



Objective Structured Clinical Examinations I: Building a Clinical Skills Center



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Building a Clinical Skills Center

Lesson Objectives

By the end of this lesson, you will be able to:

- List the 22 features that need to be considered when designing a clinical skills center for teaching and assessment in a new or refurbished space
- List three features which contribute to flexible space
- Draft a 5- to 10-year plan for upkeep and improvements

Introduction

You are building a new center for clinical skills assessment and training. While working with the architect and builder, these are the factors you should consider in the design of the new space:

- Construction costs
- Flexibility and future use of space
- Insulation
- Heating, ventilation, and air conditioning
- Power and data cables
- Plumbing
- Lighting
- Americans with Disabilities Act
- Doors
- One-way mirrored windows
- Audio-visual system
- Examination room size and equipment
- Traffic flow/layout
- Security system
- Signage
- Artwork/ plants
- Furniture
- Office equipment
- Finish recommendations
- Storage
- Simulation needs
- Upkeep

Flexible Use of Space

When designing the space, give some thought to your facility's needs for the next 5 to 10 years and factor those needs into this design. For example, will you need to share your facility with other businesses or departments within your company or school? What would their needs be? Would you rent out the facility when you're not using it? If so, to whom and for what purpose?

To optimize use of the space, design it for multiple purposes. If the space is to be used for both clinical skills assessment and training, there are design considerations that would allow for multipurpose use. The following considerations will help ensure flexible space design that can be used for multiple purposes:

- Include a multipurpose room that can be used as a general classroom as well as a debriefing room.
- Chairs and tables with hinged tops that nest can maximize space when not being used.
- Some folding walls can provide a sound insulation rating similar or better than traditional drywall.

Insulation

Insulation is used to help control temperature and for sound attenuation.

- Temperature: Insulation is usually installed on exterior walls to maintain comfortable temperatures inside the facility. Adding insulation between every interior wall is costly and usually not done unless specifically requested. It's not necessary for temperature maintenance.
- Sound attenuation: Discuss with your architect which areas of your facility might benefit from additional consideration of sound attenuation. If you are recording training sessions or clinical encounters in certain rooms, you may want to insulate them to avoid distracting background noise from other rooms and to ensure a clear audio recording. The insulation should be installed in the interior walls and also over the ceiling tile if you have an open plenum.
 - A plenum, in commercial construction terms, is the open space between the structural ceiling and the drop-down ceiling tiles. It's usually the place where all the heating, ventilation, and air conditioning (HVAC) ductwork is run, as well as cabling.
 - HVAC also refers to the ductwork that moves the hot/cold air throughout a building, and it may also include air quality control. HVAC ceiling or wall vents are a source of ambient noise. Discuss with your architect or HVAC engineer whether vents can be moved or capped in the plenum to avoid noise pollution from other areas.
 - Bathrooms are another area to insulate for sound attenuation. Many commercial toilets are power assisted and can be loud when flushed. This can be a distraction when working in an office that shares a common wall with a restroom.

Heating, Ventilation, and Air Conditioning

You may need specifications for a lower temperature in your server and/or audio/visual (AV) control rooms. Ideally, a server room should be kept within a range of 65°–75°F. Maintaining this temperature will probably require an additional cooling unit just to support the server room. While the temperature of the room is important to maintain, the actual airflow will protect the equipment from overheating.

The thermostat needs to be placed in an area where it will record the most accurate reading. Avoid installing it near any intake or outtake venting because it will give you a false reading.

Power and Data Cables

Depending on the scope of your project, you may need to specify new or additional power and/or data cables. You may need cabling to support the following equipment:

- Computers
- Telephones
- Electrical
- Data (including IP phones)
- AV (eg, cameras, microphones, intercom system)

You should consider the following when making decisions about cabling:

- Minimize the length of the cable:
 - When designing your space, minimize the length of the cable runs (eg, from server to end-user's computer); this will save money and ensure quality of the cabling. A general rule of thumb is to keep cable runs to less than 500 ft. for optimal quality.
- Planning data and electrical ports:
 - Once your space layout is drafted, specify what you'll need for data cabling for each room. Keep in mind that you'll need data cabling for each computer and IP phone, and you'll need electrical power near each data cable. It's more economical to plan for redundant capacity in the build-out phase than after a project is complete.
 - Power and data ports should be located on the blueprints once the layout is roughed out and the furniture drawn on the plans. It's helpful to have the furniture layout and dimensions included in the plans so that outlets and ports can be located accordingly.
- Surge protection:
 - Surge protection should be factored in to guard your valuable electronics. Consult your electrical engineers. Surge protection/suppression can be effectively built in at the electrical outlet or at the electrical service panel level. This allows you to avoid the clutter of surge protector power strips and ensure that all electronics are protected.

Plumbing

Plumbing needs to be specified for kitchen and bathroom areas, but will you also require sinks in the exam rooms?

Here are two ways to save on plumbing costs:

- If sinks in exam rooms are needed for hand washing only, it may afford you savings to install hand sanitizer pumps on the walls where needed rather than sinks.
- If sinks are necessary, keep plumbing areas close together (eg, have the kitchen and bathrooms share a common wall) to allow for efficient plumbing pipe access to minimize cost.

Lighting

If you have AV cameras to record training and assessment, you will need to coordinate the placement of your light fixtures with your AV cameras. Lighting considerations when designing your space include:

- Make sure the light source is not too close to the camera as this may cause a bleaching effect on the recordings.
- Consider a dimming system for exam room lighting that will allow a patient's pupils to dilate for an eye exam. If you want to ensure that this physical exam is captured on your AV system, you'll need to provide a minimum amount of light for the camera to get a clear recording.
- Ensure the locations of the light fixtures don't obstruct the camera views. Hanging light fixtures should be avoided unless they are carefully placed with regard to the camera views.

Americans with Disability Act (ADA)

Your architect should be knowledgeable about general code requirements for ADA accommodations.

These are considerations when designing your space to accommodate individuals who use wheelchairs, in addition to general code requirements for ADA accommodations:

- Ensure there is adequate space and clearance for wheelchair accommodations. This includes clearance with your furniture configurations and door width.
- Consider adjustable tables and sinks that can accommodate an examinee, patient, or a student in a wheelchair.
- Hang supply shelves and medical equipment on the wall at a wheelchair-accessible height.

One-way Mirrored Windows

If observers will be viewing exam room activities, consider installing a one-way mirrored observation window. This will allow observers to watch the exam room without distracting the occupants.

When designing the observation space:

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- Be aware that one-way mirror glass works best when there is a lower level of light in the room on the observer side than the exam room on the other side.
 - Consider whether the observers will be standing or sitting.
 - Ensure that there is adequate clearance if the observation space is also a hallway.
 - Include power and data outlets for laptop computers if needed by the observers.
 - Consider installing a wall-mounted jack for earphones near the window for observers to hear the occupants of the exam room and include this in your AV system design.

AV System

The cost of your AV system will vary based on the scope of its functionality. Below is a list of questions to discuss when looking for an AV service or designing a system:

- Will your system be digital or analog?
- Will you need to store the recordings for any length of time? This may increase the size and cost of your hard drives if you go digital.
- Will you give your examinees/students a copy of the encounter recordings? If so, in what format will it be shared, eg, thumb drive, online access?
- Will you include a ceiling-mounted microphone in a central location for each exam room?
- What is the best location to mount the cameras for an unobstructed view, eg, ceiling mount or wall mount?
- Will you need to connect a classroom to the AV system so that encounter videos may be shown on a screen to a larger group? Flat screens are preferable because they are backlit, easier to see, and may not require lower levels of light for viewing video. Ensure that your flat screen is large enough to be viewed from the far end of the room.
- Should you consider including uninterruptible power supply (UPS) units for key pieces of AV and IT equipment? The UPS unit won't necessarily function as a backup generator but will allow needed power for a short amount of time during outages and will minimize the impact of brownouts. A UPS unit also allows time for staff to turn off equipment correctly rather than having it crash. It's a backup battery power source that you can plug your equipment into to protect it from possible damage caused by electrical current fluctuations. The UPS will maintain a full charge as long as there is electrical power.
- Will you need an intercom system for staff or patients to communicate with each other or with the AV control room?
- Will you need to make announcements via ceiling speakers?
- Will you need an observation area other than the exam room observation windows?

Examination Room Size and Equipment

The size of an average exam room is approximately 10 x 10 ft. Smaller exam rooms may affect the quality of your AV recording because the angle of the ceiling-mounted camera is much more acute. The average-size room is sufficient for assessment but you might want to consider a larger size if more than two individuals will be occupying it at once.

In setting up your exam rooms, ensure that they have all the standard medical supplies and equipment needed for your purposes.

Basic supplies and equipment for exam rooms include:

- Exam table (covered with disposable paper) and pillow
- Exam drape
- Task chair for computer desk
- Small computer table and computer (for standardized patients)
- Stool
- Step stool
- Otoscope and tip dispenser
- Eye chart
- Ophthalmoscope
- Blood pressure cuff and sphygmomanometer
- Paper towel dispenser
- Disposable glove dispenser
- Soap dispenser and/or hand sanitizer dispenser
- Shelf for holding supplies such as cotton-tipped swabs, cotton balls, tuning forks, and reflex hammer
- Wastepaper basket

Traffic Flow/Layout

In addition to exam rooms, classrooms, and offices, what other areas might you need, eg, patient lounge/waiting room, patient locker rooms, catering kitchen, and/or reception area? When developing the layout of your facility, think about traffic flow of the examinees/students, standardized patients, staff, and support personnel for convenience and efficient access to frequently visited areas.

- Include enough office and work space for staff. You will also need storage space for files, exam room equipment, medical supplies, etc. Plan for any staffing increases you might have in the next 5 to 10 years.
- Take advantage of the natural light as much as possible (eg, place staff offices around the perimeter of the facility to take advantage of the windows).
- Any rooms with computer equipment (eg, server rooms, AV rooms) should be placed within your facility far away from the windows for easier temperature control.

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- The closer your server and AV control rooms are to the exam rooms, the less cable you'll need to run.

Furniture

Make a complete list of all the furniture required for your space. You will need this for both budgeting and for space planning. Any custom-made items such as a receptionist desk tailored to your space may have a longer lead time than stock materials, so plan accordingly.

Consider the following furniture and office equipment needs:

- For the examinees/students:
 - Chairs and tables for classroom/orientation room
 - Chairs and writing stations for the exam
 - Lockers or cubbies for storing personal belongings
 - Computers
- For standardized patients:
 - Lockers for storing clothes and personal belongings
 - Tables and chairs for a break room
 - Computers
- For the staff:
 - Office furniture
 - Keyboard trays
 - Chairs
 - Reception desk
 - Storage and filing cabinets
 - Utility desks/tables
 - Task lights
 - Bulletin boards
 - Computers
 - Printers
 - Telephones
 - Paper shredder
 - Fax machine
 - Photocopier
- For the conference room:
 - Tables
 - Chairs
 - Whiteboard
 - Telephone

Finish Recommendations

Vinyl covering is recommended for high traffic areas because it wears longer and can be cleaned easily without damage. Other walls should get a durable paint finish (semi-gloss and eggshell finish). Vinyl is more expensive than paint but will last considerably longer. Painted walls should be repainted every 3 to 5 years, while some vinyl wall covering may last as long as 15 years without any maintenance other than basic cleaning.

Wooden office furniture is available in a wide variety of laminate colors/patterns. If wood is selected, a lighter finish is recommended as it is less likely to show scratches and wear and tear. If a laminate finish is specified, select a neutral color that will not look dated in 5 to 10 years.

Exam room walls should not be white since it bleaches out on video. We recommend a mid- to light-range neutral color. Grays, beiges, greens, or blues look best on video.

Low-pile carpeting creates a more relaxed setting and also helps reduce unwanted noise. Carpet tiles are ideal (rather than broadloom, ie, wall-to-wall carpeting) because you can replace stained, damaged, or worn tiles as needed. Tiles tend to be a little more expensive than wall-to-wall carpeting but judicious replacement can extend the life of a carpet longer than broadloom. If tiles are installed, purchase excess stock of approximately 10% and store for future needs, as carpet manufacturers may not stock your color and pattern in the future.

Vinyl composition tile (VCT) is an economical flooring choice that is easy to clean and wears well. VCT or laminate should be used in areas where food is served and/or consumed because both are easier to clean than carpet.

Storage

Be sure to include adequate storage in your facility design. Storage areas are often overlooked.

Some storage needs to consider include:

- Storage closet with a utility sink for housekeeping staff
- Coat closets for staff, examinees, visitors, etc.
- A closet for medical supplies near the exam rooms
- An office supply closet near the staff offices
- A kitchen supply closet for catering and miscellaneous kitchen supplies
- Storage for items used by the standardized patients (eg, several sizes of patient gowns, slippers, robes)
- Lockers for examinees, students, and standardized patients to store personal belongings; you may want standardized patients' lockers to be in a separate area
- If simulation equipment is used, storage areas for supplies and backup parts; possibly include a work area for maintaining or repairing equipment

Simulation Needs

If simulation is to be used in your facility, depending on the quantity and type, it will have to be integrated into the design accordingly with adequate space, storage, and power/data drops.

Maintenance and Upkeep

After you have constructed your clinical skills center, draft a 5- to 10-year plan to keep it maintained and in good repair. This plan will also assist in your capital budget projections.

Ensure your budget considers the following maintenance requirements:

- Walls may need to be touched up or repainted every 3 to 5 years.
- Carpets should be shampooed several times a year depending on the amount of traffic. Carpet tiles should be replaced when necessary. Broadloom carpet should be replaced every 8 to 10 years as necessary. Keep in mind that a quality preventative maintenance program will extend the life of your carpeting.
- AV systems may require an overhaul every 5 to 10 years, depending on level of use, and they should also be upgraded with new technology as necessary.
- AV/IT cabling should be replaced approximately every 10 years to avoid degradation in quality.
- Office furniture, particularly task chairs which are used most, should be replaced every 8 to 10 years as necessary.
- Keep spare medical equipment and exam beds to rotate with other equipment as necessary to allow for repairs.
- Security systems may need to be upgraded periodically based on necessity.
- Fixtures such as window treatments should be updated and repaired as necessary.

Take-Home Message

Planning for a clinical skills center should be a long-range project with input from all stakeholders. Start well in advance and visit as many centers as you can in order to borrow ideas that will work for your institution, and ask their staff what works well and what they would change.

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