The Issue Is: Advocating for Universal Design in Today's Home Market

Corrie N. Hillman

Faculty Mentor: Martin Rice, PhD., OTR/L

Site Mentor: Rosemarie Rossetti, PhD.

Department of Rehabilitation Sciences

Occupational Therapy Doctorate Program

The University of Toledo

May 2011

Note: This document describes a Capstone Dissemination project reflecting an individually planned experience conducted under faculty and site mentorship. The goal of the Capstone experience is to provide the occupational therapy doctoral student with a unique experience whereby he/she can demonstrate leadership and autonomous decision-making in preparation for enhanced future practice as an occupational therapist. As such, the Capstone Dissemination is not formal research.

Thirteen years ago, Dr. Rosemarie Rossetti's "normal" life was interrupted and redefined. Having survived a three and a half ton tree fall on her resulting in five crushed vertebrae in her back, two in her cervical spine, and injuries to her spinal cord, Dr. Rossetti underwent two years of occupational and physical therapy, three days a week, "trying to get her life back." Today, with a mobility impairment-paraplegia, Dr. Rossetti, who now uses a manual wheelchair, describes "living with a disability" as "normal" (personal communication, February 21, 2011).

Early in her rehab, Dr. Rossetti and her husband, Mark Leder, realized that their dream home of three years had become an obstacle to activities of daily living. According to Dr. Rossetti, "that was going to be our last home to retire in. We truly didn't know about designing space for a lifetime." Their dream home inhibited independence, mobility, cooking, doing laundry, taking a shower, retrieving something from a cabinet, and accessing the garden. "A home that has not been properly designed for a person will intensify their disability, as we have limitations, we call them disabilities" (personal communication, February 21, 2011). The biggest barrier they faced was getting Dr. Rossetti into the home due to three front steps. A ramp was installed for her homecoming, however, Dr. Rossetti was unable to use the ramp on her own due to the steep grade (the lot size did not allow for a longer ramp). Their only solution was to add a $10,000 porch lift.

From this personal experience, the couple began their journey to find practical home build solutions to help Dr. Rossetti carry out ADLs as independently as possible with a plan to "age in place" and bring an elderly parent and sibling into their home sometime in the future. In the process, they became local and national advocates for universal design, accessibility, and visitability. At the time of this writing, the Universal Design Living Laboratory (UDLL), a

3,500 square feet ranch-style home, is nearing completion. Conceived in 2004, the UDLL is also an educational laboratory for accessibility awareness. The one-story home is a partnership between the owners, Columbus, Ohio architect, Patrick Manley, product manufacturers, and designers, with support from local and national groups advocating for home accessibility. The UDLL will be open to the public in 2011 to showcase how universal and green design building elements can be combined in new residential homes and remodeling projects to create a life-long, inclusive, and sustainable design (personal communication, January 26, 2011).

Defining Universal Design, Accessibility, and Visitability

In 1989, Ronald Mace founded the Center for Universal Design at North Carolina State University. An early advocate for civil and disability rights, Mace, working with The Americans with Disabilities (ADA) guidelines which extended civil rights protection against discrimination to persons with disabilities in the areas of employment, public transportation, telecommunications, public access, accommodations in private business and government buildings, and multi-family and public assistance housing, developed the term “universal design” (UD). Mace defined UD as “the design of products and environments to be useable by all people, to the greatest extent possible, without the need for adaptation or specialized design” (The center for universal design, 2011). The UD principles are “to guide a wide range of design disciplines including environments, products, and communications. These seven principles (Principle One: Equitable Use, Principle Two: Flexible Use, Principle Three: Simple and Intuitive Use, Principle Four: Perceptible Information, Principle Five: Tolerance for Error, Principle Six: Low Physical Effort, Principle Seven: Size and Space for Approach and Use) can

be applied to evaluate existing designs, guide the design process, and educate both designers and consumers about the characteristics of more usable products and environments.

Refer to Table 1 for Complete Definition of the Seven Universal Design Principles

Insert Table 1 Here

Universal Design is synonymous with accessible and seamless design. A home that is accessible is inclusive and trans-generational, useable by everyone, regardless of ability, and designed for a lifetime. When simple barriers of access are eliminated, the home becomes universally accessible. The UD home is a viable living environment even when mobility and ability changes occur due to accident, illness, or aging. The UD home typically contains: an open floor plan, zero-step entry, first floor master bedroom and bath with roll in shower or low threshold, built-in shower seat, or walk-in tub, wider doorways and hallways, extra floor space, lower countertops and cabinets or countertops of varying heights, lever-style faucets and hardware, non-slip flooring, reinforced walls for immediate or future grab bar installation, lower light switches, higher electrical outlets, wider staircase with deeper treads, lower risers; natural lighting, free standing storage solutions in the bedroom, built-in appliances, and side-by-sides with roll out shelves and separate drawers.

At the very minimum, accessibility advocates say homes should be visitable. Visitability is an initiative that seeks to increase the number of accessible homes through the inclusion of three structural features at the time of construction: (Increasing home access: Designing for visitability, 2010) one zero-step entry, preferably at the front or main entrance, with a side, back, or garage as a suitable alternative. To allow for wheelchair access, all main floor entrances, interior doors, main floor bathrooms, or half baths should measure 32 inches to 36 inches.

Currently, over 1 million older adults with physical disabilities live in housing with inaccessible entrances and stairs…Such problems reduce independence, make tasks difficult, hamper care giving, and contribute to accidents…(Meeting the needs of an older person to age in place, 2001).

Universal Design and Quality of Life Accessibility

Mace and his collaborators went beyond the minimum standards of accessibility to accommodate human functional diversity at all life stages. Published in 1997, application of the principles to products and environments make the design both pleasing and useable by everyone, to the greatest extent possible, regardless of ability or age. Universal design assumes that everyone at some point in their lives will experience a disability to some extent – either short or long-term. When UD elements are included in the home environment, quality of life accessibility is proactively addressed. The UD environment is adaptable and accommodating, improving safety, ergonomics, and efficiency. The design elements eliminate structural barriers (e.g. narrow interior doorways), reduce tripping hazards (e.g. raised interior thresholds), and repetitive stress from bending and reaching for heavy items in low, deep set cabinets (RS Means p. 6, 2007). Most UD features are standard construction elements that are reoriented (e.g., raised outlets), redimensioned (e.g., hallways), redesigned (e.g., levered faucets), and, perhaps, most importantly are not "institutional" looking.

According to an AARP survey, 83% of homeowners over the age of 45 want to age in place. At the beginning of the 20th century, the average life span was 47 years. Currently, the average life expectancy is 78 years and two months (Center for disease, 2011). By 2030, there will be 70 million seniors, approximately twice the current number. Most of these seniors will

remain in conventional housing (Johansson, 1999). Accessibility issues arise due to aging, illness, and/or injury (RS Means p.7, 2007). According to the Aging in Place White Paper (Partners for Livable Communities) "Providing home and community services that enable older adults to age in place has shown to be the most cost effective model for aging…" Occupational therapy can play an instrumental role in helping clients age in place and retain maximum independence through home modifications, wellness techniques, fall and injury prevention, community resources, and advocating for the adoption of mandatory universal design in today's home market. At present, the single-family home is not federally mandated by law to be ADA compliant, accessible, or visitable. Only a small number of state and local building codes require some accessibility standards. Visitability is a minimum standard of accessibility. Toledo is the only Ohio city with a visitability requirement (personal communication with Jeremy Fetty, Creative Living Systems). Effective 9/20/05, visitability was required for 1, 2, and 3 family government subsidized new home builds in Toledo, Ohio, (Ordinance 577.05). Currently, a handful of other local ordinances require visitable standards. Only Texas (SB No.623) requires subsidized single-family housing be visitable. Despite some progress in bringing accessible housing to the market, 95% of the houses currently being built have steps (Concrete change, 2008). Nationally, H.R. 1408, "Inclusive Home Design Act of 2009," introduced by Rep. Jan Schakowsky, sought to make changes to building codes requiring new federally funded, single-family homes be built visitable. H.R. 1408 was reintroduced in 2010 but failed to become law (Govtrack, 2011). New York State's Universal Design Incentive Bill 9929, passed in February 12, 2010, seeks to incentivize builders to increase the development of adaptable and accessible

housing. This bill reduces permitting fees and expedites the building process (Concrete change, 2008).

The majority of home constructions are designed without regard to consumers with disability. According to Christenson (1999), "Most housing is designed for the average person with average physical abilities." Adapting to the home environment over time is problematic. Incorporating UD at the time of a new construction adds 2-4% to the cost. Positioning electrical outlets at 18 inches above the floor instead of 12 inches and rocker light switches at 48 inches instead of 42 inches make them easier to locate, operate, and require less physical reach. Notes Dr. Rossetti, "Electrical outlets are positioned at 12 inches from the floor because that's the length of a [typical] hammer" (personal communication, February 28, 2011). Switches and outlets at the UD height costs nothing at the time of the new construction, but repositioning them makes them accessible to a person in a wheelchair, a small child, or person of short stature. Retrofitting a home can cost 30% more than a new construction (RS Means p.12, 2007). Unlike the popular Leadership in Energy and Environmental Design (LEED) certification for Green Building, which is the current best practice of the American Institute of Architects (AIA), the National Association of Home Builders (NAHB), and the National Association of the Remodeling Industry (NARI), there is no certification required for UD. While green building is sustainable and responsible to the environment, UD is socially sustainable and responsible to the individual(s) desire to age in place, as safely and independently as possible. "Design for all is slowly gaining market acceptance," according to one NAHB continuing education course on universal design. The UD trend still has a long way to go because "consumers do not currently recognize the value of the design" (National association of home builders, 2011). New single-

family homes lack accessibility and lifetime design largely because of low consumer awareness and demand, professional awareness, and the absence of new construction mandates for basic access.

Confirming the Importance of Universal Design in Occupational Therapy

In the public sector, "Occupational therapists can have a dramatic effect on the enforcement of the ADA standards" (McClain, Beringer, Kuhnhert, Priest, Wilkes, Wilkinson, & Wyrick p. 619, 1993). Occupational therapists are specifically trained to understand the correlation between physical impairments, human functionality, and environment. Occupational therapists are in a unique position to link consumers with physical disabilities to service providers. In the private sector, this advocacy statement could be applied to home accessibility. In the short term, OTs can play an important role in helping clients age-in-place or remain in their home after disability by assessing home environments and removing barriers that intensify health and mobility deficits. In the long term, OTs can play an important role in helping change the building norms so that when a mobility impaired client is released from the hospital, their home is not a structurally and socially isolating barrier. Home barriers account for a large percentage of the nearly 70% of people who enter nursing homes directly from a hospital or rehabilitation facility (US Department of Health and Human Services, 2005). Studies on the relationship between choice and quality of life among residents in Long-Term Care (LTC) facilities point to a diminished ability for OTs to promote quality of life in LTC facilities because of the dictates of the medical model, (Duncan-Myers & Huebner, 2000). The 1999 U.S. Supreme Court ruling, Olmstead v. L.C., ruled that "unnecessary segregation of individuals with disabilities in institutions constitutes discrimination based on disability because it perpetuates

unwarranted assumptions that people with disabilities are incapable of participating in community life" (Plannersweb, 2001). Aging-in-place with supportive services is the desired way of aging and can achieve the efficiencies of the customized care model (Aging in place, 2001). The study goes on to report that this model offers more flexible services, is more calibrated to fit the needs of the individual, and cost efficient. States like Ohio with budget deficits can no longer afford to pay nursing homes to deliver Medicaid-eligible care at $52,000 a year vs. $19,000 a year for the same care delivered in the home (Candisky, 2011).

Benefits of Universal Design and Aging-in-place

Through the process of aging, physiological changes occur at varying rates for different people. Genetics and the environment contribute to the rate of physiological changes. Aging brings a decrease in visual and auditory perceptions, agility and balance, and memory function. A home environment incorporating UD at the onset of construction enables the individual to age-in-place by anticipating normal physiological changes. It does not "Compete with the benefits of rehabilitation design, UD focuses on solutions that benefit multiple members of the social sphere," (Joines p. 313, 2011). In a UD home, framing is in place for grab bars, the front door frame is 36 inches wide to accommodate a wheelchair, there is a first floor master bedroom (or space that can be converted into one) in a multi-story home, closets are stacked for a future elevator, and there is a full or partial first floor bath with accessible features. Quality of life is directly impacted by an individual's environment. The environment is the medium wherein human activities are performed. If the individual's environment has barriers to ADLs, his/her quality of life is downgraded, self esteem and dignity negatively impacted, self help and choice are restricted. In response to the OT survey on "Client Mobility Issue," one Central Ohio OT

described her client's mobility issue: "[He] *could no longer climb the stairs to the only bathroom in the house. He used buckets and bags for elimination purposes while living on the ground floor."* In a traditionally built home, physiological changes often require home-modifications, if the individual plans to remain in the home. These modifications can be costly. A basic 3-fixture bathroom modification can run approximately $11,315. Adding a first floor bedroom of 20 feet by 24 feet costs approximately $45,475 (RS Means pp. 74-75, 114-115, 2007) A 16 foot long ramp costs between $1,600 - $3,200 and a door widening costs between $800 - $1,200 (Aging in place workbook, 2010). According to Johansson (1999), "Third-party payers cover few, if any, assistive devices. Client and home environment assessments-services typically provided by occupational therapy practitioners-are also rarely covered or provided through existing service systems" (p.1). Funding is either through conventional loans, grants, insurance, government assistance, or charities. Annually, Ohioans making accessibility modifications to entrances and bathrooms, spend over $5 million from various public monies from the state and federal governments, specifically from Medicaid, state MRDD capital, and Ohio Housing Trust Funds. This figure excludes other funding sources from private charities and the Ohio Rehabilitative Services Commission (Ohio.gov, 2011). While retrofitting a home can be costly, building an accessible home is proactive and affordable. For example, New Millennial Homes of Tampa, Florida, 2011, builds a 3 bedroom, 2 bath 1,297 square foot home for $164,700, comparable to a standard built home in the Tampa area. A home is the largest single investment of a person's life. The home should be, at the very least, visitable, suited to aging-in-place. When a sudden illness or disability occurs, the time required to make home retrofits often does not lend itself to long or cost-effective planning.

Applications of Models of Practice

Occupational Adaptation, Biomechanical, and Person-Environment-Occupation are applicable to Universal Design. Through occupations, human beings adapt to changing needs and conditions. The intrinsic motivational force behind adaptation is the desire to participate in an occupation. The model assumes the greater the adaptive transitional need, the greater the importance of the occupational adaptation process. Occupational adaptation integrates the constructs of occupation and adaptation into a single interactive construct. Intrinsic desire to participate in an occupation is the motivational force behind adaptation. Its application is a holistic approach giving equal importance to the person, environment, and interaction. The occupational adaptation begins with the occupational challenge and proceeds to the internal and external expectations for the performance of the occupation. In this model, the occupational environment, the person, and his/her interaction have equal importance. Personal perceptions are what generate an occupational response. An environment that presents barriers to occupations interrupts the occupation and adaptation process for the individual and/or the caregiver. Universal Design elements eliminate barriers to the physical, social, and cultural subsystems. A UD home anticipates occupational challenges at every stage of life. Universal Design reduces stress levels by conserving adaptation energy, which is the energy output an individual exerts during high levels of stress, in order to adapt to his/her occupational challenges. Everyone has a limited supply of adaptation energy. Universal Design intrinsically allows the individual to conserve energy and enhances occupational function, by making daily tasks such as toileting, easier. A UD home is efficient, allowing effective management of ADLs with the following predicted outcomes: Perceptual meaning-UD taps into the person's motivational force, which is

the desire to participate in occupation. Symbolic meaning-Universal Design allows the person to interact with the environment. Affective meaning-UD mitigates depression and emotional outlook by allowing the person to be independent. Intrinsic purpose-UD allows the person to independently do what they want to do (e.g. dress, cook, and bathe).

As an accessible design, Universal Design constructs a life-long therapeutic climate. The seven principles of UD explicitly tap into the individual's internal workings, meaning, and purpose by seamlessly integrating adaptive elements into the designs. This integration of elements supports relative mastery and supports the user's future occupational function. An example of UD's seamless integration is an open floor plan with low thresholds and wider hallways. The kitchen is a main center of occupation in the home. There are a number of integrated UD features that can be employed. Cabinets outfitted with U-Shaped drawer handles are the most ergonomic, easy to grasp, and pull. Interior cabinets with sliding shelves and glides require less mechanical effort, make retrieval easier, and reduce over-reaching and bending. A triangulated path in the kitchen between food prep, cooking, and cleanup, measuring no more than 26 feet and out of the traffic flow, reduces the travel distance between the three points, conserving human energy (RS Means p.33, 2007). Multiple countertop heights, or adjustable height sinks and countertops, allow for multiple users and reduces repetitive bending and strain.

The Biomechanical Model of Practice seeks to improve range of motion, conserve energy, and maximize physical outcomes. A UD home requires low physical effort and optimizes the individual's abilities to perform ADLs without special accommodation. For healthy individuals, individuals managing chronic conditions, and individuals with mobility impairments, the design features of a universal home require less mechanical output than a

traditional home environment. For example, UD lever door handles and lever faucets do not require grasping, or ulnar and/or radial deviations. A traditional door knob or faucet requires grasping and deviations which can be difficult for small or arthritic hands or limited dexterity. Refer to Table 2 for a brief overview of the biomechanical benefits of a barrier-free home.

Table 2 Inserted Here

The Person-Environment-Occupation Model (PEO) assumes the environment is the major factor and predictor of occupational performance success and satisfaction. A person's adaptive behavior and affect will match the press of the environment. In a traditional built home, barriers are implicit but not pressing until illness or injury occurs. In the PEO model, the occupation is directly related to the individual, the occupational task, and the environment (context). The model assumes it is often more efficient and effective to change the environment and find a "right fit." In a UD designed home, size and approach are integrated elements. Bathrooms are designed to accommodate a 5 foot turn radius for a wheelchair, regardless of the immediate need for such a device. Universal Design allows for activity, self-directed and purposeful completion of tasks, and encompasses the life course through the application of precise and uniform design elements. In the UD environment, the basic units of tasks are simplified, intuitive, and easier to complete. Self care activities are made easier with roll in/walk in showers with a handheld shower, tubs with wide rims for easy transfer in and out, adequate natural and artificial lighting, and a raised toilet seat (17 inches versus 15 inches). Universal Design enhances occupational performance resulting in increased self confidence, self esteem, feelings of self worth, acceptance, and appreciation.

Awareness and the Need for Advocacy

In January 2011, a Needs Assessment Survey was sent to 40 Central Ohio OTs to explore accessibility, visitability, and UD awareness and issues related to the practice of occupational therapy in Central Ohio. Seventeen surveys were completed. Questions and answers are as follows: 1) Are you familiar with the concept of Universal Design? *15 Yes (88%); 2 No (12%).* 2) Are you familiar with the concept of accessibility & visitability? *15 Yes (88%); 2 No (12%).* 3) Do you have experience in the area of Universal Design? *6 Yes (35%); 11 No (65%).* 4) Do you have experience in the area of accessibility/Visitability? *11 Yes (65%); 6 No (35%).* 5) Has accessibility & visitability ever been an issue for a client? *12 Yes (71%); 5 No (29%).* 6) Has aging-in-place ever been a client concern? *9 Yes (53%); 8 No (47%).* 7) Is mobility in the home a client concern? *14 Yes (82%); 3 No (18%).* 8) Is independence in the home a client concern? *13 Yes (76%); 4 No (24%).* 9) Is client safety in the home a concern? *14 Yes (82%); 3 No (18%).*

See Figure 1 for Breakdown of Occupational Therapist Responses

Respondent experience with UD includes design modifications for home health clients, designing activities, and environments within the preschool setting. Respondent accessibility and visitability experience includes workplace, ramp construction, modifications for accessibility, assessing accessibility for clients returning home after inpatient rehabilitation, and bathroom and dressing accessibility. Respondents report client accessibility and visitability issues include needing ramps, facilitating mobility with an aid, inability to access upstairs bed/bath, visitability, unable to get wheelchairs/Power Operated Vehicle into bathroom, accessing materials and ADLs from wheelchair, narrow turning radius for standard wheelchair,

and assisting with in home modifications in order for clients to return home and stay home as their diagnosis/symptoms progressed. Barriers to aging-in-place issues include difficulty performing daily ADLs, pain, ambulation difficulties, poor endurance, and house clutter, concern about getting older, having to live with family members, and not wanting to enter skilled nursing facilities. When asked to interpret the disparity between 82% of the OTs identifying mobility and safety as client concerns, and 53% of OTs indicating clients viewing aging-in-place as a concern, Martin Rice, Ph.D., OTR/L of The University of Toledo, interprets this to mean clients "Don't have as great of an awareness into mobility and safety issues as being barriers to aging-in-place [as OTs]." In his practice, Dr. Rice used Biomechanical and Dynamical systems approaches to help his clients with accessibility, visitability, and aging-in-place adjust to their ADLs. Dr. Rice's clients were diligent about following through with accessibility recommendations. Dr. Rice notes, clients often do not understand the connection between barriers and living a meaningful and purposeful life until the "barriers actually keep them from living their life to the fullest" (personal communication, March 11, 2011).

Awareness Among Local Architects, Builders, Remodelers and Real Estate Agents

Central Ohio architects, remodelers, and builders revealed mixed awareness. When asked about their company's UD products and services, many sales reps at a recent Columbus Home & Garden Show, were unfamiliar with the phrase. Some remodelers, like Dave Fox Remodeling, are actively using Universal Design, averaging 120-135 remodels per year. Bryce Jacobs, NARI member and vice president of Dave Fox Remodeling, who occasionally consults with OTs on projects, started seeing an increase in (consumer) interest in UD in 2004. According to Jacobs, baby boomers (persons born between 1946 and 1964) want to age in place,

to evolve comfortably, and live safely throughout the rest of their lives. Dave Fox Remodeling does not leave it up to the client to specifically request UD design. Jacobs believes in educating the consumer to make choices that make sense. Jacobs finds consumers are easiest sold on cabinetry with pull out drawers and barrier-free shower bases. Jacobs compares UD to putting wheels on luggage. "It is not because someone is handicapped that they buy luggage with wheels, or that they plan on being disabled. The wheels just make sense. It makes it easier for everyone to pull their luggage. Whether you are 85, 60, 35, 18, or 4 years old, it is easy to pull (no disability required). We are designing space smarter for all clients since we understand the human lifecycle. The direct cost (of a UD remodel to a standard construction) is roughly the same, but the cost of not thinking UD is very costly long-term" (personal communication, February 17, 2011).

Mary DiYanni of DiYanni Remodeling has worked with an occupational therapist for the past twenty years. The number of UD design projects per year varies depending on need (personal communication, March 28, 2011). Universal Design specific elements advertized on their website include lighting, hallway widths, bathroom and kitchen designs adjusted for client posture and mobility, heights of electrical outlets, countertops, and switches and appliances; taking into consideration the reach and mobility of the client. Other builders like M/I Homes, "make appropriate accommodations for buyers/family members with disabilities and/or that require assistance" (personal communication, March 22, 2011). "We typically find out the needs of our buyers and make changes to accommodate their needs." As Dr. Rossetti and her husband discovered in their research to build an accessible home, there is no UD specific floor plan used by area builders. Many architects advised them to erase the walls and start from scratch.

Architect, Tim Hawk of Columbus, Ohio's WSA Studio notes "We drive our clients towards accessible solutions. Universal Design is not truly embraced in architecture, by reason of economic factors" (personal communication, March 28, 2011).

Realtors interviewed were more familiar with the terms barrier-free or accessible: Michelle Deomoplis of Keller Williams has not had the "opportunity to explore this (UD) concept. It is not a common term used in this region." Deomoplis believes the market for this type of design will increase in the near future. Teddy B. Griffin of Keller Williams, who has had one home listed on www.barrierfreehome.com, believes the current market is more focused on affordable housing rather than accessible housing. As the population ages, Griffin sees demand increasing. The question then becomes, do you build to suit or retrofit existing portions of the home (personal communication, March 22, 2011). Lucy Buzzee, Columbus Board of Realtors Director of Professional Development reports clients do not usually seek accessibility right now. Buzzee sees more interest when building new versus looking for an existing home with universal design. Real estate agents are learning the terms 'barrier-free' and 'accessible' rather than 'universal design.' "In Fair Housing/Civil Rights courses that the real estate agents need to take every three years, the terms 'barrier-free' or 'accessible' are used more often" (personal communication, March 15, 2011).

Government and commercial buildings are required by federal law to build according to ADA safety, accessibility, and health standards. The Americans with Disabilities Act established minimum access codes for public buildings. Builders of single family homes financed with conventional mortgages are not voluntarily adopting ADA/accessible codes and standards, and UD. Advocates and the consumer will need to drive the market. Barbara

Krueger, author of Knack, Make it Easy Universal Design, a comprehensive photo and information resource on UD products and elements, has been working with UD since the 1980s at the government housing level. Krueger finds "the majority of people, given the financial where-with-all, would prefer to age-in-place, through home modification" (personal communication, March 24, 2011). In addition to remodelers like Dave Fox, AARP Universal Design Coalition, The Ohio Visitability Group, Global Universal Design Commission (GUDC), North Carolina State University, practitioners, disability advocates, and consumers like Dr. Rossetti, are advocating and increasing public awareness about UD.

Jeremy Fetty, Director of Manufacturing at nonprofit Creative Living Systems (CLS), Delaware, Ohio uses a different approach to advocate for universal design. Per Fetty, [Local] "builders don't do change. They will tell you the cost to revamp existing floor plans-move or enlarge a door, et cetra-is too costly. In reality, it isn't." Notes Fetty, "A 36 inch door is cheaper than a 32 inch door; even though 32 inches is ADA. It is difficult for a wheelchair to get through 32 inches" (personal communication, March 30, 2011). To help people with low incomes obtain accessible housing suitable for aging-in-place, CLS partners with the local Joint Vocational School (JVS) to build affordable and accessible single-family homes. The JVS students provide the labor at no cost and learn about building accessible and affordable housing. Creative Living System's 1,450 square foot, pre-fabricated home costs approximately $140,000 to build. For the cost of renovating an existing inaccessible home, CLS and the JVS can build two single-family homes. As an added bonus, these same students take their accessibility awareness with them into the construction field (personal communication, March 30, 2011).

Amy Lever with AARP Universal Design Coalition explains many baby boomers already have diseases that are leading to their future disability, e.g., diabetes. Baby boomers are afraid of becoming disabled. For this reason, it is important that accessible design not be stereotyped as design for the disabled. Universal Design should not be [limited to] age-based or ADA specific standards like American National Standards Institute or codes, but should epitomize good, transparent design. (personal communication, January 26, 2011). Most consumers are not aware of the possibilities of accessible UD design. Dr. Rossetti believes using the LEED (green) certification process as a model would propel UD awareness among consumers, builders, and manufacturers in Central Ohio and beyond (Leder & Rossetti, 2005).

AOTA's *Centennial Vision*: OT Entrepreneurs Wanted

AOTA's *Centennial Vision* is a challenge to all occupational therapy practitioners to advance the OT profession. The goal is to be more "powerful" and "widely recognized" by the year 2017" (AOTA, 2007a). According to the article "Wanted: Entrepreneurs in Occupational Therapy" (Anderson and Nelson, 2011), entrepreneurs interviewed for their research indicated that within the profession of occupational therapy, there are many opportunities for occupational therapists to start their own business. The specific expertise of the occupational therapist in understanding the complexity of people and their occupational forms creates opportunities for innovation. Occupational therapists devise treatment plans to help people to improve function and maximize independence within the environment. Because of the aging population, the number of people who will become disabled is on the rise, and the need for occupational therapy and expertise will increase. Johansson (1999) identified 10 emerging practice areas for the 21st century. One of these areas is home modifications. In communication with Dr. Martin Rice

(March 11, 2011), "Universal design fits with the *Centennial Vision* because it encompasses a state-of-the-art philosophy about home modification." Should a disability occur, many of the most important universal design elements are already in place, providing a barrier-free, accessible living space.

In the field of occupational therapy, entrepreneurship ranks lower than other healthcare professionals. The American Occupational Therapy Association wants to increase the number of occupational therapists to start up their own businesses. Home assessments and modifications are just one opportunity available to entrepreneurship.

Scott Anderle, PT, CAPS, owner of Specialized Home Design, Inc., national speaker/educator, and universal and accessible home design specialist, created the Comprehensive Home Evaluation Report CHER, a home assessment, computer software tool. This tool can assist OTs and other professionals in evaluating the client's home prior to his/her return home. For the past 7 ½ years, Anderle has advocated for universal and accessible home design through seminars, networking and partnering with contractors, insurance companies, Veterans Association, medical practitioners, and lay people. Anderle's CHER tool incorporates examples of home modifications/remodels and is available free of charge (Specialized home design, 2011). The report CHER generates includes: 1) identifiers for the client, 2) images of issues within the home, 3) ample details for the construction and design teams, and 4) written and produced in a logical and systematic order (personal communication, March 2, 2011).

Through a comprehensive home assessment, the occupational therapist brings individualized recommendations within the realm of daily occupations and provides follow up to the client. In partnership with referring agencies, builders, and remodelers, the OT brings a more

holistic approach to daily occupations within the environment. When recommending retrofits to a client's home, the occupational therapist has a unique opportunity to introduce universal design elements into the environment whenever possible. Even the simplest element such as lever door handles, illuminated light switches, or a small beveled threshold ramp for a threshold that is higher than ½ inch, can improve functioning. Incorporating universal design elements into the home reduces stress by leveraging the environment and the individual's capabilities. Education and awareness is what will drive consumer demand for universal design and accessibility. The occupational therapist can be an advocate for changing how homes are built by partnering with advocacy groups, American Occupational Therapy Association lobbyists, and seeking opportunities to recommend benefits of the design principles. Dr. Rossetti's Universal Design Living Laboratory is a prime example of an advocacy vision in practice. The UDLL represents how homes should be built: for everyone and for all life stages. It is a learning model for architects, designers, remodelers, realtors, and consumers. The challenge is bridging the gap between how single-family homes are currently built and the evolving occupational capabilities of the home's occupants. Most local and state building codes are not advantageous to universal accessibility and aging-in-place in the single-family home. The challenge of maintaining quality of life within the home environment might require legislative action on a national level. Such an action would mandate home-environments that will promote individuals being able to stay in their homes, maintaining their independence, and reducing overall health care costs by avoiding institutionalization.

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Figure 1 January 2011 Needs Assessment Survey to Central Ohio Occupational Therapists

Guidelines for use of the Principles of Universal Design is described here: http://www.ncsu.edu/www/ncsu/design/sod5/cud/about_ud/docs/use_guidelines.pdf

Table 1:

THE PRINCIPLES OF UNIVERSAL DESIGN

Version 2.0 - 4/1/97

Compiled by advocates of universal design, listed in alphabetical order:
Bettye Rose Connell, Mike Jones, Ron Mace, Jim Mueller, Abir Mullick, Elaine Ostroff, Jon Sanford, Ed Steinfeld, Molly Story, and Gregg Vanderheiden

Major funding provided by: The National Institute on Disability and Rehabilitation Research, U.S. Department of Education

UNIVERSAL DESIGN:

The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.

The authors, a working group of architects, product designers, engineers and environmental design researchers, collaborated to establish the following Principles of Universal Design to guide a wide range of design disciplines including environments, products, and communications. These seven principles may be applied to evaluate existing designs, guide the design process and educate both designers and consumers about the characteristics of more usable products and environments.

The Principles of Universal Design are presented here, in the following format: name of the principle, intended to be a concise and easily remembered statement of the key concept embodied in the principle; definition of the principle, a brief description of the principle's primary directive for design; and guidelines, a list of the key elements that should be present in a design which adheres to the principle. (Note: all guidelines may not be relevant to all designs.)

PRINCIPLE ONE: Equitable Use
The design is useful and marketable to people with diverse abilities.

Guidelines:

1a. Provide the same means of use for all users: identical whenever possible; equivalent when not.

1b. Avoid segregating or stigmatizing any users.
1c. Provisions for privacy, security, and safety should be equally available to all users.
1d. Make the design appealing to all users.

PRINCIPLE TWO: Flexibility in Use
The design accommodates a wide range of individual preferences and abilities.

Guidelines:

2a. Provide choice in methods of use.
2b. Accommodate right- or left-handed access and use.
2c. Facilitate the user's accuracy and precision.
2d. Provide adaptability to the user's pace.

PRINCIPLE THREE: Simple and Intuitive Use
Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

Guidelines:

3a. Eliminate unnecessary complexity.
3b. Be consistent with user expectations and intuition.
3c. Accommodate a wide range of literacy and language skills.
3d. Arrange information consistent with its importance.
3e. Provide effective prompting and feedback during and after task completion.

PRINCIPLE FOUR: Perceptible Information
The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Guidelines:

4a. Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
4b. Provide adequate contrast between essential information and its surroundings.
4c. Maximize "legibility" of essential information.
4d. Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).
4e. Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

PRINCIPLE FIVE: Tolerance for Error
The design minimizes hazards and the adverse consequences of accidental or unintended actions.

Guidelines:

5a. Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.
5b. Provide warnings of hazards and errors.
5c. Provide fail safe features.
5d. Discourage unconscious action in tasks that require vigilance.

PRINCIPLE SIX: Low Physical Effort
The design can be used efficiently and comfortably and with a minimum of fatigue.

Guidelines:

6a. Allow user to maintain a neutral body position.
6b. Use reasonable operating forces.
6c. Minimize repetitive actions.
6d. Minimize sustained physical effort.

PRINCIPLE SEVEN: Size and Space for Approach and Use
Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Guidelines:

7a. Provide a clear line of sight to important elements for any seated or standing user.
7b. Make reach to all components comfortable for any seated or standing user.
7c. Accommodate variations in hand and grip size.
7d. Provide adequate space for the use of assistive devices or personal assistance.

Please note that the Principles of Universal Design address only universally usable design, while the practice of design involves more than consideration for usability. Designers must also incorporate other considerations such as economic, engineering, cultural, gender, and environmental concerns in their design processes. These Principles offer designers guidance to better integrate features that meet the needs of as many users as possible.

Table 2: A Brief Overview of the Biomechanical Benefits of a Barrier-Free Home

Physical Barrier	**Physiological Impact**	**Examples of UD Solutions**
Entry door	Agility, mobility, poor vision, grip	Zero step entry (slope grade 1:20), well lit, porch/overhang protection, lower peephole, lever door handle
Thresholds,	Gait, mobility, uneven levels or flooring changes can become tripping hazards. Smooth transitions aid people who shuffle or use a wheelchair or walker	Recessed threshold, no thresholds, or threshold ramps for threshold higher than ½”
Flooring	Balance, fall potential	Non-slip surfaces with a CoF of 0.6 like cork, vinyl, tile, wood. Low pile carpet < ½”, tight weave offers cushion for frail persons.
Clutter free	Reduction in near vision, yellowing of eye lens around age 40, focus impairment, loss of perception of color. Clutter impedes mobility and increases fall potential.	Design clutter free space with open storage units, easy glide shelves, pull down shelves. Incorporate good natural and artificial lighting, choose colors that contrast (avoid pale and monochrome colors)
Bathrooms	Mobility, agility, grasp, vision, balance, ability to raise legs, ability to transfer	Lever faucets and door handle, under sink open knee space (for wheelchair access), roll in shower, handheld shower, shower with built in seat and recessed storage for personal care products, tub 17” or less in height with built in edge seat for transfers and grab bar; 5 ft. turning radius, non-slip surfaces, lighting. Raised toilet (17”) with grab bars.

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Summary and Significance

This web site, a university-based and non-profit effort, is dedicated to promoting aging in place and independent living for persons of all ages and abilities. It offers training and education opportunities for professionals who wish to respond to the increasing demand for home modification services. It also serves as an information clearinghouse on home modification to equip professionals and consumers with a comprehensive inventory of resources such as a National Directory of Home Modification and Repair Resources.

This website provides a relevant and general overview on what home modifications are; and it is very useful for finding information and national resources related to home modifications. The site contains sections on resources for education, research and training, and includes an online library, related website links, video lists, and products for supportive home environments. The website provides guidelines on how to prevent falls using home modifications as well. The website contains other sources related to home modifications and repair resources for the intervention phase of the occupational therapy practice for aging in place and disability prevention.

Ryder, R.A. (1989). Case report--Occupational therapy for a patient with a bilateral Krukenburg amputation. *American Journal of Occupational Therapy, 43,* 689-691.

Summary and Significance

This case report demonstrates the role of occupational therapy in the rehabilitation of a patient with a rare upper extremity (Krukenberg) amputation, who was fitted bilaterally with

prostheses. Ideally, prosthetic fitting and training eliminates the need for environmental modifications and enables the person to function more normally within his or her environment. In this particular case, the patient had been functioning without prostheses or home modifications for two decades with little difficulty. He was provided with prostheses to (a) further improve his upper extremity function for the performance of self-care, homemaking, and housekeeping activities; (b) improve his perception of body image; and (c) accommodate his social and spiritual needs.

This article mainly touched on the use of a prosthetic limb and how prosthetics can help individuals avoid further modifications and work with what is currently there. However, in other cases, it might be necessary for an individual to use a prosthetic as well as obtain some environmental modifications. This article stresses the importance of recognizing that each person is different; and that evaluating current skills and improving as much of an individual's occupations of daily living, safety, and independence as possible should be the focus of the therapy intervention.

Cumming, R. G., Thomas, M., Szonyi, G., Frampton, G., Salkeld, G., & Clemson, L. (2001). Adherence to occupational therapist recommendations for home modifications for falls prevention. *American Journal of Occupational Therapy, 55,* 641–648.

Summary and Significance

Objective

This study examined adherence to home modification recommendations made by an occupational therapist and attempted to identify predictors of adherence.

Method

An experienced occupational therapist visited the homes of 178 people (mean age = 76.4 years) to evaluate for and recommend appropriate home modifications for falls prevention. One year later, a research assistant visited these persons' homes to assess adherence.

Results

At least one home modification was recommended in 150 of the 178 homes visited. The most common recommendations were to remove mats and throw rugs (48%), to change footwear (24%), and to use a nonslip bathmat (21%). In the 121 homes revisited after 12 months, 419 home modifications had been recommended, and 216 (52%) were met with partial or complete adherence. The only significant predictors of adherence were a belief that home modifications can prevent falls and receiving help at home from relatives.

Conclusion

A major barrier to adherence to home modification recommendations is that many older people do not believe that home modifications can reduce their risk of falling.

This article shows how occupational therapists can go through someone's home and make simple recommendations as well as broader recommendations, to improve quality of life and to reduce the risk of falling and resultant injuries. Removing hazardous household items such as throw rugs and organizing clutter can vastly increase someone's ability to remain safer in the home.

Colvin, M. and Korn, T. (1984). Eliminating barriers to the disabled. *American Journal of Occupational Therapy*, *38*, (11*)*, 748-753.

Abstract

Project Open House provides for the removal of architectural barriers in the homes of disabled low and moderate income New York City dwellers. This program was developed as a cooperative effort between United Cerebral Palsy of New York City, Inc., the New York City Mayor's Office for the Handicapped, and the Department of Housing Preservation and Development. Project Open House operates as follows. An occupational therapist evaluates both structure dwelling and client needs; this information is used as a basis for the prescription of structural modifications and equipment that will allow increased physical accessibility. On completion of the prescribed work, the therapist trains the individual and family in the use of the modifications. Project Open House and Family Support Services are community programs that provide a cost-effective method for improving the quality of life for disabled individuals and their families.

Summary and Significance

This article talks about the importance of independence and modifications to increase physical accessibility. Support Services are dynamic programs directed at the elimination of physical, psychological, and social barriers to the independence of disabled individuals in their communities. It stresses the importance of how clients may receive the care and education that can be applied while in the facility, but there may not be the availability or accessibility once the client arrives to his or her home. The therapist can go through the home and assess the environment and what plans may need to be drawn up. More tools were developed such as thorough evaluations and better communications to outsourced companies. In the end, 85% of those with a disability claimed that the modifications helped improve their lives. The interesting

finding was that the home modifications also improved other housemates' quality of life within the home. This profound statement shows that home modifications are appropriate for a wide range of people and also helps the caregivers providing assistance to those with a disability or limited mobility.

Fernie, G.R., Griggs, G.T., Holiday, P.J., & Topper, A. (1994). Increasing the accessibility of a conventional cooking range for wheelchair users. *American Journal of Occupational Therapy, 48*(5), 463-466.

Abstract

Wheelchair users often have difficulty cooking with a conventional freestanding cooking range, in part because the 36-in-high working surface is too high for them. Barrier-free standards suggest a working surface height of 28 in to 34 in. (710-865 mm) for wheelchair users (American National Standards Institute, 1986; Canadian Standards Association, 1990; Mace 1991). The problems experienced when using a conventional cooking range include difficulty with moving pots, danger of burns due to poor clearance of arms over elements (especially when controls are located at the back), difficulty with checking the progress of cooking foods because the rims of the pots are above eye level, and inability to stir the contents of pots (Hale, 1979). Some solutions that have been used are improving the visual access by installing an angled mirror over the stove top, installing a motor-driven adjustable height counter with an integrated cook top (Mace, 1991), and using electric mobility devices that allow for positional adjustment of the seated person.

Summary and Significance

The article focuses on a specific appliance in a home for those with disabilities, rather than focusing on many areas. The article looks at how those in a wheelchair often struggle with using a stove. Modification Overall, the study looked at how this reduction would increase the utility of the cooking elements and reduce the risk of fire and other reaching hazards while retaining the appearance, function, and electrical safety of the cooking range.

The recommendations were to lower the stove surface. While this adjustment seems to be appropriate for those using a wheelchair, the study suggested that it is often not as appealing or that those not using a wheelchair may not like the height. So, it appears that this modification would be best for someone who lives alone or does most of the cooking in the wheelchair, as the height difference for those standing seems to be an issue.

Rossetti, R. (2003). Take back your life! Columbus, OH: Fortuna Press.

Summary and Significance

This book was an autobiography of the life changing event that took place for Dr. Rosemarie Rossetti and how she overcame it. She wrote about how her life changed after she was struck by a tree during her bicycle ride; to being in the hospital and enduring therapies, to moving back to her “dream home” and realizing that it was no longer accessible to her. Rosemarie wrote about her emotions and how she dealt with them and also, how others can deal with unforeseen situations. She talked about overcoming all of these obstacles and how she continued to teach at The Ohio State University and also gave inspirational speeches.

This book explained to the reader that there are many difficulties that we will face in life and that we must adjust our attitudes and do our best to push through. Rosemarie was able to

gain back some of her strength and partial mobility. Even though Rosemarie must live her life in a wheelchair, she does not let that stop her from living a fulfilling and successful life.

Weiker, J. (2010, September 26). Aging in place. *The Columbus Dispatch*, pp. D1, D12.

Summary and Significance

This article mainly touched on retro-fitting a home and how retro-fitting allows people the opportunity to age in place. The article highlighted a couple who realized that they would no longer be able to age in their home if they chose to continue to live there. The couple had to completely overhaul the current layout to enable this to happen. They added a bedroom to the main floor, which was one of the biggest changes made. The article also had a "10 changes for accessibility" column at the end, listing the areas that should be improved the most. Most of the retro-fitting would require some serious and extremely costly changes, like installing a new roll-in shower or widening doorways for easier passage. The house was also available to view after the project was completed for a short period of time. Overall, the couple is very proud and excited to live in their own home now; at least for a much longer time had they not changed the home to accommodate their evolving needs.

Nguyen, M.T. (2010, November 28). Growing old. *The Columbus Dispatch*, p.F3.

Summary and Significance

The article "Growing Old" delves into the hot topic of the baby boomers that make up a large percentage of the population and what will happen as they begin to age. It shows a chart for the demographics as well, comparing the amount of men versus women, race and ethnicity,

and their median income. It also states that many people are living longer-one out of eight Americans is currently 65 or older. There is going to become an increasing need for people who will need health care and for those who will want to remain in their homes as long as possible. With this growing demographic, it is easy to see the importance of why the concept of "accessibility" and "universal design" are and continue to remain, crucial to the need for people to live as independently as possible.

Robinson, J. (2010, November/December) Health and safety first. *Communicator*, pp. 1, 16.

Summary and Significance

This article is geared to keeping seniors safe, especially in the home. It starts off with the importance of falls and how to prevent them. First, it is crucial to see a doctor and to increase activity, but it is also important to organize the items and furniture in your home and remove hazards. The article makes recommendations such as checking for poor lighting, loose rugs, and slippery floors. These are easy and quick modifications that can be made to increase safety. There are also classes that are offered at the Senior Center that educate individuals how to properly check for common hazards that may contribute to tripping and falling. There is also the Health District that performs free in-home safety checks for older adults who cannot leave the home. It is important to keep people who want to remain in their home, safe. It is positive that there are programs available that do just that.

Kendrick, D. (2010, September). 'Accessibility' defined differently for different people. *The Columbus Dispatch*, p.10.

Summary and Significance

This article was fantastic as it used the terms “accessibility” and “usability,” which are terms that people may know about, but gear these terms towards people with disabilities not themselves. This article was able to help shed some light on what these terms truly mean and how everyone can benefit from them, which is not a bad thing at all. The author gave real-life examples of how one area that poses a problem to one person might not be a problem to another, such as the height of counter tops. The author illustrated that stairs might not be an issue if you do not have a mobility impairment, but it may if you have to move out or haul heavy items in. The question is then raised, “Why isn’t everything accessible?” At some point, we may need the convenience of things or areas being readily available or perhaps the acoustics in your home are fine now, but what happens if you acquire auditory troubles? The article did a nice job of explaining to the public that planning ahead and designing a more practical home earlier on is important, rather than trying to backtrack and fix everything later, which will end up costing much more. The other big point was to explain that overall, the issue of accessibility is not just an issue for those with disabilities. Accessibility is for everyone. Accessibility means everyone can enjoy and participate in the home environment as comfortably and easily as possible.

LeCrone, H. (2010). Change in abilities might dictate move. *The Columbus Dispatch*, p. C2.

Summary and Significance

This article describes the circumstances that may require someone to make a move to a skilled nursing facility or to make changes to their current facility. It explains the areas to look for if a parent or loved one must be ultimately moved into a facility, rather than staying at their

current place of residence. Areas to look for include: hygiene, ADLs, and transfers. It goes into detail for the specifics of ADLs and what is to be expected so that it can be determined if a loved one should truly be moving to a facility.

The article ends on the note that adult children may feel guilty about putting a parent in a home and how to process these feelings with them and other members of the family. It is important that no matter where a parent ends up, communication is evident to ensure no one feels abandoned.

Taylor, J. (2010, December 31). Choice of care pays off for elderly, state [Letter to the editor]. *The Columbus Dispatch*, p.A10.

Summary and Significance

This letter is written to the paper by the state director from AARP in Ohio. The state director discusses the importance of how the budget of Ohio needs to begin the shift of a 50-50 split of institutional care, but also, allowing people to remain at home. She stresses it is important that all citizens are receiving the care they require, at the level they require. She also makes the statement that 94% of those residing in the state of Ohio want to remain at home and receive services at home. The upcoming budget grant from Medicaid will be offering recipients more choices to avoid the higher cost of institutional-based care. This will be beneficial for everyone (including taxpayers); even those not directly affiliated with the individual whose needs have changed. This is an important shift in attitude and delivery of service because people should be allowed to remain at home as long as possible, as most people function best in their own home.

Maugh II, T.H. (2010). Stiff blood vessels factor in elderly's falls, study says. *The Los Angeles Times*, p. 8.

Summary and Significance

While this article does not touch much on the importance of universal design, it does talk about the increase in falls for older adults, which are directly connected to accessibility. The article explains that many adults are on more medications these days than ever before, which can lead to many side effects from the various drugs taken. Side effects from multiple medications can lead to falls, misuse of items in the home that can appear confusing, and also mental hazards. The study looked at the gait normalcy of older adults and showed that 85% of 65-year-olds have a normal gait, but only 18% of 80-year-olds have a normal gate. This statement demonstrates clearly why accessibility is an increasing concern to help people stay in their homes; and why activities such as walking will become even more of a challenge. It is important for accessibility and simplicity to remain prominent in homes with occupants who are aging or have a disability. Awareness of medications, and addressing the health issue that can increase the likelihood of falls, will allow people to continue to live in their homes longer.

Candisky, C. (2010). Financially, home care must be priority, state told. *The Columbus Dispatch*, P. A2, A4.

Summary and Significance

The article began with the statement that more and more people are aging or becoming disabled, and consequently, this social phenomenon increases the need for more tax dollars.

Since there are so many people falling into this category now and Ohio is experiencing a budget crisis, Ohio is trying to shift its priority from high-priced nursing homes, to keeping people in their homes for as long as possible. The importance is expressed that people need to do what they can to keep themselves in their own home. A nursing home should be for people who truly need to be in a home because they have no other option. Therefore, modifications and universal design elements need to be set into place to allow people with a lower priority to be in a nursing home stay in their own homes. The article is geared toward younger generations too, encouraging them to be proactive by making sure their homes are as accessible as possible to allow them to remain there should mobility become an issue. Making one's own home accessible helps defray tax dollar costs as more and more people age and live longer. It is important that people shift the responsibility off of the state and back onto themselves. Since most people who prefer to living in their homes for as long as possible, planning for the eventuality makes sense for the individual, their family and the state of Ohio. Otherwise, if nothing is done and people continue to rely on the state to help them when mobility becomes an issue, the medical costs to the state could make it go bankrupt.

Council supports falls prevention (2010, November/December) Communicator, p.3.

Summary and Significance

This article gives an overview about falls that occur in elderly populations, the outcomes that are linked to falls, who are at risk, and then what can be done to help prevent falls. The article points out that falls are the most common cause of nonfatal injuries and over 500,000 people are hospitalized each year. Falls are incredibly costly in the medical field, creating fear

and limitations in older adults. Women are more likely to have a nonfatal injury fall, but men are likely to die from a fall. Also, the risk of being seriously hurt increases with age. To prevent falls from occurring, older adults should engage in exercise programs, have their medications reviewed, and reduce hazards in the home that cause problems with accessibility. These few suggestions can help decrease the chances of an older adult having a fall and therefore, remaining in his or her home for a much longer period of time.

Carter, T. (2010, April 4). Cabinet drawers take accessibility to new level in kitchens [Letter to the editor]. *The Columbus Dispatch*, p. D2.

Summary and Significance

This article was written in response to a reader who is aging and is curious about the different types of cabinets that are available to make them more accessible and easier to use. The author explains that more accessible cabinets can be exposed and hidden and, unlike traditional ones, operate on precision glides so that they have countless ball bearings to help them glide. Precision glides make the drawers easier to open and do not put strain on the user. These drawers are built to last and hold great amounts of weight so items such as plates can be stored in them, therefore, eliminating bending and the struggle of having to get plates out of the cabinet. There are also the cabinets with hidden drawers in them so they look like a standard cabinet, but function as storage area with many drawers. The article continues to encourage the reader and anyone else to visit showrooms, shop around, and test out these items first before buying. This way, the buyer can be sure he or she is getting what they need. Most importantly, accessible cabinets make kitchen activities easier: built accessible, the need for bending over or squatting

down becomes virtually eliminated as everything can just be slid out. Ease of use and accessibility are truly important aspects to remodeling or building a kitchen. It is a simple change that can assist anyone in continuing to live in their own home for as long as possible.

Jacob, B. (2010, Holiday). The boomers are staying: Universal design concepts help older homeowners stay in their houses. Central Ohio Home & Garden, 38, 39.

Summary and Significance

This article discusses that as more boomers continue to age, the need for universal design and accessibility will also increase. Many boomers do not want to leave their homes, so the steps to keep them home are important. It is important to hire a trained remodeling specialist who focuses on universal design. A specialist not only provides the important information regarding such elements, but also educates people in general about designing space and purchasing products. It is significant that boomers and anyone else who is in the market for remodeling or building, find the right resources and tools to remain in their homes for a lifetime.

Accessibility: Welcoming home for all (2010, August). *Copy Editor,* 3.

Summary and Significance

This article was written for consumers who are in the market for purchasing a new home or upgrading their current home. The article, however, points out the important aspect of how as people age, there may not necessarily be barriers for those reading the article, but maybe their family members. The important areas of what is required to make homes more accessible were also pointed out, such as the height of the thresholds or items to add or remove from certain

rooms. There is a small list in the article that has each room in the home, such as the kitchen, with suggestions like making sure there is adequate space between counters for maneuverability. This article was laid out in such a way that any reader would be able to grasp the importance of these changes. It is important that these articles are becoming more widely published, so that there is more awareness to the public and that more people will be able to age in their homes and live safer lives.

Rossetti, R. (2009, December 1) Superior *walls support universal, green design*. Retrieved March 3, 2010 from http://concreteproducts.com/architectural-structural-prestressed.html

Summary and Significance

This article was written to explain the significance of the Universal Design Living Laboratory (UDLL). The article describes the purpose of the home and all that it can offer to the public. The home will be occupied by Rosemarie Rossetti and Mark Leder, but will be available for tours prior to them moving in. The article delves deeper into the definition of Universal Design, stating that it is accommodating for people of all sizes and abilities. The UDLL will also incorporate green features, which contributes to sustainability. Energy conservation is another important part of the home. Not only is this considered a green element because it is quantifiable, but it is also a universal element since most of the equipment and lighting will last for extended periods of time. This means a person will not have to try to climb a ladder to change a light bulb and buy expensive equipment as frequently. This is great for those who want to age in place in their own home. That is exactly what this home, and article, is about;

providing people with the tools to stay at home until it is absolutely necessary to move to another facility or receive extra care.

McClain, L., Beringer, D., Kuhnhert, H., Priest, J., Wilkes, E., Wilkinson, S., & Wyrick, L. (1993). Restaurant wheelchair accessibility [Electronic version]. *American Journal of Occupational Therapy, 47*(7), 619-623.

Abstract

This study was designed to determine the compliance of restaurants to the wheelchair accessibility standards set forth in the Uniform Federal Accessibility Standards. The standards that were operationalized in this study also found in the Title III of the American Disabilities Act of 1990. The data were collected at 120 sites in three Midwestern states. For anyone who uses a wheelchair, parking is often an obstacle to eating out. Only 53% of the restaurants surveyed provide handicapped parking. Entering the building may also be a problem. Of the restaurants that required a ramp, only 66% provided them. Inside the restaurant, the key problems were accessible restrooms and the height of tables. The study provided comparisons between restaurants in rural and urban settings, as well as comparisons between conventional restaurants and fast food restaurants. No notable differences emerged from these comparisons.

Summary and Significance

While the study itself is older, it still has valuable information in it that can still be applied today. The article starts off with literature reviews explaining the requirements for ADA and how buildings need to be accessible and usable by the physically handicapped. There were 120 participants who went to various fast food and conventional restaurants in rural and urban

areas to assess the building situations using a checklist that was designed for them. Many of the participants found it was difficult for them to even park, starting the process off sour. The participants also stated that they had difficulty using the bathrooms and eating at the table due to their heights. This problem shows that builders need to be continually educated on the guidelines for accessibility when building.

Overall, the study was able to show where there is still a need for improvement when it comes to accessibility, even when most businesses think the building is fine. It is important for all involved in the process to evaluate each aspect, so that is accessible to everyone and everyone may enjoy the facility, no matter what the ability.

Modifying your home for independence (n.d.). Retrieved January 10, 2011 from http://www.AOTA.org.

Summary and Significance

This article talks about modifying your home to help "fit" the individual. It specifically talks about how occupational therapists are appropriate to go through and make recommendations for persons who require it. The article then goes on to list the recommendations that a trained therapist can make for individuals, starting with evaluating the person's ability and determining whether the environment would be appropriate for the person to continue to reside there. Then, the article continues on to go into specifics, such as how to evaluate the bathroom and the kitchen. After the article explains how a therapist can evaluate the home, it goes on to describe what families can do for the person. They can do various tasks such as suggest resources, help facilitate the person's independence, and introduce changes at a slower pace as to not come off

too threatening or imposing. The article finished off with where you can contact an occupational therapist if there is a need for one to tour through your home.

Johansson, C. (2000, March). Home modifications. AOTA. Retrieved January 25, 2011 from http://www.aota.org/Practioners/PracticeAreas/Emerging/HW/HomeMods/36235.aspx.

Summary and Significance

This article points out the importance of the aging boomers and how their needs will be changing as they continue to turn 65 each year. Unlike their parents, boomers will be living longer and are also healthier and more educated. This societal change entails that boomers will be aging in place more. The article states that "more seniors will remain in conventional homes with modifications such as handrails, stair lifts, and more accessible cabinets and appliances." The article also explains further reasoning for older adults staying home longer such as postponing retirement, disability going down due to better exercise and medical care, and having more financial resources. The article ends on a high note depicting that there are programs available for seniors in some states that protect them from poor quality work and unscrupulous contractors.

Johansson, C. (1999, December). Assistive devices and home modifications. AOTA. Retrieved January 11, 2011 from http://www.aota.org/Practioners/PracticeAreas/Emerging/HW/HomeMods/36226.aspx.

Summary and Significance

The main point of this article was to stress the importance of assistive devices and home modifications and how they can reduce medical costs in the long run. It is extremely costly for everyone when someone has to be hospitalized due to a fall or other accident. The problem currently is that many private insurers and Medicare will not cover the cost of assistive devices or modifications. There is also not enough research on this type of assistance, but it is suggested through evidence, that is does help reduce hospitalization and is more cost effective. As people continue to age, it will be an important area to further investigate and whether it will help save money.

Christenson, M.A. (1999, November). OTs and universal design. AOTA. Retrieved January 20, 2011 from http://www.aota.org/Pubs/OTP/1997-2007/Features/1999/f-110899_1.aspx.

Summary and Significance

Universal design is a term that is becoming more widely used and recognized by the public. This article was written by an OT who has experienced universal design, but on a personal level. The OT and her husband built a home to accommodate her husband as he developed an illness that impacted his mobility. The author expressed the importance of universal design inside the home and outside the home. The design should be championed by any ability and should be equally appealing aesthetically. The movement for "good" design began with the ADA in 1990, as it became more apparent that people need assistance and access. The law was necessary to hold owners of buildings accountable for ensuring the building is accessible according to the federal law and standards.

Next, the article goes over the seven principles of universal design, which include equitable use and low physical effort. It also explains how to modify single-family homes or apartments by installing items such as an automatic door opener. The article talks bout the importance of communication devices throughout the home, which can make navigation for those with a cognitive impairment, for example. There is also a great future for occupational therapy, as therapists can make recommendations to clients and improve their quality of life. It also improves jobs for architects, designers, and those in retail. Plus, it moves clients away from the medical model more and as the demand for universally designed products increasing, the cost for such high-end products will decrease. This will continue to allow everyone to enjoy the possibilities and excellence that universal design and accessibility has to offer.

Krueger, B., & Stewart, N. (2010). Universal design: A step-by-step guide to modifying your home for comfortable, accessible living. Guildford, CT: Morris Book Publishing.

Summary and Significance

This book was written with the intent to help individuals who have an interest in updating their current home. The book describes what universal design is and how to apply it to everyday life. It is divided into chapters and each chapter focuses on a room and its specific elements. The book is beneficial if someone only wants to modify one room or multiple rooms, but not a whole house. There are pictures on every page and brief descriptions about them to offer the reader ideas and to clarify what is being said. The visuals help bring each chapter together. Also, important areas are pointed out such as why a person may need a particular item (e.g., impaired hand grip due to arthritis) and its purpose.

Overall, the book provides real products, elements that may be overlooked in a remodel, and where to find these answers for anyone to search. There is even a place to reach contractors or anyone else that may be of service to someone who needs or desires to age-in-place. The book really makes modifying your home a more positive experience rather than an overwhelming nightmare.

RS Means (2007). Universal design ideas for style, comfort, and safety. Demoines, IA: Lexicon.

Summary and Significance

This was an excellent book in terms of Universal Design. The book went through each room of the home and explained how it can either be built or remodeled, depending on what the reader's situation was. Each room had its acceptable dimensions laid out to make living more comfortable. The book also went into the detailing of colors the consumer could choose when he/she wants to produce certain feelings for certain rooms. At the end of each description for each room, there was a cost breakdown estimate in detail to give the reader an idea of what the costs would be. The book even explained how to set up furniture and lighting for more accessibility; something that is not costly and can be done by anyone. Lastly, the book had pictures of example rooms and layouts, floors, wall paint, and ramps. It was laid out well in terms of showing simplicity and using pictures and estimates to help those who may not have much experience with Universal Design, a better visual of how the concept is still esthetically pleasing.

Welcome Home. (2011, January 18). Building professionals survey executive summary.

Summary and Significance

This article explains the importance of universal design and how its impact on the baby boomer generation. There was an 83 criteria questionnaire to professionals of the building industry for over the course of one year. The professionals were required to rank each question as either NEED, NICE, or NO. The categories included accessibility, universal design, sustainability, style/aesthetics, and lifestyle. The builders rated the subcategories by importance of what is desired and needed to build an appropriate, accessible home. The top most "needed" item was to widen doors to a minimum of 32" and then following close, was having master bedrooms and bathrooms on the first floor. This survey within the article showed just how important these amenities really are for the baby boomers and for others who want to remain in their homes for as long as possible.

Kaplan, M.D.G. (2011, February 14). Universal design pioneer: Why design still excludes many. Retrieved from http://www.smartplanet.com/people/blog/pure-genius/early-oxo-designer-why-our-design-still-excludes-many/5533/

Summary and Significance

This was an interview constructed with the author, Patricia Moore, who posed many years ago as an elderly women and the impact that universal design has on the aging population. She wanted to experience, first hand, the difficulties that people face with design when it is not accommodating to their needs. She is asked a variety of questions, such as what a gerontologist is, what makes good function, and why there is still reluctance for universally designed products.

She explained that overall, she learned we are a culture that is afraid to age and therefore, if products appear to be geared for aging bodies, it truly means that we are all aging and this is something that people do not want to accept. She has designed OXO brands that are universally designed so that no one is excluded and anyone at any age can use these products. For example, a child can assist her parents making a meal if there is an extenuating circumstance. She also explained how there will become more and more baby boomers and that home health care is going to increase, as more people will be remaining home, longer. Her other big project is working with universities to educate upcoming students on the importance of design and health care within the home. Educating the upcoming generations not only provides them with jobs that can assist those who will want to remain in their homes, but also change their minds and views on how we age and the products that we use. Universal design is something that needs to be embraced by all because it is not an "aging" concept, but a concept for everyone.

Moore, P. (2005, July 8). Designed for life. Retrieved from

http://sgiquarterly.org/feature2005jly-8.html

Summary and Significance

This is the article written by Patricia Moore, who was later interviewed on her views as a gerontologist and universal designer. Her quest for better design began in 1974 when she suggested to the company that she noticed it was difficult to open the refrigerator with arthritis. The response astounded her as the men claimed, "We don't design for those people!" This triggered her determination to begin designing for everyone, regardless of their ability or age. She also made a profound statement saying that "We are made *un*able, by design." So, this poses

the question, if we were able to use our products for as long as possible in our home, we might not need as many institutions for people who might otherwise be able to remain home. So, at 26 years old in 1979, she dressed up as different elderly women, with different needs and social statuses. She was blind, hard of hearing, and had debilitating diseases. She discovered just how inaccessible life was. Patricia also stated how many different reactions she got from the public, especially when she was a lady of lower economic status, trying to access a building or using equipment. She took what she learned from this experience and began to design products that everyone could use and make items more accessible. She feels the design community is holding people back and ultimately, fails to meet the consumer's needs. It is important that designers and builders look at what is more accessible and sustainable, which in turn makes life more enjoyable and easier for everyone. This is true for those who have a temporary disability to those who have a permanent disability. It is crucial for society to begin changing its views on age and that is it something we all posses. As long as we have abilities and the need to avoid hazards of everyday life, there will be a need for accessibility and universally designed products.

LeCrone, H. (February 13, 2011). Aging parents require tactful assistance. *The Columbus Dispatch*, p. E8.

Summary and Significance

This article addresses how adult children can appropriately deal with their aging parents. It is important to keep in mind that large psychological as well as the physical adjustments. As the topic of aging-in-place comes about or the potential of moving to another facility, it is crucial to not bring up this conversation in emotional, or public situations. Do not use controlling

statements that make parents feel incapable, like “You can’t do this anymore.” Instead, take them aside and tell them you are going to be helping them more with the situation at hand. Children should essentially let the parents broach the topic themselves and to let them play a considerable amount of decision-making. Overall, children need to be tactful when offering assistance to their parents to ensure keeping touchy subjects from turning into huge arguments.

Candisky, C. (February 18, 2011). Rx for budget: home care. *The Columbus Dispatch,* P. B1, B2.

Summary and Significance

This specific article explains that over the next two years, there will be less spent on nursing homes and more on home-care. The estimated projected savings is $500 million. Governor John Kasich believes that the taxpayers and Ohio’s seniors deserve a better deal. Another point that is becoming more and more popular is that seniors prefer to age in their own homes, versus institutionalized care. On average, the cost is $52,000 per year per person in a home compared to $19,000 for home health care and nursing home costs are nearly 20% of program costs. There needs to be a bigger push for home health care and for rehabilitation to increase efforts of patients to return home. It also is hypothesized that patients will be more apt to follow up with doctors. The hope is that there will be more of a push for home health care and that it will not get cut. The proposed budget will need to be in on March 15, 2011 to the legislature to see if the proposal will be passed in order for something like this to happen.

Joines, S. (2009). Enhancing quality of life through universal design. *NeuroRehabilitation, 25,*

313-326.

Summary and Significance

Objectives: To inform clinicians, caregivers and researchers involved with assessing and treating individuals with neurological disabilities of the benefits of universal design in enhancing quality of life. The improvement of quality of life has the potential to benefit the individuals with neurological disabilities and those whose lives overlap and intersect with those individuals.

Methods: Literature and design reviews are used as a foundation for a model for incorporating and leveraging universal design to the benefit of the patient's social sphere, which includes caregivers, family members and medical staff. By matching patients varied abilities with universal design solutions, the model of universal design benefitting the patients' social sphere will be demonstrated.

Recommendations: Recommendations are made for clinicians and researchers that they may use in their practices and investigations in three areas: 1) educating patients about the benefits of universal design, 2) helping inform patients how to leverage universally designed products and approaches in their lives and living spaces, and 3) understanding how to incorporate universal design principles into research and clinical spaces as demonstration pieces for patients.

This article beautifully incorporated the just how the concept of universal design can help aid individuals to not only live in their own home, but to live safer, healthier, and happier lives. The articles starts off with the traditional definition of universal design then followed with the noticeable differences between accessible design and universal design. It talks about the beneficiaries of universal design, how to find information, and what should be included in each

room to make it universal. Lastly, it describes the types of people that should be contacted if there is further interest and also, what those who are contacted should say and do for clients.

Overall, the article thoroughly describes universal design and how it is not just for the frail or the disabled. This concept is important because universal design is trying to enhance everyone's life and not just specific groups. Almost everyone can benefit from the information displayed in this article.

Duncan, M.D. & Huebner, R.A. (2000). Relationship between choice and quality of life among residents in long-term-care facilities, *54* (5) 504-508.

Summary and Significance

Objective: This study tested the association between perceptions of personal control and quality of life among older persons.

Method: Two self-report instruments, The Quality of Life Rating (QOLR) and the Duncan Choice Index (DCI), were administered to 21 residents in a long-term-care facility. The DCI was developed for this study to measure the amount of choice available in 29 self-care and leisure activities.

Results: A significant positive correlation ($r = .54$; $p = .01$) between the amount of choice residents perceive they have and their quality of life was found. The DCI was shown to be reliable with preliminary evidence of construct validity.

Conclusion: Enhancing personal control in everyday life may be associated with improved quality of life. Occupational therapy strategies to empower residents through

increasing choice and control include increasing community in the facility emphasizing personal responsibility, and enabling choices in everyday tasks.

Summary: This article emphasized the importance of granting people choice and their quality of life. When individuals can choose where they live, it improves their overall quality of life. The article surveyed select individuals who reside in a LTC facility. In occupational therapy, there is a strong correlation between life satisfaction and choice, which promotes a sense of control. It also avoids the area of learned helplessness and incompetence. There were 31 residents, 65 and older that participated in answering the questions on the QOLR and DCI. However, participants did rate items such as physical appearance, volunteer activities, and hobbies lowest on the scale. Overall however, participants surprisingly rated their answers higher than anticipated at the LTC. One of the limitations appears that many individuals may have held back for fear of their answers being exploited at the facility, even though this was established as confidential. Regardless, the results show that increases in everyday tasks improves positive responses and perceptions. It shows that offering choice to not just those who live in LTC facilities want choice, but also those who live in their own home and those who receive occupational therapy services.

Barrier free home. (2011). Retrieved from http://www.barrierfreehome.com/accessible-property/index/php?a=2&b=1315.

Summary and Significance

This is an overview of a home that is currently on the market in Central Ohio listed under accessibility. It has a description of the home, including all of its amenities. Some of these

features include door opening with pocket doors, open sink space, and lower cabinets. The price is listed at $264,900 and is 2044 square feet. It has the realtor information available is someone is interested in touring or purchasing the home. The home, unfortunately, is listed as "handicap accessible" instead of being marketed toward any population.

This website where the home is listed is where individuals can browse for homes based on their specific needs. All of the homes meet most standards of the ADA and are accessible to those who are in a wheelchair. It is a great source to locate accessible homes in your state. Ohio currently only has this home, but there are many more available in the southernmost states.

Universal design: Raising quality of life & value of property. (2011). Retrieved from http://www.nosnownaples.com.

Summary and Significance

The article starts off explaining the importance and desire that most people put on for aging-in-place. It states that if you ask people outright what they want in a home, the things they name are all universal design amenities, unbeknownst to them. Some of these items are having a master bedroom on the first floor. What most people do not know is that universal design is not a new concept. It has been around since the 1950's, but had the negative connotation of being made for the disabled. Now, the baby boomers are the driving force for many of the changes that are happening. This generation is concerned with being independent and universal design allows them that freedom. Having a universally designed home or adding these features to an existing home actually improves the resale of the house, if need be. The article also points out additional features that are universally designed and can be added to the home. Some of the features are

raised, front-loading washers and dryers. Rooms that be easily changed into another space is also considered universal. For example, an office with a closet can be transformed into a bedroom for a sick parent or a live-in caregiver. These are great features which allow someone to continue to live there.

Overall, universal design is ideal for all homeowners personally and financially and, not only for the homeowner, but for society as a whole.

Universal design: How to build your dream home. (2011). Retrieved from http://www.aibilitymagazine.com/past/brianW/udhome.html.

Summary and Significance

This article is the personal experience of Rosemarie Rossetti and Mark Leder as they began the process of building the UDLL (Universal Design Living Laboratory). Rosemarie starts off with her story of how she inquired a spinal cord injury and how suddenly, the home she built, was no longer feasible. The next part of their journey was to find a lot in which to build a new home and finding an architect. They finally settled on Patrick Manley, who had worked on many ADA-compliant housing projects. He was able to see, first hand with Rosemarie, just how important universal design is and how it makes her life much easier. As the home continued to be built, it occurred to Rosemarie and Mark just how important a space like this is for everyone and therefore, decided that this needs to be a national demonstration home to educate the public. Sponsors began jumping on board, as well as the media, to work and review the home for all to see. There is a vast amount of knowledge invested in the home from all of its product, companies, and individuals who have helped to make this dream home a reality. Once the

project is finished, it will become a milestone and could potentially become an amenity that everyone has to have.

Institute for human centered design. (2006). Retrieved from http://www.adaptenv.org/index.php?option=Content&Itemid=3

Summary and Significance

"Universal design is a framework for the design of places, things, information, communication, and policy to be usable by the widest range of people operating in the widest range of situations without special or separate design." This article continues on by talking about synonym, "Inclusive," that so many people are starting to use in place of "Universal." This is to embrace a wider array for people in all social and economic standpoints. It is important that whatever we call this design that we focus on incorporating it into as many lives as possible. Demographics show that people are living longer than ever and in order to accommodate everyone, many people need to live in their homes for as long as possible. The WHO (World Health Organization) has begun shifting to focus on functional status over diagnoses. Persons are more likely to be considered disabled because of their interaction with the environment. This can be reduced or eliminated by fixing the different environments in which people interact. It is about enhancing everyone's experience and performance.

Roomy ranch majors in convenience (2011). Retrieved from http://www.houseoftheweek.com/a-place-for-everything/pid/114100283.

Summary and Significance

This article was available in the Columbus Dispatch and also on the website, House of the Week. The home is described just that of a universally designed one, however, the term is never actually used. The house is marketed for young families, empty-nesters, and those wanting to stay in their homes. The article continues on the amenities such as central foyers that route traffic for convenient living and a master suit with walk-in shower. There are no steps in which to enter the home, but there is a basement. There are also free-standing cabinets to allow for easier storage. The prices are also listed based on where and want the homeowner wants. For example, a home on the lower end of the price range will set you back $199,000. A medium priced home runs about $241,000 and a higher priced home is around $284,000. This is important for individuals to see as they plan for the future. A home that accommodates them does not have to cost a fortune. It is perfect for anyone considering changes or building their first home. That is what universal design living is all about!

Calkins, M.P. (2011, March). Ten senior living design innovations: a look at the most significant changes in senior living design over the past decade. *Long-Term Living, 60*(3), 40-45.

Summary and Significance

This article touches on how to improve long-term living. Many facilities are shifting to improve by providing a less institutional feel. These improvements are done by eliminating the nursing stations and med cart, having smaller groupings of people, better bathrooms with lighted grab bars, using ceiling lifts, and implementing universal design elements. By not placing residents on a time schedule and keeping staff mingling throughout the corridors keep the facility

from feeling like an institution. Med carts and nurse's stations are camouflaged as kitchen counters and other various areas so that nurse can keep moving around and socialize with residents while doing their work. Having better bathrooms that are larger allows for residents to have more room when transferring and, if help is needed, provides more room for help from aids while keeping them from getting hurt. Ohio is currently the first state to require that a shower be present in all rooms. European showers (the whole room is a wet room) are becoming more popular because it provides more room, the floors are non-slip, and is less straining on both the resident and caregiver. Ceiling lifts are becoming more accepted as they save money and promote safety. Ceiling lifts are safer for the patient as well and therefore, many facilities are turning to them.

Lastly, universal design elements are popping up like ergonomically correct utensils and garden equipment. These are great pieces that encourage residents to remain as independent as possible and put a different light on a facility. So as baby boomers continue to age, there is hope that they will change the way facilities operate. They are a fierce generation who want to remain independent and want facilities to be different upon their arrival. They just might see it.

Elia, C.R. (2011, March). Highways or hallways: designing effective corridors. *Design Environments for Aging*, 24-26.

Summary and Significance

This article goes over the specifics of how to effectively design hallways of long-term living facilities. There are many aspects that go into designing hallways. Hallways promote mobility which is important for residents to remain ambulatory. Also, keeping hallways with

visual contrast is key for those with visual impairments. Keeping hallways looking as home-like as possible encourages residents to remain active within the facility and to venture out of the rooms. Place interesting pieces in the hallway, such as artwork, to strike up conversations in the homes. Adding various places to sit gives residents the opportunity to walk down long hallways while having an option to rest or converse with other residents. Do not use flooring that causes excess glare or upkeep. Be cautious of using flooring that contributes to an abundance of noise. Make sure, if choosing carpet, the pile is low so residents using walkers or wheelchairs can maneuver more easily. Be sure transitions for rooms are low profile and not a tripping hazard. Appropriate handrails are required and it is essential for good lighting. Do not use lighting which produces glare. If this process is a renovation while the residents already live in the facility, then it is important for the contactors to leave adequate room for residents and staff to pass through.

Olson, C. (2011, March 18-20). What you need to know about indoor lighting. USA Weekend, p. 16.

Summary and Significance

The article explains the importance of good lighting and its effect on individuals. It is truthfully one of the most important aspects. It does more than simply help you see, but also creates a mood and a look. When deciding on lighting, one should look at what the main purpose is. The type of work that will be going on in particular areas should dictate what type of lighting goes along with it. Whether it is cooking or reading or doing laundry, each one of these areas requires adequate lighting so that the task at hand can be completed more easily. Different

shapes and sizes of lamps and light fixtures are also important when designing a lighting concept. The individual should look at the design he or she wants as well as how easy it is to clean and maintain. As we age, this is something to look at because high fixtures may look impressive, but may be too challenging to change the light bulb. This could inevitably lead to an injury if the light is high up. Lastly, using halogen lights rather than incandescent is more appropriate because halogen emits a white, more natural light rather than a yellow light. People must study up on light fixtures for their own personal needs before making a purchase. The more education that goes into the selection, the better the outcome.

Atlanta, (AP). (2011, March 18). U.S. life expectancy a record 78. Columbus Dispatch, p. A6.

Summary and Significance

It is important to note that there are many baby boomers that are retiring and approaching retirement age. Many baby boomers are more health conscience than prior generations and therefore living longer. Health care is continuously getting better and the need to take care of the growing population is approaching sooner than later. Babies born in 2009 can expect to live an average life expectancy of 78 years and 2 months. The gap between males and females is closing too. The overall point of the article was to show the increasing life expectancy and the resulting need for more care. Therefore, it is going to remain extremely important that people area able to live in their homes for as long as possible; otherwise there simply will not be enough care available to everyone and this is a huge concern. There must be a shift to live at home or else there may not be enough help and resources to accommodate everyone.

Carter, T. (2011, March 6). He's a sucker for central vacs. [Letter to the editor]. *The Columbus Dispatch*, p. H3.

Summary and Significance

Central vacuum cleaners are considered a universal design element. The ease of not having to push around a hand-held vacuum makes life much easier. The vacuum is also easier to clean since it is hooked up to one outlet and this is usually in the garage. This not only permits a person to vacuum the car, but to easily empty the dust outside. This keeps the dust from going back into the house. It makes breathing much easier, especially if someone has asthma or other breathing difficulties. A central vac can also be installed into an existing structure and is not just for new homes. It does need a fresh-air intake mode so that carbon monoxide does not become a problem. Once a device like this is installed, make sure the hose is long enough. It can be a problem to reach certain areas if the hose is not long enough because the device is not portable. Overall, it is a great tool for someone who does not want to use a standard vacuum and wants a cleaner, more breathable home.

Associated Press (2011, March 6). Ranch quaint, well-lighted. *The Columbus Dispatch*, p. H3.

Summary and Significance

This house of the week has many features that make it a more accessible living space. The house is 1,475 square feet so it is more manageable than a larger home.. Having all rooms on one level allows for better aging in place and reduces the need to move. There is adequate

natural lighting with a sky light and large windows and built-in shelves, which adds more room. The suite has its own bathroom that has a double-sink vanity. The laundry room is also located on the first floor and not in the basement, so the need to go up and down stairs is eliminated. There is a large patio off of the back for easy entertaining from the kitchen. This house is exactly what many people will begin to build if they cannot find something like this already constructed. It is truly what will assist people to age in place.

Weiker, J. (2011, March 6). Here are decorating ideas to tout, others to toss. The Columbus Dispatch, pp. H1, H4.

Summary and Significance

A quick review of some features that are really making an impact such as colored appliances, lever door handles, Murphy beds, and a mudroom to store dirty items so they do not come into the home. Lever door handles are great for those with arthritis or simply have their hands full. Murphy beds are perfect for those with small living spaces and also allows for easier clean up. The beds can also be disguised as a desk or other furniture so that it doubles up for function. Mudrooms are great for storing boots and coats and alleviate the need for major cleanup in the home. Also, having lighter items such as sand colored shingles will not absorb as much heat in the summer. These are all items that were highlighted at the recent Columbus Home and Garden show and are considered great amenities to have in the home.

Mernar, T.J. (2011). How well do you know your onions? Transactionalism can be your guide. American Occupational Therapy Association, 34(1), 1-4.

Summary and Significance

Transactionalism is sweeping the occupational therapy world. A person's surroundings affect the way they live. People and their environments have a mutual impact on each other. When this is disrupted, such as being placed in an institution, the person can be deeply affected. This article attempts to alleviate the problem that practitioners often see in institutionalized settings. There are micro, meso, and macro levels of health care and OTs need to be aware. With micro, this could be the result of family troubles. At the meso level, the issues could be poorly trained staff or inadequate resources. Lastly, at the macro level, this deals with the health care coverage and potential insufficient coverage. To address problems at the micro level, occupational therapists can assess patients by using certain questionnaires, such as "Therapeutic Environment Screening Survey of Nursing Homes." This gathers information on the physical environment. For addressing the meso level, the OT can use the "Nursing Stress Scale." This scale identifies causes of stress to nurses during work. And to address the macro level, OTs can use "Policy and Program Information Form" to interview administrative personnel on detailed information like the organization of the facility and what services are provided. This helps the OT to better work the individual to address specific problems. The OT can take the learned information and communicate with different disciplines to increase improvements in institutions. This helps to improve the interests of the clients while improving their skills to, hopefully, return back home. Like Transactionalism, universal design is about structuring a person's (home) environment so that the impact between person and environment are positive.

Post, K.M., & Rainville, E.B. (2011, March 14). Universal design for learning. OT Practice, 16(4), 12-17.

Summary and Significance

Universal design is branching out further than simply improving the homes in which we live. Universal design is now being implemented in some classrooms to improve the way we learn. It makes the idea of learning "usable" by everyone without special accommodations. Many of the areas are similar to that of in which we improve the home. For the environment of the classroom, improving lighting or rearranging the classroom helps minimize distractions. For activities, reduce steps and time needed to complete the activity. For the student, use a weighted vest or introduce a sensory diet. These will benefit more than just one or two students, but the majority of the classroom. Teachers who provide flexibility and choice for students to receive information have better outcomes. When students have steps broken down further, they have a better chance of retaining information. OTs can help the teachers better identify best-practice techniques to educate the students. Incorporating newer technologies, mixing up written and spoken language, and modifying distracting environments all play an important part in universal design learning. A school environment that is an inclusive environment benefits all students and therefore, produces a better outcome of learned information.

Johnson, A., & Candisky, C. (2011, March 17). Kasich's Medicaid plan isn't only cuts. The Columbus Dispatch, pp. B1-B2

Summary and Significance

Governor Kasich's plan is to help curb the spending of Medicaid on nursing homes. Kasich is trying to implement that people be more responsible for their own health and age-in-place rather than the government having to pay excess fees for nursing home residents. The cut will focus more on the chronically ill, family planning, and reducing obesity. All of these factors will reduce the need for individuals to be institutionalized, especially if not necessary. There will also be an emphasis on regular health care visits, which helps diminish drastic, costly emergency visits. Ohio alone spends more per capita on nursing homes except for five other states. There will be a shift in focus and pushing for companies to merge and work together, instead of being so segregated. Home-health services and community services save the state millions of dollars. While nursing homes and workers will feel a pinch, overall, it will save tax payers money while still guaranteeing that individuals are receiving the utmost care. Even better, they will not have to be taken from their homes, which often help people heal faster and have more peace. This is a shift that shows the importance of aging-in-place and how costly it is to have seniors in a home. The cut will save Medicaid 158.7 million dollars in the state of Ohio. Mental health service cuts will also save 135.2 million dollars, while providing more in-home health services. While it may seem like a drastic and unfair cut, it has many benefits. There will always be a need for nursing homes and by no means will they disappear. But with the rising number of retiring and aging baby boomers, the resources are just simply not enough. It will be a necessity that people stay in their homes as long and healthy as possible.

Anderson, K.M., & Nelson, D.L. (2011). Wanted: entrepreneurs in occupational therapy. American Occupational Therapy Association, Retrieved from

http://ajot.aotapress.net/content/65/2/221.full.

Summary and Significance

This article links together the *Centennial Vision* of the American Journal of Occupational Therapy and how occupational therapists need to begin to look at the option of entrepreneur. In the article, the entrepreneurs interviewed for their research indicated that within the profession of occupational therapy, there are many opportunities for occupational therapists to start their own business. The specific expertise of the occupational therapist in understanding the complexity of people and their occupational forms creates opportunities for innovation. Occupational therapists devise treatment plans to help people to improve function and maximize independence within the environment. Because of the aging population, the number of people who will become disabled is on the rise, and the need for occupational therapy and expertise will increase.

Universal design is accessible design for all abilities and ages. It is a proactive and common sense approach to everyday living which needs to be advanced and advocated for in occupational therapy and the building industry (architects, remodelers, real estate agents, product developers, etc.). Incorporating universal design elements during new home construction, places the owner/family ahead of the curve. Should a disability occur, many of the most important universal design elements are already in place - providing a barrier-free, accessible living space: entrance way with zero-step entry, low, recessed or no threshold, and 36” doors with lever handles, a first floor master bedroom and first floor bathroom accessible by wheelchair, outfitted with grab bars, a raised toilet, levered sink with knee space, and a low entry tub or walk-in shower. This shows that there are plenty of job opportunities for occupational therapists in the home modification market. They have the skills and knowledge to become great entrepreneurs.

In “Wanted: Entrepreneurs in Occupational Therapy,” the business model (evaluating homes, making recommendations from an OT perspective, helping clients live independently in their homes at every stage of life and ability), has a relatively low start-up cost. This low start-up cost is because a consulting business does not require much more than a home office. When partnered with a social service agency, (the referring agency) and potentially a remodeling contractor, the occupational therapist offers professional assessments in the client’s home (no office is required). The value to the client, the referring agency, and the remodeling contractor is that the OT adds individualized recommendations within the realm of daily occupations and provides follow up.

In the field of occupational therapy, entrepreneurship ranks lower than other healthcare professionals, which is why AOTA made it part of its centennial vision. The profession wants to increase the number of occupational therapists that go into business for themselves. Whether it is an agency-contacted direct service, consultant, client-paid direct service provider, owner and manager of a multi-therapist service business, product developer, or educational instructor, the vision is to increase the number of OTs who innovate and start a business.

Similar to all small businesses, an occupational therapist who decides to open up a consulting business in home modifications would still need to follow the recommendations of the small business administration.

Szafran, S.H. (2011). Physical, mental, and spiritual approaches to managing pain in older clients. OT Practice, 16(3), CE-1-7.

Abstract

"By 2020, approximately 50 million people age 65 years and older will live in the United States. The population segment of adults over age 85 will grow by more than one third. Chronic pain affects up to 50% of community-dwelling elders and more than 80% of those living in long-term-care facilities. To support engagement, participation, and health, as stated in AOTA's *Occupational Therapy Practice Framework: Domain and Process, 2nd Edition*, occupational therapy practitioners need to be well versed in the unique aspects of pain in the elderly, including how to assess it, interventions that are most likely to be beneficial, and the client-focused framework that results in quality of care. Pain management treatment enhances opportunities for occupational therapy practitioners to work with this population holistically, using biopsychosocial interventions that have the potential to improve quality of life.

Summary and Significance

Pain affects a large portion of individuals. Many older adults believe that pain is an inevitable part of the aging process and cannot be avoided. Occupational therapists are trained to help with this matter. Therapists can ask the patient where the location of the pain is, duration, onset, frequency, and what increases or decreases the pain. Also, asking patients to rate their pain is important. Once this is established and the pain can be treated, the therapists should start off with a physical agent modality (PAM). This can help alleviate some discomfort to help further engage in therapy. The therapist needs to know that as a client ages, PAMs should be more carefully selected. Heat is the first modality most people turn to. It is important to test for reactions to the heat and talk to the patient about tolerance.

After the PAMs comes therapeutic exercise. This can help restore function and maximize range of motion. Then the therapist needs to educate on conserving energy and protecting the

area that is most sensitive until it heals. Talking to the patients about their sleeping habits, spirituality, and their commitment to the exercises is important to gauge the outcome. All of these can affect how a person will heal. It the body does not get adequate rest, for example, the healing process slows down. If in the end the therapist does not feel there is much improvement, the physician can prescribe other forms of relief. But ultimately, it is up to the therapist-client relationship to work on the issue together. As people continue to live longer, fuller lives at a more independent rate, it is important to keep them functioning as best as possible. This will allow patients to continue to thrive in their home environment, making quality of life better overall.

Schmid, A.A., Van Puymbroeck, M. Knies, K. Spangler-Morris, C., Watts, K., Damush, T., et al. (2011). Fear of falling among people who have sustained a stroke: A 6 month longitudinal pilot study. American Journal of Occupational Therapy, 65, 125-132. doi: 10.5014/ajot.2011.000737.

Summary and Significance

Objective. Fear of falling (FoF) after stroke is not well understood. We assessed change in FoF over the first 6 mo after a stroke and compared 6-mo anxiety, depression, balance, and quality of life (QoL) scores between people with and without baseline FoF (at the time of hospital discharge).

Method. Data for this longitudinal study were collected at baseline and 6 mos. Of the 28 people included at the baseline, 18 remained in the study 6 mo later.

Results. FoF significantly decreased over time ($p = .015$). Participants with baseline FoF had higher 6-mo anxiety and depression scores ($s = .002$ and .005, respectively) and lower QoL scores ($p < .001$) than did those without baseline FoF.

Conclusion. The results are suggestive of the need for occupational therapists and their colleagues to consider anxiety and depression variables in managing the needs of post stroke participants experiencing FoF.

There are approximately 705,000 strokes in the US each year. It is the most common source of disability treated by OTs. Therapy often addresses falls and fall prevention. While many people have had a stroke are afraid of falling, this fear may exist in others. It can occur in those who have decreased physical activity, social interaction, and quality of life. It also places a fear in a person to avoid participating in activities. Fear of falling and depression are leading causes for those who have had a stroke. OTs need to address this during therapy to promote independence and confidence. This also leads to older adults having a higher success rate of living at home. They are able to move around the house safely and to still engage in activities which helps their self-esteem. Ultimately, when OTs address the emotional, cognitive, and social aspects, often the physical will follow.