

Indexing Metadata/Description

- › **Procedure:** Home Modifications
- › **Synonyms:** Housing adaptations
- › **Area(s) of specialty:** Geriatric Rehabilitation, Home Health
- › **Description/use**
 - Occupational therapist provides in-home safety assessments for patients to ensure a safe home environment⁽¹⁾
 - Home safety assessments and home modifications are important services provided by an occupational therapist in order to identify home hazards for patients who are at risk for falls
 - Home safety assessments are provided for patients who may have had recent hospitalization or extended stay at a skilled nursing facility as a result of orthopedic surgeries, recent history of falls, spinal cord injuries, traumatic brain injuries
 - Effective home modifications by the occupational therapist can allow the patient to remain in his/her home
 - Complex environmental modifications (CEMs) can include structural changes (to the environment), incorporation of assistive technologies, and services in order to ‘facilitate optimal participation in daily life’⁽¹⁵⁾
- › **Indications:** (include impairments, functional limitations, risk factors)
 - Impairments
 - High risk for falls⁽¹⁾
 - Visual impairments⁽²⁾
 - Limited accessibility for new wheelchair users⁽¹⁶⁾
 - Decreased functional ambulation, strength, or endurance
 - Functional Limitations
 - Patients may have functional limitations that result in poor mobility and poor ability to perform activities of daily living (ADL). Some examples include:
 - limited functional strength that require grab bars by toilets, showers, or stairs
 - pain as a result of arthritis requiring modifications to door handles, faucets, cabinets
 - difficulty with stair ambulation may be addressed by a stair glide
 - difficulty accessing bathtubs or showers may be improved with walk in/roll in bathtub or shower
 - inability to reach necessary items in the kitchen may be addressed by rearranging kitchen storage or modifying cabinet heights and styles
 - patients may be limited by pain due to arthritis and require modifications to their home to make ADLs easier to perform, for example moving laundry facilities from a basement to the living floor of the home
 - Risk Factors
 - People 65 years or older are at risk for falls
 - Physical impairment
 - Cognitive decline
- › **CPT codes:**
 - S5165 Home modifications; per service

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› **G-Codes**

• **Mobility G-code set**

- G8978, Mobility: walking & moving around functional limitation, current status, at therapy episode outset and at reporting intervals
- G8979, Mobility: walking & moving around functional limitation; projected goal status, at therapy episode outset, at reporting intervals, and at discharge or to end reporting
- G8980, Mobility: walking & moving around functional limitation, discharge status, at discharge from therapy or to end reporting

• **Changing & Maintaining Body Position G-code set**

- G8981, Changing & maintaining body position functional limitation, current status, at therapy episode outset and at reporting intervals
- G8982, Changing & maintaining body position functional limitation, projected goal status, at therapy episode outset, at reporting intervals, and at discharge or to end reporting
- G8983, Changing & maintaining body position functional limitation, discharge status, at discharge from therapy or to end reporting

• **Carrying, Moving & Handling Objects G-code set**

- G8984, Carrying, moving & handling objects functional limitation, current status, at therapy episode outset and at reporting intervals
- G8985, Carrying, moving & handling objects functional limitation, projected goal status, at therapy episode outset, at reporting intervals, and at discharge or to end reporting
- G8986, Carrying, moving & handling objects functional limitation, discharge status, at discharge from therapy or to end reporting

• **Self Care G-code set**

- G8987, Self care functional limitation, current status, at therapy episode outset and at reporting intervals
- G8988, Self care functional limitation, projected goal status, at therapy episode outset, at reporting intervals, and at discharge or to end reporting
- G8989, Self care functional limitation, discharge status, at discharge from therapy or to end reporting

• **Other PT/OT Primary G-code set**

- G8990, Other physical or occupational primary functional limitation, current status, at therapy episode outset and at reporting intervals
- G8991, Other physical or occupational primary functional limitation, projected goal status, at therapy episode outset, at reporting intervals, and at discharge or to end reporting
- G8992, Other physical or occupational primary functional limitation, discharge status, at discharge from therapy or to end reporting

• **Other PT/OT Subsequent G-code set**

- G8993, Other physical or occupational subsequent functional limitation, current status, at therapy episode outset and at reporting intervals
- G8994, Other physical or occupational subsequent functional limitation, projected goal status, at therapy episode outset, at reporting intervals, and at discharge or to end reporting
- G8995, Other physical or occupational subsequent functional limitation, discharge status, at discharge from therapy or to end reporting

›

G-code Modifier	Impairment Limitation Restriction
CH	0 percent impaired, limited or restricted
CI	At least 1 percent but less than 20 percent impaired, limited or restricted
CJ	At least 20 percent but less than 40 percent impaired, limited or restricted
CK	At least 40 percent but less than 60 percent impaired, limited or restricted
CL	At least 60 percent but less than 80 percent impaired, limited or restricted
CM	At least 80 percent but less than 100 percent impaired, limited or restricted
CN	100 percent impaired, limited or restricted

Source: <http://www.cms.gov>

› **Reimbursement:**

- In Sweden, home modifications are paid for by the community to allow individuals to live independently in their homes⁽⁸⁾
 - Funding is provided for home modifications regardless if the home is rented or owned or if it is an apartment or house
 - Healthcare professionals such as occupational therapist provide an assessment of the home and modifications are provided by the Swedish municipality
- Medicare B pays a percentage of cost of durable medical equipment⁽⁷⁾
- Home improvement and structural alterations program (HISA) provides special grants for eligible veterans requiring home modifications⁽⁷⁾

Indications for Home Modifications

- › The occupational therapist performs a home evaluation and provides recommendations for those patients who continue to want to live independently despite new injuries, illnesses, or decline in function. Occupational therapists can consult with contractors to provide the most effective modifications for the patient
- › Home modifications can provide caregivers and family members with improved tools and safety measures.^(7,13) Modifications such as grab bars, for example, can help decrease the amount of burden on a caregiver in order to safely perform transfers
- › Minimize environmental risk factors for falls including⁽²⁰⁾
 - unsecured rugs
 - rugs with curled edges
 - slippery floors
 - uneven surfaces (e.g., flooring, sidewalks, driveways)
 - poor lighting
- › Home assessments need to be client specific as patients will respond differently to the modifications
 - An individual's home is about personal identity and comfort; therefore, the occupational therapist must collaborate with his or her patient and discuss what changes the patient is willing to make^(4,5)
- › Environmental interventions that include assistive technology and devices reduce the level of difficulty required to perform a specific task and also allow for more independence and increase in safety⁽³⁾
- › Home modifications may provide a number of benefits including:⁽⁸⁾
 - decreasing the rate of the patient's functional decline
 - reducing overall healthcare cost
 - reducing the burden of providing patient care for caregivers and family
 - reducing the patient's fear of falling
 - reducing pain
 - restoring dignity and relationships
 - For some patients, social relationships that extend outside of their home were highly valued

Guidelines for Use of Home Modifications

- › Visually impaired patients may require modifications for proper lighting at home⁽²⁾
 - Automatic on/off switches including motion detection and centralized remote controls for light switches
 - Properly placed lighting is important to identify hazards
 - Patients may be required to modify the color of their walls and furniture to provide better contrast between objects, making them easier to identify and avoid
- › Assess the need for adaptive equipment including shower chairs, commode chairs, and grab bars
- › Therapists should always collaborate with their patients to discuss what the patient is most comfortable changing⁽⁴⁾

Contraindications/Precautions to Home Modifications

- › When providing home modifications, the occupational therapist must be mindful about other people who may be living in the home. Home modifications must be able to meet the needs of all other people living in the home⁽⁵⁾

- › The occupational therapist must assess the needs of the patient as home modifications can provide a negative effect if the patient's perceived needs and values are not recognized in the assessment process^(8,10)

Examination

› History

• History of present illness/injury for which the home modification is needed

- **Mechanism of injury or etiology of illness:** Document start of underlying diagnosis, progression of illness/injury, rehabilitation course, and any complications or comorbid injuries
- **Course of treatment**
 - **Medical management:** Document medical interventions or surgical interventions
 - **Medications for current illness/injury:** Determine what medications clinician has prescribed; are they being taken? Do they impact the patient's function?
 - **Diagnostic tests completed:** Document diagnostic tests/lab work completed for the patient
 - **Home remedies/alternative therapies:** Document any use of home remedies (e.g. ice or heating pack) or alternative therapies (e.g. acupuncture) and whether they help or not. Has the patient made any changes to the home or work environment? Are they safe?
 - **Previous therapy:** Document whether patient has had occupational or physical therapy for this or other conditions and what specific treatments were helpful or not helpful
- **Aggravating/easing factors:** (and length of time each item is performed before the symptoms come on or are eased)
 - Could modification of the environment allow the patient to complete ADLs without aggravating symptoms (e.g., pain, fatigue)?
- **Body chart:** Use body chart to document location and nature of symptoms
- **Nature of symptoms:** Document nature of symptoms (constant vs. intermittent, sharp, dull, aching, burning, numbness, tingling)
- **Rating of symptoms:** Use a visual analog scale or 0-10 scale to assess symptoms at their best, worst and at the moment (specifically address if **pain** is present **now** and **how much**)
- **Pattern of symptoms:** Document changes in symptoms throughout the day and night, if any (AM, mid-day, PM, night); also document changes in symptoms due to weather or other external variables and activities
- **Sleep disturbance:** Document number of wakings/night
 - Is sleep disturbed by the need to urinate during the night? Is the environment safe for the patient to go to the bathroom at night?
- **Other symptoms:** Document other symptoms patient may be experiencing which could exacerbate the condition and/or symptoms that could be indicative of a need to refer to physician (dizziness, bowel/bladder/sexual dysfunction, saddle anesthesia)
- **Respiratory status:** Document use of supplemental oxygen, mechanical ventilator, etc.
 - Does the environment allow the patient to safely ambulate or move around with oxygen and mobility aids (as needed)?
- **Barriers to learning:**
 - **Are there any barriers to learning? Yes ___ No ___**
 - **If Yes, describe _____**

• Medical history

- **Past medical history**
 - **Previous history of same/similar diagnosis**
 - **Comorbid diagnoses:** Ask patient about other problems including diabetes, cancer, heart disease, complications of pregnancy, psychiatric disorders, orthopedic disorders, etc.
 - **Medications previously prescribed:** Obtain a comprehensive list of medications prescribed and/or being taken (including over-the-counter drugs)
 - **Other symptoms:** Ask patient about other symptoms he/she may be experiencing

• Social/occupational history:

- **Patient's goals:** Document what the patient hopes to accomplish with therapy and in general. Discuss with the patient what types of modifications may be needed and determine if patient and others living in the home are agreeable with the potential for changes to the home. OTs need to understand the patient's abilities, desires, and needs in order to design the best solution possible

- **Vocation/avocation and associated repetitive behaviors, if any:** (e.g., does the patient participate in recreational or competitive sports?) Is the patient employed? What type of work does the patient do? Are any adaptations needed in the work environment similar to those needed in the home?
 - **Functional limitations/assistance with ADLs/adaptive equipment:** Document functional limitations due to primary diagnosis. What was the patient's prior level of function? What adaptive equipment is in use? Does the patient use a wheelchair?
 - **Living environment:** Stairs, number of floors in home, number of steps to entrance, location of laundry services, location of bedroom or sleeping area, with whom does patient live (e.g., caregiver, family members), kitchen set-up, environmental hazards such as throw rugs or cords. Identify the barriers to independence in the home; what modifications would improve function?
 - Assess doorway width. According to the ADA, minimum clear width of doors should be at least 32 inches⁽⁶⁾
 - Perform an assessment of a patient's bathroom, living room, kitchen, and bedroom and observe for items such as⁽⁷⁾
 - Throw rugs
 - Grab bars
 - Are they placed in proper locations?
 - Are they secured properly?
 - Are there towel bars located in places where they could be used for grab bars?
 - Using towel bars as grab bars is a significant safety risk. Towel bars are usually not secured into studs, nor are they designed to withstand the forces placed on them if used to support a person's weight
 - Height of toilet seat
 - Presence of non-skid mat for tub
 - Bathroom chair/tub transfer bench
 - Other things to consider throughout the home⁽⁷⁾:
 - Are there railings at the front entrance?
 - Is there adequate lighting throughout various parts of the home?
 - Is there any loose carpeting or uneven flooring?
 - Kitchen assessment⁽⁶⁾
 - Observe height of sink and countertops; are they a functional for the patient?
 - For patients requiring wheelchair access, patients require a 5x5 turning radius
 - Proper lighting throughout the kitchen
 - Determine what type of lever system may be required for faucets and sinks⁽⁴⁾
 - Organization of kitchen equipment
 - Are the items used most frequently easily accessible?
 - Bedroom assessment⁽⁴⁾
 - Are there easily accessible light switches or lamps? If not, could smart home technology be implemented?
 - For additional information on assistive technology, see *Clinical Review...Assistive Technology for Activities of Daily Living: Occupational Therapy* CINAHL Topic ID Number: T901900 and *Clinical Review...Assistive Technology for Patients with Physical Impairments* CINAHL Topic ID Number: T901901
 - Remove any rugs, cords, or environmental hazards that may increase the risk for falls
 - Will the patient require any bed-side hand rails or trapeze to get in/out of bed safely?
- › **Relevant tests and measures:** (While tests and measures are listed in alphabetical order, sequencing should be appropriate to patient medical condition, functional status, and setting)
 - **Ergonomics/body mechanics**
 - Assess body mechanics with functional transfers, standing, and sitting
 - Assess patient's body mechanics and note any abnormal deviations when sitting or in upright position
 - **Functional mobility** (including transfers, etc.)
 - Assess functional mobility, including use of assistive devices; the Functional Independence Measure (FIM) can be used as an objective measurement to assess mobility
 - Note any limitations in upper extremity range of motion, strength, or coordination negatively impacting function
 - **Gait/locomotion**
 - Screen for gait dysfunction or impaired wheelchair mobility. Refer to physical therapy as appropriate
 - Does the patient uses a cane or walker for mobility? Are there barriers for safe use of mobility aids?

- **Motor function** (motor control/tone/learning)
 - Assess upper and lower extremity coordination
 - Assess for abnormal tone
- **Observation**
 - Observe the patient performing functional tasks in the home
- **Perception** (e.g., visual field, spatial relations)
 - Assess patient’s visual acuity, eye movement, coordination, visual field, contrast sensitivity
- **Posture**
 - Assess general posture in sitting and standing and note for any abnormal postural deviations and the impact on function
- **Assessment tools specific to home modification**
 - SAFER tool: 97-item safety-related assessment tool⁽¹⁾
 - Westmead Home Safety Assessment (WeHSA): home safety assessment that determines fall risk, habits, risky situation, behaviors, and personal characteristics.⁽¹⁾ Can be accessed at <https://sites.google.com/site/studentcapstone122/westmead-home-safety>
 - Home Assessment Profile: based on client’s performance within the home. Helps to identify hazards in the home and the frequency in which the patient will be encountering them. Can be accessed at <https://instruct.uwo.ca/kinesiology/9641/Assessments/Biological/HAP.html>
 - Cougar Home Safety Assessment: used to identify environmental safety hazards in homes. Cougar 4.0 addresses any fire hazards, emergency communication and preparation, medical supplies and medication management, electrical safety, water temperature, kitchen safety, and fall hazards in the hallways, bathrooms, and parking areas. Can be accessed through http://www.misericordia.edu/uploaded/documents/academics/ot/ot_research/home_safety/ot_finalcougar07.pdf
 - In-Home Occupational Performance Evaluation (I-HOPE) and In-Home Occupational Performance Evaluation for Providing Assistance (I-HOPE Assist)⁽¹⁷⁾
 - I-HOPE Assist may be useful for assessing impact of home modifications on the informal caregivers
 - Information about additional home assessments and checklists from AOTA can be accessed at <http://www.aota.org/practice/productive-aging/home-mods/rebuilding-together/assessments.aspx>

Assessment/Plan of Care

› **Contraindications/precautions**

- **Patients with a diagnosis for which this procedure is used may be at risk for falls; follow facility protocols for fall prevention and post fall prevention instructions at bedside, if inpatient. Ensure that patient and family/caregivers are aware of the potential for falls and educated about fall prevention strategies. Discharge criteria should include independence with fall prevention strategies**

› **Diagnosis/need for procedure**

- Frail elderly patients, patients with dementia, or those with mild functional impairments may benefit from a home assessment in order to provide recommendations for home modifications that can allow these individuals to continue to live safely and maximally independently in their homes
- Occupational therapist may provide a pre-discharge home assessment visit to determine whether the patient is able to return to his or her own home or require an alternative accommodation⁽²⁾
 - Occupational therapist should perform a pre-discharge home visit along with the patient to assess ability to perform ADLs and other functional tasks in his/her own environment and determine what home modifications may be required⁽¹¹⁾
 - OT can provide compensatory strategies for the patient in home as well as provide recommendations for assistive devices and home modifications

› **Prognosis**

- Home modifications allow a patient to continue to “age in place” safely and independently
- A study by Susan Stark found that those patients who had their home modified reported having improvements with daily activity functions and were able to maintain these improvements for at least two years⁽¹²⁾

› **Referral to other disciplines**

- Professional contractor to perform extensive modifications such as adding stair glides, ramps, hand rails, bathroom adjustments, lowering or raising light switches, etc.
- Physical therapy for proper strengthening exercises, gait training and proper use of assistive devices, and/or balance training activities to minimize risk for falls

- Social worker
- Nursing

› **Other considerations**

- Modification planning should be performed as soon as possible if a patient is being discharged to home from a hospital
- When performing home modifications, the occupational therapist as well as other professionals participating in the home modifications should respect the final decision of the patient
- Low-income, Hispanic, and African American patients are more likely to perform their own modifications versus using outside sources⁽¹⁴⁾
- Individuals have unique ways that they have adapted to their disabilities. As long as the patient is safe in the adaptations, attempting to change them to the ‘right way’ to perform the task may cause ‘challenges and discomfort’ to the patient. Ask questions and observe before making recommendations⁽²¹⁾

› **Treatment summary**

- Home safety assessments can be given to patients to allow themselves to evaluate the safety of their own environment and make the necessary changes without the need of a therapist.⁽⁵⁾ Patients are given an assessment such as The Cougar that allows patients to perform a checklist of their home
- Minor modifications to the home can include:⁽⁵⁾
 - clearing the floor of any clutter to allow for safe mobility throughout the home
 - removing any throw rugs, cords, wires
 - reorganizing kitchen items that are used frequently and placing them in locations that are easily accessible to the patient
 - replacing light bulbs to higher wattage to increase lighting
 - rearranging furniture to allow easy access to other rooms
 - For patients with arthritis, consider replacing faucets with easier to use handles or door knobs with easier to use handles
- Major home modifications require significant changes to the structure of the home and may require a professional contractor. Some changes can include:⁽⁵⁾
 - installing new light fixtures
 - installing hand rails
 - widening doorways/halls
 - replacing stairs with ramps or vertical lifts
 - adding or renovating bathrooms
- Some examples of low cost home modifications include:
 - tactile labeling systems⁽²⁾
 - talking clocks and microwave ovens⁽²⁾
 - audio-labeling system⁽²⁾
 - lifeline medical alert service⁽²⁾
- Ramp access can benefit those patients with balance or strength deficits who require use of a wheelchair, walker, or cane
 - Ramps must be built in a 1:12 ratio (12 inches of ramp for every 1 inch rise). However, some patients may have difficulty accessing this type of ramp, thus a slope of 1:16 or 1:20 is recommended⁽⁶⁾
- Vertical lifts can provide access to home when space is limited; however, they are more costly
- A swing clear hinge can be installed on doorways to provide the 32 inches of clear width space to allow the wheelchair-bound patient plenty of room to enter the door without risk of skin tear or injuries to the hand and extremities⁽⁶⁾
- An article by Tor Valenza identifies 5 goals for a home evaluation:⁽⁴⁾
 - Minimize tripping hazards such as wire, cords, and cables
 - Maximize slip resistance (increase friction): increase traction on surfaces such as tiles and wooden surfaces by placing adhesive strips or removing any liquids that may increase chances of a slippery surface
 - Minimize overreaching: decrease the amount a patient will be required to reach by placing objects and commonly used items on easily accessible areas
 - Maximize visual support: provide proper lighting as well as easy accessible light switches. Nightlights are great accessory to have at night
 - Maximize physical support: items such as grab bars and specialized lift chairs can allow a patient to safely perform transfers in a bathroom

- Both standardized assessments and informal interview should be incorporated into the home evaluation, and the results are used to drive subsequent treatment⁽¹⁹⁾
 - For each environmental barrier identified, if possible present multiple potential solutions with varying cost and complexity, for considerations. For example if transporting laundry from basement is problematic, possible solutions may include installing railings along basement stairs, relocating washer and dryer upstairs, or having caregiver assist with transporting the laundry up and down the stairs
- Additional research is needed to support modifications for patients with Alzheimer’s disease (AD)⁽¹⁸⁾
 - The authors of a review of the literature on home modifications for AD recommend that any interventions be client centered and include the caregiver, but that evidence is lacking as to what are appropriate evidence-based assessments, what modifications are needed in later stages of AD, and at what stage modifications are no longer adequate to provide a safe living environment

Desired Outcomes/Outcome Measures

- › Desired Outcomes
 - Functional independence
 - FIM
 - Minimizing risk for falls
 - Berg Balance Scale
 - Timed up and go (TUG)
 - Continuing to live in home safely and independently⁽¹³⁾
 - Decreasing environmental barriers to enhance overall functional outcome⁽¹³⁾

Patient Education

- › Patients looking to find more information on home modifications can visit http://www.eldercare.gov/Eldercare.NET/Public/Resources/Factsheets/Home_Modifications.aspx
- › The American Association of Retired Persons (AARP) provides information on home modifications at <http://www.aarp.org/home-family/caregiving/info-2014/caregiving-home-safety-modifications-ginzler.html>
- › AOTA home modifications information can be found at <http://www.aota.org/Practice/Productive-Aging/Home-Mods.aspx>

Coding Matrix

References are rated using the following codes, listed in order of strength:

M Published meta-analysis	RV Published review of the literature	PP Policies, procedures, protocols
SR Published systematic or integrative literature review	RU Published research utilization report	X Practice exemplars, stories, opinions
RCT Published research (randomized controlled trial)	QI Published quality improvement report	GI General or background information/texts/reports
R Published research (not randomized controlled trial)	L Legislation	U Unpublished research, reviews, poster presentations or other such materials
C Case histories, case studies	PGR Published government report	CP Conference proceedings, abstracts, presentation
G Published guidelines	PFR Published funded report	

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