

Behavioral and Mental Health Room Annotation

Design Elements, Related Outcomes, and Design Strategies

Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Layout (Overall); Space Configuration	Room for mindfulness activities (e.g., yoga, meditation, etc.)		HDR, Inc., 2019
	Caregiver health/support/respite	View to nature/natural landscapes		Frumkin, 2001; Liddicoat, 2019a; Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich et al., 2012.
	Improved job satisfaction	Positive distractions (e.g., indoor plants, garden views, and other nature elements)		Karlin & Zeiss, 2006; Shepley, et al., 2022.
		Positive distractions (e.g., indoor plants, garden views, and other nature elements)		Karlin & Zeiss, 2006; Shepley, et al., 2022.
	Minimize patient stress/anxiety	View to nature/natural landscapes		Frumkin, 2001; Liddicoat, 2019a; Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich et al., 2012.
Landscaping		Outdoor spaces and views of nature		Karlin & Zeiss, 2006; Shepley, et al., 2022.
	Patient recovery	Positive distractions (e.g., indoor plants, garden views, and other nature elements)		Karlin & Zeiss, 2006; Shepley, et al., 2022.
		Outdoor spaces and views of nature		Karlin & Zeiss, 2006; Shepley, et al., 2022.
		Smoking areas		Shepley, et al., 2022
	Patient satisfaction	View to nature/natural landscapes		Frumkin, 2001; Liddicoat, 2019a; Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich et al., 2012.
	Improved patient healthy behaviors	Room for mindfulness activities (e.g., yoga, meditation, etc.)		HDR, Inc., 2019
	A healthy environment (reduced negative health effects)	View to nature/natural landscapes		Frumkin, 2001; Liddicoat, 2019a; Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich et al., 2012.
	Safety; air quality	Smoking areas		Shepley, et al., 2022



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Accommodate the elderly and impaired		
	Minimize stigma	(e.g., closed-bottom handrails, seating		Degl' Innocenti et al., 2020;
	William Ze Stigma	for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
		toilet, etc.)		
		Accommodate the elderly and impaired		
	Accessibility; ease of use	(e.g., closed-bottom handrails, seating		Degl' Innocenti et al., 2020;
	Accessionity, ease of use	for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
		toilet, etc.)		
		Accommodate the elderly and impaired		
	Improved	(e.g., closed-bottom handrails, seating		Degl' Innocenti et al., 2020;
	access/wayfinding	for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
		toilet, etc.)		
	Caregiver safety;	Accommodate the elderly and impaired		
		(e.g., closed-bottom handrails, seating		Degl' Innocenti et al., 2020;
	minimize risk of physical injury	for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
		toilet, etc.)		
	Efficient delivery of care	Accommodate the elderly and impaired		
		(e.g., closed-bottom handrails, seating		Degl' Innocenti et al., 2020;
Handrail		for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
Hallurali		toilet, etc.)		
		Accommodate the elderly and impaired		
	Safe delivery of care	(e.g., closed-bottom handrails, seating		Degl' Innocenti et al., 2020;
	Sale delivery of care	for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
	1	toilet, etc.)		
		Accommodate the elderly and impaired		
	Improved job satisfaction	(e.g., closed-bottom handrails, seating		Degl' Innocenti et al., 2020;
	Improved job satisfaction	for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
		toilet, etc.)		
		Accommodate the elderly and impaired		
	Patient control/	(e.g., closed-bottom handrails, seating		Degl' Innocenti et al., 2020;
	independence	for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
		toilet, etc.)		
	Safety; fall/injury	Accommodate the elderly and impaired		
	prevention and	(e.g., closed-bottom handrails, seating		Degl' Innocenti et al., 2020;
	improved mobility	for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
	improved mobility	toilet, etc.)		
	Safety; minimize risk of injury	Avoid handrails		Liddicoat, 2019b



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Avoid handrails		Liddicoat, 2019b
		Anti-ligature items (e.g., safe sliding		
		doors, continuous grab bars) and		
	Safety; reduce risk of	eliminate ligature points (e.g., standard	S	HGA, 2020
 Handrail	harm to self or harm to	doors, showerheads, bathroom fixtures,		
Tianaran	others	etc.)		
	others	Accommodate the elderly and impaired		
		(e.g., closed-bottom handrails, seating		Degl' Innocenti et al., 2020;
		for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
		toilet, etc.)		
		Ligature-resistant tactics (e.g., eliminate		
		grab bars, fixture pipes, door hinges,	S	Beebe, 2018
		etc.)		
		The design should reflect the		
		organization's goals (e.g., population,		Hunt & Sine, 2015
		rehabilitation, funding, risk tolerance,		
		etc.)		
		Maximize therapeutic design potential by involving diverse groups of		Hunt 9 Cina 2015
	Change-readiness/	stakeholders		Hunt & Sine, 2015
	future-proofing	Organization's risk tolerance effects		
		design (e.g., safest possible setting,		
		home-like ambience, upgraded finishes,		Hunt & Sine, 2015
		etc.)		
Layout (Overall);		Weigh the benefits of uniform features		11 10 6: 2045
Space Configuration		against differing patient requirements		Hunt & Sine, 2015
		Mock-up's to evaluate efficacy, safety,		
		layouts, finishes, furniture, and		Sachs, 2020
		equipment		
				Shepley & Pasha, 2013;
		Non-institutional/homelike spaces that		Shepley et al., 2016; Ulrich,
		feel welcoming and secure		Bogren, Lundin, 2012;
				Shepley, et al., 2022.
		Required safety/security features are		Lundin, 2020
	Minimize stigma	concealed or as discreet as possible		
				Degl' Innocenti et al., 2020;
		Private and/or large shared rooms		Shepley & Pasha, 2013;
		based on patient acuity/diagnoses and		Ulrich et al., 2012; The
		model of care		Center for Health Design,
				2019.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Well-organized, orderly spaces		Shepley & Pasha, 2013; Shepley et al., 2016; Shepley, et al., 2022.
		Symbolic meaning and messages		
		reinforce treatment goals and		Karlin & Zeiss, 2006
	Minimize stigma	expectations		
		Maximize therapeutic design potential		
		by involving diverse groups of		Hunt & Sine, 2015
		stakeholders		
		Provide opportunities for social		Shepley, et al., 2022
		interaction		Silepiey, et al., 2022
		Ligature-resistant tactics (e.g., eliminate		
		grab bars, fixture pipes, door hinges,	S	Beebe, 2018
		etc.)		
	Accessibility; ease of use	Accommodate the elderly and impaired		
		(e.g., closed-bottom handrails, seating		Degl' Innocenti et al., 2020;
		for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
Layout (Overall);		toilet, etc.)		
Space Configuration	Improved access/ wayfinding	Regulate sensory stimulation (e.g.,		
opass somigaration		glare, noise, light, familiarity,		Karlin & Zeiss, 2006
		orientation, etc.)		
		Accommodate the elderly and impaired		
		(e.g., closed-bottom handrails, seating		Degl' Innocenti et al., 2020;
		for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
		toilet, etc.)		
		Required safety/security features are		Lundin, 2020
		concealed or as discreet as possible		,
				Degl' Innocenti et al., 2020;
		Private and/or large shared rooms		Shepley & Pasha, 2013;
		based on patient acuity/diagnoses and		Ulrich et al., 2012; The
	Enhanced security	model of care		Center for Health Design,
	,			2019.
		Space needed for additional staff when		The Center for Health
		required to accompany a patient		Design, 2019
		Maximize direct visual observation of		Fay et al., 2016; Hunt & Sine,
		patients from security/staffing areas		2015; Lenaghan et al., 2018;
				Shepley, et al., 2022.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Caregiver health/ support/respite	Maximize daylight and nature within shared and private spaces Staff zones support performing routines		Evans, 2003; Ulrich et al., 2012; Shepley & Pasha, 2013; Shepley et al. 2016; HDR, Inc., 2019.
		in a professional and respectful manner Required safety/security features are concealed or as discreet as possible		Lundin, 2020
	Caregiver safety; minimize risk of physical injury	Clear/consistent line of sight throughout the entire room (e.g., no blind corners or hiding places; first means of egress, etc.)		HGA, 2020; Karlin & Zeiss, 2006.
		Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
	Communication/ interaction with care provider/	Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
Layout (Overall);	emergency care	Staff-patient consulting areas		Shepley, et al., 2022.
Space Configuration	Communication; staff to staff	Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
		Private and/or large shared rooms based on patient acuity/diagnoses and model of care		Degl' Innocenti et al., 2020; Shepley & Pasha, 2013; Ulrich et al., 2012; The Center for Health Design, 2019.
	Efficient delivery of care	Well-organized, orderly spaces		Shepley & Pasha, 2013; Shepley et al., 2016; Shepley, et al., 2022.
	Efficient delivery of care	Weigh the benefits of uniform features against differing patient requirements		Hunt & Sine, 2015
		Indoor therapy (PT, OT, music, etc.)		Shepley, et al., 2022
		Staff zones support performing routines in a professional and respectful manner		Olausson et al., 2021
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		Sachs, 2020



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Private and/or large shared rooms based on patient acuity/diagnoses and model of care		Degl' Innocenti et al., 2020; Shepley & Pasha, 2013; Ulrich et al., 2012; The Center for Health Design, 2019.
		Space needed for additional staff when required to accompany a patient		The Center for Health Design, 2019
	Safe delivery of care	Ligature-resistant tactics (e.g., eliminate grab bars, fixture pipes, door hinges, etc.)	S	Beebe, 2018
		Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
		Staff zones support performing routines in a professional and respectful manner		Olausson et al., 2021
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		Sachs, 2020
Layout (Overall); Space Configuration		Private and/or large shared rooms based on patient acuity/diagnoses and model of care		Degl' Innocenti et al., 2020; Shepley & Pasha, 2013; Ulrich et al., 2012; The Center for Health Design, 2019.
	Improved job satisfaction	Symbolic meaning and messages reinforce treatment goals and expectations		Karlin & Zeiss, 2006
		Staff zones support performing routines in a professional and respectful manner		Olausson et al., 2021
	Minimize patient stress/anxiety	Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
		Personal bathrooms dependent on patient acuity (shared bathrooms may be appropriate for higher acuity patients)		Liddicoat, 2019b; Sheehan et al., 2013; Shepley et al., 2016.
		Required safety/security features are concealed or as discreet as possible		Lundin, 2020
		Reasonable accommodations for service animal		Lambert et al., 2020



Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Private and/or large shared rooms based on patient acuity/diagnoses and model of care		Degl' Innocenti et al., 2020; Shepley & Pasha, 2013; Ulrich et al., 2012; The Center for Health Design, 2019.
	Well-organized, orderly spaces		Shepley & Pasha, 2013; Shepley et al., 2016; Shepley, et al., 2022.
Minimize patient	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
stress, anxiety	Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
	Separate and secure women and vulnerable patient bedrooms from men and provide view from nursing station		VA Office of Construction & Facilities Mgmt, 2014
	Maximize daylight and nature within shared and private spaces		Evans, 2003; Ulrich et al., 2012; Shepley & Pasha, 2013; Shepley et al. 2016; HDR, Inc., 2019.
Minimize undue strain during recovery	Private and/or large shared rooms based on patient acuity/diagnoses and model of care		Degl' Innocenti et al., 2020; Shepley & Pasha, 2013; Ulrich et al., 2012; The Center for Health Design, 2019.
	Required safety/security features are concealed or as discreet as possible		Lundin, 2020
	Private and/or large shared rooms based on patient acuity/diagnoses and model of care		Degl' Innocenti et al., 2020; Shepley & Pasha, 2013; Ulrich et al., 2012; The Center for Health Design, 2019.
Patient control/ independence	Well-organized, orderly spaces		Shepley & Pasha, 2013; Shepley et al., 2016; Shepley, et al., 2022.
	Access to options for acoustics		Shepley & Pasha, 2013
	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Minimize undue strain during recovery Patient control/	based on patient acuity/diagnoses and model of care Well-organized, orderly spaces Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.) Maximize direct visual observation of patients from security/staffing areas Separate and secure women and vulnerable patient bedrooms from men and provide view from nursing station Maximize daylight and nature within shared and private spaces Minimize undue strain during recovery Private and/or large shared rooms based on patient acuity/diagnoses and model of care Required safety/security features are concealed or as discreet as possible Private and/or large shared rooms based on patient acuity/diagnoses and model of care Patient control/ independence Well-organized, orderly spaces Access to options for acoustics Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating	based on patient acuity/diagnoses and model of care Well-organized, orderly spaces Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.) Maximize direct visual observation of patients from security/staffing areas Separate and secure women and vulnerable patient bedrooms from men and provide view from nursing station Maximize daylight and nature within shared and private spaces Minimize undue strain during recovery Private and/or large shared rooms based on patient acuity/diagnoses and model of care Required safety/security features are concealed or as discreet as possible Private and/or large shared rooms based on patient acuity/diagnoses and model of care Well-organized, orderly spaces Access to options for acoustics Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Patient recovery	Private and/or large shared rooms based on patient acuity/diagnoses and model of care		Degl' Innocenti et al., 2020; Shepley & Pasha, 2013; Ulrich et al., 2012; The Center for Health Design, 2019.
	,	Weigh the benefits of uniform features against differing patient requirements		Hunt & Sine, 2015
		Staff zones support performing routines in a professional and respectful manner		Olausson et al., 2021
		Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
	Patient satisfaction	Personal bathrooms dependent on patient acuity (shared bathrooms may be appropriate for higher acuity patients)		Liddicoat, 2019b; Sheehan et al., 2013; Shepley et al., 2016.
		Required safety/security features are concealed or as discreet as possible		Lundin, 2020
Layout (Overall); Space Configuration		Reasonable accommodations for service animal		Lambert et al., 2020
		Private and/or large shared rooms based on patient acuity/diagnoses and model of care		Degl' Innocenti et al., 2020; Shepley & Pasha, 2013; Ulrich et al., 2012; The Center for Health Design, 2019.
		Well-maintained high-quality features and environment		Shepley & Pasha, 2013; Shepley et al., 2016.
		Well-organized, orderly spaces		Shepley & Pasha, 2013; Shepley et al., 2016; Shepley, et al., 2022.
		Opportunities to personalize the room		Shepley & Pasha, 2013
		Symbolic meaning and messages reinforce treatment goals and expectations		Karlin & Zeiss, 2006
		Staff zones support performing routines in a professional and respectful manner		Olausson et al., 2021
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		Sachs, 2020



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
		Personal bathrooms dependent on patient acuity (shared bathrooms may be appropriate for higher acuity patients)		Liddicoat, 2019b; Sheehan et al., 2013; Shepley et al., 2016.
		Reasonable accommodations for service animal		Lambert et al., 2020
		Private and/or large shared rooms based on patient acuity/diagnoses and model of care		Degl' Innocenti et al., 2020; Shepley & Pasha, 2013; Ulrich et al., 2012; The Center for Health Design, 2019.
	Patient comfort	Maximize therapeutic design potential by involving diverse groups of stakeholders		Hunt & Sine, 2015
Layout (Overall); Space Configuration		Separate and secure women and vulnerable patient bedrooms from men and provide view from nursing station		VA Office of Construction & Facilities Mgmt, 2014
		Maximize daylight and nature within shared and private spaces		Evans, 2003; Ulrich et al., 2012; Shepley & Pasha, 2013; Shepley et al. 2016; HDR, Inc., 2019.
		Staff zones support performing routines in a professional and respectful manner		Olausson et al., 2021
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		Sachs, 2020
		Reasonable accommodations for service animal		Lambert et al., 2020
	Psychosocial support	Private and/or large shared rooms based on patient acuity/diagnoses and model of care		Degl' Innocenti et al., 2020; Shepley & Pasha, 2013; Ulrich et al., 2012; The Center for Health Design, 2019.
		Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
	Improved patient engagement	Required safety/security features are concealed or as discreet as possible		Lundin, 2020
		Maximize therapeutic design potential by involving diverse groups of stakeholders		Hunt & Sine, 2015
	Improved family presence and engagement in patient care	Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
	Enhanced privacy	Personal bathrooms dependent on patient acuity (shared bathrooms may be appropriate for higher acuity patients)		Liddicoat, 2019b; Sheehan et al., 2013; Shepley et al., 2016.
Layout (Overall); Space Configuration		Private and/or large shared rooms based on patient acuity/diagnoses and model of care		Degl' Innocenti et al., 2020; Shepley & Pasha, 2013; Ulrich et al., 2012; The Center for Health Design, 2019.
		Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
		No access to roofs or high places, open stairs, screen porches or elevator shafts		Liddicoat, 2019b
	Improved patient healthy behaviors	Private and/or large shared rooms based on patient acuity/diagnoses and model of care		Degl' Innocenti et al., 2020; Shepley & Pasha, 2013; Ulrich et al., 2012; The Center for Health Design, 2019.
		Well-maintained high-quality features		Shepley & Pasha, 2013;
		and environment Room for mindfulness activities (e.g.,		Shepley et al., 2016. HDR, Inc., 2019
		yoga, meditation, etc.) Indoor therapy (PT, OT, music, etc.)		Shepley, et al., 2022



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Improved sleep quality	Maximize daylight and nature within shared and private spaces		Evans, 2003; Ulrich et al., 2012; Shepley & Pasha, 2013; Shepley et al. 2016; HDR, Inc., 2019.
	A healthy environment	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
	(reduced negative health effects)	Maximize daylight and nature within shared and private spaces		Evans, 2003; Ulrich et al., 2012; Shepley & Pasha, 2013; Shepley et al. 2016; HDR, Inc., 2019.
	Reduced noise	Private and/or large shared rooms based on patient acuity/diagnoses and model of care		Degl' Innocenti et al., 2020; Shepley & Pasha, 2013; Ulrich et al., 2012; The Center for Health Design, 2019.
Lavant (Ovarall)		Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
Layout (Overall); Space Configuration	Safety; fall/injury prevention and	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	improved mobility	Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
	Reduced risk of contamination	Personal bathrooms dependent on patient acuity (shared bathrooms may be appropriate for higher acuity patients)		Liddicoat, 2019b; Sheehan et al., 2013; Shepley et al., 2016.
		No access to roofs or high places, open stairs, screen porches or elevator shafts		Liddicoat, 2019b
	Safety; minimize risk of	Required safety/security features are concealed or as discreet as possible		Lundin, 2020
	injury	Location of room should limit or provide no access to uncontrolled exits	S	The Center for Health Design, 2019
		Features supportive of social interaction, onlooker observation and physical retreat		The Center for Health Design, 2019



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Safety; minimize risk of injury	Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
		No access to roofs or high places, open stairs, screen porches or elevator shafts		Liddicoat, 2019b
		Required safety/security features are concealed or as discreet as possible		Lundin, 2020
		Private and/or large shared rooms based on patient acuity/diagnoses and model of care		Degl' Innocenti et al., 2020; Shepley & Pasha, 2013; Ulrich et al., 2012; The Center for Health Design, 2019.
		Space needed for additional staff when required to accompany a patient Location of room should limit or provide		The Center for Health Design, 2019 The Center for Health
	Safety; reduce risk of harm to self or harm to others	no access to uncontrolled exits	S	Design, 2019
		Features supportive of social interaction, onlooker observation and physical retreat		The Center for Health Design, 2019
Layout (Overall); Space Configuration		Clear/consistent line of sight throughout the entire room (e.g., no blind corners or hiding places; first means of egress, etc.)		HGA, 2020; Karlin & Zeiss, 2006.
		Consider outboard toilet for staff visibility		HGA, 2020
		Ligature-resistant tactics (e.g., eliminate grab bars, fixture pipes, door hinges, etc.)	S	Beebe, 2018
		Ligature-resistant features (e.g., lacking points for looped or tied attachments)	S	Beebe, 2018
		No drop ceilings		Beebe, 2018
		Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		toilet, etc.) The design should reflect the organization's goals (e.g., population, rehabilitation, funding, risk tolerance, etc.)		Hunt & Sine, 2015



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Maximize therapeutic design potential by involving diverse groups of stakeholders		Hunt & Sine, 2015
		Organization's risk tolerance effects design (e.g., safety first, residential ambience, hospitality finishes, etc.)		Hunt & Sine, 2015
	Cafata mada a mida af	Weigh the benefits of uniform features against differing patient requirements		Hunt & Sine, 2015
Layout (Overall); Space Configuration	Safety; reduce risk of harm to self or harm to others	Avoid features typical of hospital (e.g., 2'x4' light fixtures, paddle-style hardware, gas outlets, nurse call systems, etc.)		Hunt & Sine, 2015
		Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		Sachs, 2020
	Enhanced durability	Well-maintained high-quality features and environment		Shepley & Pasha, 2013; Shepley et al., 2016.
	Change-readiness/ future-proofing	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		Sachs, 2020
	Minimize stigma	Required safety/security features are concealed or as discreet as possible		Lundin, 2020
	Enhanced security	Required safety/security features are concealed or as discreet as possible		Lundin, 2020
	Caregiver health/ support/respite	Staff zones support performing routines in a professional and respectful manner		Olausson et al., 2021
Layout-Caregiver/ Clinical Staff Zone		Required safety/security features are concealed or as discreet as possible		Lundin, 2020
	Caregiver safety; minimize risk of physical	Clearly define staff zones (e.g., charting, hand-washing, storage, sitters, etc.)		HGA, 2020
	injury	Promote surveillance and first means of egress from charting and observation spaces		HGA, 2020
	Communication/ interaction with care provider/ emergency care	Staff-patient consulting areas		Shepley, et al., 2022



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Staff zones support performing routines		Olausson et al., 2021
		in a professional and respectful manner		Olausson et al., 2021
	Efficient delivery of care	Mock-up's to evaluate efficacy, safety,		
		layouts, finishes, furniture, and		Sachs, 2020
		equipment		
		Maximum of two adult patients per		
		bedroom depending upon preference		Hunt & Sine, 2015
		and population characteristics		
		Facilitate staff surveillance, egress,		Adams et al, 2020; HGA,
	Safe delivery of care	protection, teamwork and tasks		2020; Hunt & Sine, 2015.
		Staff zones support performing routines		Olausson et al., 2021
		in a professional and respectful manner		Gladsson et an, 2021
		Mock-up's to evaluate efficacy, safety,		
		layouts, finishes, furniture, and		Sachs, 2020
		equipment		
	Improved job satisfaction	Staff zones support performing routines		Olausson et al., 2021
	improved job satisfaction	in a professional and respectful manner		010033011 Ct 01., 2021
	Minimize patient	Required safety/security features are		Lundin, 2020
Lavout Caraginar/	stress/anxiety	concealed or as discreet as possible		Editalii, 2020
Layout-Caregiver/ Clinical Staff Zone	Patient control/	Required safety/security features are		Lundin, 2020
Cililical Staff Zoffe	independence	concealed or as discreet as possible		Lunum, 2020
	Patient recovery	Staff zones support performing routines		Olausson et al., 2021
	ratient recovery	in a professional and respectful manner		Olausson et al., 2021
		Required safety/security features are		Lundin, 2020
		concealed or as discreet as possible		Lunum, 2020
		Staff zones support performing routines		Olausson et al., 2021
	Patient satisfaction	in a professional and respectful manner		Olausson et al., 2021
		Mock-up's to evaluate efficacy, safety,		
		layouts, finishes, furniture, and		Sachs, 2020
		equipment		
		Staff zones support performing routines		Olausson et al., 2021
		in a professional and respectful manner		010033011 Ct 01., 2021
	Patient comfort	Mock-up's to evaluate efficacy, safety,		
		layouts, finishes, furniture, and		Sachs, 2020
		equipment		
	Improved patient	Required safety/security features are		Lundin, 2020
	engagement	concealed or as discreet as possible		Lunum, 2020
	Safety; minimize risk of	Required safety/security features are		Lundin 2020
	injury	concealed or as discreet as possible		Lundin, 2020



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Required safety/security features are		Lundin, 2020
		concealed or as discreet as possible Clearly define staff zones (e.g., charting,		
		hand-washing, storage, sitters, etc.)		HGA, 2020
		Maximum of two adult patients per		
Layout-Caregiver/	Safety; reduce risk of	bedroom depending upon preference		Hunt & Sine, 2015
Clinical Staff Zone	harm to self or harm to	and population characteristics		Hullt & Sille, 2013
Cililical Staff Zoffe	others	Facilitate staff surveillance, egress,		Adams et al., 2020; HGA,
		protection, teamwork and tasks		2020; Hunt & Sine, 2015.
		Mock-up's to evaluate efficacy, safety,		2020, Hufft & Siffe, 2013.
		layouts, finishes, furniture, and		Sachs, 2020
		equipment		34013, 2020
		Acuity-adaptable rooms to		
		accommodate medical and behavioral		Adams et al., 2020; HGA,
		comorbidities to reduce transfers and		2020.
		errors		2020.
	Change-readiness/	Customize design to fit patent's needs		HDR, Inc., 2019
	future-proofing	Private bedrooms		Shepley, et al., 2022
		Mock-up's to evaluate efficacy, safety,		Shepiey, et al., 2022
		layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
		equipment		1101, 1110., 2013, 30013, 2020.
		Счанителе		Shepley & Pasha, 2013;
		Non-institutional/homelike spaces that		Shepley et al., 2016; Ulrich,
		feel welcoming and secure		Bogren, Lundin, 2012;
		g		Shepley, et al., 2022.
		Required safety/security features are		
Layout-Patient Zone		concealed or as discreet as possible		Lundin, 2020
		Accommodate the elderly and impaired		
		(e.g., closed-bottom handrails, seating		Degl' Innocenti et al., 2020;
		for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
	Minimize stigma	toilet, etc.)		·
				Shepley & Pasha, 2013;
		Well-organized, maintained, and orderly		Shepley et al., 2016; Shepley,
		spaces		et al., 2022; Shepley, et al.
				2021.
		Continuous "chaise longue" sloped		
		angle surface between top of 18-inch		Sachs, 2020
		bench and a 27-inch desk		
		Doorless storage cubbies for clothing		Sachs 2020
		and personal items		Sachs, 2020



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Movable furniture that increases control without sacrificing safety		Sachs, 2020
		Therapeutic furniture that patients can rock slightly (e.g., ottoman)		Sachs, 2020
		Safe features in patient toilets (e.g., solid-surface countertops, integral sinks, ligature-resistant faucets, recessed cabinet pulls, and securely locked doors that enclose under-counter pipes)	S	Hunt & Sine, 2015
		Access to daylight		HDR, Inc., 2019
	Minimize stigma	Patient control		HDR, Inc., 2019
		Multipurpose built-in's (e.g., seat height shelf for storage, seating or lounging).		HDR, Inc., 2019
		Bedroom personalization with patient's items (e.g., photos, gifts, bedding, etc.)		Olausson et al., 2021
		Maximize the number of single- occupancy patient rooms and bathrooms		Olausson et al., 2021
Layout-Patient Zone		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Accessibility; ease of use	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Required safety/security features are concealed or as discreet as possible		Lundin, 2020
		Space for additional staff when required to accompany a patient		The Center for Health Design, 2019
	Enhanced security	Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
		Easy and quick visibility without hidden corners or clutter		HDR, Inc., 2019
	Caregiver health/ support/respite	Maximize daylight and nature within shared and private spaces		Evans, 2003; Ulrich et al., 2012; Shepley & Pasha, 2013; Shepley et al. 2016; HDR, Inc., 2019.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Required safety/security features are concealed or as discreet as possible		Lundin, 2020
	Caregiver safety;	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	minimize risk of physical injury	Curved angles and concealed, pull-out equipment and furniture		HGA, 2020
		Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
		Facilitate staff surveillance, egress, protection, teamwork and tasks		Adams et al, 2020; HGA, 2020; Hunt & Sine, 2015.
	Communication/ interaction with care provider/ emergency care	Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
Layout-Patient Zone	Communication; staff to staff	Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
		Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Well-organized, maintained, and orderly spaces		Shepley & Pasha, 2013; Shepley et al., 2016; Shepley, et al., 2022; Shepley, et al. 2021.
	Efficient delivery of care	Clearance of 6 feet in toilet room for inclusive accommodation of all patient populations and staff assistance		HGA, 2020
		Private toilet accessible from patient room without transitioning through a corridor		Hunt & Sine, 2015
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Accommodate the elderly and impaired		
		(e.g., closed-bottom handrails, seating		Degl' Innocenti et al., 2020;
		for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
		toilet, etc.)		
		Space for additional staff when required		The Center for Health
		to accompany a patient		Design, 2019
		ADA-compliant bedroom and bathroom		Sachs, 2020
		Ligature-free furniture and fixtures	S	Sachs, 2020
		Bi-directional swinging doors		Sachs, 2020
		Sliding doors should have stainless-steel recessed pull and concealed track		Sachs, 2020
		Continuous "chaise longue" sloped angle surface between top of 18-inch bench and a 27-inch desk		Sachs, 2020
		Doorless storage cubbies for clothing and personal items		Sachs, 2020
	Safe delivery of care	Movable furniture that increases control without sacrificing safety		Sachs, 2020
Layout-Patient Zone		Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
		Light fixtures with substantial lenses securely anchored in place and frames secured with tamper-resistant screws		Hunt & Sine, 2015
		Facilitate staff surveillance, egress, protection, teamwork and tasks		Adams et al, 2020; HGA, 2020; Hunt & Sine, 2015.
		Easy and quick visibility without hidden corners or clutter		HDR, Inc., 2019.
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Built-in furniture that maximizes safety and minimizes institutional aesthetics		Sachs, 2020
	Improved job satisfaction	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		toilet, etc.) Single-patient rooms and toilets for those with medical and behavioral comorbidities		Adams et al, 2020



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Improved job satisfaction	Curved surfaces (e.g., walls, casework, counters, etc.) to minimize dust and debris		Adams et al, 2020
		Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
		Required safety/security features are concealed or as discreet as possible		Lundin, 2020
		Well-organized, maintained, and orderly Shepley spaces et al., 20 2021. Positive distractions (e.g., outdoor views, art, television, information wall, etc.) Bed positioned for direct view out HGA, 202	Shepley & Pasha, 2013; Shepley et al., 2016; Shepley, et al., 2022; Shepley, et al. 2021.	
	Minimize patient stress/anxiety	views, art, television, information wall,		HGA, 2020
		Bed positioned for direct view out window		HGA, 2020
Layout-Patient Zone		Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
		Maximize daylight and nature within shared and private spaces		Evans, 2003; Ulrich et al., 2012; Shepley & Pasha, 2013; Shepley et al. 2016; HDR, Inc., 2019.
		Places for withdrawal and reflection		Olausson et al., 2021
		Required safety/security features are concealed or as discreet as possible		Lundin, 2020
		Well-organized, maintained, and orderly spaces		Shepley & Pasha, 2013; Shepley et al., 2016; Shepley, et al., 2022; Shepley, et al. 2021.
	Patient control/ independence	Continuous "chaise longue" sloped angle surface between top of 18-inch bench and a 27-inch desk		Sachs, 2020
		Doorless storage cubbies for clothing and personal items		Sachs, 2020
		Movable furniture that increases control without sacrificing safety		Sachs, 2020
		Therapeutic furniture that patients can rock slightly (e.g., ottoman)		Sachs, 2020



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Patient control		HDR, Inc., 2019
		Affordances for autonomy/spontaneity		Shepley, et al., 2022
		Places for withdrawal and reflection		Olausson et al., 2021
		Bedroom personalization with patient's		HDR, Inc., 2019; Olausson et
		items (e.g., photos, gifts, bedding, etc.)		al., 2021.
	Patient control/	Maximize the number of single-		Olaussan et al. 2021.
	independence	occupancy patient rooms and		Olausson et al., 2021;
	independence	bathrooms		Shepley, et al., 2022.
		Built-in furniture that maximizes safety		Sachs 2020
		and minimizes institutional aesthetics		Sachs, 2020
		Built-in's support various activities (e.g.,		
		lounge slope between bench and desk,		Sachs, 2020
		pass-through cubbies, etc.)		
		Acuity-adaptable rooms to		
		accommodate medical and behavioral		Adams et al, 2020; HGA,
		comorbidities to reduce transfers and		2020.
	Dationt recovery	errors		
	Patient recovery	Access to daylight		HDR, Inc., 2019
		Patient control		HDR, Inc., 2019
Layout-Patient Zone		Multipurpose built-in's (e.g., seat height		HDR, Inc., 2019
Layout-i atient zone		shelf for storage, seating or lounging).		HDK, IIIC., 2019
				Shepley & Pasha, 2013;
		Non-institutional/homelike spaces that		Shepley et al., 2016; Ulrich,
		feel welcoming and secure		Bogren, Lundin, 2012;
				Shepley, et al., 2022.
		lounge slope between bench and desk, pass-through cubbies, etc.) Acuity-adaptable rooms to accommodate medical and behavioral comorbidities to reduce transfers and errors Access to daylight Patient control Multipurpose built-in's (e.g., seat height shelf for storage, seating or lounging). Non-institutional/homelike spaces that feel welcoming and secure Required safety/security features are concealed or as discreet as possible Well-organized, maintained, and orderly spaces Single-patient rooms and toilets for		Lundin, 2020
		concealed or as discreet as possible		Lunum, 2020
				Shepley & Pasha, 2013;
		Well-organized, maintained, and orderly		Shepley et al., 2016; Shepley,
		spaces		et al., 2022; Shepley, et al.
	Patient satisfaction			2021.
				Adams et al, 2020; HGA,
		those with medical and behavioral		2020.
		comorbidities		
		Curved surfaces (e.g., walls, casework,		
		counters, etc.) to minimize dust and		Adams et al, 2020
		debris		
		Mock-up's to evaluate efficacy, safety,		
		layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
		equipment		



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
		Positive distractions (e.g., outdoor views, art, television, information wall, etc.)		HGA, 2020
		Bed positioned for direct view out window		HGA, 2020
		Customize design to fit patent's needs		HDR, Inc., 2019
	Patient comfort	Maximize daylight and nature within shared and private spaces		Evans, 2003; Ulrich et al., 2012; Shepley & Pasha, 2013; Shepley et al. 2016; HDR, Inc., 2019.
		Patient control		HDR, Inc., 2019
		Multipurpose built-in's (e.g., seat height shelf for storage, seating or lounging).		HDR, Inc., 2019
Layout-Patient Zone		Bedroom personalization with patient's items (e.g., photos, gifts, bedding, etc.)		HDR, Inc., 2019; Olausson et al., 2021.
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Built-in's support various activities (e.g., lounge slope between bench and desk, pass-through cubbies, etc.)		Sachs, 2020
	Psychosocial support	Maximize the number of single- occupancy patient rooms and bathrooms		Olausson et al., 2021; Shepley, et al., 2022.
		Areas for reflection or spiritual practices		Olausson et al., 2021
	Improved patient	Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
	engagement	Required safety/security features are concealed or as discreet as possible		Lundin, 2020
		Private bedrooms or non-dormitory style occupancy		Karlin & Zeiss, 2006



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
	Improved family presence and engagement in patient	Safely accommodate visitors with secure storage outside patient room and first egress access from inside patient room		Adams et al, 2020
	care	Places for withdrawal and reflection Maximize the number of single- occupancy patient rooms and bathrooms		Olausson et al., 2021 Karlin & Zeiss, 2006.; Olausson et al., 2021; Shepley, et al., 2022.
	Improved patient healthy behaviors	Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
		Room for mindfulness activities (e.g., yoga, meditation, etc.)		HDR, Inc., 2019. Evans, 2003; Ulrich et al.,
Layout-Patient Zone	Improved sleep quality	Maximize daylight and nature within shared and private spaces		2012; Shepley & Pasha, 2013; Shepley et al. 2016; HDR, Inc., 2019.
	A healthy environment (reduced negative health effects)	Maximize daylight and nature within shared and private spaces		Evans, 2003; Ulrich et al., 2012; Shepley & Pasha, 2013; Shepley et al. 2016; HDR, Inc., 2019.
	Safety; fall/injury prevention and improved mobility	Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
	Safety; medication safety	Acuity-adaptable rooms to accommodate medical and behavioral comorbidities to reduce transfers and errors		Adams et al, 2020; HGA, 2020.
		Required safety/security features are concealed or as discreet as possible		Lundin, 2020
	Safety; minimize risk of injury	Features supportive of social interaction, onlooker observation and physical retreat		The Center for Health Design, 2019
	injui y	Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Required safety/security features are		Lundin, 2020
		concealed or as discreet as possible		
		Space for additional staff when required		The Center for Health
		to accompany a patient		Design, 2019
		Features supportive of social		The Center for Health
		interaction, onlooker observation and		Design, 2019
		physical retreat		5 .
		Curved angles and concealed, pull-out		HGA, 2020
		equipment and furniture		ŕ
		Ligature-resistant features (e.g., lacking	S	Beebe, 2018
		points for looped or tied attachments)		
		Ligature-free or resistant transitions	S	Beebe, 2018
		between patient rooms and bathrooms	_	
		ADA-compliant bedroom and bathroom		Sachs, 2020
		Maximize direct visual observation of		Fay et al., 2016; Hunt & Sine,
		patients from security/staffing areas		2015; Lenaghan et al., 2018;
				Shepley, et al., 2022.
		Private toilet accessible from patient		Hunt & Sine, 2015
	Safety; reduce risk of	room without transitioning through a		
Layout-Patient Zone	harm to self or harm to	corridor		
	others	Facilitate staff surveillance, egress,		Adams et al, 2020; HGA,
		protection, teamwork and tasks		2020; Hunt & Sine, 2015.
		Acuity-adaptable rooms to		
		accommodate medical and behavioral		Adams et al, 2020; HGA,
		comorbidities to reduce transfers and		2020.
		errors		
		Safely accommodate visitors with		
		secure storage outside patient room		Adams et al, 2020
		and first egress access from inside		/ taums et al, 2020
		patient room		
		Easy and quick visibility without hidden		HDR, Inc., 2019
		corners or clutter		1151t, Ille., 2013
		Multipurpose built-in's (e.g., seat height		HDR, Inc., 2019
		shelf for storage, seating or lounging).		11011, 1110., 2013
		Mock-up's to evaluate efficacy, safety,		
		layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
		equipment		
		Built-in furniture that maximizes safety		Sachs, 2020
		and minimizes institutional aesthetics		Jaciis, 2020



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
Layout-Patient Zone	Safety; reduce risk of harm to self or harm to others	Built-in's support various activities (e.g., lounge slope between bench and desk, pass-through cubbies, etc.)		Sachs, 2020
	Change-readiness/ future-proofing	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Minimize stigma	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Accessibility; ease of use	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Enhanced security	Visiting areas in the room should be visible and easily accessible by staff		The Center for Health Design, 2019
	Efficient delivery of care	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
Lavaut Family 7ana		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
Layout-Family Zone	Patient satisfaction	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Patient comfort	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Psychosocial support	Visiting areas in the room should support family participation		The Center for Health Design, 2019
	Improved patient engagement	Visiting areas in the room should support family participation		The Center for Health Design, 2019
	Improved family presence and	Provide lockers where families can lock up belongings prior to entering patient areas		HGA, 2020
	engagement in patient care	Dedicated family zone located near door for first egress		HGA, 2020
	Enhanced privacy	Design visiting areas for privacy Design visiting areas for privacy		Karlin & Zeiss, 2006 Karlin & Zeiss, 2006



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Cofety made a risk of	Provide lockers where families can lock up belongings prior to entering patient areas		HGA, 2020
Layout-Family Zone	Safety; reduce risk of harm to self or harm to others	Dedicated family zone located near door for first egress		HGA, 2020
	others	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Safety; minimize risk of injury	Features supportive of social interaction, onlooker observation and physical retreat		The Center for Health Design, 2019
Privacy Curtain/ Screen/Barrier	Safety; reduce risk of harm to self or harm to	Avoid materials that are breakable, toxic, flame retardant, or can cause suffocation	S	The Center for Health Design, 2019
	others	Features supportive of social interaction, onlooker observation and physical retreat		The Center for Health Design, 2019
	Improved access/ wayfinding	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
	Communication/ interaction with care	High performance sound-absorbing ceiling		Liddicoat, 2019b
	provider/ emergency care	High performance sound-absorbing floor		Liddicoat, 2019b
	Improved job satisfaction	Positive distractions (e.g., indoor plants, garden views, and other nature elements)		Karlin & Zeiss, 2006; Shepley, et al., 2022.
Sound-Masking Equipment		High performance sound-absorbing ceiling		Liddicoat, 2019b
		High performance sound-absorbing floor		Liddicoat, 2019b
	Minimize patient stress/anxiety	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
		Positive distractions (e.g., indoor plants, garden views, and other nature elements)		Karlin & Zeiss, 2006; Shepley, et al., 2022.
	Patient control/ independence	White noise generator with patient- controlled volume to curb unwanted noise		Sachs, 2020



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Patient recovery	Positive distractions (e.g., indoor plants, garden views, and other nature elements)		Karlin & Zeiss, 2006; Shepley, et al., 2022.
	Patient satisfaction	High performance sound-absorbing ceiling		Liddicoat, 2019b
	ratient satisfaction	High performance sound-absorbing floor		Liddicoat, 2019b
	Psychosocial support	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
	Enhanced privacy	High performance sound-absorbing ceiling		Liddicoat, 2019b
		High performance sound-absorbing floor		Liddicoat, 2019b
Sound-Masking Equipment	A healthy environment (reduced negative health effects)	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
	Reduced noise	High performance sound-absorbing ceiling		Liddicoat, 2019b
		High performance sound-absorbing floor		Liddicoat, 2019b
		White noise generator with patient- controlled volume to curb unwanted noise		Sachs, 2020
		Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
	Safety; reduce risk of harm to self or harm to others	Avoid materials that are breakable, toxic, flame retardant, or can cause suffocation	S	The Center for Health Design, 2019
	Change-readiness/	Safe and durable familiar furnishings and finishes instead of trendy décor		Karlin & Zeiss, 2006
Flooring	future-proofing	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Minimize stigma	Secured, homelike, non-breakable artwork, marker board, etc. Wood grain pattern sheet vinyl flooring and molding profile rubber base		VA Office of Construction & Facilities Mgmt, 2014 VA Office of Construction & Facilities Mgmt, 2014
		Durable secured non-glare flooring material		VA Office of Construction & Facilities Mgmt, 2014



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Attractive aesthetic space		Shepley, et al., 2022
		Mock-up's to evaluate efficacy, safety,		
	Minimize stigma	layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
		equipment		
		Mock-up's to evaluate efficacy, safety,		
	Accessibility; ease of use	layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
		equipment		
		Differentiate areas through color,		
		lighting, carpeting, wall graphics, and		Karlin & Zeiss, 2006
	Improved access/	furnishings		
	wayfinding	Regulate sensory stimulation (e.g.,		
		glare, noise, light, familiarity,		Karlin & Zeiss, 2006
		orientation, etc.)		
	Enhanced security	Avoid objects, fixtures, and furniture	S	Watts et al., 2012
	Limanced security	which might be used as weapons	3	watts et al., 2012
	Caregiver safety;	Avoid objects, fixtures, and furniture		
	minimize risk of physical	which might be used as weapons	S	Watts et al., 2012
	injury	which might be used as weapons		
	Communication/			
Flancina	interaction with care	High performance sound-absorbing		
Flooring	provider/ emergency	floor		Liddicoat, 2019b
	care			
		Mock-up's to evaluate efficacy, safety,		
!	Efficient delivery of care	layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
	·	equipment		
		Avoid objects, fixtures, and furniture		
		which might be used as weapons	S	Watts et al., 2012
	Safe delivery of care	Mock-up's to evaluate efficacy, safety,		
!		layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
		equipment		
		High performance sound-absorbing		
	NAI-linein a matiemat	floor		Liddicoat, 2019b
	Minimize patient	Regulate sensory stimulation (e.g.,		
	stress/anxiety	glare, noise, light, familiarity,		Karlin & Zeiss, 2006
		orientation, etc.)		
		High performance sound-absorbing		Liddingst 2040b
		floor		Liddicoat, 2019b
	Patient satisfaction	Mock-up's to evaluate efficacy, safety,	1	
		layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
		equipment		



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Safe and durable familiar furnishings and finishes instead of trendy décor		Karlin & Zeiss, 2006
	Patient comfort	Attractive aesthetic space		Shepley, et al., 2022
	Patient connort	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Psychosocial support	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
	Enhanced privacy	High performance sound-absorbing floor		Liddicoat, 2019b
	A healthy environment (reduced negative health effects)	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
		High performance sound-absorbing floor		Liddicoat, 2019b
	Daducad naise	Avoid highly reverberant spaces		Karlin & Zeiss, 2006
	Reduced noise	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
Flooring	Safety; fall/injury	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	prevention and improved mobility	Avoid highly polished floors or other reflecting surfaces because of glare		Karlin & Zeiss, 2006
	Safety; minimize risk of injury	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
		Anchored furnishings and accessories without openings or sharp edges		ASHE, n.d.
	Safety; reduce risk of	Safe and durable familiar furnishings and finishes instead of trendy décor		Karlin & Zeiss, 2006
	harm to self or harm to	Avoid highly polished floors or other reflecting surfaces because of glare		Karlin & Zeiss, 2006
	others	Secured, homelike, non-breakable		VA Office of Construction &
		artwork, marker board, etc.		Facilities Mgmt, 2014
		Slip resistant 2" x 2" [50.8 mm x 50.8 mm] ceramic tile for bathroom floor and slope-to-drain shower, but not for the walls		VA Office of Construction & Facilities Mgmt, 2014



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Safety; reduce risk of	Shower and bathroom floor drains for slab depressions of 2" [50.8 mm] or less; slope length of bathroom floor to shower drain for depressions 4" [101.6 mm] or greater		VA Office of Construction & Facilities Mgmt, 2014
	harm to self or harm to others	Durable secured non-glare flooring material		VA Office of Construction & Facilities Mgmt, 2014
Flooring		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	Enhanced durability	Slip resistant 2" x 2" [50.8 mm x 50.8 mm] ceramic tile for bathroom floor and slope-to-drain shower, but not for the walls	VA Office of Construction & Facilities Mgmt, 2014	
		Durable secured non-glare flooring material		VA Office of Construction & Facilities Mgmt, 2014
	Change-readiness/ future-proofing	Safe and durable familiar furnishings and finishes instead of trendy décor		Karlin & Zeiss, 2006
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020
		Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
		Avoid "institutional colors" (i.e.,		The Center for Health
		"institutional green")		Design, 2019
Walls		Minimize "safe" design features		The Center for Health Design, 2019
	Minimize Stigma	Recessed, wall-mounted screens with nature scenes supplement window views		Sachs, 2020
		Secured, homelike, non-breakable		VA Office of Construction &
		artwork, marker board, etc.		Facilities Mgmt, 2014
		Secure trim, headboards and soothing		VA Office of Construction &
		colors contribute to the residential feel		Facilities Mgmt, 2014
		Painted gypsum board for walls with at least one soothing warm color accent wall or wood grain texture wainscot panels		VA Office of Construction & Facilities Mgmt, 2014



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Attractive aesthetic space		Shepley, et al., 2022
	Minimiza Ctiama	Mock-up's to evaluate efficacy, safety,		
	Minimize Stigma	layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
		equipment		
		Mock-up's to evaluate efficacy, safety,		
	Accessibility; ease of use	layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
		equipment		
		Differentiate areas through color,		
		lighting, carpeting, wall graphics, and		Karlin & Zeiss, 2006
	Improved access/	furnishings		
	wayfinding	Regulate sensory stimulation (e.g.,		
		glare, noise, light, familiarity,		Karlin & Zeiss, 2006
		orientation, etc.)		
		Discreet security features that reinforce		
		safety without compromising		Lenaghan et al., 2018
		experience		
		Avoid ligature points	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture	S	Watts et al., 2012
		which might be used as weapons	3	watts et al., 2012
Walls		Mirrors made of stainless steel, acrylic,		The Center for Health
VValis	Enhanced security	unbreakable glass, or polycarbonate		Design, 2019
		Affix finishes, molding, and other		The Center for Health
		interior details to limit contraband		Design, 2019
		hiding spaces		Design, 2013
		Artwork installation prevents hazards		
		(e.g., non-breakable frame/covering,		The Center for Health
		secured with tamper-resistant		Design, 2019
		fasteners)		
		Discreet security features that reinforce		
	Caregiver safety;	safety without compromising		Lenaghan et al., 2018
	minimize risk of physical	experience		
	injury	Avoid objects, fixtures, and furniture	S	Watts et al., 2012
		which might be used as weapons		
		Mock-up's to evaluate efficacy, safety,		
	Efficient delivery of care	layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
		equipment		
		Discreet security features that reinforce		
	Safe delivery of care	safety without compromising		Lenaghan et al., 2018
		experience		
		Avoid ligature points	S	Watts et al., 2012



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	Safe delivery of care	Avoid features typical of hospital (e.g., 2'x4' light fixtures, paddle-style hardware, gas outlets, nurse call systems, etc.)		Hunt & Sine, 2015
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Improved job satisfaction	Positive distractions (e.g., indoor plants, garden views, and other nature elements)		Karlin & Zeiss, 2006; Shepley, et al., 2022.
		Nature art and prints		Frumkin, 2001; Liddicoat, 2019a; Liddicoat 2019b.
	Minimize patient stress/anxiety	Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
Walls		Positive distractions (e.g., outdoor views, art, television, information wall, etc.)		HGA, 2020
		Patient-based color selection (e.g., typically avoid monochromatic/blands and trendy/pastels, overstimulating bright colors, depressing blue-greens, and white/gray in seclusion rooms, etc.)		Karlin & Zeiss, 2006
		Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
		Positive distractions (e.g., outdoor views, art, television, information wall, etc.)		Adams et al, 2020
		Positive distractions (e.g., indoor plants, garden views, and other nature elements)		Karlin & Zeiss, 2006; Shepley, et al., 2022.
		Access to options for acoustics		Shepley & Pasha, 2013
	Patient control/ independence	Ligature-free bed with multiple locations and orientations along headwall(s)	S	Sachs, 2020



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Patient control/	Patient selected artwork using wall- mounted screens with preselected images		Sachs, 2020
	independence	Curb noise and promote auditory control (e.g., sound-absorbing plaster, patient-controlled white noise generator, etc.)		Sachs, 2020
	Patient recovery	Positive distractions (e.g., outdoor views, art, television, information wall, etc.)		Adams et al, 2020
	Tallette Tecovery	Positive distractions (e.g., indoor plants, garden views, and other nature elements)		Sachs, 2020
		Nature art and prints		
		Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
		Opportunities to personalize the room		Shepley & Pasha, 2013
Walls	Patient satisfaction	Artwork installation prevents hazards (e.g., non-breakable frame/covering, secured with tamper-resistant fasteners)		
		Avoid "institutional colors" (i.e., "institutional green")		
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Minimize "safe" design features		
		Positive distractions (e.g., outdoor views, art, television, information wall, etc.)		HGA, 2020
	Patient comfort	Safe and durable familiar furnishings and finishes instead of trendy décor		Karlin & Zeiss, 2006
		Patient-based color selection (e.g., typically avoid monochromatic/blands and trendy/pastels, overstimulating bright colors, depressing blue-greens, and white/gray in seclusion rooms, etc.)		Karlin & Zeiss, 2006



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Attractive aesthetic space		Shepley, et al., 2022
	Patient comfort	Mock-up's to evaluate efficacy, safety,		
	ratient connort	layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
		equipment		
		Regulate sensory stimulation (e.g.,		
		glare, noise, light, familiarity,		Karlin & Zeiss, 2006
	Psychosocial support	orientation, etc.)		
		Marker Boards for care and team		VA Office of Construction &
		information should be securely attached		Facilities Mgmt, 2014
	Improved patient healthy behaviors	Art depicting realistic social engagement		Shepley & Pasha, 2013
		National and order		Frumkin, 2001; Liddicoat,
	A healthy environment	Nature art and prints		2019a; Liddicoat 2019b.
	(reduced negative health	Regulate sensory stimulation (e.g.,		
	effects)	glare, noise, light, familiarity,		Karlin & Zeiss, 2006
		orientation, etc.)		
		Curb noise with durable sound-		
		absorbing plaster wall and ceiling finish	Sachs,	Sachs, 2020
		systems		
)		Avoid highly reverberant spaces		Karlin & Zeiss, 2006
Walls		Regulate sensory stimulation (e.g.,		
		glare, noise, light, familiarity,		Karlin & Zeiss, 2006
		orientation, etc.)		
	Reduced noise	Durable gypsum board walls with metal		
	Neudced Hoise	studs extending to structure above and		VA Office of Construction &
		sound attenuation features (e.g., batt		Facilities Mgmt, 2014
		insulation and least penetrations.)		
		Good acoustical control		Shepley, et al., 2022
		Curb noise and promote auditory		
		control (e.g., sound-absorbing plaster,		Sachs, 2020
		patient-controlled white noise		340115, 2020
		generator, etc.)		
	Safety; fall/injury	Avoid ligature points	S	Watts et al., 2012
	prevention and	Avoid objects, fixtures, and furniture	c	Watts et al., 2012
	improved mobility	which might be used as weapons	S	vvalls El al., ZUIZ
		Avoid ligature points	S	Watts et al., 2012
	Safety; minimize risk of	Avoid objects, fixtures, and furniture	S	Watts et al., 2012
	, ,	which might be used as weapons	3	vvallS Et al., ZUIZ
	injury	Avoid clothes hooks	S	Liddicoat, 2019b
		Avoid curtain rods	S	Liddicoat, 2019b



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Cafatu mainimaina viale af	Avoid handrails	S	Liddicoat, 2019b
	Safety; minimize risk of	Ligature resistant shelves	S	Liddicoat, 2019b
	injury	Ligature resistant towel racks	S	Liddicoat, 2019b
		Discreet security features that reinforce		
		safety without compromising		Lenaghan et al., 2018
		experience		
		Avoid ligature points		Watts et al., 2012
		Avoid objects, fixtures, and furniture		Watts et al., 2012
		which might be used as weapons		Watts et al., 2012
		Avoid clothes hooks	S	Liddicoat, 2019b
		Avoid curtain rods	S	Liddicoat, 2019b
		Avoid handrails	S	Liddicoat, 2019b
		Ligature resistant shelves	S	Liddicoat, 2019b
		Ligature resistant towel racks	S	Liddicoat, 2019b
		Avoid materials that are breakable,		The Courtey for Health
		toxic, flame retardant, or can cause	S	The Center for Health
		suffocation		Design, 2019
		Mirrors made of stainless steel, acrylic,		The Center for Health
Walls	Safety; reduce risk of	unbreakable glass, or polycarbonate		Design, 2019
	harm to self or harm to	Affix finishes, molding, and other		The Center for Health
	others	interior details to limit contraband		Design, 2019
	Others	hiding spaces		Design, 2019
		Artwork installation prevents hazards		
		(e.g., non-breakable frame/covering,		The Center for Health
		secured with tamper-resistant		Design, 2019
		fasteners)		
		Alternative to wall-mounted alcohol-		ASHE, n.d.
		based hand rub (ABHR) dispensers		ASTIE, Ti.d.
		Alternative to non-recessed life safety		
		devices (e.g., chimes, strobes, pull		
		station, smoke detectors, sprinkler		ASHE, n.d.
		heads, fire extinguishers, hose cabinets,		
		etc.)		
		Alternative to wall-mounted equipment		ASHE, n.d.
		(e.g., medical devices, television, etc.)		/ Wite, II.u.
		Wall mounted items should avoid glass,		ASHE, n.d.
		protruding edges, or exposed corners		, 10.7E, 11.0.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Alternative to non-recessed monitoring, communication, and access equipment (e.g., speakers, cameras, phone, access card readers, wireless access points, etc.)		ASHE, n.d.
		Cover plates and receptacles free from protruding edges, exposed corners, and screws that can be tampered with		ASHE, n.d.
		Ligature-resistant features (e.g., lacking points for looped or tied attachments)	S	Beebe, 2018
		Signage should be secured to structure		Allen et al., 2019
		Recessed, wall-mounted screens with nature scenes supplement window views		Sachs, 2020
		Curb noise with durable sound- absorbing plaster wall and ceiling finish systems		Sachs, 2020
	Safety; reduce risk of	Safe and durable familiar furnishings and finishes instead of trendy décor		Karlin & Zeiss, 2006
Walls	harm to self or harm to others	Avoid features typical of hospital (e.g., 2'x4' light fixtures, paddle-style hardware, gas outlets, nurse call systems, etc.)		Hunt & Sine, 2015
		Secured, homelike, non-breakable artwork, marker board, etc.		VA Office of Construction & Facilities Mgmt, 2014
		Marker Boards for care and team		VA Office of Construction &
		information should be securely attached		Facilities Mgmt, 2014
		Wall-mounted ligature-resistant overbed lighting with high strength acrylic lenses (not correctional type) securely fastened to the wall with tamper resistant screws	S	VA Office of Construction & Facilities Mgmt, 2014
	Clothing or towel hooks should be designed to collapse when any weight above 4 lbs [1.81 kg] is applied		VA Office of Construction & Facilities Mgmt, 2014	
		Paper towel dispensers in patient bathrooms should be recessed		VA Office of Construction & Facilities Mgmt, 2014
		Soap dispensers should be wall- mounted with sloped tops to prevent anchor points		VA Office of Construction & Facilities Mgmt, 2014



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Safety; reduce risk of harm to self or harm to	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	others	Ligature-free bed with multiple locations and orientations along headwall(s)	S	Sachs, 2020
Walls		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	Enhanced durability	Affix finishes, molding, and other interior details to limit contraband hiding spaces		The Center for Health Design, 2019
		Durable gypsum board walls with metal studs extending to structure above and sound attenuation features (e.g., batt insulation and least penetrations.)		VA Office of Construction & Facilities Mgmt, 2014
	Change-readiness/ future-proofing	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
	Minimize Stigma	Required safety/security features are concealed or as discreet as possible		Lundin, 2020
		Attractive aesthetic space		Shepley, et al., 2022
Ceiling		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Limited-access ceilings for required utility servicing		Allen et al., 2019
	Accessibility; ease of use	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
	Enhanced security	Avoid ligature points	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Required safety/security features are concealed or as discreet as possible		Lundin, 2020
	Enhanced security	Affix finishes, molding, and other interior details to limit contraband hiding spaces		The Center for Health Design, 2019
	Caregiver safety;	Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
	minimize risk of physical injury	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
		Required safety/security features are concealed or as discreet as possible		Lundin, 2020
	Communication/ interaction with care provider/ emergency care	High performance sound-absorbing ceiling		Liddicoat, 2019b
	Efficient delivery of care	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
Ceiling		Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
		Avoid ligature points	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	Safe delivery of care	Avoid features typical of hospital (e.g., 2'x4' light fixtures, paddle-style hardware, gas outlets, nurse call systems, etc.)		Hunt & Sine, 2015
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Minimizo nationt	Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
	Minimize patient stress/anxiety	High performance sound-absorbing ceiling		Liddicoat, 2019b
		Required safety/security features are concealed or as discreet as possible		Lundin, 2020



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Required safety/security features are		Lundin 2020
		concealed or as discreet as possible		Lundin, 2020
	Patient control/	Access to options for acoustics		Shepley & Pasha, 2013
	independence	Curb noise and promote auditory		
	independence	control (e.g., sound-absorbing plaster,		Sachs, 2020
		patient-controlled white noise		3acris, 2020
		generator, etc.)		
		Discreet security features that reinforce		
		safety without compromising		Lenaghan et al., 2018
		experience		
		High performance sound-absorbing		Liddicoat, 2019b
	Patient satisfaction	ceiling		Eladicodt, 20135
	Tatient Satisfaction	Required safety/security features are		Lundin, 2020
		concealed or as discreet as possible		Editalii, 2020
		Mock-up's to evaluate efficacy, safety,		
		layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
		equipment		
		Attractive aesthetic space		Shepley, et al., 2022
	Patient comfort	Mock-up's to evaluate efficacy, safety,		
Ceiling		layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
		equipment		
	Improved patient	Required safety/security features are		Lundin, 2020
	engagement	concealed or as discreet as possible		,
	Enhanced privacy	High performance sound-absorbing		Liddicoat, 2019b
		ceiling		
		High performance sound-absorbing		Liddicoat, 2019b
		ceiling		
		Curb noise with durable sound-		
		absorbing plaster wall and ceiling finish		Sachs, 2020
		systems		
	Reduced noise	Avoid highly reverberant spaces		Karlin & Zeiss, 2006
		Good acoustical control		Shepley, et al., 2022
		Curb noise and promote auditory		
		control (e.g., sound-absorbing plaster,		Sachs, 2020
		patient-controlled white noise		
	0.6.4.6.11.6.1	generator, etc.)	-	
	Safety; fall/injury	Avoid ligature points	S	Watts et al., 2012
	prevention and	Avoid objects, fixtures, and furniture	S	Watts et al., 2012
	improved mobility	which might be used as weapons		,



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Avoid ligature points	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
		Ligature resistant fire sprinklers	S	Liddicoat, 2019b
	Safety; minimize risk of	Ligature resistant ceiling lights	S	Liddicoat, 2019b
	injury	No exposed pipes, sprinkler heads, light		
		fixtures, vents, or ducts		Liddicoat, 2019b
		Required safety/security features are		Lundin 2020
		concealed or as discreet as possible		Lundin, 2020
		Discreet security features that reinforce		
		safety without compromising		Lenaghan et al., 2018
		experience		
		Avoid ligature points	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture	c	Watts at al. 2012
		which might be used as weapons	3	watts et al., 2012
		Ligature resistant fire sprinklers	S	Liddicoat, 2019b
		Ligature resistant ceiling lights	S	Liddicoat, 2019b
		No exposed pipes, sprinkler heads, light		Liddicast 2010h
Ceiling		fixtures, vents, or ducts		Liddicoat, 2019b
Cennig		Required safety/security features are		Lundin 2020
		concealed or as discreet as possible		Lunum, 2020
		High ceilings	Lenaghan et al., 2018 Doints S Watts et al., 2012 Watts et al., 2012 Watts et al., 2012 Undicoat, 2019b Undic	Dobrohotoff & Llewellyn-
	Safety; reduce risk of	Tilgii Cellings		Jones, 2011
	harm to self or harm to	Collapsible curtain rails		Dobrohotoff & Llewellyn-
	others	Collapsible curtain rails		Jones, 2011
		Monolithic ceiling surface to restrict	ς	The Center for Health
		ceiling space access	<u> </u>	Design, 2019
		Avoid materials that are breakable,		The Center for Health
		toxic, flame retardant, or can cause	S	Design, 2019
		suffocation		Design, 2013
		Affix finishes, molding, and other		The Center for Health
		interior details to limit contraband		Design, 2019
		hiding spaces		0,
		Alternative to non-recessed life safety		
		devices (e.g., chimes, strobes, pull		
		station, smoke detectors, sprinkler		ASHE, n.d.
		heads, fire extinguishers, hose cabinets,		
		etc.)		



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Alternative to non-recessed monitoring, communication, and access equipment (e.g., speakers, cameras, phone, access card readers, wireless access points, etc.)		ASHE, n.d.
		Use alternative to suspended ceiling		ASHE, n.d.
		Ligature-resistant features (e.g., lacking points for looped or tied attachments)	S	Beebe, 2018
		Use solid ceilings in patient rooms and bathrooms		Beebe, 2018
		No drop ceilings		Beebe, 2018
		Limited-access ceilings for required utility servicing		Allen et al., 2019
		Use anti-ligature and vandal resistant lighting, ceiling systems and sprinklers	S	Allen et al., 2019
	Safety; reduce risk of	Fire Alarm (e.g., strobes, horns, etc.) should be ceiling mounted or "hooded"	S	Allen et al., 2019
Calling	harm to self or harm to others	Curb noise with durable sound- absorbing plaster wall and ceiling finish systems		Sachs, 2020
Ceiling		Avoid features typical of hospital (e.g., 2'x4' light fixtures, paddle-style hardware, gas outlets, nurse call systems, etc.)		Hunt & Sine, 2015
		Ceiling-mounted patient lifts should not be installed in patient rooms	S	VA Office of Construction & Facilities Mgmt, 2014
		Sprinklers should be vandal-resistant and not able to be used as an anchor point	S	VA Office of Construction & Facilities Mgmt, 2014
		Gypsum board or other inaccessible and durable ceiling system with tamper resistant fixtures and features		VA Office of Construction & Facilities Mgmt, 2014
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	Enhanced durability	Affix finishes, molding, and other interior details to limit contraband hiding spaces		The Center for Health Design, 2019



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Change-readiness/ future-proofing	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
		Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Provide exterior window to access daylight		HGA, 2020
		Patient control of light, views, and privacy using windows with integral blinds		Sachs, 2020
		Windows that open to 4-inches		Sachs, 2020
Windows	Minimize stigma	Window mini-blinds should be behind security glazing without stainless steel screens, exposed cords, chains, or wands		Hunt & Sine, 2015
		Avoid using correctional-style view panels in patient room doors		VA Office of Construction & Facilities Mgmt, 2014
		Maximize daylight and nature within shared and private spaces		Evans, 2003; Ulrich et al., 2012; Shepley & Pasha, 2013; Shepley et al. 2016; HDR, Inc., 2019.
		Large windows and niches that serve as shelves to store or display personal items		Olausson et al., 2021
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Accessibility; ease of use	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	·	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Improved access/ wayfinding	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
		Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
	Enhanced security	Avoid ligature points	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
		Unbreakable glass in windows		Liddicoat, 2019b
	Caregiver health/	View to nature/natural landscapes		Frumkin, 2001; Liddicoat, 2019a; Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich et al., 2012.
	support/respite	Maximize daylight and nature within shared and private spaces		Evans, 2003; Ulrich et al., 2012; Shepley & Pasha, 2013; Shepley et al. 2016; HDR, Inc., 2019.
Windows		Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
		Unbreakable glass in windows		Liddicoat, 2019b
	Caregiver safety; minimize risk of physical injury	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Clear/consistent line of sight throughout the entire room (e.g., no blind corners or hiding places; first means of egress, etc.)		HGA, 2020; ; Karlin & Zeiss, 2006.
		Facilitate staff surveillance, egress, protection, teamwork and tasks		Adams et al, 2020; HGA, 2020; Hunt & Sine, 2015.
	Efficient delivery of care	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Multiple, Large, low windows with laminated safety glass		Karlin & Zeiss, 2006



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Efficient delivery of care	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
		Avoid ligature points	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	Safe delivery of care	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Facilitate staff surveillance, egress, protection, teamwork and tasks		Adams et al, 2020; HGA, 2020; Hunt & Sine, 2015.
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
Windows	Improved job satisfaction	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Multiple, Large, low windows with laminated safety glass		Karlin & Zeiss, 2006
		View to nature/natural landscapes		Frumkin, 2001; Liddicoat, 2019a; Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich et al., 2012.
		Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
	Minimize patient	Provide exterior window to access daylight		HGA, 2020
	stress/anxiety	Positive distractions (e.g., outdoor views, art, television, information wall, etc.)		HGA, 2020
		Multiple, Large, low windows with laminated safety glass		Karlin & Zeiss, 2006
		Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Positive distractions (e.g., outdoor views, art, television, information wall, etc.)		Adams et al, 2020.
	Minimize patient stress/anxiety	Maximize daylight and nature within shared and private spaces		Evans, 2003; Ulrich et al., 2012; Shepley & Pasha, 2013; Shepley et al. 2016; HDR, Inc., 2019.
		Outdoor spaces and views of nature		Karlin & Zeiss, 2006; Shepley, et al., 2022.
		Good daylight		Shepley, et al., 2022.
		and be operable to a maximum of 4" Windows with controlled operability	Sachs, 2020	
		Windows with controlled operability (i.e., sash openings limited to 4" or less)		The Center for Health Design, 2019; Ulrich et al., 2018
		Window shades between glass that are cordless, remotely controlled or restricted	S	BETA Healthcare Group and Emergency Medicine Council, 2018
Windows	Patient control/ independence	Patient control of light, views, and privacy using windows with integral blinds		Sachs, 2020
		Windows that open to 4-inches		Sachs, 2020
		Large windows and niches that serve as shelves to store or display personal items		Olausson et al., 2021
		Large, low windows		Shepley & Pasha, 2013
		Fresh air, good ventilation, and neutral odors is recommended		Karlin & Zeiss, 2006
		Multiple, Large, low windows with laminated safety glass		Karlin & Zeiss, 2006
	Patient recovery	Positive distractions (e.g., outdoor views, art, television, information wall, etc.)		Adams et al, 2020
		Maximize daylight and nature within shared and private spaces		Evans, 2003; Ulrich et al., 2012; Shepley & Pasha, 2013; Shepley et al. 2016; HDR, Inc., 2019.
		Outdoor spaces and views of nature		Karlin & Zeiss, 2006; Shepley, et al., 2022.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		View to nature/natural landscapes		Frumkin, 2001; Liddicoat, 2019a; Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich et al., 2012.
	Patient satisfaction	Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
		Bed oriented for direct view through window with consideration for size, sill height, daylight control, privacy, etc.		Adams et al, 2020.
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Large, low windows		Shepley & Pasha, 2013
		Provide exterior window to access daylight		HGA, 2020
		Positive distractions (e.g., outdoor views, art, television, information wall, etc.)		HGA, 2020
Windows	Patient comfort	Maximize daylight and nature within shared and private spaces		Evans, 2003; Ulrich et al., 2012; Shepley & Pasha, 2013; Shepley et al. 2016; HDR, Inc., 2019.
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Large, low windows		Shepley & Pasha, 2013
		Ample natural daylight		Karlin & Zeiss, 2006
	Davide and side account	Multiple, Large, low windows with laminated safety glass		Karlin & Zeiss, 2006
	Psychosocial support	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
		Avoid using correctional-style view		VA Office of Construction &
	Enhanced college	panels in patient room doors		Facilities Mgmt, 2014
	Enhanced privacy	Windows should have integral blinds and be operable to a maximum of 4"		Sachs, 2020
	Improved sleep quality	Maximize daylight and nature within shared and private spaces		Evans, 2003; Ulrich et al., 2012; Shepley & Pasha, 2013; Shepley et al. 2016; HDR, Inc., 2019.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		View to nature/natural landscapes		Frumkin, 2001; Liddicoat, 2019a; Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich et al., 2012.
		Avoid ligature points	S	Watts et al., 2012
	A haalahu aasiinanaan	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	A healthy environment (reduced negative health	Avoid curtain rods	S	Liddicoat, 2019b
	,	Unbreakable glass in windows		Liddicoat, 2019b
	effects)	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
	Safety; air quality	Maximize daylight and nature within shared and private spaces		Evans, 2003; Ulrich et al., 2012; Shepley & Pasha, 2013; Shepley et al. 2016; HDR, Inc., 2019.
	Safety; air quality	Fresh air, good ventilation, and neutral odors is recommended		Karlin & Zeiss, 2006
Windows	Reduced noise	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
	Safety; fall/injury	Avoid ligature points	S	Watts et al., 2012
	prevention and improved mobility	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
		Avoid ligature points	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	Safety; minimize risk of	Avoid curtain rods	S	Liddicoat, 2019b
	injury	Unbreakable glass in windows		Liddicoat, 2019b
		Window shades between glass that are cordless, remotely controlled or restricted	S	BETA Healthcare Group and Emergency Medicine Council, 2018
	Cofee and the first	Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
	Safety; reduce risk of	Avoid ligature points	S	Watts et al., 2012
	harm to self or harm to others	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
		Avoid curtain rods		Liddicoat, 2019b
		Unbreakable glass in windows		Liddicoat, 2019b



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Window shades between glass that are cordless, remotely controlled or restricted	S	BETA Healthcare Group and Emergency Medicine Council, 2018
		Use an alternative to non-institutional window hardware and treatments	S	ASHE, n.d.
		Clear/consistent line of sight throughout the entire room (e.g., no blind corners or hiding places; first means of egress, etc.)		HGA, 2020; ; Karlin & Zeiss, 2006.
		Ligature-resistant features (e.g., lacking points for looped or tied attachments)	S	Beebe, 2018
		Use windows that prevent elopement		Allen et al., 2019
		Use secure window/glazing with limited-access patient operation		Allen et al., 2019
		Patient control of light, views, and privacy using windows with integral blinds		Sachs, 2020
		Windows that open to 4-inches		Sachs, 2020
Windows	Safety; reduce risk of harm to self or harm to	Multiple, Large, low windows with laminated safety glass		Karlin & Zeiss, 2006
	others	Use shatterproof windows with breakaway curtain rods	S	Karlin & Zeiss, 2006
		Shard/shatter proof windows and safe treatments (e.g., no curtains, drapes, or vertical blinds)		Hunt & Sine, 2015
		Window mini-blinds should be behind security glazing without stainless steel screens, exposed cords, chains, or wands		Hunt & Sine, 2015
		Facilitate staff surveillance, egress, protection, teamwork and tasks		Adams et al, 2020; HGA, 2020; Hunt & Sine, 2015.
	Exterior windows should have integral blinds and laminated glass on interior face		VA Office of Construction & Facilities Mgmt, 2014	
		Heavy gauge commercial strength windows with insulated double glazing and other safety features (e.g., custodial locks, integral blinds, laminated glass, 4" maximum opening, etc.)	S	VA Office of Construction & Facilities Mgmt, 2014



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Safety; reduce risk of harm to self or harm to	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
Windows	others	Windows should have integral blinds and be operable to a maximum of 4"		Sachs, 2020
	Enhanced durability	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
		Unbreakable glass in windows		Liddicoat, 2019b
	Change-readiness/ future-proofing	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
		Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Minimize "safe" design features		The Center for Health Design, 2019
Doors	Minimize stigma	Warm light gray paint with cool blue accent wall, woodgrain built-in's and doors, solid surfaces, stainless steel fixtures and hardware		Sachs, 2020
		Sliding bathroom doors (not pocket) with a wall-inset top sliding track and a receiving wall on the patient room side		VA Office of Construction & Facilities Mgmt, 2014
		Stained wood doors are strongly recommended over hollow metal doors for their aesthetic appeal		VA Office of Construction & Facilities Mgmt, 2014
		Avoid using correctional-style view panels in patient room doors		VA Office of Construction & Facilities Mgmt, 2014
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Non-protruding wing doorknobs that do not allow patient to maintain grasp to prohibit staff from entering the room		Liddicoat, 2019b; BETA Healthcare Group and Emergency Medicine Council, 2018
	Accessibility; ease of use	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Retrofit inward-opening doors with Wicket door-within-a-door systems		Allen et al., 2019
		Doors should open out to facilitate emergency access		Allen et al., 2019
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Enhanced security	Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
		Avoid ligature points	S	Watts et al., 2012
Doors		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
		All lockable patient doors allow emergency access		The Center for Health Design, 2019
		Eliminate doors entirely if patient privacy can be maintained		The Center for Health Design, 2019
		Eliminate doors with hold-open devices and self-closers		The Center for Health Design, 2019
		Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
		Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
	Caregiver safety; minimize risk of physical	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
		Doors open in both directions		Liddicoat, 2019b
	injury	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Caregiver safety; minimize risk of physical injury	Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
	Communication/ interaction with care provider/ emergency care	Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
	Communication; staff to staff	Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
		Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Efficient delivery of care	Doors should swing out to prevent barricading or blocking room access		Hunt & Sine, 2015
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
Doors		Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
		Avoid ligature points	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
		Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Safe delivery of care	Bi-directional swinging doors		Sachs, 2020
		Sliding doors should have stainless-steel recessed pull and concealed track		Sachs, 2020
		Avoid features typical of hospital (e.g., 2'x4' light fixtures, paddle-style hardware, gas outlets, nurse call systems, etc.)		Hunt & Sine, 2015
		Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Doors should swing out to prevent barricading or blocking room access		Hunt & Sine, 2015
	Safe delivery of care	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Improved job satisfaction	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Minimize patient	Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
	stress/anxiety	Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
	Patient satisfaction	Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
Doors		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Minimize "safe" design features		The Center for Health Design, 2019
	Patient comfort	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment Minimize "safe" design features Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment Solid core wood door HDR, Inc., 2 HDR, Inc., 2 Liddicoat, 2	HDR, Inc., 2019; Sachs, 2020.	
	Enhanced privacy	Solid core wood door Avoid using correctional-style view panels in patient room doors		Liddicoat, 2019a VA Office of Construction & Facilities Mgmt, 2014
		Avoid ligature points	S	Watts et al., 2012
	Safety; fall/injury prevention and	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	improved mobility	Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
	Safaty: minimiza risk of	Avoid ligature points	S	Watts et al., 2012
	Safety; minimize risk of injury	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Non-protruding wing doorknobs that do not allow patient to maintain grasp to prohibit staff from entering the room		Liddicoat, 2019b; BETA Healthcare Group and Emergency Medicine Council, 2018
	Safety; minimize risk of	Ligature resistant door hinges (e.g., continuous "piano" style that extend from top to bottom)	S	Liddicoat, 2019b; The Center for Health Design 2019
	injury	Doors open in both directions		Liddicoat, 2019b
		Door closing devices, if used, should be on the public-facing side of the door		The Center for Health Design, 2019
		Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
		Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
		Avoid ligature points	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
Doors		Non-protruding wing doorknobs that do not allow patient to maintain grasp to prohibit staff from entering the room	Shepley, et al., 2022. Inforce Lenaghan et al., 2018 S Watts et al., 2012 Watts et al., 2012 Liddicoat, 2019b; BETA Healthcare Group and Emergency Medicine Council, 2018. Liddicoat, 2019b; The Ce for Health Design 2019. Liddicoat, 2019b The Center for Health Design, 2019	Healthcare Group and Emergency Medicine
		Ligature resistant door hinges (e.g., continuous "piano" style that extend from top to bottom)	S	Liddicoat, 2019b; The Center for Health Design 2019.
	Safety; reduce risk of	Doors open in both directions		Liddicoat, 2019b
	harm to self or harm to others	All lockable patient doors allow emergency access		
		Ligature resisent bathroom door	S	The Center for Health Design, 2019
		Eliminate doors entirely if patient privacy can be maintained		The Center for Health Design, 2019
		Eliminate doors with hold-open devices		The Center for Health
		and self-closers		Design, 2019
				The Center for Health
		on the public-facing side of the door		Design, 2019
		Alternative to non-institutional door		ASHE, n.d.
		Cut top of doors (e.g., avoid anchor		ASHE, n.d.
		Alternative to non-institutional door closure, hardware and hinges		Design, 2019 ASHE, n.d.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Anti-ligature items and elimination of ligature points (e.g., patient-safe sliding doors, continuous grab bars, standard doors, bathroom fixtures, etc.)	S	HGA, 2020
		Ligature-resistant features (e.g., lacking points for looped or tied attachments)	S	Beebe, 2018
		Use ligature-resistant door hardware (e.g., hinges, handles and locks)	S	Beebe, 2018
		Retrofit inward-opening doors with Wicket door-within-a-door systems		Allen et al., 2019
		Doors should open out to facilitate emergency access		Allen et al., 2019
		Anti-ligature bathroom doors that lower to 45-degree angle with pressure on top	S	Allen et al., 2019
		Continuous tamper-resistant door hinges		Allen et al., 2019
	Safety; reduce risk of	Exit door locks meets OBC/LSC criteria		Allen et al., 2019
Doors	harm to self or harm to	Bi-directional swinging doors		Sachs, 2020
Doors	others	Sliding doors should have stainless-steel recessed pull and concealed track		Sachs, 2020
		Warm light gray paint with cool blue accent wall, woodgrain built-in's and doors, solid surfaces, stainless steel fixtures and hardware	dgrain built-in's and ces, stainless steel Sachs, 2020	Sachs, 2020
		Avoid features typical of hospital (e.g., 2'x4' light fixtures, paddle-style hardware, gas outlets, nurse call systems, etc.)		Hunt & Sine, 2015
		Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
		Avoid door swing conflicts (e.g., inward- swinging door from corridor and an outward-swinging bathroom door)		Hunt & Sine, 2015
		Doors should swing out to prevent barricading or blocking room access		Hunt & Sine, 2015



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Ligature-resistant doors and hardware (e.g., closed-door clearances, continuous geared hinges, knobs, levers, pulls, deadbolts, classroomfunction lock sets, tapered door tops, etc.)	S	Hunt & Sine, 2015
		Bathroom doors with pressure sensitive alarm at door head, continuous hinge and anti-ligature lever with magnetic latch	S	VA Office of Construction & Facilities Mgmt, 2014
	Safety; reduce risk of harm to self or harm to others	Bedroom doors should have anti- ligature hardware and continuous out- swinging hinges to prevent barricading	S	VA Office of Construction & Facilities Mgmt, 2014
Doors		Bathroom doors with continuous hinges open outward with door-top pressure sensitive alarms or sloped top and anchor-point resistant hardware		VA Office of Construction & Facilities Mgmt, 2014
		Sliding bathroom doors (not pocket) with a wall-inset top sliding track and a receiving wall on the patient room side		VA Office of Construction & Facilities Mgmt, 2014
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	Enhanced durability	Solid core wood door		Liddicoat, 2019a
	Enhanced durability	Interior doors should be 1¾" [44 mm] thick, solid-core, flush-panel wood doors in hollow metal frames		VA Office of Construction & Facilities Mgmt, 2014
	Improved access/ wayfinding	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
	Enhanced security	Avoid ligature points	S	Watts et al., 2012
HVAC	Efficient delivery of care	Temperature controls allow for heating and cooling per patient preference		Liddicoat, 2019b
	Safe delivery of care	Avoid ligature points	S	Watts et al., 2012
	Minimizo nationt	Temperature controls allow for heating and cooling per patient preference		Liddicoat, 2019b
	Minimize patient stress/anxiety	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Patient control/ independence	Patient lighting and temperature control		HGA, 2020
	Patient recovery	Fresh air, good ventilation, and neutral odors is recommended		Karlin & Zeiss, 2006
	Dationt satisfaction	Temperature controls allow for heating and cooling per patient preference		Liddicoat, 2019b
	Patient satisfaction	Patient lighting and temperature control		HGA, 2020
	Patient comfort	Temperature controls allow for heating and cooling per patient preference		Liddicoat, 2019b
		High-quality air filtration systems		Shepley & Pasha, 2013
	Psychosocial support	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
		Avoid ligature points	S	Watts et al., 2012
	A healthy environment (reduced negative health effects)	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
	Safety; air quality	High-quality air filtration systems		Shepley & Pasha, 2013
HVAC		Fresh air, good ventilation, and neutral odors is recommended		Karlin & Zeiss, 2006
	Reduced noise	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
	Safety; fall/injury			
	prevention and improved mobility	Avoid ligature points	S	Watts et al., 2012
		Avoid ligature points	S	Watts et al., 2012
	Safety; minimize risk of injury	Serviceable components of HVAC terminal devices and covers, thermostats, vents, and grilles should be located outside room	S	The Center for Health Design, 2019
		Avoid ligature points	S	Watts et al., 2012
	Safety; reduce risk of harm to self or harm to	Serviceable components of HVAC terminal devices and covers, thermostats, vents, and grilles should be located outside room		The Center for Health Design, 2019
	others	Secure in-room HVAC units, diffusers, and grilles		ASHE, n.d.
		Restrict size of HVAC in-room unit, diffuser, and grill holes or slots		ASHE, n.d.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Ligature-resistant features (e.g., lacking points for looped or tied attachments)	S	Beebe, 2018
		HVAC covers with limited-access		Allen et al., 2019
HVAC	Safety; reduce risk of harm to self or harm to others	Locked or tamper-resistant mechanical units with secured air grilles that have perforated openings no larger than 3/16" in diameter		Hunt & Sine, 2015
		Mechanical supply and return diffusers should have small perforations behind the louvers and be located in the ceiling		VA Office of Construction & Facilities Mgmt, 2014
		Ligature resistant ceiling lights	S	Liddicoat, 2019b
	Safety; minimize risk of injury	AFCI (Arc Fault Circuit Interrupter) & GFCI (Ground Fault Circuit Interrupter) outlets specified whenever possible		The Center for Health Design, 2019
		Ligature resistant ceiling lights	S	Liddicoat, 2019b
Electrical	Safety; reduce risk of harm to self or harm to others	AFCI (Arc Fault Circuit Interrupter) & GFCI (Ground Fault Circuit Interrupter) outlets specified whenever possible		The Center for Health Design, 2019
		Ligature-resistant features (e.g., lacking points for looped or tied attachments)	S	Beebe, 2018
		Use tamper-proof electrical outlets		Karlin & Zeiss, 2006
	Change-readiness/ future-proofing	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
Lighting	Minimize stigma	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Avoid "institutional lighting"		HDR, Inc., 2019; The Center for Health Design, 2019
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Accessibility; ease of use	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Accessibility; ease of use	Rooms for older patients have accessible bathrooms and higher lighting levels Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		VA Office of Construction & Facilities Mgmt, 2014 HDR, Inc., 2019; Sachs, 2020.
	Improved access/	Differentiate areas through color, lighting, carpeting, wall graphics, and furnishings		Karlin & Zeiss, 2006
	wayfinding	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
		Avoid ligature points	S	Watts et al., 2012
	Enhanced security	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
Lighting	Caregiver safety; minimize risk of physical injury	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Efficient delivery of care	Night lighting in all patient rooms and bathrooms		VA Office of Construction & Facilities Mgmt, 2014
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Avoid ligature points	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	Safe delivery of care	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Avoid features typical of hospital (e.g., 2'x4' light fixtures, paddle-style hardware, gas outlets, nurse call systems, etc.)		Hunt & Sine, 2015



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Light fixtures with substantial lenses securely anchored in place and frames secured with tamper-resistant screws		Hunt & Sine, 2015
	Safe delivery of care	Good electric lighting		Shepley, et al., 2022
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Improved job satisfaction	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Minimizo nationt	Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
	Minimize patient stress/anxiety	Soft, indirect, and pervasive or full-spectrum lighting		Karlin & Zeiss, 2006
Lighting		Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
	Patient control/ independence	Good electric lighting		Shepley, et al., 2022
	Patient recovery	Soft, indirect, full-spectrum lighting with sparingly used and carefully placed spotlight-type recessed lighting		Karlin & Zeiss, 2006
		Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
	Patient satisfaction	Soft, indirect, and pervasive or full-spectrum lighting		Karlin & Zeiss, 2006
		Avoid "institutional lighting"		The Center for Health Design, 2019
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
	Patient comfort	Soft, indirect, and pervasive or full-spectrum lighting		Karlin & Zeiss, 2006
	ratient connort	Lighting supportive of healing and positive distraction		BETA Healthcare Group and Emergency Medicine Council, 2018
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Psychosocial support	Soft, indirect, full-spectrum lighting with sparingly used and carefully placed spotlight-type recessed lighting		Karlin & Zeiss, 2006
	rsychosocial support	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
Lighting	Improved patient engagement	Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
	Improved family presence and engagement in patient care	Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
	Improved patient healthy behaviors	Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
	Improved sleep quality	Night lighting in all patient rooms and bathrooms		VA Office of Construction & Facilities Mgmt, 2014
	A healthy environment (reduced negative health effects)	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006
	Reduced noise	Regulate sensory stimulation (e.g., glare, noise, light, familiarity, orientation, etc.)		Karlin & Zeiss, 2006



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Avoid ligature points	S	Watts et al., 2012
	Safety; fall/injury	Avoid objects, fixtures, and furniture	S	Watts et al., 2012
	prevention and	which might be used as weapons	3	Watts et al., 2012
	improved mobility	Night lighting in all patient rooms and		VA Office of Construction &
		bathrooms		Facilities Mgmt, 2014
		Avoid ligature points	S	Watts et al., 2012
	Safety; minimize risk of	Avoid objects, fixtures, and furniture	S	Watts et al., 2012
	injury	which might be used as weapons	3	watts et al., 2012
		Ligature resistant ceiling lights	S	Liddicoat, 2019b
		Avoid ligature points		Watts et al., 2012
		Avoid objects, fixtures, and furniture		Watts et al., 2012
		which might be used as weapons		watts et al., 2012
		Ligature resistant ceiling lights	S	Liddicoat, 2019b
		Light fixtures that cannot be damaged		ASHE, n.d.
		Ligature-resistant features (e.g., lacking	S	Beebe, 2018
		points for looped or tied attachments)	3	Beese, 2010
		Avoid features typical of hospital (e.g.,		
		2'x4' light fixtures, paddle-style		Hunt & Sine, 2015
Lighting		hardware, gas outlets, nurse call	Trunt & Sine, 201	114116 & 31116, 2013
		systems, etc.)		
	Safety; reduce risk of	Lighting must limit patient access to		
	harm to self or harm to	light bulbs and electrical contacts (e.g,		Hunt & Sine, 2015
	others	table lamps should generally be		,
		avoided)		
		Light fixtures with substantial lenses		
		securely anchored in place and frames		Hunt & Sine, 2015
		secured with tamper-resistant screws		
		Wall-mounted ligature-resistant over-		
		bed lighting with high strength acrylic	C	VA Office of Construction &
		lenses (not correctional type) securely	S	Facilities Mgmt, 2014
		fastened to the wall with tamper		
		resistant screws		
		Mock-up's to evaluate efficacy, safety,		UDD Inc. 2010; Coche 2020
		layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Avoid objects, fixtures, and furniture		
	Enhanced durability	which might be used as weapons	S	Watts et al., 2012
		which might be used as weapons		



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Change-readiness/ future-proofing	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Warm light gray paint with cool blue accent wall, woodgrain built-in's and doors, solid surfaces, stainless steel fixtures and hardware		Sachs, 2020
	Minimize stigma	Safe features in patient toilets (e.g., solid-surface countertops, integral sinks, ligature-resistant faucets, recessed cabinet pulls, and securely locked doors that enclose under-counter pipes)	S	Hunt & Sine, 2015
Fixtures/ Equipment/ Appliances/ Accessories		Porcelain toilets (not stainless steel) with fixed seats, push-button flush actuators, concealed piping, and flushing and flooding controls		VA Office of Construction & Facilities Mgmt, 2014
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		Facilities Mgmt, 2014 HDR, Inc., 2019; Sachs, 2020
	Accessibility; ease of use	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Improved access/ wayfinding	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Avoid ligature points	S	Watts et al., 2012
	Enhanced security	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Caregiver safety;	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	minimize risk of physical injury	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Efficient delivery of care	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Avoid ligature points	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	Safo delivery of care	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
Fixtures/ Equipment/ Appliances/ Accessories	Safe delivery of care	Avoid features typical of hospital (e.g., 2'x4' light fixtures, paddle-style hardware, gas outlets, nurse call systems, etc.)		Hunt & Sine, 2015
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Improved job satisfaction	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Patient control/	Unincorporated waste receptacles should be lightweight, non-weightbearing, and free from liners		BETA Healthcare Group and Emergency Medicine Council, 2018
	independence	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Patient satisfaction	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Patient comfort	Heavy-duty platform beds with rounded edges and provisions for restraints are dimensionally sized for mobility limitations		VA Office of Construction & Facilities Mgmt, 2014
	ratient connort	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Avoid ligature points	S	Watts et al., 2012
	Safety; fall/injury	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	prevention and improved mobility	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Safety; infection control and hand sanitation	Toilet paper dispensers should consist of a soft spindle (recessed holders without spindles pose infection control concerns)		VA Office of Construction & Facilities Mgmt, 2014
	Safety; minimize risk of	Avoid ligature points	S	Watts et al., 2012
Fixtures/ Equipment/		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
Appliances/ Accessories		Ligature resistant towel racks		Liddicoat, 2019b
	injury	Conceal plumbing		Liddicoat, 2019b
		Unincorporated waste receptacles should be lightweight, non-weightbearing, and free from liners	S	BETA Healthcare Group and Emergency Medicine Council, 2018
		Avoid ligature points Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012 Watts et al., 2012
		Ligature resistant towel racks	S	Liddicoat, 2019b
		Conceal plumbing		Liddicoat, 2019b
	Safety; reduce risk of harm to self or harm to	Unincorporated waste receptacles should be lightweight, non-weight-bearing, and free from liners		BETA Healthcare Group and Emergency Medicine Council, 2018
	others	Alternative to wall-mounted alcohol- based hand rub (ABHR) dispensers		ASHE, n.d.
		Alternative to non-recessed life safety devices (e.g., chimes, strobes, pull station, smoke detectors, sprinkler heads, fire extinguishers, hose cabinets, etc.)		ASHE, n.d.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Restrict access to cords		ASHE, n.d.
		Alternative to wall-mounted equipment		ASHE n.d
		(e.g., medical devices, television, etc.)		ASFIE, II.u.
		Alternative to non-recessed monitoring,		
		communication, and access equipment		
		(e.g., speakers, cameras, phone, access		ASHE, n.d.
		card readers, wireless access points,		
		etc.)		
		Durable plumbing fixtures and		ASHE n.d
		concealed piping		ASTIL, II.u.
		Anti-ligature items and elimination of		
		ligature points (e.g., patient-safe sliding	ς	HGA 2020
		doors, continuous grab bars, standard		11GA, 2020
		doors, bathroom fixtures, etc.)		
		Ligature-resistant features (e.g., lacking	S	Rocho 2018
		points for looped or tied attachments)	3	Beese, 2010
		Standard toilet seats with a hinged seat	_	
	Safety; reduce risk of	and lid are not a significant risk for	Beebe, 2018	
Fixtures/ Equipment/	harm to self or harm to	suicide attempts or self-harm		
Appliances/ Accessories	others	Lockable cabinets and carts (e.g.,		Allen et al., 2019
		housekeeping, laundry, dietary, etc.)		Beebe, 2018 Allen et al., 2019 Allen et al., 2019 Allen et al., 2019
		Liner-free equipment and accessories		
		(e.g., waste receptacles)		
		If present, dumbwaiter controls and		Allen et al., 2019
		access need to be secure from patients		
		Warm light gray paint with cool blue		HGA, 2020 Beebe, 2018 Beebe, 2018 Allen et al., 2019 Allen et al., 2019 Allen et al., 2019
		accent wall, woodgrain built-in's and		Sachs. 2020
		doors, solid surfaces, stainless steel		,
		fixtures and hardware		
		Lockable water taps		Karlin & Zeiss, 2006
		Accommodate the elderly and impaired		
		(e.g., closed-bottom handrails, seating		_
		for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
		toilet, etc.)		
		Avoid features typical of hospital (e.g.,		
		2'x4' light fixtures, paddle-style		Hunt & Sine, 2015
		hardware, gas outlets, nurse call		
		systems, etc.)		



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Shard/shatter-proof, ligature-resistant, securely anchored bathroom fixtures (e.g., concealed plumbing, sloped top flush valves and piping, pushbutton-activated valves, tight-fitting pipe covers, tempered glass distortion-free mirrors with security film and stainless steel, tamper-resistant frames, recessed towel shelves, etc.)	S	Hunt & Sine, 2015
		Safe features in patient toilets (e.g., solid-surface countertops, integral sinks, ligature-resistant faucets, recessed cabinet pulls, and securely locked doors that enclose under-counter pipes) Showers without curtains instead of	S	Hunt & Sine, 2015
Fixtures/ Equipment/ Appliances/ Accessories	Safety; reduce risk of harm to self or harm to others	bathtubs with valves and spouts Heavy-duty platform beds with rounded edges and provisions for restraints are dimensionally sized for mobility limitations		VA Office of Construction & Facilities Mgmt, 2014
		Shower and bathroom floor drains for slab depressions of 2" [50.8 mm] or less; slope length of bathroom floor to shower drain for depressions 4" [101.6 mm] or greater		VA Office of Construction & Facilities Mgmt, 2014
		Porcelain toilets (not stainless steel) with fixed seats, push-button flush actuators, concealed piping, and flushing and flooding controls		VA Office of Construction & Facilities Mgmt, 2014
		Solid surface lavatories with integral sinks and sensor activated faucets temperature mix of 110° F [43.34° C] with concealed piping and tamperresistant screws		VA Office of Construction & Facilities Mgmt, 2014



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Accessible, attractive and durable showers with solid surface panels and pans, recessed stainless steel panels with anchor proof dual-head assemblies and controls that prevent the need for shower curtains (where necessary, recessed tracks with plastic clips or Velcro tabs that collapse under more than 4 lbs [1.81kg] of weight)		VA Office of Construction & Facilities Mgmt, 2014
		Wall-anchored reflective polycarbonate mirror with shelf-less stainless-steel frame		VA Office of Construction & Facilities Mgmt, 2014
Fixtures/ Equipment/ Appliances/ Accessories	Safety; reduce risk of harm to self or harm to others	Toilet paper dispensers should consist f of a soft spindle (recessed holders		VA Office of Construction & Facilities Mgmt, 2014
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Fixed grab bars (not swinging) with a welded horizontal bottom plate Securely attached drains with tamper-		VA Office of Construction & Facilities Mgmt, 2014 VA Office of Construction &
		resistant screws Paper towel dispensers in patient bathrooms should be recessed		Facilities Mgmt, 2014 VA Office of Construction & Facilities Mgmt, 2014
		Paper towel dispensers in patient bathrooms should be recessed Soap dispensers should be wall- mounted with sloped tops to prevent anchor points VA Office of Facilities Mg	VA Office of Construction & Facilities Mgmt, 2014	
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Enhanced durability	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	Change readings /	Safe and durable familiar furnishings and finishes instead of trendy décor		Karlin & Zeiss, 2006
Furniture/ Accessories	Change-readiness/ future-proofing	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Minimize stigma	Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Accommodate the elderly and impaired		
		(e.g., closed-bottom handrails, seating		Degl' Innocenti et al., 2020;
		for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
		toilet, etc.)		
		Avoid "institutional colors" (i.e.,		The Center for Health
		"institutional green")		Design, 2019
		Minimize "safe" design features		The Center for Health Design, 2019
		Continuous "chaise longue" sloped		Design, 2015
		angle surface between top of 18-inch		Sachs, 2020
		bench and a 27-inch desk		300113, 2020
		Doorless storage cubbies for clothing		
		and personal items		Sachs, 2020
		Movable furniture that increases		Sachs, 2020 Sachs, 2020
		control without sacrificing safety		Sachs, 2020
	Minimize stigma	Therapeutic furniture that patients can		s 1 2000
		rock slightly (e.g., ottoman)		Sachs, 2020
		Secured, homelike, non-breakable		VA Office of Construction &
		artwork, marker board, etc.		Facilities Mgmt, 2014
urniture/ Accessories		Secure trim, headboards and soothing		VA Office of Construction &
		colors contribute to the residential feel		Facilities Mgmt, 2014
		Durable furnishings and finishes that are		VA Office of Construction &
		residential in character		Facilities Mgmt, 2014
		Multipurpose built-in's (e.g., seat height		HDR, Inc., 2019
		shelf for storage, seating or lounging).		11bR, IIIc., 2013
		Attractive aesthetic space		Shepley, et al., 2022
		Attractive furniture		Shepley, et al., 2022
		Mock-up's to evaluate efficacy, safety,		
		layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
		equipment		
		Built-in furniture that maximizes safety		Sachs, 2020
		and minimizes institutional aesthetics		53.5.5, 555
		Accommodate the elderly and impaired		
		(e.g., closed-bottom handrails, seating		Degl' Innocenti et al., 2020;
		for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
	Accessibility; ease of use	toilet, etc.)		
		Mock-up's to evaluate efficacy, safety,		
		layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
		equipment		



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Improved access/	Differentiate areas through color, lighting, carpeting, wall graphics, and furnishings		Karlin & Zeiss, 2006
	wayfinding	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Avoid ligature points	S	Watts et al., 2012
	Enhanced security	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	Caregiver safety; minimize risk of physical injury	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.) Avoid ligature points Avoid objects, fixtures, and furniture which might be used as weapons Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.) Facilitate staff surveillance, egress, protection, teamwork and tasks Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.) Facilitate staff surveillance, egress, protection, teamwork and tasks Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.) Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment Avoid ligature points Avoid objects, fixtures, and furniture which might be used as weapons Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment) Avoid objects, fixtures, and furniture which might be used as weapons Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.) Degl' Innocenti example to Watts et al., 201 Watts et al., 201 Use furnishings that limit use as weapon	Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.	
		_		Adams et al, 2020; HGA, 2020; Hunt & Sine, 2015.
Furniture/ Accessories	Efficient delivery of care	(e.g., closed-bottom handrails, seating for rising, equipment/aides, visible		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
		Avoid ligature points	S	Watts et al., 2012
			S	Watts et al., 2012
		(e.g., closed-bottom handrails, seating for rising, equipment/aides, visible		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Safe delivery of care		S	Allen et al., 2019
		Ligature-free furniture and fixtures	S	Sachs, 2020
		Continuous "chaise longue" sloped angle surface between top of 18-inch bench and a 27-inch desk		Sachs, 2020
		Doorless storage cubbies for clothing and personal items		Sachs, 2020



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Movable furniture that increases control without sacrificing safety		Sachs, 2020
		Facilitate staff surveillance, egress,		Adams et al, 2020; HGA,
		protection, teamwork and tasks		2020; Hunt & Sine, 2015.
	Safe delivery of care	Mock-up's to evaluate efficacy, safety,		
		layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
		equipment		
		Built-in furniture that maximizes safety and minimizes institutional aesthetics		Sachs, 2020
		Accommodate the elderly and impaired		Dog! Innocenti et al. 2020.
		(e.g., closed-bottom handrails, seating		Degl' Innocenti et al., 2020;
	Insurance of the sections	for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
	Improved job satisfaction	toilet, etc.) Positive distractions (e.g., indoor plants,		Karlin & Zeiss, 2006; Shepley,
		garden views, and other nature elements)		et al., 2022.
Furniture/ Accessories	Minimize patient stress/anxiety	Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
		Nature art and prints		Frumkin, 2001; Liddicoat, 2019a; Liddicoat 2019b.
		Positive distractions (e.g., indoor plants, garden views, and other nature elements)		Karlin & Zeiss, 2006.; Shepley, et al., 2022.
		Attractive furniture		Shepley, et al., 2022
	Patient control/	Possibility to adapt furnishings and décor to personal preferences		Degl' Innocenti et al., 2020; Shepley & Pasha; Ulirch, 2018
		Continuous "chaise longue" sloped angle surface between top of 18-inch bench and a 27-inch desk		Sachs, 2020
	independence	Doorless storage cubbies for clothing and personal items		Sachs, 2020
		Movable furniture that increases control without sacrificing safety		Sachs, 2020
		Therapeutic furniture that patients can rock slightly (e.g., ottoman)		Sachs, 2020



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Patient control/	Built-in furniture that maximizes safety and minimizes institutional aesthetics		Sachs, 2020
	independence	Built-in's support various activities (e.g., lounge slope between bench and desk, pass-through cubbies, etc.)		Sachs, 2020
		Ligature-free bed with multiple locations and orientations along headwall(s)	S	Sachs, 2020
		Multipurpose built-in's (e.g., seat height shelf for storage, seating or lounging).		HDR, Inc., 2019
	Patient recovery	Positive distractions (e.g., indoor plants, garden views, and other nature elements)		Karlin & Zeiss, 2006; Shepley, et al., 2022.
Furniture/ Accessories		Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
		Damage-resistant furnishings that are easily repaired or replaced		Liddicoat, 2018; Shepley & Pasha, 2013; Shepley et al., 2016.
	Patient satisfaction	Nature art and prints		Frumkin, 2001; Liddicoat, 2019a; Liddicoat 2019b.
		Well-maintained high-quality features		Shepley & Pasha, 2013;
		and environment		Shepley et al., 2016.
		Avoid "institutional colors" (i.e.,		The Center for Health
		"institutional green")		Design, 2019
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
				Shepley & Pasha, 2013;
		Non-institutional/homelike spaces that		Shepley et al., 2016; Ulrich,
		feel welcoming and secure		Bogren, Lundin, 2012;
	Patient comfort			Shepley, et al., 2022.
		Minimize "safe" design features		The Center for Health Design, 2019
		Safe and durable familiar furnishings and finishes instead of trendy décor		Karlin & Zeiss, 2006



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Heavy-duty platform beds with rounded edges and provisions for restraints are dimensionally sized for mobility limitations		VA Office of Construction & Facilities Mgmt, 2014
		Multipurpose built-in's (e.g., seat height shelf for storage, seating or lounging).		HDR, Inc., 2019
		Comfortable furniture		Shepley, et al., 2022
	Patient comfort	Attractive aesthetic space		Shepley, et al., 2022
		Maximize bed comfort		Olausson et al., 2021
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Built-in's support various activities (e.g., lounge slope between bench and desk, pass-through cubbies, etc.)		Sachs, 2020
	Improved patient engagement	Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
Furniture/ Accessories	Improved family presence and engagement in patient care	Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
	Improved patient	Non-institutional/homelike spaces that feel welcoming and secure		Shepley & Pasha, 2013; Shepley et al., 2016; Ulrich, Bogren, Lundin, 2012; Shepley, et al., 2022.
	healthy behaviors	Well-maintained high-quality features and environment		Shepley & Pasha, 2013; Shepley et al., 2016.
		Built-in furniture to delineate room zones		Shepley & Pasha, 2013
	A healthy environment (reduced negative health effects)	Nature art and prints		Frumkin, 2001; Liddicoat, 2019a; Liddicoat 2019b.
	Safety; fall/injury	Avoid ligature points	S	Watts et al., 2012
	prevention and improved mobility	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	Safety; fall/injury prevention and improved mobility	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Avoid ligature points	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture		
		which might be used as weapons	S	Watts et al., 2012
		Avoid bedrails		Liddicoat, 2019b
		Tamper-proof bed with minimal		Lambert et al., 2020;
	Safety; minimize risk of	leverage points and no sheets/blankets		Liddicoat, 2019b.
	injury	Fire-resistant bed		Liddicoat, 2019b
		Features supportive of social		TI 0
		interaction, onlooker observation and		The Center for Health
		physical retreat		Design, 2019
		No furnishings or objects that provide		TI
		ceiling access		The Joint Commission, 2017b
				Liddicoat, 2018; Shepley &
		Damage-resistant furnishings that are		Pasha, 2013; Shepley et al.,
		easily repaired or replaced		2016.
		Avoid ligature points	S	· ·
		Avoid objects, fixtures, and furniture		
		which might be used as weapons	S	watts et al., 2012
		Avoid bedrails		Liddicoat, 2019b
		Tamper-proof bed with minimal		Lambert et al., 2020;
Furniture/ Accessories		leverage points and no sheets/blankets		Liddicoat, 2019b.
		Fire-resistant bed		Liddicoat, 2019b
		Avoid materials that are breakable,		The Content of a Ulas like
		toxic, flame retardant, or can cause	S	The Center for Health
		suffocation		Design, 2019
	Safety; reduce risk of	Features supportive of social		The Content of a Ulas like
	harm to self or harm to	interaction, onlooker observation and		The Center for Health
	others	physical retreat		Design, 2019
		No furnishings or objects that provide		The laint Commission 2017h
		ceiling access		The Joint Commission, 2017b
		Anchored furnishings and accessories		ACHE n.d.
		without openings or sharp edges		ASHE, n.d.
		Ligature-resistant features (e.g., lacking	S	Beebe, 2018
		points for looped or tied attachments)	3	веере, 2018
		Liner-free equipment and accessories		Allen et al., 2019
		(e.g., waste receptacles)		Allell et al., 2019
		Use weight-sensitive collapsible "break		Allen et al., 2019
		away" hooks		Allell et al., 2019
		Select furnishings (e.g., chairs, beds,		
		nightstands, etc.) that cannot be used to		Allen et al., 2019
		block or barricade doors		



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Use furnishings that limit use as weapon	c	Allon et al. 2010
		(e.g., heavy, weighted, etc.)	S	Allen et al., 2019
		Ligature-free furniture and fixtures	S	Sachs, 2020
		Continuous "chaise longue" sloped		
		angle surface between top of 18-inch		Sachs, 2020
		bench and a 27-inch desk		
		Doorless storage cubbies for clothing		Sachs, 2020
		and personal items		300113, 2020
		Movable furniture that increases		Sachs, 2020
		control without sacrificing safety		346113, 2020
		Therapeutic furniture that patients can		Sachs 2020
		rock slightly (e.g., ottoman)		345113, 2020
		Safe and durable familiar furnishings		Karlin & Zeiss. 2006
		and finishes instead of trendy décor		1.6.1 6. 26.65, 26.65
		Use shatterproof windows with	S	Karlin & Zeiss. 2006
		breakaway curtain rods		·
		Stainless-steel mirrors		Karlin & Zeiss, 2006
	Safety; reduce risk of	Accommodate the elderly and impaired		
Furniture/ Accessories	harm to self or harm to	(e.g., closed-bottom handrails, seating		
	others	for rising, equipment/aides, visible		Karlin & Zeiss, 2006.
		toilet, etc.)		
		Color, texture, and natural materials		Hunt & Sine, 2015
		that provide a more residential feel		
		Soft, upholstered, durable furniture		
		with wood accents that can be		Hunt & Sine, 2015
		anchored in place		
		Sturdy durable furniture anchored in		Hunt & Sine, 2015 Hunt & Sine, 2015 Adams et al, 2020; HGA, 2020; Hunt & Sine, 2015. VA Office of Construction & Facilities Mgmt, 2014
		place (no table lamps) Facilitate staff surveillance, egress,		Adams et al. 2020: UCA
		protection, teamwork and tasks		
		Secured, homelike, non-breakable		
		artwork, marker board, etc.		
		Heavy-duty platform beds with rounded		racilities MgIIII, 2014
		edges and provisions for restraints are		VA Office of Construction &
		dimensionally sized for mobility		Facilities Mgmt, 2014
		limitations		. 33.11(163 Highlit) 2017
		Ligature-free durable desk chairs with		VA Office of Construction &
		arms and rounded edges	S	Facilities Mgmt, 2014
		a and rounded edges	<u> </u>	



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Built-in or furniture-based open shelving units with provisions for safety (e.g., spring loaded hooks, gypsum board soffit, etc.)		VA Office of Construction & Facilities Mgmt, 2014
		Clothing or towel hooks should be designed to collapse when any weight above 4 lbs [1.81 kg] is applied		VA Office of Construction & Facilities Mgmt, 2014
		Durable furnishings and finishes that are residential in character		VA Office of Construction & Facilities Mgmt, 2014
	Safety; reduce risk of	Multipurpose built-in's (e.g., seat height shelf for storage, seating or lounging).		HDR, Inc., 2019
	harm to self or harm to	Damage-resistant furniture		Shepley, et al., 2022
	others	Damage-resistant furniture Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Built-in furniture that maximizes safety and minimizes institutional aesthetics		Sachs, 2020
Furniture/ Accessories		Built-in's support various activities (e.g., lounge slope between bench and desk, pass-through cubbies, etc.)		Sachs, 2020
		Ligature-free bed with multiple locations and orientations along headwall(s)	S	Sachs, 2020
		Damage-resistant furnishings that are easily repaired or replaced		Liddicoat, 2018; Shepley & Pasha, 2013; Shepley et al., 2016.
	Enhanced durability	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
		Fire-resistant bed		Liddicoat, 2019b
		Well-maintained high-quality features and environment		Shepley & Pasha, 2013; Shepley et al., 2016.
		Damage-resistant furniture		Shepley, et al., 2022
	Enhanced sustainability	Damage-resistant furnishings that are easily repaired or replaced		Liddicoat, 2018; Shepley & Pasha, 2013; Shepley et al., 2016.
	Reduced resource consumption	Damage-resistant furnishings that are easily repaired or replaced		Liddicoat, 2018; Shepley & Pasha, 2013; Shepley et al., 2016.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Change-readiness/ future-proofing	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Well-organized, maintained, and orderly spaces		Shepley & Pasha, 2013; Shepley et al., 2016; Shepley, et al., 2022; Shepley, et al. 2021.
		Equipment should be built-in/hidden		HGA, 2020
	Minimize stigma	Warm light gray paint with cool blue accent wall, woodgrain built-in's and doors, solid surfaces, stainless steel fixtures and hardware		Sachs, 2020
Casework/ Storage		Safe features in patient toilets (e.g., solid-surface countertops, integral sinks, ligature-resistant faucets, recessed cabinet pulls, and securely locked doors that enclose under-counter pines)	S	Hunt & Sine, 2015
		(e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.) Shepley & Pash Well-organized, maintained, and orderly spaces Well-organized, maintained, and orderly spaces Equipment should be built-in/hidden Warm light gray paint with cool blue accent wall, woodgrain built-in's and doors, solid surfaces, stainless steel fixtures and hardware Safe features in patient toilets (e.g., solid-surface countertops, integral sinks, ligature-resistant faucets, recessed cabinet pulls, and securely locked doors that enclose under-counter pipes) Attractive and secure built in desks and shelving units Multipurpose built-in's (e.g., seat height shelf for storage, seating or lounging). Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.) Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment Avoid ligature points Shepley & Pash Shepley & Shepley & Shepley & Shepley & Pash Shepley &	VA Office of Construction & Facilities Mgmt, 2014	
				HDR, Inc., 2019
		layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
	Accessibility; ease of use	(e.g., closed-bottom handrails, seating for rising, equipment/aides, visible		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		layouts, finishes, furniture, and		HDR, Inc., 2019; Sachs, 2020.
			S	Watts et al., 2012
	Enhanced security	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Caregiver safety;	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	minimize risk of physical injury	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Efficient delivery of care	Well-organized, maintained, and orderly spaces		Shepley & Pasha, 2013; Shepley et al., 2016; Shepley, et al., 2022; Shepley, et al. 2021.
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
Consume de / Characa		Avoid ligature points	S	Watts et al., 2012
Casework/ Storage		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	Safe delivery of care	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Mock-up's to evaluate efficacy, safety,	HDR, Inc., 2019; Sachs, 2020.	
	Improved job satisfaction	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Minimize patient stress/anxiety	Well-organized, maintained, and orderly spaces		Shepley & Pasha, 2013; Shepley et al., 2016; Shepley, et al., 2022; Shepley, et al. 2021.
		Equipment should be built-in/hidden		HGA, 2020



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Patient control/	Well-organized, maintained, and orderly spaces		Shepley & Pasha, 2013; Shepley et al., 2016; Shepley, et al., 2022; Shepley, et al. 2021.
	independence	Built-in's support various activities (e.g., lounge slope between bench and desk, pass-through cubbies, etc.)		Sachs, 2020
	Patient recovery	Multipurpose built-in's (e.g., seat height shelf for storage, seating or lounging).		HDR, Inc., 2019
		Well-maintained high-quality features and environment		Shepley & Pasha, 2013; Shepley et al., 2016. Shepley & Pasha, 2013;
	Patient satisfaction	Well-organized, maintained, and orderly spaces		Shepley et al., 2016; Shepley, et al., 2022; Shepley, et al. 2021.
		Opportunities to personalize the room		Shepley & Pasha, 2013
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
Casework/ Storage.		Multipurpose built-in's (e.g., seat height shelf for storage, seating or lounging).		HDR, Inc., 2019
, , , , , ,	Patient comfort	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Built-in's support various activities (e.g., lounge slope between bench and desk, pass-through cubbies, etc.)		Sachs, 2020
	Improved family presence and engagement in patient care	Safely accommodate visitors with secure storage outside patient room and first egress access from inside patient room		Adams et al, 2020
	Improved patient healthy behaviors	Well-maintained high-quality features and environment		Shepley & Pasha, 2013; Shepley et al., 2016
	Safety; fall/injury	Avoid ligature points	S	Watts et al., 2012
	prevention and improved mobility	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	. ,	Avoid ligature points	S	Watts et al., 2012
	Safety; minimize risk of	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	injury	Avoid clothes hooks		Liddicoat, 2019b
		Ligature resistant shelves	S	Liddicoat, 2019b



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Ligature resistant towel racks	S	Liddicoat, 2019b
		Conceal plumbing		Liddicoat, 2019b
	Safety; minimize risk of	No furnishings or objects that provide		The Joint Commission 2017h
	injury	ceiling access		The Joint Commission, 2017b
		Avoid clothing rods and hangers		The Center for Health
		Avoid Clothing rous and hangers		Design, 2019
		Avoid ligature points	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture	S	Watts et al., 2012
		which might be used as weapons	3	watts et al., 2012
		Avoid clothes hooks		Liddicoat, 2019b
		Ligature resistant shelves	S	Liddicoat, 2019b
		Ligature resistant towel racks	S	Liddicoat, 2019b
		Conceal plumbing		Liddicoat, 2019b
		Fixed, non-adjustable shelves or hooks		The Center for Health
		that support no more than 4 pounds		Design, 2019
		(and no rods or hangers)		Design, 2015
		No furnishings or objects that provide		The Joint Commission, 2017b
		ceiling access		1116 301116 60111111331011, 20175
Casework/ Storage		Avoid clothing rods and hangers		The Center for Health
, , , , , , , , , , , , , , , , , , , ,				Design, 2019
	Safety; reduce risk of	Anchored furnishings and accessories		ASHE, n.d.
	harm to self or harm to	without openings or sharp edges		7.0.12,
	others	Wall mounted items should avoid glass,		ASHE, n.d.
		protruding edges, or exposed corners		7.07.2,
		Ligature-resistant features (e.g., lacking	S	Beebe, 2018
		points for looped or tied attachments)		,
		Warm light gray paint with cool blue		
		accent wall, woodgrain built-in's and		Sachs, 2020
		doors, solid surfaces, stainless steel		,
		fixtures and hardware		
		Color, texture, and natural materials		Hunt & Sine, 2015
		that provide a more residential feel		
		Locked doors and drawers with flush		
		pulls and recessed hinges prevent		Hunt & Sine, 2015
		access		
		Securely anchored non-adjustable		
		shelves in cabinets without doors and		Hunt & Sine, 2015
		drawers (no hanging rods)		



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Safe features in patient toilets (e.g., solid-surface countertops, integral sinks, ligature-resistant faucets, recessed cabinet pulls, and securely locked doors that enclose under-counter pipes)	S	Hunt & Sine, 2015
		Safely accommodate visitors with secure storage outside patient room and first egress access from inside patient room		Adams et al, 2020
Casework/ Storage	Safety; reduce risk of harm to self or harm to others	Built-in or furniture-based open shelving units with provisions for safety (e.g., spring loaded hooks, gypsum board soffit, etc.)		VA Office of Construction & Facilities Mgmt, 2014
		Multipurpose built-in's (e.g., seat height shelf for storage, seating or lounging).		HDR, Inc., 2019
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Built-in's support various activities (e.g., lounge slope between bench and desk, pass-through cubbies, etc.)		Sachs, 2020
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	Enhanced durability	Well-maintained high-quality features and environment		Shepley & Pasha, 2013; Shepley et al., 2016.
Patient Handling/ Movement Equipment	Minimize stigma	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Accessibility; ease of use	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Enhanced security	Avoid ligature points Avoid objects, fixtures, and furniture	S	Watts et al., 2012
	,	which might be used as weapons	S	Watts et al., 2012



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Carogivor cafety:	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	Caregiver safety; minimize risk of physical injury	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Efficient delivery of care	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
		Avoid ligature points	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
Patient Handling/ Movement Equipment	Safe delivery of care	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Improved job satisfaction	Accommodate the elderly and impaired (e.g., closed-bottom handrails, seating for rising, equipment/aides, visible toilet, etc.)		Degl' Innocenti et al., 2020; Karlin & Zeiss, 2006.
	Safety; minimize risk of injury	Avoid ligature points	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
		Avoid ligature points	S	Watts et al., 2012
	Safety; reduce risk of harm to self or harm to others	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
		Ceiling-mounted patient lifts should not be installed in patient rooms	S	VA Office of Construction & Facilities Mgmt, 2014
	Enhanced durability	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	Change readings.	Design to incorporate new technology as it develops		Karlin & Zeiss, 2006
Technology/ Internet/ Communication/ Monitoring Equipment	Change-readiness/ future-proofing	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Minimize stigma	Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
		Required safety/security features are concealed or as discreet as possible		Lundin, 2020



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Minimize stigma	Minimize "safe" design features		The Center for Health Design, 2019
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and		HDB Inc. 2010; Sache 2020;
		equipment		The Center for Health Design, 2019 HDR, Inc., 2019; Sachs, 2020; HDR, Inc., 2019; Sachs, 2020; Lenaghan et al., 2018 Watts et al., 2012 Watts et al., 2012 Lundin, 2020 The Center for Health Design, 2019; BETA Healthcare Group and Emergency Medicine Council, 2018 Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022. Lendin, 2020 Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2012
	Accessibility; ease of use	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020;
		Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
		Avoid ligature points	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
	Enhanced security	Required safety/security features are concealed or as discreet as possible		Lundin, 2020
Technology/ Internet/ Communication/ Monitoring Equipment		Avoid over-reliance on technology provisions to address safety		Design, 2019; BETA Healthcare Group and Emergency Medicine
		Maximize direct visual observation of patients from security/staffing areas		2015; Lenaghan et al., 2018;
		Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
		Avoid objects, fixtures, and furniture which might be used as weapons		Watts et al., 2012
	Caregiver safety; minimize risk of physical	Required safety/security features are concealed or as discreet as possible		Lundin, 2020
	injury	Maximize direct visual observation of patients from security/staffing areas		2015; Lenaghan et al., 2018;
		Facilitate staff surveillance, egress, protection, teamwork and tasks		Adams et al, 2020; HGA, 2020; Hunt & Sine, 2015.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Communication/ interaction with care provider/ emergency	Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
	care	No nurse call buttons (not cords) in patient rooms and bathrooms		VA Office of Construction & Facilities Mgmt, 2014
	Communication; staff to staff	Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
	Efficient delivery of care	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
		Avoid ligature points	S	Watts et al., 2012
		Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012
Technology/ Internet/ Communication/ Monitoring Equipment	Safe delivery of care	Avoid over-reliance on technology provisions to address safety		The Center for Health Design, 2019; BETA Healthcare Group and Emergency Medicine Council, 2018
		Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.
		Facilitate staff surveillance, egress,		Adams et al, 2020; HGA,
		protection, teamwork and tasks		2020; Hunt & Sine, 2015.
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Improved job satisfaction	Positive distractions (e.g., indoor plants, garden views, and other nature elements)		Karlin & Zeiss, 2006.; Shepley, et al., 2022.
		Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
	Minimize patient stress/anxiety	Required safety/security features are concealed or as discreet as possible		Lundin, 2020
	St. CSS/ diffictly	Maximize direct visual observation of patients from security/staffing areas		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018; Shepley, et al., 2022.



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
	Minimize patient stress/anxiety	Positive distractions (e.g., indoor plants, garden views, and other nature elements)		Karlin & Zeiss, 2006; Shepley, et al., 2022.
		Required safety/security features are concealed or as discreet as possible		Lundin, 2020
		Access to options for acoustics		Shepley & Pasha, 2013
	Patient control/independence	Patient selected artwork using wall- mounted screens with preselected images		Sachs, 2020
	independence	Curb noise and promote auditory control (e.g., sound-absorbing plaster, patient-controlled white noise generator, etc.)		Sachs, 2020
	Patient recovery	Positive distractions (e.g., indoor plants, garden views, and other nature elements)		Karlin & Zeiss, 2006; Shepley, et al., 2022.
Technology/ Internet/ Communication/ Monitoring	Patient satisfaction	Discreet security features that reinforce safety without compromising experience		Lenaghan et al., 2018
Equipment		Required safety/security features are concealed or as discreet as possible		Lundin, 2020
		Opportunities to personalize the room		Shepley & Pasha, 2013
		Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
		Minimize "safe" design features		The Center for Health Design, 2019
	Patient comfort	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Improved patient engagement	Required safety/security features are concealed or as discreet as possible		Lundin, 2020
		Good acoustical control		Shepley, et al., 2022
	Reduced noise	Curb noise and promote auditory control (e.g., sound-absorbing plaster, patient-controlled white noise generator, etc.)		Sachs, 2020



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
		Avoid ligature points	S	Watts et al., 2012
	Safety; fall/injury	Avoid objects, fixtures, and furniture	S	Wette et al. 2012
	prevention and	which might be used as weapons	3	Watts et al., 2012
	improved mobility	Maximize direct visual observation of		Fay et al., 2016; Hunt & Sine, 2015; Lenaghan et al., 2018;
		patients from security/staffing areas		Watts et al., 2012 Watts et al., 2012
		Avoid ligature points		Watts et al., 2012
		Avoid objects, fixtures, and furniture	S	Watts et al. 2012
		which might be used as weapons	3	Watts et al., 2012
	Safety; minimize risk of injury	Required safety/security features are concealed or as discreet as possible		Lundin, 2020
				Fay et al., 2016; Hunt & Sine,
		Maximize direct visual observation of		2015; Lenaghan et al., 2018;
		patients from security/staffing areas		Shepley, et al., 2022.
		Discreet security features that reinforce		
		safety without compromising		Lenaghan et al., 2018
		experience		
		Avoid ligature points		Watts et al., 2012
Technology/ Internet/		Avoid objects, fixtures, and furniture	c	Watts et al 2012
Communication/ Monitoring		which might be used as weapons	3	vvatts et al., 2012
Equipment		Required safety/security features are	Lundin 2020	
		concealed or as discreet as possible		S Watts et al., 2012
		Alternative to non-recessed life safety		
		devices (e.g., chimes, strobes, pull		
		station, smoke detectors, sprinkler		ASHE, n.d.
	Safety; reduce risk of	heads, fire extinguishers, hose cabinets,		
	harm to self or harm to	etc.)		
	others	Alternative to non-recessed monitoring,		
		communication, and access equipment		
		(e.g., speakers, cameras, phone, access		ASHE, n.d.
		card readers, wireless access points,		
		etc.)		Faulat al. 2016: Hunt 8 Sins
		Maximize direct visual observation of		2015; Lenaghan et al., 2018;
		patients from security/staffing areas		Shepley, et al., 2022.
		Facilitate staff surveillance, egress,		Adams et al, 2020; HGA,
		protection, teamwork and tasks		2020; Hunt & Sine, 2015.
		No nurse call buttons (not cords) in		VA Office of Construction &
		patient rooms and bathrooms		Facilities Mgmt, 2014
	L	paratition and addition to	L	



Design Element:	Desirable Outcome:	Design Strategies:	Safety (S)	Reference:
Technology/ Internet/ Communication/ Monitoring Equipment	Safety; reduce risk of harm to self or harm to others	Mock-up's to evaluate efficacy, safety, layouts, finishes, furniture, and equipment		HDR, Inc., 2019; Sachs, 2020.
	Enhanced durability	Avoid objects, fixtures, and furniture which might be used as weapons	S	Watts et al., 2012

References

- Adams, et al (2020). Designing the inclusive inpatient room: Advice for design teams on planning spaces to handle medical and behavioral health comorbidities.
- Allen et al. (2019). Transforming BH Environments. 245 pm. Ligature Reduction.pdf
- ASHE. (n.d.). ASHE_Patient-safety-and-ligature-risk-checklist.xlsx.
- Beebe, C. E. (2018, November 9). Ligature-risk requirements: Separating fact from fiction in Ligature risk. Patient Safety.
- BETA Healthcare Group & Emergency Medicine Council. (2018). Management of mental health patients in the ED toolkit. https://betahg.com/wp-content/uploads/2019/01/Section 1 Safety- EMC Toolkit Final.pdf
- BETA Healthcare Group and Emergency Medicine Council. (2018). Management of Mental Health Patients in the ED Toolkit. https://betahg.com/wp-content/uploads/2019/01/Section 1 Safety- EMC Toolkit Final.pdf
- Dobrohotoff, J. T., & Llewellyn-Jones, R. H. (2011). Psychogeriatric inpatient unit design: A literature review. *International Psychogeriatrics*, 23(2), 174–189. https://doi.org/10.1017/S1041610210002097
- Eklund, M., & Hansson, L. (2001). Ward atmosphere, client satisfaction, and client motivation in a psychiatric work rehabilitation unit. *Community Mental Health Journal*, 37, 169–177. https://doi.org/10.1023/A:1002765800180
- Evans, G. (2003). The built environment and mental health. *Journal of Urban Health*, 80, 536–555. https://doi.org/10.1093/jurban/jtg063
- Fay, L., Carll-White, A., & Harrell, J. (2016). Coming Full Cycle: Linking POE Findings to Design Application. *HERD: Health Environments Research & Design Journal*, 10(3), 83–98. https://doi.org/10.1177/1937586716672856
- Frumkin, H. (2001). Beyond toxicity: Human health and the natural environment. *American Journal of Preventive Medicine*, 20(3), 234–240.



- HDR, Inc. (Host). (2019, August 13). Prototyping a Therapeutic Environment for Behavioral Health Treatment.
- HGA (2020, May 22). Health Facilities Management: Designing the Inclusive Inpatient Room.
- Hunt, J., & Sine, D. (2015). Common Mistakes in Designing Psychiatric Hospitals: An Update.
- Hunt, J., & Sine, D. (2015). Common Mistakes in Designing Psychiatric Hospitals: An Update.; Lenaghan et al., 2018;
- Hunt, J., & Sine, D. (2018). Behavioral Health Design Guide: Edition 7.3 [White Paper/Guidelines]. http://www.bhfcllc.com/download-the-design-guide/
- Karlin, B. E., & Zeiss, R. A. (2006). Best Practices: Environmental and therapeutic issues in psychiatric hospital design: Toward best practices.
- Karlin, B. E., & Zeiss, R. A. (2006). Best Practices: Environmental and therapeutic issues in psychiatric hospital design: Toward best practices. *Psychiatric Services*, 57(10), 1376–1378. PsycINFO. https://doi.org/10.1176/appi.ps.57.10.1376
- Lambert, K., Fischer-Sanchez, D., & Watson, W. T. (2020). ASHRM/AHA behavioral health white paper series behavioral health care in the emergency department setting [Review of ASHRM/AHA behavioral health white paper series behavioral health care in the emergency department setting, by M. Cooke, J. Howard, & B. Romero].
- Lenaghan, P. A., Cirrincione, N. M., & Henrich, S. (2018). Preventing Emergency Department Violence through Design. *Journal of Emergency Nursing*, 44(4), 322–323. https://doi.org/10.1016/j.jen.2017.06.012
- Liddicoat, S. (2018). Perceptions of spatiality: Supramodal meanings and metaphors in therapeutic environments. *Interiority*, 1(2), 91–111. https://doi.org/10.7454/in.v1i2.17
- Liddicoat, S. (2019a). Designing a supportive emergency department environment for people with self harm and suicidal ideation: A scoping review. *Australasian Emergency Care*, 22(3), 139–148. https://doi.org/10.1016/j.auec.2019.04.006
- Liddicoat, S. (2019b). Enhancing emergency care environments: Supporting suicidal distress and self-harm presentations through environmental safeguards and the built environment. *Patient Experience Journal*, 6(3), 91–104. https://doi.org/10.35680/2372-0247.1361
- Lundin, S. (2021). Can healing architecture increase safety in the design of psychiatric wards? *HERD: Health Environments Research & Design Journal*, 14(1), 106–117. https://doi.org/10.1177/1937586720971814
- National Association for Behavioral Healthcare. (2019). The high cost of compliance: Assessing the regulatory burden on inpatient psychiatric facilities. https://www.nabh.org/nabh-releases-the-high-cost-of-compliance-assessing-the-regulatory-burden-on-inpatient-psychiatric-facilities/
- Olausson, et al. (2021). Patients' experiences of place and space after a relocation to EBD forensic psychiatric hospitals.; Shepley, et al. (2021). Staff and resident perceptions of mental and behavioural health environments.
- Sachs, N. A., Shepley, M. M., Peditto, K., Hankinson, M. T., Smith, K., Giebink, B., & Thompson, T. (2020). Evaluation of a Veterans Administration mental and behavioral health patient room mockup. *HERD: Health Environments Research & Design Journal*, 13(2), 46–67. https://doi.org/10.1177/1937586719856349



- Sheehan, B., Burton, E., Wood, S., Stride, C., Henderson, E., & Wearn, E. (2013). Evaluating the Built Environment in Inpatient Psychiatric Wards. *Psychiatric Services*, 64(8), 789–795. https://doi.org/10.1176/appi.ps.201200208
- Shepley, M. M., & Pasha, S. (2013). Design Research and Behavioral Health Facilities (pp. 1–81) [Literature Review]. The Center for Health Design. https://www.healthdesign.org/sites/default/files/chd428 researchreport behavioralhealth 1013final-0.pdf
- Shepley, M. M., Peditto, K., Sachs, N. A., Pham, Y., Barankevich, R., Crouppen, G., & Dresser, K. (2022). Staff and resident perceptions of mental and behavioural health environments. *Building Research & Information*, 50(1–2), 89–104. https://doi.org/10.1080/09613218.2021.1963653
- Shepley, M. M., Watson, A., Pitts, F., Garrity, A., Spelman, E., Kelkar, J., & Fronsman, A. (2016). Mental and Behavioral Health Environments: Critical Considerations for Facility Design. *General Hospital Psychiatry*, 42, 15–21. https://doi.org/10.1016/j.genhosppsych.2016.06.003
- The Center for Health Design. (2019). Behavioral health: Mitigating risk in healthcare facility design—A module on a Safety Risk Assessment. https://www.healthdesign.org/system/files/res_files/Module_SRA_Behavioral%20Health_2019.pdf
- The Joint Commission. (2017). November 2017 Perspectives Preview: Special Report: Suicide Prevention in Health Care Settings. Joint Commission Online Article. http://www.jointcommission.org/issues/article.aspx
- Ulrich, R. S., Bogren, L., & Lundin, S. (2012). Towards a design theory for reducing aggression in psychiatric facilities. ARCH, 12, 12–14.
- Ulrich, R. S., Bogren, L., Gardiner, S. K., & Lundin, S. (2018). Psychiatric ward design can reduce aggressive behavior. *Journal of Environmental Psychology*, 57, 53–66. https://doi.org/10.1016/j.jenvp.2018.05.002
- VA Office of Construction & Facilities Management. (2014). Mental Health Design Guide. Department of Veterans Affairs
- Watts, B. V., Young-Xu, Y., Mills, P. D., DeRosier, J. M., Kemp, J., Shiner, B., & Duncan, W. E. (2012). Examination of the effectiveness of the Mental Health Environment of Care Checklist in reducing suicide on inpatient mental health units. *Archives of General Psychiatry*, 69(6), 588–592. https://doi.org/10.1001/archgenpsychiatry.2011.1514