VITAL
ANAESTHESIA
SIMULATION
TRAINING

VAST COURSE PILOT - RWANDA

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Executive summary

Situation

The Vital Anaesthesia Simulation Training (VAST) Course is a novel, three-day training program that utilises simulation to focus on core clinical and non-technical skills promoting safe perioperative care in resource-limited settings. It was piloted over three successive weeks in Kigali, Rwanda during January 2018.

Background

VAST is preceded by foundation work in simulation and non-technical skills training in Rwanda and is grounded in a longstanding collaboration among the anaesthesia departments at Dalhousie University, University of Rwanda and the Canadian Anesthesiologists' Society International Education Foundation. District hospitals in low- and middle-income countries are recognised as pivotal targets for quality improvement initiatives. VAST reflects the case mix encountered at this level and utilises clinical frameworks from established educational programs (e.g., EPM, SAFE). Through simple, low-cost simulation and reflective debriefing, VAST creates opportunities to apply these frameworks to common clinical situations and to explore non-technical skills that enhance patient safety.

Assessment

The VAST Course was successfully piloted over three weeks in January 2018 in Kigali, Rwanda. In total, 40 participants completed the course. Over 50% of participants were non-physician anaesthesia providers. The VAST Facilitator Course was conducted twice, with 12 trainee-facilitators completing the course. Course evaluations were universally positive. Facilitators found the timetable to be both practical and productive. The pilot courses provided insight into the feasibility of conducting a three-day simulation-based course in a resource-limited setting on a modest budget.

Recommendation

The pilot programs generated valuable insights that will be used to refine the VAST Course. Along with further dissemination of VAST in Rwanda, we intend to conduct formal assessment of VAST for both knowledge translation of non-technical skills and efficacy of facilitator training. Continued dissemination of the VAST Course throughout Rwanda, with embedded facilitator training, will promote perioperative safety and improve capacity for effective, locally driven education programs.

Contents

Background

In low- and middle-income countries (LMICs), resource limitations, severe workforce shortages and scarce professional development opportunities pose significant challenges to the provision of safe anaesthesia[1] [2]. The Vital Anaesthesia Simulation Training (VAST) Course is a novel, three-day simulation-based training program that focuses on core clinical and non-technical skills promoting safe perioperative care in resource-limited settings. It is designed specifically to accommodate the varied expertise of anaesthesia providers practising in this setting and has capacity for inter-professional training with other perioperative team members.

VAST was developed by the current global health fellow at Dalhousie University, Dr Adam Mossenson, and co-authored by Dr Patricia Livingston (Dalhousie University) and Dr Christian Mukwesi (Rwanda Military Hospital). Extensive foundational work has already been conducted in Rwanda in both medical education[3] and simulation[4] [5] [6]. VAST was made possible by the longstanding relationship amongst the anaesthesia departments at Dalhousie University, University of Rwanda and the Canadian Anesthesiologists' Society International Education Foundation (CASIEF).

Prior to the development of VAST, opinion was sought amongst anaesthesia providers in Rwanda regarding their interest in a simulation, barriers and enablers for program success and

[1] Vo D, Cherian MN, Bianchi S et al. Anesthesia capacity in 22 low and middle income countries. J Anesth Clin Res. 2012; 3:4

[2] Enright A. Review article. Safety aspects of anesthesia in under-resourced locations. Can J Aneth. 2013; 60: 152-158

[3] Livingston P, Evans F, Nsereko E et al. Safer obstetric anesthesia through education and mentorship: a model for knowledge translation in Rwanda. Can J Anesth. 2014; 61: 1028-1039

[4] Livingston P, Zolpys L, Mukwesi C et al. Non-technical skills of anaesthesia providers in Rwanda: an ethnography. Pan Afr Med J. 2014: 19-97

[5] Livingston P, Bailey J, Ntakiyiruta G et al. Development of a simulation and skills centre in East Africa: a Rwandan-Canadian partnership. Pan Afr Med J. 2014; 17: 315

[6] Skelton T, Nshimyumuremyi I, Mukwesi C et al. Low-cost simulation to teach anesthetists' non-technical skills in Rwanda. Anaes Anal. 2016; 123: 474-480

desired content. The results from this needs assessment informed the design of the VAST Course. Collaboration with the Scottish Centre for Simulation and Clinical Human Factors provided a robust framework for simulation design and debriefing, which was adapted to be suitable in resource-limited settings. This framework and principles for facilitation are explored in the VAST Facilitator Training Course. The authors intended that VAST be complementary to established courses, such as EPM, SAFE, PTC and HBB. Consultation and consent for use of materials has allowed the clinical content of VAST to mirror these robust courses. The goal is being able to reinforce established clinical frameworks through the use of in-depth simulation in VAST.

The content of the VAST Course has been specifically designed to reflect the case mix encountered at the district hospital, a level in the health system of LMICs recognised as a pivotal target for quality improvement initiatives[7] [8]. There is a focus on anaesthesia and resuscitation for obstetric, paediatric and trauma care as well as safe general surgery and pain management. Beyond the clinical material, VAST utilises simulation and reflective learning (debriefing) to highlight the role of anaesthestists' non-technical skills (ANTS). Performance improvement is achieved through reflection on ANTS use during scenarios and through opportunities to apply these skills in an immersive simulation environment. VAST creates this environment without reliance on advanced or expensive simulation technology. It is achieved through the combination of basic task trainers, iPads using SimMon software as monitors, simple props (e.g., airway equipment, syringes, drapes), representative documentation, discoverable pathology and briefing cards which prepare participants for the roles they play in scenarios.

Achievements

The VAST Course was conducted three times in January 2018 in Kigali, Rwanda. In total, 40 participants completed the course:

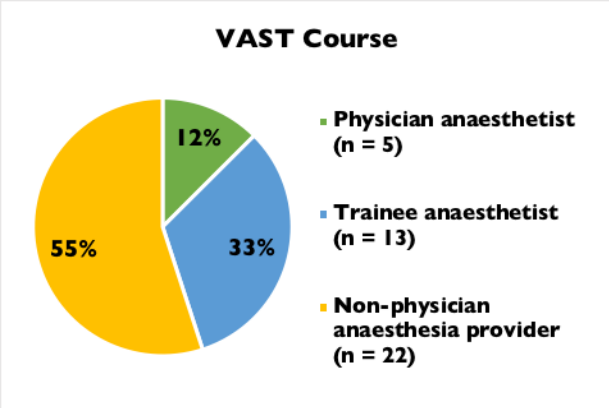
- VAST Course weeks 1 and 2 at Rwanda Military Hospital (RMH)
    - Two simultaneous groups, 16 participants each week, total of 32 participants
- VAST Course week 3 at University Central Hospital Kigali (CHUK)
    - One group of 8 participants
- VAST Facilitator Course
    - Week 1 at RMH with 8 participants
    - Week 2 at RMH with 4 participants

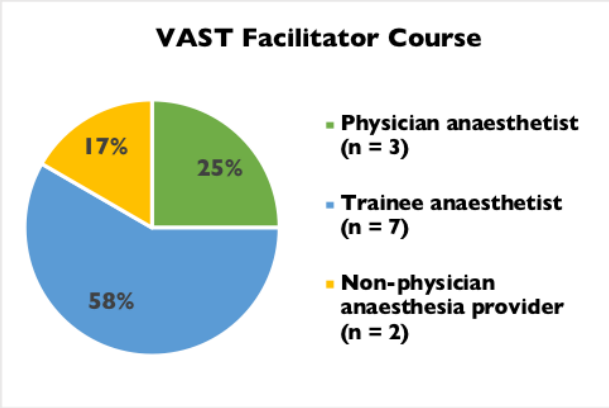
There was full enrolment in all three pilot courses. Aside from one participant who missed an afternoon session on one day of the course, there was complete attendance by all participants across the 3 days. We trialled conducting the facilitator course with different numbers of trainee facilitators to ascertain the 'ideal' number of participants.

[7] Mock CN, Donkor P, Gawande A, Jamison DT, Kruk ME, Debas HT. Essential surgery: key messages from Disease Control Priorities, 3rd edition. Lancet 2015; 385:2209-2219

[8] Henry JA, Bem C, Grimes C et al. Essential surgery: the way forward. World J Surg. 2015; 39: 822-832

Composition of participants:





These pilot courses represented the first time that the VAST Course and VAST Facilitator Course had been completed in their entirety. Given the multitude of unknowns in terms of course mechanics, we considered it a success that the course was delivered as planned and in accordance with the timetable.

Other key achievements stemming from the pilot courses:

- Involvement of the Minister of State in Charge of Public Health and Primary Healthcare and Commandant of the RMH in certificate presentation and closing remarks at the completion of pilot week 2 at RMH.
    - Commitment by the Minister of State to facilitate VAST dissemination throughout Rwanda, as a program that fits within the country's strategic plan
    - Commitment by the Commandant of the RMH to conduct ongoing VAST Courses for staff in the 13 Eastern Province district hospitals. The RMH is responsible for continuing professional development opportunities in these hospitals. A preliminary plan is for 2 VAST Courses in late August 2018 for this group.
- Planning discussions with University Teaching Hospital Butare Regional (CHUB) with a preliminary plan for 2 VAST Courses in September 2018
- Liaison with the President of the Burundi Society for Anaesthesia following their demonstrated interest in the VAST Course for anaesthesia providers in Burundi
- Establishment of a research team planning VAST Course evaluation.
    - Submission of a research grant application to University of Rwanda
- Training of Laurence Mizero, CHUK simulation and skills centre co-ordinator, to function in the role of VAST Course assistant. By pilot week 3, Laurence was independently functioning in this role. Her services will be utilised to help conduct future VAST Courses in Rwanda.

Summary of participant evaluations

Course participants appreciated the simulation format, scenario design and case mix, interactive learning, a supportive environment, good organization and time management. There was a strong desire to see the course disseminated throughout Rwanda and offered to other health professionals. Many people wished for more experience (e.g., more frequent courses, longer courses).

At the end of the course, participants were sent a link for electronic access to the course materials. They may not have been aware of this when they completed the evaluation form. Regardless, there was a desire for supplementary reading and course materials. Additional suggestions for improvement were around confirming understanding during discussions and prior to scenario role-play.

With regard to content, participants were enthusiastic about the attention to both non-technical skills and clinical topics.

Lessons learnt

VAST Course

The content of the course was appreciated and appropriate to the participants. There is no need to overhaul course content, particularly simulation scenarios. Some review of the discussion sessions should occur, in regards to their detail, format and delivery. The course must be supported with resources provided to participants. This should be achieved through the development of the VAST website (www.vastcourse.org is under construction), continued provision of hard copy materials (i.e. participant booklets) and soft copy materials (USBs for participants) if budgets allow.

For logistical reasons and to avoid learner fatigue, the course should remain at 3 days. It was feasible to conduct all sessions within the allocated timeframe. To promote the incorporation of inter-professional healthcare providers, scenarios suitable for non-anaesthesia lead participants should be highlighted. Running two simultaneous simulation groups was extremely effective. Through regular participant rotations, the altered group composition allowed participants to learn from a variety of colleagues. The VAST Course was piloted with 8 participants per simulation group. In the future, to promote more direct and meaningful participant engagement, we will limit group size to 7 participants. For logistical reasons the VAST pilot courses were only offered to anaesthesia providers. VAST has been designed for multi-professional involvement and this is our intention for group composition in the future. An ideal group would consist of 3-4 anaesthesia providers, 2 nurses and 1-2 other medical officers (GPs, obstetricians, general surgeons, emergency doctors) for a total of 7 participants.

As expected, language is a potential barrier to both effective simulation and debriefing. For future courses, participants should be encouraged to speak up when points need clarification, rephrasing or translation due to language issues. Likewise, facilitators should take time to confirm understanding. Further, VAST Course materials should be translated into the most

common language used in country. Where possible, facilitators should be promoted to conduct sessions and debrief in multiple languages to ensure universal understanding. Prioritising time for questions is of paramount importance.

It is essential that for future courses, that someone function in a 'course assistant' role. The course assistant should be responsible for set up before and change over between scenarios. Additionally, the assistant can be tasked with timekeeping and helping to marshal participants between sessions. This will enable facilitators to focus on conducting and debriefing the scenarios. At least 2 facilitators are required per group of participants (one to be lead facilitator and one to act as a confederate within the scenario). If there is an additional facilitator, this will allow for rotation and breaks during sessions, helping limit fatigue amongst the faculty. It is feasible to have 2 trainee facilitators practicing within one group. Through task division one trainee can focus on briefing participants, controlling the iPads and co-ordinating the scenario, with the other trainee observing the scenario and conducting the debriefing.

VAST Facilitator Course

More than one day is required during the Facilitator Course to equip trainee facilitators with the required skills. Future VAST Facilitator Courses should be 2 days in duration. This extra time can be spent on learning the non-technical skills framework and more practice with debriefing. Limiting the number of participants during the facilitator course will create more opportunities to practice and will allow better individual mentoring. A maximum of 4-5 trainee-facilitators should attend each facilitator course. In addition to pre-identification of likely future facilitators, participants who have demonstrated aptitude throughout the VAST Course should be offered opportunity to participate in the VAST Facilitator Course. Allocation of the limited facilitator training positions should be based on merit rather than seniority.

Future directions

After the success of the pilot courses, there is strong ongoing support and enthusiasm for delivery of the VAST Course in Rwanda. Preliminary plans are underway to conduct 4 further courses and 2 facilitator courses in 2018. Future courses will be led by Rwandan anaesthesia providers who have completed the VAST Facilitator Course. This is essential to ensuring local sustainability. Dr Livingston, who has a longstanding commitment to anaesthesia capacity building in Rwanda, will assist them. Dr Mossenson will continue to have broad involvement with the VAST Course direction and with program evaluation after completion of his fellowship in June 2018. The incoming Dalhousie anaesthesia global health fellow, Dr Dave Rawson, will dedicate his fellowship to the progression and evaluation of the VAST Course. Dr Christian Mukwesi will continue in his role as VAST Course Co-ordinator – Rwanda.

Please see the following table that maps out the future directions of the VAST Course:

Rwanda	

Rwandan VAST Courses in 2018	• Rwanda Military Hospital (Aug 27-Sep 6)
	  ○ Two 3-day VAST Courses and one 2-day facilitator course
	  ○ Target group: NPAs and other perioperative health care providers in the Eastern Province
	• CHUB – Butare (Sep 18-27)
	  ○ Two 3-day VAST Courses and one 2-day facilitator course
	  ○ Target group: NPAs and other perioperative health care providers in the Southern Province
	• Graduates of the facilitator course help lead future courses
	• Each VAST Course trains 14 participants (therefore 56 total)

Foundations Simulation Curriculum	• Development and delivery of an expanded version of VAST as a 48 week simulation-based curriculum (one half day per week) for first year anaesthesia residents, supported by the University of Rwanda • Goal is demonstration of essential safe anaesthesia practices • Potential to deliver this curriculum to NPA trainees
Translation	• Goal to translate course materials to French by mid-2018
Website	• Develop a website of VAST Course resource material
Financial stability	• Seek funding from Rwandan Ministry of Health for additional mannequins to complete the VAST Course kit and request a small annual budget for resource materials • Obtain commitment from relevant teaching hospitals for annual delivery of VAST Courses
Evaluation	
Mixed methodology investigation of non-technical skills	• Assessment of non-technical skills during simulation scenarios pre-course, immediately post-course and 4-6 months post-course • Qualitative assessment through logbook review and interview studies 4-6 months post-course
Trainee facilitator evaluation	• Assessment of efficacy of the VAST Facilitator Course and subsequent mentorship of trainee-facilitators using a validated facilitator assessment tool

Summary

Since the inception of VAST in July 2017, there has been progressive refinement and redesign of the program. This process has been augmented by a longstanding relationship between Dalhousie University and colleagues in Rwanda and through collaboration with key stakeholders, such as the WFSA, SCSCHF and CASIEF. The pilot courses in January served to test the materials in their entirety and to gather crucial information on course mechanics. Overall, as reflected by the course evaluations, the VAST Course pilots were a great success. The lessons learnt and subsequent modifications that will be made to the course will further strengthen the ability for VAST to promote safe anaesthesia and peri-operative care in resource-limited settings. The next exciting phases for the course will be dissemination of the program in Rwanda and formal evaluation, in terms sustainable improvement in anaesthetists' non-technical skills and for simulation facilitator training.

Appendix 1 – Course Photos

Example setup of different scenarios - routine equipment is distributed in 3 'bins' – Airway, Breathing, Circulation + Drugs.

Participants often play the role of patient, briefed with information about their role and augmented with simple moulage to build realism

Without needing to rely on expensive technology and complex equipment, psychological fidelity and 'buy in' can be achieved

Briefing cards help participants to prepare for their roles during the scenarios

Utilisation of course materials


Debriefing

Commitment to change completed as the final session of the course


Following mentorship by Michelle, Laurence was able to utilise the VAST Facilitator manual and independently preparing for scenarios

VAST Facilitator Course – exploring SimMon App for patient monitor. Requires only two iPads synched over Bluetooth

Preparing for the arrival of the Minister of State and Commandant

Demonstration scenario for the Commandant, Minister of State and entourage

Certificate presentations at end of VAST pilot week 1 and 2

Appendix II - Testimonials

Michelle Murray, RN (co-facilitator and course assistant for VAST Pilot)

Overall this is a comprehensive and incredibly well designed simulation course.

The attention to detail is the key to ease of implementation of the course. It is designed to be inclusive of other health care team members and could easily be adapted for inter-professional training. This can be accomplished by having them participate with or without the confederate information cards.

It is a beneficial course in emphasizing the importance of a good handover using SBAR and teamwork in emergency situations. It provides invaluable education opportunities in non-technical skills during debriefing.

The other notable benefit to VAST is the minimum equipment needed so there is great potential for teaching it in district hospitals in Rwanda and other countries.

Having Day 4 added to VAST as a Facilitator Training day immediately following the course helps local faculty prepare to deliver and implement the course.

Health care workers who have never had the opportunity to participate in simulation-based learning benefit from a demonstration of a simulation scenario by course facilitators on Day 1.

Again this very detailed and well-designed course would be a valuable educational tool for perioperative team members almost anywhere.

Dr Christian Mukwesi (Chief of anaesthesia RMH and VAST Pilot Course director)

Partnering with you [Patty and Adam] regarding VAST pilot course was a wonderful idea and an opportunity to deliver non-technical skills to both Anesthesia postgraduates and non-physician anesthetists. Non-technical skills are something new in the Rwandan medical education that needs to be taught to people (anesthetists, surgeons and nurses) who work in critical areas. I believe that staffs do have a lot of information, knowledge and technical skills, but put in critical roles, they may have difficult to deal with different situations. Simulation, which was the main learning technique employed in VAST, helped trainees to apply both non-technical skills and clinical principles.

At a point in time, when you want things to prosper, you need the support of authorities, which we did by approaching the DG of RMH who fully supported the idea of hosting the course in our simulation centre. Later, I remember that Paulin and I came up with a good plan of hospitals to involve, that I shared with you. Once we all agreed with the plan, I started contacting anesthesia managers who helped a lot to organize the attendance list, in providing email addresses and contact telephones of their staffs. This step was also a big and difficult one; because it took us time to contact them, to have their confirmation to attend 3 full days-course in a planned 3 consecutive weeks. We sometimes had to remove and replace some by others. And we had to revise the attendance list and communicate with attendants prior to each week

session. I really appreciated your team spirit [of Adam and Patty], in which we worked during the preparation of the course through emails, WhatsApp conferences. Without them, we might not make it happen. These discussions helped all of us to clarify things.

Simulation Centre-RMH: The first & Second weeks: I personally benefited from Adam and Patty expertise in simulation. It is during those 2 weeks that I really applied my skills in simulation. The first sessions were somehow uncomfortable, especially during debriefing sessions. But with time, I started building confidence and I could flow with the help of either Adam or Patty. Sometimes, I had to switch to my Kinyarwanda to help clarifying some points.

From my point of view, simulation technique is something you can practice several times and get feedbacks from your supervisors and with time, be able to fly solo.

- Language barrier is something I observed many times during debriefing; people wanted to discuss points but were reserved. They were stimulated only when encouraged to express themselves in Kinyarwanda. The issue of debriefing both in Kinyarwanda and English is that may take long when you have inside the group someone who doesn't use both tongues; so, you would translate and have to adjust the schedule many times.
- Putting together NPA staffs and postgraduates was so beneficial in order to building team spirit (for the anesthesia culture in Rwanda) and learning purpose during the training (postgraduates learn from NPAs and NPAs likewise). Some senior NPAs who work in district hospitals with little supervision testified to me that they end up in to wrong routines and believed that during the VAST Course, they refreshed and learnt a lot from both VAST materials and postgraduate who are still in training.
- Many of NPA valued the session of crisis management & debriefing; one NPA told me that the course was an opportunity to both reflect on what they usually do when they face a crisis and contrast it with the non-technical skills learnt. And this obviously would have a positive impact in his way of managing a crisis and also in the debriefing. He encouraged this kind of training to all NPAs.
- VAST was also rated very high by a NPAs who said that he never neither attended a well-organized course like VAST nor taught with different simulation technics. This means a lot to me and to everyone who have been taught in a traditional way. Thus, lecturers and mentors in medical field should benefit simulation courses in order to deliver well some of their lessons.

On Coordination point of view, things went well. I liked the way facilitators were seriously chosen after a close observation of what they were capable to deliver. In conclusion, I would like to appreciate all of you, without forgetting Michelle and her twin (Laurence). They did a wonderful work, they made it easy for me and Patty.

Dr. Eugene Tuyishime (senior anaesthesia resident and trainee facilitator)

The Vital Anesthesia Simulation Training (VAST) Course was developed in order to recall the concepts of safe anesthesia and surgery to non-physician anesthetists and other perioperative staff working in low-resources settings. As a participant chosen to become a local facilitator, I describe my impression on the VAST course.

Course design and organization

The VAST course is designed using small case based tutorials and simulated scenarios. This helps to put in practice during simulation what was learned during the tutorial. In addition, there is a particular topic at the end called "no easy answer" that helps the participants to think deeply on lessons learned and to make a decision.

How it is different from other educational courses

For VAST course, the cases covered reflect the real cases managed by participants in their hospitals. In addition, every participant has an opportunity to be the lead participant in simulation and this helps to keep everyone engaged and to provide feedback to everyone.

Also, to my knowledge this is the first course to train local facilitators in running simulation scenarios in Rwanda. The skills in simulation-based training can be used even beyond the course like during teaching medical students and residents. I believe that the skills retention after simulation based training like VAST course are higher than regular classroom training, however research is needed to confirm this.

Personally, I have picked interest in simulation-based training and I think that I may do a fellowship related to simulation and be involved in development of more courses like the VAST course. Professionally, the VAST course will provide an opportunity for continuous professional development for anesthesia providers in Rwanda.

To conclude, the VAST course is well designed to fit the context of Rwanda with the goal to provide safe anesthesia and surgery in low resource settings. Studies are needed in order to evaluate the impact of VAST course on knowledge retention among participants and local facilitators.

Appendix III – Participant evaluations

VAST Course evaluations:

Participants filled out evaluations each day. They were asked to list 3 things they liked about the course, provide some suggestions for improvement, identify 3 things they learned and to give general comments. The following is a summary of their comments. The number in parentheses indicates how many people made the same or similar comments. This is not intended to be scientific but rather to show trends. An evaluation form was completed each day of the course. 112 evaluations were completed by a total of 40 participants.

What did you like about the course?

Methods/ teaching

- Learning by scenarios made it easy to understand; learning from simulation, well prepared simulation (15)
- Debriefing; constructive debriefing and take home messages; feedback (13)
- Good environment to learn; supportive learning environment; welcoming; non-judgmental, we could make mistakes; good relationships between participants and facilitators (13)
- Facilitation; good teachers; rich knowledge of facilitators (12)
- Everyone participates; everyone was included; we helped each other (10)
- Teaching methods; interactive (23)
- Not tiring; not boring (2)
- Repetition of material; I liked discussing the case before doing the scenario (2)
- Development of my skills from stress to confident
- Good slides

Content

- The setting and scenarios were fantastic; comprehensive content of topics covered in scenarios; scenarios reflected our reality; content was important (15)
- Identification of challenges
- Importance of communication and team work
- Presentations, especially the one on checklists and the video
- Non-technical skills session (3)
- Trauma scenario
- Simple
- APVU as part of A to E in adults
- Commitment to change

Logistics

- Well organized; well-planned (22)
- Time management; sticking to time is wonderful (17)
- Refreshments and meals (1)

What could be improved?

Methods/ teaching

- Need for clear scenario tasks; confirm understanding of roles in scenarios (4)

- Check whether what was taught was understood by everyone; speak in understandable English and make sure everyone was on the same page; speak slowly (5)
- Simulations are good but theory is also needed
- Ask participants if they have a personal example about the topic so they can share experience
- More video and demonstrations instead of presentations

Content

- More discussion on how to overcome challenges
- Add advanced neonatal care
- More scenarios on how hierarchy can be detrimental to patient management
- More scenarios on airway obstruction; keep emphasis on burnout syndrome

Resources

- Need documents for what you present; give notes to participants; on line summary of course; give the material ahead of time (11)
- Give pens to participants
- Noise to be avoided

Time allocation

- Need more time for the course; more frequent courses; extend time for the training up to 3 weeks; more practice; more scenarios (40)
- Decrease break time and finish at 1500 hours (2)
- Increase break time (5)

Participants

- Include surgeons/obstetricians. Why not? Multidisciplinary team; anesthetists must have this course because it is interesting; extend to all anesthesia providers; provide the training to district hospitals give this to all healthcare providers; expand to EMS/SAMU; Give the good skills and knowledge that I have got here to my colleagues so that they may all change together with me; this course is very important and needs to be spread to all healthcare providers; invite nurses; invite other disciplines like midwives and emergency team (28)
- Morning was a big group, afternoon was smaller; reduce the number of learners
- Participants have different levels and knowledge. Maybe some need different preparation before the course. English is also a barrier for a few people.

Positive comments entered in this section

- Keep on obeying time
- Keep it up (20)

Additional comments

- Come and assess us in our district hospitals
- We need more supervision in our district hospitals

What 3 messages will you take away?

Non-technical skills (mentioned generally 11 times)

- Team working

- Good communication and team work (46)
- Stress management is crucial; being calm (12)
- Closed loop communication (5)

- How a good leader should behave during a crisis; leadership (15)
- Sharing your mental model; inviting team ideas (18)
- Professionalism and empathy; honesty (5)
- Prevention of burnout; helping colleagues with burnout (12)
- Use SBAR for handover; good handover (8)
- Introduce team members to know what each can do well

- *Task management*
  - Task allocation (24)
  - Organization of workplace; being systematic; being organization in a crisis; planning and preparing; being proactive (16)
  - Call for help early; be specific when calling for help; crisis declaration (16)
  - Prioritization (21)
  - Using available resources
  - Advocacy for safe anesthesia
- *Situational awareness*
  - Situational awareness; anticipation (10)
  - Early recognition of a crisis (2)
  - Vigilance
- *Decision making*
  - Clinical frameworks help improve patient care; decision making; algorithms to help with decision making; cognitive aids (14)
  - Reassessment (1)

Clinical content

- ABCDE approach to assessment of patients; systematic assessment; AMPLE history (23)
- Effective primary survey, repeat the primary survey; trauma management (18)
- Management of difficult intubation; airway management skills (3)
- Improvement in our daily work
- Recognizing and managing obstetrical hemorrhage (11)
- Management of obstetrical emergencies/cases (4)
- Caring for both mother and baby in PACU (2)
- Managing hypertension prior to induction in pre-eclampsia; pre-eclampsia management (8)
- Steps in care of neonate; neonatal resuscitation and the golden minute (20)
- Acute pain management with essential drugs and non-pharmacologic therapy; RAT model; pain management as part of care (22)
- Management of laryngospasm (4)
- Pediatric anesthesia (7)
- Management of burns (7)
- Management of sepsis (6)

Other comments:

These summary comments are all quotes. They are in addition to the numbers above in parentheses.

- This training should be carried out periodically to improve patient care and reduce patient morbidity and mortality
- The day was wonderful
- All good, keep this up, do it every ½ year
- Need to avoid leaving during the traffic jam
- Reduce the number of learners if possible
- Super training, thanks!!
- All of us need the knowledge from VAST but the focus should be on the NPAs from the district hospital
- It was very helpful. It should come out periodically to make things go well.
- Spread the training to the rest of anesthesia providers elsewhere in Rwanda. SUPER!! Thanks!!
- This should be kept every year
- Thank you for starting and finishing on time
- It was fantastic
- Come again. That will be our pleasure.
- Wonderful training. You may do it continually for us. It is helpful.
- This course should be given to many people because what we learn is life saving.
- Thank you for this course. Spread it to the whole of Rwanda.
- VAST is to be spread elsewhere in Rwanda
- I liked the simulation, how it is organized; very busy but important
- Super course!!
- You are good teachers
- The course was interesting with a good caring environment
- Try to train as many anesthesia providers in VAST as you can
- VAST is well structured and needs to be conducted for all NPAs in practice
- Simulation is very educational and refreshing
- More simulation can help us to improve the quality of anesthesia delivery in practice
- Simulation is helpful and we need more time because what we are doing in simulation is what happens in real life
- Non-technical skills are very important for managing a crisis. I like that you told us we have to reflect on them daily and this will help improve our non-technical skills
- We learned how to recognize or prioritize things when in emergency situations. We will work together systematically when each of us has something to do
- The course is very important to the anesthesia team
- Go through all contents of every course (ex: trauma – signs of cervical fracture)
- This project is very nice and it will really improve our daily work
- I would suggest the VAST team encourage (advocate) for the MOH to give financial facilities so that everyone in the whole country can benefit from this course

VAST Facilitator Course evaluations

Participants in the Facilitator Course also completed the same evaluation. 12 participants underwent facilitator training, with 8 evaluations completed.

What did you like about the course?

- Stages of debriefing, debriefing practice (5)
- Well-prepared, well-organized (4)
- Excellent professional course materials
- Manageable group size
- Simplicity
- Facilitator attitudes
- It is wonderful

What could be improved?

- Provide materials (2)
- Teaching about how to give feedback
- More courses like this are needed
- More practice leading and facilitating scenarios (4)

What 3 messages will you take away?

- Formulate questions to engage the group; formulating questions without humiliating anyone (2)
- Strategies for debriefing; importance of debriefing (4)
- Understanding the inner workings of the scenarios
- Appreciation of the scope of roles in the scenarios
- Generate answers from the audience
- Make sure you achieve your objectives (2)
- Language and body language (2)

Appendix IV – VAST Course timetable

Day 1			
Time	***Code***	***Format***	***Session***
0800-0815			**Registration**
0815-0845	1.1	Discussion	Welcome
0845-0900	1.2	Discussion	Introduction to simulation
0900-0930	1.3	Demo	Facilitator led scenario
0930-1000	1.4	Discussion	Clinical frameworks
1000-1030			**Morning tea**
1030-1115	1.5	Discussion / skill station	Unanticipated difficult intubation
1115-1200	1.6	Scenario	Pre-operative assessment
1200-1230	1.7	Scenario	Preparation for emergency anaesthesia
1230-1315			**Lunch**
1315-1345	1.8	Discussion	Non-technical skills
1345-1430	1.9	Scenario	WHO SSC and RSI
1415-1445			**Afternoon tea**
1445-1500	1.10	Discussion	Trauma primary survey
1500-1545	1.11	Scenario	Trauma primary survey
1545-1630	1.12	Scenario	Trauma re-assessment
1630-1645		Reflection	**End of day reflection and evaluation**
1645-1700			**Facilitator debrief**

Day 2			
Time	***Code***	***Format***	***Session***
0800-0830			**Reflection on day 1**
0830-0915	2.1	Discussion	Obstetric case discussion
0915-1000	2.2	Scenario	Obstetric pre-op assessment
1000-1030			**Morning tea**
1030-1115	2.3	Scenario	C-section under spinal
1115-1200	2.4	Scenario	GA C-section
1200-1245			**Lunch**
1245-1330	2.5	Scenario	Intra-partum haemorrhage
1330-1415	2.6	Scenario	Post-partum haemorrhage
1415-1445			**Afternoon tea**
1445-1515	2.7	Discussion / skill station	Neonatal resuscitation
1515-1600	2.8	Discussion	Pain case discussion
1600-1615		**Reflection**	**End of day reflection and evaluation**
1615-1630			**Facilitator debrief**

Day 3			
Time	***Code***	***Format***	***Session***
0800-0830			**Reflection on day 2**
0830-0915	3.1	Discussion	Paediatric case discussion
0915-1000	3.2	Scenario	Paediatric pre-operative assessment
1000-1030			**Morning tea**
1030-1115	3.3	Scenario	Paediatric laryngospasm
1115-1200	3.4	Scenario	Paediatric burns
1200-1245			**Lunch**
1245-1330	3.5	Scenario	Post-anaesthesia care unit
1330-1415	3.6	Discussion	No easy answers
1415-1445			**Afternoon tea**
1445-1530	3.7	Scenario	Sepsis
1530-1600	3.8	Reflection	Commitment to change and final reflection
1600-1605			**Final evaluation**
1605-1630			**Certificate presentation**