Mental Health Unit Design: Promoting Safety and Therapeutic Benefit through Careful Planning

By Edward Herzog

Mental Health Units: Background

• Most mental health units serve the acute phases of illness and have short lengths of stay (LOS): 2-10 days
• Some units have longer LOS; state hospital and forensic units may have stays measured in months, years, or decades
• Common subtypes of MHU’s include admitting (aka transitional, acute, 72 hour); child; adolescent; med-psych; psych intensive care; geriatric.
• MHU’s may be locked (most) or unlocked (few)
• MHU’s may be freestanding or within other institutions (primarily general hospitals)

Disclosures

• The speaker has no conflicts of interest to disclose.
• I can assure you that I am not being paid, bribed, or in any way encouraged to shill for any particular product or service. In fact, it seems like nobody pays me for anything, let alone this.
• I am innocent of most of the misdeeds for which I have been accused. Further, my memory of that particular day is unclear.
• To the extent I am able to remember details about the dates and events in question, I was out of the country that day, I never even met the guy, and I was in a coma then. I also have chemo brain (you can look it up).

Needs Served by MHU’s

Treatment needs:
  o Facilitate observation for assessment and evaluation
  o Efficient and effective delivery of specific treatment services to individuals, families and groups
  o Privacy/confidentiality
Safety needs:
  o Prevention of self-injurious behavior
  o Suicide prevention
  o Assault prevention
  o Prevention of elopement

Institutional Needs

Objectives

1. Discuss important design considerations that should be included in planning for mental health unit construction or remodeling
2. Identify a range of design and furnishing options for consideration based on treatment philosophy and the population to be served.
3. Critique unit design and furnishing options and arrive at practical choices that will provide patients and staff with a safe, therapeutic environment

Current MHU Design Principles

• Designed for patients who are ambulatory
• Recreate the home environment and routine
• Surroundings are secure—provides for physical and psychological security of patients, visitors and staff
• The social and physical environments contribute to desired therapeutic outcomes (therapeutic milieu principle); e.g. MHU design should:
  o Facilitate interaction
  o Enable therapeutic activities (groups, etc.)
  o Promote independence
  o Create a sense of psychological and physical security and comfort
Current Mental Health Unit Design Principles, cont'd

- Generally accepted that it is desirable to be able to segregate genders (e.g. a male hallway and a female hallway)
- Increasingly accepted that there should be a separate area for higher acuity patients and/or persons with higher security needs
- Converting medical units to MHU’s can be more expensive than scratch-built
- Long, linear hallways, common in med-surg, work poorly for MH treatment needs
- A core area for staff and nearby patient activity spaces, with patient rooms flowing outward from there, is a common design

Current Mental Health Unit Design Principles, cont’d

- Light and bright is desirable; assure natural light in all patient areas (skylights, windows)
- Acoustic control is essential for privacy, confidentiality, stimulation control
- Furnishings, decoration, and the design of the unit itself should be uncluttered (clutter adds to stimulation)
- Ambiance is non-clinical, non-institutional—colors, furnishings, lighting, décor are as homelike as possible given the need for security

MHU Design Considerations

1. What ages will be served?
   - child—will need pediatric furniture, play therapy area, will need group and interview rooms large enough to serve families (parents, siblings)
   - adolescent—will need sturdier furnishings (more issues with vandalism, acting out of anger), more space for activity and exercise, group and interview rooms large enough to serve families (parents, siblings)
   - adult
   - Geriatric—will need additional handrails, more room for assistive appliances (e.g. walkers, wheelchairs, geri chairs)
MHU Design Considerations, cont’d

2. What population will be served?
   - acute vs. chronic
   - civil vs. forensic

3. What level of security is needed?
   - What degree of risk will the majority of patients present?
   - What is your tolerance for risk?
   - Lower security units offer greater design flexibility (e.g. more ability to use standard fixtures, etc.)
   - Higher security units require specialized, expensive fixtures and furnishings, and involve greater design complexity
   - High security features are expensive to retrofit

5. What will the typical length of stay be?
   Longer term patients will need:
   - more activities and activity space to reduce boredom
   - more exercise options
   - more storage space for belongings
   - a broader range of therapeutic services
   - Possibly more space for visiting
   For longer term patients especially, contraband is a concern

6. What code, state and local regulations, insurance, and other requirements apply?
   - These vary with the census, population served, and the intended use of the space, e.g. square footage requirements for patient rooms are different than for group rooms
   - Usually there is a ratio of square footage per patient that has to be achieved.
   - Sprinkler, alarm and other safety systems can affect space and aesthetic design elements
   - Sound control—walls must extend to upper structure, no shared ductwork, staggered stud walls helpful
   - In Ohio, laundry room counts as pt social space (!)

Design Elements for Safety

Doors
- Roller latches or anti-ligature knobs (expensive)
- Continuous (piano) hinge design to reduce risk of hanging or finger amputation
- Fully concealed, anti-ligature closing mechanisms
- Possibly anti-ligature door tops (e.g. sloped tops)
- Deadbolt vs. remote release locks (magnetic vs. electric latch release) on entrance/exit doors (locked units must have remote release button on and outside)
- Key vs. keypad vs. swipe lock mechanisms
- Unit entrances feature elopement prevention via “sally port” design along with camera monitoring (or possibly shatterproof windows)

Sally Port Entranceway

Only one door is to be opened at a time

Room with sloped door top

Source: 1
**Design Elements for Safety, cont'd**

### Windows
- All windows are shatterproof, e.g. laminated tempered glass
- Note that lexan flexes and can be "popped out" of larger openings (also breaks down in ultraviolet light)
- Shatterproof interior "storm" windows are another option
- Non-opening or secured if operable (special keys to open)
- Windows in seclusion/restraint rooms and psych ICU pt rooms are flush-mounted to walls (or covered by tough screen that is flush to walls) to prevent out-facing corners
- Blinds are between window panes (no drapery/controls)
- Use fewer windows, higher windows, or opaque windows (e.g. glass block) if the view is poor
- Higher placed windows increase privacy

### Anti-ligature fixtures

- Source: 1

### Lighting and Electrical systems

- Tamperproof outlet and switch covers
- GFCI outlets throughout
- ADA switches
- "Pediatric" outlet design (prevent insertion of objects into outlets)
- Lighting is anti-ligature design, ideally recessed in walls and ceilings to be out of patient reach where possible
- Dimmable lighting is desirable
- Night lights or night level lighting is desirable
- Cordless phones or wall phones with short cords
- Nurse call buttons/pads instead of pull cords
- Motion sensors to alert staff when pts get out of bed

### Fire/Smoke/Sprinkler systems

- Anti-ligature smoke detectors, alarms
- Any fixtures extending below ceiling level are boxed in or caulked to ceiling to prevent attachment of ligatures
- All pull stations are keyed, alarms are linked
- All heat and smoke detectors are difficult to reach
- Special permission needed to keep horns out of pt rooms
- Synchronized strobes to reduce seizure risk
- Recessed and locked extinguishers
- Two fire zones per unit

### Linens

- Suicide-resistant, anti-ligature linens are available and are indicated as appropriate in ICU's and for selective use with higher risk patients

### Staff duress alarms

- "Nurse down" alarms
- Panic buttons in interview, therapy, and seclusion & restraint rooms
- Staff location technology
- Two way communication devices

### Room Design

- "Safe rooms" in which staff or patients can shelter (tornados, etc.); should have emergency phone
- Dual escape routes (two exits) from all interview rooms, nurses' station, and closed therapy rooms
Design Elements for Safety, cont’d

Furniture/furnishings
- No sharp corners, no sharp legs, no pinch points
- Vandalism and spill-resistant—parts cannot be easily removed/broken, fabrics are non-absorbent
- Designed to prevent throwing (e.g. no grasping points, too heavy)
- Lockers and cabinets are open and without drawers
- Tall furniture (cabinets, wardrobes, lockers) have slanted tops so objects/patients cannot rest on top
- All wall mounted art & décor is securely attached with tamper-resistant fasteners and covered with shatter-proof material (use painted graphics in ICU/security areas)

Unsafe Chairs

Source 17
Source 18
Source 19

Safest Chairs

Source 23
Source 24
Source 25
Source 26

Design Elements for Safety, cont’d

Other safety design elements:
- "High impact" wallboard (not standard wallboard)
- Hard surface ceilings
- Anti-ligature handrails (and bedrails for gero and med-psych)
- Include furniture/furnishings that can be used as shields (e.g. clipboards, movable furniture) in interview, activity, and group rooms
- Minimize locations one could hide contraband:
  - any suspended ceiling tiles are clipped
  - All fixtures are tamperproof
- Vandalism resistant furnishings and wall décor (e.g. paint instead of wallpaper in pt rooms)

Safer Chairs

Source 20
Source 21
Source 22

Design Elements for Safety, cont’d

Other safety design elements, cont’d:
- Shatterproof polycarbonate mirrors (polished stainless steel for forensic/high security settings)
- Sheet vinyl floors that wrap up the walls 6 inches
- Carpet should be of a type that allows for easy spot repairs (always keep additional spare carpet for possible spot replacement needs later on)
- All coat, towel, and other hooks designed to breakaway at 15-30lb loads

Source 23
Source 24
Source 25
Source 26
**Unsafe Elements**

- Source 27
- Source 12

**Other Considerations, cont’d**

- Music source—PA speakers in ceiling, protected and secure as with TV's; boom box units for portable use by trusted pts (head/earphone cords are a hazard); maintain a varied, culturally sensitive and trauma-informed music selection (regularly seek patient input on music and TV programming)
- Carpentry is very helpful for noise control, should be attractive but easy to clean and repair, can be used to define spaces, can be used as a decorative element, should be used in all areas other than dining/kitchen spaces and bathrooms, optional but recommended in hallways and patient rooms except for higher acuity setting; fire resistant

**Anti-ligature fixtures**

- Source 28
- Source 29
- Source: 30

**Other Considerations, cont’d**

- Cameras can heighten paranoia so consider their use and placement carefully;
  - Best used at entrances and to cover areas that cannot otherwise be monitored.
  - Not a substitute for direct monitoring of seclusion/restraint rooms, nor for any at-risk pt.
- Consider everyday objects can be turned into weapons; to what extend should we try to control/restrict these? E.g. dining utensils, pencils and pens, paperclips and staples, etc.
- Smoking is a concern on all MHU's; patients can be very clever/creative in finding ways to get cigarettes and smoke (black market, etc.)

**Other Considerations**

- Storage for games, craft/art supplies (lockable if in pt area); located for easy access and monitoring; open shelves vs. cupboards
- Televisions
  - Protect from damage (e.g. enclose in lexan boxes)
  - Secured so cannot be pulled from walls
  - Prevent patient access to cords/cables
  - Design so staff can easily monitor (control?) what pts are watching
- Minimize PA announcements in patient areas, group rooms, interview spaces (no speakers or volume controls on speakers in those areas)

**Living (Day) Rooms**

- A space to be used during the day
- Comparable to the living room in a residence
- Often involves a multipurpose design (e.g. so can also be used for meetings and therapy groups)
- Need to provide for easy observation and access by staff, e.g. viewable from the nurses station
- Sound control designed in (provides for privacy of conversations and reduces overstimulation); e.g. sound absorbent materials, controllable white noise.
- Décor emphasizes security, comfort and attractiveness; large windows brighten ambiance
- Furnishings are safe but comfortable and practical
- Carpeted (designs are attractive)
Living (day) rooms, cont’d

- Usually include media (TV, game console, music) for therapeutic and recreational uses
- May include limited elements of a comfort room
- Chairs may be preferable to loveseats, loveseats to couches (severely mentally ill persons may need increased personal space; couches may encourage sleeping)
- Arrange furniture into several intimate seating areas (not large circle around the periphery of the room)
- Use movable furniture so you can rearrange furniture for use as a group therapy room
- Suggest pastel colors with wall décor &/or an accent wall (e.g. matching but darker shade)

Note use of glass blocks to extend light into inner spaces, French doors to allow monitoring with privacy

Example of an open floor plan (hazardous corners & edges, however)

Note hazardous dining chairs and out-facing corners

Note all the objects that could be easily broken or turned into weapons, set afire, etc
Dining Rooms

- Usually adjacent to day rooms
- Open floor plan design, or enclosed for noise control and for use for therapy sessions
- Can separate from day room with sliding divider, half wall, or interior window
- Large window areas brighten ambiance
- Including kitchen appliances can allow cooking (e.g. baking cookies as therapeutic activity) and provide function as a skills lab, but must have locking master control switch to minimize burn risk when staff supervision is not present
- Having a microwave and sink is helpful (but no scalding water temps permitted)
- Fixed furniture for higher security/ICU units or maximum safety (but limits utility somewhat)
- Not carpeted; suggest pastel colors with wall decor

Source: 1

Higher security fixed furniture

Source: 38

Two-story design at Menninger's
Note transparent walls for privacy with monitoring

Source: 36

Note the unsafe chairs in dining room

Source: 39
Patient Rooms (Bedrooms)

• For sleep and hygiene activities; no televisions, radios
• Patient rooms should open directly onto hallway—one does not have to go through an anteroom to access them (exception: seclusion and restraint rooms)
• Less opportunity for staff observation means higher risk
• Outlets are tamperproof and GFCI design
• Primary lights are recessed in ceiling (no table lamps)
• Wall-mounted nightlights with tamperproof covers to permit staff rounds at night
• Switches to control lights & outlets outside the room
• Doors can swing outward to prevent barricading (ICU’s)

Patient Rooms (Bedrooms), cont’d

• All door closure mechanisms are fully enclosed so that there is no portion that can be used to hang oneself
• Continuous (piano) hinge design to reduce risk of hanging or finger amputation
• Desirable to have a partial divider between patient spaces in double rooms (anti-ligature curtain, wall partially dividing room, etc.)
• Basic but secure beds (e.g. platform beds with plastic-coated fire-resistant foam mattresses)
• Lockers or shelves (open face with slant tops on secure units)
• Bedside stand with one drawer (non-removable, no tray insert); no drawer in higher security areas

Patient Rooms (Bedrooms), cont’d

• Using a different color on one or two walls creates an attractive accent
• Neutral and pastel/lighter colors are recommended except for high touch areas
• Avoid institutional colors, e.g. grey
• A mix of single and double rooms is perhaps best
• Separate male from female rooms as possible (opposite ends of hallways, separate hallways)

GERO and Med-Psych

• Some with adjustable, secure electric beds (e.g. hidden controls, no IV poles); ideal design minimizes crush, pinch risks
• Some rooms with oxygen and suction in locked, recessed wall boxes

Herzog
Notice the difference when there are no windows.

What are the plusses and minuses of this design?
Bathrooms

- Consider private vs. shared baths
- Consider separate toilet and bathing spaces
- Helpful to have at least one bathing space designed for staff-assisted bathing (essential in gero-psych, less so on child/adolescent units), with room for patient lift devices
- Need handicap accessibility in at least some if not all bathroom spaces
- Plan for larger adult sizes

Bathrooms, cont’d

Chief safety concerns are hanging and scalding
- Anti-scald automatic temperature controls
- Anti-ligature fixtures, including faucets, water controls, showerheads, towel and clothes hooks, grab bars, sinks, and toilet, under sink plumbing
- Break-away shower curtains (if any)

Patients can also damage plumbing
- Cover plumbing with tamperproof shields
- Floor drain for sink, shower and toilet overflows
- Autoflush toilets may make flooding the room more difficult
Seclusion Rooms

• Single rooms designed to (briefly) isolate patients
• Can double as quiet rooms if properly designed
• Separated from hallway by alcove/anteroom
• Shatterproof observation windows in door (one high, one low)
• Door opens outward to prevent barricading (or dual hinge doors with stops that open in or out)
• Dual upper and lower deadbolts or mag locks
• One higher-mounted shatter-proof window; must be screened or inset to make flush with the wall (no out-facing corners)
• High security/ICU settings: consider padded walls, floor and door

Seclusion Rooms. Cont’d

• High ceiling—pt must be unable to reach it
• Maximum soundproofing needed
• All fixtures are recessed, flush-mounted in ceiling
• Dimmable ceiling-mounted lighting
• No electrical outlets; all switches are outside the room
• No out-facing corners—round them or box them in
• Only item in room: mattress on platform (on floor?)
• No wall graphics, décor, etc—plain walls (due to concern that acutely ill psychotic patients may be prone to overstimulation and/or to misperceiving visual stimuli)

Outfacing corners

Corners boxed in

An unsafe, dated seclusion room design

Note the rounded corners and seamless padding
Restraint Rooms

Same as seclusion room except:

- May be used for longer periods of time
- Usually larger than seclusion room to allow plenty of room for multiple staff needed when forced restrain is necessary (10x10 minimum)
- Has as its only furnishing a restraint bed bolted to the center of the floor; restraint bed is usually a platform design with multiple attachment points for restraints
- Includes a bathroom that opens into the anteroom so facilities can be used without need to move patient into hallway
- Restraint cabinet should be built into anteroom walls
- Dimmable lighting

Antique restrain devices

Platform style restraint bed
**Comfort Rooms**
- Can usually be used without staff assistance
- Furnishings, décor and activities are designed to comfort the user
- Furnishings, décor and activities usually designed by the consumers
- Patient usually selects the resources or activities he wishes to use
- Staff supervision only as needed, unobtrusive
- Not too large, intended for use by one person at a time
- Are different from sensory rooms

**Furnishing a Comfort Room**
- Pleasant décor
- Wall borders, graphics, or murals (not monochrome)
- Attractive view through window (or faux stained glass)
- Carpet or throw rug
- Blanket for warmth
- Comfortable furniture for sitting and reclining (e.g. recliners or bean bags)
- Minimal items that could be dangerous
- Erasable board, writing materials
- Selection of music and reading materials
- Plush washable pillows and animals
- Craft and art projects and supplies
- Activities such as puzzles, games
- Posters suggesting comfort activities (e.g. self massage)

**Comfort Carts or Boxes**
- Located in comfort room, or if no comfort room exists, may be checked out by patients for use in their rooms
- Contents selected by consumers or with consumer input

Items in cart/box may include:
- Reading materials
- Comic books
- Soft or squeeze toys
- Art materials / Coloring books
- Stuffed Animals
- Writing materials
- Music player (usually boombox style, no head or ear phones, or pt selection is played overhead by staff)
- Minimally stimulating hand-held games
Examples of sensory and stress relief objects

Sensory Rooms
- Akin to comfort rooms except the focus is on sensory modulation—stimulation and involvement
- Patient use may require staff instruction
- Contain specific resources and tools for sensory modulation
- Staff may guide or direct the tools/resources to be used
- Sensory stimuli involve multiple senses
- Color changing, dimmable LED lighting
- Snoezelen is one proprietary approach
- Not used for psychotic patients
- May be more useful in geropsych, units treating Autism-spectrum disorders
Nurses’ Station

- Open vs. vs. semi-open vs. enclosed design; e.g. strip glass
- Located and designed to enable monitoring of patient spaces,
  - Located across from day and dining rooms
  - Bump-out to permit monitoring of hallways
- Designed so that staff can hear important sounds but also to prevent staff conversations from being overheard by patients
- Usually have a secretary area at front;
  - Secretary usually is interface for patients seeking nursing staff or other assistance, usually controls entrances and exits
  - Consider raised counters and stools at secretary station so she/he is at same level as ambulatory patients

Nurse’s Station, cont’d

Include:
- At least two exits (essential)
- Secure latches on gates (e.g. gates on entrances to open-design nurses’ station) that patients cannot readily operate (lockable doors if enclosed)
- Computer stations for multiple computers
- Dictation area
- Comfortable, adjustable, sturdy wheeled chairs
- Brighter lighting for day shift, dimmer lighting with local task lighting for night shift
- Chart rack that is mobile and positioned so it is available to nurses, secretary, and other personnel
Other MHU Spaces

**Medication rooms**
- One door to nurses’ station, one door to hallway so med cart can be moved to dispensing area (or split/dutch door for med-passing)
- Keyed to nurse and essential personnel swipe cards only (or keypad locks)
- Includes sink, storage, refrigerator
- Includes computer area, phone
- Room for a stool, medication dispensing unit
- Wired and large enough to accommodate future technologies in med dispensing

**Conference rooms**
- Used for report, meetings, patient team meetings, student pre- and post-conferences,
- Should be at least two, one larger, one smaller (e.g. 12x20, 12x16)
- May double as small group therapy or interview rooms, possibly as special visitation spaces
- Conference tables and safe chairs if they are to be shared with patients (avoid chairs too heavy too move)
- Attractive but secure wall décor
- Wall or ceiling lighting (dimmable)
- Blinds within windows so room can be darkened
- Video source for presentations
- White board, bulletin board or clip board for postings

**Interview rooms**
- Locate to be easily monitored (via window, viewing port, or half-height glass walls)
- Usually closed rather than open
- Attractive but with no objects/décor that could be readily turned into weapons
- Small desk or table, office chair, 2-4 patient chairs (same safe design as elsewhere on unit, but movable)
- Some prefer chairs only (no desk), or desk against wall, to decrease psychological barriers
- Two exits (essential)
- Wall or ceiling lighting (dimmable), not table lighting
- Adequate space to use for small meetings
- For higher security: doors can swing outward

**Art therapy, other therapy rooms**
- Located to be easily monitored
- Sink for cleanup
- Lockable storage space (large amount)
- Walls designed to display patient artwork
- No carpet
- Easily cleaned walls
- Floor drain if possible
- Can do double duty for additional therapies:
  - Horticulture
  - Life skills (with kitchenette)
Other MHU Spaces, cont’d

Physical examination space—as on med-surg units but secure; storage for crash cart, portable oxygen & suction, assessment equipment

Court/hearing room space—adjacent to MHU, usually furnished as a small conference room; located to be shared by multiple units; essential in forensic units; include shackle attachment points

Clean laundry room as on med-surg units—for patient linens; secured, room for a rolling laundry cart, ideally near unit entrance (near staff entrance is ideal)

Dirty Laundry area—secured, separate from clean laundry, near staff entrance

Secured storage for patient belongings (depending on frequency of access, may be helpful to locate it in or adjacent to the nurses’ station)

Other MHU Spaces, cont’d

Staff Support Spaces

- Break room for staff—ideally on unit near the nurses’ station; may need to include bank of monitors. Sink, microwave, table, chairs, recliner, library (journals, etc.), bulletin boards.
- Staff restroom—consider location near nurses’ station vs. near break room
- Staff offices—for unit manager, social worker, etc. Consider advantages and disadvantages of locating on vs. off the MHU.

Other MHU Spaces, cont’d

Recreation rooms

- Essential for long term settings and child/adol units
- On unit if possible so all can use
- Secured from patient access unless staff are present to monitor; located to facilitate monitoring
- May be adjacent to MHU’s so multiple units can share these
- Usually include exercise equipment (weight or resistance machines, exercycles, treadmills)
- Ping pong, arcade-style basketball hoop, other age-appropriate, large-motor equipment is desirable
- Caution with pool tables (balls and cues as weapons)

Other MHU Spaces, cont’d

Classrooms for Child/Adolescent Units

- May be mandated to be separate spaces (i.e. not multipurpose space)
- On or adjacent to MHU
- Include educational resources, e.g. computers, video equipment
- Secure entrances and exits
- Located to facilitate monitoring and/or monitored via camera
- Local school board or state department of education may assist in funding, design

Other MHU Spaces, cont’d

Patient Laundry Room

- Needed for longer term settings, helpful on all units
- Can be part of life skills training
- Secured from patient access when staff are not present to supervise
- Usually adjacent to MHU’s so they can be shared by multiple units
- Typical laundry design: floor drain, water source, folding table, washer and dryer (two dryers are helpful to reduce back-ups and waiting times)

Outdoor Areas

- Secure outdoor areas accessible to MHU patients, whenever feasible, are very therapeutic and highly desirable.
- May be in the form of an enclosed courtyard surrounded by the unit itself
- Alternately, may be a patio remote from or adjacent to the unit that is secured by security fencing (special designs exist for this type of fencing)
- If above the ground floor or for higher security applications, overhead fencing/mesh may be needed
- Secured from patient access when staff are not present to supervise
Outdoor areas, cont’d

- Can include:
  - seating areas
  - picnic facilities
  - walking paths
  - Fountains or other water features (water sounds for relaxation, sensory stimulation, maintaining privacy of conversations)
  - Recreational equipment (e.g. basketball hoop)
- One section should be covered for shade and protection from the weather
- Can incorporate horticultural therapy elements (e.g. flower or vegetable garden)
- Usually adjacent to MHU’s so they can be shared by multiple units

Image Sources

1. Please refer to the Image Sources handout for information pertaining to all of the images in this presentation.