BC SIMULATION CURRENT STATE REPORT

Prepared by:

BC Provincial Simulation Coordination Committee

Delivered to:

BC Ministry of Advanced Education, Innovation, and Technology

BC Ministry of Health

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1 Executive Summary

The Provincial Simulation Coordination Committee (PSCC) was established in June 2012 and functions as a central coordinating and advisory organization. The PSCC's goal is to support health authorities and health professional education institutions province wide to advance the efficient development of simulation education through an integrated approach that improves access to simulation facilities, technologies, and resources. In early 2013, the PSCC received funding to develop a Simulation Roadmap for BC. The first deliverable in this roadmap is a Current State Report that aims to enable the BC Government to make effective, contextual decisions on where to allocate taxpayer funds based on an improved understanding of the current simulation environment.

A PSCC Sub-Committee was established to lead the development of the Current State Report and included representatives from UBC, BCIT, and Northern Health Authority. The Sub-Committee developed a list of online survey questions for stakeholders identified by the PSCC across the Province according to regional, professional, and institutional affiliation. Approximately 80 individuals were invited to complete the survey on May 27, 2013 and 56 completed responses were received by the survey close on July 5, 2013 for a 70% completion rate.

Key findings from the survey were grouped into three categories:

1. Equipment and Technology
2. Facilities
3. Human Resources (HR) and Support

Making additional investments in simulation equipment and technology were seen as a low priority by the majority of respondents and equipment was typically used less than 2-3 times per month. One area that was identified as a priority, was the need to invest in simulation recording and debriefing equipment software, as less than half of respondents currently have access to these types of technologies. Technology is a key enabler of simulation education. Existing equipment in simulation facilities will need to be replaced within the next few years as new technology becomes available. In addition, an operational support model needs to be developed to identify these emerging technologies and determine which facilities are in the greatest need for renewal.

Access to simulation facilities was reported as a key need; however, simulation facilities were also reported to be in use less than 50% of the available time. Although increasing space was seen as a high priority, many respondents reported they are unable to increase space due to a lack of funding. One potential solution is to encourage and build partnerships to share resources and space between organizations. Less than 50% of institutions reported that they are currently sharing their simulation equipment and/or space with others. In addition, 50% of organizations who are currently sharing resources have a memorandum of understanding (MOU) in place with another organization. Building partnerships would also effectively begin to remove silos between healthcare professions, health authorities, post-secondary institutions, and other partners, while still leveraging simulation expertise.

Three of the top five priorities reported were related to human resources and support. Organizing and conducting train-the-educator sessions was reported as a top priority and would include education for health professional educators on curriculum development and how to identify the areas within that curriculum that will benefit from simulation-based pedagogy as one of the teaching strategies. There will also need to be instruction on how to create specific scenarios that directly address the identified learning needs of the curriculum and best assist in teaching concepts.

There may also be a need at some centers to train support staff on how to use specific simulation equipment effectively. As well as providing staff with information on how to assist educators on the effective implementation of simulation equipment as learning and teaching tools to support curriculum goals and objectives. This information and experience can then be passed on through each participant's organization and build the knowledge base throughout the province.

From the data collected and analysis of results, the Committee determined four themes which then resulted in areas to recommend further action:

- **SE: Simulation Education**
  - SE1. Develop / Identify Instructor Courses
  - SE2. Conduct Sessions for Instructor Courses
- **LD: Leadership Development**
  - LD1. Leadership Training and Capacity Building
- **BP: Build Partnerships**
  - BP1. Conduct Needs Analysis
  - BP2. Facilitate Conversations
- **TD: Technology Development**
  - TD1. Website Development
  - TD2. Recording and Debriefing Equipment
  - TD3. Future Simulation Equipment Requirements

These recommendations and associated activities are proposed to occur over the immediate (0 – 12 months), short term (12 – 24 months), and long term (2 – 5 years). Ideally it is anticipated that improvements in patient outcomes, with reduced adverse events and increased patient satisfaction in their health care, will be realized as a result of these recommendations. Feedback from recommended activities will also provide evidence of simulation-based teaching effectiveness and guide future curriculum development for health care team training and the use of simulation as a teaching strategy within the province of BC.

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2 Introduction and Background

The Provincial Simulation Coordination Committee (PSCC) was established in June 2012 and functions as a central coordinating and advisory organization to advance the capacity of health authorities and health professional education institutions to support the efficient and integrated development and access to simulation facilities, technologies, and resources province-wide. The PSCC is currently composed of representatives from the following organizations:

- British Columbia Institute of Technology
- BC Academic Health Council
- Justice Institute of BC
- UBC Faculty of Medicine
- UBC Centre for Health Education Scholarship
- College of Physicians and Surgeons BC
- Ministry of Health
- Ministry of Advanced Education, Innovation, and Technology
- Fraser Health Authority
- Interior Health Authority
- Northern Health Authority
- Provincial Health Services Authority
- Vancouver Island Health Authority

The PSCC held a workshop in September 2012 to identify activities that would maximize return on investments in simulation technology for health education. High priority actions from this workshop included engaging with stakeholders within BC and Canada and developing a Simulation Roadmap for BC to ensure cost effective, high value investments in simulation.

Many organizations and post-secondary institutions are planning to make significant investments and associated funding requests to the government over the next 3-5 years. The first deliverable in the Simulation Roadmap is a Current State Report that documents current simulation infrastructure in BC, technologies and frequency of use, funding, and perceived priorities for future investment.

3 Objectives

The goal of this report is to enable the BC Government to make effective, contextual decisions on where to allocate taxpayer funds based on an improved understanding of the current simulation environment. Specifically, this report will:

- Develop a high-level inventory of simulation facilities across the province, how often they are in use, and any operational funding that is being used to sustain them;
- Identify the types of simulation technologies in use and how often they are being used;
- Identify memoranda of understanding that are currently in place between stakeholder organizations;
- Identify the perceived priorities for simulation investment in the province; and
- Develop recommendations and next steps based on the current state of simulation in the province.

4 Simulation Definition

For the purposes of the survey and this report, simulation is defined as the imitation of some real thing, state of affairs, or process for the purpose of learning or practice; and can encompass a wide range of levels of complexity. Healthcare simulations can be said to have four main purposes – education, assessment, research, and health system integration in facilitating patient safety (Society for Simulation in Healthcare, 2013).

The purpose of patient simulations is to focus on patient safety, standardize educational events, increase healthcare professional skill acquisition, provide opportunities for assessment of competence, and interprofessional education / collaboration (International Nursing Association for Clinical Simulation and Learning, 2013; Motola, Devine, Chung, Sullivan, & Issenberg, 2013; SSIH, 2013). Patient simulations can range greatly both in realism (low to high fidelity) and in reliance on technology. Many modes of simulation exist, including but not limited to:

1. Patient simulation mannequins/simulators;
2. Computer-based interactive systems (virtual reality and haptic devices);
3. Standardized patients;
4. Tissue-based simulations with cadaveric material or live animal labs; and
5. Task trainers.

The initial survey focused on the equipment, facilities, and resources involved in simulation. Based on the initial data, further investigation about other elements of simulation such as curriculum, and research are presented in the recommendations.

5 Methodology

A Sub-Committee of the PSCC was established in order to make decisions and complete the necessary activities in an efficient manner and included representatives from UBC, BCIT, and Northern Health Authority. The Sub-Committee met bi-weekly to monthly and developed a list of online survey questions for stakeholders across the province. See Appendix A for the complete list of survey questions. The test survey was reviewed by the PSCC and the Simulation Technology Working Group (STWG) for feedback and revisions before distributing to participants.

The PSCC and Sub-Committee identified and invited participants based on regional, professional, and institutional affiliation. Approximately 80 individuals were invited to complete the survey on May 27, 2013 and 56 complete responses were received by the survey close on July 5, 2013 for a 70% response rate. Table 1 below provides a summary of how the respondents were categorized by affiliation.

Table 1. Affiliation

Response	Chart	Percentage	Count
Nursing		59%	33
Medicine		25%	14
Emergency services		11%	6
Allied health		25%	14
Health authority		36%	20
Other types, please specify…		12%	7
	Total Responses		56

Respondents were able to choose multiple affiliations as appropriate. The majority of respondents were affiliated with Nursing, followed by Medicine, and Health Authority. Table 2 lists the post-secondary institutions, Table 3 lists the Health Authorities and associated hospitals that participated in the survey, and Table 4 lists organizations who did not identify with any of the above categories.

Table 2. Institutions

Post-Secondary Institutions	
British Columbia Institute of Technology	Thompson Rivers University
Camosun College	University of British Columbia
Douglas College	University of British Columbia – Okanagan
Justice Institute of BC	University of Northern British Columbia
Kwantlen Polytechnic University	University of the Fraser Valley
Langara College	Vancouver Community College
Selkirk College	

Table 3. Health Authorities

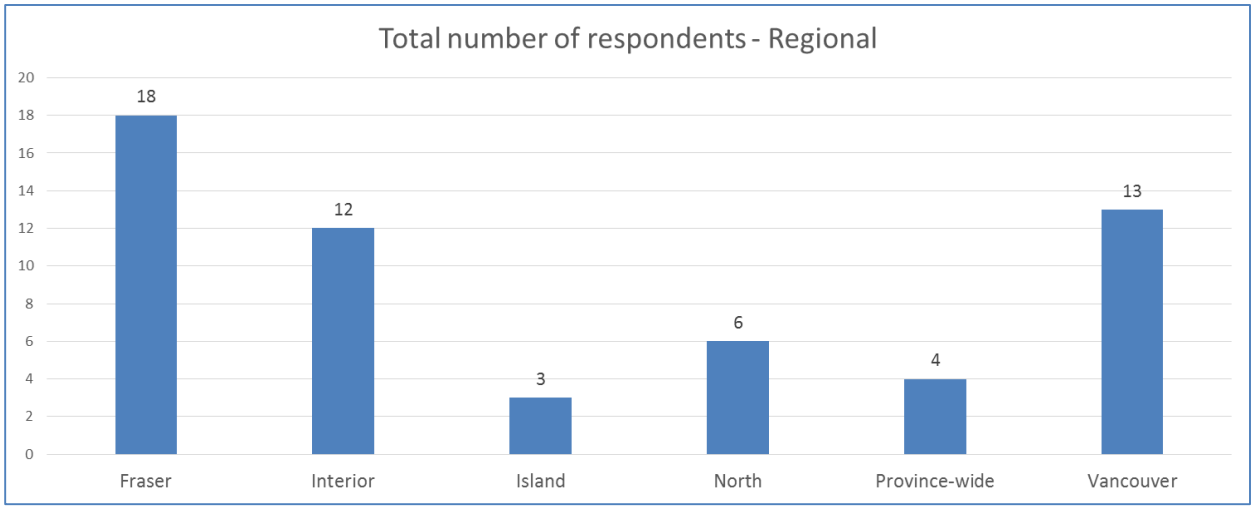
Health Authority	Affiliated Hospitals
Northern Health Authority	University Hospital of Northern BC G.R. Baker Hospital Mills Memorial Hospital Fort St John Hospital and Peace Villa
Interior Health Authority	Kelowna General Hospital East Kootenay Regional Hospital Invermere and District Hospital Royal Inland Hospital
Vancouver Island Health Authority	Victoria General Hospital Royal Jubilee Hospital
Fraser Health Authority	Royal Columbian Hospital Peace Arch Hospital Abbotsford Regional Hospital and Cancer Centre Delta Hospital Eagle Ridge Hospital Chilliwack General Hospital
Provincial Health Services Authority	BC Women's Hospital and Health Centre

Table 4. Other Organizations

Other Organization
BC College of Licensed Practical Nurses
Canadian Armed Forces

All participants are categorized by region in Figure 1 below. The Fraser region had the largest representation followed by Vancouver and the Interior.

Figure 1. Regional



The Findings section below uses the demographics information in this section to provide contextual information for the survey answers in at least one of three ways: Affiliation, Region, or Institution.

6 Findings

This section will first outline the key findings of the survey in the following categories:

1. Equipment and technology
2. Facilities
3. Human resources and support

The Key Findings sub-section is a summary of the survey information which is detailed in subsequent sub-sections.

6.1 Key Findings

The table of figures below lists the key findings and the figure(s) or table(s) in support of each finding.

Table 5. Table of Figures

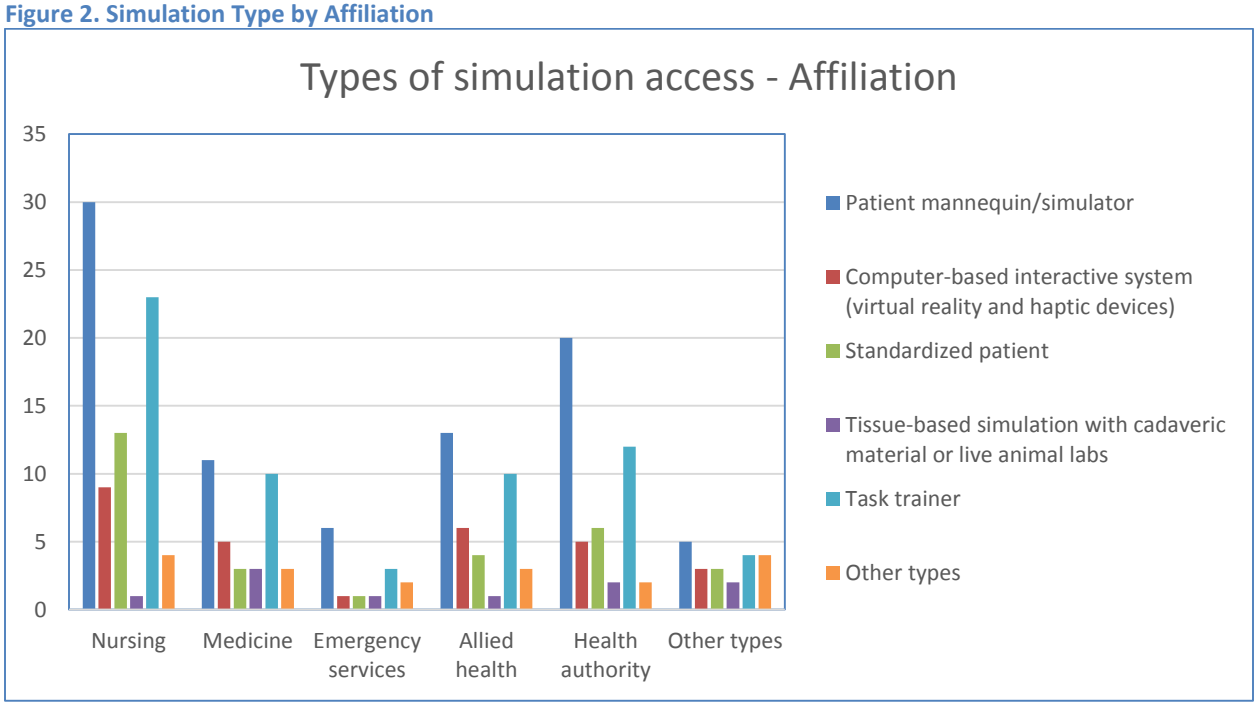
Key Finding	Figure/Table	Page
3. Less than 50% of institutions are sharing their simulation equipment and/or space	Figure 10	12
4. Funding, space, and simulation expertise and leadership were reported as the most common barriers to expanding simulation.	Table 9, 10	15-16
Human Resources and Support		
1. Leadership support for the simulation events and/or centre was recorded as the highest priority aside from funding	Table 10	16
2. Technician support and train-the-educator sessions were ranked in the top 5 out of 14 in terms of priority	Table 10	16
3. Respondents reported an average of 43.9 hours per week of support by leadership, administrative, technical, educator, and other resources. However, the median reported was only 9.5 hours per week of support, meaning that over 50% of respondents have less than 9.5 hours per week of dedicated support resources	Table 11	16
4. Majority of respondents reported yearly operational support costs to be under $50k	Figure 12	17

6.2 Detailed Findings

The following sections provide additional detail and survey results for the key findings in the previous section.

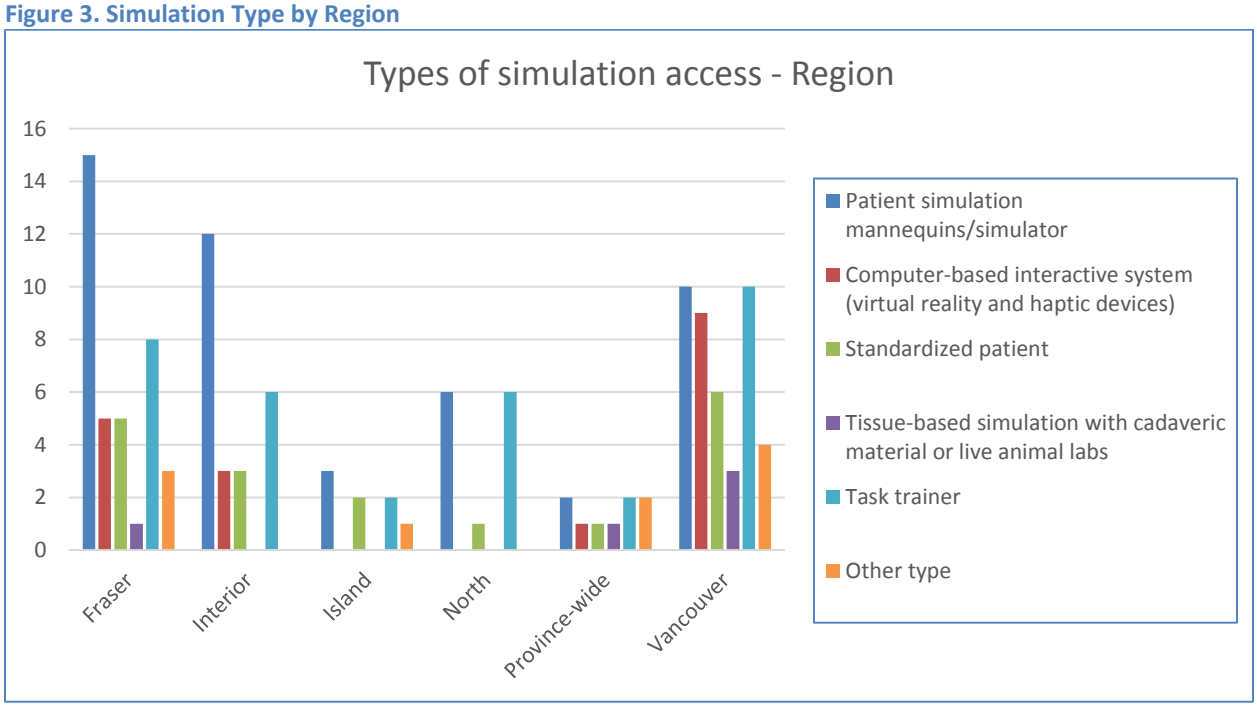
6.2.1 Equipment and Technology

Figure 2. Simulation Type by Affiliation



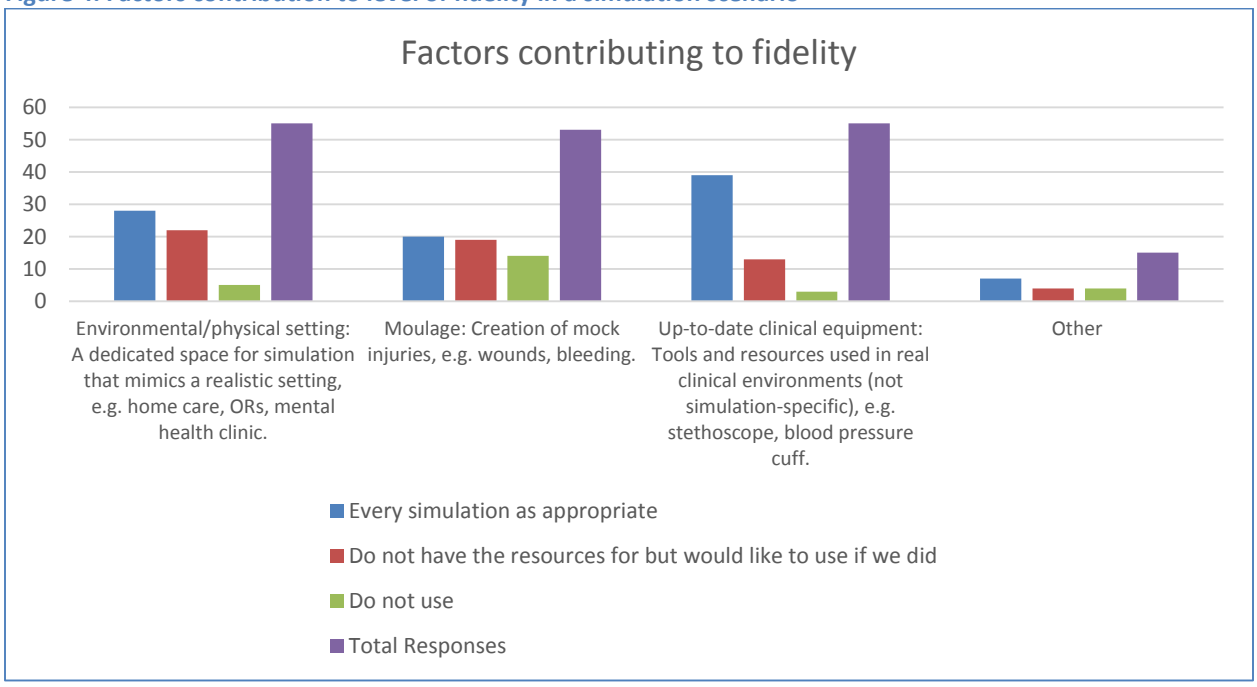
Each group reported having access to patient mannequins/simulators the most, followed by task trainers, standardized patients, and computer-based interactive systems. The majority of groups also reported using these simulation types less than once per month.

Figure 3. Simulation Type by Region



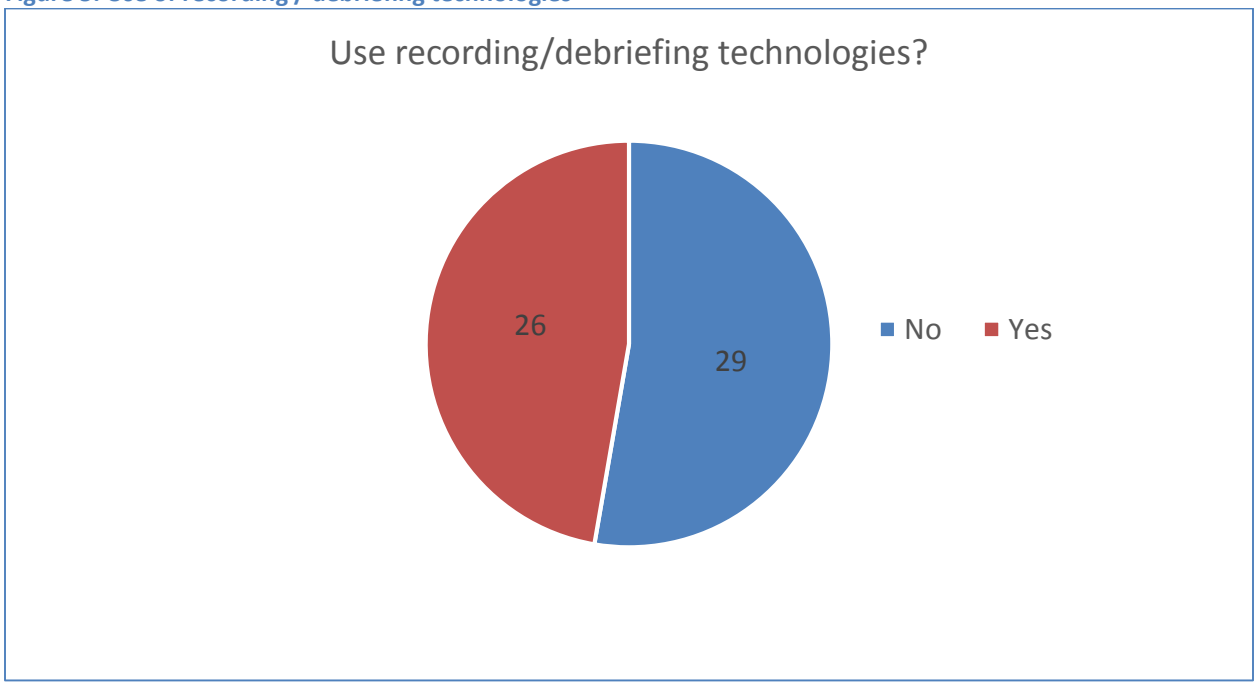
All regions have access to simulators, task trainers, and standardized patients (ordered by frequency). The North and Island regions did not report having access to computer-based interactive systems.

Figure 4. Factors contribution to level of fidelity in a simulation scenario



Approximately one-quarter to one-third of respondents would like to have access to equipment and resources that contribute to the level of fidelity in a simulation scenario.

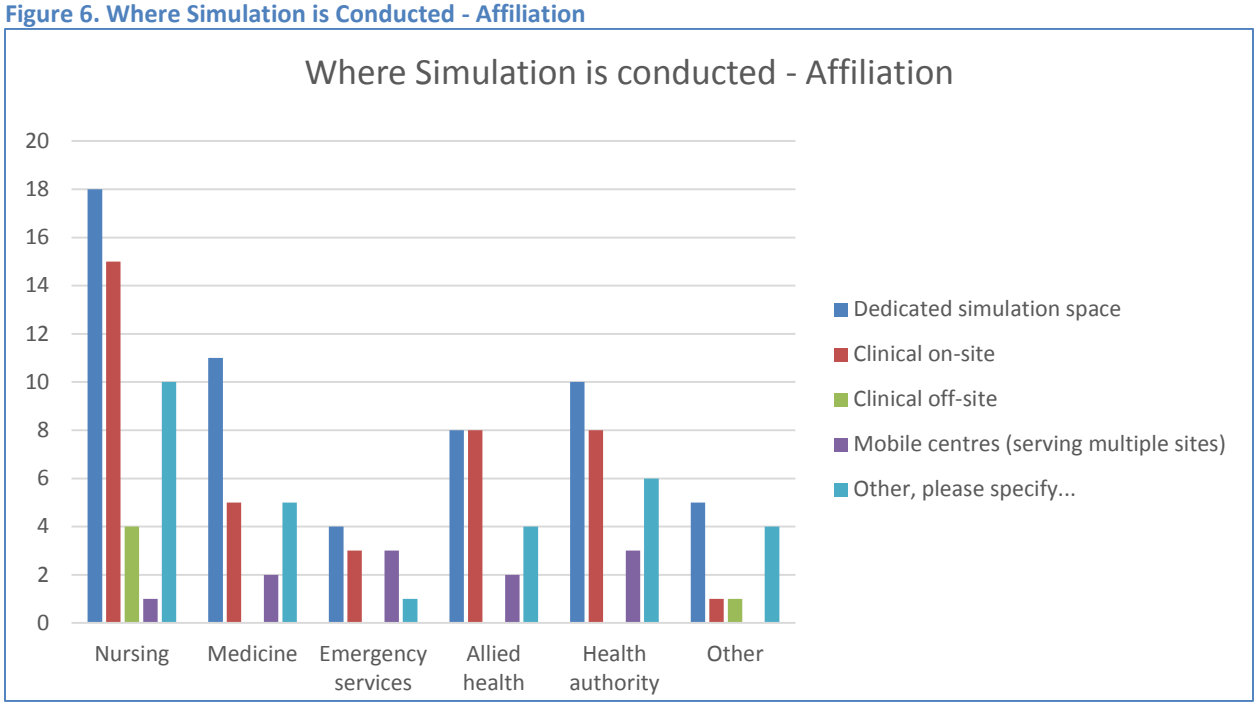
Figure 5. Use of recording / debriefing technologies



Recording and debriefing technologies was reported as being one of the highest non-human resource development initiatives required. Less than half of respondents use recording / debriefing technologies for simulations.

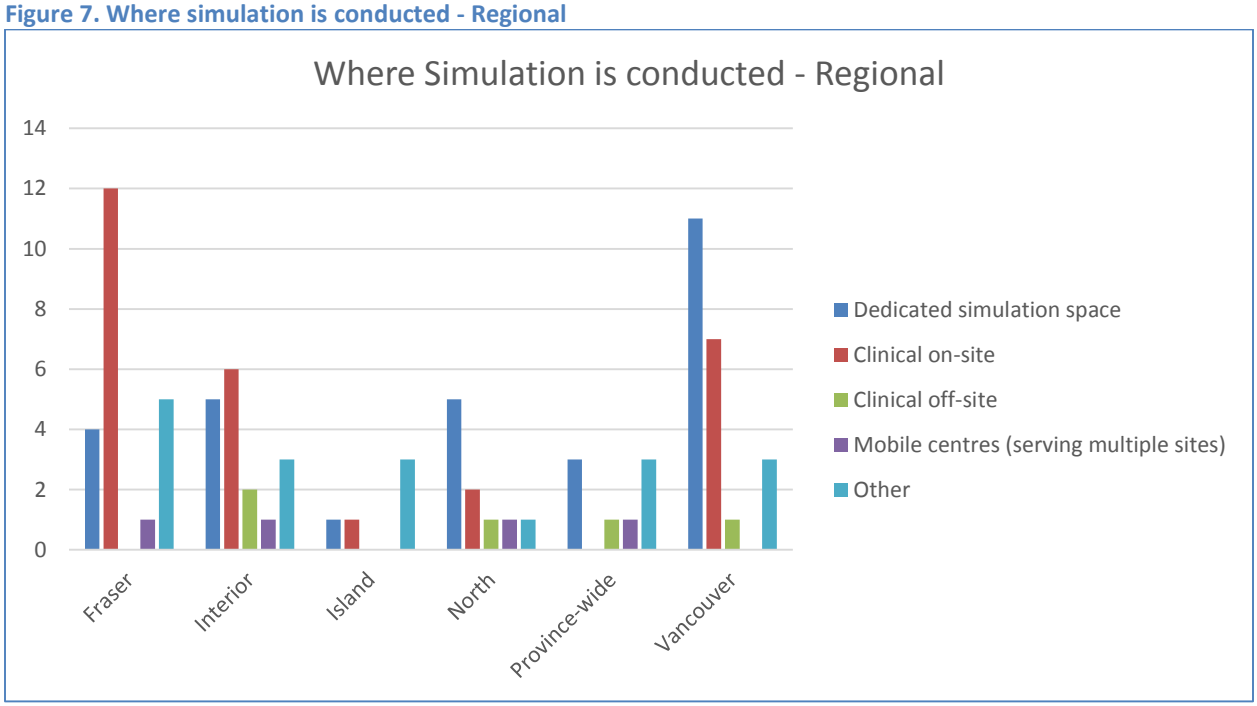
6.2.2 Facilities

Figure 6. Where Simulation is Conducted - Affiliation



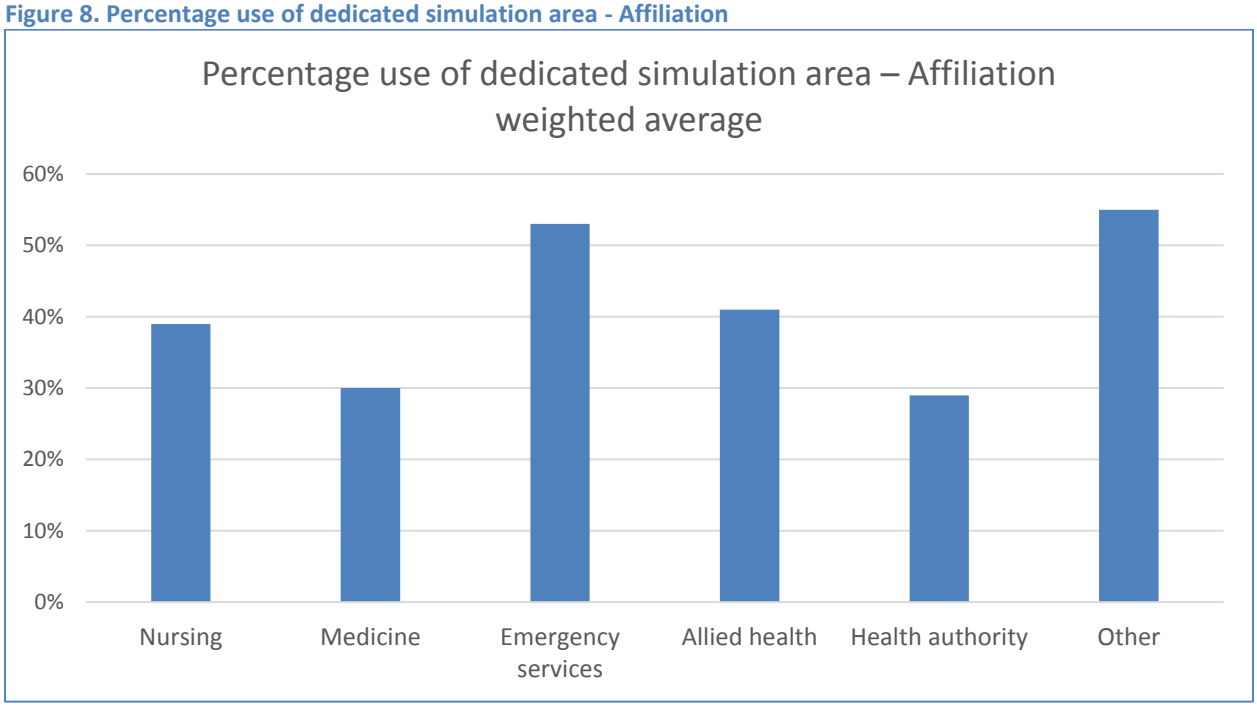
All groups reported conducting simulation in dedicated spaces or clinical on-site facilities most frequently. Nursing also reported conducting simulation in clinical off-site facilities.

Figure 7. Where simulation is conducted - Regional



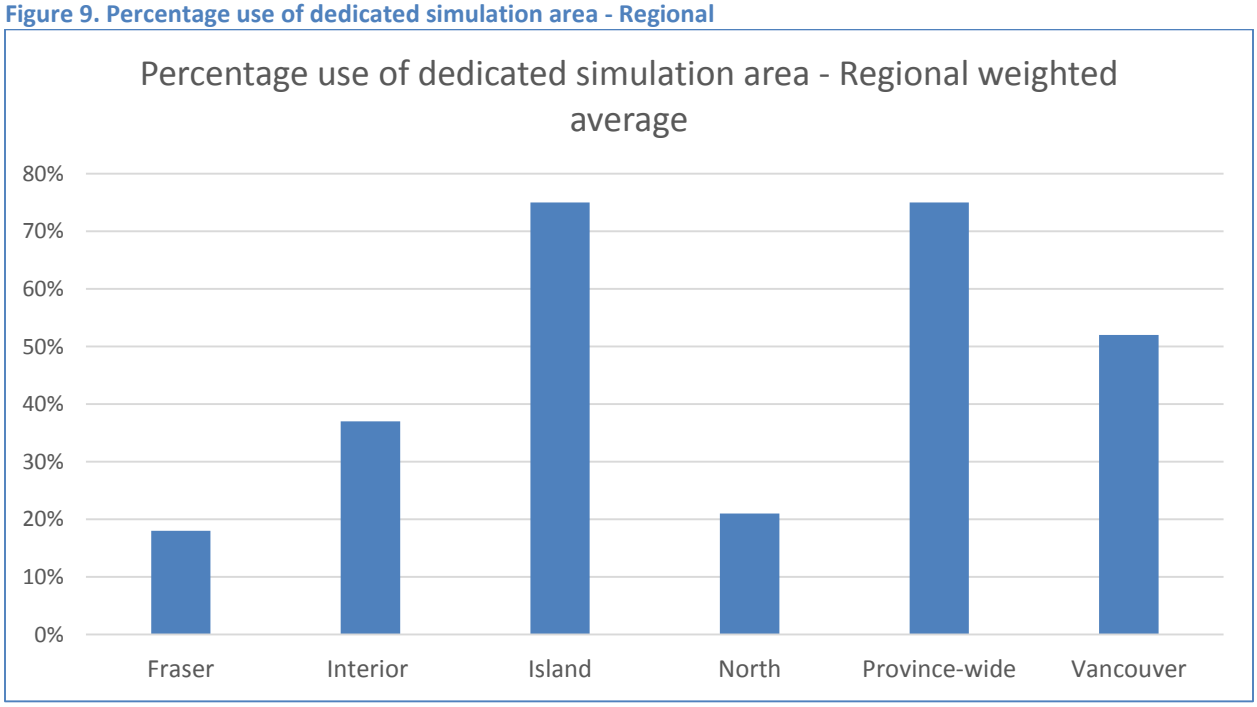
The Fraser region conducts most of its simulation in clinical on-site spaces. The Interior and Vancouver regions frequently conduct simulation in both dedicated simulation spaces and clinical on-site spaces.

Figure 8. Percentage use of dedicated simulation area - Affiliation



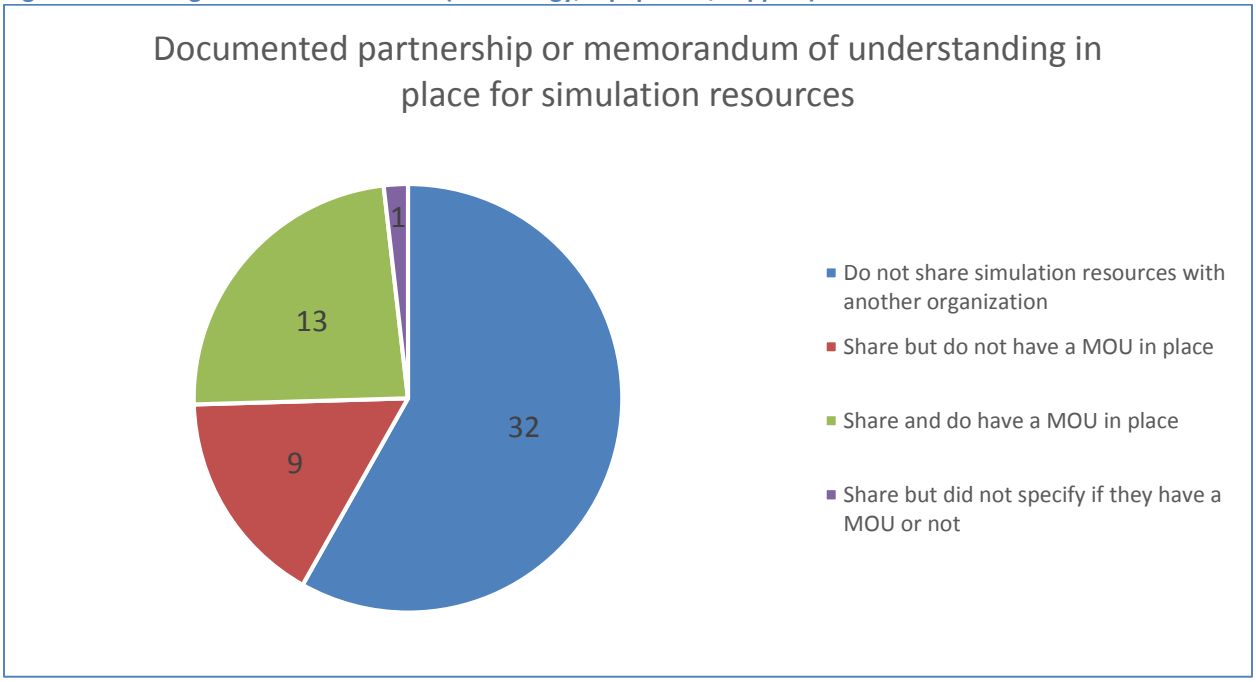
Over half of respondents reported that dedicated simulation areas are in use less than 50% of the time. Emergency services and those identified as "Other" were the only groups that reported over 50% usage rates.

Figure 9. Percentage use of dedicated simulation area - Regional



The Island, Province-wide and Vancouver regions reported the highest percentage of time that dedicated simulation areas are in use. Fraser, Interior and North regions all reported that dedicated simulation areas are in use less than 50% of the time.

Figure 10. Sharing simulation resources (technology, equipment, support)



Less than 50% of organizations are sharing their simulation equipment and/or space. Of the 23 respondents who share resources, over 50% have a MOU in place for simulation resources.

Sharing of resources occurs mostly between health authorities and educational institutions. This is illustrated in Table 6 below.

Table 6. Specific facilities or institutions with a MOU in place

Organization	MOU with….
BC Women's Hospital and Health Centre	Other (not specified)
Camosun College	Northern Health
Invermere and District Hospital	Interior Health Authority
Royal Inland Hospital	Interior Health Authority
Kelowna General Hospital	UBC Okanagan University of British Columbia
Fort St. John Hospital	University of British Columbia
G.R. Baker Hospital	University of British Columbia UNBC School of Nursing

Organization	MOU with….
Mills Memorial Hospital	University of British Columbia UNBC School of Nursing
University Hospital of Northern BC	University of British Columbia UNBC School of Nursing
Justice Institute of BC	Provincial Health Services Authority
Langara College	Other
Selkirk College	Aurora College
Thompson Rivers University	Interior Health Authority UBC - Okanagan
University of British Columbia	University of Victoria Vancouver Island Health Authority
University of British Columbia Okanagan	University of British Columbia
University of Northern British Columbia	Northern Health Authority University of Northern British Columbia
Vancouver Community College	Vancouver Coastal Health Authority

Table 7. Square footage of all simulation space

Measurement	Square Footage
Range	0 - 60,000
Mean	3000
Median	490

While the range shown above in Table 7 is large, the median indicates that over 50% of the simulation space is 490 square feet or smaller.

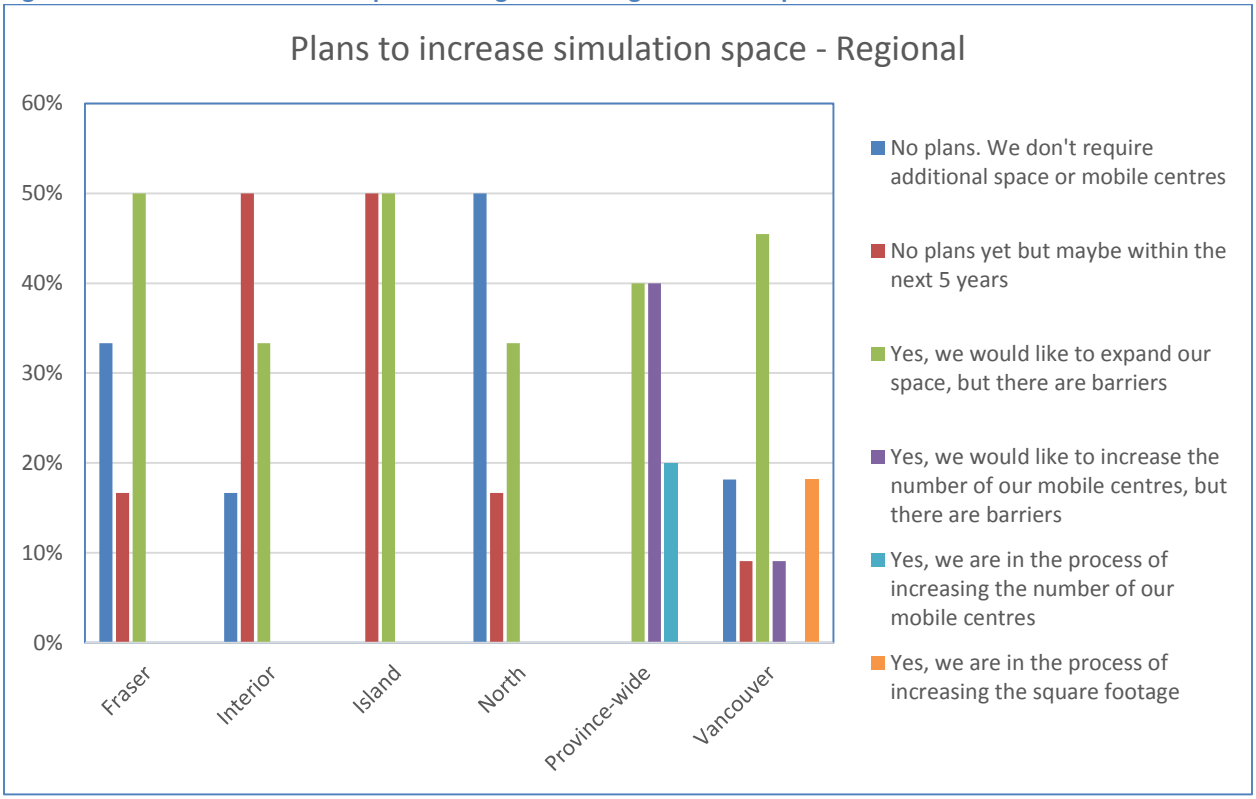
Table 8. Percentage breakdown of the spaces

Variable	Mean
Simulation lab (anywhere the simulation can take place)	50%
Observation/control	9%
Debriefing	13%
Storage	14%
Videoconference	7%
Flexible space / meeting room	25%

Variable	Mean
Reception area	3%
Other	14%

The majority of simulation (75%) is being conducted in simulation labs or flexible spaces such as meeting rooms.

Figure 11. Plans to increase the square footage of existing simulation space or increase number of mobile units



Vancouver is the only region that reported being in the process of increasing the square footage of existing simulation space. Province-wide is the only region in the process of increasing the number of mobile units. Additionally, Vancouver and Province-wide were the only regions that reported high levels of interest in increasing the total number of mobile units. The Interior is the most prominent group to express interest in expansion in the next 5 years.

All groups indicated barriers to expansion. The most commonly cited barriers are listed in Table 9 below.

Table 9. Barriers to expanding simulation activities

Barrier	Frequency (out of 19 responses)
Funding	13 / 19 (68%)
Space	11 / 19 (58%)

Simulation expertise and leadership	6 / 19 (32%)

6.2.3 Human resources and support

Table 10. Level of importance (1 = low importance, 10 = high importance)

	Mean	1	2	3	4	5	6	7	8	9	10
Funding	**8**	4	2	1	1	4	2	0	2	4	30
Leadership support for the simulation events and/or centre	**7.3**	4	1	2	3	2	2	3	10	5	16
Space for simulation events	**6.9**	8	1	0	0	6	2	4	5	5	16
Technician support for the simulation events and/or centre	**6.8**	7	1	3	2	2	2	5	7	6	14
Train-the-educator and/or simulation certification sessions for the faculty	**6.7**	6	2	2	3	4	2	2	7	4	15
Ability to record and debrief training sessions	**6.4**	9	1	0	1	4	4	5	8	5	10
Administrative support for the simulation events and/or centre	**6.3**	7	0	3	2	9	2	4	6	4	11
Train-the-trainer sessions for support staff	**6.3**	6	3	2	4	4	1	3	11	2	11
Ability to share space or resources with other similar programs	**6.1**	8	0	1	4	5	4	7	7	3	8
More patient simulation mannequins/simulators	**5.8**	6	3	3	2	7	7	2	7	3	7
More computer-based interactive systems/virtual reality/haptic devices	**5.5**	6	1	7	4	6	3	5	5	5	4
More task trainers	**5.1**	9	0	2	6	11	4	1	3	3	5
More standardized patients	**4.5**	8	7	3	7	7	3	3	3	2	3
More tissue-based simulations with cadaveric material or live animal labs	**3**	23	5	6	1	2	1	1	0	2	4

Leadership support for simulation events and/or centre was recorded as the highest priority after funding. Technician support and train-the-educator sessions were ranked in the top 5 out of 14 in terms of priority.

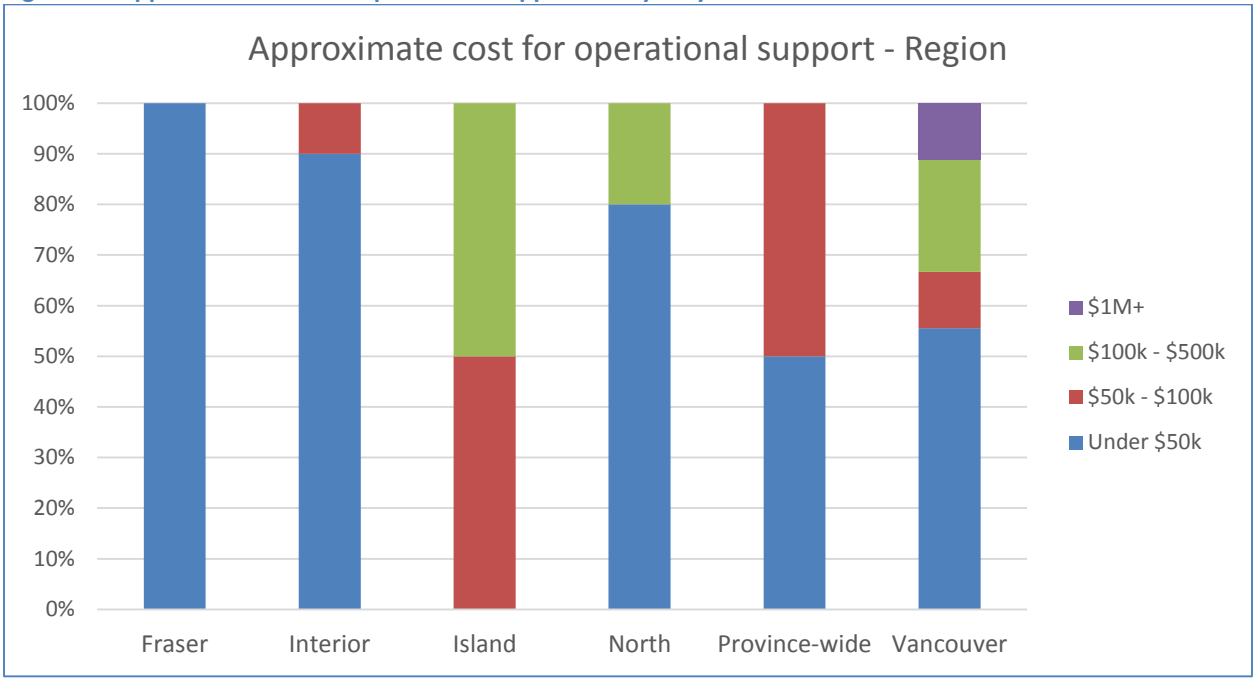
Table 11. Hours per week of dedicated resources for simulation support

Variable	Mean	Median
Leadership	9.1	1.5
Administrative	5.6	1
Technical	8.4	1

Variable	Mean	Median
Educator	13.1	6
Other	7.7	0
Total	43.9	9.5

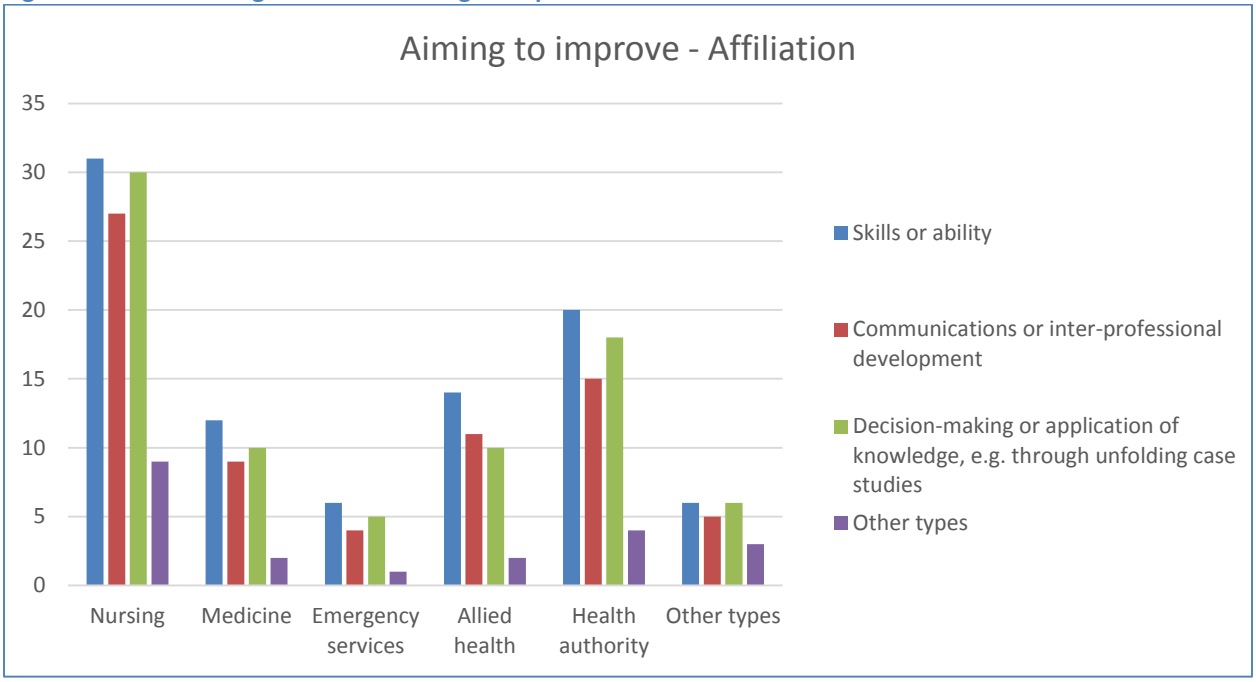
Average of a little over a full FTE (44 hours) per week across 5 different types of resources dedicated to support. Average median of 9.5 hours per week shows that the range of support varies amongst respondents. Over 50% of respondents have less than 9.5 hours per week of dedicated support resources.

Figure 12. Approximate cost for operational support on a yearly basis



Most sites have approximate less than $50k in operational support. Vancouver is the only region with a centre reported to have more than $1M in operational support.

Figure 13. What the organization is aiming to improve with the use of simulation



All groups reported that they would like to improve all of the areas listed with no significant difference between groups.

6.3 Discussion

6.3.1 Equipment and Technology

Making additional investments in simulation equipment and technology were reported by the majority of respondents as low priority at this time. Respondents also reported that equipment is typically used less than 2-3 times per month. Exceptions to this finding were the need for investments in recording and debriefing equipment and software, and providing access to equipment that enhances the fidelity of simulation scenarios. Less than half of respondents currently have access to recording and debriefing technologies and this was reported as one of the highest non-human resource development initiatives required.

The greatest need in terms of technology is not the traditional simulation based training equipment such as patient mannequins and task trainers. Future investments in simulation equipment and technology should be focused on technologies that act as a companion to existing tools and can help enhance learning outcomes by providing educators and learners with performance related information. Currently, the BC Simulation Technology Working Group (STWG) a community of practice, is providing leadership in supporting simulation centers across the province with the acquisition and adoption of simulation technology, including recording and debriefing equipment. Future investments in new technology will be reviewed over the next 5 years.

6.3.2 Facilities

Access to simulation facilities was reported as a key need for all types of respondents as it ranked in the top three for priorities going forward. The need for more space seems to be contradicted by the finding that simulation facilities were reported to be in use less than 50% of the available time. More information and further study is required to determine how to best leverage lab space in the province.

Space usage also varied significantly between regions as the Island and Province-wide respondents reported usage levels of approximately 75%, Interior and Vancouver between 35 and 50%, and Fraser and North reporting that simulation facilities were in use less than 25% of the available time.

Although increasing space was reported as a high priority, many respondents reported that they are unable to increase space due to a lack of funding. One potential way to increase the access to simulation space without a significant increase in funding is to share resources and space between institutions. Less than 50% of institutions reported that they are currently sharing their simulation equipment and/or space with others. There is room for further improvement in organizations who are currently sharing resources as only 50% have a memorandum of understanding (MOU) in place with another organization.

Creating partnerships across the province would not only increase the utilization of existing simulation labs/environments it would also effectively begin removing silos between healthcare professions, health authorities, post-secondary institutions and other partners whilst still leveraging simulation expertise. Examples include:

- Creating a provincial standardized patient registry would allow smaller simulation centers and postsecondary institutions access to the use of and expertise of already successful programs
- Research initiatives with multiple partners from across the province to support a provincial research agenda.

Additional methods to supplement already existing space in simulation-based education could explore the potential for ‘in-situ’ simulation, community disaster simulations, primary and community simulation scenarios, pre-hospital and virtual simulations. In-situ simulation is that which occurs at the clinical site to which the simulated experience pertains. This type of simulation has the benefit of decreasing required resources, increasing realism and affordability, and widening multidisciplinary team participation, thus enabling assessment and training of non-technical team-working skills in real clinical teams. (Walker, Sevdalis, Lamben, Guatama, Aggarwal, & Vincent, 2013). In-situ simulation helps support interprofessional collaboration/communication and creates opportunities for staff to identify system changes that could result in greater patient safety as well as supporting healthcare student education of how teams function (British Columbia Practice Education Committee, 2013). Simulation initiatives already in place in the hospital setting may translate into primary and community healthcare settings. While postsecondary simulation labs can partner to share unique lab settings as well as create distance sites so students can be taught virtually while in other locations in the province.

6.3.3 HR and Support

Three of the top five priorities reported are related to human resources and support including leadership support (2), technician support (4), and providing train-the-educator sessions (5). These priorities are not about making direct investments in simulation technology and equipment, but are about enabling and supporting the current simulation infrastructure.

In much the same way that investments in simulation technology and equipment such as patient mannequins are seen as less important than those that enhance the current tools, investments in training and support can help organizations improve their current service offering.

Simulation experiences in healthcare are planned, implemented, and evaluated from multiple professional and curricular contexts. Costly resources and time can be saved if a comprehensive strategy is developed in advance of implementation. (Motola, Devine, Chung, Sullivan, & Issenberg, 2013).

Organizing and conducting education sessions was reported as one of the top priorities by respondents in the survey. These train-the-trainer sessions will include education for health professional educators on curriculum development and how to identify the areas within that curriculum that can benefit from simulation-based pedagogy as one of the teaching strategies. In addition, there will need to be instruction on how to create specific scenarios that directly address the identified learning needs of the curriculum and best assist in the teaching of these seminal concepts. A critical aspect of simulation-based education is the debriefing process as it is this component of the educational activities that solidifies the key information and ensures that correct clinical application of the learning objectives are acquired by the learners. This process of learning will also need to educate the instructors on the capabilities and limitations of the various pieces of simulation equipment available for teaching various clinical skills. It is important that educators understand the principles of using simulation equipment as effective learning and teaching tools (Motola, Devine, Chung, Sullivan, & Issenberg, 2013).

There may also be the need at some centers to train support staff on how to use the specific simulation equipment effectively in addition to providing them with information on how to assist educators/instructors on the effective implementation of simulation equipment as learning and teaching tools to support curriculum goals and objectives. It is critical that educators and technical staff work collaboratively to create effective and comprehensive learning experiences for the students. This information and experience can then be passed on through each participant's organization and build the knowledge base throughout the province.

From the data collected and analysis of results, the Committee determined four themes, which then resulted in areas to recommend further action.

- Simulation Education – human resources and support
- Leadership Development – human resources and support
- Partnerships – facilities/organizations and MOU's
- Technology – equipment and technology

7 Recommended Next Steps

Based on the key findings above we recommend four categories of recommendations that are broken down within each category as follows:

- **SE: Simulation Education**
  - SE1. Develop / Identify Instructor Courses
  - SE2. Conduct Sessions
- **LD: Leadership Development**
  - LD1. Leadership Training and Capacity Building
- **BP: Build Partnerships**
  - BP1. Conduct Needs Analysis
  - BP2. Facilitate Conversations
- **TD: Technology Development**
  - TD1. Website Development
  - TD2. Recording and Debriefing Equipment
  - TD3. Future Simulation Equipment Requirements

The following sections describe each of these recommendations in detail. For each specific recommendation, we provide the rationale, actions required, anticipated outcome, and resources required. Sequencing of activities and high level timing estimates are also provided based on identified linkages between recommendations and provincial priorities.

7.1 Simulation Education

Train-the-trainer education programs provide people with the skills to teach other people. They provide information to be taught and give prospective instructors the experience of teaching the material before they educate others.

7.1.1 SE1: Develop / Identify Instructor Course

Recommendation

Develop or identify an education program that would address basic knowledge of curriculum development, simulation scenario development, and effective debriefing.

Rationale

Curriculum development is pivotal to determine what teaching strategies are most appropriate for effectively communicating the goals and objectives of the educational program. Simulation is one teaching strategy that can be effective for the adult learner because it builds experience on an already existing knowledge base, addresses the learners' needs in a practical clinically applicable format, and has immediate application to the learners' daily professional activities.

It is essential that the goals and objectives of a simulation education program dictate the most appropriate teaching strategies to develop the specific material or content to be included in the

curriculum and thereby identify the methods or strategies that will effectively help the learners assimilate new skills into their clinical armamentarium. Simulation is but one method or teaching strategy that may be utilized for learning new knowledge and skills. However, simulation has been shown able to be very effective particularly in solidifying the acquisition of new skills of healthcare professionals and high reliability teams in medicine. Careful and deliberate continuous quality improvement activities are required to ensure that the implementation of the technology meets its potential. Simulation may also be used as an adjunct to already developed curriculum content in the learning of specific skills by individuals and improving communications between members of healthcare teams.

A critical aspect of simulation-based education is the debriefing process as it is this component of the educational activities that solidifies the key information and ensures that correct clinical application of the learning objectives are acquired by the learners.

Actions Required

The recommended actions are as follows:

a. Identify state of current knowledge of curriculum development, simulation scenario development, and debriefing
b. Critically review existing train-the-trainer courses in Canada and compare development of a BC dedicated train-the-trainer course
c. Develop a strategic plan to implement a province-wide train-the-trainer course
d. Develop training materials for curriculum development and simulation scenario construction
e. Develop effective learning experiences to assist educators to become effective in the debriefing of simulation scenarios
f. Develop stakeholder engagement materials and encourage leaders to champion simulation education activities
g. Develop framework for systematic evaluation of the effectiveness of the simulation activities engaged

Anticipated Outcome

This recommendation will result in a program that will ensure that educators / instructors throughout the province are utilizing recognized best practice approaches to developing and integrating simulation-based healthcare education.

Timing and Sequence

These actions should be completed in the immediate time frame (0 – 12 months).

Resources Required

The following types of resources will be required to implement the actions:

- Resources for a provincial education coordinator to coordinate/compile program
- A steering committee with representatives from each health profession to develop an appropriate train-the-trainer program

- Access to simulation facilities to trial and refine proposed train-the-trainer course within the various health professions' identified needs

The simulation Subject Matter Experts (SMEs) will need to consult with faculty and other simulation leaders throughout the province to identify the current knowledge gaps and to develop a course that meets the needs of healthcare professionals in BC.

7.1.2 SE2: Conduct Sessions for Instructor Course

Recommendation
Organize and conduct train-the-trainer sessions for simulation-based interprofessional health education in BC.

Rationale
Simulation based health education is necessary to ensure simulation-based training in BC is delivered according to recognized best practices. Simulation-based education requires both simulation technology with capable technicians and instructors who know how to apply the equipment and integrate it into their curriculum to meet specific learning objectives.

Actions Required
The actions in support of the recommendation are as follows:

a. Identify educators committed to learning effective trainer skills
b. Identify and book venues and utilize already trained local educators to help instruct the new educators
c. Conduct workshops
d. Develop processes and identify support model for ongoing administration and maintenance of program

Anticipated Outcome
Participants in the sessions will have an increase in the knowledge, skills, and abilities required to effectively present simulation-based health education and educate additional local instructors of simulation-based health education. Following these initial sessions, instructors will be able to conduct workshops within their own organization to further increase the knowledge base and deliver simulation-based education according to recognized evidence informed practices. With this increased knowledge and ability it is anticipated new areas of the curriculum will be identified for development of simulation-based education and learners will be more active in directing and requesting needed simulation-based learning.

Timing and Sequence
These actions should be completed within the immediate time frame with the session logistics completed in parallel with Recommendation SE1. The 'build or buy' analysis to determine whether the education course should be developed internally or if participants should attend courses that are

already available needs to be completed before a new program is developed. The sessions can only be conducted once the goals and objectives of the curriculum are identified and logistics are complete.

Resources Required
The following types of resources will be required to implement the actions:

- Venues to conduct the workshops
- Qualified educators and simulation technicians to facilitate the sessions regionally for sustaining the educator group with simulation based education expertise
- A coordinator to book venues, manage invitations, collate list of trained educators in the province, and coordinate regional requests for educators and train-the-trainer courses

7.2 Leadership Development

Simulation facilities and technologies cannot be used to their full potential without active and visible support from leaders. Respondents in the simulation resources survey indicated that leadership support for the simulation events and/or centers was the highest priority next to funding. In addition, the median weekly average of hours for leadership and administrative support was reported as less than 10.

7.2.1 LD1: Leadership Training and Capacity Building

Recommendation
Develop a leadership training program that focuses on enabling leaders to effectively manage simulation facilities, resources, and simulation based healthcare education programs.

Rationale
Leadership support for simulation events and facilities is seen as a key need in the province. Leaders should be encouraged to participate in a training program that can help them manage and support these resources effectively. Effective implementation of simulation-based learning within education curricula requires unique skills in scenario development and implementation and debriefing. Leadership is required to identify regional champions and educators interested in acquiring these skills to sustain this type of healthcare education. The program will also include activities to build both awareness and desire amongst leaders to champion simulation events and help foster interprofessional participation in healthcare education.

Actions Required
The actions in support of the recommendation are as follows:

a. Identify stakeholders
b. Develop stakeholder engagement materials
c. Develop leadership education materials
d. Conduct leadership education workshops

Anticipated Outcome
Participants in the leadership training program will have increased knowledge, skills, and abilities to effectively support and manage simulation events and facilities.

Timing and Sequence
These actions should be completed within the short term timeframe (12 – 24 months) following the simulation education sessions.

Resources Required
The following types of resources will be required to implement the actions:

- Simulation steering committee coordinator to contact stakeholders and coordinate session logistics
- Venues to conduct the training sessions
- Simulation leadership and capacity building SMEs to develop training materials

7.3 Build Partnerships

Acquiring additional funding for simulation activities was reported as the number one priority as facilities and equipment require significant investments to purchase and maintain. Respondents also reported that the need for equipment is a low priority while the need for space was recorded as one of the highest non-human resource development initiatives required.

One way to address the need for additional space without requiring significant funding is to build and promote partnerships between organizations in BC. To some extent this is already occurring with some simulation centers providing loan of their simulation equipment to other centers or groups in need of this type of assistance. Academic and industry partnerships between the health authorities and postsecondary institutions can be realized through multiple initiatives including research.

7.3.1 BP1: Needs Analysis

Recommendation
Perform a needs analysis to understand where the greatest needs are for space and where existing partnerships exist.

Rationale
Although space was reported as a key need for all respondents, the majority of spaces were reported to be in use less than 50% of the available time. This indicates that there may be opportunities for organizations who are located in close proximity to one another to share simulation space and resources based on a mutual understanding of needs.

Actions Required
The actions in support of this recommendation are as follows:

a. Identify organizations with existing partnerships but no documented memoranda of understanding (MOUs)
b. Identify organizations who are in the greatest need for space
c. Identify organizations who would benefit from entering into collaborative partnerships through equipment, simulation expertise, and/or research

d. Create a password protected repository of simulation centers and equipment that are available for collaborative utilization provincially

Anticipated Outcome
This recommendation will result in a comprehensive list of all current agreements and memoranda of understanding between health education institutions, health authorities, and allied health. It will also lead to a greater understanding of which organizations have the greatest need for space and would benefit most from building partnerships.

Timing and Sequence
These actions should be completed within the short term timeframe (12 – 24 months) and must be completed before Recommendation BP2 is undertaken.

Resources Required
The following types of resources will be required to implement the actions:

- Resources to research current state of partnerships and needs for space
- Resources to create and maintain website

7.3.2 BP2: Facilitate Conversations between Organizations

Recommendation
Facilitate conversations between organizations to develop MOUs to share resources and space.

Rationale
Survey findings indicate that less than 50% of institutions are sharing their simulation equipment and/or space. Of these institutions that are currently sharing resources, approximately half have an MOU in place. There are opportunities to facilitate conversations between organizations that are not sharing resources and are interested in doing so as well as between those that share but have not formally documented an MOU.

Actions Required
The actions in support of this recommendation are as follows:

a. Develop MOU template
b. Coordinate meetings to discuss partnerships between institutions and organizations
c. Facilitate MOU development process between institutions and organizations via a password protected area of the central computer registry that includes information on simulation centers contact information, schedules and equipment

Anticipated Outcome
This recommendation will result in an increase in the number of organizations who have formally documented partnerships. This increase in the number of partnerships will enable organizations to share space and other simulation resources based on real needs. A more efficient use of resources can satisfy the need for additional space without requiring significant increases in funding.

Timing and Sequence
Some of the actions can be completed in the immediate to short term timeframe (0 – 24 months) such as developing the MOU template. Activities relating to discussing partnerships and facilitating MOU development will be conducted over the short to long term (1 - 5 years) and will need to include an iterative process as needs change.

Resources Required
The following types of resources will be required to implement the actions:

- Current MOUs in place to share resources between organizations
- Meeting coordinator
- Resource to facilitate development of MOUs between organizations

7.4 Technology Development

Technology is a key enabler of simulation education. Although the need for additional patient simulators such as mannequins or computer based systems was seen as a low priority at this time, investments in companion technologies including recording and debriefing systems and those that increase the level of fidelity in simulation scenarios were reported as being a high priority.

Existing equipment in simulation facilities will need to be replaced within the next few years as new technology becomes available. An operational support model needs to be developed to identify these emerging technologies and determine which facilities are in the greatest need for renewal.

7.4.1 TD1: BC Simulation Website Development

Recommendation
Develop a website to support simulation activities in BC.

Rationale
There presently is no actively visited and updated central website for simulation in BC. A robust website is required to support simulation in BC and serve as a central hub for communications and provide access to relevant simulation-based, healthcare professional education materials.

Actions Required
The actions required in support of this recommendation include:

a. Investigate existing simulation websites in BC
b. Decide whether it is appropriate to repurpose an existing website or whether the existing technology is incapable of supporting present and future needs of this communication tool
c. Investigate the logistics of creating and supporting a new dedicated simulation website for long-term implementation in BC
d. Identify ongoing ownership, management, and resource support model for a simulation website

Anticipated Outcome

This recommendation will result in a website that will provide updates on PSCC activities, house relevant documents including terms of reference and reports, and provide access to training and development materials.

Timing and Sequence
Some of the actions can be completed in the immediate term such as investigating existing simulation websites and making a 'build or buy' decision. Development of the website and an associated ownership/management model will likely need to occur over the short term (12 – 24 months).

Resources Required
The following types of resources will be required to implement the actions:

- Resources to investigate existing simulation websites in BC
- Resources to develop new website or revise existing website
- Operational resources to support website in the long term

7.4.2 TD2: Recording and Debriefing Equipment

Recommendation
Disseminate and support the recommendations from the BC Simulation Technology Working Group's (STWG) report on simulation recording and debriefing technologies.

Rationale
Investments in recording and debriefing technologies was reported as one of the highest non-human resource development initiatives required. In addition, less than half of respondents currently have access to recording and debriefing technology. These technologies serve as a companion to existing tools and can help enhance learning outcomes by providing performance related information.

Actions Required
The actions required in support of this recommendation include:

a. Identify contacts in clinical and post-secondary institutions
b. Provide support in identifying sites with the greatest need for recording and debriefing technologies

Anticipated Outcome
This recommendation will help enable the work that the BC STWG has completed in supporting simulation centers across the province with acquiring and adopting recording and debriefing equipment.

Timing and Sequence
These actions will be completed during the immediate (0 – 12 months) and short term (12 -24 months).

Resources Required
The following types of resources will be required to implement the actions:

- Recommendations from the BC STWG

- Repository that includes information on which facilities have / do not have recording and debriefing solutions.

7.4.3 TD3: Future Simulation Equipment Requirements

Recommendation
Develop a strategy for supporting and renewing simulation technology over the next five years.

Rationale
Simulation technology currently in place around the province has a limited shelf life due to normal wear and tear and the emergence of new technologies. Not all new technologies may necessarily mandate adoption or changes to existing simulation-based health professional education. However, it will be important to create a deliberative process by which these new technologies can be assessed, discussed and reviewed for appropriateness of inclusion in provincial initiatives for simulation-based education. It would be anticipated that the Provincial Simulation Coordination Committee would function in the oversight of this important deliberative process.

Action Required
The action required in support of this recommendation include:

a. Develop a strategy for renewing existing simulation technology and assessing new technology developments related to simulation in BC

Anticipated Outcome
This recommendation will result in a strategy for how the Province should conduct technology renewal activities over the long term.

Timing and Sequence
These actions will be completed during the long term (24 months to 5 years).

Resources Required
The following types of resources will be required to implement the actions:

- Repository that includes up to date inventory of simulation equipment in BC
- Resources to gather information and requirements for new technology

8 Anticipated Outcomes

Simulation is increasingly becoming a significant teaching strategy for healthcare professional education and this is obviously the case within the province of British Columbia as evidenced by the survey results. This is particularly important for health professional learners to engage in interactive learning with those outside their profession in order to create effective teams involved in patient care. The goal of inter-professional learning is to prepare all health professionals for deliberatively working together with the common goal of building a safer and improved patient-centered health care system.

Communication failures in healthcare teams are associated with medical errors and negative health outcomes. Healthcare professionals consistently make errors, not because they are incompetent, uncaring or careless, but because of the complicated systems in which they work and the lack of training in nontechnical or communication skills (W Riley, S Davis et al, 2011). The hazards and errors specific to systems can be anticipated and processes such as team training can be designed to avoid failures and to prevent patient adverse events when a failure does occur (Institute of Medicine, 2004). Interdisciplinary team training can be highly effective at improving communication and teamwork, as evidenced by introduction of the Surgical Safety Checklist. Implementation of this checklist in eight hospitals worldwide was associated with concomitant reductions in the rates of death and complications among patients undergoing non-cardiac surgery in a diverse group of hospitals (AB Haynes, TG Weiser et al, 2009). This checklist is now a routine in operating rooms globally.

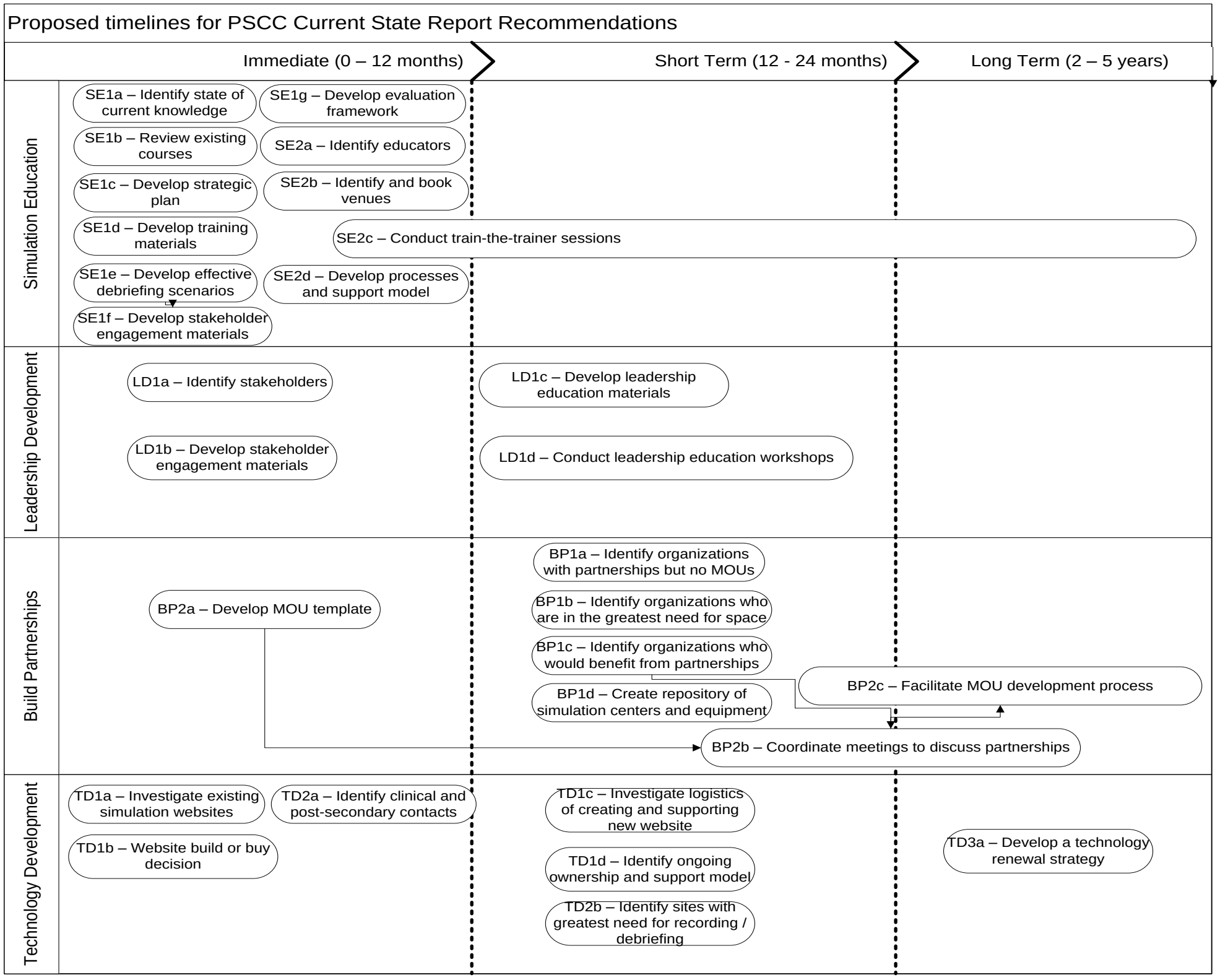
Simulation training is commonplace in high-reliability organizations, such as the aviation and nuclear power industries, and is strongly recommended by the Institute of Medicine to improve patient safety. However, there is a paucity of empirical evidence of the direct impact of simulation training on patient outcomes (W Riley, S Davis et al, 2011). Training should be incentivized, in a realistic context, and delivered to inter-professional teams similar to those delivering actual care. Local adoption and adaptation of effective programs can help keep costs down, and make them locally relevant thereby maintaining effectiveness (A Smith, D Siassakos et al (2013).

The recommendations arising from the BC Simulation Survey indicate simulation-based education is being widely implemented provincially and there is increasing need for this type of health profession teaching, especially at the inter-professional level. According to the priorities identified in this Current State Report, the initial three areas of focus for simulation-based education will be to establish a central server mechanism to facilitate communication and collaboration between health professional educators within BC, develop instructional courses to assist teaching centers and groups to increase and maintain their group of educators skilled in the development and implementation of simulation-based education within their curricula locally, and to begin developing a clinical tool for inter-professional safe and effective handoff of patients. These three primary initiatives offer a unique opportunity for scholarly activity and research that should be taken advantage of to ensure optimal use of the resources being used. It is vital to study the learning processes and organizational/cultural factors influencing uptake, to monitor outcomes and to robustly evaluate programs for their impact on participants, patient care, and health care outcome. Ideally it is anticipated that improvements in patient outcomes, with reduced adverse events and increased patient satisfaction in their health care, will be realized. This feedback will

also provide evidence of simulation-based teaching effectiveness and guide future curriculum development for health care team training and the use of simulation as a teaching strategy within the province of BC.

9 Proposed Timelines

The proposed timelines for these recommendations are mapped out below for the immediate (0 – 12 months), short term (12 – 24 months), and long term (2 – 5 years).



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Hospital Care for Seniors Clinical Care Management Guideline: 48/6 Model of Care
British Columbia Provincial Seniors Hospital Care Working Group, September 2012

Appendix A: Survey Questions

Survey purpose

The BC Provincial Simulation Coordination Committee (PSCC) was established in June 2012 and functions as a central coordinating and advisory organization to advance the capacity of health authorities and health professional education institutions to support the efficient and integrated development and access to simulation facilities, technologies, and resources province-wide.

In March 2013, the PSCC was provided with funding by the Ministry of Advanced Education, Innovation, and Technology (AVEIT) to develop a Simulation Roadmap for the province. One of the goals of this roadmap was to develop an inventory of simulation facilities, equipment, and resources across the province. In order to ensure the information collected is comprehensive and inclusive, the stakeholders identified for this survey have been confirmed by the following PSCC sub-committee members: Connie Evans, Nursing Lab Educators Group / BCIT Tammy Hoefer, Northern Health Elspeth McDougall, UBC Faculty of Medicine The purpose of this survey to collect facility, equipment, and resource information as it relates to existing simulation programs. At this time, we are not collecting information from organizations that do not currently use simulation in their curriculum.

Simulation definition

Simulation is the imitation of some real thing, state of affairs, or process for the purpose of learning or practice; and can encompass a wide range of levels of complexity. Healthcare simulations can be said to have four main purposes – education, assessment, research, and health system integration in facilitating patient safety.

The purpose of patient simulations is to reduce risk and discomfort for real-life patients by providing initial training for healthcare professionals in a simulated environment. Patient simulations can range greatly both in realism (low to high fidelity) and in reliance on technology. Many modes of simulation exist, including but not limited to: Patient simulation mannequins/simulators; Computer-based interactive systems (virtual reality and haptic devices); Standardized patients; Tissue-based simulations with cadaveric material or live animal labs; and Task trainers. The aim of the survey questions on the following pages is to capture information about the quantity and frequency of usage for various simulation resources throughout BC.

Survey focus

This survey focuses on the equipment, facilities, and resources involved in simulation. Further investigation about other elements of simulation such as pedagogy, curriculum, or research will be part of a future phase and are not included in this survey.

This survey will take approximately 20-30 minutes to complete, depending on the degree of complexity of your simulation programs.

Demographics

Please provide information for the following demographic questions.

*denotes a required question for the purposes of data analysis.

1. What type(s) of organization are you affiliated with?*

Please select at least one.

- ☐ Nursing
- ☐ Medicine
- ☐ Emergency services
- ☐ Allied health
- ☐ Health authority
- ☐ Other types, please specify... _____

2. Please select your primary affiliation from the drop down menu.*

- BCIT
- Camosun College

• College of New Caledonia
• College of the Rockies
• Douglas College
• Fraser Health Authority (FHA)
• Interior Health Authority (IHA)
• Justice Institute of BC
• Kwantlen Polytechnic University
• Langara College
... 6 additional choices hidden ...
• University of British Columbia
• University of British Columbia - Okanagan
• University of Northern British Columbia
• University of the Fraser Valley
• University of Victoria
• Vancouver Coastal Health Authority (VCHA)
• Vancouver Community College
• Vancouver Island Health Authority (VIHA)
• Vancouver Island University
• None of the above

 Please select the department you are primarily affiliated with from the drop down menu.

• Anesthesiology, Pharmacology Therapeutics
• Audiology Speech Sciences
• Biochemistry Molecular Biology
• Cellular Physiological Sciences
• Dermatology Skin Science
• Emergency Medicine
• Family Practice
• Medical Genetics
• Medicine
• Obstetrics Gynaecology
... 1 additional choices hidden ...
• Orthopaedics
• Pathology Laboratory Medicine
• Pediatrics
• Physical Therapy
• Population Public Health
• Psychiatry
• Radiology
• Surgery
• Urologic Sciences
• Other

 Please select the primary facility in Northern Health (NH) you are affiliated with from the drop down menu.*

• Acropolis Manor
• Alward Place
• Atlin Health Centre
• Birchwood Place
• Bulkley Lodge
• Bulkley Valley District Hospital
• Chetwynd Health Unit
• Chetwynd Hospital and Health Centre
• Cottonwood Manor
• Dawson Creek and District Hospital
... 63 additional choices hidden ...
• The Pines
• Tumbler Ridge Community Health Centre

• Tumbler Ridge Community Health Unit
• Tumbler Ridge Mental Health and Addictions
• Tweedsmuir House
• University Hospital of Northern British Columbia (formerly Prince George Regional Hospital)
• Urquhart House
• Valemount Community Health Centre
• Vanderhoof Health Unit
• Wrinch Memorial Hospital

Please select the primary facility in Interior Health Authority (IHA) you are affiliated with from the drop down menu.*

• 100 Mile District General Hospital
• 100 Mile District General Hospital Laboratory
• 100 Mile Mental Health
• Aberdeen House
• Adult Day Program
• Adult Day Program (Hawthorn)
• Adult Day Program (Lake Country)
• Alexis Creek Health Centre
• Anahim Lake Nursing Station
• Anchorage Drop-In Centre
... 393 additional choices hidden ...
• Whitevalley Community Resource Centre
• Williams Lake Community Dialysis
• Williams Lake Health Protection Office
• Williams Lake Mental Health Centre
• Williams Lake Seniors Assisted Living Village
• Williams Lake Seniors Village
• Willowview
• Winfield Public Health Satellite Office
• Yellowhead Pioneer Residence
• Other

Please select the primary facility in Vancouver Island Health Authority (VIHA) you are affiliated with from the drop down menu.*

• Galiano Island Health Care Centre
• Lady Minto/Gulf Islands Hospital
• Mayne Island Health Care Centre
• Pender Islands Health Centre
• Queen Alexandra Centre for Children's Health
• Royal Jubilee Hospital
• Saanich Peninsula Hospital
• Saturna Island Medical Clinic
• Victoria General Hospital
• Victoria Hospice (Palliative Care)
... 33 additional choices hidden ...
• Port Alberni Child, Youth Family Health Unit
• Port Hardy Health Unit
• Port McNeill Health Unit
• Saanich Health Unit
• Salt Spring Island Health Unit
• Sooke Health Unit
• Tuberculosis Prevention Control Office
• Tofino and Ucluelet Public Health Coastal Family Place
• Victoria Health Unit
• West Shore Health Unit

Please select the primary facility in Vancouver Coastal Health Authority (VCHA) you are affiliated with from the drop down menu.*

• Amherst Private Hospital
• BC Children's Hospital
• Bella Coola General Hospital
• East Kootenay Regional Hospital
• Holy Family Hospital
• Lions Gate Hospital
• Mount Saint Joseph Hospital
• Penticton Regional Hospital
• Powell River General Hospital
• Richmond Hospital
... 7 additional choices hidden ...
• UBC Hospital - Koerner Pavillion
• UBC Hospital - Purdy Pavilion
• Vancouver General Hospital (VGH) - Centennial Pavilion
• Vancouver General Hospital (VGH) - Health Centre
• Vancouver General Hospital (VGH) - Jim Pattison Pavilion
• Vancouver General Hospital (VGH) - Jim Pattison Pavilion - Emergency Department
• Vancouver General Hospital (VGH) - Research Pavilion
• Vancouver General Hospital - Willow Pavilion
• Whistler Health Care Centre
• Other

Please select the primary facility in Fraser Health Authority (FHA) you are affiliated with from the drop down menu.*

• Abbotsford Regional Hospital and Cancer Centre
• Burnaby Hospital
• Chilliwack General Hospital
• Delta Hospital
• Eagle Ridge Hospital
• Fraser Canyon Hospital
• Langley Memorial Hospital
• Mission Memorial Hospital
• Peace Arch Hospital
• Ridge Meadows Hospital
• Royal Columbian Hospital
• Surrey Memorial Hospital
• Other

Please select the primary facility in Provincial Health Services Authority (PHSA) you are affiliated with from the drop down menu.*

• BC Cancer Agency
• BC Centre for Disease Control
• BC Children's Hospital and Sunny Hill Health Centre for Children
• BC Mental Health Addiction Services
• BC Renal Agency
• BC Transplant
• BC Women's Hospital Health Centre
• Cardiac Services BC
• Perinatal Services BC
• Other

Please list your organization below.*

_____

Please select your primary region.*

◯ North
◯ Island
◯ Interior

- Vancouver
- Fraser
- Province-wide

Simulation usage

This section will ask specific questions about the types of simulation resources you and your organization have used. The table below provides a description and examples to help you identify the simulation you may be using for the purposes of this survey:

Definition and examples of simulation types. Simulation type Definition Examples 1. Patient simulation mannequins/simulator Learner performs a task on a mannequin/model and a computer system. Either an instructor or the computer determines the model's response to the action and then provides feedback or an assessment of the adequacy of the learner performance. BLS PALS ACLS Laerdal SimMan Laerdal VitalSim Gaumard Noelle 2. Computer-based interactive systems (virtual reality and haptic devices) Learner engages with computer-, console-, or tablet-based interactive systems to complete tasks in a simulated virtual scenario or haptic devices. Virtual patient cases Population health scenarios Simbionix UroMentor/ LapMentor/GIMentor 3. Standardized patient Learner interacts with a person or people who have been trained to specifically represent patients, members of healthcare teams or other people. The context is healthcare scenario and the learner is expected to perform as they would in a real clinical situation. Role-playing with actors or other healthcare professionals 4. Tissue-based simulation with cadaveric material or live animal labs Learner performs technical procedures or task on cadavers or live animals using real clinical equipment and devices following the principles and steps of the actual clinical procedure. 5. Task trainer Learner performs a task on a model using real clinical instruments for skills improvement. Oranges Pig feet Synthetic anatomical models / trainers Laerdal HARVEY Simulator K

1. Which of the following simulation types do you have access to? Check all that apply.

- ☐ Patient simulation mannequins/simulator
- ☐ Computer-based interactive system (virtual reality and haptic devices)
- ☐ Standardized patient
- ☐ Tissue-based simulation with cadaveric material or live animal labs
- ☐ Task trainer
- ☐ Other, please specify... _____

Please indicate the frequency of the following simulation-based education types your organization currently uses.

	Everyday	Once a week	2 to 3 times a month	Once a month	Less than once a month	Never
1. Patient simulation mannequins/simulator	○	○	○	○	○	○
2. Computer-based interactive system (virtual reality and haptic devices)	○	○	○	○	○	○
3. Standardized patient	○	○	○	○	○	○
4. Tissue-based simulation with cadaveric material or live animal labs	○	○	○	○	○	○
5. Task trainer	○	○	○	○	○	○
6. Other (please specify types below if not specified in previous question)	○	○	○	○	○	○

Please describe the type of simulation you use in your organization.

_____

_____

_____

2. Please indicate where your organization conducts simulation.

- ☐ Dedicated simulation space
- ☐ Clinical on-site
- ☐ Clinical off-site
- ☐ Mobile centres (serving multiple sites)
- ☐ Other, please specify... _____

What percentage of time is the dedicated simulation area in use?

Please indicate the estimated percentage of the simulation area based on the number of hours the simulation area is in use divided by the number of hours the simulation area is available for use.

- ○ 10%
- ○ 25%
- ○ 50%
- ○ 75%
- ○ 100%

3. What is your organization aiming to improve with the use of simulation?

- ☐ Skills or ability
- ☐ Communications or inter-professional development
- ☐ Decision-making or application of knowledge, e.g. through unfolding case studies
- ☐ Other, please specify... _____

4. Does your organization use recording/debriefing systems to record your simulations?

Recording and debriefing has been recognized as one of the most effective ways for students to retain the learning objectives from a simulation session. The simulation session is recorded and immediately played back to students in a separate room. The instructor uses the video to lead a discussion among the students on the experience while the scenario is still fresh in their minds.

Please indicate if your and your organization use recording/debriefing systems to record your simulations.

- ○ Yes
- ○ No

Which of the following do you use to record and debrief? Check all that apply.

- ☐ Camera/camcorder
- ☐ IP camera
- ☐ Webcam
- ☐ Integrated recording and debriefing system and/or software
- ☐ Other, please specify... _____

5. Various factors contribute to the level of fidelity in a simulation scenario. Please indicate what equipment you and your organization use to augment and support simulation in your environment.

	Every simulation as appropriate	Do not have the resources for but would like to use if we did	Do not use
Environmental/physical setting: A dedicated space for simulation that mimics a realistic setting, e.g. home care, ORs, mental health clinic.	○	○	○
Moulage: Creation of mock injuries, e.g. wounds, bleeding.	○	○	○

Up-to-date clinical equipment: Tools and resources used in real clinical environments (not simulation-specific), e.g. stethoscope, blood pressure cuff.	○	○	○
Other (please specify below)	○	○	○

Please specify what your organization uses or would like to use to augment and support simulation in your environment.

_____
_____
_____

Page #4

Inventory questions

Part of the overall need that the Simulation Roadmap is meant to fulfill is understanding where, what types, and quantity of resources located in BC.

This section will ask detailed questions relating to the quantity of each type of simulation equipment based on your selections from the previous page. You will only see sections below if you have selected an option other than "Never" for question 1 on the previous page. Please provide accurate information to the best of your ability.

1. Which of the following brands of patient simulation manneguin/simulators does your organization have?

Check all that apply.
- ☐ CAE/METI
- ☐ EMS
- ☐ Gaumard
- ☐ Laerdal
- ☐ MedSim
- ☐ Other

Patient simulation mannequin/simulator - CAE/METI

Please indicate the number of units your organization has of the following simulation devices (please enter a numeric value only).

CAE/METI METIMan	_____
CAE/METI METIMan Nursing	_____
CAE/METI METIMan Pre-Hospital	_____
CAE/METI HPS Adult	_____
CAE/METI PediaSim HPS	_____
CAE/METI iStan	_____
CAE/METI Dylan	_____
CAE/METI ECS (Adult)	_____
CAE/METI ECS (Pediatric)	_____
CAE/METI ExamSim	_____
CAE/METI Vimedix	_____
CAE/METI Others	_____

Please specify the names and quantity of the other CAE/METI simulation devices not included in the list above.

_____

Patient simulation mannequin/simulator - Laerdal

Please indicate the number of units your organization has of the following simulation devices (please enter a numeric value only).

Laerdal BLS Mannequin	
Laerdal PALS Mannequin	
Laerdal ACLS Mannequin	
Laerdal CPR mannequins	
Laerdal CPR-D mannequins	
Laerdal Simulator Advanced	
Laerdal Baby Anne	
Laerdal ALS Simulator	
Laerdal Little Junior	
Laerdal Nursing Anne	
Laerdal Nursing Baby	
Laerdal Nursing Kelly	
Laerdal Patient Kelly	
Laerdal MamaNatalie Birthing Simulator	
Laerdal MegaCode Kelly	
Laerdal SimBaby	
Laerdal SimJunior	
Laerdal SimJunior Advanced	
Laerdal Resusci Baby	
Laerdal VitalSim (ACLS)	
Laerdal VitalSim (Adult)	
Laerdal VitalSim (Pediatric)	
Laerdal VitalSim (Anne)	
Laerdal VitalSim (Kelly)	
Laerdal VitalSim (Baby)	
Laerdal VitalSim (Newborn)	
Laerdal VitalSim (Other)	
Laerdal SimBaby	
Laerdal SimMan	
Laerdal SimMan Essential	
Laerdal SimMan 3G	
Laerdal SimNewB	
Laerdal Others	

Please specify the names and quantity of the other Laerdal simulation devices not included in the list above.

_____
_____
_____

Patient simulation mannequin/simulator - Gaumard

Please indicate the number of units your organization has of the following simulation devices (please enter a numeric value only).

Gaumard Noelle _____

Gaumard HPS _____

Gaumard Infant Hal _____

Gaumard PEDI Blue _____

Gaumard Others _____

Please specify the names and quantity of the other Gaumard simulation devices not included in the list above.

_____
_____
_____

Patient simulation mannequin/simulator - MedSim

Please indicate the number of units your organization has of the following simulation devices (please enter a numeric value only).

MedSim Ultrasound Training _____

MedSim Others _____

Please specify the names and quantity of the other MedSim simulation devices not included in the list above.

_____
_____
_____

Patient simulation mannequin/simulator - EMS or Other

Please specify the names and quantity of the simulation devices.

_____
_____
_____

2. Please indicate the number of units your organization has of the following computer-based interactive system, virtual reality, or haptic devices (please enter a numeric value only).

Simbionix UroMentor _____

Simbionix LapMentor _____

Simbionix GIMentor _____

Mimic dVTrainer _____

Virtual patient cases _____

Computer-based learning stations _____

Others _____

Please specify the names and quantity of the other computer-based interactive system, virtual reality, or haptic devices not included in the list above.

_____
_____
_____

3. How many standardized patients/role-playing actors do you have available to you?

_____

4. Please indicate the number of units your organization has for tissue-based simulation with cadaveric material or live animal labs (please enter a numeric value only).

Live animal lab stations you can accommodate at one teaching session	_____
Pigs	_____
Rabbits	_____
Dogs	_____
Live animal you use in a year for these labs	_____
Cadaveric lab stations you can accommodate at one teaching session	_____
Cadavers you use in a year for these labs	_____
Others	_____

Please specify the names and quantity of the other tissue-based simulation with cadaveric material or live animal labs not included in the list above.

_____
_____
_____

5. Please indicate the number of units your organization has of the following task trainers (please enter a numeric value only).

Synthetic anatomical models	_____
Special models for venipuncture	_____
Intubation models	_____
Venous or arterial line placement	_____
Pelvic exam model	_____
Suturing training	_____
Nursing Anne	_____
Laerdal HARVEY	_____
Simulator-K	_____
Pelvic box trainer	_____
Others	_____

Please specify the names and quantity of the other task trainers not included in the list above.

_____
_____
_____

6. Which of the following brands of integrated recording/debriefing systems and/or software does your organization have?

- ☐ B-Line
- ☐ CAE/METI

☐ EMS
☐ Gaumard
☐ Laerdal
☐ Studiocode
☐ Other, please specify... _____

7. Do you share any simulation resources (technology, equipment, support) with another organization?

The organization can be internal or external to your overall institution. This may include mobile centres that serve multiple sites.

◯ Yes
◯ No

Do you have a documented partnership or memorandum of understanding currently in place?

◯ Yes
◯ No

Please select the organization(s) from the following dropdown menus.

If you share with internal organizations or provide mobile services to multiple sites, please select "Other" and provide details in the box below.

Organization 1	• BCIT • Camosun College • College of New Caledonia • College of the Rockies • Douglas College • Fraser Health Authority (FHA) • Interior Health Authority (IHA) • Justice Institute of BC • Kwantlen Polytechnic University • Langara College ... 6 additional choices hidden ... • University of British Columbia • University of British Columbia - Okanagan • University of Northern British Columbia • University of the Fraser Valley • University of Victoria • Vancouver Coastal Health Authority (VCHA) • Vancouver Community College • Vancouver Island Health Authority (VIHA) • Vancouver Island University • Other

Organization 2

- BCIT
- Camosun College
- College of New Caledonia
- College of the Rockies
- Douglas College
- Fraser Health Authority (FHA)
- Interior Health Authority (IHA)
- Justice Institute of BC
- Kwantlen Polytechnic University
- Langara College

... 6 additional choices hidden ...

- University of British Columbia
- University of British Columbia - Okanagan
- University of Northern British Columbia
- University of the Fraser Valley
- University of Victoria
- Vancouver Coastal Health Authority (VCHA)
- Vancouver Community College
- Vancouver Island Health Authority (VIHA)
- Vancouver Island University
- Other

Organization 3

- BCIT
- Camosun College
- College of New Caledonia
- College of the Rockies
- Douglas College
- Fraser Health Authority (FHA)
- Interior Health Authority (IHA)
- Justice Institute of BC
- Kwantlen Polytechnic University
- Langara College

... 6 additional choices hidden ...

- University of British Columbia
- University of British Columbia - Okanagan
- University of Northern British Columbia
- University of the Fraser Valley
- University of Victoria
- Vancouver Coastal Health Authority (VCHA)
- Vancouver Community College
- Vancouver Island Health Authority (VIHA)
- Vancouver Island University
- Other

Organization 4	• BCIT • Camosun College • College of New Caledonia • College of the Rockies • Douglas College • Fraser Health Authority (FHA) • Interior Health Authority (IHA) • Justice Institute of BC • Kwantlen Polytechnic University • Langara College ... 6 additional choices hidden ... • University of British Columbia • University of British Columbia - Okanagan • University of Northern British Columbia • University of the Fraser Valley • University of Victoria • Vancouver Coastal Health Authority (VCHA) • Vancouver Community College • Vancouver Island Health Authority (VIHA) • Vancouver Island University • Other

Please list the specific facility(ies) or institution(s) if applicable.

_____

_____

_____

Facilities and operations

This section will ask about current and future plans for simulation spaces and mobile centres including any current or planned partnerships as well as capital and operational funding.

1. What is the approximate square footage of all the simulation space your organization uses?

_____

What is the percentage breakdown of these spaces?

Simulation lab (anywhere the simulation can take place)	_____
Observation/control	_____
Debriefing	_____
Storage	_____
Videoconference	_____
Flexible space / meeting room	_____
Reception area	_____
Other	_____

Please describe the "other" space used for simulation.

_____

_____

How many mobile units, if any, does your organization own?

How many total distant sites does your organization mobilize simulation-based education equipment and/or personnel to?

What is the approximate cost for operational support for the simulation space and any associated mobile centres on a yearly basis?

- Under $50k
- $50k - $100k
- $100k - $500k
- $500k - $1M
- $1M+

How are your organization's simulation activities being funded?

How many hours per week are the following resource types dedicated to supporting the simulation spaces and mobile centres?

Leadership	
Administrative	
Technical	
Educator	
Other, please specify	

2. Does your organization have plans to increase the square footage of your existing simulation space or increase the number of mobile centres?

- [ ] No plans. We don't require additional space or mobile centres
- [ ] No plans yet but maybe within the next 5 years.
- [ ] Yes, we would like to expand our space, but there are barriers.
- [ ] Yes, we would like to increase the number of our mobile centres, but there are barriers.
- [ ] Yes, we are in the process of increasing the number of our mobile centres.
- [ ] Yes, we are in the process of increasing the square footage.

Please describe the barriers to increasing your simulation space or the number of mobile centres.

What's the approximate increase in square footage or number of mobile centres?

3. Do you share simulation space with other organizations?

The organization can be internal or external to your overall institution.

- Yes

No

Do you have a documented partnership or memorandum of understanding currently in place?

Yes
No

Please select the organization(s) from the following dropdown menus.

If you share with internal organizations, please select "Other" and provide details in the box below.

Organization 1

- BCIT
- Camosun College
- College of New Caledonia
- College of the Rockies
- Douglas College
- Fraser Health Authority (FHA)
- Interior Health Authority (IHA)
- Justice Institute of BC
- Kwantlen Polytechnic University
- Langara College

... 6 additional choices hidden ...

- University of British Columbia
- University of British Columbia - Okanagan
- University of Northern British Columbia
- University of the Fraser Valley
- University of Victoria
- Vancouver Coastal Health Authority (VCHA)
- Vancouver Community College
- Vancouver Island Health Authority (VIHA)
- Vancouver Island University
- Other

Organization 2

- BCIT
- Camosun College
- College of New Caledonia
- College of the Rockies
- Douglas College
- Fraser Health Authority (FHA)
- Interior Health Authority (IHA)
- Justice Institute of BC
- Kwantlen Polytechnic University
- Langara College

... 6 additional choices hidden ...

- University of British Columbia
- University of British Columbia - Okanagan
- University of Northern British Columbia
- University of the Fraser Valley
- University of Victoria
- Vancouver Coastal Health Authority (VCHA)
- Vancouver Community College
- Vancouver Island Health Authority (VIHA)
- Vancouver Island University
- Other

Organization 3	• BCIT • Camosun College • College of New Caledonia • College of the Rockies • Douglas College • Fraser Health Authority (FHA) • Interior Health Authority (IHA) • Justice Institute of BC • Kwantlen Polytechnic University • Langara College ... 6 additional choices hidden ... • University of British Columbia • University of British Columbia - Okanagan • University of Northern British Columbia • University of the Fraser Valley • University of Victoria • Vancouver Coastal Health Authority (VCHA) • Vancouver Community College • Vancouver Island Health Authority (VIHA) • Vancouver Island University • Other
Organization 4	• BCIT • Camosun College • College of New Caledonia • College of the Rockies • Douglas College • Fraser Health Authority (FHA) • Interior Health Authority (IHA) • Justice Institute of BC • Kwantlen Polytechnic University • Langara College ... 6 additional choices hidden ... • University of British Columbia • University of British Columbia - Okanagan • University of Northern British Columbia • University of the Fraser Valley • University of Victoria • Vancouver Coastal Health Authority (VCHA) • Vancouver Community College • Vancouver Island Health Authority (VIHA) • Vancouver Island University • Other

Please list the specific facility(ies) or institution(s) if applicable.

_____

_____

_____

Greatest immediate needs for technology, space, and resources.

This section of the survey is to gather feedback on your organization's greatest immediate needs for technology, space, and resources which will help us prioritize the direction of BC simulation in the next 5 - 10 years.

1. Please indicate the level of importance your organization places on the following needs. (1 = low importance, 10 = high importance)

	1	2	3	4	5	6	7	8	9	10
Funding	○	○	○	○	○	○	○	○	○	○
Leadership support for the simulation events and/or centre	○	○	○	○	○	○	○	○	○	○
Technician support for the simulation events and/or centre	○	○	○	○	○	○	○	○	○	○
Administrative support for the simulation events and/or centre	○	○	○	○	○	○	○	○	○	○
Space for simulation events	○	○	○	○	○	○	○	○	○	○
Ability to record and debrief training sessions	○	○	○	○	○	○	○	○	○	○
Ability to share space or resources with other similar programs	○	○	○	○	○	○	○	○	○	○
Train-the-trainer sessions for support staff	○	○	○	○	○	○	○	○	○	○
Train-the-educator and/or simulation certification sessions for the faculty	○	○	○	○	○	○	○	○	○	○
More patient simulation mannequins/simulators	○	○	○	○	○	○	○	○	○	○
More computer-based interactive systems/virtual reality/haptic devices	○	○	○	○	○	○	○	○	○	○
More standardized patients	○	○	○	○	○	○	○	○	○	○
More tissue-based simulations with cadaveric material or live animal labs	○	○	○	○	○	○	○	○	○	○
More task trainers	○	○	○	○	○	○	○	○	○	○

Please use this space to provide feedback on anything we may have missed.

_____

_____

_____