TOOLS

Healthcare at Home Bathroom Annotation

Design Elements, Related Outcomes, and Design Strategies

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
Pathways	Accessibility; Ease of use	Smooth, level floor surfaces with minimal variations that allow freedom of movement, especially when navigating with mobility assistance or medical equipment	U, A, H	Parsons et al., 2006b; World Health Organization, 2007
		Minimize thresholds (less than ¼ inch vertical, or up to ½ inch beveled)	U, A, H	ADAAG, 2010
		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.	U, A, H	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	U, A, H	Parsons et al., 2006b; World Health Organization, 2007
	Safety; fall/injury prevention	Smooth, level floor surfaces with minimal variations that allow freedom of movement, especially when navigating with mobility assistance or medical equipment	U, A, H	Parsons et al., 2006b; World Health Organization, 2007
		Minimize thresholds (less than ¼ inch vertical, or up to ½ inch beveled)	U, A, H	ADAAG, 2010
		Avoid glare and excessive contrast and patterns on floors, which can be perceived as or conceal actual changes in level	U, A, H	AIA New York Design for Aging Committee, 2017

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
		which pose a potential trip hazard.		
Pathways	Safety; fall/injury prevention	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.	U, A, H	AIA New York Design for Aging Committee, 2017
	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.	U, A, H	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.	U, A, H	AIA New York Design for Aging Committee, 2017
Layout (Overall)	Accessibility; Ease of use	Bedroom on main level (street level) or independently accessible by ramp, stair lift, or elevator	U, A, H	Mitka, 2001; National Association of Home Builders, 2016
		Three-fixture bathroom adjacent to bedroom with 60-inch turning radius or acceptable T-turn space and 36-inch or 30-inch by 48-inch clear space (minimum dimensions for independent use; additional space needed for caregiver)	U, A, H	Mitka, 2001; National Association of Home Builders, 2016
		Flexible layout and sufficient space for an individual to carry out activities of daily living while using/navigating medical devices/equipment	U, A, H	National Research Council, 2011

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
Layout (Overall)	Accessibility; Ease of use	Adequate space for durable medical devices (e.g., hospital beds, wheelchairs, walkers) and medical equipment (e.g., oxygen tanks, home-dialysis units, infusion pumps, blood glucose meters, feeding tubes, catheters, commodes, ambulation aids, patient lifts/hoists and specialist equipment) near bed/chair/lounge/care areas to support changing levels of care	U, A, H	Beer, McBride, Mitzner, & Rogers, 2014; Collins, Wolf, Bell, & Evanoff, 2004; Dellve, Lagerström, & Hagberg, 2003; Exley & Allen, 2007; Kim, Geiger-Brown, Trinkoff, & Muntaner, 2010; Parsons, Galinsky, & Waters, 2006b
		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.	A, H	Lee et al., 2017
	Caregiver safety; minimize risk of physical injury	Adequate space for two people to provide caregiving assistance if using hydraulic patient lift/hoist (e.g., toilet, bed, car)	U, A, H	Beer, McBride, Mitzner, & Rogers, 2014
		Three-fixture bathroom adjacent to bedroom with 60-inch turning radius or acceptable T-turn space and 36-inch or 30-inch by 48-inch clear space (minimum dimensions for independent use; additional space needed for caregiver)	U, A, H	Mitka, 2001; National Association of Home Builders, 2016
		Adequate space for durable medical devices (e.g., hospital beds, wheelchairs, walkers) and medical equipment (e.g., oxygen tanks, home-dialysis units, infusion pumps, blood glucose meters, feeding tubes, catheters, commodes, ambulation aids, patient lifts/hoists and specialist	U, A, H	(Beer, McBride, Mitzner, & Rogers, 2014; Collins, Wolf, Bell, & Evanoff, 2004; Dellve, Lagerström, & Hagberg, 2003; Exley & Allen, 2007; Kim, Geiger-Brown, Trinkoff, & Muntaner, 2010; Parsons, Galinsky, & Waters, 2006b

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
		equipment) near bed/chair/lounge/care areas to support changing levels of care		
Layout (Overall)	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.	A, H	Lee et al., 2017
		Bedroom on main level (street level) or independently accessible by ramp, stair lift, or elevator	U, A, H	Mitka, 2001; National Association of Home Builders, 2016
		Three-fixture bathroom adjacent to bedroom with 60-inch turning radius or acceptable T-turn space and 36-inch or 30-inch by 48-inch clear space (minimum dimensions for independent use; additional space needed for caregiver)	U, A, H	Mitka, 2001; National Association of Home Builders, 2016
		Adequate space for durable medical devices (e.g., hospital beds, wheelchairs, walkers) and medical equipment (e.g., oxygen tanks, home-dialysis units, infusion pumps, blood glucose meters, feeding tubes, catheters, commodes, ambulation aids, patient lifts/hoists and specialist equipment) near bed/chair/lounge/care areas to support changing levels of care	U, A, H	(Beer, McBride, Mitzner, & Rogers, 2014; Collins, Wolf, Bell, & Evanoff, 2004; Dellve, Lagerström, & Hagberg, 2003; Exley & Allen, 2007; Kim, Geiger-Brown, Trinkoff, & Muntaner, 2010; Parsons, Galinsky, & Waters, 2006b
		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"	A, H	Lee et al., 2017

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
		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.		
Layout (Overall)	Efficient delivery of care	Bedroom on main level (street level) or independently accessible by ramp, stair lift, or elevator	U, A, H	Mitka, 2001; National Association of Home Builders, 2016
	Minimize undue strain during recovery	Bedroom on main level (street level) or independently accessible by ramp, stair lift, or elevator	U, A, H	Mitka, 2001; National Association of Home Builders, 2016
		Three-fixture bathroom adjacent to bedroom with 60-inch turning radius or acceptable T-turn space and 36-inch or 30-inch by 48-inch clear space (minimum dimensions for independent use; additional space needed for caregiver)	U, A, H	Mitka, 2001; National Association of Home Builders, 2016
		Adequate space for durable medical devices (e.g., hospital beds, wheelchairs, walkers) and medical equipment (e.g., oxygen tanks, home-dialysis units, infusion pumps, blood glucose meters, feeding tubes, catheters, commodes, ambulation aids, patient lifts/hoists and specialist equipment) near bed/chair/lounge/care areas to support changing levels of care	U, A, H	Beer, McBride, Mitzner, & Rogers, 2014; Collins, Wolf, Bell, & Evanoff, 2004; Dellve, Lagerström, & Hagberg, 2003; Exley & Allen, 2007; Kim, Geiger-Brown, Trinkoff, & Muntaner, 2010; Parsons, Galinsky, & Waters, 2006b
	Safety; fall/injury prevention	Adequate space for two people to provide caregiving assistance if using hydraulic patient lift/hoist (e.g., toilet, bed, car)	U, A, H	Beer, McBride, Mitzner, & Rogers, 2014
		Bedroom on main level (street level) or independently	U, A, H	Mitka, 2001; National Association of Home Builders, 2016

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
Layout (Overall)	Safety; fall/injury prevention	accessible by ramp, stair lift, or elevator		
		Three-fixture bathroom adjacent to bedroom with 60-inch turning radius or acceptable T-turn space and 36-inch or 30-inch by 48-inch clear space (minimum dimensions for independent use; additional space needed for caregiver)	U, A, H	Mitka, 2001; National Association of Home Builders, 2016
		Adequate space for durable medical devices (e.g., hospital beds, wheelchairs, walkers) and medical equipment (e.g., oxygen tanks, home-dialysis units, infusion pumps, blood glucose meters, feeding tubes, catheters, commodes, ambulation aids, patient lifts/hoists and specialist equipment) near bed/chair/lounge/care areas to support changing levels of care	U, A, H	Beer, McBride, Mitzner, & Rogers, 2014; Collins, Wolf, Bell, & Evanoff, 2004; Dellve, Lagerström, & Hagberg, 2003; Exley & Allen, 2007; Kim, Geiger-Brown, Trinkoff, & Muntaner, 2010; Parsons, Galinsky, & Waters, 2006b
		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.	A, H	Lee et al., 2017
	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.	A, H	Lee et al., 2017

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
Caregiver/Clinical Staff Workspace	Efficient delivery of care	Easily accessible storage and disposal for non-reusable supplies (e.g., medication, incontinence products, bandaging, etc.)	U, A, H	Beer et al., 2014
		Easily accessible storage for cleaning supplies when needed immediately (e.g., incontinence on self/seating/floor)	A, H	Beer et al., 2014
	Safety; infection control	Easily accessible storage and disposal for non-reusable supplies (e.g., medication, incontinence products, bandaging, etc.)	U, A, H	Beer et al., 2014
Caregiver/Clinical Staff Workspace	Safety; infection control	Easily accessible storage for cleaning supplies when needed immediately (e.g., incontinence on self/seating/floor)	A, H	Beer et al., 2014
	Safety; medication safety	Easily accessible storage and disposal for non-reusable supplies (e.g., medication, incontinence products, bandaging, etc.)	U, A, H	Beer et al., 2014
Flooring	Accessibility; Ease of use	Smooth, level floor surfaces with minimal variations that allow freedom of movement, especially when navigating with mobility assistance or medical equipment	U, A, H	Parsons et al., 2006b; World Health Organization, 2007
		Minimize thresholds (less than ¼ inch vertical, or up to ½ inch beveled)	U, A, H	ADAAG, 2010
	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	U, A, H	Parsons et al., 2006b; World Health Organization, 2007
		Avoid deep pile carpet or loose/worn carpet; tack down	U, A, H	Clemson, Cumming, & Roland, 1996; “Meridian at Home,”

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
		edges of carpets and rugs; remove loose rugs/mats		2017; Mitka, 2001; Parsons et al., 2006a
Flooring	Minimize undue strain during recovery	Easy-to-clean materials to reduce surface contamination	U, A, H	National Association of Home Builders, 2016
	Safety; fall/injury prevention	Non-slip flooring, surface treatment, and/or mat in bathtub/shower	U, A, H	"Meridian at Home," 2017; Parsons et al., 2006a
		Smooth, level floor surfaces with minimal variations that allow freedom of movement, especially when navigating with mobility assistance or medical equipment	U, A, H	Parsons et al., 2006b; World Health Organization, 2007
	Safety; fall/injury prevention	Minimize thresholds (less than ¼ inch vertical, or up to ½ inch beveled)	U, A, H	ADAAG, 2010
		Smooth, non-glare, non-slip or slip-resistant flooring	U, A, H	National Association of Home Builders, 2016
		Avoid deep pile carpet or loose/worn carpet; tack down edges of carpets and rugs; remove loose rugs/mats	U, A, H	Clemson, Cumming, & Roland, 1996; "Meridian at Home," 2017; Mitka, 2001; Parsons et al., 2006a
		Avoid flooring materials with intricate high-contrast patterns (especially for patients with impaired vision)	U, A, H	(Calkins, Biddle, & Biesan, 2012; Perritt, McCune, & McCune, 2005)
		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.	U, A, H	AIA New York Design for Aging Committee, 2017
		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.	U, A, H	AIA New York Design for Aging Committee, 2017

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
Flooring	Safety; infection control	Easy-to-clean materials to reduce surface contamination	U, A, H	National Association of Home Builders, 2016
	Safety; minimize risk of injury	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.	U, A, H	AIA New York Design for Aging Committee, 2017
		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.	U, A, H	AIA New York Design for Aging Committee, 2017
Walls	Accessibility; Ease of use	Grab bars including vertical grab bar at shower/bathtub entrance and diagonal grab bar on long side of bathtub	U, A, H	Bakker, 2009
		Light switches lowered to 44-inches off the floor	U, A, H	Mitka, 2001
		Wall support and provision for adjustable and/or varied height counters and removable base cabinets for wheelchair accessibility/roll-under counters	U, A, H	Gerring & Wozniak, 2016; National Association of Home Builders, 201
		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.	U, A, H	AIA New York Design for Aging Committee, 2017
	Caregiver safety; minimize risk of physical injury	Horizontal and vertical track system with adaptable products for various bathroom functions	A, H	
		Structural provisions for ceiling- and/or wall-mounted trapeze system(s) (for patients with adequate upper body strength) to hold on to for stability while walking and to assist when	H	Parsons et al., 2006a

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
		sitting up in bed (Note: not recommended for patients with long-term injuries)		
Walls	Caregiver safety; minimize risk of physical injury	Intercom system and/or voice-activated smartphone technology	U, A, H	Beer et al., 2014; National Research Council, 2011
		Wall support and provision for adjustable and/or varied height counters and removable base cabinets for wheelchair accessibility/roll-under counters	U, A, H	Gerring & Wozniak, 2016; National Association of Home Builders, 2016
	Communication/ interaction with care provider/ emergency care	Intercom system and/or voice-activated smartphone technology	U, A, H	Beer et al., 2014; National Research Council, 2011
		Electric and internet outlets located at 24-inches (min) above floor [48-inchs (max) above the floor when located above countertops] and in close proximity to locations where telemedicine equipment will be used to ensure that cords will not obstruct walking paths	U, A, H	"Meridian at Home," 2017; Mitka, 2001; National Research Council, 2011; U.S. Department of Housing and Urban Development, 1998
	Efficient delivery of care	Electric and internet outlets located at 24-inches (min) above floor [48-inchs (max) above the floor when located above countertops] and in close proximity to locations where telemedicine equipment will be used to ensure that cords will not obstruct walking paths	U, A, H	"Meridian at Home," 2017; Mitka, 2001; National Research Council, 2011; U.S. Department of Housing and Urban Development, 1998
	Minimize patient stress/anxiety	Intercom system and/or voice-activated smartphone technology	U, A, H	Beer et al., 2014; National Research Council, 2011
	Minimize undue strain during recovery	Easy-to-clean materials to reduce surface contamination	U, A, H	(National Association of Home Builders, 2016

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
Walls	Patient control and independence	Grab bars including vertical grab bar at shower/bathtub entrance and diagonal grab bar on long side of bathtub	U, A, H	Bakker, 2009
		Light switches lowered to 44-inches off the floor	U, A, H	Mitka, 2001
	Patient control and independence	Electric and internet outlets located at 24-inches (min) above floor [48-inchs (max) above the floor when located above countertops] and in close proximity to locations where telemedicine equipment will be used to ensure that cords will not obstruct walking paths	U, A, H	"Meridian at Home," 2017; Mitka, 2001; National Research Council, 2011; U.S. Department of Housing and Urban Development, 1998
		Wall support and provision for adjustable and/or varied height counters and removable base cabinets for wheelchair accessibility/roll-under counters	U, A, H	Gerring & Wozniak, 2016; National Association of Home Builders, 2016
	Patient satisfaction and comfort	Light switches lowered to 44-inches off the floor	U, A, H	Mitka, 2001
		Electric and internet outlets located at 24-inches (min) above floor [48-inchs (max) above the floor when located above countertops] and in close proximity to locations where telemedicine equipment will be used to ensure that cords will not obstruct walking paths	U, A, H	"Meridian at Home," 2017; Mitka, 2001; National Research Council, 2011; U.S. Department of Housing and Urban Development, 1998
	Safety; fall/injury prevention	Bracing in walls around tub, shower, shower seat, and toilet for installation of grab bars to support 250-500 pounds (additional structural support for bariatric use)	U, A, H	National Association of Home Builders, 2016; Parsons et al., 2006a

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
Walls	Safety; fall/injury prevention	Horizontal and vertical track system with adaptable products for various bathroom functions	A, H	
		Structural provisions for ceiling- and/or wall-mounted trapeze system(s) (for patients with adequate upper body strength) to hold on to for stability while walking and to assist when sitting up in bed (Note: not recommended for patients with long-term injuries)	H	Parsons et al., 2006a
	Safety; fall/injury prevention	Intercom system and/or voice-activated smartphone technology	U, A, H	Beer et al., 2014; National Research Council, 2011
		Electric and internet outlets located at 24-inches (min) above floor [48-inchs (max) above the floor when located above countertops] and in close proximity to locations where telemedicine equipment will be used to ensure that cords will not obstruct walking paths	U, A, H	"Meridian at Home," 2017; Mitka, 2001; National Research Council, 2011; U.S. Department of Housing and Urban Development, 1998
		Wall support and provision for adjustable and/or varied height counters and removable base cabinets for wheelchair accessibility/roll-under counters	U, A, H	Gerring & Wozniak, 2016; 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.	U, A, H	AIA New York Design for Aging Committee, 2017
	Safety; infection control	Easy-to-clean materials to reduce surface contamination	U, A, H	National Association of Home Builders, 2016
		Multiple storage locations for gloves and other personal protective equipment	A, H	Leiss, 2012; Markkanen, Quinn, Galligan, & Bello, 2009

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
		throughout the occupied space, especially in care areas, to facilitate proper safety protocols (e.g. in the event of exposure to blood and other bodily fluids)		
Walls	Safety; minimize risk of injury	Electric and internet outlets located at 24-inches (min) above floor [48-inchs (max) above the floor when located above countertops] and in close proximity to locations where telemedicine equipment will be used to ensure that cords will not obstruct walking paths	U, A, H	"Meridian at Home," 2017; Mitka, 2001; National Research Council, 2011; U.S. Department of Housing and Urban Development, 1998
		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.	U, A, H	AIA New York Design for Aging Committee, 2017
Ceiling	Caregiver safety; minimize risk of physical injury	Structural provisions for ceiling- and/or wall-mounted trapeze system(s) (for patients with adequate upper body strength) to hold on to for stability while walking and to assist when sitting up in bed (Note: not recommended for patients with long-term injuries)	H	Parsons et al., 2006a
		Track-mounted hoists in areas where space is tight and transfers occur frequently (e.g., bed, toilet)	A, H	Parsons et al., 2006b
	Safety; fall/injury prevention	Structural provisions for ceiling- and/or wall-mounted trapeze system(s) (for patients with adequate upper body strength) to hold on to for stability while walking and to assist when sitting up in bed (Note: not	H	Parsons et al., 2006a

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
		recommended for patients with long-term injuries)		
Ceiling	Safety; fall/injury prevention	Track-mounted hoists in areas where space is tight and transfers occur frequently (e.g., bed, toilet)	A, H	Parsons et al., 2006b
Doors	Accessibility; ease of use	Easy-to-open doors (consider handle grip, mechanics, and weight of door)	U, A, H	
		Minimize thresholds (less than ¼ inch vertical, or up to ½ inch beveled)	U, A, H	ADAAG, 2010
		Minimum 36-inch doors	U, A, H	National Association of Home Builders, 2016
Doors	Minimize patient stress/anxiety	Efficient ventilation to minimize unpleasant smells	A, H	
	Patient satisfaction and comfort	Efficient ventilation to minimize unpleasant smells	A, H	
	Safety; fall/injury prevention	Easy-to-open doors (consider handle grip, mechanics, and weight of door)	U, A, H	
		Minimize thresholds (less than ¼ inch vertical, or up to ½ inch beveled)	U, A, H	ADAAG, 2010
		Minimum 36-inch doors	U, A, H	National Association of Home Builders, 2016
	Safety; minimize risk of injury	Efficient ventilation to minimize unpleasant smells	A, H	
HVAC	Minimize patient stress/anxiety	Efficient ventilation to minimize unpleasant smells	A, H	
	Patient satisfaction and comfort	Efficient ventilation to minimize unpleasant smells	A, H	
	Safety; minimize risk of injury	Efficient ventilation to minimize unpleasant smells	A, H	

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
Electrical	Accessibility; ease of use	Light switches lowered to 44-inches off the floor	U, A, H	Mitka, 2001
	Communication/ interaction with care provider/ emergency care	Electric and internet outlets located at 24-inches (min) above floor [48-inchs (max) above the floor when located above countertops] and in close proximity to locations where telemedicine equipment will be used to ensure that cords will not obstruct walking paths	U, A, H	("Meridian at Home," 2017; Mitka, 2001; National Research Council, 2011; U.S. Department of Housing and Urban Development, 1998)
	Efficient delivery of care	Electric and internet outlets located at 24-inches (min) above floor [48-inchs (max) above the floor when located above countertops] and in close proximity to locations where telemedicine equipment will be used to ensure that cords will not obstruct walking paths	U, A, H	("Meridian at Home," 2017; Mitka, 2001; National Research Council, 2011; U.S. Department of Housing and Urban Development, 1998)
	Patient control and independence	Light switches lowered to 44-inches off the floor	U, A, H	Mitka, 2001
		Electric and internet outlets located at 24-inches (min) above floor [48-inchs (max) above the floor when located above countertops] and in close proximity to locations where telemedicine equipment will be used to ensure that cords will not obstruct walking paths	U, A, H	"Meridian at Home," 2017; Mitka, 2001; National Research Council, 2011; U.S. Department of Housing and Urban Development, 1998
	Patient satisfaction and comfort	Light switches lowered to 44-inches off the floor	U, A, H	Mitka, 2001
		Electric and internet outlets located at 24-inches (min) above floor [48-inchs (max) above the floor when located above countertops] and in close proximity to locations where telemedicine equipment will be	U, A, H	"Meridian at Home," 2017; Mitka, 2001; National Research Council, 2011; U.S. Department of Housing and Urban Development, 1998

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
		used to ensure that cords will not obstruct walking paths		
Electrical	Safety; fall/injury prevention	Electric and internet outlets located at 24-inches (min) above floor [48-inchs (max) above the floor when located above countertops] and in close proximity to locations where telemedicine equipment will be used to ensure that cords will not obstruct walking paths	U, A, H	"Meridian at Home," 2017; Mitka, 2001; National Research Council, 2011; U.S. Department of Housing and Urban Development, 1998
	Safety; minimize risk of injury	Electric and internet outlets located at 24-inches (min) above floor [48-inchs (max) above the floor when located above countertops] and in close proximity to locations where telemedicine equipment will be used to ensure that cords will not obstruct walking paths	U, A, H	"Meridian at Home," 2017; Mitka, 2001; National Research Council, 2011; U.S. Department of Housing and Urban Development, 1998
Lighting	Accessibility; ease of use	Light switches lowered to 44-inches off the floor	U, A, H	Mitka, 2001
	Patient control and independence	Light switches lowered to 44-inches off the floor	U, A, H	Mitka, 2001
	Patient satisfaction and comfort	Light switches lowered to 44-inches off the floor	U, A, H	Mitka, 2001
	Safety; fall/injury prevention	Light in tub/shower stall	U, A, H	National Association of Home Builders, 2016
		Interior motion lighting/sensor-activated lighting without glare, and/or use nightlights	A, H	"Meridian at Home," 2017; National Research Council, 2011
		Smart home sensor technology to light path from bed to toilet	A, H	N2Care LLC, 2017

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
Lighting	Safety; fall/injury prevention	Night lighting system that provides both horizontal and vertical cues (e.g., under bed and around doorways) to support postural control and stability	A, H	Figueiro, Gras, et al., 2008
		Amber-colored LED lighting for night lighting so as not to disrupt circadian rhythms	U, A, H	Figueiro, Gras, et al., 2008
		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.	U, A, H	AIA New York Design for Aging Committee, 2017
	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.	U, A, H	AIA New York Design for Aging Committee, 2017
Fixtures/Furnishings/ Appliances/Equipment/ Accessories	Accessibility; ease of use	Accessible moveable seat/chair/bench (e.g. swivel seat, high-low seat) for use in tub or shower	U, A, H	Parsons et al., 2006a
		If a shower is used, it is curbless and a minimum of 36" wide	U, A, H	National Association of Home Builders, 2016
		Adjustable/handheld showerheads, 6-foot hose	U, A, H	National Association of Home Builders, 2016; Parsons, Galinsky, & Waters, 2006a
		If bath is used, wheelchair maneuverable bath on main level with 60-inch turning radius or acceptable T-turn space and 36-inch or 30-inch by 48-inch clear space (minimum dimensions for independent use; additional space needed for caregiver)	U, A, H	National Association of Home Builders, 2016

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
		Toilet seat at 17-19 inches above floor or height adjustable	U, A, H	National Association of Home Builders, 2016; Parsons et al., 2006a
Fixtures/Furnishings/ Appliances/Equipment/ Accessories	Accessibility; ease of use	Lever handles or pedal-controlled faucets with hand-held sprayer	U, A, H	National Association of Home Builders, 2016
		Wall-hung sink (or other wheelchair accessible sink) to provide space for wheelchair use	U, A, H	
		Bathtub transfer bench	U, A, H	
		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.	A, H	Lee et al., 2017
		Bracing in walls around tub, shower, shower seat, and toilet for installation of grab bars to support 250-500 pounds (additional structural support for bariatric use)	U, A, H	National Association of Home Builders, 2016; Parsons et al., 2006a
		Transfer lifts (portable or ceiling mounted) and other repositioning devices that support safe ergonomic conditions for patient handling and movement, if needed.	H	Collins et al., 2004; Dellve et al., 2003; Kim et al., 2010; Parsons et al., 2006a
		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	A, H	Lee et al., 2017

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
		sidewall 24" from CL of toilet on the other.		
Fixtures/Furnishings/ Appliances/Equipment/ Accessories	Accessibility; ease of use	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.	A, H	Lee et al., 2017
		Easy-to-clean materials to reduce surface contamination	U, A, H	National Association of Home Builders, 2016
		Non-slip flooring, surface treatment, and/or mat in bathtub/shower	U, A, H	"Meridian at Home," 2017; Parsons et al., 2006a
		Accessible moveable seat/chair/bench (e.g. swivel seat, high-low seat) for use in tub or shower	U, A, H	Parsons et al., 2006a
		If a shower is used, it is curbless and a minimum of 36" wide	U, A, H	National Association of Home Builders, 2016
		Bracing in walls around tub, shower, shower seat, and toilet for installation of grab bars to support 250-500 pounds (additional structural support for bariatric use)	U, A, H	National Association of Home Builders, 2016; Parsons et al., 2006a
		Transfer lifts (portable or ceiling mounted) and other repositioning devices that support safe ergonomic conditions for patient handling and movement, if needed.	H	Collins et al., 2004; Dellve et al., 2003; Kim et al., 2010; Parsons et al., 2006a
		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"	A, H	Lee et al., 2017

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
		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.		
Fixtures/Furnishings/ Appliances/Equipment/ Accessories	Safety; infection control	Easy-to-clean materials to reduce surface contamination	U, A, H	National Association of Home Builders, 2016
	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.	A, H	Lee et al., 2017
		Install anti-scald water devices that limit the temperature to 120 degrees Fahrenheit maximum.	U, A, H	AIA New York Design for Aging Committee, 2017
Casework/ Storage	Accessibility; ease of use	Upper wall cabinetry three inches lower than conventional height	U, A, H	National Association of Home Builders, 2016
	Efficient delivery of care	Easily accessible storage and disposal for non-reusable supplies (e.g., medication, incontinence products, bandaging, etc.)	U, A, H	Beer et al., 2014
		Easy-to-access storage for first-aid supplies	U, A, H	
		Easily accessible storage for cleaning supplies when needed immediately (e.g., incontinence on self/seating/floor)	A, H	Beer et al., 2014
		Maximize space for medical supplies when needed	A, H	Centers for Disease Control and Prevention, 2017; Leiss, 2012; National Research Council, 2011

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
Casework/ Storage	Minimize undue strain during recovery	Easy-to-clean materials to reduce surface contamination	U, A, H	National Association of Home Builders, 2016
	Safety; fall/injury prevention	Easy-to-access storage for first-aid supplies	U, A, H	
		Maximize space for medical supplies when needed	A, H	Centers for Disease Control and Prevention, 2017; Leiss, 2012; National Research Council, 2011
	Safety; infection control	Easily accessible storage and disposal for non-reusable supplies (e.g., medication, incontinence products, bandaging, etc.)	U, A, H	Beer et al., 2014
		Easily accessible storage for cleaning supplies when needed immediately (e.g., incontinence on self/seating/floor)	A, H	Beer et al., 2014
		Easy-to-clean materials to reduce surface contamination	U, A, H	National Association of Home Builders, 2016
		Multiple storage locations for gloves and other personal protective equipment throughout the occupied space, especially in care areas, to facilitate proper safety protocols (e.g. in the event of exposure to blood and other bodily fluids)	A, H	Leiss, 2012; Markkanen, Quinn, Galligan, & Bello, 2009
	Safety; medication safety	Easily accessible storage and disposal for non-reusable supplies (e.g., medication, incontinence products, bandaging, etc.)	U, A, H	Beer et al., 2014
Patient Handling/Movement Equipment	Caregiver safety; minimize risk of physical injury	Adequate space for two people to provide caregiving assistance if using hydraulic patient lift/hoist (e.g., toilet, bed, car)	U, A, H	Beer, McBride, Mitzner, & Rogers, 2014

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
Patient Handling/Movement Equipment	Caregiver safety; minimize risk of physical injury	Avoid deep pile carpet or loose/worn carpet; tack down edges of carpets and rugs; remove loose rugs/mats	U, A, H	Clemson, Cumming, & Roland, 1996; "Meridian at Home," 2017; Mitka, 2001; Parsons et al., 2006a
		Structural provisions for ceiling- and/or wall-mounted trapeze system(s) (for patients with adequate upper body strength) to hold on to for stability while walking and to assist when sitting up in bed (Note: not recommended for patients with long-term injuries)	H	Parsons et al., 2006a
		Transfer lifts (portable or ceiling mounted) and other repositioning devices that support safe ergonomic conditions for patient handling and movement, if needed.	H	(Collins et al., 2004; Dellve et al., 2003; Kim et al., 2010; Parsons et al., 2006a
		Ceiling-mounted trapeze hook(s) (for patients with adequate upper body strength) to hold on to for stability while walking and to assist when sitting up in bed (Note: not recommended for patients with long-term injuries).	H	Parsons et al., 2006a
	Safety; fall/injury prevention	Adequate space for two people to provide caregiving assistance if using hydraulic patient lift/hoist (e.g., toilet, bed, car)	U, A, H	Beer, McBride, Mitzner, & Rogers, 2014
		Avoid deep pile carpet or loose/worn carpet; tack down edges of carpets and rugs; remove loose rugs/mats	U, A, H	Clemson, Cumming, & Roland, 1996; "Meridian at Home," 2017; Mitka, 2001; Parsons et al., 2006a
		Structural provisions for ceiling- and/or wall-mounted trapeze system(s) (for patients with adequate upper body strength) to hold on to for stability while walking and to assist when sitting up in bed (Note: not	H	Parsons et al., 2006a

Design Element:	Desirable Outcome:	Design Strategies:	Universal Design (U) Aging in Place (A) Healthcare at Home (H)	Reference:
		recommended for patients with long-term injuries)		
Patient Handling/ Movement Equipment	Safety; fall/injury prevention	Transfer lifts (portable or ceiling mounted) and other repositioning devices that support safe ergonomic conditions for patient handling and movement, if needed.	H	Collins et al., 2004; Dellve et al., 2003; Kim et al., 2010; Parsons et al., 2006a
		Ceiling-mounted trapeze hook(s) (for patients with adequate upper body strength) to hold on to for stability while walking and to assist when sitting up in bed (Note: not recommended for patients with long-term injuries).	H	Parsons et al., 2006a
Technology/Monitoring Equipment/Internet	Caregiver safety; minimize risk of physical injury	Intercom system and/or voice-activated smartphone technology	U, A, H	Beer et al., 2014; National Research Council, 2011
	Communication/ interaction with care provider/ emergency care	Toilet seat with integrated technology to measure weight, temperature, and urine content	A, H	N2Care LLC, 2017
		Intercom system and/or voice-activated smartphone technology	U, A, H	Beer et al., 2014; National Research Council, 2011
	Minimize patient stress/anxiety	Intercom system and/or voice-activated smartphone technology	U, A, H	Beer et al., 2014; National Research Council, 2011
	Safety; fall/injury prevention	Intercom system and/or voice-activated smartphone technology	U, A, H	Beer et al., 2014; National Research Council, 2011

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