

Patient and hospital risk factors in the design of door locksets for patient-use bathrooms and toilets

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Study Objectives

The purpose of the research was to

- develop an easy method to evaluate the patient bathroom / toilet door lockset design against design criteria of patient and hospital risk factors; and
- propose a suitable lockset design for patient bathroom / door.

Methodology

From Sept - Nov 2014, 130 numbers of in-patient bathroom / toilet doors were surveyed in 27 wards in SGH.

- Each door lockset was evaluated for the following features:
 - Handle type (handhold, lever or knob)
 - Door latch (with door latch or without)
 - Lock latch (with lock latch or without)
 - Action required to activate lock latch (lock by turning or lock by pressing)
 - Tool required to open locked door from the outside (coin, screwdriver or key)
 - Occupancy indicator (with indicator or without)
- Each of the 130 doors were assigned door lockset design code based on the features presented.
- 4 design criteria were identified
 - Universal design
 - Patient risk factors (psychosocial and physiological)
 - Hospital risk factors – patient care SOP
 - Hospital risk factors – emergency rescue
- Each door lockset design code was matched against the design criteria using a matrix.

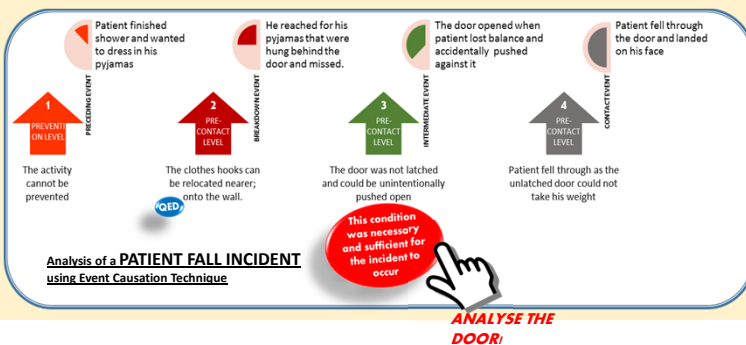
Background

Incident

In July 2014, a patient fell in the bathroom when he leaned forward to reach out for his pyjama pants, which was hanging on the hook at the back of the shower room door.


















He missed and pushed against the unlatched and unlocked door and fell through the doorway, landing on his front and sustaining left frontal hematoma to the face.

SN had advised patient that the door should be left unlocked at all times so that the nurses could easily assist him if needed.



Results

Table 3: A matrix of door lockset design features against the criteria of patient and hospital risk factors.

Door Lockset Design Code (in alphabetical order)	Door Lockset Code Description						Design Criteria			
	Handle Type	Door Latch	Lock Latch	Action to Lock	Tool to Open from Outside	Occupancy Indicator	Universal Design	Patient Risk Factors	Hospital Risk Factors (Patient care SOP)	Hospital Risk Factors (Emergency Rescue)
	Handhold  Lever  Knob 	With Door Latch  Without 	With Lock Latch 	Lock Turn  Lock Press 	Coin  Screwdriver  Key 	With Indicator  Without Indicator 				
1. H-Lo-LKT-C/WI	H	-	Lo	LKT	C	WI	✓	✓	✓	✓
2. K-LaLo-LKP-C/WOI	K	La	Lo	LKP	C	WOI	✓	✓	✓	✓
3. K-LaLo-LKP-K/WOI	K	La	Lo	LKP	K	WOI	✓	✓	✓	✓
4. L-LaLo-LKT-C/WI	L	La	Lo	LKT	C	WI	✓	✓	✓	✓
5. L-LaLo-LKT-C/WOI	L	La	Lo	LKT	C	WOI	✓	✓	✓	✓
6. L-LaLo-LKT-K/WOI	L	La	Lo	LKT	K	WOI	✓	✓	✓	✓
7. L-Lo-LKT-C/WI	L	-	Lo	LKT	C	WI	✓	✓	✓	✓
8. L-Lo-LKT-N/WI	L	-	Lo	LKT	N	WI	✓	✓	✓	✓
9. L-Lo-LKT-S/WI	L	-	Lo	LKT	S	WI	✓	✓	✓	✓

Conclusion & Recommendation

The study had achieved its stated objectives of identifying a suitable patient bathroom / toilet door lockset design by using a simple matrix of door lockset design data against criteria of patient and hospital risk factors. That lockset design that fulfilled all 4 criteria of Universal design, Patient human factor, Healthcare worker requirement and Emergency Rescue was recommended for all future patient bathroom / toilet door projects.



- A. Lever handle**
- "Return" on the end to reduce risk of catching on clothing
 - Contrasting color to the door
 - Meet measurements recommended by Code on Accessibility
- B. Separately activated door and lock latches**
- When unlocked
- Patient can have the privacy of a latched door
 - Staff can easily access to render assistance



- C. Colored occupancy indicator**
- Staff has quick indication on the need to 'unlock' the door to assist patient
- D. Open by coin from outside when locked**
- Can be opened from the outside with a 'local currency' coin of any denomination
 - Coin is readily available on nearly every staff or visitor

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