, 1 x 4, 1 x 3
Talk on Intensive Care and resuscitation:  22 x 5, 1 x 4, 2 x 3
Workshop on ICU:  22 x 5, 1 x 4, 2 x 3
Talk on maternal trauma:  22 x 5, 4 x 4, 1 x 3, 1 x 2
Workshop on maternal resuscitation:  18 x 5, 4 x 4, 1 x 3
Talk on pre-eclampsia and eclampsia:  21 x 5, 2 x 4
Workshop on PET:  20 x 5, 2 x 4, 1 x 3
Workshop on hemorrhage:  19 x 5, 5 x 4
Talk on urgent obstetrics:  18 x 5, 2 x 4, 2 x 3, 1 x 2
Workshop on urgent obstetrics:  8 x 5, 4 x 4
Did you find the course useful: 19 x 5, 4 x 4
Did it improve your knowledge: 21 x 5, 2 x 4, 1 x 3
Do you think it improved your clinical ability: 20 x 5, 4 x 4
Did you find the course useful for your daily work: 21 x 5, 1 x 3, 1 x 1
Have you learnt to give better care to patients: 20 x 5, 4 x 4
Would this course be useful at your hospital: 20 x 5, 1 x 4, 2 x 3

**Have you any comments or suggestions?**

Too short a time for the course
Too short a time for the workshops
Continue these workshops/courses on other themes
Include other people eg nurses
Very tiring
Check out the skills in the hospital
Give a handbook or a poster to the participants
Very captivating and relevant course
Do it every 2 years
The lectures were too short
People from Niamey should get per diems