Report on Visit to Nepal November 22\textsuperscript{nd} to December 7\textsuperscript{th} 2013

Four doctors went from Southampton General Hospital to Nepal for this trip. They were Drs Oliver Ross (OCR), Kevin Boyle (KB), John Stubbing (JS) and Angela Denner (AD). The trip is organised with the Nick Simon’s Institute in Kathmandu and is to support Anaesthesia Assistant (AA) training and development in Nepal. This is another visit supporting the well established link between Southampton Anaesthetic Department and NSI to promote training and an upgrade programme for Nepali AAs. All except AD had been before several times. Therefore the group had an understanding of the complexities of Nepal, its geography and peoples, recent history, government problems and in particular its health issues.

Nick Simon’s Institute is a Nepali NGO who has been given responsibility by the Government of Nepal to promote and improve rural health care in Nepal to try to help the country achieve the WHO Millennium Health goals. One of their strands of improvement in rural health care is support for isolated AAs in remote health districts.

Nepali secondary health care is fragmented. There are government hospitals in each district, with district and some districts have larger Zonal hospitals. There are 5 regions in Nepal outside Kathmandu and each region has one Regional hospital. In addition there are a plethora of private hospitals and small clinics all providing some sort of health care, often confined to one specialty. For our link with NSI we deal almost exclusively with government institutions and government employed AAs.

The Anaesthesia Assistant - background

The anaesthesia assistant’s main role in Nepal is to work in remote districts (there are about 60 such districts) as the sole anaesthesia provider. In these districts there is not enough work for a full-time anaesthetist and the opportunities and existence in most of these centres are not attractive to doctors. In these situations the AA works under the surgeon or a multi-specialty trained doctor (MDGP).

In larger institutions there may be several AAs if the work calls for it providing a full range of anaesthesia techniques. In Kathmandu and about a half dozen centres outside the capital there are medically qualified anaesthetists. In these hospitals the AA works under the guidance of the doctor but will carry out spinal anaesthesia, IV ketamine sedation and axillary upper limb blocks totally independently. Some very experienced AAs in these settings will give independent GA anaesthesia – but in the centres like this usually the doctor anaesthetist is required for every GA, even out of hours. I have seen one centre where the AAs work almost like our Operating Department Assistants. Government AAs have no specific training in paediatric anaesthesia.

Anaesthetic Assistant Course

For the last three years the Nepal Association of Medical Sciences (NAMS) has sanctioned a 12 month AA Course (AAC) to train non-doctors to give anaesthesia. The course has a very well developed curriculum to give recognisably safe and straightforward anaesthesia to adults in elective and emergency situations. There is a significant focus on obstetric anaesthesia due to the case load. There is a considerable
amount of theory to back up the clinical practice. Five centres in Nepal are training sites, each with three trainees.

To be eligible for the 12 month AAC in Nepal requires either a previous training as a staff nurse, a health assistant or a BSc in medical sciences. This was not always the case for previous 6 month courses, which ran until three years ago.

When the course is completed and passed, these AAs are contracted to work in government hospitals for 3 years. They may well be working alone in a hospital right away but more likely will be put initially with a more experienced AA.

**Anaesthesia Assistant Upgrade Course**

As mentioned above, there used to be a six month course to train AAs. Excellent work on this was done by Dr Paul Foster (UK consultant) when he worked in Patan Hospital 15 years ago, and he trained many high quality AAs who are still working and we have seen practicing.

The government of Nepal no longer recognises this qualification, so NSI are working with Southampton to create an upgrade course with an exam at the end of it, to give these 6 month AAs a qualification equivalent to the 12 month course. About 50 of the AAs working in government hospitals in Nepal are eligible for this upgrade.

**The Trip Itself - JS**

For the first part of JS’s trip he visited Bharatpur Government Hospital, one of five places in Nepal currently training AA students on the new 12 month anaesthetic course (total 14 students). Bharatpur is a major centre and crossroads in Nepal and the hospital is one of the 5 main hospitals outside of Kathmandu.) There are 5 Regions in Nepal each one has one major (Regional) hospital. There are two medically qualified anaesthetists, five trained AAs and two in training, who JS would spend time with. His role was to observe their practice and comment on it; to question them on their theoretical knowledge and to provide a lecture from their course each day. He also observed the training they were receiving and took in the facilities and environment in which they were working.

Lectures presented from AA course; Section three

Difficult and Failed Intubation
Oxygen Delivery and Hypoxia
Monitoring the CVS under anaesthesia and general theatre awareness

JS had spent most of his time on previous visits in one Mission Hospital (Tansen). So this was an opportunity to see how the government institution worked in comparison. An obvious point is that the government working day in theatres ran from 10.00am to 2.00pm and outside these hours only urgent/emergency work was done. The main operating theatre had two tables and a neonatal resuscitation cot – when all three were in use the room was extremely noisy. Drug and equipment availability was the same as Tansen but anything broken could not be repaired. (Hence he saw the strange sight of an ENT surgeon spending 15 minutes putting back together a pulse oximeter probe
after a patient’s arm waving at the end of surgery had lead to the probe falling off and breaking on the floor. ) (Another example is the C-arm for theatre use has been broken for 8 months and hospital management works so slowly there is still no repair undertaken.) There are two working anaesthetic continuous flow machines, both in good condition. There was a UAM, but it was not liked and was parked in the corner of a minor ops theatre and used only for delivery of oxygen to patients receiving IV ketamine anaesthesia.

After 4 days in Bharatpur JS returned Kathmandu and spent Friday morning at NSI going through the techniques and equipment needed for the FEP (Follow-up Enhancement Programme) visits JS and KB were to undertake next week.

**Follow up Enhancement Programme (FEP) (see Dr Ollie Ross’ s Sabbatical Report 2012 for comprehensive overview of AA FEP)**

This is a one day assessment of the AA trained under the previous regime of a 6 month training. Done in-post, it looks at their knowledge, at the techniques of basic airway management, intubation at RSI, use of the laryngeal mask airway as a rescue for failed intubation and spinal anaesthesia. Then there is a section teasing out their ability to identify, assess and manage the common complications of spinal and GA. A major component of the assessment is one-to-one coaching of their knowledge around an initial MCQ. In all these situations patient safety is the predominant issue. Assessment of complications is done using the ABC model. Understanding of their facilities and the general context in which they work as well as their personal aspirations is part of the general assessment.

JS went to three centres in the Western Region of the country, and this included all three types of government hospital, from a visit to a District hospital where the AA was sole practitioner, through a Zonal Hospital where there were 2 AAs and a supporting medically qualified general physician who also did anaesthetics, to the Regional Hospital for this part of Nepal in Pokhara. Here the set up is lead by 4 specialist anaesthetists, there are 4 junior doctors in training and 3 AAs, one of whom was being assessed. For these assessments JS was helped by an NSI Nepali (Lisa Dali), non medical but who has done many of these before with OCR and also other FEPs in non-doctor groups.

Collated information on the FEP test results is kept at NSI which will also coordinate upgrade programmes for interested and appropriate AAs.

**Rupendehi District Hospital:** The AA there was Sarasuti. She was trained at Tansen by Dr Steve Pickering (Australian anaesthetist) 6 years ago. In her current position there are no GAs, and she performs spinal anaesthesia for emergency C Section, about 6 cases a month. She provides very occasional ketamine IV sedation and diazepam sedation for lap sterilization. She scored 32/40 in the MCQ and after coaching scored 40/40. Skills were good and complication management also good. There was a relatively new Boyle’s machine, but no vapours were available, the machine was never used. Oxygen by cylinder was available. Sarasuti was keen to be involved in the AA Upgrade programme.
Lumbini Zonal Hospital, Butwal. Here we undertook a FEP on Gunakala. She had trained for 6 months at Maternity Hospital in Kathmandu 4 years ago. She had been working in Butwal for two years after more exposure to anaesthesia in a gynaecological surgery camp. She told us she did not do GAs and was one of two AAs who with a part-time doctor anaesthetist did just over 100 spinals a month between them. There were 3 Boyle’s machines, two had both isoflurane and halothane and the third halothane alone. She scored 31/40 in the test and after coaching scored 40/40. Although she informed JS she did not do GAs, he witnessed a 50kg patient receive midazolam 2mgs and propofol 50mgs, lose consciousness and require airway support with no facilities for airway support and the AA who could not do jaw thrust and chin lift properly! In addition she was not aware of the term “Total Spinal”.

Western Regional Hospital, Pokhara. This hospital has 4 specialist anaesthetists, a further 4 in training and 3 AAs. Our AA was not available at short notice so the other AA who had received 6 months training at the Teaching Hospital in Kathmandu stood in. Shivaji does not give anaesthesia or spinals but helps with preparation of anaesthesia by the doctors. Her MCQ score was 33/40 and after coaching 40/40. Her skills were less good, not surprisingly, but she understood the theory of the skills well. Also she was rusty on the management of complications. Shivaji was keen to be involved in the AA Upgrade programme.

JS met with 3 of the 4 anaesthesia specialists during his visit. They all agreed that they would be keen to have AAs on the 12 month course, if the hospital superintendent allowed it. This is information for NSI to consider when planning placements for the next 12 month course.

Acknowledgements:

All four Southampton doctors are grateful to Nick Simon’s Institute for their efforts in the organisation and funding of all internal trips. Additionally all NSI staff we have met have been extremely kind and generous. We are also grateful to the Association of Anaesthetists of Great Britain and Ireland for their funding of this project in Nepal.

OCR, JS, KB and AD
December 2013
AMDA Damak Hospital, Nepal
24th-27th November

Dr Kevin Boyle and Dr Angela Denner, University Hospital Southampton

Three Anaesthetic Assistants (AAs) were working on our first morning under the supervision of Dr Nabin, anaesthesiologist and medical supervisor. Over the course of the first day we witnessed several Caesarean Sections under spinal anaesthesia undertaken by all the AAs. A gynaecological case was also performed under spinal anaesthesia.

Whenever the operating theatre was inactive, we both went along to see the activity in the minor operations room. There, we witnessed a ketamine anaesthetic for debridement of an occipital wound. This was the only general anaesthetic case we saw during our stay. Several cases, including debridement of infected soft tissue, proceeded under local anaesthesia.

The second day was similar to the first. Kavita, one of the AAs, had had to leave early the previous day but was present on the second day and took full part in the work. We saw similar cases as previously in the minor operations room and also noticed a patient having electroacupuncture. Dr Nabin has an interest in chronic pain.

We had asked Dr Nabin if we could have some protected time with the AAs for teaching which he readily agreed to and so we set up in a clean comfortable teaching room, set apart from the theatre area.

Dr Silash, the second anesthesiologist working at AMDA, remained on duty with one AA to help him (Kavita).

Dr Denner presented a review of pre-eclampsia and we all took part in group discussions on postpartum haemorrhage and resuscitation.
On the third day there was little happening in theatres and we took the opportunity to be shown around the hospital by one of the AAs, Kamala. After a farewell lunch, we spent the afternoon visiting another AA, Suresh, whom Dr Boyle had taught on the AA course in 2009. He now works exclusively in a private hospital in Damak. He showed us the facilities there and we finished up by visiting the snake bite clinic nearby where he had previously worked.

Assessment:

We noticed some very good aspects of practice undertaken at AMDA.

Firstly, our experience was that supervision from one of the anaesthesiologists was always closely available and we noted that the AAs would readily discuss cases, while being quite able to work independently. The AAs looked at the preoperative case notes and checked blood results etc.

Technically, all AAs were very adept at the conduct of spinal anaesthesia. Attention to sterility was good during the conduct of the spinal. The betadine antiseptic however was cleaned off with a spirit wipe rather than it being allowed to evaporate. This is a widespread practice and we suspect it will not change.

The height of the block was tested correctly in every case and vital signs duly recorded on the anaesthetic chart. The AAs clearly cared about the patients and reassured them appropriately.

They prepared for the eventuality of a spinal failing and had all the correct drugs and equipment to hand.

They recognised the pre-eclamptic patient's need for magnesium and administered it correctly. Aware that there was no dedicated recovery area, one of the AAs kept her patient in theatre until happy with her condition - in effect using the operating theatre as a recovery unit.
We had the opportunity to examine Kamala's logbook which had clearly itemised the number of spinal C-sections she had performed. She also had sections in her logbook which accounted for general anaesthesia cases observed.

The AAs jointly demonstrated a good attitude and worked diligently and without fuss in a cooperative fashion.

Inevitably, there are areas that ideally should be addressed for the benefit of staff and patients:

**Sterility:** We were concerned that patients are expected to lie on dirty, reused and blood-stained sheets for their surgery. There were insufficient numbers of sinks with warm water, both in theatre and on the ward. Staff would routinely go from patient to patient without hand washing creating conditions for cross-infection. There was no provision for alcohol wipes or gel.

**Equipment:** Anaesthesia monitoring was very scarce with a combination of partially working monitors being relied upon. There is no readily available backup for these monitors in the event they should fail completely.

There is no currently used area for recovery. Interestingly, there is an area which could be used and seems quite suitable. This is reserved however for ENT surgery which has taken place sporadically in the past and which may resume. However, it seemed to us that if such surgery is reinstated, it could easily take place in one of the two existing theatres. Staffing would of course have to be provided.

We could not fail to notice that the bleeping from the ECG or saturation probe was always turned up to the maximum setting. This was designed so that the anesthesiologist could hear from a distance, so in fact this could be regarded as a safety device. However, to western ears this would be considered unacceptable and distracting.
Laboratory backup: The AAs are usually confronted with patients without up to date blood results. For example, a patient with pre-eclampsia could have an unrecognised low platelet count at the time of requiring C-section.

The place of general anaesthesia: A further concern is that the AAs have now obtained a significant exposure to witnessing general anaesthesia and we suggested to both them and Dr Nabin that it may be time to begin undertaking simple general anaesthetic cases. He has told us that he will do this. To our eyes, several cases took place in the minor theatre under local anaesthesia that seemed to warrant full general anaesthesia. We noted that anaesthetic staff were available at those times. This concerned us, particularly in the cases of children who were obviously in pain during their procedures.

However, it must be said that they were stoical and seemed quite settled once the procedures were finished.

Anaesthetic practice: There seems to be poor understanding around the need for term patients to avoid lying supine. As the fetus is not monitored there is no understanding that fetal distress may be occurring. A bag of fluid is routinely placed under the right flank just prior to incision, with doubtful results. Patients often lie supine while spinal anaesthesia is being prepared. The WHO checklist in not in use. We imagine that this will be difficult to institute as most of the surgery is obstetric and there is such a small pool of theatre staff.

Dr Nabin has expressed an interest in the 'Lifebox' which may prompt adoption of the WHO checklist. He will follow this up. We encouraged the AAs to keep a record of interesting cases and events so as to reflect upon them rather than just itemise cases done.

Other AAs: Finally, AAs sometimes go to work exclusively in private hospitals as is the case with Suresh. We were concerned that he had little support and very little equipment available to him. In fact he has the most basic of resuscitation equipment, having no anaesthesia machine, intubation kit or adequate monitoring. He felt that what he needed most of all was a 'senior'!
We wondered whether the anesthesiologists had had any opportunity for CPD but we did not inquire.

Finally, we were treated with wonderful hospitality and made to feel very welcome.
Report of FEP visit to peripheral hospitals in Nepal, November 2013

Dr Kevin Boyle, Consultant Anaesthetist, University Hospital Southampton

As part of the Follow-up Enhancement Programme (FEP) organised and run by the Nick Simons Institute (NSI), I visited three outlying hospitals and spent time with three anaesthesia assistants (AAs). On all visits I was accompanied by two training co-ordinators from NSI who facilitated and acted as translators when required. The co-ordinators conducted an inquiry regarding how well the hospitals meet the criteria of an enabling environment and collected such data on the FEP form.

On the first day we visited Bharatpur government hospital where we assessed Meena, one of the AAs who had been trained in 2006. She has been working since then under the supervision of an anaesthesiologist. This hospital undertakes some 500 cases per month, including spinal and general cases and therefore Meena has gained a lot of practical experience.

She scored reasonably well on the pre-test MCQ and was very competent in performing spinal anaesthesia during her assessment on the manikin. Airway management too was good (basic airway and simulated rapid sequence intubation). She performed well in the case scenarios concerning management of high spinal block, hypoxia, postpartum haemorrhage and ketamine anaesthesia. She did require some coaching however and responded well to this. She did not keep a log book and was encouraged to do so as well as to undertake some reflective practice. She considered the process valuable.

The second FEP visit was in Hetauda Hospital in Makwanpur. Unfortunately this hospital has been without a working operating theatre for more than one year. However, we were able to contact the AA, Hari, who had been working there and who is hopeful of resuming work there soon. He does occasionally undertake spinal anaesthesia cases in a private hospital, the last of which was two weeks previous.

As Hari was available and consenting we proceeded with the assessment and coaching. His performance on the MCQ was mediocre. However he seemed technically good on all aspects of spinal anaesthesia. He would not perform general anaesthesia in his normal practice but we proceeded with the airway coaching in any case. Not surprisingly he was rusty on the case scenarios and needed extensive coaching. He seemed happy to have undertaken the assessment and found it educational. Under the circumstances, there was no working environment to assess.

Our final visit was to the Children’s Spinal and Rehabilitation Unit, some 25km from Kathmandu, where the AA, Sova, has been working since her training in 2008. Her workload is purely elective and paediatric. We conducted the assessment as in the previous two cases, understanding that she had no experience of emergency Caesarean Section or adult anaesthesia. She performed poorly in the MCQ, possibly resulting from a lack of understanding of the process as coaching revealed she often knew the correct answers. She was very capable on the practical spinal and airway assessment, however needed considerable coaching on the case scenarios.

In summary, the AAs I met undertook varying amounts of work in different patient populations. They are very capable in the practical aspects of spinal and anaesthetic provision, less so in their understanding of complications and their management. While the style of teaching was foreign to them they all said that they enjoyed the experience.

I have taken the liberty to add some personal comments below.
I believe that such stand-alone teaching has limited benefits and would benefit best if part of a wider teaching programme. The AA upgrade course would seem tailor-made for such circumstances.

Undertaking such FEP visits as described is expensive and time consuming. Potential improvements perhaps worth considering would be to arrange for several AAs to be assessed in the one hospital or even arranging for them to come to a central hospital for the clinical training. The assessment of their working environment could then be undertaken by visiting co-ordinators.
Southampton-Nepal Anaesthesia Partnership Interim Report December 2013

Overall program

A well-established link between University Hospital, Southampton Shackleton Department of Anaesthesia and colleagues in Nepal is in support of the Government of Nepal’s Anaesthesia Assistant Program. Anaesthesia assistants are non-doctor anaesthesia providers and from the bulk of anaesthesia providers outside the capital, Kathmandu.

Southampton’s program is in partnership with the Nick Simons Institute (NSI), National Academy of Medical Sciences and the Government of Nepal National Health Training Council (NHTC). Our work is entirely in support of existing programs, led by Nepali organisations and in support of national health objectives.

This link has been and continues to be generously supported by the AAGBI.

Dr Ollie Ross’ s report to the AAGBI in 2012 provides background on the AA program, AA follow-up and coaching and future plans in development in Nepal.

Current Southampton partnership activities are:

1. Support to current 12 month AA training centres
2. In-service follow-up and enhancement /coaching: FEP
3. AA Upgrade course development (Ollie Ross)
4. Data analysis, reports, research
5. Continued liaison with Nepali anaesthesia leaders

AA Upgrade course development is an on-going project with regular work here from the UK; project log frame and proposal submitted to the AAGBI (summary follows below). This course is being developed by NSI in partnership with NHTC and Southampton.

AA Upgrade Project Summary (indicators not shown)

Overall goal to which the AA Upgrade project contributes

Improved CEC and surgical outcomes at government district and zonal hospitals (towards MDG 4 and 5)

Overall AA program outcome

Sustainable safe anaesthesia continuously available at target government district and zonal hospitals
**AA Upgrade project outputs**

1. There is a fully functional institutionalised AA Upgrade program (to form a continuous professional development program)
2. 6-month trained AAs at every target DH and ZH are Upgraded and government certified
3. Essential drugs and equipment (EE) available at each hospital at all times
4. Regular local and central data-basing of all anaesthesia cases by AAs in AAU
5. Working AAs are professionally supported.
6. AA supervisors are up-skilled in anaesthetic emergencies and WHO Safe Surgery Checklist in a refresher course

**Major activities required**

1. Develop and run AA continuous Upgrade program for target 6 month trained AAs
2. Accredit (continuously and by examination) and professionally register all AAs who have completed Upgrade program
3. Develop and embed continuous data-basing of anaesthetic cases by use of local and central logbooks
4. Develop a sustainable network of support for AAs based on ongoing continuous professional development (CPD) and mentoring system
5. Develop and embed essential equipment and drugs QI
6. Develop and run anaesthesia refresher course for supervisors

Most recently, a two-week trip (November 22-December 7th) was undertaken by four consultant anaesthetists from University Hospital, Southampton. They were Drs Ollie Ross (OCR), Kevin Boyle (KB), John Stubbing (JS) and Angela Denner (AD).

As usual, the trip is organised and coordinated by the Nick Simons Institute, Kathmandu ([www.nsi.edu.np](http://www.nsi.edu.np)).

All except AD had been before several times.

Dr Ollie Ross worked at NSI in Sanepa, Kathmandu for the whole two weeks on AAU program development, planning and content. This continues work throughout the autumn on this program in Nepal and Southampton.

Attached are three reports from Drs John Stubbing, Kevin Boyle and Angela Denner.

Once again, we are very grateful for the on-going support from the AAGBI.

Dr Ollie Ross, December 15th 2013
I visited Tansen Mission Hospital for 5 days and observed a variety of operations and anaesthetic techniques. The surgical department at the time of my visit consisted of orthopaedic, gynaecology and general surgeons (some of whom were short term visitors from other nations).

The anaesthetic department consisted of 3 anaesthetic assistants (AAs) in training, a number of experienced non-doctor anaesthetic providers and a consultant anaesthetist from Australia. He is the principle author of the anaesthetic assistant’s teaching course and is currently posted in Tansen for a year.

I saw a number of operations in “main theatres” including: laparoscopic cholecystectomy, vaginal hysterectomy, total abdominal hysterectomy, corrective osteotomy of the clavicle, ORIF elbow, various hernia repairs, emergency laparotomy, DHS for fractured neck of femur, shoulder ORIF and spinal decompression.

Tansen has a high burden of trauma surgery due to poor road safety standards and an increased incidence of trauma in the general population, owing to various accidents eg falling out of trees. There is also a high incidence of foot ulcers/wounds due to open footwear and unpaved streets.

I also observed a number of minor operations in a separate “minor ops” theatre. These included simple procedures such as incision and drainage of abscesses and closed reduction of fractures. These were done under axillary nerve blockade, ketamine sedation or a combination of both.
I did not observe any C-sections although these are performed regularly at Tansen.

There was a half day of protected teaching for the AAs which consisted of tutorial style teaching on muscle relaxants and cardiovascular physiology.

Following the morning meeting where the overnight admissions from all specialities were presented, I joined the surgical ward rounds to assist with anaesthetic pre-operative assessments. A number of patients were postponed or cancelled during my visit because of uncontrolled hypertension.

The hospital is well-equipped with a laboratory for blood tests and has a system for procuring blood donations from relatives where possible. ECGs and basic plain film radiological investigations are also available.

The AAs were well supervised by either a doctor anaesthetist or the more experienced of the non-doctor anaesthetic providers. The AAs seemed competent in providing spinal and general anaesthesia.

The theatre team worked efficiently to get through cases and there is a recovery area to accommodate and monitor post-op patients.

The paediatric patients were very stoical and tolerated separation from their parents very well. I observed a number of axillary blocks being performed on awake paediatric patients using the landmark technique (the youngest of these being a 9 year old).
The theatres were equipped with anaesthetic machines and piped gases (including nitrous oxide). Halothane was readily available, as was volatile scavenging.

There is no gas monitoring in theatres or automated ventilators. Many of the theatre issues experienced in the western world were present eg suboptimal functioning of the diathermy, minor disagreements about the ambient temperature of theatre and surgical discontent with the degree of muscle relaxation! However, it should be noted that reliability of drug efficacy is not infrequently an issue in Nepal. The WHO checklist was rigorously performed in theatre by the anaesthetic team.

There was an occasion where one of the AAs didn’t seem to recognise an obstructed airway in a paediatric patient and I intervened but generally I felt that anaesthetic practice was safe. There was a strong work ethic and a cohesive team.

I thoroughly enjoyed my time at Tansen hospital and came away with the impression that it is a very well-managed hospital in a resource-poor country that delivers excellent training for non-doctor anaesthetists.