Designing an Inclusive Healthcare Facility

A STARTER KIT

MISSING BILLION

PHILIPS

Contents

Acknowledgments

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1. Introduction

Many healthcare facilities are not optimally accessible to people with disabilities (MB report; Read et al 2018; Pinto et al., 2021), resulting in a lower standard of care. While many countries have regulations addressing the accessibility of healthcare facilities (e.g., Americans with Disability act, Equality Act 2010 UK, Brazilian law on the Inclusion of Persons with Disabilities 2015), healthcare facilities cannot always adhere to them (Read et al., 2018, Story et al., 2008). To truly put accessibility into practice, hospital designers will play a key role. However, there is a lack of actionable recommendations specific to designing inclusive healthcare facilities. While existing building regulations are very concrete (e.g., precisely describing architectural elements such as minimal door width), they provide designers with only minimum requirements, and do not always put sufficient focus on designing for social, cognitive, or neurodivergent accessibility requirements. This limits the scope of these guidelines regarding inclusivity.

Guidance is available in literature regarding how to take a more inclusive approach toward design, such as Kat Holmes' book *Mismatch* (2020) that describes a clear working process for making products more accessible, or the approach of Universal Design that outlines 7 key principles to guide the design of an environment so that it can be accessed, understood, and used equitably by as many people as possible (NDA 2020). These sources, while informative and inspiring, remain high level and are not immediately actionable for designing inclusive healthcare facilities. The aim for this Inclusive Design Starter Kit is to bridge this gap in the hopes that they can support hospital designers who are just starting out their inclusive design-journey, and who want to design beyond the minimal guidelines.

Designing an inclusive healthcare facility can be a daunting task. Product or software solutions can be tested for accessibility and iteratively improved throughout the development process. Architectural design, however, remains largely theoretical until the day the doors open and people start to use the facility for the first time. This means that designers must embed considerations for physical, social, and digital accessibility into their design process from the very beginning. There are a few design agencies who are driving inclusive design processes for large environments (e.g., The Mima Group), but it will take the collective effort of many more designers and architects to build the truly accessible healthcare facilities of the future. How can this majority of designers and architects begin to build an inclusive design mindset when faced with a healthcare facility design?

To answer this question, a collaboration between The Missing Billion and Philips was established. The aim was to explore how healthcare facility designers can be better supported to create accessible environments that are inclusive of all people. The focus of the collaboration goes beyond providing the bare minimum of access, and instead focuses on supporting the design of spaces that can provide positive and dignified experiences for all. The Missing Billion bring a deep understanding of disability and accessibility in healthcare to the collaboration, while Philips has long history of designing healthcare machines and hospital interiors.

The collaboration consisted of three phases:

- User research into accessibility needs for healthcare facilities,
- Synthesis of findings into guidelines and exploration of facility design,
- Publications for feedback from the community.

In this document, we share accessibility design guidelines to support designers with creating equitable healthcare facilities. We have endeavoured to develop them so they can be easily interpreted, adapted and applied, keeping in mind that not all designers are familiar with disability or universal design for healthcare environments. They can also be a good starting point for broader actors of seeking to make health facilities disability-inclusive: architects, innovators, global health leaders – implementers, governments, donors.

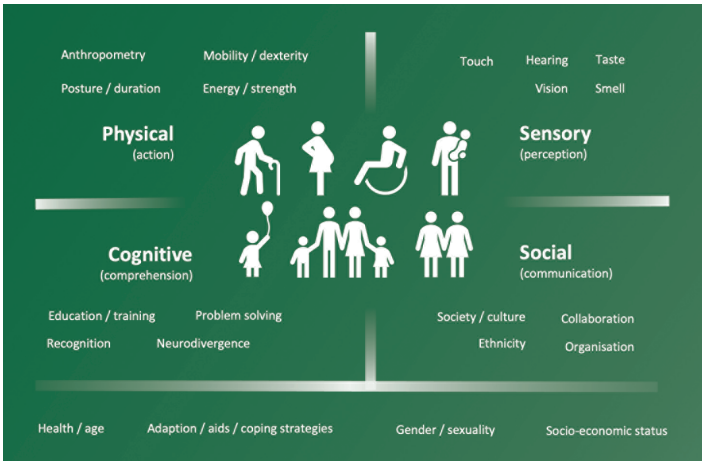
These guidelines are divided into three categories. The first is *Mindset* which frames the attitude that a design team can approach the design of an accessible healthcare facility with. The second is *Method*, which provides ways of working that can improve the chances of identifying accessibility requirements and wishes. The third is *Considerations*, a series of key points to keep in mind when generating ideas or assessing concepts or potential solutions.

1.1 Definitions

The authors recognise that there are many terms used in this topic area to describe people and their capabilities and limitations. To ensure clarity and to avoid misunderstanding, the following definitions will be used:

Disability: In the International Classification of Functioning, Disability and Health, disability is an umbrella term for impairments, activity limitations, and participation restrictions, denoting the negative aspects of the interaction between an individual (with a health condition) and that individual's contextual factors (environmental and personal factors). This definition is what is often called the "social definition" of disability.

Health: A state of well-being, achieved through the interaction of an individual's physical, mental, emotional, and social states.



Intersection of experiences to consider when designing inclusively

Impairment: In the International Classification of Functioning, Disability and Health, impairment is the loss or abnormality in body structure or physiological function (including mental functions), where abnormality means significant variation from established statistical norms.

Condition: The collective consequence of multiple or compound impairments on the human body that positively or negatively impacts a person's capability.

Accessibility: The extent to which a design or environment can be used by people to successfully, and independently, achieve a goal.

Accessibility requirement: A requirement from one or multiple people based on evidence that pinpoints a means of successfully achieving all or part of a goal with the desired degree of independence.

Inclusive society: One that freely accommodates any person with a disability without restrictions or limitations.

Inclusive Design: The design of mainstream products and/or services that are accessible to, and usable by, as many people as reasonably possible, without the need for special adaptation or specialised design (University of Cambridge 2017).

Universal Design: Universal Design is the design and composition of an environment so that it can be accessed, understood, and used to the greatest extent possible by all people (NDA 2020)

2. Equity Mindset: Go Beyond the Minimum

Building codes and regulations set minimum dimensions and accessibility requirements. However, these requirements are often exactly that - the minimum. Applying them does not necessarily lead to a truly accessible, dignified, pleasant or smooth experience for everyone. To design facilities where all people can receive fantastic care, designers must go beyond the minimum of existing regulations.

Many existing regulations focus primarily on the mobility requirements of people with a physical disability, however in truth, disabilities encompass a wide range of other conditions and impairment types, including sensory, physiological, cognitive, and neurological impairments. Going beyond the minimum means designing for both visible and non-visible disabilities, as well as neurodivergence. Aim to build environments which take a comprehensive approach towards designing for mobility, sensory, emotional, cognitive, and social accessibility requirements.

When designing, go beyond meeting technical parameters and legal requirements to explore how the space can create positive experiences, such as designing for agency and independence. Remember that good design extends beyond harm reduction to creating an uplifting, and dignified experience for all.

One way of doing this is to shift your mindset and consider the need to design inclusively as being the only way to design; it is not an extra or add on, it is just good design. By avoiding the “able” and “disabled” binary division, the diversity of people and their real accessibility needs can be explored, to ensure that healthcare spaces can accommodate the range and overlapping needs of all patients, visitors, and staff members.

Design in such a way that all situations or ideas are questioned and assessed from the viewpoints of multiple different people with differing accessibly requirements. Can as many people as possible independently achieve their goals when accessing your healthcare facility?

Tools and Examples:

- **DeafSpace** is an example of a spatial design approach which goes beyond the minimum of making “accommodations” within a space to facilitate deaf people, but rather completely de-centres the able-bodied perspective and instead re-imagines what architecture and space can be (Bauman, 2008; Johnson 2010).
- There is a host of insightful literature that is written by those with experience of living with impairments and conditions who are not fully accommodated by society and design. The fact these texts exist, demonstrates how the regulations are either not sufficiently applied or not extensive enough. The following publications are great examples get started with the topic:
  - Shakespeare, T. (2017). *Disability: The Basics*. London: Routledge.
  - Taussig, R. (2020). *Sitting Pretty: The View from My Ordinary Resilient Disabled Body*. New York: Harper One.

3. Methods for designing equitable healthcare facilities

3.1 Design with people who have lived experience

People are the experts of their own experience, and it is vital to design *with* the communities the healthcare facilities serve, as the phrase “Nothing about us, without us” captures. Working from assumptions about how people access healthcare and interact with a facility often leads to impractical design outcomes and poor experiences. Instead, make design decisions based on data collected from diverse users, with diverse accessibility requirements, in local contexts. This can include using participatory design approaches, conducting qualitative and quantitative research with local users who live with impairments and conditions. Also consider reviewing literature published by (critical) disability scholars, and getting frequent feedback from disability experts, advocates and disabled users, at all steps of the design process.

Remember that participation in research can also require accessibility considerations. When conducting research, it is essential to consider intersectional experiences, keeping in mind how gender, age ethnicity, race, socio-economic status, and sexuality intersect and impact the experiences of people living with disabilities. Include the perspectives of people with impairments or conditions in many different roles within a healthcare facility, including as a patient, healthcare provider, facility staff, caregiver or loved one. It is also important to consider the experiences of those who might accompany a person with disabilities, for example assistants, caregivers, interpreters, children, loved ones, or service animals.

Tips and tricks for conducting accessibility requirement research

When conducting accessibility requirement research with people who have lived experience, consider the following:

- **Begin with open questions** that explore past experiences of accessing environments, not only healthcare facilities, but shops, public transportation, days out, as these can uncover additional accessibility requirements.
- **Focus on the facts**; ask people to recall what they experienced and what occurred, not what they might do in the future.
- **Consider combining qualitative and quantitative research methods** – this is more engaging for participants and allows for more flexibility to make contributing to your research accessible.
- **Ask participants to rank their accessibility needs**, so you can get a feeling for their relative importance. This is helpful to have during the design process when you inevitably encounter conflicting requirements. For example, this can be done using the MoSCoW prioritization method (in which needs are categorized as e.g., Must have, Should have, Could have, etc).

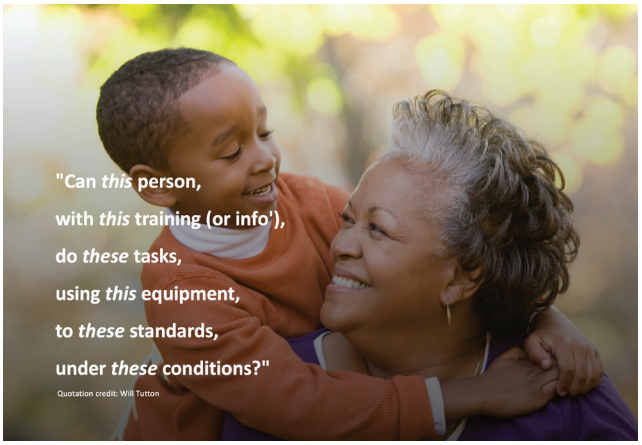
3.2 Design the healthcare facility as a system

There is a complex, bi-directional relationship between the built environment and how people interact with it. There are many factors that influence how people can achieve their goals and navigate the world (or "system") they are in. When designing a healthcare facility, modelling the system can help a design team understand the full context of use and ensure that important factors are not overlooked. Use your research (conducted with people who have lived experience) to help build your systems model. Consider all the possible users, the societal and cultural factors, the organisations, and the physical environments, as well as the tools they need to use, the processes they need to follow, and their goals and tasks. Look for:

- Challenging combinations or relationships between parts of the system that might need particular design attention.
- Gaps in your knowledge: which parts of the system do you not know much about and need more research?
- Different routes people might travel through the system to achieve their goals.

The premise of system modelling is that *people* do not fail or make an error, the *system* does. Be sure to ask yourself the question "Are we designing a system in which *all* people can succeed?". At each stage of your design, or for each user group, ask: can *this* person, with *this* training or information, do *these* tasks, using *this* equipment (facility) to *these* standards, under *these* conditions? This mantra can help to keep you focused on designing for the people in the system.

Elements of a system to consider when designing a healthcare facility



Tool: Using systems thinking to guide healthcare design

SEIPS (Systems Engineering Initiative for Patient Safety) is a tool that can help design teams to map all of the key elements of a facility and explore the relationships/ dependencies between them (Holden et al., 2013).

3.3 Design for accessibility, not the impairment or condition

People visiting or working in a healthcare facility will be diverse regarding the impairment or condition they experience, as well as who they are in and of themselves. Once you consider the great variety of possible combinations of conditions people may be experiencing, the task of designing inclusively can seem overwhelming. Utilising the work of Kat Holmes (2020), one suggestion is to analyze the data for accessibility barriers and requirements, as there will be common accessibility requirements across many diverse impairments and conditions. One accessibility requirement will often support many different users with attaining their goals. For example, a simple handrail in a corridor is one solution that can address the accessibility need of support and maintaining balance for people with diverse conditions, such as, the elderly, those with poor balance or muscle spasms, visually impaired (navigation), people with acute injury (sprained ankle), etc. Multiple conditions have a similar accessibility need that can be addressed with a single solution design.

An advantage to working in this way is that many inventive and successful products, services, and environments started as a response to an accessibility requirement. The diversity in accessibility needs often poses a creatively challenging design space. This can be a source of exciting new ideas and previously unconsidered solutions that may not have otherwise been thought of. It is often seen that inclusive design environments work brilliantly for all users, not only those who originally expressed the accessibility need.

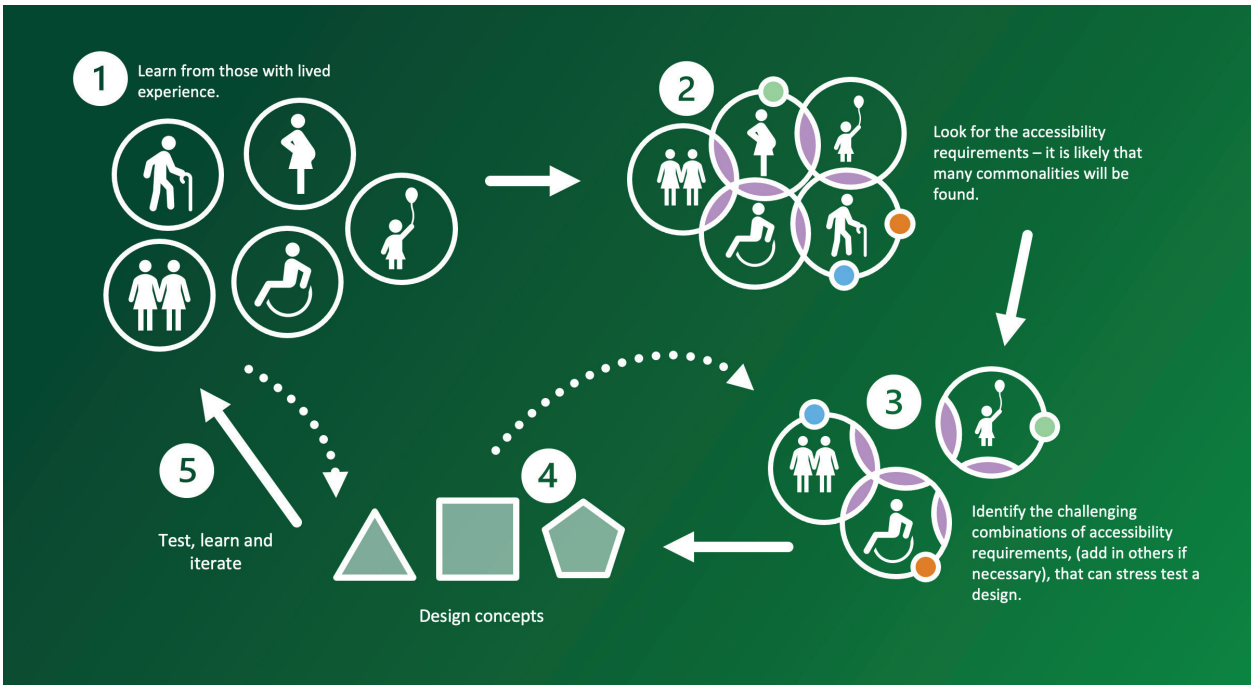
3.4 Challenging the design

A method used in the fields of ergonomics and anthropometry is to stress test design concepts with the most challenging requirements and interactions that those using the design will require. To do this, combinations of the accessibility needs are embodied in a set of representative but challenging user personas and use scenarios. These combinations are based on data from literature and the lived experience research. For example, a well selected set of user representations and use scenarios will include combinations of mobility, sensory, cognitive, neurodiverse, and social accessibility requirements. Aim to devise a set of user personas that embody some of the more challenging accessibility requirements the facility should accommodate.

When working in this way and using these diverse user scenarios for assessing a design concept, it can become clear who may or may not be able to interact with features of the facility. An advantage to this way of working is that designers can momentarily focus their attention on fewer users or scenarios when developing initial design concepts without necessarily neglecting the needs of the majority, as these should be covered if their accessibility needs are less challenging. Testing and iterating designs with end users is still a necessary step.

Examples and Tools

- From your data, identify key users, or combinations of accessibility requirements, that can help stress test your design such that if they can succeed, many others will also mostly likely succeed too. Remember to always check designs with real users frequently.
- When stress testing a design with your personas, apply the 7 Principles of Universal Design (Story, Mueller & Mace, 1998) as this can help highlight which aspects to consider when designing and determine where they might need more support.



Example of an iterative process to design an inclusive healthcare facility

4. Healthcare Facility Design Considerations

Healthcare is a complex socio-technical system in which patients, family, caregivers, and healthcare professionals must work alongside each other to achieve the goal of improving health. They do this using tools and equipment, within organisations governed by processes, and within buildings, such as a healthcare facility. Therefore, there are aspects that might make designing for a healthcare facility different from other environments or systems. Several considerations for the design of a healthcare facility are described below, in no particular order.

4.1 Agency and adaptive opportunity

"People are the experts of their condition" (Shakespeare, 2017), consequently, they know what they need when accessing a healthcare facility. For this reason, consider how the healthcare facility can enable agency and assist patients with remaining in control for as long as possible. Stress and anxiety are often associated with feeling out of control; therefore, designing for agency at all stages of a visit can positively improve people's experiences.

Agency can be accommodated via multi-modal interactions, where access and communication can be achieved in a variety of ways; should one mode be unsuitable, another option is available. Adaptive opportunity, where people can select from multiple options or adjust the environment or location to their preference, is another way of ensuring agency. An example of a multi-modal solutions could be coloured tactile floor markings, which is giving both high contract colour and tactility for people with visual impairements. Or, where seating is provided, there can be a variety of seating options with the ability to adjust light level.

4.2 Healthcare professionals and employees

When designing for accessible healthcare facilities, do not stop at only patient accessibility requirements. To design a truly accessible future, the facility must also be accessible for professionals with a disability, condition or impairment. This includes considering the experiences of healthcare professionals such as doctors, nurses and specialists, as well as other employees who work in the space, such as reception and administration staff, cleaning and maintenance workers, and greeters. For example, this can translate into giving preference to low-level storage cupboards, a calming staff common room, or proving employees with technology to support communication with deaf or visually impaired people, people with intellectual disabilities etc.

As previously mentioned, intersectionality is important to consider. Age, for example is especially relevant as the average age of healthcare professionals is increasing above 50 years (Definitive Healthcare, 2022). To ensure safe and effective healthcare provision, the working accessibility needs of older people will need to be included in all healthcare facility design.

4.3 Supporting roles

In addition to patients, healthcare professionals, and employees, it is essential to consider the experience of those who accompany a patient. This can include family, friends, carers, children, or support animals. Consider the roles they play and how they provide support and what might assist them in doing so. For example, it can be more pleasant and reassuring for a wheelchair user and the person accompanying them if there is enough space to move around the facility side by side. When researching into the lived experience ask those who accompany the participant what they need when visiting a healthcare facility.

4.4 Temporal accessibility

People's accessibility requirements can change over time. Healthcare facilities are unique spaces with regard to accessibility requirements; a person can enter in one condition and leave experiencing another condition, being more or less abled than before. People can be permanently, temporally, or situationally disadvantaged (Holmes, 2020), suddenly experiencing accessibility barriers that were not experienced before. For example, someone who has used only one arm since birth is used to interacting with the world in that way, whereas someone with a broken arm must quickly learn and adapt. Both, however, may experience similar accessibility requirements for that period.

4.5 Social interactions

Spatial design can have a powerful impact on the social experience of people with disabilities. Spaces can be intentionally designed to create welcoming, dignified experiences, as well as positive interactions between people. This can include interactions between staff and patients, as well as interactions between patients themselves, and interactions between staff members. Aspects of social interaction to consider include avoiding segregation, providing privacy, and supporting communication. Sometimes, different needs can be at odds with each other, such as a need for privacy and a need to avoid segregating people. In these cases, it may be necessary to find compromises between conflicting needs.

4.6 Atmosphere

Designing truly accessible spaces means going beyond technical parameters and physical barriers to access, to also explore how the atmosphere of a space makes people feel. Healthcare facilities can easily feel clinical, crowded, and stressful. However, buildings can have many qualities which influence how welcome, comfortable, and safe people feel. This can include the layout, the acoustics, the lighting, and decor.

There is not one singular atmosphere that will be perfect for everyone, so consider creating access to a variety of spaces. For example, creating a quiet, low-sensory space with dimmed lighting, sound absorbing material, calm colour palettes and access to sensory equipment can create a comfortable space for people who experience sensory overload. Other people who require and enjoy more active sensory stimulation can benefit from spaces with natural lighting, access to active sensory equipment, and the freedom to make noise.

4.7 Circulation and wayfinding

Circulation and wayfinding are aspects central to accessible facility design. Navigation can be considered successful when someone can understand and navigate a space efficiently and completely independently, if they wish to do so. This is a crucial point to consider as being lost in a space can trigger confusion and anxiety. Be sure to consider how a person can re-orient themselves when they are lost, or when they need to locate someone to ask for help. Circulation spaces such as hallways and entrances are high traffic areas used by all, there are often conflicting needs which need to be considered.

When designing for circulation, consider aspects such as passing points, rest locations along the route and people navigating the space at different speeds. When designing for wayfinding, consider aspects such as the design, height, colour, and size of signage. It is also recommended to use a variety of communication approaches including graphics, colours, patterns and words. To allow visitors to prepare in advance, consider making maps of the facility available to people before they arrive.

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