



# VITAL ANAESTHESIA SIMULATION TRAINING

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## VAST Course report – Rwamagana, Rwanda

6-9 August 2019

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## Executive summary

### *Situation*

The Vital Anaesthesia Simulation Training (VAST) Course was held successfully at Rwamagana Hospital for 15 multi-disciplinary healthcare providers.

### *Background*

The Rwamagana course builds upon a well-established foundation for the VAST Course in Rwanda. This course was entirely taught by local facilitators with the only international facilitator (Dr Patty Livingston) attending to course logistics and facilitator preparation. Participant course feedback was overwhelmingly positive.

### *Assessment*

Responsibility for facilitating VAST is being effectively transferred to the Rwandan team. There is enormous need for more training, especially for multi-disciplinary practitioners.

### *Recommendations*

1. Seek sustainable 5-year funding to ensure comprehensive training of Rwandan healthcare practitioners.
2. Consider implementing VAST in training programs for doctors, nurses, and NPAs.
3. Emphasize facilitator quality over quantity, as strong experience in debriefing is mandatory for excellent course delivery. Continue to build the local facilitator network.
4. Allocate a lead facilitator each day to maintain a high-level overview of the course.
5. Consider refillable water bottles to reduce plastic waste during courses. Seek to minimize the environmental impact of teaching VAST.

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## Acknowledgements

The course directors gratefully acknowledge support by:

Rwandan Society of Anesthesia

Ministry of Health, Rwanda

IntraHealth International

Canadian Anesthesiologists' Society International Education Foundation (CASIEF)

Department of Anesthesia, Pain Management and Perioperative Medicine, Dalhousie University

## Background

The Vital Anaesthesia Simulation Training (VAST) Course was developed to teach and reinforce essential clinical practices and non-technical skills for both anesthesia providers and perioperative teams. Designed as a collaboration between Dalhousie University and the University of Rwanda, VAST equips anesthesia providers, as well as surgical, nursing, and medical colleagues, with critical non-technical skills required in the most common clinical cases found in low-resource district hospitals. The course utilizes immersive, low-cost simulation focusing on safe anesthesia and resuscitation for obstetrics, pediatrics, trauma, general surgery, and pre- and post-operative care. In addition to role-play in 15 simulated scenarios, there are targeted case-based discussions and skills stations covering non-technical skills, trauma primary survey, difficult airway management, neonatal resuscitation, pain management, and complex decision making. The course is designed to be portable, locally adaptable, and affordable. It relies on low-cost simulation that is nonetheless highly effective at demonstrating and reinforcing critical non-technical skills in the operative and clinical setting.

The Rwamagana course builds upon a well-established foundation for the VAST Course in Rwanda. The course was first piloted three times in Rwanda in January 2018. After minor revisions, VAST was again delivered in Aug-Sep 2018 at Nyagatare, Rwanda Military Hospital and Huye (twice). Courses were accompanied by the VAST Facilitator Course, with the goal of building a cadre of Rwandan anesthesiologists, anesthesia residents, and non-physician anesthetists capable of high-quality course delivery and debriefing. As local capacity grows, the number of international facilitators required is rapidly diminishing. The Rwamagana course was delivered by Rwandans with some coaching from one international facilitator (Dr Patty Livingston).

## Attendees

COURSE STAFF (Rwamagana, Rwanda, August, 2019)		
Last Name	First Name	Role
Mukwesi	Dr Christian	Course Director
Livingston	Dr Patty	Facilitator
Nyirigira	Dr Gaston	Facilitator
Tuyishime	Dr Eugene	Facilitator
Laurence	Mizero	Course Coordinator

TRAINEE FACILITATORS (Rwamagana, Rwanda, August 2019)		
Last Name	First Name	Role
Uzamukunda	Dr Claudine	Trainee facilitator
Kwizera	Dr Jackson	Trainee facilitator
Irakoze	Dr Alain	Trainee facilitator
Rusats Ladislaus	Emmanuel	Trainee facilitator
Niyongombwa	Christophe	Trainee coordinator

COURSE PARTICIPANTS (Rwamagana, Rwanda, August 2019)		
Last Name	First Name	Position
<b>Group A</b>		
NIYITEGEKA	Eliezer	Anaesthesia
RUDAKUBANA	Pierre Celestin	Anaesthesia
KAPAPA	Olivier	Anaesthesia
UWIMANZI	Elias	Anaesthesia
MUKANDAYISENGA	Nadine	Nurse
NKUNZUMUKIZA	Jonathan	Nurse
KAYITESI	Esther	Midwife
<b>Group B</b>		
NYIRANEZA	ESPERANCE	Anaesthesia
TURABAYO	Jean Leonard	Anaesthesia
NYIRANEZA	Athanasie	Anaesthesia
KOMEZA	Gilbert	Anaesthesia
MURESHYA	Bernadette	Nurse
NIYOGUSA	Jean Felix	Midwife
HABARUGIRA	Diogene	Doctor
UWIZEYIMANA	Claudine	Anaesthesia

## Venue and equipment

The course was held in the educational centre at Rwamagana Hospital. This proved to be an excellent venue with two large rooms, abundant ventilation, and a quiet setting. The hospital kindly supplied stretchers, sheets, and IV poles. The remaining course materials are all part of the “VAST kit” which has been previously donated by CASIEF and Dalhousie University. This includes mannequins, iPads, equipment, and scenario documentation. The VAST kit is currently stored in the simulation centre of Rwanda Military Hospital under the stewardship of Dr Christian Mukwesi.

There were two concurrent groups of participants in simulation scenarios; common sessions were held in the larger of the two rooms. Lunches and tea breaks during the course were supplied by the Dereva Hotel. The high quality of the food contributed to participant satisfaction.

Laurence Mizero performed admirably as the simulation coordinator. She trained Christophe Niyongombwa in this role, with a goal of building a strong team to support course delivery.

We purchased a refillable water bottle and dispenser and had participants fill their water bottles in an effort to reduce plastic waste. VAST Courses should consider environmental responsibility (e.g., minimizing course garbage, reducing unnecessary transport).

## Course conduct

Much of the course was conducted in Kinyarwanda with some translation to English. It was not possible to adhere to the course timetable fully owing to tardiness of participants, late catering on day 1, and time required for translation. Additionally, simulation was a new concept to participants. To ensure the days finished on time, some sessions were omitted (1.7, 2.6, 3.7, 3.8). We ran a demonstration scenario on Day 1 and repeated a demonstration scenario mid-way through Day 2, when the need was apparent. In addition to role cards, we gave each scenario participant a label with their scenario identity (e.g. “surgeon”, “theatre nurse”). This helped reduce confusion regarding the identity of various scenario roles.

The following practices were employed:

1.3 Brief intro to sim environment, demonstration scenario, complete intro to workspace and opportunity for participants to examine materials

1.8 Use PowerPoint and skills demonstration at the same time (2 facilitators: one speaks, the other demonstrates); a similar model was used for neonatal resuscitation and primary trauma survey.

2.5 Do not hand out cards, just allocate roles, identify team members and give them one minute to organize the team response, by setting out 3 chairs and timing the discussion (3 roles in team: nurse, surgeon, anesthesia provider)

2.8 Bring both simulation groups together and choose among the best performing participants to be the lead participant, husband, and medical student. Present at start: simulated patient and PACU nurse. The scenario has three stages:

1. Pain management – lead participant enters and needs to provide pain management
2. Angry husband – husband enters and is angry that his wife has not received pain relief
3. Burnout – Dr Tim (cofacilitator) enters and is clearly suffering from burnout; medical student is worried

3.6 Cut the team down to 3 people (nurse, anaesthesia provider, surgeon) and tell them there is an incoming trauma in one minute, give them time to prepare the sim room and allocate roles; if a stretcher is available, the ambulance attendant wheels the patient in after one minute; if no stretcher is available, cover the patient with a sheet and uncover after one minute

## Summary of participant evaluations

Participant feedback (Appendix I) was overwhelmingly positive. There is a clear desire for more training and training all members of the healthcare team. The burnout session resonated strongly, with great engagement in the discussion and a desire for more tools to manage this difficult problem. Participants expressed learning in both clinical and non-technical spheres.

## Challenges and lessons learnt

This course represents a significant milestone as all sessions were delivered by local health care providers. Dr Livingston's role was to ensure quality control and to hold the big picture. This included schedule adjustments, timekeeping, and facilitator preparation. For future courses, it would be useful to have one facilitator responsible each day, or half day, for maintaining a global view of the course. This would include recognizing when participants are struggling and making appropriate adjustments, such as repeating scenarios or demonstrations. Timekeeping can easily be delegated to the simulation coordinator who should work closely with the responsible facilitator to make changes as needed. We were fortunate to have a strong facilitator pool, in both quality and number, to allow sharing the workload in course delivery.

Once again, it is essential to have a multi-disciplinary team, ideally with people playing the role of their own professions in scenarios.

Due to the complex nature of simulation debriefing, variable levels of training are required for facilitators to achieve competence. This is an important area for future research. In the meantime, it cannot be assumed that competence as a VAST facilitator will be achieved after one VAST Facilitator Course. It is important to train VAST facilitators for Rwanda, but it is essential that each facilitator have ongoing mentorship and experience to achieve competence.

There is a great need to implement VAST into health professional training programs to build a common understanding of essential clinical practices and non-technical skills. Ultimately, this will be more efficacious than training health professionals who have been in practice for decades.

## Future directions

1. Seek sustainable 5-year funding to ensure comprehensive training of Rwandan healthcare practitioners.
2. Consider implementing VAST in training programs for doctors, nurses, and NPAs.
3. Emphasize facilitator quality over quantity, as strong experience in debriefing is mandatory for excellent course delivery. Continue to build the local facilitator network.
4. Additional VAST Courses are planned for Kabutare, in August, and Kigali, in October 2019.
5. Allocate a lead facilitator each day to maintain a high-level overview of the course.
6. Consider refillable water bottles to reduce plastic waste during courses. Seek to minimize the environmental impact of teaching VAST.

## Appendix I – Participant evaluations

What participants liked	
Organization and preparation	<ul style="list-style-type: none"> <li>• Time was respected, time management x 3</li> <li>• Provision of essential needs, including lunch</li> <li>• All team members got to be the lead participant</li> </ul>
Course content	<ul style="list-style-type: none"> <li>• Management of burnout/stress x 8</li> <li>• Neonatal resuscitation x 3</li> <li>• SBAR/handover x 3</li> <li>• Clinical frameworks x 2</li> <li>• Pain management x 3</li> <li>• Non-technical skills x 2</li> <li>• Management of sepsis x 6</li> <li>• Management of PPH</li> </ul>
Simulation-based learning	<ul style="list-style-type: none"> <li>• Interactive; learning by doing x 4</li> <li>• Simulation x 9</li> <li>• Teaching us to put theory into practice</li> <li>• Scenario discussions and debriefings x 5</li> </ul>
Facilitators	<ul style="list-style-type: none"> <li>• Our mentors explained the course well</li> <li>• Welcoming us</li> </ul>
General	<ul style="list-style-type: none"> <li>• I've learned important things that will help me in emergency department</li> </ul>

Suggestions for improvement	
More practice/more training	<ul style="list-style-type: none"> <li>• Continuous simulation in our work</li> <li>• Prepare this training frequently, like 2 times a year</li> <li>• Increase time for discussions x 3</li> <li>• Increase time for the course</li> </ul>
Money	<ul style="list-style-type: none"> <li>• Provide some money to motivate participants x 2</li> </ul>
More multidisciplinary	<ul style="list-style-type: none"> <li>• Invite doctors x 3</li> </ul>
Videos	<ul style="list-style-type: none"> <li>• Videos of simulation x 3</li> </ul>

Key take away messages	
Clinical practice	<ul style="list-style-type: none"> <li>• Left lateral tilt for pregnant women</li> <li>• Airway management from zero to cricothyroidotomy</li> <li>• Neonatal resuscitation x 2</li> </ul>

	<ul style="list-style-type: none"> <li>• Predictors of difficult intubation</li> <li>• Essential pain management x 2</li> </ul>
Non-technical skills	<ul style="list-style-type: none"> <li>• A-E systematic approach x 7</li> <li>• Preparing materials before any procedure</li> <li>• Practice the SSCL; role of SSCL x 3</li> <li>• Assessing capabilities and respecting all the team members x 2</li> <li>• SBAR x 3</li> <li>• Team working/communication x 9</li> <li>• Decision making x 3</li> <li>• Importance of simulation</li> <li>• Situation awareness x 4</li> <li>• Sharing mental model x 2</li> <li>• Protocols and guidelines</li> <li>• Sharing responsibility</li> <li>• Burnout management x 4</li> <li>• Respecting patients</li> <li>• Staying calm</li> </ul>

#### Other comments

- It was very good. The facilitators were active and this course is very international.
- If possible, have more sessions of this training to expand to other health centres
- I wish you would increase the time of training to two weeks.
- I thank the team who planned VAST
- I would like to thank the team that organized this training. It will help us to improve our daily activity.
- This first day was very important to me. I learned much that will improve my work, so thanks.
- I liked involvement of the doctor and so many nurses
- All sessions were good for me; continue like that
- Increase the time of presentations for learning more information
- The course was very interesting
- More training like this
- Visit and evaluate the training in our respective hospitals
- Advocate for burnout prevention and setting up protocols for all health care providers
- I wish tomorrow we can do a summary of all we have seen over the last 2 days.
- This course was very interesting. Keep it up, all facilitators
- This training is essential. You can plan for it every three months.
- Do this simulation two times a year.
- This training was good. I wish to thank the organizers.
- The day was wonderful. Work in scenarios is good and helpful for us to learn.
- This VAST is good.



## Appendix II – Course Photos



Rwamagana Hospital entrance



Welcome by Dr Christian Mukwesi



VAST workstation



Reducing plastic waste!

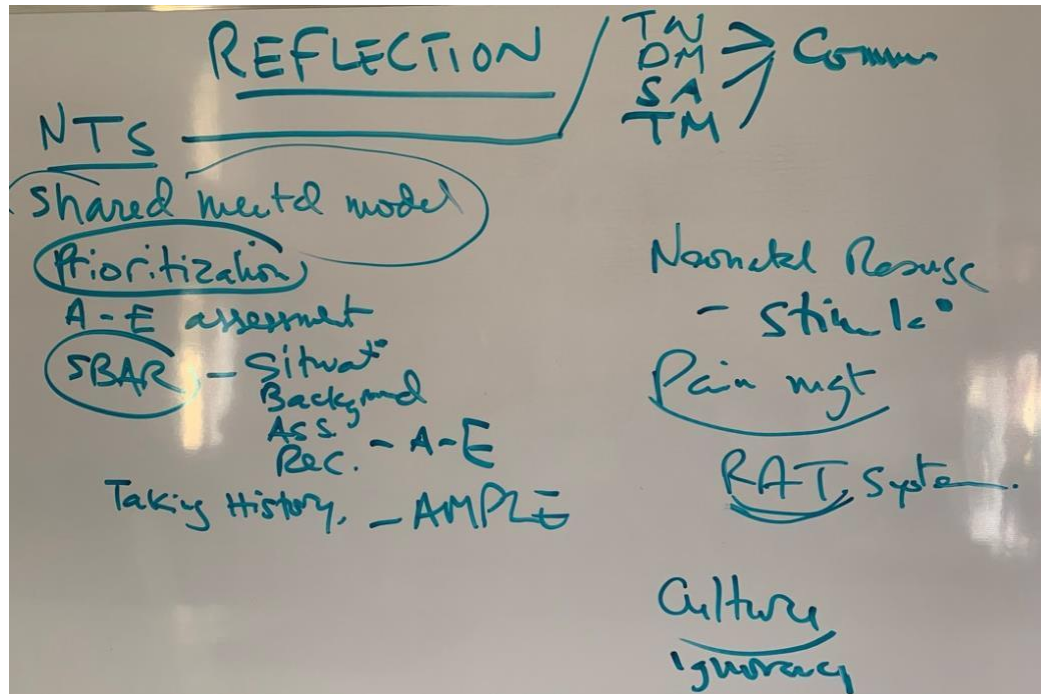




Simulated scenario with role-play



Dr Gaston leading the debrief



Reflection on Day 1



Bernard Kalisa, head NPA in Rwamagana, did a fantastic job with local logistics.





The trauma survey demonstration was engaging. Dr Gaston shows neck stabilization when a C-spine collar is unavailable.



Everyone got involved in the burnout discussion, led by Dr Christian Mukwesi



Facilitator team

Back row: Alain, Jackson

Front row: Claudine, Eugene, Emmanuel, Christian, Gaston, Laurence, Patty