



Design Guidelines for Learning Space AV Systems & Associated Infrastructure Enhanced Clinical Skills Rooms

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1 INTRODUCTION

1.1 FACULTY OF MEDICINE DISTRIBUTED MEDICAL PROGRAM

In 2004, the University of British Columbia (UBC) Faculty of Medicine (FOM) initiated its Distributed Medical Program (DMP), the purpose of which is to provide equal access to medical teaching and training for students, residents, and practicing physicians across BC. The DMP is made possible by technology-enabled learning spaces located at university sites (UNBC, UBCO, UVic, and UBC) as well as Clinical Academic Campuses and Affiliated Regional Centres located across the province. Many of these spaces are also videoconference (VC)-enabled and are connected to each other via the central VC Bridge, all of which rests on a dedicated network called the Distributed Medical Program Audiovisual (DMP-AV) network.

1.2 DOCUMENT PURPOSE

This document is part of a collection of documents referred to as the **UBC FOM Design Guidelines for Learning Space AV Systems and Associated Infrastructure** (henceforth referred to as AV Design Guidelines). They provide guidelines for technology-enabled learning spaces based on best practices and extensive organizational experience developed since 2004. Each learning space type has (or will have) an associated AV Design Guideline document with high-level information about that space type. If additional, more detailed information is required, it can be provided by the UBC FOM project team. Please see section 4 for contact information.

The AV Design Guidelines are generally used in the early stages of a facilities project, along with the Functional Program and/or Project Plan, to align various stakeholders around a common, high-level vision of a given space. Where a functional plan includes technology-enabled rooms, the corresponding AV Design Guideline document(s) should accompany it. If a project is approved, the applicable AV Design Guidelines will be provided to all project team members and contractors.

This document in particular presents high-level guidelines for enhanced clinical skills rooms (ECSRs) which are used for years 1-4 and beyond for clinical skills teaching, procedure training, and examination techniques.

The AV Design Guidelines are intended to encourage and facilitate conversation between designers and the UBC FOM project team to confirm that all designs match the intended use of the space. Information contained in this document (and all UBC FOM AV Design Guidelines) should be considered guidelines¹. In every case, the project design team must consult with the UBC FOM's project team to clarify requirements and develop and approve designs specific to the space. The contents of this document will never supersede UBC project team decisions, a specification document, detailed design, or any other source that is considered by UBC to be more directly relevant to the project at hand. Furthermore, the contents of these documents must not be used as contract language.

¹ A guideline is a general rule, principle, or piece of advice. As used in this project, guidelines are not considered mandatory. They are to be used to determine a course of action and are intended to enable alignment towards common designs. (Oxford Dictionaries Online: <http://oxforddictionaries.com/definition/english/guideline?q=guideline>)

1.3 ROOM USAGE DESCRIPTIONS

ECSRs are used by 4-11 students, plus 1 instructor/clinician. ECSRs are generally located at clinical academic campuses.

Enhanced clinical skills rooms are used by students and residents to practice performing clinical procedures within a safe learning environment. Procedures are usually conducted on patient simulation mannequins. Enhanced clinical skills rooms are also used to conduct exams, such as the objective structured clinical exam (OSCEs) for years 1 – 4.

Technology is used to support the delivery of clinical skills education by enhancing access to materials that students can use to prepare, review, and debrief. However the primary objective and focus is always on the student's interaction with the mannequin, building communication skills, rapport, learning new skills, learning new procedures, refining approach to clinical encounters, and preparing students for medical practice.

1.4 FUNCTIONAL REQUIREMENTS

1.4.1 BACKGROUND

The background section describes the usage of the space, which drive the functional requirements. It is intended to aid in the understanding of how the space will be used and why position of equipment is important.

1.4.1.1 ROLES

- The primary roles in an ECSR include the:
- Control room operator;
- Evaluator; and
- Learner(s).

1.4.1.2 PRE-EXERCISE

- Prior to a learning event, the control room operator will set up all necessary equipment, ensure that disposables such as gloves are well-stocked in the ECSR, and test all systems to ensure proper operation. Upon the arrival of the learners, the control room operator and/or evaluator will provide the learner with relevant instructions in the debriefing room or in the ECSR.

1.4.1.3 DURING EXERCISE

- Typical exercises require one hour from start to finish, including setup and debriefing. During the exercise itself, the learner will administer medical treatment to the task trainer/simulation mannequin. The learner will typically perform the exercise with at least one other individual. The team may consist of up to four people such as other health care professionals in addition to the learner for certain types of exercises, such as anesthesia. The evaluator may be present locally or may participate remotely through

videoconferencing (if equipped), especially if the exercise occurs in a location without a full range of clinical specialists.

- In some circumstances the evaluator may have to provide instructions to the learner during the exercise. While observing, the evaluator/instructor needs the ability to annotate the recording (either directly or via an operator) to facilitate debriefing with the student after the session.
- The control room operator will observe the exercise from the adjoined control room and will continuously monitor audio and video from the ECSR. The control room operator will selectively communicate with the ECSR through an audio system to answer questions that the learner has posed to the task trainer or mannequin, or to give instructions.
- A private wireless communication link between the instructor and operator is used to inform the operator when to trigger events on the mannequin. This link can also be used to inform the operator when to tag events for review during debriefing.
- The control room operator and evaluator must always be able to see the mannequin and how the learners are interacting with it. It is therefore quite important to orient the bed such that the feet point toward the observation window so the line of site is not obstructed when the learners are tending to the mannequin.

1.4.1.4 POST-EXERCISE DEBRIEFING

- After the exercise is complete, the evaluator will debrief the learner. A major point of focus will be the annotated recording that the evaluator and/or operator annotated during the exercise. This debriefing should take place in a room outside of the ECSR, both to create a mental separation between the exercise and debriefing events, and so that other exercises can occur during this time.

1.4.2 TECHNOLOGY-RELATED FUNCTIONAL REQUIREMENTS

Technology-related functional requirements specific to ECSRs are described below. These functional requirements describe the ideal ECSR.

In an ECSR, the participants should be able to:

- Interact with the mannequin or task trainer as they would in a real doctor's office, including access to an examination table, any medical equipment associated with the procedure being trained, head wall with diagnostic equipment, and supplies such as sutures and gloves.
- Display electronic material from either their laptop or a room-based computer so that all participants in the room can see it.
- Have access to a whiteboard.
- Access internet-based resources from a user provided laptop or a room-based computer.
- Access and play videos, both in DVD format and common digital video file formats.
- Record interactions with the evaluator, each other, with 'patients', or the mannequin.
- Play back the interaction recordings immediately.
- Store the recordings for later play back.
- Not see the operator or observer(s) located in the control room.
- Not hear discourse from/between the observer(s) located in the control room of the ECSR.

In addition to the above requirements, an evaluator or instructor should be able to:

- Communicate with the room operator/technician via a wireless communication link.

This document specifies infrastructure to support these functional requirements. Specific systems (e.g.: IP cameras, recording systems, etc.) are not included in this document.

2 OVERVIEW OF TECHNICAL SOLUTION

- Design considerations:
 - Additional number of stretchers or plinths; and
 - Local hospital's standards and building code requirements.
- Note that several technology systems are referenced in these guidelines to highlight special infrastructure requirements related to these systems. All base building infrastructure mentioned in these guidelines must be provided at the time a facility is constructed or renovated. Technology systems should be owner-supplied and owner-installed due to the complex nature of technology functional requirements.
- A qualified AV designer should be consulted during the budget development phase and be part of the design team at the beginning of the design phase to ensure proper specifications for conduits, lighting, and other infrastructure supporting base AV systems. The manufacturers for mannequins and recording/debriefing systems, if known, should also be consulted for technology infrastructure requirements of their products as early as possible.
- A key principle in designing ECSR infrastructure is flexibility. This reflects the fact that user and technology requirements will likely change over time as curriculum, clinical standards, and technology evolve. For example, one element of creating a flexible design might include specifying a moderate amount of additional conduit capacity to allow for future changes to wiring needs.

Some attributes of enhanced clinical skills rooms are:

- High definition digital display – This is used to review procedural instruction videos, prior to launching into a clinical skills training session; review exhibits to enhance the students' ability to correlate diagnostic information with case history (x-rays, lab results, photographs, medical records, etc). Increasingly these items are accessed in digital format within the clinical settings. Students and educators can also refer to other information to help with their learning during these sessions.
- Recording cameras – Recording a student conducting their procedure provides unparalleled capability to provide feedback objectively. The ability for an educator to record their procedure, and immediately playback for debriefing enables the educator to provide important feedback, just-in-time, when the learning opportunities are still present. Recording also allows for the educator to annotate comments for the student to consider during self-study reflection or for exam preparation.
- Mannequins – Mannequins are used to train specific procedures to learners. Each mannequin style has its own requirements such as power, data, compressed air, fluids etc. ECSRs should have sufficient infrastructure to meet mannequin requirements for the intended room purpose.
- Control rooms – Control rooms allow for educators to record learners during a procedure, and make annotations for debriefing while the procedure is taking place. The educator will have the ability to communicate with the operator to trigger mannequin events, and to mark annotations in the recorded

video file. The use of control rooms allows the operator controlling the mannequin to do so without being in the room.

- Debrief rooms – Debriefing rooms are used by educators to review recorded material with the student. This removes the student from the training space, and frees up the room to be used again. Debrief rooms require high definition displays, and a comfortable seating area with a table to make notes. The display should be at a comfortable viewing angle from the seating area.

Given that the ECSR should closely model a patient examination room, it should contain a sink, soap, and paper towels are required for hand washing, cleaning materials, and teaching specific procedures, such as dialysis. Please see the functional program for additional information regarding these non-technical requirements.

The room should also have-appropriate architecture, acoustical treatments, wall and furniture colours, lighting, cooling, power and data ports, and cable pathways. The following sections describe guidelines for additional aspects of room and AV system design. Spaces are primarily used during business hours (6am-6pm Monday-Friday), but can be used at any time.

AV equipment in this space has a life cycle. The best practices included herein consider renewal as part of this.

3 TECHNICAL SOLUTION DESCRIPTION

The following content is divided into trade specific sub-sections related to specific infrastructure needed in order for the AV system to function as intended. The sections are as follows:

1. Architecture & Interior Design
2. Mechanical
3. Electrical
4. Data & Telephone
5. Acoustics
6. AV System
7. Control Room

Note -

The information contained in this AV Design Guideline is relatively high-level and intended to be used for early project planning (e.g.: budget estimates) and to create a common understanding of what is necessary for CSRs to be fit for intended use. Once a project has been approved, this AV Design Guideline document can be used to guide design of the spaces.

All information in this document should be considered as in support of the AV, VC, and mannequin systems. There may be additional infrastructure requirements unrelated to the AV or mannequin systems, and thus not contained herein, but that are still necessary for the space to be fit for intended use. For example, power outlets not required for AV components, door sizes, wheelchair access, etc. These should be included in the space design developed by the architect.

3.1 ARCHITECTURE & INTERIOR DESIGN

3.1.1 GENERAL DESCRIPTION

- Room size and aspect ratio should be determined through consideration of: expected fixed and portable equipment and millwork; minimum clearances around and between equipment and millwork; expected learner/evaluator team size, with 4 being a typical minimum and 12 being a typical maximum; critical viewing angles; number of stretchers or plinths; local standards for simulated clinical space; and any special pedagogic requirements.
- Minimum clearance of 1m required around stretcher/plinth to provide appropriate working space. This clearance should not be intruded upon by fixed equipment, millwork or door swings, although portable equipment may be placed within the clearance limit, as appropriate.
- If task trainers are to be used in the lab in addition to mannequins, an appropriate work surface will be required.
- Subject to the above considerations, ECSRs (single plinth) should be 17 to 23 net square meters with an aspect ratio of approximately 1:1.26.
- 1 doorway to corridor wide enough to accommodate a medical stretcher.
- 1 standard-size doorway to control room.
- 1 standard-size doorway to debriefing room, if possible.
- Each enhanced clinical skills room should have a door with a push button code with key override or key card access with key override lock.
- If there is a common door to the area where the enhanced clinical skills rooms are located, it should have card access.
- There should be a whiteboard permanently installed in each enhanced clinical skills room. It may be retractable. Minimum whiteboard size is 6'x4'. If there is not enough wall space to facilitate a permanently installed white board, a movable whiteboard is an acceptable alternative.
- One of the walls should be able to accommodate the load of the flat-panel display (up to 150lbs).
- The UBC FOM AV designer should specify which wall will be used for the display, subject to the functional requirements. Corner mounts are not acceptable.
- In existing facilities, where walls haven't been designed to accommodate the load of a flat panel display, ¾" plywood may be installed. This plywood should be attached to at least 3 studs and should be painted the same colour as the wall. In some areas, plywood may need to be treated with appropriate finish to meet infection control specifications.
- The clinical skills room may require shelving or cabinetry for small items used in clinical procedures such as hospital linens, hospital gowns, gloves, otoscope tips, tongue depressors, sutures, etc. Shelving/cabinetry should not be mounted directly below the flat panel display.
- Clinical skills room will require one wall to be dedicated as the 'head wall' where the diagnostic set, gas, ports, and valves, examination table, and ample standing room are available. The display, control room window, and whiteboard should not impede this area.
 - To reduce noise and complexity, centrally supplied air is significantly preferred over local air compressors.

- In addition to its use as a simulated medical gas, compressed air is required to drive mechanical functions such as eye blinking for certain models of simulation mannequin. In this circumstance, compression air must be regulated based on mannequin requirements, often at a value of 50 psi.
- Sufficient wall space should be available to accommodate a control room window, a plasma display with attached speakers, a white board, anatomical charts, bedside equipment, bed headboard, and cupboards.
- The items below are examples of clinical infrastructure that should be considered. Final clinical infrastructure requirements should be determined by local standards for the equivalent clinical space:
- Bed curtain (may obstruct views of control room and cameras).
- Realistic wall treatments.
- Code blue button or nurse call button (signage should indicate whether fully operational for hospital drills, connected to control room only for simulation, or completed inactive).
- Suction, if required. If a special-purpose suction pump is installed that must be turned off after use, it must be placed in a location accessible to the users of the lab but that does not introduce undue noise.
- Mobile stretcher with lockable wheels.

3.1.2 WINDOWS

- One of the walls of a clinical skills room should have a window to a control room, with one-way glass between the control room and the enhanced clinical skills room. The window dimensions should be 8' wide by 4' high. The bottom edge of the frame should be 30" above finished floor.
- The observation window should have retractable blinds. A retractable whiteboard is an acceptable solution, in which case the whiteboard should be large enough to cover the window.
- It is preferable that enhanced clinical skills rooms have no windows except for the control room, to preserve patient privacy.
 - If non-observation windows are unavoidable, adequate wall space for headwall, display, whiteboard, and anatomical charts should be provided.
 - If non-observation windows are unavoidable, appropriate window coverings (e.g.: blinds) should be provided. Blinds should be 100% blackout to ensure patient privacy whilst changing and for privacy during examination procedures.

3.1.3 FURNITURE

- A significant quantity of equipment, accessories, and disposables must be stored for local access during simulations:
- One effective storage solution is to place a bank of cabinets with counter tops along the lab's longest wall. This serves the dual purpose of providing a working surface for preparing simulation materials. Cabinets should be lockable for the storage of expensive or dangerous items (e.g. drugs to administer to simulation mannequins).
- Each clinical skills room should have the following furniture:
 - 11 slim, stackable, plastic, washable chairs
 - 1 plastic folding table
 - 1 rolling doctor's stool
 - 1 small table or stand with wheels for a laptop or other portable equipment
 - 1 small overbed table for teaching models

- 1 standard patient bed/examination table
- Diagnostic set
- 1 floor standing examination light
- An effort should be made to have furniture match the esthetics of the room and existing furniture styles.
- The clinical skills room should have millwork (cabinets, cupboards, and counters) in accordance with a usual doctor's office design and layout.

3.2 MECHANICAL

3.2.1 HVAC AND HEAT LOAD

- Ventilation should be appropriate based on intended clinical uses, for instance, if real medical gasses will be used.
- Cooling systems should be designed for a heat load from the specified equipment and a team of four to twelve performing intensive work inside the simulation lab for one or more hours with all doors closed.
- Cooling systems should be designed for a heat load from the specified equipment and a team of up to ten performing intensive work and one person dressed only in a hospital gown inside the room for one or more hours with all doors closed. It is preferred to have individual temperature control within each room. This is especially important when students are working in smaller groups with one patient, the patient becomes very cold if the temperature cannot be adjusted to a comfortable level for someone dressed only in a hospital gown.

3.2.2 PROTECTION FROM WATER DAMAGE

- All AV equipment should be protected from damage caused by plumbing failures and excessive condensation.
- If overhead water pipes exist, the designs should include a mitigation strategy in the event of a leak.

3.2.3 PLUMBING

- A sink, soap, and paper towels are required for hand washing, cleaning simulation materials, and teaching specific procedures, such as dialysis.
- If gowning and gloving procedures will be taught, the sink should be large enough to accommodate this.

3.3 ELECTRICAL

3.3.1 LIGHTING

- Dimmable lighting is required above mannequin.
- Lighting controls for the lighting should be located in both the simulation lab and control room.
- Colour temperature, intensity, and lighting type must be specified by a qualified AV designer.

- Any additional clinical lighting should be evaluated by a qualified AV designer for impact on video recording (e.g. washed out images, blocked camera angles, etc.) and sound recording (e.g. blocked ceiling microphone).
- The clinical skills room lighting should meet or exceed classroom standards.
- The control room should have dimmable lighting so that the one-way glass is effective.

3.3.2 POWER OUTLETS

- Electrical systems and simulation data conduits should support the equipment detailed below. Sample quantities and locations can be found in Section 5.
- Simulation:
- Task trainer or mannequin, including mannequin-specific data ports at headboard to connect with control systems in control room.
- Physiological monitor, including required ports to connect with control systems in control room.
- Local audio-visual:
 - One ceiling-mounted microphone to capture simulation audio for control room monitoring and recording purposes.
 - Ceiling-mounted speaker(s) for control room communication with simulation participants. One wall-mounted display (50" - 65") to view images associated with the simulation (e.g. x-rays), watch debriefing footage, or other use. The display should also have side-mounted speakers. Video and audio ports are required to connect to control systems in the control room.
 - There should be one, standard duplex power outlet on the wall that will hold the display.
 - The power outlet for the display should be positioned so that it is hidden from view once the display is mounted.
 - If the power outlet for the display cannot be located behind the display, the power cord should be hidden behind surface-mounted Panduit or wire mold.
- Recording / debriefing:
 - One camera mounted on the ceiling above the control room window, looking out towards the feet of the simulation mannequin. If it is not possible to orient the mannequin foot board toward the control room observation window, the camera should be moved such that it looks toward the feet of the mannequin.
 - One ceiling-mounted camera facing down above the chest of the simulation mannequin.
- Videoconferencing (for use with a remote evaluator):
 - One high definition camera mounted on the wall next to the local AV system wall-mounted display to capture the learner when conversing with the remote evaluator.
 - One high definition camera mounted on the ceiling above the control room window to provide the remote evaluator with a view of the entire simulation lab, looking out towards the feet of the simulation mannequin.
 - Note that videoconferencing system will integrate with the audio systems listed under the heading "local audio-visual". Integration with recording / debriefing cameras may not be possible due to the use of different standards and the extended delay associated with encoding video signals for many recording / debriefing cameras.
- Other
 - An accessible, open cable pathway should be run between the simulation lab and control room.

- In addition to the above, clinical skills rooms should have sufficient power outlets to accommodate:
 - Participants' laptops.
 - The diagnostic set (power outlet for this should be located at the head of the examination table).
 - Examination light.
 - Examination bed (depending on the bed specifications, some have a heated drawer for instruments) and some may require power assisted height adjustments.

3.3.3 CONDUITS AND CABLE PATHWAYS

- There should be no visible cabling in the room; surface-mounted Panduit or wire mold is an acceptable option for renovated facilities where in-wall conduit is not feasible.
 - Surface-mounted Panduit or wire mold should be screwed in place rather than glued. Square or rectangular Panduit is preferable to round Panduit.
- In the control room, there should be a location for volume control (usually to the right of the control window) with conduit for low-voltage wires up into the ceiling space in the control room.
- A conduit pathway from the control room to the display should be in place to provide sources driven from the control room.

3.4 DATA & TELEPHONE

- 3 network ports near headwall for simulation mannequin, and ad-hoc use of computer or equipment other equipment. These should be placed adjacent to the headwall in ECSRs.
- Network design should account for specific requirements of recording/debriefing system and mannequins. For example, recording/debriefing systems may have specific bandwidth requirements based on anticipated peak use, and may require specific ports to be open on the network.
- A wireless network is required as users may intend to use tablet computers or other portable devices.
- Phone with speaker phone mounted on the wall by the corridor door.
- Clinical skills rooms should have wireless internet access to the UBC network.
- There should be two data jacks in each enhanced clinical skills room to accommodate computers. Location to be confirmed by the audiovisual designer.

3.5 ACOUSTICS

Unless otherwise specified, an acoustical engineer will be engaged to provide specifics on how to meet NC and STC requirements. The below are typical examples of what ratings are required for Enhanced Clinical Skills rooms.

3.5.1 BACKGROUND NOISE

- Noise control measures must be undertaken to achieve a background noise criterion of NC 25 for the enhanced clinical skills rooms.

3.5.2 NOISE ISOLATION

- Clinical skills room perimeters must achieve a Sound Transmission Class (STC) rating of STC 55.
 - Groups of students in adjoining rooms should be able to converse at normal levels and not interrupt their colleagues in adjacent rooms.
 - Appropriate sealant of observation windows should be in place to increase noise isolation. The observation windows themselves should also meet this STC rating.
 - Two layers of 16 mm thick Type X gwb on each side with 25 gauge studs is generally sufficient to achieve this STC rating.
 - Solid core wood or filled metal doors with full perimeter acoustic seals including an automatic door bottom should be provided.

3.6 AV SYSTEM

3.6.1 AUDIO

- All enhanced clinical skills rooms should have side-mounted speakers attached to the displays (provided by the display manufacturer) for audio produced by display connected devices.
- A small red light should be installed in the ceiling of the activity room immediately above the control room window, and should illuminate whenever the audio system is turned on.

3.6.2 DISPLAYS

- All clinical skills rooms should have a 42" to 60" (depending on room size) flat panel display mounted to one wall, usually 50" above finished floor.
- There should be a VGA cable for any participant to be able to connect their laptop, and the display should be ready for digital connections (i.e.: HDMI).
 - The cable should be neatly stored while not in use – it may be hung on a hook on the wall below the display.
 - The cable must be long enough to reach to any participant's laptop within the room.

3.7 CONTROL ROOM

3.7.1 SIZE AND LAYOUT

- A minimum of 8.36 nsm is recommended to allow for two people and floor-to-ceiling shelving and/or cabinets along back wall.
- A one-way glass window must look out towards the feet of the simulation mannequin and provide an unobstructed view of the entire simulation lab.
- A desk should run the length of the one-way glass for the control room operator.
- An equipment rack may be required. Depending on the volume of equipment to be installed, the rack may be mounted underneath the control room operator desk or may stand independently.

- A sound-treated closet to house any gasses not provided by the hospital.

3.7.2 ACCESS AND SECURITY

- 1 standard size doorway to corridor.
- 1 standard size doorway to simulation room.
- Access card required for corridor doorway.
- Access card use should be logged for accountability purposes. Must be zoned separately from simulation lab, which has more widely distributed access.

3.7.3 NETWORK AND COMMUNICATIONS

- 3 network ports above desk height for computer equipment.
- 3 network ports at the rack location.
- A wireless network is required as users may intend to use tablet computers or other portable devices.
- Speaker phone.

3.7.4 POWER AND DATA

- Electrical systems and simulation data conduit must support the equipment detailed below, including connections between this equipment and the systems noted in the simulation lab. Note that some of the equipment below may optionally be placed in a separate server room, assuming on-demand access to this equipment is ensured.
- Power should be available for:
 - Operator computer
 - Related electronics (requirements range from zero to a full rack for certain high fidelity mannequins).
- Local audio-visual:
 - Wall-mounted speakers.
 - Desk-mounted push-to-talk microphone.
 - Headphones
 - Control hardware
 - Recording / debriefing server
 - Operator computer to control recording and view debriefing.
 - Audio and video processing hardware
- Videoconferencing:
 - Codec and signal processing hardware.
 - Touch screen controls.
 - Displays to monitor videoconference.
 - Other control hardware, as included by AV designer.

3.7.5 STORAGE

- A storage cabinet(s) / counter is required along the back wall of the control room.

- A specialized cabinet or closet may be required to hold gas cylinders and related equipment, if centrally supplied gasses are not possible. This cabinet may alternately be placed in an adjacent storage room.
- Closet will house an air compressor (select quietest model available that meets CFM requirements) used for mannequins.
- Closet should be treated with sound dampening materials to reduce the noise level within the control room.
- An acoustically treated intake vent should be installed if millwork is used to house the gasses and compressor.
- Intake vent should draw from above the ceiling tiles and should have at least one 90 degree bend.

3.7.6 HVAC

- HVAC should be sufficient to cool the control room operators and all electronics to be contained within the control room.
- The mechanical engineer should confirm the expected equipment BTUs prior to finalizing HVAC requirements.

3.8 OTHER SPACES

3.8.1 DEBRIEFING ROOM

- A conference-style layout works best for debriefing purposes.
- Room should be as close as possible to the simulation lab, and would ideally be accessible through a shared doorway.
- Room capacity requirements will normally match the capacity the requirements for enhanced clinical skills rooms (e.g. 12 attendees).
- The room must have network connectivity and a means of displaying computer audio output and video output (e.g. a wall mounted LCD/Plasma display with side mount speakers).
- Dry erase board for teaching purposes. The location of any dry erase boards must be coordinated with the AV design to avoid impact on video quality.

3.8.2 RECEPTION AREA

- Depending on security arrangements, the reception area may require additional data drops and power for security monitors.
- Millwork will be required for the receptionist work area, as well as any housing for security monitors.

3.8.3 STORAGE ROOM

- The required size for the storage room will depend upon the quantity and size of enhanced clinical skills rooms in a given facility. The minimum area for a one-unit facility is 9 nsm. The upper storage room area limit for a facility with multiple enhanced clinical skills rooms 28 nsm.
- Deep shelving should be included for equipment.

- The room must be large enough to accommodate moveable carts and clinical equipment, such as IV poles and ventilators. One potential design is to place shelving and/or cabinets at a height of 5' and higher on one or more walls, allowing large pieces of equipment to be stored below.
- Access card use should be logged for accountability purposes. Must be zoned separately from simulation lab, which has more widely distributed access.

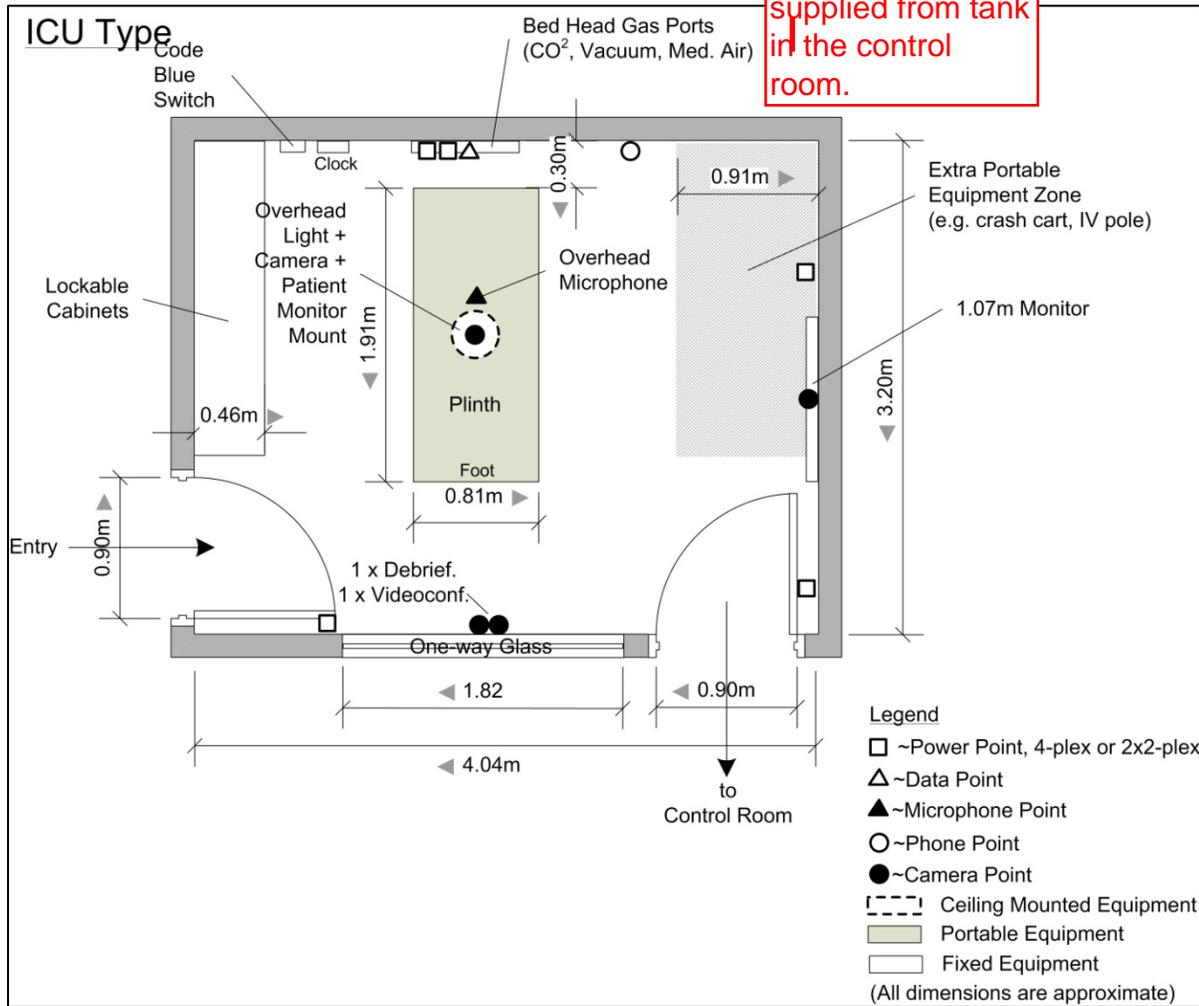
4 CONTACT

If you have questions or require additional information, please contact Izaak Housden, Sr. Technology Analyst, Island Medical Program at ihousden@uvic.ca or 250-472-5506.

5 REFERENCE DIAGRAMS

5.1 ENHANCED CLINICAL SKILLS ROOM

Station to include Vacuum, Med Air, and Oxygen. Note CO2 will be supplied from tank in the control room.



5.2 CONTROL ROOM

