Enforceable Accessible Medical Equipment Standards

A Necessary Means to Address the Health Care Needs of People with Mobility Disabilities

National Council on Disability

May 20, 2021

National Council on Disability (NCD)
1331 F Street NW, Suite 850
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Enforceable Accessible Medical Equipment Standards: A Necessary Means to Address the Health Care Needs of People with Mobility Disabilities

National Council on Disability, May 20, 2021
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National Council on Disability

An independent federal agency making recommendations to the President and Congress to enhance the quality of life for all Americans with disabilities and their families.

Letter of Transmittal

May 20, 2021

President Joseph R. Biden Jr.
The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

Dear Mr. President:

Decades of studies have found that people with disabilities experience a much higher prevalence of preventable disease and poorer health outcomes than the general population. And although it is well known that disability status is a high-risk factor for diabetes, cardiovascular disease, stroke, arthritis and asthma, as well as obesity, high blood pressure and high cholesterol levels, adults with physical disabilities continue to face significant physical barriers that impede their access to health care, resulting in unmet health care needs. Among the most significant barriers is the absence of accessible medical diagnostic equipment.

On behalf of the National Council on Disability (NCD), I submit this report titled *Enforceable Accessible Medical Equipment Standards—A Necessary Means to Address the Health Care Needs of People with Mobility Disabilities*. For all of the reasons set forth in this report, we recommend that both the U.S. Department of Justice (DOJ) and the U.S. Department of Health and Human Services Office of Civil Rights (HHS OCR) move forward with the regulatory process to adopt the January 9, 2017 accessible medical diagnostic equipment standards (MDE Standards) developed by the U.S. Access Board (Access Board). Adoption of the MDE Standards is necessary to eliminate this one barrier that adversely affects quality of care for adults with physical disabilities leading to delayed and incomplete care, misdiagnosis, the exacerbation of the original disability, along with the increased likelihood of developing secondary conditions.

In 2009, NCD issued a research report, *The Current State of Health Care for People with Disabilities*, that concluded that the then 54 million Americans with disabilities experienced health disparities and problems accessing health care. The report documented a serious issue, often overlooked in research on health disparities—the inability of people with mobility disabilities to access medical care due to exam tables and other medical diagnostic equipment that were not height-adjustable. Soon thereafter, in 2010, the U.S. Department of Health and Human Services report, *Healthy People 2020*, documented that people with disabilities were more likely than those without disabilities to experience difficulties in getting the health care they needed, and made decreasing barriers within health care facilities one of its objectives for U.S. healthcare by 2020.

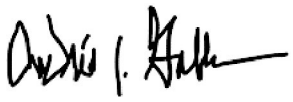
Provisions of Section 4203 of the Patient Protection and Affordable Care Act of 2010 (Public Law 111-148, 124 Stat. L. 119), required the U.S. Access Board (Access Board), in consultation with the Food and Drug Administration, to issue MDE Standards to accommodate adults with disabilities. In 2013, the Access Board issued a report that identified inaccessible medical equipment among the reasons for the susceptibility of people with disabilities to experience substandard health care, citing numerous studies documenting access barriers involving medical equipment and the health disparities experienced by millions of people with disabilities. The MDE Standards were published on January 9, 2017, providing technical criteria for medical diagnostic equipment to ensure it is usable by patients with disabilities.

The MDE Standards are a critical aspect to addressing health care disparities for people with physical disabilities, however, they do not have the force of law until they are adopted by regulation by an enforcing authority, such as the DOJ and the HHS OCR. These agencies may issue regulations establishing scoping requirements and requiring health care providers, subject to their jurisdiction under the ADA and other civil rights laws, to acquire accessible medical diagnostic equipment that complies with the MDE Standards. To that end, in 2013, DOJ issued an Advance Notice of Proposed Rulemaking (ANPRM) on accessible medical equipment under titles II and III of the ADA but withdrew it on December 26, 2017, to reevaluate whether regulation of the accessibility of non-fixed equipment and furniture was necessary and appropriate. Only recently, in January 2021, HHS OCR began the regulatory process for amending its Section 504 regulation by issuing a Request for Information that includes questions on the MDE Standards.

Federal regulations requiring availability of accessible medical and diagnostic equipment in health care facilities are necessary to the provision of nondiscriminatory health care for people with mobility disabilities and to help reduce the economic costs of treating chronic illnesses resulting from preventable illnesses. Without widespread availability of height adjustable examination tables, accessible mammography equipment, accessible weight scales and lift equipment to facilitate transfers, among other accessible medical and diagnostic equipment, people with mobility disabilities will remain less likely to receive recommended preventive health care services—like cervical cancer screening; colorectal cancer screening; obesity screening; and breast cancer screening. Moreover, the absence of such equipment will continue to perpetuate health care disparities between people with physical disabilities and their nondisabled counterparts.

Adopting MDE Standards is consistent with your commitment to addressing health care disparities and ensuring equity in health care for people with disabilities.

Most respectfully,



Andrés J. Gallegos
Chairman

(The same letter of transmittal was sent to the President Pro Tempore of the U.S. Senate and the Speaker of the U.S. House of Representatives.)

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Executive Summary

One in seven American adults has a disability that limits their functional mobility.[1] This number is expected to grow given population health trends, such as increasing rates of chronic medical conditions, obesity, and the aging population.[2] People with disabilities tend to be higher-frequency and higher-cost users of health care services than their peers without disabilities. Under Section 1557 of the Affordable Care Act (ACA),[3] the Americans with Disabilities Act (ADA),[4] and Section 504 of the Rehabilitation Act (Section 504),[5] health care providers must ensure full and equal access to their health care services and facilities.[6] Yet, in 2021, people with mobility impairments continue to encounter significant physical accessibility barriers in obtaining preventative, primary, and specialty medical care.[7] This lack of physical accessibility adversely affects quality of care, leading to delayed and incomplete care, missed diagnoses, exacerbation of the original disability, and increases in the likelihood of the development of secondary conditions.[8] Examination tables, weight scales, examination chairs, and imaging equipment are vital medical diagnostic equipment (MDE) and are usually inaccessible for people with physical disabilities.[9] Furthermore, when confronted with inaccessible MDE, most health care facilities lack appropriate transfer equipment and trained staff to help people with disabilities transfer safely to the standard equipment, placing both patients and staff at risk for injury. Lack of accessible MDE not only compromises the quality of care, but it can also negatively impact emotional and physical health[10] and health-related quality of life, and it can cause people to forego needed preventative and primary care.[11]

One in seven American adults has a disability that limits their functional mobility.

On March 23, 2010, the ACA amended the Rehabilitation Act by adding Section 510, which required the Access Board, in consultation with the U.S. Food and Drug Administration, to issue standards that set out minimum technical criteria for MDE used in (or in conjunction with) physicians' offices, clinics, emergency rooms, hospitals, and other medical settings, to ensure that it is accessible to, and usable by, people with accessibility needs, and allows independent entry, use, and exit by such individuals to the maximum extent possible.[12] The "MDE Standards" were published on January 9, 2017.[13]

In 2015, the U.S. Department of Health and Human Services (HHS) said that it intended to issue regulations or policies requiring covered entities to abide by the MDE Standards after they

Timeline of Regulatory Activity/ Inactivity on MDE

- March 23, 2010 – The Affordable Care Act required the U.S. Access Board to issue standards that set out minimum technical criteria for MDE.
- January 9, 2017 – U.S. Access Board published "MDE Standards."
- 2015 – HHS said it intended to issue regulations or policies requiring covered entities to abide by the MDE Standards, but never acted upon the intention.
- 2017 – DOJ withdrew its Advanced Notice of Proposed Rulemaking on revising its Title II and III ADA regulations to adopt the MDE Standards, citing a reevaluation of whether the regulation was "necessary and appropriate."
- 2018 – DOJ told NCD that based upon Executive Order 13771, the regulation adopting the MDE Standards could not be issued unless it could be shown that its total costs were no greater than $0.00.
- June 12, 2020 – HHS issued its final rule on Section 1557 but declined to incorporate the MDE Standards, stating they were beyond the scope of the regulation.

were finalized by the Access Board[14] but has not acted upon that intention. On June 12, 2020, HHS issued its final rule on Section 1557.[15] The Office for Civil Rights (OCR) declined to incorporate the MDE Standards, stating that doing so was beyond the scope of the 1557 regulation, and adopting new standards, a significant regulatory change, required the benefit of notice and public comment.[16]

In 2017, the U.S. Department of Justice (DOJ) withdrew its Advanced Notice of Proposed Rulemaking on revising its Title II and III ADA regulations to adopt the MDE Standards.[17] The DOJ cited plans to reevaluate whether regulation of the accessibility of MDE "is necessary and appropriate." In 2018, DOJ representatives relayed to the National Council on Disability (NCD) that, based on Executive Order 13771,[18] the regulation could not be issued unless it could be shown that its total costs were no greater than $0.00.[19]

The requirement to have accessible MDE is part of the federal nondiscrimination protections for people with disabilities, an existing obligation under Section 504,[20] Titles II and III of the ADA,[21] and Section 1557 of the ACA. NCD maintained that a regulation adopting the MDE Standards is not subject to a $0.00 limitation imposed by E.O. 13771. The real cost lies in not issuing regulations adopting the standards because the United States will continue paying billions of dollars treating serious illnesses that could have been prevented by allowing people with disabilities to better access preventive care. Without regulations, health care providers are unlikely to alter their practices and acquire accessible medical equipment, as they have yet to do so notwithstanding the existing federal nondiscrimination mandates.

This report evaluates the need for regulatory adoption of the MDE Standards by federal enforcing agencies and for widespread use of

the standards by health care facilities to address the health disparities experienced by people with disabilities.

The following are some key findings in this report:

- People with disabilities experience significant health care disparities due in part to lack of physical access, leading to delayed care, high cost utilization, loss of dignity, and poorer health outcomes.
- While accessible MDE is required under the ADA, Sections 504 and 1557, the lack of enforceable MDE standards allows for continued, widespread discrimination in health care for people with mobility disabilities.
- Audit-based accessibility surveys reveal greater access disparities than facility self-report surveys, revealing a gap in health care providers' understanding of what constitutes access and the need for federal audit surveys of covered entities to ensure civil rights compliance.
- Physicians' (mis)conceptions that accessible MDE is not required and that only a narrow group of patients benefit from its availability contribute to the lack of accessible MDE.
- A lack of transparent complaint processes at the clinic, health system, state, and federal levels obscures barriers to health care access created by inaccessible MDE.
- Even when accessible MDE is available in a facility, it is not consistently used, indicating a lack of medical staff knowledge of its existence and/or how to use it with patients.

In 2018, DOJ representatives relayed to the National Council on Disability (NCD) that, based on Executive Order 13771, the [MDE Standards] regulation could not be issued unless it could be shown that its total costs were no greater than $0.00. . . . NCD maintained that a regulation adopting the MDE Standards is not subject to a $0.00 limitation imposed by E.O. 13771.

The following are some NCD recommendations in this report:

- HHS OCR should issue a regulation requiring health care providers subject to its jurisdiction to acquire accessible MDE that complies with the MDE Standards.
- DOJ Civil Rights Division should revise its Title II and III ADA regulations requiring health care providers subject to its jurisdiction to acquire accessible MDE that complies with the MDE Standards.
- DOJ and HHS should update the 2010 *Access to Medical Care for Individuals with Mobility Disabilities* to reflect the Access Board's MDE Standards and include information about Internal Revenue Service tax benefits for medical equipment purchases.
- The HHS Office of the National Coordinator for Health Information Technology

should add disability-related items to the *Meaningful Use Standards* to promote data tracking across health systems and federal and state health care programs.

- The U.S. Department of Education, Liaison Committee on Medical Education, should add disability competency requirements to section 7.2 of the Functions and Structure of a Medical School, including the importance and safe use of accessible MDE for the appropriate physical examination of people with mobility limitations, and to section 7.6 on cultural competence and health care disparities. Equivalent requirements should be added for accreditation of nursing and radiology technician programs. The Accreditation Council on Graduate Medical Education should require all federally funded medical residency programs to include disability competency training, which includes the importance of accessible medical diagnostic equipment to help ensure equitable access to health care and reduce health care disparities.

Acronym Glossary

ACA	Patient Protection and Affordable Care Act
ACL	Administration for Community Living
ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act Accessibility Guidelines
AHRQ	Agency for Healthcare Research and Quality
ANPRM	Advance Notice of Proposed Rulemaking
BRF	Barrier Removal Fund
CMS	Centers for Medicare and Medicaid Services
CPT	Current Procedural Terminology
CRT	Civil Rights Division (Department of Justice)
DOJ	U.S. Department of Justice
HHS	U.S. Department of Health and Human Services
IRS	Internal Revenue Service
MCO	Managed Care Organization
MDE	Medical Diagnostic Equipment
NCD	National Council on Disability
NCIL	National Council on Independent Living
OCR	Office for Civil Rights (HHS)
PAI	Provider Accessibility Initiative
PCORI	Patient-Centered Outcomes Research Institute
RERC-AMI	Rehabilitation Engineering Research Center on Accessible Medical Instrumentation
SPHM	Safe Patient Handling and Mobility
VA	Veterans' Affairs
VHA	Veterans' Health Administration

Disability is part of the human condition. All health care providers, regardless of practice setting, size, geographic location, and specialty, will have people with permanent and transient disabilities among the people they serve. The creation of a culture of access through the formal adoption of MDE Standards by enforcing authorities will help ensure that the U.S. health care system is meeting the needs of all Americans. This will also benefit those essential workers—nurses, technicians, doctors, therapists, and aids—dedicated to the provision of safe, effective, and timely preventive, primary, emergency, and specialty care.

Introduction

Health Care Access Issues for People with Disabilities

In the United States, one in four adults live with a disability.[22] People with disabilities have the right to the "highest attainable standard of health without discrimination on the basis of disability";[23] however, they experience structural,[24] financial,[25] cognitive/knowledge,[26] attitudinal,[27] and physical barriers[28] to preventive,[29] primary,[30] and specialty care.[31] Adults with physical disabilities are at higher risk of foregoing or delaying necessary care[32] and having unmet medical, dental, and prescription needs compared to adults without disabilities.[33] Lack of timely access to primary and preventive care can result in the development of chronic and secondary conditions as well as the exacerbation of the original disabling condition itself,[34] resulting in poorer health outcomes.[35]

Of the 61 million people with disabilities in the United States, more than 20 million people over the age of 18 years have a disability that limits their functional mobility; this can pose challenges to accessing standard medical diagnostic equipment (MDE).[36] With population health trends—including increasing rates of chronic medical conditions, obesity, and the aging population—the number of people with mobility-related disabilities will continue to rise.[37] To appreciate the scope of the issue, it is important to take a broad view of who belongs to the category of people with mobility limitations. Far from an isolated group, people with mobility disabilities include people with a wide range of congenital and acquired conditions that limit their functional mobility due to pain, muscle weakness or paralysis, deconditioning, poor balance, spasticity and lack of coordination, as well as limb loss and fractures. Given the prevalence of mobility disability in the adult population, all health care facilities, regardless of practice setting, geographic location, or clinical specialty area, can expect to

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see people with mobility disabilities among those they serve. Ensuring physical access to care through accessible MDE is necessary to equitably provide medical care for all people, and the need continues to grow.

Health Care Utilization

People with disabilities often have more compromised health and tend to be more frequent users of health care services than their nondisabled peers. One study comparing health care utilization among working-age people with disabilities and their nondisabled peers found people with disabilities were more likely to report intensive utilization: six times more likely to see a physician 10 or more times in the last year and five times more likely to be admitted to the hospital.[38] It is thus particularly important that people with disabilities have timely and appropriate access to primary and preventative health care services to address problems early and prevent and manage health conditions. Moreover, in *Healthy People 2020*, which set decennial national health priorities for 2010–2020, the U.S. Department of Health and Human Services (HHS), Office of Disease Prevention and Health Promotion, documented that people with disabilities were more likely than those without disabilities to

- experience difficulties or delays in getting health care they need,
- not have had a mammogram in the past two years,
- not have had a Pap test within the past three years,
- not have had an annual dental visit,
- not engage in fitness activities, and
- use tobacco, be overweight or obese, have high blood pressure, and experience symptoms of psychological distress.[39]

The *Disability and Health Journal* has consistently published studies quantifying lack of access to health care for people with disabilities. A study that examined the effect of physical disability on access to health care in working-age adults with and without physical disabilities in the United States between 2002 and 2011 found that people with physical disabilities had 75, 57, and 85 percent higher odds of having unmet medical, dental, and prescription medication needs, respectively.[40]

A study that examined the effect of physical disability on access to health care in working-age adults with and without physical disabilities in the United States between 2002 and 2011 found that people with physical disabilities had 75, 57, and 85 percent higher odds of having unmet medical, dental, and prescription medication needs, respectively.

Similarly, a 2017 survey-based study of 432 wheelchair users described health care utilization and characterized barriers encountered when attempting to obtain access to health care.[41] While nearly all respondents (97.2 percent) had a primary care appointment within the past year, most encountered physical barriers when accessing care (73.8 percent primary, 68.5 percent specialty). The majority of participants remained clothed for

their primary care evaluation (76.1 percent) and were examined seated in their wheelchair (69.7 percent). We obtained a first-person narrative that highlights the personal experience behind these data:

> My longtime internal medicine doctor was on vacation and I had scheduled an annual physical with one of his partners, whom I've met on occasion. He didn't require that I transition from my wheelchair onto an examination table (which was not height adjustable, and there was no lift or transfer equipment available). In fact, he said I could remain in my wheelchair for the physical exam. After the nurse drew blood for analysis, he listened to my heart and lungs underneath my clothing, looked inside my ears and throat, and then stepped back and stated, "I assume everything below the waist is fine." That was the extent of the physical examination. *(Man with a physical disability)*

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A 2015 study published in the *Disability and Health Journal* concluded that significant disparities in health were found for adults with disabilities relative to adults without disabilities. Adults with disabilities are 12.7 times more likely to report poor overall health status compared to adults without disabilities.[42] Similarly, a 2018 paper published by the National Academies of Sciences, Engineering, Medicine, *Compounded Disparities: Health Equity at the Intersection of Disability, Race, and Ethnicity*,[43] highlights that people with disabilities have much poorer preventable health outcomes. Specifically, obesity rates for adults and youth with disabilities are 58 and 38 percent, respectively, higher than those of their nondisabled peers; the annual number of new cases of diabetes is almost three times as high among adults with disabilities relative to adults without disabilities (19.1 per 1,000 versus 6.8 per 1,000); disability status is a high risk factor for early onset cardiovascular disease (rates of 12 versus 3.4 percent among 18- to 44-year-olds with and without disabilities); and adults with disabilities are much more likely to experience cardiovascular disease during young adulthood as well as in their older years. According to the *2013 National Healthcare Disparities Report* from the Agency for Healthcare Research and Quality (AHRQ), while more than 60 percent of quality indicators, such as measures of patient-centered care and access to care, had improved for people without any activity limitations (one measure of disability), only 20–35 percent had improved for people with such limitations.[44] Furthermore, a 2017 study published in *Health Services Research* found that people with disabilities are particularly vulnerable to being hospitalized for conditions that are typically manageable in ambulatory care settings.[45]

Adults with disabilities are 12.7 times more likely to report poor overall health status compared to adults without disabilities.

Health Disparities for People with Disabilities

- 12.7 times more likely to report poor overall health status compared to adults without disabilities.
- Obesity rates for adults and youth with disabilities are 58 and 38 percent, respectively, higher than those of their nondisabled peers.
- Annual number of new cases of diabetes is almost three times as high among adults with disabilities relative to adults without disabilities.
- Less likely than people without disabilities to have had an annual dental visit.
- Less likely than people without disabilities to have had a mammogram in the last two years.
- Less likely than people without disabilities to have had a Pap test in the last three years.
- Significantly less likely to be weighed as part of routine care.

Accessible Medical Diagnostic Equipment

Health care providers are required by law to ensure full and equal access to their health care services and facilities.[46] Yet, in 2020, 30 years after the passage of the Americans with Disabilities Act (ADA), and 45 years after passage of the Rehabilitation Act, people with mobility impairments continue to encounter significant physical accessibility barriers to preventative, primary, and specialty care.[47] This lack of physical accessibility compromises quality of care and can lead to delayed and incomplete care, missed diagnoses, and exacerbation of the original disability.[48] Examination tables, weight scales, examination chairs, and imaging equipment are vital MDE and are often inaccessible for people with mobility disabilities.[49] On-site evaluation of 2,389 health care facilities in California found that only 3.6 percent had an accessible weight scale, and only 8.4 percent had height-adjustable examination tables.[50] Even when physicians have accessible equipment, they do not always use it to examine their patients with disabilities.[51] One wheelchair user informed us that her doctor's office had an accessible examination table, but the staff were not aware of it. As a result, for several years, she was examined in her chair because the examination tables were too high for her to transfer onto. After lamenting the fact that the examination tables were too high, her doctor recalled that they "might have an adjustable height table," and, in fact, the office did have one that they rarely used.

Furthermore, many health care facilities lack appropriate lift equipment and staff training to help people with disabilities transfer safely to the standard, inaccessible equipment, placing both patients and staff at risk for injury.[52] The lack of accessible MDE is also stressful for individual patients and can negatively impact emotional and physical health[53] and health-related quality of life and may cause people to forego needed preventive and primary care.[54] First-person accounts reinforce these data:

> Even if the medical staff could get me on a standard exam table, I needed extra staff in the room to keep me from falling off the

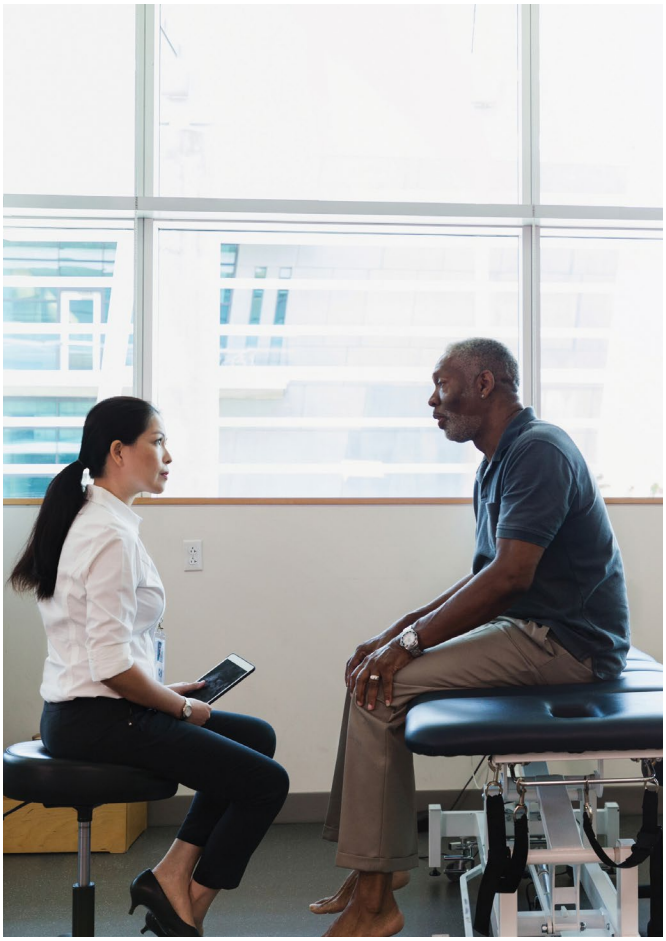

table while being examined because the tables are high and narrow, without side rails. Each experience was frightening and embarrassing for me. After several years of frightening experiences on standard tables, or exams in my wheelchair, I just avoided going to the doctor altogether unless I was very ill. *(Woman with a physical disability)*

It is important to recognize that the safe and effective use of accessible MDE is central to the provision of comprehensive medical care to people with disabilities. Despite substantial advancements in medical instrumentation, physical examination remains a valuable diagnostic tool. It is through the physical examination, typically conducted on an examination table, that health care providers rapidly assess body structures and functions to develop hypotheses about the nature of the presenting condition, which promotes a more judicious approach to ordering tests leading to diagnosis and treatment recommendations. This, in turn, has the potential to reduce patient risk and health care costs. If patients are not transferred to an examination table, when it is clinically appropriate, it may be difficult if not impossible to conduct a comprehensive examination, which may lead to missed or delayed diagnosis. For example, for wheelchair users, development of pressure sores is a major risk that can lead to a cascade of serious medical complications. When patients are examined in their wheelchairs instead of on an examination table when clinically appropriate, it limits providers' ability to visually inspect the skin and identify pressure sores. Similarly, women with disabilities have reported that the inability to transfer to fixed height examination tables limits their access to preventative cancer screenings, like Pap tests:

> *Examination tables, weight scales, examination chairs, and imaging equipment are vital MDE and are often inaccessible for people with mobility disabilities.*

Tables are so high. So, I couldn't do it [transfer to a fixed height exam table]. I told my doctor I couldn't do it, and he was like okay and that was that. And so I went like 5 years without a Pap smear or a mammogram . . . He tried to do it sitting in my wheelchair, but I said no." *(Woman with a physical disability)*

Body weight measurement is an important clinical indicator that is used to track nutritional status and prescribe appropriate dosage of a large number of medications. Rapid changes in weight (both weight gain and weight loss) can be indications of serious medical conditions, such as cancer, heart failure, depression, and dementia. While statistics vary by study design, research clearly indicates that people with disabilities are significantly less likely to be weighed as part of routine care than their nondisabled peers. In the absence of accessible weight scales, people with disabilities are not weighed, are asked to self-report their weight, and in some cases are asked to go to other locations within a health care facility or community to be weighed. A representative of a major managed care organization described scenarios from across the country in which people with disabilities were weighed on scales designed for freight and even livestock:

> In New Mexico, we heard a story of a doctor's office that had made a member go down to the zoo to get weighed because they didn't have an accessible weight scale, and [the] same thing in Ohio, except they made them go down to the local loading dock. *(Representative from managed care organization)*

On-site evaluation of 2,389 health care facilities in California found that only 3.6 percent had an accessible weight scale, and only 8.4 percent had height-adjustable examination tables.

The U.S. Preventive Services Task Force recommends biennial screening mammography for women aged 50–74 years.[55] Early detection of breast cancer through screening mammography is associated with a reduction in breast cancer deaths among women ages 40–69 years, yet women with disabilities have not accessed such tests on par with nondisabled women. Inaccessible mammography machines have been identified as an important contributor to low screening rates among women with disabilities, and women with more complex disabilities were even less likely to be screened.

> It's very difficult when you are sitting down to get an accurate reading. . . . It takes three people to position me . . . to be honest, it's a bit degrading. . . . This past year I was diagnosed with breast cancer. I felt it myself. Actually, my last mammogram did not yield anything . . . [then] like three or so months after that mammogram . . . I was diagnosed with Stage II invasive ductal carcinoma—very rapid growing. . . . They never did know if the mammogram didn't pick it up or what. . . . It's just a very difficult process trying to manipulate and get an accurate reading. *(Woman with a physical disability and breast cancer)*[56]

[R]esearch clearly indicates that people with disabilities are significantly less likely to be weighed as part of routine care than their nondisabled peers.

These passages highlight the important role that access to appropriate accessible MDE has on health care access, quality, and outcomes. They represent a small subset of the qualitative data and first-person narratives that speak to the importance of accessible MDE.

Provider Safety and Safe Patient Handling Initiatives

The availability and appropriate use of accessible MDE are not only related to quality of care to patients with disabilities, they also impact the occupational health and safety of health care workers, especially nurses and nursing assistants. A growing body of research has demonstrated a relationship between musculoskeletal injuries, worker compensation claims, and safe patient handling, due in part to the overreliance on manual transfers to inaccessible equipment. Inaccessible equipment leads health care workers to use awkward body postures and poor ergonomics that heighten the risk of injury. Workforce issues like high patient-to-staff ratios and organizational cultures that prioritize efficiency and productivity over safety can further increase the injury risk.[57] In a vicious cycle, musculoskeletal injuries among health care workers can also create a greater risk of injury to patients, as health care providers who are experiencing pain and decreased mobility may use unsafe practices that result in patients being mishandled or injured. Nursing (including registered nurses, licensed practical nurses, and nursing assistants) has been identified as the most dangerous occupation for disabling back injury, and estimates suggest that up to 12 percent of nurses leave the profession due to back injuries.[58]

A growing body of research has demonstrated a relationship between musculoskeletal injuries, worker compensation claims, and safe patient handling, due in part to the overreliance on manual transfers to inaccessible equipment.

To date, no federal law mandates safe patient handling procedures. The last attempt at federal legislation was in December 2015 when parallel bills called the Nurse and Health Care Worker Protection Act of 2015 were introduced in the House[59] and Senate.[60] As of November 2020, no Congressional Budget Office (CBO) cost estimate was received for these bills.

Safe Patient Handling Legislation

In 2005, in an effort to mitigate the risk of back injuries, Texas became the first state to enact Safe Patient Handling legislation. Subsequently, 10 states—including New York, Ohio, Washington, Rhode Island, Hawaii, Minnesota, Maryland, New Jersey, Illinois, and California—have passed safe patient handling laws. While the specifics of these laws vary by state, key features include written safe handling policies, accessible examination equipment, mechanical lifts, and trained transfer teams. Some states, such as Illinois, also include provisions to afford choice and control to patients to preserve their dignity and safety in all transfers.

There is a growing body of research examining the impact of state safe patient handling initiatives on workplace injuries and worker compensation claims.[61] For example, an observational study of a safe patient handling program in the Veterans' Health Administration (VHA) found that it decreased the incidence and severity of worker injuries and resulted in net benefits of $200,000 per year.[62] The payback period of the initial investment in patient handling equipment was 4.3 years.[63] Similarly, a 2013 study in the *American Journal of Industrial Medicine* evaluated the economic impact of implementing a safe handling program in 110 skilled nursing facilities using program implementation costs, workers' compensation claims, and turnover rates.[64] These studies demonstrate that programs that emphasize a culture of safety and access can have widespread benefits for patients, providers, and health systems. As such, safe patient handling and mobility (SPHM) initiatives can serve as an exemplar for the cultural change necessary for the routine provision and appropriate use of accessible MDE across practice settings.

The payback period of the initial investment in patient handling equipment was 4.3 years.

The time for action on the adoption of the Access Board's MDE Standards is now. Existing civil rights laws provide federal enforcing authorities the power to adopt the MDE Standards and make their use mandatory for entities subject to their jurisdiction. Given the persistence of barriers to health care access, quality, and outcomes experienced by millions of Americans with disabilities, enforcing agencies, like DOJ and HHS, have the authority and obligation to ensure that the guarantee of equal access is realized across health care settings.

Chapter 1: Policy Background

A long history of research, advocacy, and policy lays the foundation for both the development of the accessible MDE Standards and a pathway to transition the accessible MDE Standards from guiding principles to mandatory enforceable regulations. In this chapter, we provide an overview of foundational studies, key initiatives, and legal developments that have advanced and stymied widespread adoption of accessible MDE across clinical practice settings.

In 2005, the Rehabilitation Engineering Research Center on Accessible Medical Instrumentation (RERC-AMI) released the results of a national study about the types of medical equipment that were most difficult for patients with disabilities to use and the causes for such difficulties.[65] The survey results revealed that examination tables, x-ray equipment, weight scales, and examination chairs were the four most reported categories of inaccessible medical equipment.

[E]xamination tables, x-ray equipment, weight scales, and examination chairs were the four most reported categories of inaccessible medical equipment.

Prompted by the RERC-AMI's study results, in 2007 identical companion bills, S. 1050 and H.R. 3294, Promoting Wellness for Individuals with Disabilities Act,[66] were introduced. The proposed legislation aimed to establish, among other things, that the U.S. Access Board issue and periodically review standards for MDE, ensuring accessibility and usability by people with disabilities and allowing independent entry to, use of, and exit from such equipment by people with disabilities. Equipment included examination tables and chairs, weight scales, mammography equipment, and x-ray equipment.

On March 23, 2010, ACA amended the Rehabilitation Act by adding Section 510.[67] Section 510 required the Access Board, in consultation with the U.S. Food and Drug Administration, to issue accessibility MDE Standards. In December 2013, the Access Board issued the final report of the Medical Diagnostic Equipment Accessibility Standards Advisory Committee,[68] identifying inaccessible medical equipment among the reasons for people with disabilities to be susceptible to experiencing substandard care.[69] The report cited the growing number of studies documenting the access barriers involving MDE and health disparities experienced by the then approximately 57 million people with disabilities. The experiences of people with disabilities were important contextual

considerations that shaped the committee's view of the need for, and the potential nature of, the MDE Standards.[70] In the report, the committee cited the following:

- NCD's 2009 report, *The Current State of Health Care for People with Disabilities*,[71] detailed the significant barriers people with disabilities had when obtaining access to examination and diagnostic equipment; highlighted health care providers' frequent examination or testing of patients seated in their wheelchairs, which can generate inaccurate results or conceal physical evidence required for appropriate diagnosis and treatment; and underscored the need to gather better data about health disparities affecting people with disabilities.
- HHS' *Healthy People 2010*[72] cautioned that "as a potentially underserved group, people with disabilities would be expected to experience disadvantages in health and well-being compared with the general population."
- The U.S. Surgeon General's 2005 *Call to Action*[73] pointed out that people with disabilities can lack equal access to health care and urged their inclusion in studies of health care disparities.
- HHS' 2008 *National Health Interview Survey*[74] highlighted that women with self-reported disabilities of different types are substantially less likely than other women to receive critical mammography screening and Pap screening tests, and among women who self-report mobility difficulties, screening rates fall linearly as the severity of mobility limitations increases.
- AHRQ's 2009 and 2010 *National Healthcare Disparities Reports*[75] examined disparities in health and dental care for people with disabilities.
- HHS' *Healthy People 2020*,[76] like the 2010 version, noted health care disparities for people with disabilities, and among its objectives for this population, included decreasing barriers within health care facilities.
- Other research publications documented physical access barriers involving MDE, including reports concerning individual patients; findings from focus groups, in-depth individual interviews, or surveys of relatively small numbers of patients or practitioners; and several larger studies.[77]

In December 2013, the Access Board issued the final report of the Medical Diagnostic Equipment Accessibility Standards Advisory Committee, identifying inaccessible medical equipment among the reasons for people with disabilities to be susceptible to experiencing substandard care.

The mountain of empirical evidence included in the committee's report made it absolutely clear that in the absence of accessible MDE, people with physical disabilities experience marked disparities in care compared to their nondisabled peers.

In response, on July 26, 2010, DOJ published an Advance Notice of Proposed Rulemaking

(ANPRM) titled, "Nondiscrimination on the Basis of Disability by State and Local Governments and Places of Public Accommodation; Equipment and Furniture,"[78] seeking public input on possible revisions of Titles II and III of the ADA regulations to ensure the accessibility of medical equipment and furniture provided by covered entities. DOJ received over 350 comments.

The Access Board published Standards for Accessible Medical Diagnostic Equipment on January 9, 2017.[79] The MDE Standards contain minimal technical criteria to ensure that MDE, including but not limited to examination tables, examination chairs, weight scales, mammography equipment, and other imaging equipment used by health care providers for diagnostic purposes, are accessible to, and usable by, people with disabilities. They allow independent entry to, use of, and exit from the equipment by people with disabilities to the maximum extent possible.[80]

[The MDE Standards] allow independent entry to, use of, and exit from the equipment by people with disabilities to the maximum extent possible.

Although the Rehabilitation Act mandated that the Access Board promulgate technical standards regarding accessibility of MDE, it did not give it authority to enforce the standards. Compliance with the MDE Standards becomes mandatory only when an enforcing authority, like DOJ or HHS, adopts the standards as mandatory for entities subject to its jurisdiction (covered entities).[81] In addition, enforcing authorities will determine the application and scope of these standards, such as who must comply and the extent to which MDE used by covered entities must comply.[82]

The MDE Standards point out that given the many barriers to health care that people with mobility disabilities encounter due to inaccessible MDE, adoption of the standards by DOJ and HHS, will facilitate the ability of people with disabilities to "receive healthcare comparable to that received by their nondisabled counterparts."[83]

The need for enforceable MDE standards is also economic. Enforceable standards will help people with disabilities get the preventive care they need, and in turn, the United States will save billions of dollars that it currently spends addressing American's serious health conditions and deadly diseases that could be prevented if caught earlier through preventive care. Preventive care is a far more cost-effective practice of medicine than acute or crisis care, and accessible MDE makes greater preventive care possible. A 2014 study showed, for example, that preventable illnesses corresponded to treatment costs and lost productivity of $1.3 trillion. It was projected that the impact of improving prevention and treatment corresponded with a reduction in treatment costs of $220 billion and an increase in the gross domestic product of $900 billion.[84] This is a win for public health and the nation's financial health.

Preventive care is a far more cost-effective practice of medicine than acute or crisis care, and accessible MDE makes greater preventive care possible.

Discriminatory Barriers to Access to Health Care and Health Disparities Persist as the Population of People with Disabilities Grows

We have been talking about health care disparities for decades, but despite the clear need shown in study after study, the equipment used for basic health care services—examination tables and chairs, weight scales, x-ray equipment—remains inaccessible to a large percentage of people with physical disabilities. Moreover, eight years after the Access Board's Final Rule establishing the MDE Standards, health care accessibility discrimination against people with physical disabilities persists, evidenced, in part, by the significant and alarming health disparities that remain between people with disabilities, particularly people with physical disabilities, and those without. These health disparities and access barriers are adversely affecting a greater number of people with disabilities as this demographic continues to grow.[85]

The lack of accessible medical equipment contributes significantly to the fact that people with physical disabilities utilize the health care system for disease management versus disease prevention. Compared with their nondisabled peers, people with physical disabilities are less likely to receive recommended preventive health care services like those recommended by the U.S. Preventive Services Task Force.[86] The U.S. Preventive Services Task Force develops recommendations for clinical preventive services for all Americans (e.g., blood pressure screening, cervical cancer screening, colorectal cancer screening, obesity screening and counseling, breast cancer screening, among other tests and screenings).[87] Without the availability of height-adjustable examination tables, accessible mammography equipment, lift equipment to facilitate transfers, and so on, all of which are covered by the MDE Standards, most people with physical disabilities, if they receive those preventive services at all, will likely receive substandard care. The absence of that equipment places their health and well-being at risk and contributes greatly to their denial of the equal opportunity to benefit from a provider's facilities and services. Changing this paradigm requires the issuance of enforceable federal regulations on accessible MDE.

Without the availability of height-adjustable examination tables, accessible mammography equipment, lift equipment to facilitate transfers, and so on, all of which are covered by the MDE Standards, most people with physical disabilities, if they receive those preventive services at all, will likely receive substandard care.

Existing Nondiscrimination Regulations Are Insufficient

Although Section 504, Titles II and III of the ADA (Titles II and III), and most recently, Section 1557, prohibit disability-based discrimination in health care by covered entities,[88] systemic improvement in the availability of accessible MDE and resulting improved health care for people with mobility disabilities have not materialized.[89]

The statutes' implementing regulations do not require health care providers to have accessible MDE in their facilities. People with disabilities may file complaints with DOJ's Disability Rights

Section and HHS's Office for Civil Rights (OCR) against health care providers based on barriers to health care due to the lack of accessible MDE under Section 504, the ADA, and the Section 1557 regulations. Among their nondiscrimination requirements, these regulations require that health care providers provide reasonable modifications of policies, practices, or procedures; program accessibility; and barrier removal.[90]

DOJ established a Barrier-Free Health Care Initiative in 2012 to help ensure entities subject to their jurisdiction provide effective communication for Deaf and Hard of Hearing, physical access to medical care for people with mobility disabilities, and equal access to treatment for people who have HIV/AIDS.[91] This is an important initiative that has resulted in a few agreements to improve access to accessible medical equipment.[92] Likewise, HHS's OCR has taken corrective action in several complaints where people with mobility disabilities alleged discrimination due to inaccessible medical equipment.[93] Each of these agreements has assisted in removing physical barriers to obtaining needed health care; however, the continued, widespread lack of accessible MDE in health care facilities proves that enforcement on a case-by-case approach has not made meaningful, systemic improvements in its availability.

[C]ontinued, widespread lack of accessible MDE in health care facilities proves that enforcement on a case-by-case approach has not made meaningful, systemic improvements in its availability.

As clearly described in DOJ's ANPRM on Equipment and Furniture,[94]

> [W]ithout accessible medical examination tables, dental chairs, radiological diagnostic equipment, scales, and rehabilitation equipment, individuals with disabilities do not have an equal opportunity to receive medical care. Individuals with disabilities may be less likely to get routine preventative medical care than people without disabilities because of barriers to accessing that care.[95]

That assessment rings as true in 2021 as it did in 2010 given the significant number of studies and reports that give voice to the struggles that people with mobility disabilities have receiving quality health care.

To date, the only federal agency to act is the VHA, which initiated an acquisitions policy that requires all new equipment purchases across the Veterans' Affairs (VA) Health System meet the standards for MDE.[96] In 2010, DOJ and HHS jointly issued a guidance document for health care providers titled, *Access to Medical Care for Individuals with Mobility Disabilities*,[97] on their responsibilities under Section 504 and the ADA to ensure their services and facilities are accessible to people with physical disabilities, by

[T]he only federal agency to act is the VHA, which initiated an acquisitions policy that requires all new equipment purchases across the Veterans' Affairs (VA) Health System meet the standards for MDE.

utilizing lift equipment, height-adjustable examination tables, and so on. This is an important document, but guidance without enforcement authority does not require compliance by health care providers.

In addition to being a tool for remedying widespread, systemic disability discrimination, adoption of the MDE Standards would clarify legal obligations and remove ambiguity about required access for patients, providers, and health systems. By removing ambiguity from the process, enforceable MDE Standards would promote the delivery of safe, efficient, and appropriate care to millions of Americans.

[G]uidance without enforcement authority does not require compliance by health care providers.

Disability is part of the human condition. All health care providers, regardless of practice setting, size, geographic location, and specialty, will have people with permanent and transient disabilities among the people they serve. The creation of a culture of access through the formal adoption of MDE Standards by enforcing authorities will help ensure that the U.S. health care system is meeting the needs of all Americans. This will also benefit those essential workers—nurses, technicians, doctors, therapists, and aids—dedicated to the provision of safe, effective, and timely preventive, primary, emergency, and specialty care.

Year	History of Law and Policy Related to Accessible Medical Diagnostic Equipment
9/26/1973	Section 504 of the Rehabilitation Act is enacted, prohibiting discrimination on the basis of disability by any program or activity receiving federal financial assistance or under any program or activity conducted by any executive agency or by the U.S. Postal Service.
7/26/1990	The ADA is enacted, prohibiting discrimination on the basis of disability in employment (Title I), local and state government programs and services (Title II), places of public accommodation (Title III), Telecommunications (Title IV), and transportation.
7/26/1991	DOJ proposes regulations under Titles II and III of ADA addressing multiple requirements, including that all new equipment purchases must be accessible to the extent available. (This provision was not included in the final rulemaking due to the lack of consensus on equipment accessibility standards.)
9/30/2004 6/17/2008	DOJ issues ANPRMs for revised regulations under Titles II and III of the ADA. The DOJ received numerous comments regarding the inclusion of nonfixed, accessible furniture and equipment. In the 2008 Notice of Proposed Rulemaking, DOJ declined to include accessible furniture and equipment but stated that it would continue its approach of requiring accessible equipment and furniture on a case-by-case basis.
7/10/2010	DOJ issues final Revised Regulations under Titles II and III, including revised ADA Standards for Accessible Design for buildings and facilities but not including "non-fixed furniture and equipment" such as accessible MDE.
7/29/2010	DOJ issues an ANPRM that sought public comments on revising Titles II and III of the ADA to include requirements for accessible medical equipment. Public Comments were due in January 2011. Over 360 comments were submitted by the public.

Year	History of Law and Policy Related to Accessible Medical Diagnostic Equipment
3/3/2010	The Patient Protection and Affordable Care Act (ACA) is enacted. Section 4203 amended the Rehabilitation Act by adding Section 510, which charges the Access Board, in cooperation with the U.S. Food and Drug Administration, to develop accessibility standards for MDE, including examination tables, examination chairs, weight scales, mammography equipment, x-ray machines, and other radiological equipment. Section 4302 amends Section 300kk of the Public Health Service Act (42 U.S.C. 300kk) by requiring HHS to survey health care providers and establish other procedures in order to assess access to care and treatment for people with disabilities and to identify the number of providers with accessible facilities and equipment to meet the needs of people with disabilities, including MDE that meets the minimum technical criteria set forth in Section 510 of the Rehabilitation Act, and the number of employees of health care providers trained in disability awareness and patient care of people with disabilities.
5/18/2016	HHS issues a Final Rule on Nondiscrimination in Health Programs and Activities under Section 1557 of the ACA. The Final Rule states that HHS will take action to adopt the MDE Standards after they are published, and that health care providers must ensure that health programs and activities that involve the use of medical equipment are accessible to people with disabilities.
1/9/2017	U.S. Access Board issues its Final Rule on Standards for Accessible Medical Diagnostic Equipment. The MDE Standards are not mandatory and must be adopted by an enforcing agency (e.g., DOJ and HHS) to be enforced.
2017	VA incorporates the U.S. Access Board Standards for Medical Diagnostic Equipment as part of its procurement policies.
1/30/2017	President Trump issued Executive Order 13771, Reducing Regulation and Controlling Regulatory Costs, mandating that no new policies or regulations can be implemented unless they can document cost neutrality, and for every new regulation implemented, two regulations must be rescinded.
12/26/2017	DOJ withdraws its 2010 ANPRM on Nondiscrimination on the Basis of Disability by State and Local Governments and Places of Public Accommodation; Equipment and Furniture.
8/13/2018	NCD issues a letter to U.S. Attorney General Jeff Sessions regarding the necessity and appropriateness of DOJ promulgating accessible medical equipment regulations.
2020	HHS's Administration for Community Living (ACL) issues brief titled, "Wheelchair-Accessible Medical Diagnostic Equipment: Cutting Edge Technology, Cost-Effective for Health Care Providers, and Consumer-Friendly."
6/12/2020	HHS issues a revised regulation on Section 1557 but does not adopt the Access Board's 2017 MDE Standards.
7/31/2020	NCD issues a letter to HHS Secretary Azar on the need for HHS to issue an accessible MDE rule.
1/20/2021	President Biden revokes Executive Order 13771, Reducing Regulation and Controlling Regulatory Costs.

Chapter 2: Research Synthesis and Key Findings

To inform the recommendations in this report, we implemented a rigorous research process that included peer-reviewed research and conducted individual and group interviews with 20 interdisciplinary stakeholders from the research, clinical, advocacy, and policy communities (see Appendix 1 for stakeholder experts and affiliations) to gain insights into opportunities and challenges for advancing the policy, implementation, and research agendas related to the adoption of the MDE Standards. Finally, we convened a virtual meeting of interdisciplinary stakeholder experts to envision a path forward to implementation of MDE Standards to promote health care equity for the 61 million Americans with disabilities, including the 20 million people with mobility limitations.

Qualitative Research Indicates Significant Barriers to Health Care Access

As described in the introduction, a preponderance of qualitative and survey-based evidence indicates that people with disabilities experience significant barriers to health care access due in no small part to the inconsistent availability and appropriate use of accessible MDE in preventative, primary, and specialty care settings. Qualitative research is generally characterized by the use of comparatively small samples of people from whom in-depth information concerning their experiences is gathered. It is a powerful approach for understanding the personal experience behind the numbers and can provide insights into the ways people experience and respond to barriers within the health care systems. The majority of qualitative studies included in this review focused on access to care broadly, with issues regarding access to accessible MDE emerging either upon direct questioning or as a component of more in-depth stories about health care experiences.

In a 2006 study of the barriers and strategies affecting utilization in a heterogeneous group of people with physical disabilities, participants identified both environmental and process barriers to accessing primary preventative care services.[98] Environmental barriers included inaccessible x-ray machines, mammography equipment, and examination tables, as well as a variety of issues related to architectural accessibility. Process barriers included lack of disability competence among health care providers and patients' limited understanding of how to access services, especially accessible services.

In a 2010 study published in the *Oncology Nursing Forum*, women with chronic mobility disabilities who had developed early stage breast cancer identified inaccessible MDE

Environmental and Process Barriers to Preventative Care

Environmental barriers:

- Inaccessible x-ray machines, mammography equipment, and examination tables
- Architectural inaccessibility

Process barriers:

- Lack of disability competence among health care providers
- Patients' limited understanding of how to access services, especially accessible services

(mammography machines, weight scales, and examination tables) as barriers to cancer diagnosis and treatment.[99] In addition, availability of an accessible examination table was not enough to ensure its use. Women were forced to be strong advocates for their care and assert their right to be transferred to an examination table when providers showed a preference for examining them in their wheelchairs. However, this advocacy was not without a cost, as women often felt unsafe during transfers, feared injury, and expressed concern for the safety of the medical team.

Similarly, in a 2015 study in the *Journal of Women's Health*, women with mobility disabilities shared their experiences of prenatal care.[100] Many women reported difficulty transferring to their doctor's fixed-height table and were examined while seated in their wheelchairs. Women again expressed safety concerns about assisted and unassisted transfers. None of the women in the sample were routinely weighed on an accessible weight scale, and a few reported never being weighed during their pregnancies.[101] The following year, a study in the *Archives of Physical Medicine and Rehabilitation* reported that women with physical disabilities identified lack of accessible examination tables and disability competence by providers as barriers to quality gynecological and reproductive health care.[102]

Survey-Based Data Provide Evidence for the Scope of the Problem

Survey-based data supplement first-person accounts by providing statistics that reveal the extent of the problem of lack of accessible MDE. In a 2020 study published in *Disability and Health Journal*, 536 people with disabilities, including 290 who self-identified as mobility device users, were surveyed about their health care experiences.[103] Of the total sample, 25 percent had difficulty accessing examination tables, 22 percent had difficulty accessing weight scales, and 20 percent had difficulty accessing diagnostic equipment. Of the 173 participants who indicated that they needed a height-adjustable examination table, only 13 percent always had access to it. In follow-up qualitative questions, people identified consequences of barriers to health care access, including delaying or foregoing care, dropping a health care provider, losing their sense of agency in health care decision making, losing trust in the health care system, feeling like a burden, and feeling dehumanized.[104] Similarly, a 2019 survey of 1,159 people with multiple sclerosis, spinal cord injury, muscular dystrophy, and post-polio syndrome found that while the majority

2020 *Disability and Health Journal* study

- 536 people with disabilities surveyed, 290 of whom self-identified as mobility device users
- 25 percent had difficulty accessing examination tables
- 22 percent had difficulty accessing weight scales
- 20 percent had difficulty accessing diagnostic equipment
- Of 173 who indicated a need for height-adjustable examination tables, only 13 percent had access to one

of participants had seen a health care provider in the previous 12 months, only 56 percent of the 462 people who needed a height-adjustable examination table received it, only 33 percent of the 295 people who needed a wheelchair-accessible weight scale received one, and only 31 percent of the people who needed a safe transfer device to move to an examination table received one.[105]

A 2014 survey of 108 adults with spinal cord injury published in the *Archives of Physical Medicine and Rehabilitation* reported that while almost all of their participants had visited a primary care provider and a specialty care provider, the majority had experienced accessibility challenges clustered around the examination room in both primary care (91 percent) and specialty care (80 percent).[106] The most prevalent barriers were

inaccessible examination tables (primary care 77 percent; specialty care 51 percent) and lack of transfer aids (primary care 69 percent; specialty care 61 percent). The majority of patients were not weighed (89 percent) and remained in their wheelchairs during the examination (82 percent). Cancer screening rates among the survey group were below national benchmarks for colon, breast, and cervical cancers. Despite being high-frequency users of health care services, people with disabilities continue to report inconsistent access to accessible MDE, which in turn compromises their quality of care, including access to preventative screenings.[107]

While a 2009 survey-based study published in the *American Journal of Physical Medicine and Rehabilitation* found that only 3 percent of adult respondents with disabilities who received care at a specialty rehabilitation facility reported problems with physical accessibility, 59 percent of people who identified as being dependent for transfer reported being examined in their wheelchairs, 70 percent reported that caregivers assisted with transfers to the examination table because the staff were unable, and 44 percent reported that staff did not know how to transfer them.[108] These findings suggest that physical access barriers may have been underreported or that patients were unaware that accessible MDE is a component of physical accessibility. Both scenarios point to a larger issue concerning patients' awareness of their rights in the health care setting.

Surveys of practice administrators indicate that when accessible MDE is not available, health care providers resort to *ad hoc* "accommodations," such as examining patients in their wheelchairs (76 percent), asking patients to bring someone to assist them (52 percent), skipping parts of the examination where the barrier was encountered (44 percent), and refusing to treat the patient due to clinic inaccessibility (3 percent).[109] An audit-based study of 30 primary and specialty care clinics in the Louisville, Kentucky, area reported similar findings during a 2013–2014 follow-up survey of clinical managers.[110] Ninety-three percent of examination rooms were noncompliant with one or more ADA requirements, and 70 percent of clinic managers reported not owning a height-adjustable examination table or wheelchair-accessible weight scale. In the absence of accessible MDE, wheelchair users were offered inappropriate accommodations including being examined in their wheelchairs (70–87 percent), being asked to bring someone with them to assist with transfers (30 percent), or being referred elsewhere.

Ad Hoc "Accommodations" in Absence of Accessible MDE

Surveys of practice administrators indicate that when accessible MDE is not available, *ad hoc* "accommodations" include:

- Examining patients in their wheelchairs (76 percent)
- Asking patients to bring someone to assist them (52 percent)
- Skipping parts of the examination where the barrier was encountered (44 percent)
- Refusing to treat the patient due to clinic inaccessibility (3 percent).

Audit-Based Accessibility Studies Reveal Greater Access Disparities

Participants in our stakeholder interviews expressed concerns that self-report surveys from patients and providers may underreport architectural and MDE accessibility barriers. A cluster of studies examined availability of accessible MDE, directly or in combination with architectural accessibility. There is no consistent instrument used to evaluate accessibility across studies, and most studies created their own survey or audit tool guided by the ADA Accessibility Guidelines (ADAAG)[111] supplemented with targeted items about the availability of accessible MDE.

Participants in our stakeholder interviews expressed concerns that self-report surveys from patients and providers may underreport architectural and MDE accessibility barriers.

A 2008 study in the *Disability and Health Journal* reported on the findings of accessibility audits of 68 primary care facilities in South Carolina using the ADAAG supplemented with items about the availability of accessible MDE.[112] Only one facility had a wheelchair-accessible weight scale, and 44 percent of the facilities had a height-adjustable examination table. Hospital-owned facilities and newer constructions tended to be more accessible. Informal follow-up by a rehabilitation engineer identified challenges to complying with federal law (ADA) and providing accessible MDE in practice, including budgetary concerns.[113] However, the availability of funding support was not enough to motivate change, and lack of patient complaints was perceived to indicate that the *status quo* was acceptable. This finding was corroborated by our interviews with stakeholder experts who reported that even when accessible MDE was provided free or at very low cost, health care providers failed to take advantage of the offer. For example, one expert shared that when a large health network offered accessible MDE grants to their hundreds of thousands of providers, only a few hundred applied for the funding, and even fewer accepted it. In a puzzling turn of events, some providers declined to accept accessible MDE upon delivery. While the reason for this was unclear, the stakeholder experts speculated that it was indicative of a lack of provider understanding about the need and widespread benefit of accessible MDE to the people they serve.

[T]he availability of funding support was not enough to motivate change, and lack of patient complaints was perceived to indicate that the status quo *was acceptable. . . . [E]ven when accessible MDE was provided free or at very low cost, health care providers failed to take advantage of the offer.*

A 2019 study published in *Health Equity* reported the findings of a secondary analysis of on-site audits of 3,993 primary care offices in California between 2013 and 2016.[114] Audits were guided by the ADAAG supplemented with items about the availability of accessible MDE. While approximately 85 percent of primary care offices complied with ADA architectural

elements, only 19 percent of offices had an accessible examination table, and 10.9 percent had accessible weight scales.[115] Although these numbers are low, they represent an improvement over the research team's 2012 *Disability and Health Journal* study of 2,389 audits completed between 2006 and 2010. Those audits found that only 8.4 percent of primary care clinics had a height-adjustable examination table, and 3.6 percent had an accessible weight scale.[116] In contrast, a 2018 survey of 214 health professionals who were part of a large health system in the South Atlantic United States[117] reported that a relatively high percentage of hospital-based primary care clinics, and private diagnostic centers indicated that they had accessible MDE, including at least one height-adjustable examination table (hospital 95 percent, primary care 99 percent, private diagnostic 80 percent) and at least one wheelchair-accessible weight scale (hospital 60 percent, primary care 72 percent, private diagnostic 55 percent).

An alternate approach to evaluating clinic accessibility was taken by attempting to schedule a subspecialty appointment for a fictitious patient with mobility impairments.[118] Of the 256 practices contacted, representing eight subspecialties across four cities, 22 percent (56 practices) reported that they could not accommodate the patient due to inaccessible building architecture (4 percent, 9 practices) and inability to transfer the patient from wheelchair to examination table (18 percent, 47 practices). Only 9 percent (22 practices) of the sample reported use of a height-adjustable examination table or lift to assist with transfers. Gynecology was the subspecialty with the highest rate of inaccessible practices (44 percent).

These findings highlight that accessible MDE access lags far behind architectural access, due in part to the federal accessibility requirements that apply to public and government entities under the ADA and the lack of enforceable federal MDE Standards. There was widespread agreement among experts interviewed that unless the HHS and the DOJ adopt the MDE Standards as mandatory for the entities subject to their jurisdiction, significant improvement in the availability of accessible MDE for all people with disabilities was unlikely.

[A]ccessible MDE access lags far behind architectural access, due in part to the federal accessibility requirements that apply to public and government entities under the ADA and the lack of enforceable federal MDE Standards.

Even within catchment areas, availability of accessible MDE varied. A 2019 study of the geographic distribution of disability-accessible offices of Medicaid managed care plan physicians in Los Angeles (LA) County found that only 44 percent of LA County zip codes had at least one office with a height-accessible examination table, only 31 percent had an accessible weight scale, and only 16 percent had a patient lift.[119] These findings illuminate disparities in access to accessible MDE based on zip code of residence, placing people with mobility disabilities in the difficult position of having to choose between long travel times to accessible clinics or seeking care in local but potentially inaccessible settings. The findings across studies and our interviews with stakeholder experts emphasized the importance

of acknowledging geographic and setting-specific variability in the availability of accessible MDE. People with disabilities who do find a provider with a fully accessible office often have to travel long distances to regional medical centers. Also, given the strong association between racial residential segregation and health disparities, the impact of geographic variability in facilities with accessible MDE may be particularly pronounced for people of color with disabilities.[120]

These findings illuminate disparities in access to accessible MDE based on zip code of residence, placing people with mobility disabilities in the difficult position of having to choose between long travel times to accessible clinics or seeking care in local but potentially inaccessible settings.

Stakeholder experts emphasized the need to pay special attention to people receiving care in small and rural communities from what many called "mom-and-pop" providers who frequently provide care to communities while working with a very tight operating budget and for whom procurement of accessible MDE may be perceived as cost prohibitive. Equipment manufacturers and policy experts who participated in the stakeholder interviews emphasized the importance of publicizing tax incentives available to small practices with either 30 or less employees or total revenue of $1 million or less through the Internal Revenue Service's (IRS) Disabled Access Credit (Form 8826).[121] At least two stakeholder experts in disability advocacy suggested that managed care organizations (MCOs) are better suited to purchase accessible MDE than individual providers. "Don't put the burden on the small offices," said one. "Put it where the funding resides." Unfortunately, this keeps the burden on the patients who live in small communities where there are only small medical practices, unaffiliated with a hospital system with resources. If such small practices do not obtain accessible MDE, their patients who need it will continue to avoid care or travel outside of their communities to receive appropriate care.

[G]iven the strong association between racial residential segregation and health disparities, the impact of geographic variability in facilities with accessible MDE may be particularly pronounced for people of color with disabilities.

Further influencing procurement of accessible MDE is decision makers' limited knowledge about the need for and the availability of accessible MDE. Research suggests that rather than licensed clinicians, administrators and office managers were responsible for MDE purchasing decisions in hospitals (70 percent), primary care offices (67 percent), and private diagnostic facilities (100 percent).[122] In 2013 and 2014, a series of manuscripts based on a survey of 63 primary care administrators found that while administrators were primarily responsible for MDE purchases, less than half knew that accessible equipment existed, and only a quarter knew what accessible equipment was available.[123] Clearly, administrators are the key decision makers when it comes to

MDE, so it is imperative that they understand the value of accessible MDE and are aware of what accessible MDE options are available to them.[124]

Additional Challenges Identified by Stakeholder Experts

Knowledge of Rights and the Role of DOJ Need to Be Increased

Stakeholder experts raised the issue that consumers may be unaware that accessible MDE is available and required, so they do not know to advocate for its use or report nonavailability. Stakeholder experts also indicated that fear of losing their health care and health care providers can make people with disabilities reluctant to lodge complaints about quality of care and lack of accessible MDE. This problem is particularly acute for people with disabilities who receive their health care funding through federal programs, especially Medicaid, for whom finding providers who will accept this form of reimbursement is already problematic.[125] When complaints are lodged and result in legal action, they typically impact a single health system. Stakeholder experts have noted that this case-by-case approach to enforcement has not led to widespread changes in procurement and provision of accessible MDE across the broader health care delivery system(s). While nearly all of the stakeholder experts acknowledged that litigation under existing civil rights legislation was an important tool in the advocacy and system's change arsenal, they emphasized that leadership at the federal level through the adoption and enforcement of the MDE Standards was preferred to a case-by-case enforcement approach.

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Lack of Reliable Disability Data

Closely related to the public reporting of accurate, verifiable accessibility information were challenges related to the availability of disability data. There continues to be no universally agreed upon coding system to document the presence of disability at the population or health system level. Despite lobbying efforts by members of the Access Board, disability-related variables are not included in meaningful use standards for electronic health records.[126] Concerns over provider and patient burden were cited as the reason for their exclusion, but a more fundamental challenge may be convincing health administrators and information technology specialists that disability data are important. Even when facility-level data are required, such as in California's state-mandated Facility Site Review Process that includes a Physical Accessibility Survey,[127] compliance is determined by completion of the process rather than the results of the accessibility audit.

Stakeholder experts also indicated that many health care providers have narrow and stereotypical views of who the potential beneficiaries of accessible MDE are. When they

see an expanded view on who benefits from accessible MDE, they recognize the opportunities for widespread patient benefit. Several stakeholder experts pointed to the need to change the culture of health care to see the relationship between accessibility, patient and provider safety, and quality of care. For example, a series of ergonomic studies found that the use of height-adjustable examination tables decreased perceived exertion during transfers for both providers[128] and patients.[129] Perceived exertion has been used in previous ergonomic studies as an indicator of occupational risk, particularly for musculoskeletal injuries. Additionally, regardless of functional mobility status, patients reported more difficulty and less sense of safety when transferring to fixed-height examination tables. These findings speak to the potential widespread benefit of accessible MDE and are examples of the application of universal design principles to MDE.

There continues to be no universally agreed upon coding system to document the presence of disability at the population or health system level. Despite lobbying efforts by members of the Access Board, disability-related variables are not included in meaningful use standards for electronic health records.

A Need to Foster a Culture of Access and Inclusion for Everyone

Culture change may also be needed to ensure that not only is accessible MDE purchased, but it is also appropriately used as part of routine clinical care. Studies show that even when accessible MDE is available, it is not consistently used by providers. For example, a 2017 study in the *Journal of Internal Medicine* compared patients' perceptions of quality and frequency of physical examinations on examination tables at two primary care clinics, one with and one without height-adjustable examination tables.[130] People with disabilities were 27 percent less likely to be examined on a table ($p < 0.001$) and reported lower perceived quality of care, regardless of the availability of height-adjustable examination tables. This suggests that provision of accessible MDE alone may be insufficient to change provider practice patterns and that a more comprehensive approach to create a culture of access is required.

Given the preponderance of qualitative evidence highlighting the lack of accessible MDE and disability competence as barriers to primary, preventative, and specialty care for people with physical disabilities, a 2019 study in the *Archives of Physical Medicine and Rehabilitation* sought to understand providers' perspectives on accessible MDE use.[131] Physicians had mixed feelings about accessible MDE use and identified both strengths and drawbacks of using accessible MDE in clinical practice. Greater safety for patients and staff was seen as a benefit. Accessible MDE allowed providers to stop relying on patient descriptors of symptoms and self-reported weights, which was another plus. Extra time and effort needed to perform transfers was a drawback, and some providers indicated a preference for examining people with disabilities in their wheelchairs, even when an accessible examination table was available.[132]

Cost Considerations

Rather than viewing accessible diagnostic equipment as a civil rights and health care equity issue, it is often seen through only a cost lens, or worse yet, a cost-benefit lens. Collaboration between states, health care providers, and insurers has been floated as an approach to mitigate cost concerns.[133] For example, in 2018, Centene, a national Medicaid insurer, partnered with the National Council on Independent Living (NCIL) to create a Provider Accessibility Initiative (PAI) program to improve access to quality health care and services to members with disabilities.[134] Centene's goal is to increase the number of network providers who meet the minimum accessibility standards in both physical and programmatic access. To date, Centene has issued 140 barrier removal grants totaling $1 million to six health care systems in Illinois, Texas, Ohio, Florida, New Mexico, and Kansas. The grants have funded assistive listening devices, Braille signage, wheelchair-accessible examination tables and weight scales, wheelchair-accessible building ramps, and mobility handrails. In 2020, the PAI extended grants to health care providers in California, Indiana, and Pennsylvania, and in 2021, to Hawaii, Iowa, and Louisiana.

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Stakeholder experts, including health economists, equipment suppliers, and procurement officers within health systems, indicated that simple cost comparisons between accessible and inaccessible MDE may not be possible. True costs are a more complex reflection of list prices of devices and issues related to economy of scale and organizational negotiating power. Economic advisors further suggest that when making medical equipment purchase decisions based on return on investment estimates, it is important to consider up-front costs, including cost of purchase, capital costs if alterations to the physical space are needed to support use and installation, as well as cost of acquisition (from staff time devoted to the purchase and procurement process), recurring costs (including maintenance and training costs), and the projected net cash flow generated from the underlying equipment (e.g., does the accessible equipment influence patient volume, efficiencies, or flow). Under the IRS's Disabled Access Credit (IRS Form 8826), small businesses can take a federal tax credit of equal to 50 percent of the amount they spend on access improvements over $250. The maximum credit a business can elect for any tax year is $5,000.[135] Unfortunately, some health care providers could view examining a wheelchair user while they remain in the wheelchair as more cost effective, since it takes time to transfer to the height-adjustable examination table—time they may

not get reimbursed for. However, for medical examinations that require added time, providers have the option of billing under the Centers for Medicare and Medicaid Services (CMS) prolonged service codes (CPT 99354 and 99355) that allow physicians and other qualified nonphysician practitioners to be paid at a higher rate if total direct face-to-face time equals or exceed the threshold time for the code.[136]

Under the IRS's Disabled Access Credit (IRS Form 8826), small businesses can take a federal tax credit of equal to 50 percent of the amount they spend on access improvements over $250. The maximum credit a business can elect for any tax year is $5,000.

Conclusions

Although the existence of health care access disparities is well known within the disability advocacy, policy, and research communities, the issue has failed to capture the attention of the mainstream clinical and public health communities. Research efforts are still largely directed at documenting the existence and severity of disparities. It is clear from the best available evidence that people with physical and mobility disabilities largely lack access to accessible MDE in preventative, primary, and specialty care, which is a barrier to receiving necessary health care and contributes to missed or delayed diagnoses and poorer health outcomes. There is some indication that the number of health care facilities with accessible MDE is increasing, and that there are differences in availability and access based on geographic location, health system, and practice setting. Additionally, the providers who have accessible MDE need to inform their staff and train them in its use. Despite the many challenges surrounding accessible MDE procurement and access, the limited quantitative data provide promising preliminary evidence that the use of accessible MDE can increase provider and patient safety.

Chapter 3: Three Arguments for Adopting Medical Diagnostic Equipment Standards

Based on the perceived challenges and opportunities, three broad approaches to implementation and widespread adoption of the MDE Standards were identified: (1) ensuring access and equity; (2) linking to safety and quality initiatives; and (3) making the business argument. We describe each of these approaches in turn, including key opportunities, targeted research funders, and challenges.

Ensuring Access and Equity Under Existing Federal Laws

There was a strong emphasis in both the published literature and among the expert stakeholders that the provision and appropriate use of accessible MDE is a civil right under the ADA,[137] Section 504 of Rehabilitation Act,[138] and Section 1557 of the ACA.[139] These laws guarantee people with disabilities full and equal access to preventative, primary, and specialty health care. Formal endorsement and adoption of the MDE Standards by DOJ and HHS were seen as a natural supplement to the existing regulations. Formal endorsement and enforcement of the MDE Standards were recognized as conferring multiple benefits by protecting patients' rights and clarifying providers' responsibilities related to MDE procurement and appropriate use. There was a consensus among stakeholder experts that access to accessible health care services and MDE is a civil right that should not be subject to Executive Order 13771's[140] edict to demonstrate cost neutrality.

[P]rovision and appropriate use of accessible MDE is a civil right under the ADA, Section 504 of Rehabilitation Act, and Section 1557 of the ACA.

To promote awareness among health care providers of their responsibilities under federal law, disability competencies, such as those developed by the Alliance for Disability in Health Care Education,[141] should be endorsed and adopted by medical education accreditation boards. The field of dentistry has made efforts to improve access and equity by requiring disability education as part of accreditation,[142] which could be a model for other health fields. Additional education covering attitudes and access could be accomplished through partnerships with agencies that provide continuing education credits to a variety of health care professionals. Because we know that providers may not use accessible MDE even when it is procured and available, there is also a need for continuing education on why, when, and how to use accessible MDE. Educational efforts

like these can promote a culture of access and foster the type of cultural change that the SPHM research has identified as essential to long-term programmatic success.

Accessible MDE education efforts must extend beyond those who provide direct care to patients. Practice administrators are responsible for the majority of equipment purchases in the United States, so it is imperative that they understand their legal obligations to ensure health care access. Several stakeholder experts who participated in our study highlighted the importance of ensuring that administrators and procurement officers have information about the existence of and theneed for accessible MDE to make purchasing decisions that are responsive to the needs of their patients with permanent and transient mobility disabilities. Currently, very few facilities collect information on disability, patients' access needs, or level of functional mobility, citing concerns that data gathering places undue burden on patients and providers. Without accurate disability data, the needs of people with disabilities are missing variables. As a result, administrators rarely understand patient needs when trying to make data-driven purchasing decisions. As work toward the routine collection of disability data continues, education and outreach campaigns for procurement and purchasing officers can help ensure that they understand their legal obligations, purchasing options, as well as the potential widespread benefit to the people they serve.

Grassroots disability community action can be used to raise the awareness of people with disabilities, the general public, and health care entities about their rights to health care access. Creation of a rich library of people's lived experiences can demonstrate the need for and the implications of not having access to accessible MDE. These stories can be powerful advocacy tools and can be amplified through the strategic use of social media when disseminated by trusted sources. Social media platforms are increasingly used in public health and medicine. While the impact of social media on health behaviors remains unclear, it has been demonstrated to promote peer-to-peer information sharing and lifelong learning among health care professionals.[143]

Targeted strategies that link compliance with payment and contracting with a health plan may be necessary to prompt systems change.

The filing of ADA complaints at the provider, health system, and federal levels can challenge perceptions that the *status quo* of inaccessibility is acceptable. Stakeholder experts acknowledge that lawsuits have prompted accessible MDE adoption within several large health systems. They also expressed disappointment that because these lawsuits are dealt with on a case-by-case basis, they have yet to result in widespread systems change at the national level. Stakeholder experts suggested that change was particularly slow at the level of small private practices. Targeted strategies that link compliance with payment and contracting with a health plan may be necessary to prompt systems change. The endorsement and enforcement of the MDE Standards would

provide HHS and the DOJ with authority over their covered entities.

Grounded in understanding of the importance of evidence to guide practice and health service delivery, the expert stakeholders identified potential funders for research related to the adoption of MDE Standards, including the following:

- The Centers for Medicare and Medicaid Demonstration and Systems Change Initiatives in collaboration with the Office for Minority Health is a potential funder of accessible MDE implementation projects.
- The National Institute on Disability, Independent Living, and Rehabilitation Research is a strong target for research funding given its emphasis on "expanding society's capacity to provide full opportunities and accommodations for citizens with disabilities."[144]
- VHA is the federal entity that committed to the voluntary adoption of accessible MDE Standards and is an ideal agency for experiments and observational and outcomes studies about the impact of adopting accessible MDE Standards as they occur in real time, including pre-post comparisons of the patient, provider, and cost outcomes. The wealth of patient, programmatic, and claims data routinely gathered and centrally managed by the VHA provides a unique opportunity to link typically disparate data sources to support sophisticated statistical modeling of the relationship between disability status, accessible MDE, and outcomes.

There was a consensus among the expert stakeholders who contributed to this project that disability remains an afterthought for many providers, and there is limited awareness of the availability of accessible MDE. Our research indicated that multiple factors contribute to a false impression among health care providers that the current status quo of inaccessibility is acceptable. There is an overall lack of accessible MDE-related complaints at both the health system and federal levels. If providers are not held accountable for the lack of accessibility, there is little motivation to change. When working with people with disabilities, providers tend to create well-intentioned "work-arounds," such as examining patients in their wheelchairs instead of transferring them to an examination table and asking patients to report their weight rather than weighing them. Although these work-arounds are antithetical to comprehensive quality of care, they persist even when accessible MDE is available.[145] In the absence of education on federal law and few patient complaints, health care providers may get the mistaken impression that their work-arounds meet patients' needs and are legally acceptable. As a result, they may not recognize the need for making changes to their existing MDE to support access for all patients.

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Persistent negative biases about disability within the medical community also impede the adoption of MDE Standards.[146] The attitudinal change required to imbue health care with a culture of access is slow, and people with disabilities need accessible and appropriate health care services now. The endorsement and enforcement of MDE Standards can help advance the equity agenda for people with disabilities and changes attitudes, as implementation of accessibility features into public spaces often demonstrates their widespread benefit for people who may not self-identify as disabled. For example, people used to argue that curb cuts were too expensive to install everywhere just for a small portion of the population that used wheelchairs. Now that they are ubiquitous, everyone uses them, including parents with strollers, delivery companies, urban scooters, and people with walkers or canes. Similar widespread benefit may be achieved with lowered examination

Disability Bias in the Medical Profession Impedes Adoption of MDE Standards

A 2020 study in *Rehabilitation Psychology* based on a secondary analysis of survey-based data from over 25,000 health care providers revealed that an overwhelming majority of providers harbored negative implicit biases against people with disabilities. The authors hypothesized that these biases negatively impact health care access and outcomes for people with disabilities.

tables or radiology machines that help pregnant women, overweight patients, people who are aging/fragile patients, and those weak from cancer or other intensive treatment. People with disabilities are not only patients but also providers and caregivers; availability of accessible MDE can help them serve vital work- and support-related roles within the health care system.

> I have not had a full exam for over 50 years, except when I've been in the hospital. This is due to never being seen by a doctor who had accessible exam tables. So, a lot of the preventative parts of an annual physical, I don't get. Even though I pay the same price as those who do. Also, when my wife was ill with cancer, there were lots of times that I was not able to provide comfort and companionship because the examination rooms were not accessible, so I could not be next to my wife. *(Man with a physical disability)*

Linking to Existing Safety and Quality Initiatives

Improving safety and quality has been a major emphasis of the health care industry throughout the 21st century. By linking health care access, accessibility, and accessible MDE Standards to existing patient safety initiatives, there is the opportunity to build on a track record of success for the benefit of society at large. Incorporation of the principles of accessibility and universal architectural design has improved access for diverse stakeholders and system users for many different services and products. By shifting from a narrow focus on people with disabilities as a special interest group to broader conceptualizations of who can potentially benefit from accessible MDE creates opportunities to promote widespread adoption. By taking an expanded view of disability that moves away from diagnostically determined categories to emphasize functional status, the health care community can begin to see potential accessible MDE users everywhere: geriatrics, bariatric care, oncology and cancer survivorship, maternal and reproductive health, orthopedics, radiology, and so on. A wheelchair-accessible weight scale can also accommodate a geriatric patient using a walker or a bariatric patient who requires wide clearance. A height-adjustable examination table that is accessible for wheelchair users is also beneficial to pregnant women who may have trouble maneuvering or a cancer patient experiencing extreme fatigue. Similarly, health care providers can benefit from adjustable features in accessible MDE to accommodate their own bodily differences related to height, weight, strength, and

> *[P]eople used to argue that curb cuts were too expensive to install everywhere just for a small portion of the population that used wheelchairs. Now that they are ubiquitous, everyone uses them. . . . Similar widespread benefit may be achieved with lowered examination tables or radiology machines that help pregnant women, overweight patients, people who are aging/fragile patients, and those weak from cancer or other intensive treatment.*

mobility. As such, universal access moves from the sidelines to the core mission of health care entities.

Expanded conceptualization of who benefits from accessible MDE also provides opportunities to build coalitions to support systems change. For example, the collaboration between state nursing associations and disability community partners was instrumental in amending the Illinois Hospital Licensing Act to add requirements for safe patient handling, including accessible medical equipment and training for medical staff.[147] Recognition of the widespread beneficial impact of accessible MDE can foster collaboration between the disability community and other advocacy groups, such as AARP and veterans' groups, whose constituents could also benefit from use of accessible MDE. Collaboration and recognition of mutual benefit between professional organizations, such as the American Medical Association (AMA), American Nurses Association, American Hospital Association, and Patient Safety Organizations, can further support systems change and advocacy efforts. At a facility level, the integration of accessible MDE protocols into safety and quality initiatives is best accomplished through thoughtful interprofessional collaborations between clinical care providers, risk management and safety teams, human resources, procurement and facilities engineers, as well as executive leadership and disability community partners.

Leveraging existing safety and quality initiatives could provide new opportunities for cost and outcomes research by improving access to data and building on existing methodological approaches, such as existing and evolving risk management and mitigation protocols (such as root cause analysis of harm and near miss incidents and the systematic documentation and assessment of the influence of environmental and equipment factors on patient and provider outcomes. Given its emphasis on health care safety and quality, AHRQ represents a logical target funder for research related to the implementation of accessible MDE standards across clinical care settings to help build an evidence base to support decision making and innovations.

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While accessible MDE is highly beneficial to a broad range of patients and health care providers, it is important to recognize that there may be some risks associated with its use. Such risks do not arise from any inherent flaws in the technology. Instead, they primarily stem from the clinical community's lack of familiarity with accessible MDE and their limited experience caring for people with disabilities. If the unfamiliar equipment is not correctly installed or installed in an inappropriate space, it can be rendered unusable or unsafe. Likewise, staff must be properly trained to operate the equipment, so they and their patients are protected from injury risk. Providers must also be able to recognize the accessible MDE as an asset to the provision of quality care. Perceptions that using the equipment is too difficult, takes too long, or is simply an unnecessary disruption to the flow of care can all impede use. In a health care culture where people with disabilities are often an

afterthought, linking to safety and quality initiatives does not automatically rule out these risks, and care must be taken to address them.

The Business Argument

It should be noted that as previously stated, many of the stakeholder experts interviewed for this project challenged the validity of the business argument as the basis for decisions on the adoption of the MDE Standards, asserting instead the civil right to access and equity in places of public accommodations, including health care settings. They drew parallels with other accessibility features and pointed out that it was not necessary to demonstrate cost-effectiveness of wheelchair ramps or electric door openers prior to mandating their use.

However, in an effort to respond to Executive Order 13771,[148] stakeholder experts sought to craft arguments related to the provision of accessible MDE based on economic arguments. In addition to long-term benefits of timely access to preventive and primary care,[149] stakeholder experts identified a variety of angles from which to approach the issue of cost-effectiveness. The most intuitive, which was put forth concretely by two experts with health economics backgrounds and generally by all others, is the case built on demonstrating that the provision of accessible MDE creates a competitive advantage for health care providers and enables them to attract a greater number of patients with disabilities. If provision of accessible MDE will improve the patient experience, higher ratings of patient satisfaction will result, as will the ability to document accessibility via patient report and/or verified accessibility audits. Public reporting that a health care facility meets or exceeds accessibility standards may drive business to a particular health care system or provider.

Similarly, at least one interviewed stakeholder expert suggested that being able to document the appropriate use of accessible MDE may be perceived by current or prospective employees, especially nursing and imaging professionals, as a commitment to employee safety. This commitment to safety may support staff satisfaction and recruitment and retention efforts, while also reducing costs associated with work-related injuries and lost person-hours resulting from those injuries.

Given its emphasis on health care safety and quality, AHRQ represents a logical target funder for research related to the implementation of accessible MDE standards across clinical care settings to help build an evidence base to support decision making and innovations.

Exploring and quantifying the financial impact of timely care and geographic access was another popular business angle among the stakeholder experts interviewed. If local health care facilities have the equipment needed to examine and diagnose patients with disabilities, those patients are more likely to receive timely preventive services and follow-up care, thereby decreasing costly hospital admissions, readmissions, or long-term care placements. Early detection of cancer and other serious conditions can lead to downstream savings. Receiving care locally is more efficient and convenient, especially for frequent users of

health care who may postpone or not follow up if appointments are too far from home.

> I have been using a wheelchair for 32 years and have run into many problems. Firstly, I have only weighed myself about four times in the last 32 years—at the feed store and when I've gone back to visit Santa Clara Valley Medical Centers SCI unit. I am now a Kaiser patient, and I'm told there is a roll-on weigh machine somewhere, but I have never seen it, and it has never been brought up by my doctors. I need a bone density test every three years, and this table is not accessible nor will hospital staff help lift me up. I'm told to bring someone to lift me. This is difficult as my friend/family group is not physically able to do this easily. I have always asked my mother, but she is now 71 years old and unable to do this. I am a few years behind on doing this test because I have no idea who to ask! *(Woman with a physical disability)*

As indicated in the preceding passage, many people with disabilities arrive at their local clinics having been told the facilities are "accessible," only to learn that accessible MDE is not available. Insurance is typically billed for that unsuccessful visit as well as a subsequent visit to a facility with accessible MDE, which is often a more costly regional medical center. When local providers are equipped with MDE for patients who need it, insurers and patients avoid redundant costs, and physicians keep a patient.

If local health care facilities have the equipment needed to examine and diagnose patients with disabilities, those patients are more likely to receive timely preventive services and follow-up care, thereby decreasing costly hospital admissions, readmissions, or long-term care placements.

Both the stakeholder expert interviews and research literature recommended leveraging state and federal programs as well as those initiated by payers and community partners to incentivize the acquisition and appropriate use of accessible MDE. Perceived and actual costs of accessible MDE have been identified as major barriers to implementation, especially by small mom-and-pop providers. There is a need for expanded provider education around existing programs to support procurement and use of accessible MDE, such as the IRS Disabled Access Credit[150] and CMS's Prolonged Service Codes.[151] Health system–initiated programs, such as Centene's Provider Accessibility Initiative,[152] can be expanded and replicated. In-kind grants that minimize the out-of-pocket expenses of small business owners

Perceived and actual costs of accessible MDE have been identified as major barriers to implementation, especially by small mom-and-pop providers. There is a need for expanded provider education around existing programs to support procurement and use of accessible MDE . . .

may be particularly effective in reducing the financial burden and risk to providers who operate on very tight budgets. Equipment suppliers can support routine purchase of accessible MDE by improved marketing and reduction of price points for accessible equipment. Just as suppliers are accountable for ensuring product safety, so too should they be accountable for the provision of accessible equipment options at a reasonable price. Our stakeholder experts with backgrounds in procurement and equipment supply acknowledged that there is a significant price differential between the list prices for fixed and adjustable MDE. They asserted, however, that these differences may be artificially inflated, and lower prices can be obtained through price negotiations and volume-based purchasing agreements.

Experts interviewed cited the advantage of a multipronged approach that includes both "carrots and sticks." Many of them recommended that the business argument would be furthered by linking payment, accreditation, and inclusion in health plans to compliance with federal law and accessible MDE Standards. Similarly, fear of litigation was viewed as the ultimate stick to force compliance (see Ensuring Access and Equity Under Existing Federal Laws).

[T]he business argument would be furthered by linking payment, accreditation, and inclusion in health plans to compliance with federal law and accessible MDE Standards.

Research that supports the implementation and widespread use of accessible MDE may be funded by entities such as the following:

- The AHRQ, which emphasizes health care quality and patient safety
- The Patient-Centered Outcomes Research Institute (PCORI), which emphasizes patient-centered outcomes and funds research on health care disparities
- The National Institutes of Health

Challenges to the business case

The case for a business argument to support accessible MDE procurement and use confronts several practical realities within the health care delivery system. There must be recognition that while transferring a patient to a height-adjustable examination table or locating an accessible weight scale is easier and faster than completing a transfer to a fixed-height table or transporting a patient to the loading dock to get weighed; many providers are not doing these things. Even when accessible MDE is available, patients report that providers are still examining patients in their wheelchairs or asking for self-reported weights, which is perceived as faster and easier than using accessible MDE.[153] Therefore, it is important to ensure that when cost comparisons are being made, they are made on care that is appropriate, high quality, and preserves the patient's dignity.

Many people with disabilities receive their health care services through government entitlement programs, such as Medicare and Medicaid. These programs have lower and slower reimbursement rates than private insurance and place greater restrictions on reimbursable services. Such factors can dissuade providers from taking on new patients with disabilities. Many people with disabilities report challenges finding health care providers who accept

Medicaid. A 2017 study revealed that the average rate of Medicaid acceptance in the 15 largest U.S. cities was just 53 percent.[154] Precarious federal and state support for entitlement programs, such as Medicaid and health exchanges under the ACA, risks undermining a business argument for accessible MDE built around increased market share of patients with disabilities.

Finally, it is important to recognize how unlikely it is that any single business argument can appeal to the broad range of providers whose patients would benefit from accessible MDE. What makes financial sense to one entity (e.g., a small, private, rural clinic) will not necessarily translate to another setting (e.g., a large regional health system). In addition, barriers to accessible MDE differ widely based on facilities' regions, specialties, sizes, and so on.

[I]t is important to recognize how unlikely it is that any single business argument can appeal to the broad range of providers whose patients would benefit from accessible MDE. What makes financial sense to one entity (e.g., a small, private, rural clinic) will not necessarily translate to another setting (e.g., a large regional health system).

Our stakeholder experts confirmed that all three approaches—ensuring access and equity, linking to safety and quality initiatives, and making the business argument—have merit. Each complements the others and warrants further exploration through policy and practice initiatives and data gathering. Based on the cumulative findings of the rapid review of the literature, environmental scan, and expert interview process (both individual and convened interdisciplinary meeting), we developed recommendations that will assist in making accessible MDE a common feature in physicians' offices and medical facilities.

Chapter 4: Recommendations

Federal Agencies

Department of Health and Human Services (HHS)

HHS Office for Civil Rights (OCR)

OCR should:

- Issue a regulation requiring health care providers subject to its jurisdiction to acquire accessible MDE that complies with the MDE Standards without delay.
- Develop technical assistance resources to assist covered entities in complying with the regulation.
- Develop a technical assistance document on accessible MDE and how to file a complaint for people with disabilities if they experience discrimination in health care due to inaccessible medical equipment, under laws enforced by the OCR.

HHS Office of the National Coordinator for Health Information Technology

The Office of the National Coordinator for Health Information Technology should add disability-related items to the Meaningful Use Standards to promote interoperability and data tracking across health systems and federal and state programs.

HHS National Institutes of Health

The National Institutes of Health should fund or conduct a biannual nationwide health facility accessibility survey (HFAS), modeled on California's Facility Site Review, that includes questions on the availability of accessible medical equipment, and publish the results biannually.

(continued)

Federal Agencies: *continued*

U.S. Department of Justice, Civil Rights Division

The Civil Rights Division should:

- Revise its Title II and III ADA regulations requiring health care providers subject to its jurisdiction to acquire accessible MDE that complies with the MDE Standards, without delay.
- Develop technical assistance resources to assist covered entities to comply with the revised regulations.
- For people with disabilities, develop a technical assistance document on accessible MDE, the Barrier-Free Health Care Initiative, and how to file complaints if they experience discrimination in health care due to inaccessible medical equipment, under the ADA.
- Collect statistics on patient complaints about inaccessible medical equipment and the results of such complaints. These data should be consistently posted to the DOJ website.
- Update the 2010 "Access to Medical Care for Individuals with Mobility Disabilities" to include information on the Access Board's MDE Standards. The updates should include information on IRS tax credits for accessible equipment purchase, and CMS's CPT codes for extra time with patients.

U.S. Department of Veterans Affairs, Veterans' Health Administration

VHA should:

- Publicize and promote their policies and practices on accessible MDE and produce a report on their implementation of the MDE Standards, sharing that information with their counterparts.
- Fund research on the implementation of MDE Standards. Given VHA's commitment to implementing the MDE Standards, unique opportunities exist to study the impact of the standards as they are implemented across practice settings.
- Create data-sharing opportunities for researchers to support analysis of programmatic and claims data in order to evaluate outcomes and cost-effectiveness of implementing the MDE Standards.
- Include items related to functional mobility status, need for accessible MDE, and use of accessible MDE in VHA's electronic medical records.

Federal Agencies: *continued*

Department of Labor, Occupational Safety and Health Administration

The Occupational Safety and Health Administration should include the Access Board's MDE Standards in their Standard 5047 Medical, Dental, and Hospital Equipment and Supplies.

Department of Education, Liaison Committee on Medical Education

The Liaison Committee on Medical Education (LCME) should add disability competency requirements to Section 7.2 of the Functions and Structure of a Medical School, including appropriate use of accessible MDE as part of basic physical examination, and Section 7.6 on cultural competence and health care disparities. Equivalent requirements should be added for accreditation of nursing and radiology technician programs.

The Accreditation Council on Graduate Medical Education (ACGME)

ACGME should require all federally funded medical residency programs to include disability competency training, which includes the importance of accessible medical diagnostic equipment to help ensure equitable access to health care and reduce health care disparities.

Professional Organizations

Professional organizations, such as the AMA, American Nurses Association, American Hospital Association, American Society for Health Care Engineering, American Dental Association, and Patient Safety Organizations should:

- Publicly support the voluntary adoption and advocate for formal adoption of MDE Standards to improve quality of care.
- Educate members on disability competency or offer resources for such training. The training should include information about the MDE Standards and providers' responsibility to provide equitable, quality care to all patients.
- Showcase educational materials and infographics on accessibility to their members such as the AMA's "Access to care for patients with disabilities: Strategies for ensuring a safe, accessible and ADA compliant practice." Materials should include information on the MDE Standards.

Equipment Developers, Manufacturers, and Suppliers

Equipment developers, manufacturers, and suppliers should:

- Use the MDE Standards as a best-practice document to spur innovation and promote research and development of new MDE products that meet or exceed the MDE Standards.
- Use the MDE Standards to simultaneously educate providers and market their devices to help increase the availability of accessible MDE in health care facilities.
- Prioritize accessible MDE in marketing materials and make accessible equipment easier to find on websites and in catalogs.
- Educate providers, especially small health care providers, about the availability of incentives and tax credits to support the procurement and purchase of accessible MDE.
- Ensure that sales associates are educated on the availability and importance of accessible MDE and highlight its availability and importance when communicating with buyers.

Health Maintenance Organizations and Managed Care Organizations

Health maintenance organizations and managed care organizations should:

- Set standards for the accessibility of medical equipment for covered health care providers based on the MDE Standards and tie reimbursement to achieving accessibility benchmarks.
- Verify and publicize a provider's accessibility and include this information in its provider listings.
- Leverage their purchase power to negotiate lower rates for such equipment for their network providers and/or provide grants to network providers for such acquisition.

Educators

Educators including but not limited to medical schools, nursing programs, radiology and imaging programs (collectively "Educators") should integrate disability competency training into their core educational curricula to create a culture of access and increase awareness of the needs of people with disabilities. Participants should include health administrators and procuring officers to ensure that they understand their obligations under federal laws (e.g., Section 504, the ADA, the ACA, and are aware of the 2017 MDE Standards).

Health Care Facilities

Health care facilities should:

- Inform staff where accessible equipment is located and provide training on its operation.
- Procure accessible medical equipment when replacing old equipment.
- Provide disability competency training for all staff and administrators.
- Revise intake forms to ask about mobility status and accessible equipment needs as part of routine screening and scheduling practices.
- Include questions related to accessible MDE use in patient satisfaction surveys, such as those in the Consumer Assessment of Healthcare Providers and Systems developed by the AHRQ.
- Provide a clear mechanism for patients to submit complaints about barriers to care.

Appendix 1: Stakeholder Experts

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Appendix 2: Research Methodology

Research on accessible MDE is in a relatively nascent phase with a smattering of small-scale demonstration and evaluation studies published in diverse areas of research and disciplinary fields. Further stymieing the ability to conduct research is inconsistent collection and linking of data related to health care utilization by people with disabilities and mechanisms for clear documentation of the availability and appropriate use of accessible MDE.

Approach: Modified Appreciative Inquiry

To accomplish the project goals, this project was divided into three primary research questions, each with a targeted set of activities. To provide an organizational framework and structure to the project and to make clearly definable project activities and deliverables, a modified appreciative inquiry (AI) approach was used. Research indicates that cross-functional teams that use an AI approach report higher levels of engagement and efficacy on addressing complex organizational challenges and gap analyses. The research required information from diverse health service and policy experts from clinical practice, policy, health care systems, health services research, as well as health informatics and, ultimately, patients. Research indicates that cross-functional teams that use an AI approach report higher levels of engagement and efficacy on addressing complex organizational challenges and gap analyses. The AI structure and phases we followed consisted of:

Rapid Review of Literature

We followed the eight steps of a rapid review as outlined in the World Health Organization's *Rapid Reviews to Strengthen Health Policy and Systems: A Practical Guide.*[155]

Environmental Scan

To supplement the rapid review findings, we conducted an environmental scan of existing policies and practices around accessible equipment purchases.

Health Policy and Services Expert Interviews

As the final phase of the determination process, we conducted a series of interviews with health services and policy experts to obtain in-depth professional perspectives on key opportunities, needs, and approaches to the conducting of rigorous cost-effectiveness research related to the adoption of accessible medical equipment standards.

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78 Nondiscrimination on the Basis of Disability by State and Local Governments and Places of Public Accommodation; Equipment and Furniture, 75 Fed. Reg. 43452 (July 26, 2010).

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81 *Id.* at 2810.

82 *Id.* at 2810.

83 *Id.* at 2811.

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86 https://www.uspreventiveservicestaskforce.org/uspstf/about-uspstf; https://www.uspreventiveservicestaskforce.org/uspstf/topic_search_results?topic_status=P&grades%5B%5D=A&grades%5B%5D=B&searchterm=.

87 Id.

88 Section 504 applies to "any program or activity receiving Federal financial assistance or under any program or activity conducted by any Executive agency," 29 U.S.C. 794(a). Section 1557 applies to "any health program or activity, any part of which is receiving Federal financial assistance (including credits, subsidies, or contracts of insurance) provided by the U.S. Department of Health and Human Services; or under any program or activity administered by the Department under such Title; or under any program or activity administered by any entity established under such Title," 45. C.F.R. 92.2(a). Title II of the ADA applies to public entities, including any state or local government and any department, agency, special-purpose district, or other instrumentality of a state or states or local government, 42 U.S.C. 12131(1). Title III of the ADA covers "any place of public accommodation by any private entity who owns, leases (or leases to), or operates a place of public accommodation," 28 C.F.R. 36.201(a).

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92 Tufts Medical Center (2/28/20); Thomas Jefferson University Hospitals, Inc. Settlement Agreement (4/18/19); and Charlotte Radiology Settlement Agreement (8/13/18) can be accessed at https://www.ada.gov/usao-agreements.htm. The DOJ corrective actions regarding medical equipment that it took prior to the establishment of its 2012 Initiative: Washington Hospital Center (11/2/05); Valley Radiologists Medical Group, Inc. (11/2/05); Exodus Women's Center (3/26/05); and Dr. Robila Ashfaq (1/12/05).

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134 The Provider Accessibility Initiative is a collaboration between the National Council on Independent Living and the Centene Corporation to offer competitive funding to health providers within the Centene system to increase programmatic and physical accessibility. Information is available at: https://ncil.org/provider-accessibility-initiative/.

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137 42 U.S.C. § 12131 (Title II); 42 U.S.C. § 12181 (Title III).

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140 Executive Order 13771, Reducing Regulation and Controlling Regulatory Costs, 82 Fed. Reg. 9339 (February 3, 2017). E.O. 13771 was revoked by President Biden on January 20, 2021. https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-revocation-of-certain-executive-orders-concerning-federal-regulation/

141 The Alliance for Disability in Health Care Education is a not-for-profit organization of health care educators who are working to integrate disability-related content and experiences into health care education and

training programs. They have developed a set of CORE Competencies on Disability for Health Care Education, available at: http://www.adhce.org/resources/.

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144 The National Institute on Disability, Independent Living, and Rehabilitation Research is the federal government's primary disability research agency with an explicit mission to "generate new knowledge and to promote its effective use to improve the abilities of individuals with disabilities to perform activities of their choice in the community, and to expand society's capacity to provide full opportunities and accommodations for its citizens with disabilities." Available at: https://acl.gov/about-acl/about-national-institute-disability-independent-living-and-rehabilitation-research.

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