Report for CNIS – USTOP

Nursing Courses at Mulago National Referral Hospital, Kampala, Uganda and Nursing Education at Mbarara and Fort Portal Hospitals September 2015

Audrey Hiebert, RN, BSN, CPN(C)

Background

UBC affiliated surgeons have taught and worked at Mulago Hospital, Kampala during numerous trips over the last six years. In February 2012, USTOP perioperative nurses identified perioperative nursing issues and as a result, a collaboration between the Canadian Network for International Surgery (CNIS) and USTOP was formed to provide structured perioperative nursing education. Ugandan nurses who are part of the perioperative team do not have specialized training for the operating room and often lack the knowledge and skills to provide safe patient care. The CNIS "Safe Surgery Saves Lives (SSSL) nursing course" has been taught at Mulago Hospital to nurses from various theatres, including non-orthopedic theatres, five times. The USTOP team works with and shares their knowledge and skill with the orthopedic surgeons, residents and nurses in the orthopedic operating rooms. Please refer to previous reports for background of past work.

What happened

Mulago Hospital

The nurses currently working in Ward 7 theatre and the Ortho Trauma theatre had taken the SSSL course once or twice already. In light of this, Genelle Leifso and Audrey Hiebert, CNIS certified instructors, discussed additional education the theatre nurses needed instead of repeating the same course. An outline and teaching plan for two separate one-day courses was developed. The course for the first day was titled "Essential Skills for Perioperative Nurses" and the second day's course "Sterilization Principles".

Audrey was in email contact with Vickie Sebudde, charge nurse for Ward 7 Theatre, and arranged for the attendees and location. The two courses were planned for the two Saturdays, but Vickie requested the day change to the Fridays. She said Friday was a "cleaning" day for Ward 7 Theatre and felt more nurses would attend if the courses were held on Fridays. The intent was to have a small group and provide lots of opportunity for interactions and hands on work.

Sept 11 – The Essential Skills for Perioperative Nurses course included lectures, demos, skill sessions and role play covering:

- what do perioperative nurses do, why, when, where and how and whom for and with whom
- aseptic principles, sterile field monitoring, aseptic technique, opening sterile items
- scrubbing, gowning, closed gloving, gloving others
- teamwork
- sponges and sutures
- counting
- Surgical Safety Checklist

Sept 18 – The Sterilization Principles course included lectures, demos and skill sessions covering:

- transmission of infection
- asepsis principles related to sterilization
- cleaning and preparing instruments
- packing and processing surgical instruments and supplies
- indicator tape
- sterilization process, loading and drying
- wet packs
- applying ethics to the sterilization process
- sterile supply storage
- theatre cleaning

Audrey taught both courses to nurses and theatre assistants, mainly from Ward 7 Theatre and the Ortho Trauma Theatre. 10 participants attended day 1 and 12 participants attended day 2. Christine, charge nurse from CAS attended both days and Sheila, charge nurse from Private Patient Theatre attended the second day. Michelle Lord, a perioperative nurse from Alberta who was with USTOP for a second time, assisted with logistics and skill sessions for the course on day 2.

Lawrence Buchan, biomedical engineer with this USTOP team, provided a session to the nurses on use of the reusable drill cover including drill safety, loading, unloading, cleaning, sterilization and tracking usage. His session included a PowerPoint presentation, demonstrations and hands on practice. No bleach for the drill cover bag or chuck adaptor was stressed.

The courses were paired with four days of in-theatre coaching and mentoring by Audrey and Michelle, who assisted the nurses to put their new knowledge into practice and continued informal teaching as they answered questions and addressed practice issues. The Canadian surgical team (surgeons and nurses) was able to model a team approach to perioperative patient care, including consistent implementation of the WHO Safe Surgery Checklist.

Safe surgery requires partnership and cooperation with all members of the perioperative team. Audrey was able to address this as she was given the opportunity to present the Surgical Safety Checklist (SSCL) to the first and second year orthopedic residents at the Basic Bioskills course and to the third and fourth year residents at the Advanced Bioskills course. They were an attentive and interactive audience, asking questions about the SSCL. This was a wonderful opportunity to encourage the residents to participate in a culture of safety with their teams.

There were additional opportunities to assist in the continuing education of residents and nurses. These included small group sessions on scrubbing, including a scrub with alcohol when no water was available, gowning, closed gloving, aseptic technique, surgical site marking, etc.

Some of the USTOP team members went to Fort Portal and some to Mbarara the second week. Both of these sites have an orthopedic surgeon who recently graduated from Mekerere University/Mulago Hospital.

Mbarara Hospital - Summary of teaching provided (Audrey)
- One on one education or group of 2 – 3 – no formal classroom sessions
- Scrubbing
- Gowning/closed gloving
- Aseptic principles
- Wet table/wet apron – strike through
- Not flipping
- Counting
- Drill cover use, care, cleaning and sterilization
- Cleaning instruments, cleaning before bleach and soaking in bleach only 10 min, taking instruments apart to clean, cleaning under water.
- Preparing instruments
- Wrapping instruments
- Autoclave tape – to include a small piece on the inside too
- Removing old autoclave tape (old tape destroys the linen – hardens and breaks the material; unable to determine if the tape is new or old so not reliable as a sterility indicator)
- Intraoperative – passing instruments, measuring screws, cleaning instruments intraop
- Rothrock textbook, Alexander's Care of the Patient in Surgery and ORNAC Standards given to them
- Spent time with charge nurses Paula and Rose – teaching re above as well

Fort Portal Hospital - Summary of teaching provided (Michelle)
- One on one teaching as staff often between the two ORs
- Drill cover use, care, cleaning and sterilization
- Residents and medical students need education re gowning and prepping

- Charge nurse receptive to information and questions, said she'd be willing to organize some group teaching if contacted ahead of time. Stated she wasn't aware of USTOP coming although there was a posted letter from Dr. Pariyo with the dates
- Staff in the theatre receptive to teaching

Comprehensive Rehabilitative Surgery Uganda (CoRSU)

I visited CoRSU Hospital upon invitation from Norgrove Penny. He requested that the SSSL nursing course be taught at CoRSU on a future trip. I met with Halima Hussein, head of nursing, to assess the needs in the OR and discuss the course material. She has a vision for change and improvement in nursing care at CoRSU. She expressed that she would like to see the course offered as soon as possible and would have welcomed the SSSL course to have occurred on this trip. I went into the ORs upon her request and provided her with a short assessment regarding the perioperative nursing practice. Norgrove and Halima would like the SSSL course to be taught at CoRSU on the next trip.

Global Partners in Anesthesia and Surgery (GPAS) Conference

I was provided with the opportunity to present at the GPAS conference in Entebbe, Uganda. "Responding to the Need for Additional Knowledge and Expertise for Theatre Nurses in Uganda" was shared in both an oral presentation and a poster presentation. The CNIS Safe Surgery Saves Lives nursing course was emphasized. A highlight for me was Victoria Sebbude, charge nurse for Ward 7 Theatre, presenting with me. She was the only Ugandan nurse speaking at the conference and spoke about the value of the nursing education from CNIS/USTOP and the various barriers the nurses face in implementing the new knowledge they receive.

Community participation / contributions

Nathan O'Hara, the USTOP Program Coordinator, organized the trip with Dr. O'Brien and Dr. Blachut and looked after all the logistics, including the trips to Fort Portal and Mbarara. At Mulago, Monica Kabagambe, GPAS Office Coordinator, assisted with arranging for a projector, booking the caterers and distributing the transportation fee. Vickie Sebudde invited the attendees. Ward 7 Theatre staff (including the theatre attendants) brought chairs from the ortho department to Ward 7 Theatre for the courses.

Education resources brought to Uganda included an Operating Room Nurses Association of Canada (ORNAC) Standards, donated by Abbotsford Regional Hospital and a Rothrock perioperative textbook donated by Genelle Leifso. Both of these were given to Mbarara Regional Referral Hospital.

Mbarara University provided the bus and drivers to transport the team to Mbarara from Kampala.

Results

The courses at Mulago were held in the Ward 7 Theatre. The venue worked well for the skill sessions as scrub sinks, autoclaves, prep area, sterile supplies and a theatre setting were available for realistic demonstrations and practice. The presentations were done in the hallway and the skills sessions were done in the theatres, which was air-conditioned. The plan was to hold the courses in the prep area or the theatres but Vickie wanted the hallway used and this worked although it was very warm. She did not want chairs brought into the theatres and the prep area would not have worked due to the autoclave noise. A sheet hung over the doors to the OR provided the screen for the PowerPoint presentations.

There was good lively discussion among the participants. The two charge nurses from other units had numerous questions and Ward 7 Theatre staff answered a lot of the questions. Vickie showed the two charge nurses around her theatre, including the sterile supply storage, instrument prep area, etc. The Ward 7 Theatre staff answered a lot of the questions participants from other theatres had. It was encouraging to see this sharing of knowledge.

The participants answered quiz questions on day 2 after each presentation and showed a good grasp of the material presented. The two courses were a good start to addressing some of the knowledge gaps of the theatre nurses.

Certificates were awarded to the participants at the end of each course as well as an OR cap.

It was encouraging to see some of the education being put into practice. A number of the surgeons/residents were observed marking the surgical site and initiating the SSCL before incision. It was discouraging to see the understaffed Ortho Trauma Theatre nurses (only two nurses for two cases running at the same time) overwhelmed with their workload and not participating in the theatre as a scrub nurse at all or a circulating nurse for most of the time.

Informal teaching occurred in the theatres at Mbarara and Fort Portal Hospitals. The teaching was well received and the nurses indicated they would like a formal course to learn more.

Observations from Theatres

Observations from the individual theatres is captured here to assist the next USTOP group in assessing any changes.

Ward 7 Theatre

- Staff – Vickie (in charge), Beatrice, Yona, Alfred, Joyce and Francis (theatre assistant 2 days/wk) No new staff since April 2015 and the loss of three staff – Elizabeth, Joseph and Stella
- Surgeons and nurses were on time to start the slate but numerous times anesthesia was late
- Surgical lists planned, equipment and implants available (except a plate for one case)
- Lack of communication between docs and nurses about next case – difficult to prepare
- Decreased linens, gowns and wrappers in terrible condition, holes in table covers

- Cases cancelled because no linen packs
- No towels are being used for outer wrappers – an improvement
- Bottom of pans dirty with debris and linen lint
- Vickie informed re need to wash filters on pans before reusing
- Reusing "clean" wrappers without laundering because of linen shortage
- Bleach/soap/rinse process – instruments being cleaned of blood and tissue on the field
- Instruments in good condition and adequate amounts, short of implants
- Organization of implants needed, boxes of nails, etc. Do they know what they have?
- Small autoclave working, large autoclave not fixable, Godfrey continues to work with the autoclaves
- No indicators, no steam autoclave tape (just green gas tape – the hospital purchasers need to purchase the correct product)
- Have system of pre and post autoclave pack placement (but someone from another dept came to borrow something and went off with an unsterile bundle. Vickie has to run after them to retrieve it) No indicator on the outside to indicate whether pack is sterile or not.
- Vickie/Beatrice led SSCL for most cases
- Often anesthesia not aware of SSCL. On two occasions, surgeons led SSCL
- One day – one anesthetist between three patients
- Monitors on anesthetic machine not functioning, had two lifebox pulse oximeters and two manual BP machines
- Antibiotics being given preop
- Electricity down more. Generators not working. Surgery cancelled or working in the dark
- Joyce – aseptic technique not as good as Yona and Alfred who have good technique. Still flipping gloves
- Site marking not always done. I set up the skin marker pen in a marked container by the poster on the wall in the receiving area and spoke with the nurses and residents.
- Patient arriving from ward without ID band on. Vickie placing white tape patient ID on. Reminded her to place it on their arm, not the operative site.
- Counting – about 50% of the time
- Cautery working well but cauteries are now being "sterilized" in formalin soaked towels and are wiped with saline soaked gauze before use

CAS Theatre

- Five staff were still there from April 2015 - Teddy, Enock, Joy, Samuel and Nancy; the rest were new staff. Brenda was a new grad there in April 2015, not hired but working for free. She was very interested in theatre nursing, a keen learner and already teaching others what she had learned. She wasn't hired after a year of working for free and has now been hired on the Burns ward. Hannah, the charge nurse in April 2015, who had lots of theatre experience, has also been

moved to the ward. The new charge nurse, Christine, was in Maternity for 10 years and was in CAS now for just one week.
- The nurses in CAS were not counting or using the SSCL. They tended to sit outside of the theatre during the cases and had to be called in to assist. The unit storage area is still a heap of unorganized chaos. The CAS theatre is in the Main Theatre area now and their sterilization takes place in the Main Theatre. Some of the sterile packs had autoclave tape, some did not.

Trauma Ortho Theatre
- Two nurses – Sarah (in charge) and Alice Janet
- Located in previous psychiatric building – space not adequate for washing and preparing instruments and packs. Packing is done in the entrance to the OR, a tiny room that also houses the sterile stores supplies, linens, and autoclave. Change room is in a bathroom
- Two OR beds in the theatre with a shower curtain strung between. One anesthestic machine, one pulse oximeter, one manual BP cuff, no CO2 absorbant, anesthetic gas exhausted into room, no OR lights, one suction in a suitcase (not sure if it worked)
- Theatre has been set up with very little equipment or supplies. Not enough linens to wrap instruments or make packs, very few sutures.
- Wrapped sterile instruments, "pick pans", gauze, linen packs, etc. are all stored in the theatre Instruments mostly in "pick" sets. Residents help themselves and contaminate sets and lifting forceps.
- Critical instruments missing from sets, lack of instrumentation
- Glove wrappers used for filters on pans
- Inadequate brushes to clean instruments
- Soaking instruments in bleach for 30 min or more. No clocks or timer. Taught re soaking in jik (bleach) for 10 min max and cleaning instruments before jik. No cleaning done at present before jik soak.
- Reusing linen without laundering – teaching provided
- Using gas autoclave tape – teaching provided
- Using small sterilizer in unit and Ward 7 Theatre's autoclave (encouraged them to test their autoclave when the steam indicators and tape would arrive the following week)
- Removing packs from autoclave when they are hot and wet – teaching done
- Not using the SSCL, even after the course – provided more education and a laminated SSCL
- Little nursing presence in the theatre – nurses say they are overwhelmed with the workload - washing and packing instruments, obtaining supplies, folding linen, setting up for cases, two cases running at the same time, etc. Michael, an OR aide, does some of their running errands and washing instruments.
- I stressed the need for nurses being in the theatre to assist with patient care using the example of the patient who desaturated in the middle of a case and needed to be intubated – only one anesthetist between two patients and no nurse was present or available when called.

- Anesthetist arrived late most days and delayed start of surgery (the one day that the anesthetist arrived early and was all set up, the first patient was delayed by 2 hours for various reasons, mostly miscommunication and lack of action)
- Two cases occurring at the same time – implants and infected cases side by side. One anesthetist between the two patients

Main Theatre

- No orthopedic surgeries were done in the Main Theatre and therefore their practice was not observed. Sister Agnes, previous in charge, has moved to a ward. She will return after the renovation to work in the Organ Transplant Theatre.

Spine Theatre

- All nurses except charge Oliver have left since April 2015
- Not doing checklist consistently, not counting any more
- Did not spend any time observing or teaching in spine theatre. Spent a short time with Oliver, asking for an update on practice and encouraging her to follow safe surgery principles

Mbarara Theatre

- OR open 24/7 for emergency surgery and C-sections.
- 4 theatres and one pre anesthetic room, which was being used as a theatre too
- Patients recovered in admissions area – no one assigned to patient post op, have a large recovery room but it is not being used
- One nurse or less per theatre. Nurses did not scrub.
- Have a second floor identical to the OR, not being used, no equipment in it
- Few working suctions
- Paper SSCLs available in each OR and a laminated SSCL was posted on the wall with a big sign, “Have you done the WHO Surgical Safety Checklist???”, but checklist was not being used at all. An Al Jazeers TV documentary showed this hospital using the checklist all the time.
- Count sheets available in each OR but also not being used
- Instruments – soaking bloody and dirty instruments in jik for an indefinite amount of time (in bucket on floor), then soap water and a rinse. Instruments in pans dirty, rusty, many not usable e.g. depth gauge – stuck full of old blood and debris – instruments not being taken apart. Are using a big brush – that’s it. (I gave them some toothbrushes on day 2)
- Labeling instrument packs with a piece of cardboard tied on
- Using small piece of steam autoclave tape on the outside wrapper (not removing old tape though)
- two working steam autoclaves (third one not functioning)
- Have new lead aprons – great condition (long to floor and heavy)
- Working C arm

- No ID bands – there were some for the newborn infants
- Not great cleaning of theatre – said there was a cleaner but often the nurse cleaned, not all tables, etc. were wiped clean
- Lifting forcep used for picking instruments and gauze – not sure how often it was sterilized, same for picked sets, not sure how often these are sterilized or how used instruments are sterilized and replaced
- Using cidex to sterilize some items – 30 min. Teaching done re increased time needed for sterilization. (Paula looked it up on the internet the next day and said the info she found said 20 min for disinfection and 8 hours for sterilization)

Fort Portal Theatre – Michelle Lord's observations
- Two operating rooms and an assessment room where minor procedures are done, an additional OR in the maternity unit
- Three shifts of staff – one charge nurse (not in the ORs at all), one other nurse and the rest were theatre assistants and attendants
- Admission and recovery of patients takes place inside the patient entrance
- Only one working anesthesia machine
- One anesthetist, an additional anesthetist scheduled to arrive in October
- Two cases run simultaneously if one is a GA and the other regional
- Anesthetist and nurses on time for work
- Large instrument processing area at the back of the building but only a small area is being used
- Instruments are picked from sets between the two rooms
- No autoclave tape or indicators
- Orthopedic sets: one small and one large fragment set, one bone set, one drill – all kept locked in the charge nurse's office. New scrubs and new instruments in charge nurse's office as well
- Drill was sterilizable but was not being sterilized
- Sets wrapped in cloth and some instruments in peel packs
- Small sterilizer in one OR, used frequently but staff didn't know how to fully operate (frequently locked after a cycle, staff didn't know how to vent the steam)
- Cloth packs often damp, moisture seen in some peel packs
- Most of the instrument processing happens at night – Michelle did not meet the night staff. Teaching information from Michelle did not relay to the night shift. e.g. new drill covers – chuck and key processed in different sets and the cover was drying and not sterilized at all
- Orthopedic instruments in poor condition, broken, rusty, very limited drill bits
- SSCL signs posted in both ORs by infection control but no teaching done
- No C arm

Unanticipated problems/solutions

The projector was an issue for the second course at Mulago. The GPAS projector was not working so Monica arranged to borrow the projector from the ortho department but the orthopedic residents refused to give it up for several hours. The first presentation had to be done without the aide of the PowerPoint. The hydro was inconsistent during of the day so without power, there was no projection on the wall either. It would be advantageous to have a working GPAS projector.

USTOP's provision of nutrition breaks and lunch for the participants meant that the participants stayed at the course site over the breaks and this helped facilitate punctuality. It was also a good time for interacting with the participants. Even though Monica arranged for the lunch to be delivered 1 hour earlier than needed, the lunch was delivered late both days. It is a challenge to alter the teaching sessions when the timing of the breaks is so variable. This seems to be an issue each time. I arranged for the tea break to start the day and this assisted in starting on time. Those who were late just missed the tea break.

Lessons learned

Monica was present at the end of both days this time and gave out the transportation money both days instead of a combined amount at the end of day two. Each participant also received their own transportation money, rather than a group of them receiving a larger bill, which is something they appreciated.

The four days following the first course at Mulago allowed us to coach the participants on the material covered in course one. We left after the second nursing course and were not able to provide additional in theatre education around sterilization. It would be beneficial to have coaching days following the second course as well.

Teaching and coaching were done in the Ward 7 Theatre and the Ortho Trauma Theatre. The only nurse present at the courses from CAS Theatre was the charge nurse and she wasn't present in the CAS theatre when I was there. It was difficult to engage the other nurses in CAS without the personal relationship that occurs as a result of spending time together in a course and without a base of knowledge for them to work from. The intent for the course and coaching was to focus on Ward 7 and Ortho Trauma theatres but both charge nurses from CAS and Private Patient Theatre expressed a desire for us to come and help them in their theatres.

Gaining knowledge and expertise as a perioperative nurses takes time. Unfortunately, we continue to see that nurses are often reassigned to other departments. Hospital administration should be encouraged to value their human resource, allowing nurses who enjoy and excel in the perioperative environment to remain there so that they can provide the leadership, expertise and safe care essential to optimize patient outcomes.

Future work

The topics or issues about which further action can be taken to improve safe patient care are remarkably similar with those identified on previous trips. Perhaps it is not surprising that many of the issues identified in previous reports are still not completely addressed; change takes time. They include:
Consistently using the Safe Surgery Checklist.
Basic hand washing
Patient identification bands
Surgical site marking
Pulse oximetry - Ortho Trauma had only one between two patients
Surgical scrub
Closed gloving
Sterilization of supplies (instruments and drapes), application of autoclave tape
Surgical count
Instrument maintenance and repair
Decontamination of instruments
Personal protective
Sharps safety
Post anesthesia care

The participants in the April 2015 course listed 14 items they could do to make patient care safer. The top three items were confirming the consent, proper gowning and gloving and counting. We observed these three items were being done in Ward 7 Theatre most of the time.

Recommendations

The meaningful involvement of local nursing leadership at the hospitals where courses are being taught can improve the delivery and "buy-in" of the practice changes being suggested as consideration is given to adopting a "culture of safety" in their practice environment. These perioperative nurses need to demonstrate their increased knowledge so that they can contribute to the team's patient care and gain the respect from the other team members (e.g. surgeon) that they desire. They also need to identify direct patient care as a vital and valuable component of their role.

Surgeons and residents can assist in implementing change in the theatres if they are informed and have an understanding of the "why" and "how". The SSCL presentation should continue to be provided to the residents. In addition, the residents would also benefit with a scrubbing, gowning and closed gloving session.

As in previous courses, our intent was to help the participants focus on basic principles that can be part of safe perioperative nursing care no matter the practice context. For example, proper handwashing and surgical scrub techniques are essential no matter where surgical

interventions take place. Similarly, safe surgery anywhere requires that the surgical instruments be properly prepared and sterilized.

Theatre staffing is not always conducive to providing safe patient care. There are not enough nurses in some of the theatres to supply a scrub nurse. Nurses are not replaced when they are sick, on maternity leave, on vacation, etc. The question arises, why is one theatre able to have scrub nurses and not others? The quality of care for the patients could improve with two nurses per case.

Returning to these teaching sites on a regular basis will be an important strategy aimed at reinforcing the importance of the teaching undertaken on this trip. There are struggles and many challenges to implement change in an environment with so few resources. Without the consistent presence of the Canadian teams, the staff at Mulago in the OR theatres tend to revert to previous practices that are not in line with the SSCL or best practice for patient safety. Nurses working in the perioperative environment in other theatres would also benefit. The Safe Surgery Saves Lives nursing course could continue to be given by certified instructors returning to Mulago Hospital with other UBC surgical teams (as presented in the June 2012 Project Proposal).

At the same time, it will be important to continue developing resources for subsequent courses/modules. Content experts will need to be recruited and course development begun under the auspices of CNIS. Based on the overwhelming need at Mulago Hospital, it is recommended that the next formal course be developed around "Sterile Processing: Decontamination, Disinfection, and Sterilization." Although a course on this topic was presented on this trip, it needs to be developed into a formal module. This module should also include information on organization and storage of sterile instruments and supplies in the operating room. In the interim, continued education on this topic for all perioperative staff is essential.

In addition, nurses returning to Mulago Hospital are advised to read the previous reports which outline many practice issues that we hope may be changed over time. The important information should be reviewed so that the issues identified can also be addressed.

The post-course coaching days allowed us to offer further instruction and assistance as some of the practice changes are enacted.

Conclusions

It was my privilege to work with these Ugandan nurses. I have every intention of trying to stay in touch with them and hope that they will feel free to ask questions and further explore some of the issues that were identified during my time with them. In this way I can provide long-distance mentorship if they desire this connection and support. There is so much work that still needs to be done.

I am grateful for the opportunity to participate with CNIS and USTOP in presenting the Nursing courses to perioperative nurses at the Mulago National Referral Hospital in Kampala and the opportunity to provide some perioperative education to the nurses in Fort Portal and Mbarara Hospitals. I believe that the courses were well presented and well received. I look

forward to hearing how the education material is implemented and whether our suggestions are being put into practice, as well as in assisting in the further development of nursing initiatives under the CNIS/USTOP umbrella.