



Dementia-Friendly Waiting Room Annotation

Design Elements, Related Outcomes, and Design Strategies

Design Element:	Desirable Outcome:	Design Strategies:	Reference:	
Landscaping	Accessibility; ease of use	Views of outside nature and gardens.	(Parsons et al., 2006b; World Health Organization, 2007)	
	Minimize patient stress/anxiety	Views of outside nature and gardens.	(Parsons et al., 2006b; World Health Organization, 2007)	
	Patient satisfaction	Use low-maintenance shrubs and plants and avoid poisonous vegetation or vegetation that is irritating to the touch as well as plants that tend to attract stinging insects		(National Association of Home Builders, 2016; AIA New York Design for Aging Committee, 2017)
		Views of outside nature and gardens.		(Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003; Lee et al., 2004; Pati & Nanda, 2011)
	Patient comfort	Use low-maintenance shrubs and plants and avoid poisonous vegetation or vegetation that is irritating to the touch as well as plants that tend to attract stinging insects		(National Association of Home Builders, 2016; AIA New York Design for Aging Committee, 2017)
		Views of outside nature and gardens.		(Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003; Lee et al., 2004; Pati & Nanda, 2011)
Pathways	Accessibility; ease of use	Avoid glare and excessive contrast and patterns on floors, which can be perceived as or conceal actual changes in level which pose a potential trip hazard.	(AIA New York Design for Aging Committee, 2017)	
		Provide wainscot trim that protrudes from the wall and is securely fastened to offer a frame of reference and a touchstone for balance for level surfaces.	(AIA New York Design for Aging Committee, 2017)	
	Caregiver safety; minimize risk of physical injury	Smooth, level floor surfaces with minimal variations that allow freedom of movement, especially when navigating with mobility assistance or medical equipment	(Parsons et al., 2006b; World Health Organization, 2007)	
	Safety; fall/injury prevention and improved mobility	Avoid glare and excessive contrast and patterns on floors, which can be perceived as or conceal level changes that pose a potential trip hazard	(AIA New York Design for Aging Committee, 2017)	



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Pathways	Safety; fall/injury prevention and improved mobility	Provide wainscot trim that protrudes from the wall and is securely fastened to offer a frame of reference and a touchstone for balance for level surfaces.	(AIA New York Design for Aging Committee, 2017)
		Smooth, level floor surfaces with minimal variations that allow freedom of movement, especially when navigating with mobility assistance or medical equipment	(Parsons et al., 2006b; World Health Organization, 2007)
	Safety; minimize risk of injury	Avoid glare and excessive contrast and patterns on floors, which can be perceived as or conceal actual changes in level which pose a potential trip hazard.	(AIA New York Design for Aging Committee, 2017)
		Provide wainscot trim that protrudes from the wall and is securely fastened to offer a frame of reference and a touchstone for balance for level surfaces.	(AIA New York Design for Aging Committee, 2017)
Handrails	Reduced risk of contamination	Wipe-able/washable, easy-to-clean /disinfect High Touch Surfaces with minimal joints/seams (e.g. door knobs, faucets, sinks) in the room	(Carling, Briggs, Hylander, & Perkins, 2006; Carling, Briggs, Perkins, & Highlander, 2006; Carling, Parry, & Von Beheren, 2008; Dancer, White, Lamb, Girvan, & Robertson, 2009; Joseph, & Rashid, 2007; Lankford et al., 2007; Takai et al., 2002; Wilson & Ridgway, 2006)
Layout - Overall	Change-readiness/future-proofing	Building design that facilitates the potential changes in functional space layout (e.g., structural column location, modular layout, window modules).	-
	Improved access/wayfinding	Sufficient clearance (e.g., wide corridors) for wheelchair use.	-
	Enhanced security	Room doors under staff visual monitoring (visibility from nursing station)	-
	Caregiver safety; minimize risk of physical injury	Accommodate independent and assisted toilet transfers by included fold-down grab bars on both sides of the toilet (14" from centerline [CL] of toilet, 32" above the floor, and extended a minimum of 6" in front of the toilet) with one side open and a sidewall 24" from CL of toilet on the other.	(Lee et al., 2017)



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Layout - Overall	Caregiver safety; minimize risk of physical injury	Clear/turn space at least 5-foot by 5-foot	(National Association of Home Builders, 2016)
		Layout that allows for reorganization of space (e.g., easily movable furniture, modular elements) to accommodate changing needs	-
	Efficient delivery of care	Accommodate independent and assisted toilet transfers by included fold-down grab bars on both sides of the toilet (14" from centerline [CL] of toilet, 32" above the floor, and extended a minimum of 6" in front of the toilet) with one side open and a sidewall 24" from CL of toilet on the other.	(Lee et al., 2017)
		Easy access to sink or alcohol gel dispenser in care areas.	-
		Layout that allows for reorganization of space (e.g., easily movable furniture, modular elements) to accommodate changing needs	-
	Minimize patient stress/anxiety	Access to positive/meaningful distractions (e.g., nature-themed artwork, window with views of nature, music, TV, Internet, reading materials)	-
		Non-institutional looking appearance (e.g., finish materials, fixtures, furniture, color, texture, etc.)	(Altringer, 2010; Becker & Douglass, 2008; Hodnett, Downe, Edwards, & Walsh, 2005; Swan, Richardson, & Hutton, 2003)
		Unappealing elements hidden from view (trash cans, soiled linen, scrub basin, sharps container, etc.)	-
	Minimize undue strain during recovery	Clear/turn space at least 5-foot by 5-foot	(National Association of Home Builders, 2016)
		Layout that allows for reorganization of space (e.g., easily movable furniture, modular elements) to accommodate changing needs	-
	Patient satisfaction	Access to positive/meaningful distractions (e.g., nature-themed artwork, window with views of nature, music, TV, Internet, reading materials)	-



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Layout - Overall	Patient satisfaction	Non-institutional looking appearance (e.g., finish materials, fixtures, furniture, color, texture, etc.)	(Altringer, 2010; Becker & Douglass, 2008; Hodnett, Downe, Edwards, & Walsh, 2005; Swan, Richardson, & Hutton, 2003)
	Patient comfort	Access to positive/meaningful distractions (e.g., nature-themed artwork, window with views of nature, music, TV, Internet, reading materials)	-
	Psychosocial support	Clear/turn space at least 5-foot by 5-foot	(National Association of Home Builders, 2016)
	Safety; fall/injury prevention and improved mobility	Accommodate independent and assisted toilet transfers by included fold-down grab bars on both sides of the toilet (14" from centerline [CL] of toilet, 32" above the floor, and extended a minimum of 6" in front of the toilet) with one side open and a sidewall 24" from CL of toilet on the other.	(Lee et al., 2017)
		Bathroom door is visible to patients	(Calkins, Biddle, & Biesan, 2012)
		Clear/turn space at least 5-foot by 5-foot	(National Association of Home Builders, 2016)
		Large bathroom door openings to accommodate patient, equipment and caregiver	(Calkins, Biddle, & Biesan, 2012)
		Layout that allows for reorganization of space (e.g., easily movable furniture, modular elements) to accommodate changing needs	-
		No equipment or other obstruction in the path from seating to bathroom	(Calkins, Biddle, & Biesan, 2012; Hitcho et al., 2004)
		Spatial clearance to accommodate the movement of bariatric patients	-
	Safety; infection control and hand sanitation	Easy access to sink or alcohol gel dispenser in care areas.	-
	Reduced risk of contamination	Special isolation rooms designated for patients who are or may be infectious.	-
Safety; medication safety	Easy access to sink or alcohol gel dispenser in care areas.	-	



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Layout - Overall	Safety; minimize risk of injury	Accommodate independent and assisted toilet transfers by included fold-down grab bars on both sides of the toilet (14" from centerline [CL] of toilet, 32" above the floor, and extended a minimum of 6" in front of the toilet) with one side open and a sidewall 24" from CL of toilet on the other.	(Lee et al., 2017)
Layout - Staff	Efficient delivery of care	Easily accessible storage for cleaning supplies when needed immediately (e.g., incontinence on self/seating/floor)	(Beer et al., 2014)
	Safety; infection control and hand sanitation	Easily accessible storage for cleaning supplies when needed immediately (e.g., incontinence on self/seating/floor)	(Beer et al., 2014)
Sound-Masking	Minimize patient stress/anxiety	Use of white noise/sound masking to reduce disruptions from noise (e.g. white noise machines)	(Stanchina, Abu-Hijleh, Chaudhry, Carlisle, & Millman, 2005; Xie, Kang, & Mills, 2009)
	Patient comfort	Use of white noise/sound masking to reduce disruptions from noise (e.g. white noise machines)	(Stanchina, Abu-Hijleh, Chaudhry, Carlisle, & Millman, 2005; Xie, Kang, & Mills, 2009)
	Enhanced privacy	Sound masking to prevent conversations from being overheard by others in nearby areas.	-
Flooring	Accessibility; ease of use	Avoid glare and excessive contrast and patterns on floors, which can be perceived as or conceal actual changes in level which pose a potential trip hazard.	(AIA New York Design for Aging Committee, 2017)
		Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)
	Improved access/wayfinding	Color coding (e.g., floor, wall color, etc.), together with lighting, landmarks, and view of exterior, to make wayfinding easy for patients.	Baskaya, Wilson, & Özcan, 2004
	Caregiver health/support/respice	High durability and high lifecycle performance for all elements (e.g., materials): minimum wear and tear over time (e.g., minimize visual cracks, stains and damages); sustaining recommended cleaning protocols	(Sehulster et al., 2003)



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Flooring	Caregiver safety; minimize risk of physical injury	Flooring with energy-absorbent properties (to absorb the force of impact that causes injury, for example rubber) balanced with firmness (to reduce the risk of falling due to poor balance)	(Laing & Robinovitch, 2008; Nanda, Malone, & Joseph, 2012; Redfern & Cham, 2000; Wright & Laing, 2012)
		Smooth, level floor surfaces with minimal variations that allow freedom of movement, especially when navigating with mobility assistance or medical equipment	(Parsons et al., 2006b; World Health Organization, 2007)
	Improved Job satisfaction	High durability and high lifecycle performance for all elements (e.g., materials): minimum wear and tear over time (e.g., minimize visual cracks, stains and damages); sustaining recommended cleaning protocols	(Sehulster et al., 2003)
	Minimize patient stress/anxiety	Flooring that does not scratch/scuff easily and sustains the impact of mobile equipment (e.g. flooring materials including adhesive compatible with equipment weight to avoid indentation) as well as other frequent wear and tear	(Nanda, Malone, & Joseph, 2012)
		High-quality home-like or natural materials that create an attractive non-institutional ambience for patients and families.	(Becker & Douglass, 2008; Becker, Sweeney, & Parsons, 2008; Pruyn & Smidts, 1998)
		Noise reduction measures (e.g. sound-absorbing finish materials)	(Hagerman et al., 2005; Van Rompaey, Elseviers, Van Drom, Fromont, & Jorens, 2012)
		Non-glare finishes	-
	Minimize undue strain during recovery	Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)
	Patient satisfaction	Flooring that does not scratch/scuff easily and sustains the impact of mobile equipment (e.g. flooring materials including adhesive compatible with equipment weight to avoid indentation) as well as other frequent wear and tear	(Nanda, Malone, & Joseph, 2012)
		High-quality home-like or natural materials that create an attractive non-institutional ambience for patients and families.	(Becker & Douglass, 2008; Becker, Sweeney, & Parsons, 2008; Pruyn & Smidts, 1998)



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Flooring	Patient satisfaction	Noise reduction measures (e.g. sound-absorbing finish materials)	(Hagerman et al., 2005; Van Rompaey, Elseviers, Van Drom, Fromont, & Jorens, 2012)
		Non-glare finishes	-
	Improved patient engagement	Noise reduction measures (e.g. sound-absorbing finish materials)	(Hagerman et al., 2005; Van Rompaey, Elseviers, Van Drom, Fromont, & Jorens, 2012)
	Healthy environment (reduced negative health effects)	Interior materials that contain low-VOC or minimal use of hazardous content (e.g., phthalates).	Ait Bamai et al., 2014; Bornehag et al., 2005; Jaakkola et al., 1999; Jaakkola, Ieromnimon, & Jaakkola, 2006; Ohlmeyer, Makowski, Fried, Hasch, & Schöler, 2008
		Interior materials that require less harsh chemicals than typical materials during installation, cleaning, maintenance, and replacement.	(Delclos et al., 2007; Weaver, McDiarmid, Guidera, Humphrey, & Schaefer, 1993)
	Safety; air quality	Finish materials with low hazardous content including plasticizers, volatile organic compounds, latex, etc.	(Bornehag et al., 2005; Galobardes et al., 2001; Holter et al., 2002; Jaakkola et al., 1999; Tuomainen et al., 2006)
		Finish materials' production associated with less energy use and lower level of greenhouse gas emission or recyclable materials	(Sedjo, 2002)
	Noise reduction	Floor finish and sub-floor conditions that mitigate noise levels transmitted by adjacent spaces	(Nanda, Malone, & Joseph, 2012)
		Flooring with high sound absorbing properties and low sound transmitting properties	(Nanda, Malone, & Joseph, 2012)
	Safety; fall/injury prevention and improved mobility	Avoid flooring materials with intricate high-contrast patterns (especially for patients with impaired vision)	(Calkins, Biddle, & Biesan, 2012; Perritt, McCune, & McCune, 2005)
		Avoid glare and excessive contrast and patterns on floors, which can be perceived as or conceal actual changes in level which pose a potential trip hazard.	(AIA New York Design for Aging Committee, 2017)
		Flooring stable, firm and slip-resistant, especially around water usage area (e.g. water cooler, sink, toilet/urinal, eye-wash station, bath, shower, etc.)	-



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Flooring	Safety; fall/injury prevention and improved mobility	Flush flooring transitions	(Gulwadi & Calkins, 2008)
		Install soft, resilient interior flooring materials (e.g., cork, rubber, or linoleum) that are gentler under foot than harder materials and can lessen the impact of falls.	(AIA New York Design for Aging Committee, 2017)
		Low contrast in flooring patterns	(Calkins, Biddle, & Biesan, 2012; Nanda, Malone, & Joseph, 2012; Perritt, McCune, & McCune, 2005)
		Minimum joints and seams to ensure that sharp edged objects, like walking sticks or heels, do not cause trips	-
		Smooth, level floor surfaces with minimal variations that allow freedom of movement, especially when navigating with mobility assistance or medical equipment	(Parsons et al., 2006b; World Health Organization, 2007)
		Smooth, non-glare, non-slip or slip-resistant flooring	(National Association of Home Builders, 2016)
	Safety; infection control and hand sanitation	Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)
	Reduced risk of contamination	Coved right angles between wall and floor	-
		Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)
		Joints and seams for easy cleaning/maintenance	-
		Manufacturers' recommended cleaning protocols for the selected surface and finish materials compatible with recommendations by Centers for Disease Control and Prevention Guidelines for Environmental Infection Control in Health-Care Facilities	(Kramer, Schwebke, & Kampf, 2006; Lankford et al., 2006; Sehulster et al., 2003)
		Smooth and nonporous surfaces, and minimize perforations and crevices	-
Safety; minimize risk of injury	Avoid glare and excessive contrast and patterns on floors, which can be perceived as or conceal actual changes in level which pose a potential trip hazard.	(AIA New York Design for Aging Committee, 2017)	



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Flooring	Safety; minimize risk of injury	Avoid glare and excessive contrast and patterns on floors, which can be perceived as or conceal actual changes in level which pose a potential trip hazard.	(AIA New York Design for Aging Committee, 2017)
		Flooring with energy-absorbent properties (to absorb the force of impact that causes injury, for example rubber) balanced with firmness (to reduce the risk of falling due to poor balance)	(Laing & Robinovitch, 2008; Nanda, Malone, & Joseph, 2012; Redfern & Cham, 2000; Wright & Laing, 2012)
		Install soft, resilient interior flooring materials (e.g., cork, rubber, or linoleum) that are gentler under foot than harder materials and can lessen the impact of falls.	(AIA New York Design for Aging Committee, 2017)
	Enhanced durability	Flooring that does not scratch/scuff easily and sustains the impact of mobile equipment (e.g. flooring materials including adhesive compatible with equipment weight to avoid indentation) as well as other frequent wear and tear	(Nanda, Malone, & Joseph, 2012)
		High durability and high lifecycle performance for all elements (e.g., materials): minimum wear and tear over time (e.g., minimize visual cracks, stains and damages); sustaining recommended cleaning protocols	(Sehulster et al., 2003)
		Materials that can prevent the growth of mildew and mold due to moisture retention	(Sehulster et al., 2003)
		Materials with high lifecycle performance: minimum wear and tear over time; sustaining recommended cleaning protocols	(Sehulster et al., 2003)
	Enhanced sustainability	Finish materials with low hazardous content (e.g., plasticizers, volatile organic compounds, latex, etc.)	(Bornehag et al., 2005; Galobardes et al., 2001; Holter et al., 2002; Jaakkola et al., 1999; Tuomainen et al., 2006)
		Finish materials' production associated with less energy use and lower level of greenhouse gas emission or recyclable materials	(Sedjo, 2002)
	Increased recycling	Environmentally conscious materials that contain rapidly renewable materials (e.g., bamboo flooring, straw & wheat board, cotton batt insulation, etc.) or recycled content when possible.	-



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Walls	Accessibility; ease of use	Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)
		Provide wainscot trim that protrudes from the wall and is securely fastened to offer a frame of reference and a touchstone for balance for level surfaces.	(AIA New York Design for Aging Committee, 2017)
	Improved access/wayfinding	Color coding (e.g., floor, wall color, etc.), together with lighting, landmarks, and view of exterior, to make wayfinding easy for patients.	Baskaya, Wilson, & Özcan, 2004
		Hand or lean rails to support frail, obese, and other patients when needed.	-
	Caregiver health/support/respice	High durability and high lifecycle performance for all elements (e.g., materials): minimum wear and tear over time (e.g., minimize visual cracks, stains and damages); sustaining recommended cleaning protocols	(Sehulster et al., 2003)
	Efficient delivery of care	Sound-absorbing finish materials to reduce overall background noise level and consequently reduce the alarm volume level	-
	Improved Job satisfaction	High durability and high lifecycle performance for all elements (e.g., materials): minimum wear and tear over time (e.g., minimize visual cracks, stains and damages); sustaining recommended cleaning protocols	(Sehulster et al., 2003)
	Minimize patient stress/anxiety	Clock displayed in direct view of patients.	-
		Display of expected waiting time in direct view of most patients.	-
		High-quality home-like or natural materials that create an attractive non-institutional ambience for patients and families.	(Becker & Douglass, 2008; Becker, Sweeney, & Parsons, 2008; Pruyun & Smidts, 1998)
		Nature scene, iconic images, or other pleasant stimuli in patient view	(Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003; Lee et al., 2004; Pati & Nanda, 2011)
Noise reduction measures (e.g. sound-absorbing finish materials)		(Hagerman et al., 2005; Van Rompaey, Elseviers, Van Drom, Fromont, & Jorens, 2012)	



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Walls	Minimize patient stress/anxiety	Non-glare finishes	-
		Non-institutional looking appearance (e.g., finish materials, fixtures, furniture, color, texture, etc.)	(Altringer, 2010; Becker & Douglass, 2008; Hodnett, Downe, Edwards, & Walsh, 2005; Swan, Richardson, & Hutton, 2003)
		Presence of clock for patient's orientation to the time of day	(McCusker et al., 2001)
		Soundproof windows/walls to block external noise (e.g. planes, traffic), if needed	-
	Minimize undue strain during recovery	Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)
	Patient satisfaction	Clock displayed in direct view of patients.	-
		Display of expected waiting time in direct view of most patients.	-
		High-quality home-like or natural materials that create an attractive non-institutional ambience for patients and families.	(Becker & Douglass, 2008; Becker, Sweeney, & Parsons, 2008; Pruyt & Smidts, 1998)
		Nature scene, iconic images, or other pleasant stimuli in patient view	(Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003; Lee et al., 2004; Pati & Nanda, 2011)
		Noise reduction measures (e.g. sound-absorbing finish materials)	(Hagerman et al., 2005; Van Rompaey, Elseviers, Van Drom, Fromont, & Jorens, 2012)
		Non-glare finishes	-
		Non-institutional looking appearance (e.g., finish materials, fixtures, furniture, color, texture, etc.)	(Altringer, 2010; Becker & Douglass, 2008; Hodnett, Downe, Edwards, & Walsh, 2005; Swan, Richardson, & Hutton, 2003)
		Positive audio distractions (e.g. music, nature sounds)	(Chang & Chen, 2005; Lee et al., 2004)
		Soundproof windows/walls to block external noise (e.g. planes, traffic), if needed	-



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Walls	Improved patient engagement	Noise reduction measures (e.g. sound-absorbing finish materials)	(Hagerman et al., 2005; Van Rompaey, Elseviers, Van Drom, Fromont, & Jorens, 2012)
		Patient access to electronic media for education and entertainment	-
		Positive audio distractions (e.g. music, nature sounds)	(Chang & Chen, 2005; Lee et al., 2004)
	Enhanced privacy	Solid walls (e.g., full-height partitions, materials with high noise reduction ratings - noise reduction coefficient, sound transmission class, ceiling attenuation class) that sufficiently prevent conversations in one room from being overheard by patients in neighboring rooms/corridors.	Deshefy-Longhi, Dixon, Olsen, & Grey, 2004
	Healthy environment (reduced negative health effects)	Interior materials that contain low-VOC or minimal use of hazardous content (e.g., phthalates).	(Ait Bamai et al., 2014; Bornehag et al., 2005; Jaakkola et al., 1999; Jaakkola, Ieromnimon, & Jaakkola, 2006; Ohlmeyer, Makowski, Fried, Hasch, & Schöler, 2008)
		Interior materials that require less harsh chemicals than typical materials during installation, cleaning, maintenance, and replacement.	(Deltos et al., 2007; Weaver, McDiarmid, Guidera, Humphrey, & Schaefer, 1993)
	Safety; air quality	Finish materials with low hazardous content (e.g., plasticizers, volatile organic compounds, latex, etc.)	(Bornehag et al., 2005; Galobardes et al., 2001; Holter et al., 2002; Jaakkola et al., 1999; Tuomainen et al., 2006)
		Finish materials' production associated with less energy use and lower level of greenhouse gas emission or recyclable materials	(Sedjo, 2002)
	Noise reduction	Wall construction and finish blocking (e.g., absorbing sound from outside, corridor, and adjacent rooms)	(Barlas, Sama, Ward, & Lesser, 2001; Karro, Dent, & Farish, 2005; Mlinek & Pierce, 1997)
	Safety; fall/injury prevention and improved mobility	Provide wainscot trim that protrudes from the wall and is securely fastened to offer a frame of reference and a touchstone for balance for level surfaces.	(AIA New York Design for Aging Committee, 2017)
	Safety; infection control and hand sanitation	Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Walls	Reduced risk of contamination	Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)
		Joints and seams treated for easy clean/maintenance	-
		Manufacturers' recommended surface and finish material cleaning protocols compatible with recommendations by Centers for Disease Control and Prevention Guidelines for Environmental Infection Control in Health-Care Facilities	(Kramer, Schwebke, & Kampf, 2006; Lankford et al., 2006; Schulster et al., 2003)
		Smooth and nonporous surfaces, and minimize perforations and crevices	-
		Wipe-able/washable, easy-to-clean /disinfect high touch surfaces with minimal joints/seams (e.g., door knobs, faucets, sinks, etc.) in the room	(Carling, Briggs, Hylander, & Perkins, 2006; Carling, Briggs, Perkins, & Highlander, 2006; Carling, Parry, & Von Beheren, 2008; Dancer, White, Lamb, Girvan, & Robertson, 2009; Joseph, & Rashid, 2007; Lankford et al., 2007; Takai et al., 2002; Wilson & Ridgway, 2006)
	Safety; minimize risk of injury	Provide wainscot trim that protrudes from the wall and is securely fastened to offer a frame of reference and a touchstone for balance for level surfaces.	(AIA New York Design for Aging Committee, 2017)
	Enhanced durability	High durability and high lifecycle performance for all elements (e.g., materials): minimum wear and tear over time (e.g., minimize visual cracks, stains and damages); sustaining recommended cleaning protocols	(Schulster et al., 2003)
	Enhanced sustainability	Finish materials with low hazardous content (e.g., plasticizers, volatile organic compounds, latex, etc.)	(Bornehag et al., 2005; Galobardes et al., 2001; Holter et al., 2002; Jaakkola et al., 1999; Tuomainen et al., 2006)
		Finish materials' production associated with less energy use and lower level of greenhouse gas emission or recyclable materials	(Sedjo, 2002)
	Increased recycling	Utilization of rapidly renewable interior materials (e.g., bamboo flooring, straw & wheat board, cotton batt insulation, etc.) or that contain recycled content when possible.	-



Design Element:	Desirable Outcome:	Design Strategies:	Reference:	
Ceiling	Caregiver health/support/respite	High durability and high lifecycle performance for all elements (e.g., materials): minimum wear and tear over time (e.g., minimize visual cracks, stains and damages); sustaining recommended cleaning protocols	(Sehulster et al., 2003)	
	Communication/ interaction with care provider/ emergency care	Sound-absorbing materials to reduce noise and reverberation to minimize potential interference with verbal communication.	-	
	Improved job satisfaction	High durability and high lifecycle performance for all elements (e.g., materials): minimum wear and tear over time (e.g., minimize visual cracks, stains and damages); sustaining recommended cleaning protocols	(Sehulster et al., 2003)	
	Minimize patient stress/anxiety		High-quality home-like or natural materials that create an attractive non-institutional ambience for patients and families.	Becker & Douglass, 2008; Becker, Sweeney, & Parsons, 2008; Pruy & Smidts, 1998
			Noise reduction measures (e.g. sound-absorbing finish materials)	(Hagerman et al., 2005; Van Rompaey, Elseviers, Van Drom, Fromont, & Jorens, 2012)
			Non-glare finishes	-
			Non-institutional looking appearance (e.g., finish materials, fixtures, furniture, color, texture, etc.)	(Altringer, 2010; Becker & Douglass, 2008; Hodnett, Downe, Edwards, & Walsh, 2005; Swan, Richardson, & Hutton, 2003)
			Sound-absorbing ceiling construction and finishes (e.g., tiles and other noise reducing measures)	(Joseph & Ulrich, 2007)
	Patient satisfaction		High-quality home-like or natural materials that create an attractive non-institutional ambience for patients and families.	(Becker & Douglass, 2008; Becker, Sweeney, & Parsons, 2008; Pruy & Smidts, 1998)
			Noise reduction measures (e.g. sound-absorbing finish materials)	(Hagerman et al., 2005; Van Rompaey, Elseviers, Van Drom, Fromont, & Jorens, 2012)
			Non-glare finishes	-
			Non-institutional looking appearance (e.g., finish materials, fixtures, furniture, color, texture, etc.)	(Altringer, 2010; Becker & Douglass, 2008; Hodnett, Downe, Edwards, & Walsh, 2005; Swan, Richardson, & Hutton, 2003)



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Ceiling	Patient satisfaction	Sound-absorbing ceiling construction and finish (e.g., tiles and other noise reduction measures)	(Joseph & Ulrich, 2007)
	Improved patient engagement	Noise reduction measures (e.g. sound-absorbing finish materials)	(Hagerman et al., 2005; Van Rompaey, Elseviers, Van Drom, Fromont, & Jorens, 2012)
	Healthy environment (reduced negative health effects)	Interior materials that contain low-VOC or minimal use of hazardous content (e.g., phthalates).	(Ait Bamai et al., 2014; Bornehag et al., 2005; Jaakkola et al., 1999; Jaakkola, Ieromnimon, & Jaakkola, 2006; Ohlmeyer, Makowski, Fried, Hasch, & Schöler, 2008)
		Interior materials that require less harsh chemicals than typical materials during installation, cleaning, maintenance, and replacement.	(Delclos et al., 2007; Weaver, McDiarmid, Guidera, Humphrey, & Schaefer, 1993)
	Safety; air quality	Finish materials with low hazardous content (e.g., plasticizers, volatile organic compounds, latex, etc.)	(Bornehag et al., 2005; Galobardes et al., 2001; Holter et al., 2002; Jaakkola et al., 1999; Tuomainen et al., 2006)
		Finish materials' production associated with less energy use and lower level of greenhouse gas emission or recyclable materials	(Sedjo, 2002)
	Noise reduction	Sound-absorbing ceiling construction and finish (e.g., tiles and other noise reduction measures)	(Joseph & Ulrich, 2007)
		Use of acoustic tiles with high noise reduction coefficient (NRC) ratings	(Blomkvist, Eriksen, Theorell, Ulrich, & Rasmanis, 2005; Joseph & Ulrich, 2007)
	Reduced risk of contamination	Joints and seams treated for easy clean/maintenance	-
		Manufacturers' recommended surface and finish material cleaning protocols compatible with recommendations by CDC (Centers for Disease Control and Prevention) Guidelines for Environmental Infection Control in Health-Care Facilities	(Kramer, Schwebke, & Kampf, 2006; Lankford et al., 2006; Schulster et al., 2003)
		Smooth and nonporous surfaces and minimize perforations and crevices	-



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Ceiling	Enhanced durability	High durability and high lifecycle performance for all elements (e.g., materials): minimum wear and tear over time (e.g., minimize visual cracks, stains and damages); sustaining recommended cleaning protocols	(Schulster et al., 2003)
	Enhanced sustainability	Finish materials with low hazardous content (e.g., plasticizers, volatile organic compounds, latex, etc.)	(Bornehag et al., 2005; Galobardes et al., 2001; Holter et al., 2002; Jaakkola et al., 1999; Tuomainen et al., 2006)
		Finish materials' production associated with less energy use and lower level of greenhouse gas emission or recyclable materials	(Sedjo, 2002)
	Increased recycling	Environmentally conscious materials that contain rapidly renewable materials (e.g., bamboo flooring, straw & wheat board, cotton batt insulation, etc.) or recycled content when possible.	-
Windows	Accessibility; ease of use	Views of outside nature and gardens	(Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003; Lee et al., 2004; Pati & Nanda, 2011)
	Improved access/wayfinding	Natural light, views of outside, and landmarks to provide visual aids for wayfinding.	-
	Minimize patient stress/anxiety	Glare sources (window) designed to minimize patient discomfort	-
		Large windows for natural daylight and window views	(Beauchemin & Hays, 1996; Wilson, 1972)
		Non-institutional looking appearance (e.g., finish materials, fixtures, furniture, color, texture, etc.)	(Altringer, 2010; Becker & Douglass, 2008; Hodnett, Downe, Edwards, & Walsh, 2005; Swan, Richardson, & Hutton, 2003)
		Soundproof windows/walls to block external noise (e.g. planes, traffic), if needed	-
		Views of outside nature and gardens.	(Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003; Lee et al., 2004; Pati & Nanda, 2011)
		Window treatments that allow natural light to be blocked/reduced during the day if needed	-



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Windows	Minimize patient stress/anxiety	Windows and/or skylight that provide high quality direct or indirect natural light	(National Association of Home Builders, 2016; Rice, Ingram, & Mizan, 2008)
	Patient satisfaction	Glare sources (window) designed to minimize patient discomfort	-
		Large windows for natural daylight and window views	(Beauchemin & Hays, 1996; Wilson, 1972)
		Non-institutional looking appearance (e.g., finish materials, fixtures, furniture, color, texture, etc.)	(Altringer, 2010; Becker & Douglass, 2008; Hodnett, Downe, Edwards, & Walsh, 2005; Swan, Richardson, & Hutton, 2003)
		Soundproof windows/walls to block external noise (e.g. planes, traffic), if needed	-
		Views of outside nature and gardens	(Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003; Lee et al., 2004; Pati & Nanda, 2011)
		Window treatments that allow natural light to be blocked/reduced during the day if needed	-
		Windows and/or skylight that provide high quality direct or indirect natural light	(National Association of Home Builders, 2016; Rice, Ingram, & Mizan, 2008)
	Patient comfort	Views of outside nature and gardens.	(Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003; Lee et al., 2004; Pati & Nanda, 2011)
		Window treatments that allow natural light to be blocked/reduced during the day if needed	-
		Windows and/or skylight that provide high quality direct or indirect natural light	(National Association of Home Builders, 2016; Rice, Ingram, & Mizan, 2008)
	Enhanced privacy	Prevention of patients from being viewed through exterior windows	-
	Healthy environment (reduced negative health effects)	Glazed windows with UV protection to reduce staff and patient exposure.	-
	Enhanced sustainability	Double-glazed windows with low U-value glazing	(Hien, Wang, Chandra, Pandey, & Wei, 2005; Menzies & Wherrett, 2005; Hien et al., 2005)



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Windows	Reduced resource consumption	Proper shading (interior, integral, and exterior shading devices) to minimize direct sunlight and solar exposure in the main indoor spaces.	(Oregon Health & Science University, 2007)
		Window insulation to reduce heat transmission.	-
Doors	Improved access/wayfinding	Door design that facilitates pass-through of wheel chaired patients (e.g., wide door, clearance at the opening side, etc.)	-
	Caregiver health/support/respite	High durability and high lifecycle performance for all elements (e.g., materials): minimum wear and tear over time (e.g., minimize visual cracks, stains and damages); sustaining recommended cleaning protocols	-
	Improved Job satisfaction	High durability and high lifecycle performance for all elements (e.g., materials): minimum wear and tear over time (e.g., minimize visual cracks, stains and damages); sustaining recommended cleaning protocols	-
	Minimize patient stress/anxiety	Noise reduction measures (e.g. sound-absorbing finish materials)	-
		Non-institutional looking appearance (e.g., finish materials, fixtures, furniture, color, texture, etc.)	-
	Patient satisfaction	Noise reduction measures (e.g. sound-absorbing finish materials)	-
		Non-institutional looking appearance (e.g., finish materials, fixtures, furniture, color, texture, etc.)	-
	Improved patient engagement	Noise reduction measures (e.g. sound-absorbing finish materials)	-
Enhanced privacy	Solid doors (e.g., materials with high noise reduction ratings - noise reduction coefficient, sound transmission class, and ceiling attenuation class that sufficiently prevent conversations from being overheard in neighboring rooms/corridors.	-	



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Doors	Enhanced privacy	Sound absorption or blocking measures (e.g. acoustic ceiling tile) to minimize sound transmission between patient rooms, and between patient rooms and corridors	-
	Noise reduction	Door construction and finish blocking/absorbing sound from outside, corridor, and adjacent rooms	-
		Minimal noise from equipment operation	-
	Safety; fall/injury prevention and improved mobility	Bathroom door is visible to patients	-
		Easy-to-open doors (consider handle grip, mechanics, and weight of door)	-
		Large bathroom door openings to accommodate patient, equipment and caregiver	(Calkins, Biddle, & Biesan, 2012)
		Minimal noise from equipment operation	-
		Spatial clearance to accommodate the movement of bariatric patients	-
	Reduced risk of contamination	Joints and seams treated for easy cleaning/maintenance	-
		Manufacturers' recommended surface and finish material cleaning protocols compatible with recommendations by CDC (Centers for Disease Control and Prevention) Guidelines for Environmental Infection Control in Health-Care Facilities	(Kramer, Schwebke, & Kampf, 2006; Lankford et al., 2006; Schulster et al., 2003)
		Smooth and nonporous surfaces and minimize minimal perforations and crevices	-
		Wipe-able/washable, easy-to-clean/disinfect high touch surfaces with minimal joints/seams (e.g., door knobs, faucets, sinks, etc.) in the room	(Carling, Briggs, Hylander, & Perkins, 2006; Carling, Briggs, Perkins, & Highlander, 2006; Carling, Parry, & Von Beheren, 2008; Dancer, White, Lamb, Girvan, & Robertson, 2009; Joseph, & Rashid, 2007; Lankford et al., 2007; Takai et al., 2002; Wilson & Ridgway, 2006)



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Doors	Enhanced durability	High durability and high lifecycle performance for all elements (e.g., materials): minimum wear and tear over time (e.g., minimize visual cracks, stains and damages); sustaining recommended cleaning protocols	(Sehulster et al., 2003)
		Materials that can prevent the growth of mildew and mold due to moisture retention	(Sehulster et al., 2003)
		Materials with high lifecycle performance: minimum wear and tear over time; sustaining recommended cleaning protocols	(Sehulster et al., 2003)
HVAC	Minimize patient stress/anxiety	Air temperature, relative humidity, and flow speed maintained at comfort level without dramatic difference between spaces	-
	Patient comfort	Air exchange rate to avoid stuffiness without causing drafts	(Memarzadeh, 2011; Memarzadeh & Manning, 2000)
		Quiet heating, ventilation, and air conditioning (HVAC) system	-
	Healthy environment (reduced negative health effects)	High-performance ventilation systems (e.g., high ventilation rate) to minimize VOC levels and smells.	(Klas, Dan, & Roland, 1995; Mendell, Lei, Apte, & Fisk, 2005; Rios et al., 2009)
	Safety; air quality	Equipment and other measures to monitor and control air quality (e.g., filtration, physical barriers, etc.) during construction/renovation	-
	Reduced risk of contamination	High-efficiency particulate absorption (HEPA) filters	(Barnes & Rogers, 1989; Crimi et al., 2006; Hahn et al., 2002; Sherertz et al., 1987)
		Ultraviolet germicidal irradiation (UVGI) filters	(Menzies, Popa, Hanley, Rand, & Milton, 2003; Memarzadeh, Olmsted, & Bartley, 2010)
		Uniform, non-mixed airflow patterns to direct contaminants toward exhaust registers and grilles	(Barnes & Rogers, 1989; Memarzadeh, 2011; Sehulster et al., 2003)
Safety; minimize risk of injury	Air temperature, relative humidity, and flow speed maintained at comfort level without dramatic difference between spaces	-	



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
HVAC	Enhanced sustainability	Energy-efficient heating, ventilation, and air conditioning (HVAC) systems	(Mathews, Botha, Arndt, & Malan, 2001; Mazzei, Minichiello, & Palma, 2002)
	Reduced resource consumption	High-efficiency HVAC equipment that uses relatively less energy for ventilation and air-conditioning	(Oregon Health & Science University, 2007)
Electrical	Communication/ interaction with care provider/ emergency care	Appropriate electrical system to support reliable internet access	(National Research Council, 2010)
Lighting	Accessibility; ease of use	Avoid glare and excessive contrast and patterns on floors, which can be perceived as or conceal actual changes in level which pose a potential trip hazard.	(AIA New York Design for Aging Committee, 2017)
	Minimize patient stress/anxiety	Lighting design allows lighting variation (i.e. bright light during daytime and reduced light during nighttime) for the purpose of maintaining patients' circadian rhythm	(Vinall, 1997)
		Non-institutional looking appearance (e.g., finish materials, fixtures, furniture, color, texture, etc.)	(Altringer, 2010; Becker & Douglass, 2008; Hodnett, Downe, Edwards, & Walsh, 2005; Swan, Richardson, & Hutton, 2003)
	Patient satisfaction	Lighting design allows lighting variation (i.e. bright light during daytime and reduced light during nighttime) for the purpose of maintaining patients' circadian rhythm	(Vinall, 1997)
		Non-institutional looking appearance (e.g., finish materials, fixtures, furniture, color, texture, etc.)	(Altringer, 2010; Becker & Douglass, 2008; Hodnett, Downe, Edwards, & Walsh, 2005; Swan, Richardson, & Hutton, 2003)
	Safety; fall/injury prevention and improved mobility	Avoid glare and excessive contrast and patterns on floors, which can be perceived as or conceal actual changes in level which pose a potential trip hazard.	(AIA New York Design for Aging Committee, 2017)
		Interior motion lighting/sensor-activated lighting without glare, and/or use nightlights	("Meridian at Home," 2017; National Research Council, 2011)
	Safety; minimize risk of injury	Avoid glare and excessive contrast and patterns on floors, which can be perceived as or conceal actual changes in level which pose a potential trip hazard.	(AIA New York Design for Aging Committee, 2017)



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Lighting	Enhanced sustainability	Energy-efficient lighting fixtures (e.g. light-emitting diode [LED] lighting fixture)	(Guenther & Vittori, 2007; Li, Lam, & Wong, 2006)
	Reduced resource consumption	Lighting fixtures that include high-efficiency fluorescent lamps and LEDs that use relatively less lighting energy.	-
Fixtures/Equipment/Appliances	Accessibility; ease of use	Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)
		Lever handles or pedal-controlled faucets with hand-held sprayer	(National Association of Home Builders, 2016)
		Toilet seat at 17-19 inches above floor or height adjustable	(National Association of Home Builders, 2016; Parsons et al., 2006a)
		Wall-hung sink (or other wheelchair accessible sink) to provide space for wheelchair use	-
	Caregiver safety; minimize risk of physical injury	Accommodate independent and assisted toilet transfers by included fold-down grab bars on both sides of the toilet (14" from centerline [CL] of toilet, 32" above the floor, and extended a minimum of 6" in front of the toilet) with one side open and a sidewall 24" from CL of toilet on the other.	(Lee et al., 2017)
		Avoid chairs that restrict the ability to stand without the need for lift mechanisms (e.g., too low, deep, lack arm rests, or don't enable a person to get their feet under the edge of the seat)	-
	Efficient delivery of care	Accommodate independent and assisted toilet transfers by included fold-down grab bars on both sides of the toilet (14" from centerline [CL] of toilet, 32" above the floor, and extended a minimum of 6" in front of the toilet) with one side open and a sidewall 24" from CL of toilet on the other.	(Lee et al., 2017)
	Minimize patient stress/anxiety	Access to positive/meaningful distractions (e.g., nature-themed artwork, window with views of nature, music, TV, Internet, reading materials)	-
		Drinking water easily accessible to all patients, staff, and visitors.	-



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Fixtures/Equipment/Appliances	Minimize patient stress/anxiety	Lighting design allows lighting variation (i.e. bright light during daytime and reduced light during nighttime) for the purpose of maintaining patients' circadian rhythm	(Vinall, 1997)
		Non-institutional looking appearance (e.g., finish materials, fixtures, furniture, color, texture, etc.)	(Altringer, 2010; Becker & Douglass, 2008; Hodnett, Downe, Edwards, & Walsh, 2005; Swan, Richardson, & Hutton, 2003)
	Minimize undue strain during recovery	Avoid chairs that restrict the ability to stand without the need for lift mechanisms (e.g., too low, deep, lack arm rests, or don't enable a person to get their feet under the edge of the seat)	-
		Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)
	Patient satisfaction	Access to positive/meaningful distractions (e.g., nature-themed artwork, window with views of nature, music, TV, Internet, reading materials)	-
		Drinking water easily accessible to all patients, staff, and visitors.	-
		Lighting design allows lighting variation (i.e. bright light during daytime and reduced light during nighttime) for the purpose of maintaining patients' circadian rhythm	(Vinall, 1997)
		Non-institutional looking appearance (e.g., finish materials, fixtures, furniture, color, texture, etc.)	(Altringer, 2010; Becker & Douglass, 2008; Hodnett, Downe, Edwards, & Walsh, 2005; Swan, Richardson, & Hutton, 2003)
	Patient comfort	Access to positive/meaningful distractions (e.g., nature-themed artwork, window with views of nature, music, TV, Internet, reading materials)	-
	Reduced noise	Minimal noise from equipment operation	-



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Fixtures/Equipment/Appliances	Safety; fall/injury prevention and improved mobility	Accommodate independent and assisted toilet transfers by included fold-down grab bars on both sides of the toilet (14" from centerline [CL] of toilet, 32" above the floor, and extended a minimum of 6" in front of the toilet) with one side open and a sidewall 24" from CL of toilet on the other.	(Lee et al., 2017)
		Adequate numbers of bathrooms designed to accommodate bariatric patients	-
		Avoid chairs that restrict the ability to stand without the need for lift mechanisms (e.g., too low, deep, lack arm rests, or don't enable a person to get their feet under the edge of the seat)	-
		Minimal noise from equipment operation	-
	Safety; infection control and hand sanitation	Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)
		Hands free mechanisms (e.g. wrist blades) for faucets, towel dispensers, alcohol gel dispensers, soap dispensers etc.	-
	Reduced risk of contamination	Built-in sinks with seamless countertop surface	(Bartley, Olmsted, & Haas, 2010; Hota et al., 2009)
		Deep sink basins to prevent splashing from drain to other surfaces	(Bartley, Olmsted, & Haas, 2010; Hota et al., 2009)
		Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)
		One sink and one alcohol gel dispenser located within easy reach in each clinician-patient interaction space.	-
		Wipe-able/washable, easy-to-clean/disinfect High Touch Surfaces with minimal joints/seams (e.g. door knobs, faucets, sinks) in the room	(Carling, Briggs, Hylander, & Perkins, 2006; Carling, Briggs, Perkins, & Highlander, 2006; Carling, Parry, & Von Beheren, 2008; Dancer, White, Lamb, Girvan, & Robertson, 2009; Joseph, & Rashid, 2007; Lankford et al., 2007; Takai et al., 2002; Wilson & Ridgway, 2006)



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Fixtures/Equipment/Appliances	Safety; minimize risk of injury	Accommodate independent and assisted toilet transfers by included fold-down grab bars on both sides of the toilet (14" from centerline [CL] of toilet, 32" above the floor, and extended a minimum of 6" in front of the toilet) with one side open and a sidewall 24" from CL of toilet on the other.	(Lee et al., 2017)
		Install anti-scald water devices that limit the temperature to 120 degrees Fahrenheit maximum.	(AIA New York Design for Aging Committee, 2017)
	Enhanced sustainability	Energy-efficient lighting fixtures (e.g. light-emitting diode [LED] lighting fixture)	(Guenther & Vittori, 2007; Li, Lam, & Wong, 2006)
	Reduced resource consumption	Faucets and toilets that are low flow and use relatively less water.	(Massachusetts Water Resources Authority, n.d.)
Furniture/Accessories	Accessibility; ease of use	Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)
	Caregiver health/support/respice	Furniture design features that enhance staff comfort (e.g., enough leg room for computer desk, left-handed staff).	-
	Efficient delivery of care	Furniture design features that enhance staff comfort (e.g., enough leg room for computer desk, left-handed staff).	-
	Improved job satisfaction	Furniture design features that enhance staff comfort (e.g., enough leg room for computer desk, left-handed staff).	-
	Minimize patient stress/anxiety	Easy-to-adjust furniture to improve the comfort of various users.	-
		Furniture configured to facilitate interaction between patient and companions	(Xidou et al., 2019)
		Non-institutional looking appearance (e.g., finish materials, fixtures, furniture, color, texture, etc.)	(Altringer, 2010; Becker & Douglass, 2008; Hodnett, Downe, Edwards, & Walsh, 2005; Swan, Richardson, & Hutton, 2003)
		Soothing music and nature sounds accessible to patients.	(Gershon, Zimand, Lemos, Rothbaum, & Hodges, 2003; Loewy, Hallan, Friedman, & Martinez, 2005; Schneider, Prince-Paul, Allen, Silverman, & Talaba, 2004; Walworth, 2005)



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Furniture/Accessories	Minimize undue strain during recovery	Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)
	Patient satisfaction	Easy-to-adjust furniture to improve the comfort of various users.	-
		Furniture configured to facilitate interaction between patient and companions	(Xidou et al., 2019)
		Non-institutional looking appearance (e.g., finish materials, fixtures, furniture, color, texture, etc.)	(Altringer, 2010; Becker & Douglass, 2008; Hodnett, Downe, Edwards, & Walsh, 2005; Swan, Richardson, & Hutton, 2003)
		Soothing music and nature sounds accessible to patients.	(Gershon, Zimand, Lemos, Rothbaum, & Hodges, 2003; Loewy, Hallan, Friedman, & Martinez, 2005; Schneider, Prince-Paul, Allen, Silverman, & Talaba, 2004; Walworth, 2005)
	Patient comfort	Furniture suitable for variations in age, ability, and build (consider bariatric populations)	-
		Comfortable patient chair without compromising safety	-
	Improved family presence and engagement in patient care	Furniture configured to facilitate interaction between patient and companions	(Xidou et al., 2019)
	Enhanced privacy	Furniture configured to allow patient and companion privacy	(Xidou et al., 2019)
	Safety; fall/injury prevention and improved mobility	Chairs with armrests	-
		Furniture sturdy and stable to support patient transfer and weight bearing requirements (including requirements for bariatric patients)	-
		Space beneath the chair to support foot position changes	-
	Safety; infection control and hand sanitation	Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Furniture/Accessories	Safety; infection control and hand sanitation	Furniture sturdy and stable to support patient transfer and weight bearing requirements (including requirements for bariatric patients)	-
	Reduced risk of contamination	Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)
		Impervious material for upholstery	-
		Smooth and nonporous surfaces and minimize perforations and crevices	-
	Safety; minimize risk of injury	No sharp edges in fixtures found in patient/caregiver pathways (e.g. rounded corners of casework)	-
Casework/ Storage	Change-readiness/future-proofing	Reconfigurable casework	-
	Accessibility; ease of use	Counters 25" deep (max) to maximize reachable distance for persons in wheelchairs, with clear knee space as deep as the reach distance	(U.S. Department of Housing and Urban Development, 1998)
		Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)
		Open shelving for easy access to frequently used items	(National Association of Home Builders, 2016)
	Efficient delivery of care	Adequate storage space (e.g., cabinet that conceals medical equipment) to efficiently store items, reduce clutter, and maintain domestic aesthetic.	(Exley & Allen, 2007; Sine, 2015; Leiss, 2012; National Research Council, 2011).
		Easily accessible storage for cleaning supplies when needed immediately (e.g., incontinence on self/seating/floor)	(Beer et al., 2014)
	Minimize patient stress/anxiety	Adequate storage space (e.g., cabinet that conceals medical equipment) to efficiently store items, reduce clutter, and maintain domestic aesthetic.	(Exley & Allen, 2007; Sine, 2015; Leiss, 2012; National Research Council, 2011).
		Minimal visual clutter (e.g. equipment and wires) in the room	-
	Minimize undue strain during recovery	Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)



Design Element:	Desirable Outcome:	Design Strategies:	Reference:
Casework/ Storage	Safety; fall/injury prevention and improved mobility	Adequate storage space (e.g., cabinet that conceals medical equipment) to efficiently store items, reduce clutter, and maintain domestic aesthetic.	(Exley & Allen, 2007; Sine, 2015; Leiss, 2012; National Research Council, 2011).
	Safety; infection control and hand sanitation	Easily accessible storage for cleaning supplies when needed immediately (e.g., incontinence on self/seating/floor)	(Beer et al., 2014)
		Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)
	Reduced risk of contamination	Easy-to-clean or antibacterial/antimicrobial finish materials to reduce surface contamination	(National Association of Home Builders, 2016)
		Smooth and nonporous surfaces and minimize perforations and crevices	-
	Safety; minimize risk of injury	No sharp edges in fixtures found in patient/caregiver pathways (e.g. rounded corners of casework)	-
Technology/Internet/ Communication/Monitoring	Change-readiness/future-proofing	Coordination with information technology (IT) and communications experts to plan flexible infrastructure that can adapt to expected future technologies	-
	Enhanced security	Caregiver control over computer screen to allow private entering of information (to protect electronic medical record [EMR] from being viewed by other patients and unrelated staff) as well as sharing of information with patient (when needed)	-
	Communication/ interaction with care provider/ emergency care	Easily accessible staff communication system (e.g., telephone, intercom) between patient room and other healthcare spaces (e.g. nursing station)	-
		Toilet seat with integrated technology to measure weight, temperature, and urine content	(N2Care LLC, 2017)
	Efficient delivery of care	Noiseless paging/visual alarms and displays	-
	Safe delivery of care	Noiseless paging/visual alarms and displays	-
Improved family presence and engagement in patient care	Wireless connectivity/ cellphone access	-	



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