SAFE Paediatrics Report:
Dhaka, Bangladesh

BSMMU, Dhaka
27-29th November 2016
Executive Summary

- The SAFE (Safer Anaesthesia From Education) Paediatric Anaesthesia Course is a structured training course in paediatric anaesthesia for healthcare providers of all training backgrounds in low or low-middle income countries.

- The first SAFE Paediatrics course in Bangladesh was run at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka on 27th - 29th November.

- The chief coordinator was Professor D. Banik (Professor Anaesthesia and Critical Care, Daka) with support from local coordinator Dr. F. Hoque (Associate Professor, Daka) and Dr. R. Jones (Consultant Anaesthetist, Bristol) as foreign faculty coordinator. The course director was Dr. L. Bowen (Consultant Paediatric Anaesthetist, Cardiff).

- There was a mix of Bangladesh, English, Welsh and Irish faculty totaling 11 (5 UK anaesthetists, 1 UK senior registrar and 5 Bangladeshi consultant anaesthetists). Only one UK and one Bangladesh faculty were full time paediatric anaesthetists.

- All delegates that attended and finished the three day course (32) were qualified physician anaesthetists with mixed experience of regular paediatric practice.

- Most delegates improved on both their knowledge and skills. A few remained the same (generally high scoring initially equaled this score on re-test).

- Knowledge score average (as assessed by MCQ) improved from 36/50 (73%) to 44/50 (88%) by the end of the course.

- Skills accuracy average doubled by the end of the course from 4 to 8.

- Excellent delegate feedback was received for lectures, breakout sessions, overall course delivery (> 8.5 average scores throughout).

- Commitment to change by the delegates showed a trend towards trying more organized approaches to preoperative assessment, preparation of drugs and equipment, SBAR for communication and WET FLAG during resuscitation.

- There was also a drive to improve on current neonatal resuscitation and increase safety of anaesthesia.

- Social media updates on the Bangladesh Anaesthetic Society sites as well as live streaming of demonstrations provide a novel approach to disseminating information to a wider audience.
Country Background

Bangladesh is a small country totaling 143,998km$^2$ (almost three fifths the size of the United Kingdom). It has a population of over 160 million people, which makes it the 8th most populous country in the world. More than two thirds of the population lives in rural areas, which are prone to flooding as the Himalayan river deltas drain through it en route to the Bay of Bengal.

There are estimated to be 0.4 physicians per 1,000 population in Bangladesh and the largest proportion of these are concentrated in and around the main urban centres. Since 1990 the mortality rates of infants under the age of 5 years throughout the world have decreased steadily from 12.7 million to 5.9 million in 2015. Although this is a significant decrease it still means that 11 children die every minute in the world. In south Asia 1 in 19 children die before their 5th birthday. In Bangladesh the rate is falling but remains high at 37.6 per 1000. The neonatal mortality rate contributes to a large proportion of this being 23 per 1000 live births thus 59% of deaths occur in the first month of life.

The main causes of Bangladesh neonatal mortality are extreme prematurity, birth asphyxia, infections and sepsis. In infants and children under 5 years; pneumonia, diarrhea and trauma make up the largest proportion of avoidable deaths. Many of these communicable diseases are caused by malnutrition and poor sanitation and are further exacerbated by the large numbers who live rurally that have poorer access to healthcare, clean water and sanitization than those in the cities.

Aims

Our aim was to deliver the first SAFE Paediatric course to delegates who frequently anaesthetise children in Bangladesh. As this was the first course our hosts advised to do so centrally, in the capital city Dhaka, due to the high population density and paediatric provision there.
Partnerships

The course was highly dependent and thankful for the support and financial donations from:

- The Bangladesh Association of Anaesthetists
- The Association of Anesthetists of Great Britain and Ireland
- The World Federation of Societies of Anaesthesiologists

Delegates and faculty at the end of the course (minus John who’s taking the photo!)
This was the first SAFE Paediatrics course to run in Bangladesh although there have been three previous SAFE Obstetrics courses delivered. This was held at the critical care unit teaching rooms at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka.

There were a total of 36 anaesthetic doctors invited to attend the course. Confirmation of the exact numbers that can attend is impossible before hand because of family and work commitments as well as transport issues. The groups were confirmed on the morning by the local chief coordinator to ensure there was an even spread of experience amongst the delegate groups. The actual number of delegates attending the course was 33 and all but one finished the course fully.

Visiting faculty comprised of:

- Dr Lowri Bowen (Consultant Paediatric Anaesthetist, Children’s Hospital for Wales, Cardiff)
- Dr Debamoy John Chatterjee (Consultant Anaesthetist, King’s Hospital and London HEMS)
- Dr Rebecca Jones (Consultant Anaesthetist, Bristol Royal Infirmary)
- Dr James Leedham (Worcestershire Acute Hospitals NHS Trust).
- Dr Ursula McHugh (Anaesthetic Specialty Trainee, Northern Ireland)
- Dr Allan Monks (Consultant Anaesthetist, Blackpool Victoria Hospital, UK)

Bangladeshi faculty comprised of:

- Professor Debabrata Banik (Professor of Anaesthesia, analgesia & Intensive Care Medicine Bangabandu Sheikh Mujib Medical University, Dhaka)
- Dr. AKM Faizul Hoque (Associate professor, Dept. of Anesthesiology. Bangabandu Sheikh Mujib Medical University, Dhaka)
- Professor Md. Shahidul Islam (Professor of Anaesthesia (Paediatrics) Dhaka Shishu Hospital)
- Professor Paresh Chandra Sarker (Dept. of Anesthesiology, Dhaka Medical Collage & Hospital)
- Dr. Dilip Kamar Blowmick (Associate Professor, Bangabandu Sheikh Mujib Medical University, Dhaka)

The chief coordinator was Professor Debabrata Banik and was aided locally by Dr. Faizul Hoque and Dr Rebecca Jones from the UK pre-arrival. The course director was Dr Lowri Bowen.

Local faculties were pre-selected by Professor Banik based on their current or expected ongoing contribution to anaesthetic education within Bangladesh. One of the original group of 4 local faculty pulled out prior to the start and was replaced last minute by another who had been due to attend the course as a delegate. Only one of the local faculty members had ever been to a SAFE run course and none had attended a SAFE Training the Trainers course, although they were all experienced teachers. This did mean that despite encouragement several local faculty members were reluctant to undertake much of the teaching role, preferring to watch and interject at times. However there were encouraging signs of growing confidence in teaching this format of course by
the end. The model of following the course with a training the trainers and running a second course wasn’t possible as we had already taught a SAFE Obstetrics and delivered a ToT/Lifebox course in the country in a different district.

Local Faculty Professor Sarkar teaching with the support of Dr James Leedham

The entire UK faculty had previously taught on at least one SAFE Obstetrics course but none, including the course director had ever delivered a SAFE Paediatric course. Only the course director was a full time paediatric anaesthetist but despite the visiting faculty only having some experience of delivering paediatric anaesthesia in various forms they acquitted themselves incredibly well to some unfamiliar scenarios.

**Logistics**

Professor Banik and Dr. Hoque carried out pre-course logistics, with input from Dr. Rebecca Jones (director of the Lifebox and SAFE Obstetrics courses run prior to the SAFE Paediatrics course). All printing apart from the SAFE pocketbooks was carried out in country. UK faculty brought and donated some manikins and some disposable equipment to add to the course resources. Manikins that were ethnically sensitive where possible were purchased and donated by Dr. Rebecca Jones (from personal, charitable and crowd funding donations) and consisted of:

- One Gaumard S320 newborn paediatric airway trainer (intubatable)
- Laerdal baby Annie (non-intubatable)
- Laerdal Little junior (non-intubatable)
- Little Anne small adult (non-intubatable) – from the SAFE Obstetrics course for teenagers

A Laerdal ALS baby trainer (intubatable) a neonatal head (intubatable) was also donated from the UK. The Bangladesh faculty did not have any manikins to supply to the SAFE Paediatrics course.

Non-mannequin teaching equipment was largely provided from existing material present in the BSMMU under the direction of Professor Banik. This was acquired over many years from the Bangladesh Anaesthetic Association, the hospital stores and supplies as well as some of the teaching materials for SAFE Obstetrics. We were also fortunate to have some paediatric specific equipment donated by the company Flexicare.
Candidate recruitment and facility sequestration was carried out prior to visiting faculty arrival by the local chief coordinator and helping coordinator. Thirty-two candidates equated to 7-9 delegates per group (mixing the group for experiences) being facilitated by a local and foreign faculty. This number of delegates is at the maximum end of what I would consider to be ideal and in fact I suspect the optimum number per group would lie under this number.

The venue was contained within the academic offices of the intensive care unit at the hospital. Lectures were presented in the lecture room of the intensive care unit and then the break out rooms consisted two nearby doctor's rooms, the lecture room doubling up a room and a corridor space that was successfully turned into a classroom. Despite reservations about the formed classroom, this worked well as it was large and had the same number of desks and projector facilities as the others. An armed guard outside the main entrance to the corridor meant it was not noisy. In fact it was probably a better room than one of the doctor's rooms, which was very small and provided difficulties in accommodating any type of simulation based training. This didn’t impair the course as some discussion sessions were swapped into that room when the subject required more space. However the overall the proximity of the rooms to the lecture halls and to the refreshments meant time keeping was easily controlled.

Room 4, created in the corridor

Dr. Masum Hasan carried out the administration and printing required on a daily basis. He also spent a great proportion of time taking photos and filming to upload on the BSA social media sites real time. It seems to be a very innovative way to share knowledge with others not on the course.
One anaesthetic intern was given the task of time keeping and was incredibly diligent at this, especially with the 10 minute and 5 minute warnings. He was regularly briefed with the time schedule, which was slightly fluid due to cultural needs of prayer times during breaks.

Candidate and faculty catering was excellent and was provided in the hospital with the use of caterers. This consisted of a late breakfast for the first break and also a comprehensive selection of hot food for lunch and of course plentiful coffee/tea for all of the breaks. Faculty accommodation was secured beforehand by Dr. Rebecca Jones at Viator Guesthouse, Dhaka and transport to and from the course consisted of a prearranged minibus.

The transportation to and from the venue was the time limiting factor for both delegates and faculty, as traffic was generally very bad at peak times. Sadly there was no way to avoid this except start out very early and leave very late!

(Lunchtime curry arriving)
Monitoring and Evaluation

The course evaluation will be comprised of the following levels:

- Pre and post course knowledge (MCQ) assessment
- Pre and post course skills assessment
- Delegate’s feedback (overall feedback and individual sessions)
- Commitment to change declarations
- Logbooks (assessment to occur in the months following the course)

Pre and post course knowledge (MCQ) and skills assessment

The pre course assessment was conducted after the hospital welcome ceremony, which was held post delegate registration. Due to the large number of candidates the MCQ and skills assessments were conducted at the same time under strict examination conditions. This allowed several to start the MCQ and then attend the skills test when there were free slots allowing a continual flow through the skills before returning to finish the questions. All had finished both assessments well within the allocated time. The post course knowledge assessment was conducted on the last day, following the last breakout session and before the final ceremony.

Thirty-three delegates started the course but one had to leave after the first day which meant only 32 delegates completed both the pre and post course knowledge assessment. Absence from one test excluded them from analysis. The MCQ assessment was marked out of a total of 50.

Pre and post course knowledge (MCQ)

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<tr>
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<th>Average (percentage score)</th>
<th>Range</th>
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<tbody>
<tr>
<td>Pre-course MCQ</td>
<td>36 (73%)</td>
<td>27-49</td>
</tr>
<tr>
<td>Post-course MCQ</td>
<td>44 (88%)</td>
<td>35-49</td>
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All the candidates improved on their pre course score. The one individual who scored 49 in the pre course score went on to equal this in his post score, although he got a different answer incorrect!

Pre and post course skills assessment

Each delegate carried out one of four skills stations: Intubation, Neonatal resuscitation, Trauma and Basic Life Support and were marked out of 10 by the same assessor for both pre and post course assessment.

<table>
<thead>
<tr>
<th>Overall Skills</th>
<th>Average score</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-course Skills</td>
<td>4</td>
<td>1-10</td>
</tr>
<tr>
<td>Post-course Skills</td>
<td>8</td>
<td>3-10</td>
</tr>
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Overall the average skill scores doubled with an increase in the range of scores gained. The breakdown of skills shows that all candidates improved or remained at the same level in their skills over the course of the three days.
Delegates’ feedback

In general the feedback both written and verbal regarding the overall course was extremely positive and encouraging as this is the first course to run in Bangladesh.

The main negative feedback was that there was a lot to cover in three days and that at times the sessions were quite long. There is however a lot of important content to deliver in each breakout session which is all necessary.

The graph below illustrates the average feedback scores for specific breakout sessions. Feedback was done using a scale of 1-10 inclusive with 1 being poor and 10 being excellent. All sessions scored 8.5 or above on average.
The lectures were well received and also scored an average of 8.5 or above on the same scale.

Graph showing the average lecture scores for the course.

The overall course feedback with regards to usefulness and changes to practice and knowledge for the delegates is illustrated in the following graph.
Overall course feedback was also excellent, as illustrated in the chart below.

![Overall course feedback chart](image)

**Figure 6: A chart showing feedback from all delegates about the overall course**

Free written feedback from delegates were all positive with regards to the course, many suggesting that it should be repeated on a frequent basis and taught throughout Bangladesh. A selection of feedback is enclosed below:

‘Must continue as CPD every year’
‘Please regularly arrange this course for anaesthesiologists, this is very helpful.’
‘I would like to participate this kind of workshop again and again. It is best to much improve knowledge and anaesthesia performance for safe anaesthesia in Bangladesh.’
‘This course is needed more frequently’
‘As a teacher we have to give training to our own station. So it is better to give the teaching material in pen drive’
‘This type of training should be arranged very frequently and reassessment should be taken from us after a time being’
‘Refreshment course in one or two years’. 
Commitment to change

The delegates were asked to highlight three changes that they intend to make in their anaesthetic practice as a result of attending the course. The following word map highlights the major changes noted, which were overwhelmingly: preoperative assessment and preparation of drugs and equipment, to use WET FLAG during resuscitation, and SBAR for handover. To improve on current neonatal resuscitation and increase safety of anaesthesia as a whole was also regularly quoted.
Summary

The first SAFE Paediatrics course to take place in Bangladesh was delivered successfully. It was well received with demonstrable improvements in both skills and knowledge of the delegates. The feedback has been highly complimentary with the vast majority suggesting further courses and more frequent refreshers. The Bangladesh Anaesthetic Society will hopefully undertake the follow up of delegate’s logbook. The provision of SAFE Paediatrics to many delegates who are teachers in their own right and the live streaming of some of the sessions on the BSA social media site should ensure that a wide audience will benefit from this one course and hopefully that will show dividends to paediatric care in Bangladesh.
Sick child demonstration

Intubating breakout session and WET FLAG calculations
Lecture delivery

Communication discussion
Appendix 1

Action Plans/Pointers to improve future Bangladesh courses

- Limit numbers to a maximum of 6-7 per group (28 maximum attending)
- Hold course in a non-clinical area to limit disruption to medical services
- More manikins to allow greater hands on practice, especially for intubation as well as insertion of LMA's
- Addition of Malnutrition chapter (instead of Sickle cell) into manual
- Take group photograph at the beginning after the pre-course tests and use this at each faculty meeting to identify future ToT candidates or those that require extra support
- Perform demonstration of sick child/BLS at beginning of the course to give expectation of what’s expected and how to add these skills together
- Addition of culturally sensitive material e.g. ethnic Wong and Baker facies

Desirable/on the wish list for future courses

- Addition of second paediatric anaesthetist or experienced in lots of paediatric anaesthesia would be useful especially in the more specialist breakout sessions
- Bangla speaking faculty member from UK made a huge difference and was a valuable addition in a very interactive trauma scenario
- More video's that have been developed and filmed in low/middle income countries rather than in UK
- Closer accommodation to venue to counteract very early starts and late return due to traffic