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As the official journal of the AIA Academy of Architecture for Health (AAH), this publication explores subjects of interest to AAH members and others involved in the fields of healthcare architecture, planning, design, and construction. The goal is to promote awareness, educational exchange, and advancement of the overall project-delivery process and building products.

About the Academy

The Academy of Architecture for Health (AAH) is one of 21 member communities of the American Institute of Architects. The AAH is unique in the depth of its collaboration with professionals from all sectors of the healthcare community, including physicians, nurses, hospital administrators, facility planners, engineers, managers, healthcare educators, industry and government representatives, product manufacturers, healthcare contractors, specialty subcontractors, allied design professionals, and healthcare consultants.

The AAH currently consists of approximately 6,954 members. The mission of the Academy is to improve both the quality of healthcare design and the design of healthy communities by developing, documenting, and disseminating knowledge; educating design practitioners and other related constituencies; advancing the practice of architecture; and affiliating and advocating with others that share these priorities.

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Behavioral Healthcare Design:
Ten Things You 'Know' That 'Just Ain't So'

by JAMES M. HUNT, AIA, NCARB

ABSTRACT

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"It'snot what you don't know that will hurt you; it's what you 'know' that just ain't so."

Andso it is, I find, with the design of psychiatric hospitals. The intelligent and highly educated people who are brought together in preliminary design meetings frequently fail to consider whether what they have come to "know" about psychiatric facility design is now (or ever was) valid. Let's look at the data available from some credible sources to see if some of these "known" statements are actually correct.

ARTICLE

Behavioral Healthcare Design: Ten Things You 'Know' That 'Just Ain't So'

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Preliminary meetings involving architects, psychiatric hospital management, and unit staff members often result in decisions that crystallize into critical details of facility design very early in the planning process. These can be very difficult, if not impossible, to change at a later date.

During these sessions, it is not unusual for psychiatric hospital staff to state any number of time-honored platitudes that, through sheer repetition, have come to be "known" as unchallengeable facts of psychiatric facility design. Typically, staff comes to "know" such things because they have heard them during their education and throughout their professional lives in the facilities in which they have worked. But using such "common knowledge" while designing new psychiatric facilities can be very problematic and very costly.

Former baseball great Satchel Paige explained the problem best when he said,

"It's not what you don't know that will hurt you; it's what you 'know' that just ain't so."

And so it is, I find, with the design of psychiatric hospitals. The intelligent and highly educated people who are brought together in preliminary design meetings frequently fail to consider whether what they have come to "know" about psychiatric facility design is now (or ever was) valid. "Evidence Based Design" is a popular concept these days. It is used (and sometimes abused) frequently. Let's look at the data available from some credible sources to see if some of these "known" statements are actually correct.

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How Behavioral Healthcare Facilities Are Different

At the root of many of the design ideas that "just ain't so" is a bad assumption, an assumption that may be shared by practicing architects, clinicians and hospital administrators. The assumption is that, from a design standpoint, psychiatric hospitals are very similar to general hospitals and, therefore, the traditional design ideas that evolved in general hospitals are valid in psychiatric hospitals as well.

I know that this assumption is wrong. I know because my consulting practice continues to be called upon by the owners of newly constructed or newly renovated psychiatric hospitals to develop remedial solutions for problems that were designed into their facilities. To see why the design features of psychiatric hospitals must be significantly different from those of general hospitals, one need look no farther than the design and function of the patient room in a general hospital and consider how its design and functional requirements differ from those of a psychiatric hospital. General hospital patients seldom leave their rooms. They see their doctors, receive treatment, eat their meals, visit with friends and family in their rooms. Typically, behavioral healthcare patients do not use their rooms for any of these activities. Their rooms are used almost exclusively for sleeping and resting. The rest of their time is spent in common areas and activity, group or day rooms where they can be observed and their interaction with others noted (see Figure 1).

Erroneous Assumptions In Psychiatric Hospital Design

Based on the many design-related discussions I've heard over the years, and after having addressed many of the problems that erroneous design ideas have caused, I've developed a short list of the most common and problematic design ideas that I've heard. Here they are, together with a few suggestions that might help designers respectfully, yet effectively, refocus problematic ideas into safer, more cost-efficient and more appropriate solutions.

1. Virtually all behavioral health/psychiatric hospital facilities can be built around a single, state-of-the-art planning model.

2. "Suicide assessment tools now available are reliable."

3. "Not all of our patients are suicidal, so we only need a few specially equipped rooms near the Staff Station to monitor suicidal patients."

4. "15-minute checks provide sufficient observation for patients on suicide watch."

5. "We put our suicidal patients on one-to-one (with a sitter) to prevent them from committing suicide."

6. "Building deficiencies can be compensated for by increasing staff."

7. "Tight fitting doors between patient rooms and corridors pose a risk for ligature attachment, but those doors are a code requirement, so the hazard is unavoidable."

8. "The blocking or barricading of in-swinging corridor doors is not a problem, so long as furniture is anchored in place (in patient rooms), or staff are present (in activity rooms)."

9. "It is not necessary to protect against ligature attachment for items less than 18 inches above the floor."

10. "Break-away shower and window curtains provide an adequate measure of safety."

Each if these will be explored in more detail below:

(1.) VIRTUALLY ALL BEHAVIORAL HEALTH/PSYCHIATRIC HOSPITAL FACILITIES CAN BE BUILT AROUND A SINGLE, STATE-OF-THE-ART PLANNING MODEL. Models such as "treatment mall" or "house/neighborhood/downtown" may work well for facilities with long lengths of stay- such as state hospitals-but not so well for hospitals with 5-7 day average lengths of stay or varied patient populations. Generally, the treatment mall concept assumes that all patients will move from the unit to the treatment mall during the daytime on weekdays. Yet, some facilities built around this model have found that often there are patients who are too upset/too unstable to leave the unit. Because these patients must stay behind on the unit, staff must also stay behind, a problem that complicates staff assignments and drives up staffing costs.

Staff in units with 3-7 day average lengths of stay often report that their patients are not stable enough to move off the unit. Accordingly, they recommend that patients be kept within the unit for their relatively short period of treatment.

I've come to believe that terms like "treatment mall" or "house/neighborhood/downtown" are often used rather loosely-as a fashionable way to refer to different portions of self-contained units that provide required facility functions rather than as terms that reference the kind of long-term treatment environment referenced above. I recall one recent discussion with an architectural firm that stated that they are firm believ-

How do Behavioral Healthcare Units need to be different from General Hospital Units?

General Hospital Unit

Focus is on treating medical conditions.

FUNCTION OF SPACE

Treatment takes place in patient rooms.

Family visitation takes place in patient rooms.

Patient is in room majority of the time.

FLOOR PLAN SOLUTIONS

Travel distance for staff from service core to patient room is primary traffic flow issue.

Access to unit is unrestricted.

Group Rooms and Activity Rooms are not required.

Interview Rooms and Visitation Rooms are not required.

Observation of corridors from staff station is not required.

Seclusion Rooms are not required.

Direction of door swings for patient rooms are not important.

Alcoves and hiding places are not problems.

PRODUCT AND MATERIAL HAZARDS

Typical patient rooms *have* the following:

Medical gasses

Monitors and cables

Sharps containers

IV poles

Cubicle curtain tracks

Open grab bars

Open flush valves

Open bed pan washers

Accessible ceilings

Windows

Heating and air conditioning systems and grilles

Light fixtures

Electrically operated beds

Wardrobes and clothes hangers

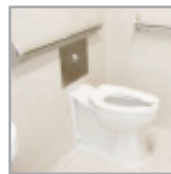Wall mounted television sets

Beds

Lavatories

Toilets

Headwalls

Behavioral Healthcare Unit

Focus is on treating mental disorder, keeping patient safe from self-harm and protecting other patients and staff.

FUNCTION OF SPACE

Treatment takes place in Interview Rooms, Group Rooms and Activity Rooms

FLOOR PLAN SOLUTIONS

Observation of corridors and Day Rooms from staff station is a primary concern

Access to and from the unit is restricted

Travel distance for staff from service core to patient rooms not critical

Group Rooms, Activity Rooms, Interview Rooms and Seclusion Rooms are required

Direction of door swings to resit barricading is important

Alcoves and hiding places are hazards

LESS HAZARDOUS PRODUCTS AND MATERIALS

Typical patient rooms and toilets *do not* have the following:

Medical gas outlets, monitors with related cable, sharps containers, IV poles, curtain cubical tracks, accessible ceilings, television sets, telephones, nurse call systems, bed pan washers

Typical patient rooms and patient toilets *do have* the following:

Shatter resistant windows and mirrors, platform beds that are secured in palace, wardrobes with only open fixed shelves, ligature resistant door hardware and toilet accessories, vandal resistant heating and cooling systems and light fixtures, ligature resistant plumbing fixtures and concealed piping

FIGURE 1

ers in the house/neighborhood/downtown model for behavioral health/psychiatric facility development and that they "would not hire any consultants that were not in agreement with that approach."

This sounds dangerously like proposing a one-size fits all solution before the variables are known. The fact is that the design of behavioral health/psychiatric facilities must account for many factors:

- patient populations
- average lengths of stay
- diagnoses
- acuity levels
- staffing patterns
- organization's culture

These factors, among others, all provide vital information that needs to be accumulated and thoroughly understood before important decisions regarding the general organization of the various elements of the unit can be determined.

(2.) "SUICIDE ASSESSMENT TOOLS NOW AVAILABLE ARE RELIABLE." This addresses an issue that is located in the very core of many clinical decisions that are made on a behavioral health unit and may not be well received. Asking the following questions may provide a way to get clinical staff to open up and entertain the idea that this may need to be revisited.

QUESTION 1: How do you know which patients are suicidal? The response will likely be that they utilize one of the various risk assessment tools or suicidality scales that are available for this purpose. The following information may be useful in getting the hospital staff to consider the fact that this mindset could be dangerous and may create a situation which could result in patient deaths by suicide.

RESPONSE 1: The American Psychiatric Association has released several studies on inpatient suicides in inpatient psychiatric units:

The 2003 study showed that 1,500 inpatient suicides occurred annually and that $1/3$ of those patients were on 15-minute checks. (Placing patients on 15-minute checks is often standard practice for patients that have been identified as being actively suicidal. This practice will be discussed later in this paper.) Perhaps the more significant conclusion that can be reached from these studies is that $2/3$ (or over 1,000 deaths) were patients that staff had not identified as being suicidal and placed on 15-minute checks.

RESPONSE 2: In March of 2012, the Veterans Hospital Association released a study that concluded that the assessment tools that they are using are not reliable. This study is titled "Suicide Risk Factors and

Risk Assessment Tools: A Systematic Review".[2] It was conducted by the VP\s Evidence-based Synthesis Program. The entire report is available for download at: http://www.hsrd.research.va.gov/publications/esp/suicide-risk.cfm.

In response to the question, "What assessment tools are effective for assessing risk of engaging in suicidal self-directed violence in Veteran and military populations?" the conclusion stated on page 35 of this document is "Insufficient evidence overall to recommend screening with these risk assessment tools based on this evidence. Future research is warranted, particularly for risk assessment instruments that are already in use within the VA System."

This report also asks the following question on page 95: "Are there any clinical performance measures, programs, quality improvement measures, patient care services or conferences that will be directly affected by this report? If so please provide detail." Conclusion #5 under this question is that there is a "...lack of data to support the use of specific risk assessment instruments ..."

In short, the suicide risk assessment tools currently in use by the VA hospital system were found to be unreliable. There is some impressive work being done by several groups to develop more reliable information, but most of them are not ready for widespread use at the present time.

Therefore, since many decisions regarding the design of patient use facilities hinge on knowing the suicide risk for individual patients at a given time, and because this information is largely obtained from risk assessment tools that have been judged to be unreliable, it is more prudent to design all patient accessible areas to be as suicide resistant as possible.

(3.) "NOT ALL OF OUR PATIENTS ARE SUICIDAL, SO WE ONLY NEED A FEW SPECIALLY EQUIPPED ROOMS NEAR THE STAFF STATION TO MONITOR SUICIDAL PATIENTS." At first, this sounds like a cost-saving suggestion, but only deeper questioning and discussion can expose its dubious underlying assumptions. Designers might ask these questions:

- How will you know which patients are suicidal? The idea to build a few specially designed rooms places a heavy burden on staff to accurately identify all of the risks in the patients' environments and then make appropriate adjustments. Staff must accurately decide which patients need the "safer" rooms and exactly when they need them. (See item 2 above.)
- What if you have more "suicidal" patients on the unit than your secure rooms will allow? How will you decide which patients get them? What will

your defense be if the patient you moved to a less-secure room commits suicide that night? Such questions may expose the unnecessarily high responsibility this design decision places on staff to accurately judge every patient situation. It may also lead to consideration of how disruptive—and costly in staff time—the process of moving patients can be, and whether the cost of a single misjudgment that results in an adverse outcome might more than erase any short-term savings.

(4) "15-minute checks provide sufficient observation for patients on suicide watch." This is a widely held concept that has been around for decades. But it must be challenged, because it is not backed by evidence.

I would suggest that a designer start a discussion with this question: "Why do you think that checking on patients at 15-minute intervals is an effective suicide deterrent?" Typical responses may note that an individual could not accomplish a suicide by strangulation or suffocation in that period of time.

But that is not the case: medical studies verified by The Joint Commission'' establish that patients can tie something around their necks tightly enough to cause death or irreparable brain damage in as little as 4 to 5 minutes by inducing a condition called anoxia. Another study'' also concluded that 15-minute checks do not prevent suicides. It is clearly possible for patients to "time" suicide attempts between checks.

(5) "We put our suicidal patients on one-to-one (with a sitter) to prevent them from committing suicide." A study at Johns Hopkins Hospital in Baltimore found that 9% of successful suicides were by patients who were on one-to-one supervision. You may ask, "How can this be?" It is actually very simple. In some cases the patient physically incapacitates the staff member, sometimes they trick the staff into letting them go into the bathroom alone, and sometimes they just wait until the staff member falls asleep or is otherwise distracted.

(6) "Building deficiencies can be compensated for by increasing staff." Some facilities compensate for patient and staff safety hazards by increasing the staff-to-patient ratio to increase the level of observation possible. This creates an increase staffing patterns (FTE per Patient) or in overtime pay.

To expose the potentially costly long-term trade-off that added staffing involves, a designer might ask these questions:

- Does the additional staff time and expense result in better patient care, or is it solely to safeguard

patients against these risks? Responses from staff members may be both positive and negative on this point.

- How would the one-time cost of fixing the deficiency compare to the ongoing personnel cost of your remedial practice? An evaluation of alternatives, followed by an estimate, may show that the cost of an appropriate remedy is available at a fraction of the cost of additional staffing.

(7.) "Tight fitting doors between patient rooms and corridors pose a risk for ligature attachment, but those doors are a code requirement, so the hazard is unavoidable." This statement is partially true: Every facility has tight-fitting doors to patient rooms because they are required by building codes and other regulatory agencies. However, it is not true that the safety risks of such doors are unavoidable. In this situation, the key question is this: Is it acceptable to ignore a known serious hazard just because it's required by code and "everyone else is doing it?"

Discussion here might center on the fact that suicides (or suicide attempts) that employ ligatures using the joints between the door and the frame of patient room-to-corridor doors—remain a frequent occurrence. Patients can tie a knot in almost anything (a bed sheet, a pair of trousers, a sweatshirt) place it over the top of a sturdy door, and use the other end as a ligature. There are safety alternatives available, including pressure sensitive or electric eye type devices that mount on door edges, connect to a central alarm system, and sound alarms when they are activated by the presence of an object, such as a ligature. These are available from several companies. Of course, the edge of the door is not the only ligature attachment hazard: care must also be taken when choosing the door hardware, since hinges and lockset handles can be ligature attachment points.

(8.) "The misuse of furniture to block or barricade in-swinging corridor doors is not a problem, so long as furniture is anchored in place (in patient rooms), or staff are present (in activity rooms)." This is an inaccurate assumption because it is always possible for a group of patients to enter any patient or activity room, with some able to block the door (even if furniture is anchored in place), while others commit harm to other patients or staff members.

While some might advocate the need for additional staff to prevent this situation, I would ask: How can we add or modify existing doors to mitigate this safety threat?
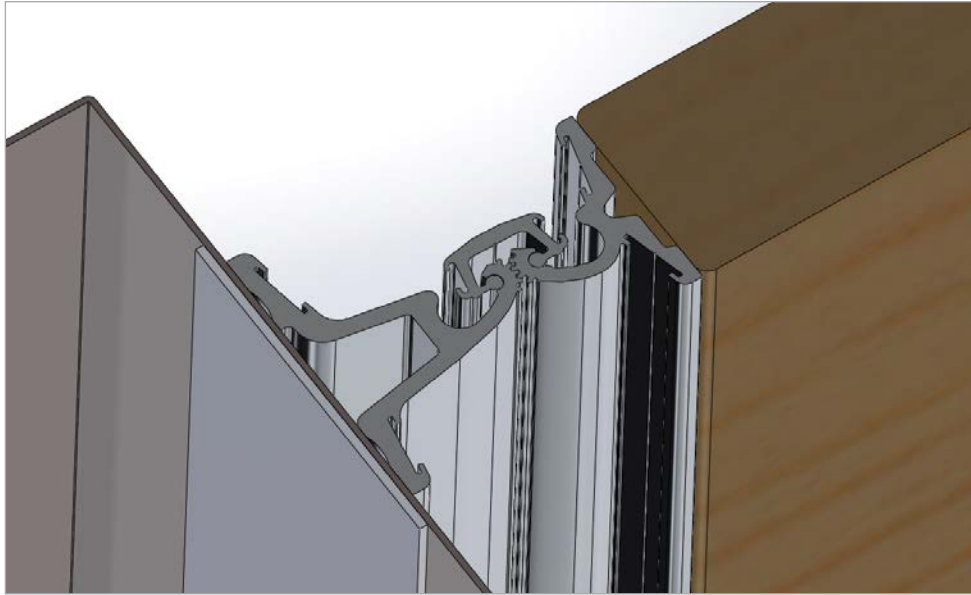
FIGURE 2

The first solution is to add a second doorway to the room. This can be ideal for larger rooms, such as activity rooms, particularly if the second door swings outward.

When a second door is not practical and the existing door swings inward, there are still several options:[7]

- Install or retrofit the door with double-acting continuous hinges, which allow the door to swing out into the corridor in an emergency. These doors are equipped with an emergency stop that extends the full height of the door, as well as a keyed lock to resist unauthorized use (See Figure 2).
- Install or retrofit a door-within-a-door or "wicket" door. These doors contain a hinged panel in the center of the door that is secured by a deadbolt lock on the corridor side. When unlocked, the movable panel swings outward into the corridor, ensuring staff entry to the room.
- Install an unequal pair of "double doors," with the larger leaf hinged to swing inward (toward the patient or activity room) and the smaller hinged to swing outward. To maximize the width of the opening, install the doors so they are free swinging. To increase strength and reduce noise, separate the doors with a vertical frame member (see Figures 3 and 4).

(9.) "It is not necessary to protect against ligature attachment for items less than 18 inches above the floor." Many years ago, the "standard of care" for preventing ligature attachment was to protect "any attachment point at or above waist level." Then, the standard

of care was reduced to 18 inches above floor height. But in fact, there is no level below which the risk of ligature attachment and strangulation is not a concern. A ligature attachment point need not be elevated: it could be the leg of a chair or even the crack at the bottom af a door. There is no "safe zone".[1,8]

Current practice requires that ligature attachment risks be mitigated throughout the environment, notably in areas where patients will be alone, such as patient rooms or toilet rooms. But, a designer might ask: What about "non-patient areas" like staff offices, storerooms or other areas where patients are never expected to be alone?

Even these areas should be designed with safety in mind. Despite the best efforts of staff, I find on site visits that it is not unusual to find the doors to such areas unlocked, with patients inside and unknown to staff. Incorporating ligature resistant features in these rooms can reduce the pressure on staff to constantly secure such areas by locking doors or exercising extreme vigilance.

(10.) "Break-away shower and window curtains provide an adequate measure of safety." This, I believe, is a questionable proposition. Here's why: even when specially designed, all break-away curtain hangers hold some weight; some patients have been known to bunch these hangers together to share a bigger load. Even when these fasteners function properly, the curtains themselves can easily be tied around the neck as ligatures, so the consideration of break-away weight alone is not sufficient to prevent hazard. One hospital recently reported that a patient was able to thread a

FIGURE 3

FIGURE 4

ligature above the break-away hangers and into the ceiling-mounted track. This connection provided substantial holding force.

For these reasons, current best practice is to design all patient-accessible areas without curtains or drapes. Whenever possible, showers should be designed to contain water without the presence of a curtain or door. European type toilet rooms (rooms in which the floor space is sloped to drain, or equipped with trench-type drains, and all fixtures are designed to tolerate shower spray) are an effective alternative. Such designs require a water barrier pan beneath the entire floor area as well as slip-resistant flooring.

When shower curtains are required, they should be equipped with the minimum number of breakaway fasteners and consist of a "breathable" fabric that reduces the suffocation risk.

Windows with integral blinds eliminate the need for curtains and drapes. The tilt of the blinds can be controlled by patients with thumbwheels, ligature-resistant knobs, or pushbuttons; or by staff with key-operated, motorized units.

Cubicle curtains and their tracks are not required in behavioral health units[10] and are strongly discouraged.

Conclusions

Good design requires good dialogue. Examples like those above demonstrate the potential dangers that can result when long-term facility design decisions involving the lives and safety of patients and staff are based on incorrect information and differing or untested assumptions about the real risks and costs involved. Such discussions require real effort, but are vital to project success. They can be aided by a design team that uses appropriately worded questions to prompt the client to explore the validity of potentially dangerous design decisions.

Throughout the design process, the client remains the decision maker. The designer's role is to identify potential safety concerns, foster dialogue, consider and present possible solutions, and explain the positive and negative elements of each.

If, in the designer's opinion, a client's decision creates a potential risk of self-harm or harm to others, it may be necessary for the designer to put his or her concerns in writing, then ask the client to provide written instructions regarding the design element in question. Hospitals are encouraged to carefully review and document the need for these elements with the help of their internal safety and risk management programs, legal counsel, and liability insurance carriers.

Should the design elements in question become the basis of legal action in the future, this review process may provide some protection for both the design team and the hospital.

About the Author

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