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## **ABSTRACT**

### **A scoping review of international wheelchair and seating provision, policy guidelines.**

**Background:** For people who use wheelchairs being supplied with an appropriate wheelchair that is well fitted and well designed to maximise occupational performance and participation is a basic human right. Wheelchair provision has a huge bearing on a person's quality of life, health and well being. Every aspect of wheelchair provision is paramount from referral to follow up, maintenance and repair.

**Objective:** At present in Ireland there is no national policy, standards or guidelines in place for the provision of wheelchairs, making the focus of this study a high priority. The researcher is going to explore international literature on wheelchair and seating provision policy and guidelines.

**Method:** Wheelchair provision policy guidelines were identified using databases: AMED, EMBASE, CINAHL Plus, MEDLINE, PhycINFO and Google Scholar. The search engine "Google" was used to search grey literature. The data was interpreted through a content analysis.

**Findings:** Policy, guidelines and standards were identified in various countries throughout the world. National policy guidelines and standards are paramount to the prescription of an appropriate wheelchair. Wheelchair provision remains inconsistent, fragmented and unsustainable even though governments have taken steps to improve wheelchair and seating services.

**Conclusion:** International, national and local policy dictates the way wheelchair and seating services are provided in ones country. Policies hugely influence the lives of all people with disabilities. The system that guides wheelchair provision in Norway is a leading example of what can be achieved through comprehensive policy, regular monitoring and most of all government commitment.

## **INTRODUCTION**

A wheelchair is ‘a body orthosis on wheels’ that serves as an enabler both extrinsically and intrinsically (McIntyre 2010; Gowran 2012). Wheelchairs are essential for their users to achieve an optimal level of participation in society, “a prerequisite in the hierarchy of needs from basic survival to self-actualisation” (Rousseau-Harrison et al 2009). Mobility and movement is core for a person’s identity, life experiences and opportunities (Imrie 2000). Therefore the provision of an appropriate wheelchair and seating intervention cannot be underestimated for enhancing the mobility of people with complex needs (WHO 2008). As each and every one of us is unique in body function, structure and participation wheelchair prescription is complex, and the importance of getting wheelchair provision to meet individual needs cannot be underestimated (Fitzgerald et al 2005; Gowran 2012). The prescription of an inappropriate wheelchair can increase physical impairments, impact negatively on emotions, and deprive a person from engaging in necessary and meaningful occupations (WHO 2008). Globally there is a demand for high quality wheelchair and seating services, however research shows that services lack uniformity, are costly and cannot be regarded as sustainable. To date in Ireland there is no clear pathway for wheelchair service provision, assessment or prescription. Research conducted at the University of Limerick highlighted major issues in wheelchair and seating services throughout the country. Concerns have been raised in relation to the equity of wheelchair and seating provision in Ireland, as there is a worrying lack of national policy and no national register of wheelchair and seating exists (Tiernan 2013; Gowran).

The aim of this research study therefore is:

1. To explore international wheelchair and seating provision policy guidelines.

## **LITERATURE REVIEW**

A wheelchair is a fundamental piece of equipment, which has been utilised by people throughout time, used by the wealthy as mode of transport and used as a medical apparatus for the injured, sick and disabled (Woods et al 2004). Today a wheelchair is used to enhance mobility, provide access to the community and is central to an individual's ability to function independently (Tiernan 2013; Fitzgerald et al 2005; WHO 2008). Globally it is estimated that there are 70 million people using wheelchairs, with approximately 40,000 people using wheelchairs in Ireland (WHO 2008; Tiernan 2013). A wheelchair is often the only source of mobility for a person with mobility challenges and there are many reasons why people may require wheelchair or seating interventions, likewise anyone of us can become a wheelchair user at any point in our lives (Ravneberg 2008; Ravneberg 2005). Regardless of the reason, the acquisition of a wheelchair can often be a major life altering event. In essence, assistive technologies can make the difference between living fully and merely existing. Assistive technologies enable human development physiologically, perceptually, cognitively, psychologically, and socially (Gowran et al 2012; Rousseau – Harrison et al 2009; Cote 2012; Layton et al 2009; Tiernan 2013).

Wheelchair provision is “an overall term for wheelchair design, production, supply and service delivery” and occupational therapists are the key profession involved in the assessment and prescription (WHO 2008 p.11: Kenny and Gowran 2013). Disability and the importance of wheelchair provision were made visible in many countries primarily as an outcome of military engagements. Historically individuals with disabilities were greatly ignored by governments (Universal Design History 2008). Mainly as a result of the major wars and natural disasters of the last century wheelchair provision and rehabilitation legislation has become more rigid (Gowran et al 2009). Wheelchair and seating provision has a huge impact, not only on a person's quality of life, but also on their health and well being (National Wheelchair Managers Forum 2005). A wheelchair is ‘appropriate’ when it: “meets the user's needs and environmental conditions, provides proper fit and postural support, is safe and durable, is available in the country and can be maintained and service sustained at an affordable cost” (WHO 2008 p.21).

Gone are the days of the “one size fits all” approach to wheelchairs and wheelchair seating (Mortenson et al 2008). The prescription of a wheelchair is complex as it involves the user, the technology and the environment or context of the user (RESNA 2011). According to Tiernan, research conducted by Gowran suggests that the provision of an inappropriate wheelchair and seating system can have serious implications for the end user. Evidence suggests that ‘poor and inappropriate (wheelchair) provision could have devastating effects on the individual, causing increased physical impairment, depression, isolation and death’ (Tiernan 2013). Without appropriate wheelchair provision other assistive technology devices are rendered less effective or simply unusable (Fitzgerald et al 2005; Tiernan 2013).

The United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) is an international human rights policy (UNCRPD 2008). The Convention respects the rights of wheelchair users through Article 20, and countries are encouraged to ratify the convention as it promotes full inclusion for all persons with disabilities (UNCRPD 2008; WHO 2008). Despite huge efforts being made at international, national, and local level the mobility needs of people with disabilities are still not being met, as evidence suggests “good intentions were not backed up by political will”, even though it is a basic human right to be supplied with an appropriate wheelchair (WHO 2011; Muscular Dystrophy Campaign 2010; Gowran et al 2009). Bearing this in mind positive changes have occurred in wheelchair and seating services throughout the world, in Ireland for example there are now more specialised services and advanced technologies being offered however the supply of wheelchairs remains unregulated in this country (Irish Independent 2014). Research has identified that wheelchair provision is not prioritised in national government policies, and Ireland creates a perfect example of this as there is no national policy or guidelines in place to support the estimated 40,000 wheelchair users (Gowran 2011; Tiernan 2013). In Ireland concerns exist in relation to the equity of wheelchair and seating service provision (Tiernan 2013).

Dr Gowran, an occupational therapist and lecturer from the University of Limerick has called on the Irish Government to sanction a national review of wheelchair services as a matter of public priority (University of Limerick 2014). Evidence suggests a national policy on wheelchair provision can ensure wheelchairs meet minimum requirements and are appropriate for individual needs (WHO 2008). Research shows that a wheelchair service should be streamline from referral to follow up, maintenance and repairs, therefore by implementing a national policy on wheelchair provision you are ensuring all of the above.

## **METHODOLOGY**

### **Study Design**

The aim of this study is to examine wheelchair and seating provision policy guidelines internationally. The researcher was keenly aware from the onset that both scientific literature and grey literature needed to be explored to assist in answering the question. Grey literature according to McKinstry, can include policy documents, honours and master's thesis, government reports or research findings that may not yet be published (McKinstry *et al* 2013). The researcher also acknowledges that a review of both scientific and grey literature was essential to build a clear picture of what wheelchair policy provision guidelines exist. Based on the reading carried out in the area the researcher was guided towards a scope of literature as it best fitted the topic being researched, in addition evidence suggested that scoping reviews are useful when an overview of evidence is needed (McKinstry *et al* 2013). By applying a scoping review to this study the research was able to access a wide range of literature, scoping reviews are an efficient and effective approach that allows the researcher to locate, analyse, summarise and present research findings with ease (McKinstry *et al* 2013: Cramm *et al* 2013). For this study the research found Arksey and O'Malley (2005) framework to be the most applicable and user friendly. The framework involves five steps that helped the researcher scrutinise the literature. The five steps are as follows.

1. Identifying the research question.
2. Identifying the relevant studies.
3. Study selection.
4. Charting the data.
5. Collating, summarising and reporting the results

### **Search Strategy**

In order to identify the wheelchair provision policy guidelines available in scientific literature, a detailed database search was completed using the following data bases platforms: AMED, EMBASE, CINAHL Plus, MEDLINE, PhycINFO and Google Scholar. Searches were limited and studies focused on wheelchair provision policy guidelines. The search terms *wheelchair* and *seating, provision, policy, guidelines, standards, prescription* and *delivery* were used. These terms were used because they emerged as the most commonly used phrases in relation to the initial literature review. In order to identify wheelchair provision policy guidelines within grey literature, a further detailed search was completed. A targeted approach to searching the grey literature was conducted. The researcher used the search engine “Google” to search through grey literature. Search terms included *wheelchair* and *seating, provision, policy, guidelines, standards, prescription* and *delivery*.

### **Inclusion criteria:**

Both quantitative and qualitative studies on wheelchair provision policy guidelines were included in the search for this study. All publication will be included if they relate to the study topic, in addition only publications in the English language from 1995 to 2014 were included. This gave the opportunity to capture all relevant and most up to date evidence available to research topic. The inclusion criteria for grey literature, the literature must specifically address wheelchair provision policy guidelines and be published in the English language. Supplementary searches that identify areas that can be related to the research topic will also be included.

### **Exclusion criteria:**

Due to the constraints of the study, feasibility, limitations and time the researcher did not incorporate literature that did not address components of the aims and objectives of the study; this also reduced the volume of information. Furthermore literature written in any other language than English was excluded. Likewise any documents or studies that appear to prove difficult to obtain were also excluded.

### **Data Analysis**

The data for this study was compiled and summarised into table format, the data was then interpreted through a content analysis. By utilising a content analysis the researcher was able to find a common theme within the data; the theme was then broken down and discussed. According to Bryman (2004) a content analysis is a method that can be applied to several different kinds of documents, therefore as this research contains both scientific and grey literature it was most appropriate for this study. Like all research techniques content analysis has its limitations, such as the analysis can only be as good as the documents the researcher uses.

### **Ethical Consideration**

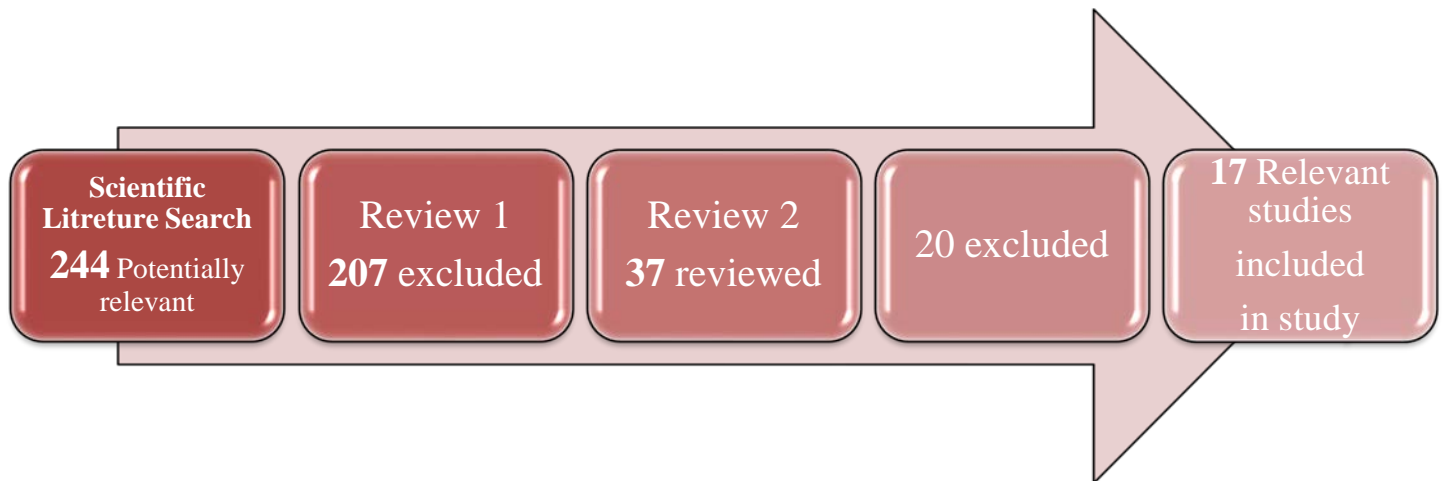
There was no ethical clearance need for this study as it is solely based on a scope of literature, as a result there are very little ethical dilemmas in regards to this study, as informed consent is not needed. Bearing this in mind evidence suggests that the researcher needs to remain conscious that the study does not breach ethical guidelines (Bryman 2004). When conducting the study and reviewing the literature the researcher will ensure that each piece of literature used in the study is ethically bound, likewise the researcher will observe any prejudices and will remain objective whilst analysing the literature.

### **Identifying Relevant Material**

Identifying the relevant material was challenging as scoping literature is a skill in itself, unfortunately due to time constraints the researcher did not have time to practice this skill. A detailed search of databases identified a total of 244 potentially relevant journal articles; all articles were screened for relevance. A large proportion of the article had to be retrieved to initially read the titles and abstracts, full reading were necessary for some articles as abstracts and titles were unclear. The criteria for retrieval of an abstract included that article made reference to (A) wheelchair or seating and (B) made reference to policy, guidelines or provision. During the second stage of the screening selection process the initial 244 journal articles reduced to a total of 37. The final stage of the selection process yielded 17 scientific literature based articles. The grey literature search initially identified 42 documents; a critical review of the documents yielded a final total of 15 documents. The diagram below illustrates a simple visual the above information.



**Diagram 1. Summary of Scientific Literature included and excluded in the scoping review**



**Diagram 2. Summary of Grey Literature included and excluded in the scoping review**



## **FINDINGS**

The findings are based on a scoping review; literature from five World Health Organisation regions was retrieved. The South East Asia WHO Region was the only area that literature was not retrieved from. Eight countries in total were highlighted from the literature the U.S., the U.K, Australia, Ireland, South Africa, Canada, Afghanistan, and Norway. The findings expose a diversity of wheelchair and seating policies, guidelines and standards.

### **Wheelchair and seating policies, guidelines and standards:**

The WHO advocate that member states develop national policy on wheelchair provision and respect the rights of people who use wheelchairs, as policy according to the WHO ensures wheelchairs meet minimum requirements and are provided by trained personnel (WHO 2008). The findings highlight two international policies that are directly linked to human rights and wheelchair provision. It is through Article 20 of the UNCRPD that a person's right to mobility is laid down; the Convention is a vital framework for creating policy as it embraces the rights of people who use wheelchairs. Governments globally are encouraged to ratify the Convention (UNCRDD 2006). The second document identified is the Standard Rules on the Equalization of Opportunities for Persons with Disabilities this is a fundamental framework for policy makers and expresses the same commitments as the UNCRPD. Rule 3 and 4 of the Standard Rules are specifically directed toward wheelchair provision (United Nations 2007). The majority of countries that have been exposed within this research have ratified the Convention however the United States of America and Ireland are the only two countries from this study that have not yet ratified it. Unclear from the findings whether each country has acted on the Standard Rules. Below is a summary of key findings in Table 1, while Table 2, is complete findings of international wheelchair and seating provision, policy, guidelines and standards.

### **Scientific literature findings:**

The main document guiding the provision of manual wheelchairs globally is the “guidelines on the provision of manual wheelchairs in less resourced setting” (WHO 2008). The guidelines were put in place to address the design, production, supply and service delivery of manual wheelchairs (Kiss and Răducan 2012). The guidelines focus on manual wheelchairs in less resourced settings however evidence suggests that the guidelines are more than relevant and should be adopted by all countries, leading to more sustainable provisions globally (Gowran *et al* 2011). The U. S., Canada and the U.K. have several conceptual models to facilitate the distribution of wheelchairs (Eggers *et al* 2009; Mortenson *et al* 2008). South Africa and Australia’s wheelchair provision lacks uniformity as policy is disregarded in both countries rural areas (Visagie *et al* 2013; Layton 2009). Governments putting national policy in place is emphasised throughout, yet few countries specifically prioritise wheelchair provision as part of their national government policy (Gowran *et al* 2011). Lang *et al* suggests “The successful implementation of international policy in certain countries depends on each countries implementation policies, their political willingness and government set up” (Visagie *et al* 2013). The complete scientific literature findings are addressed fully in Table 2.

### **Grey literature findings:**

The “guidelines on the provision of manual wheelchairs in less resourced setting” were published; to provide countries with a framework to improve the way in which people receive wheelchairs (WHO 2008). Governments across the globe overlook the provision of mobility devices (WHO 2011). The Joint Position Paper on the Provision of Mobility Devices in Less Resourced Settings was developed in response to concerns of personal mobility. The majority of wheelchair and seating service have tried to make improvement to services. Wheelchair delivery systems have been found to differ to varying degrees across the majority of countries (RESNA 2011; National Wheelchair Managers Forum 2005). In the U.K. wheelchair services have started to be reformed; the Department of Health have set out to modernise wheelchair services and the public provision of equipment across England, Scotland, Wales and Northern Ireland (Department of Health 2010). Relatively new to the U.S. the wheelchair service provision guide provides an appropriate “framework for identifying the essential steps in the provision of a wheelchair” (RESNA 2011). In Norway National Guidelines have been developed in a number of areas of the AT services (Disability Information Resources 2012).

Whilst in Australia the Department of Health NSW and the NSW Lifetime Care Support Authority (LTCSA) funded the development of clinical guidelines to assist with the prescription of a seated wheelchair or mobility scooter. The overall grey literature findings are addressed fully in Table 3.

**Table: 1 Summary of Key Findings**

<b>Country</b>	<b>Ratified International Policy</b>	<b>National/Local Policy</b>	<b>Guidelines or Standards</b>	<b>Are Wheelchair and Seating Systems Successful</b>
<b>The United States of America</b>	No	National policy in place	Guidelines in place	No
<b>England</b>	Yes	National policy in place	Clinical Standards in place	No
<b>Norway</b>	Yes	National policy in place	Guidelines and Standards in place	Yes
<b>Scotland</b>	Yes	National policy in place	Clinical Standards in place	Yes
<b>Australia</b>	Yes	National policy in place	Guidelines in place	No
<b>Canada</b>	Yes	No visible policy	Standards in place	No
<b>South Africa</b>	Yes	National policy in place	Guidelines in place	No
<b>Afghanistan</b>	Yes	National policy in place	No visible Guidelines or Standards	Not Visible
<b>Ireland</b>	No	No National policy in place	No Guidelines or Standards in place	No

Table 2: International Policy, Guidelines, Standards

International Policies	Key Findings
<p><b>The United Nations Convention on the Rights of Persons with Disabilities (WHO 2008; United Nations 2006)</b></p>	<p><b>The UNCRPD</b> is an international disability policy that has been put in place to protect the human rights of persons with disabilities across the world and it is closely related to wheelchair provision. Countries are encouraged to sign up and ratify the Convention. Countries that ratify the Convention have an obligation “to take effective measures to ensure personal mobility with the greatest possible independence for persons with disabilities by facilitating access to good quality mobility aids, devices and assistive technologies at an affordable cost”. The UNCRPD consists of 50 articles; articles 4, 20, 26 and 32 are particularly applicable to wheelchair provision while article 20 and 26 of the Convention cover personal mobility and rehabilitation. Countries that ratify the convention are obliged to grant people with disabilities the rights enshrined within the Convention by adapting there national policies. It is a vital framework for creating legislation and policies that embrace the rights of people with disabilities.</p>
<p><b>The Standard Rules on the Equalization of Opportunities for Persons with Disabilities (WHO 2008; United Nations 2007)</b></p>	<p><b>The Standard Rules on the Equalization of Opportunities for Persons with Disabilities</b> is an international policy instrument related to wheelchair provision that creates rights to wheelchairs. The Standard Rules consists of 22 rules, and express the same commitment as the UNCRPD, demanding that countries ensure the development, production, distribution and servicing of assistive devices for people with disabilities. Rule 3 and 4 apply directly to wheelchair provision, rule 3 state that governments must ensure “the provision of rehabilitation services to persons with disabilities in order for them to reach and sustain their optimum level of independence and functioning”. Rule 4 states that governments “ensure the development and supply of support services, including assistive devices for persons with disabilities, to assist them to increase their level of independence in their daily living and to exercise their rights”. Rule 14 is directly linked to policy making and planning that requests “states will ensure that disability aspects are included in all relevant policy making and national planning”. Key among the Standard Rules is the right to support services, to which a wheelchair is one of the focal items.</p>

**The World Health Organisation Guidelines on the provision of Manual Wheelchairs in Less Resourced Settings (WHO 2008)**

**The WHO advocate** member states develop a national policy on wheelchair provision. A national policy ensures wheelchairs meet minimum requirements and that wheelchairs are provided by trained personnel. The WHO has identified five areas that need to be considered when developing a policy for basic wheelchair provision. **The five areas are as follows:** Design – as we are all unique no single wheelchair design is appropriate therefore it is recommended that polices ensure several type of wheelchairs are made available. Production and Supply – in this case wheelchairs can be produced and acquired in a number of ways. Service Delivery – an appropriate wheelchair is provided in addition to education and training being provided. Training – training is made available for all involved in development and implementation of wheelchair provision. Financing – policies should include specific funding and set eligibility criteria for funding.

<u>Country</u>	<u>Guideline/Policy/Provision/Standards</u>	<u>The UNCRPD</u>	<u>Key Findings</u>	<u>Reference</u>
United States of America	<p>The Americans with Disabilities Act of 1990 Requirements. Wheelchairs, Mobility Aids, and Other Power Driven Mobility Devices.</p> <p>Wheelchair Service Provision Guide – 2011 Rehabilitation Engineering &amp; Assistive Technology Society of North America.</p> <p>Guidelines for the Use of Assistive Technology. Evaluation, Referral and Prescription.</p>	<p>In 2009 the US signed the UNCRPD. The US has failed to ratify the Convention to date. This means that the US limits both their role in the treaty’s implementation and the benefits of the treaty itself.</p>	<p><b>The Americans with Disability Act (ADA)</b> was the world’s first comprehensive civil rights law for people with disabilities. The UNCRPD is modelled on the ADA. The ADA prohibits discrimination and ensures equal opportunities and personal mobility for persons with disabilities in the U.S. People who use wheelchairs in America have equal opportunities in public accommodations, employment, transportation, state and local government services, and telecommunications.</p> <p><b>The RESNA guidelines</b> were developed to provide an appropriate framework for identifying the essential steps in the provision of wheelchairs in the US. They are intended for all stakeholders of wheelchair mobility and those in the seating industry to provide and deliver a high quality service. The wheelchair and seating framework has a step by step guide that shares many similarities to the recommended WHO Guidelines.</p> <p><b>The American Medical Association</b> developed guidelines for primary care physicians to help them meet the needs of people with disabilities. The guidelines can be used as a quick reference when evaluating, referring or prescribing assistive technologies.</p>	<p>Rehabilitation Engineering and Assistive Technology Society of North America (2011).</p> <p>American Medical Association (1996).</p> <p>Americans with Disabilities Requirements (1990).</p>

<b>The United Kingdom</b>	<p><b>The National Health Service Act 2006</b> – The provision of wheelchairs is included in paragraph 9 to 11; Schedule 1.</p> <p><b>Health Care Standards</b> for NHS Commissioned Wheelchair Services.</p>	<p><b>The United Kingdom’s</b> (UK) government ratified the Convention in 2009. As a result the UK government that includes the devolved governments (England, Scotland, Wales and Northern Ireland) must comply with the legal rights and obligations contained in the convention.</p>	<p><b>The main piece of legislation</b> underpinning the provision of wheelchairs by the National Health Service is the National Health Service Act 1977/2006. Paragraph 9 – states that wheelchair will be provided to people. Responsible for</p> <p>The main public entities responsible for provision of assistive technology are the local authorities and the NHS.</p> <p><b>In 2005 the National Minimal Standards and a Best Practice framework</b> were published and later updated in 2010. These standards have been agreed for NHS wheelchair and seating services throughout the UK. These national minimal standards were implemented to provide a comprehensive wheelchair service nationally in the NHS. In England there is now “no one size fits all” policy within the NHS, with the national minimal standards in place people are assessed according to individual needs. The Health Care Standards entitle people in the UK to be referred to wheelchair services that are of first class services, supporting people to lead healthy, active and independent lives.</p>	(Wheelchair Managers Forum 2010)
<b>Northern Ireland</b>	<p><b>The Disability Discrimination Act 1995</b></p> <p>Quality Standards for Health and Social Care 2006.</p> <p>Supporting Good Governance and Best Practice in the Health and Personal Social Service.</p> <p>Disability Equipment Services in Northern Ireland</p>	<p><b>In Northern Ireland</b> a wheelchair users must be eligible for registration under section 1 of the Chronically Sick and Disabled Persons Act (NI) 1978. <b>The Disability Discrimination Act</b> aims to end the discrimination that faces many people with Disabilities.</p> <p>The people of Northern Ireland are entitled to the highest standards of health and social care and a “world class person centred wheelchair service” as wheelchair services in Northern Ireland have started to be reformed. Wheelchair services will be person centred, accessible, responsive and equitable. The people of Northern Ireland will be provided with appropriate wheelchairs to enable full participation in society.</p>	<p>(Health and Social Care 2006)</p> <p>(Minister for Health, Social Services and Public Safety 2008)</p>	
<b>Scotland</b>	<p>NHS Scotland Wheelchair and Seating Services - <b>Clinical Standards</b></p>	<p>In 2005 a review of the Wheelchair and Seating Services (WSSs) in Scotland was conducted, finding highlighted a system that was under resourced; in addition WSSs reflected a fragmented system with no uniformity similar to that what was found in wheelchair services in England. Wheelchair and seating service in Scotland offer safer, reliable and person-centred service through <b>five clinical standards</b>. The five clinical standards ensure consistency and sustainability across wheelchair centres in Scotland. The standards share similarities to the WHO guidelines but do not address all eight WHO steps.</p>	<p>(Green et al 2012)</p> <p>(NHS Scotland Wheelchair and Seating Services – Clinical Standards 2011)</p>	



<b>South Africa</b>	<p><b>National Policy:</b> The South African National Rehabilitation Policy (2000) The Integrated National Disability Strategy (1997)</p> <p><b>National Guidelines:</b> The National Guidelines on the Standardisation of Provision of Assistive Devices in South Africa (2003)</p>	<p><b>South Africa</b> signed and ratified the UNCRPD in 2007. South Africa has therefore made a commitment to take effective measures to ensure personal mobility with the greatest possible independence for persons with disabilities.</p>	<p><b>In South Africa</b> wheelchair and seating provision falls under the provision of assistive devices. Both national policies express the government’s commitment towards addressing the support needs of people with disabilities. The guidelines on the “Standardisation of Provision of Assistive Devices” policy framework ensure the provisions of assistive devices are equitable and appropriate in South Africa. The national guidelines include specific steps and protocol on the provision of wheelchairs and other assistive devices and follow a similar structure to the WHO guidelines, however of note, both national policies and guidelines were in place prior to the ratification of the Convention.</p>	<p>(Department of Health 2003) (Visagie et al 2013) (Law 2008)</p>
<b>Norway</b>	<p><b>The Social Security Act –</b></p> <p><b>National Guidelines -</b></p> <p><b>The National Standards -</b></p>	<p><b>Norway</b> signed the UNCRPD in 2007 and ratified the Convention in 2013. Norway has made a commitment to take effective measures to ensure personal mobility with the greatest possible independence for persons with disabilities.</p>	<p><b>In Norway</b> wheelchair and seating provision fall under the provision of Assistive Technology (AT). The Social Security Act – is the main piece of legislation covering AT – The Social Security Act address AT as an individual right under social security to all citizens and AT devices are provided to persons whose functional capacity are permanently impaired in addition people are central when policies are formulated - AT in Norway is an individual right – and people with disabilities have full opportunities to be full citizens. National Guidelines have been developed in a number of areas of the AT service that include “National standard for front-line training”, “Emergency repairs to assistive devices”, “Ambulance service activities”, “Testing assistive devices” and “Range work at assistive technology centres” .The National Standards describe the quality of service that can be expected by the public, these standard are continually been updated so that the people of Norway get the best possible service, the guidelines help to keep AT services in Norway to a high standard and ensures consistency, coordination and continuity across a person’s life stages</p>	<p>(Disability Information Resources 2012) (Enable 2004) (Disability Information Resources 2012) (Cullen et al 2012)</p>

<b>Australia</b>	<p><b>The National Disability Strategy 2010-2020</b></p> <p><b>The Disability Discrimination Act (DAA) 1992</b></p>	<p>Australia signed the UNCRPD in 2007 and the Convention entered into force in 2008 when it was ratified.</p> <p><b>By ratifying the Convention</b> in 2008 and acceding to its optional protocols in 2009, people with disabilities in Australia are afforded the same rights as all other citizens.</p>	<p><b>The National Disability Strategy</b> – this is the first time in Australia’s history that all governments have committed to a unified, national approach to improve the lives of people with disabilities. The strategy enables people with disabilities to fulfil their potential as equal citizens this includes appropriate strategies for aids and equipment to facilitate effective participation.</p> <p><b>In Australia</b> the Disability Discrimination Act provides protection for everyone in Australia against discrimination based on disability.</p> <p><b>The Disability Discrimination Act</b> makes it unlawful to discriminate in the provision of goods, services or facilities.</p> <p><b>There</b> are currently no national accreditation structures for AT practitioners or suppliers involved in assessment, prescription, customised fittings, repairs or maintenance in Australia.</p>	<p>(National Disability Strategy 2011) (ATATA 2013) (Lukersmith et al 2013) (Guidelines 2011)</p>
<b>Afghanistan</b>	<p><b>National Policy:</b> The Comprehensive National Disability Policy in Afghanistan (2003)</p>	<p>Afghanistan did not sign up to the UNCRPD. Nevertheless in 2012 Afghanistan ratified the Convention.</p>	<p><b>In Afghanistan</b> the provision of wheelchair falls under the provision of assistive technologies/ mobility devices.</p> <p><b>The Comprehensive National Disability Policy</b> works to promote an inclusive, barrier free and rights based society for persons with disabilities. The policy takes a human rights approach to addressing needs and provisions for people with physical disabilities. All people with disabilities have a right to receive assistive and mobility devices that are well made and well fitted.</p>	<p>(WHO 2008) (WHO 2014)</p>

**Table 3: Scientific Literature Findings**

JOURNAL	TITLE	COUNTRY	AUTHOR	KEY FINDINGS
<b>Assistive Technology Research Series</b>	Sustainable Wheelchair Provision	Ireland	Gowran, R. J., Murray, E., Sund, T., Steel, E., McKay, E., & O'Regan, B. (2011)	According to the authors wheelchair provision globally is fragmented, costly and unsustainable. Likewise the prescription of an inappropriate wheelchair can have a negative impact on an individual's health and well being. Furthermore we are told that wheelchair provision is not prioritised in national government policies. The authors suggest that the WHO guidelines on the provision of manual wheelchairs in less resourced settings are relevant to all countries not just low income countries. It is recommended that all stakeholders involved in wheelchair and seating provision utilise the guidelines in the development of national policy on wheelchair provision. Likewise the guidelines can be utilised to develop a wheelchair delivery system.
<b>Timisoara Physical Education &amp; Rehabilitation Journal</b>	Introduction of World Health Organization guidelines for provision of wheelchairs in less resourced settings	World Health Organisation Romania	Kiss, K. and Răducan, G. (2012)	This journal was written to introduce readers to the WHO guidelines for provision of manual wheelchairs in less resourced settings and encourages countries to adopt them. The article when interrupted wants to support European Union Member states in the development of a wheelchair delivery system. The authors introduce the reader to the guidelines for the provision of wheelchairs in less resourced settings. The guidelines were put in place to support low income countries governments to support the Right to mobility laid down in Article 20 of the United Nations Convention on Rights of Persons with Disabilities. It is recommended that the guidelines are used as a tool. In addition the guidelines recommend appropriate standards for design, production, service delivery and training.
<b>Archives of Physical Medicine &amp; Rehabilitation</b>	A Preliminary Model of Wheelchair Service Delivery	USA	Eggers et al (2009)	The authors of this article wanted to develop a detailed descriptive model of wheelchair service delivery. The article describes the wheelchair delivery system in the U.S.A and the literature review focuses on the wheelchair provision process, models of service delivery and factors that may influence the wheelchair provision process. The study looks at wheelchair service delivery and provides a preliminary framework for developing a more comprehensive model of wheelchair service delivery for adults with spinal cord injury. The literature highlights that several models related to wheelchair service delivery exists, this has resulted in an inconsistency in wheelchair prescription in the U.S. The literature exposed that ethnic, racial and income differences impacting greatly on the way wheelchairs were supplied in the U.S.A.

<b>Annals of internal medicine</b>	Wheeled mobility (wheelchair) service delivery: scope of the evidence	USA	Greer et al (2012)	The authors of this article were exploring wheelchair service delivery. A scope of evidence was used to compile the research. The review describes the process of wheeled mobility services delivery for long term wheelchair users with complex rehabilitation needs. The literature review shows that wheeled mobility devices in U.S.A can be obtained in various ways online stores, retail stores and off the shelf being the most common identified. The findings suggest that an evidence based approach is needed in wheelchair services and findings show a lack of standardisation across the wheelchair delivery process.
<b>Canadian Journal of Occupational Therapy</b>	The wheelchair procurement process: Perspectives of clients and prescribers	Canada	Mortenson, W. B. and Miller, W. C. (2008)	This is a qualitative study and the overall purpose of this study was to explore the wheelchair procurement process from the perspectives of clinicians and clients. The research was conducted as part of a larger study which did not focus on exclusive issues of wheelchair procurement. The Canadian practice process framework describes a process of client centred occupational enablement in which clients and therapist collaborate to identify plan and implement intervention. The authors found that wheelchair procurement requires careful consideration as wheelchair selection has a powerful impact on the lives of wheelchair users. The paper helps occupational therapists understand the various perspectives of this complex process. The article provides insight into the whole wheelchair procurement process and can assist in improving interventions.
<b>Canadian Medical Association Journal</b>	Could changes in the wheelchair delivery system improve safety	Canada	Kirby, R. L., Coughlan, S. G., & Christie, M. (1995)	The authors of this article want to improve wheelchair safety and believe that it takes efforts by governments, manufacturers, purchasing groups, users and clinicians. The article addresses wheelchair safety, and improvements that can be made. The authors also focus on current regulations. The literature highlight wheelchair standards, and expose that adherence is voluntary. In addition the literature shows that regulations governing wheelchair manufacture, safety and delivery are nonexistent in Canada. Finding show that wheelchair delivery systems in Canada have a number of specialised programs to prescribe wheelchairs, however high numbers of people obtain non-prescription wheelchairs that is similar to the U.S.A.

<b>South African Journal of Occupational Therapy</b>	Wheelchairs-A Human Rights Issue or a Mere Mobility Device?	South Africa	McIntyre, J. (2010)	This article is based on the reflection of an occupational therapist. The literature discusses wheelchair as a human rights issue or a mere mobility device. The article includes a number of real life case studies that are discussed. There are a number of main theme that come to light these include the provision of wheelchairs by donors, provision of wheelchairs within the KZN department of health. Finding show that the South African government is a signatory of the United Nations Convention on the Rights of Persons with Disabilities. In addition the literature addresses the implemented of the National Rehabilitation Policy. Finding show that the human rights of people with mobility impairments in South Africa are not being met and wheelchairs are continually donated and are allocated inappropriately.
<b>African Journal of Disability</b>	Policy implementation in wheelchair service delivery in a rural South African setting	South Africa	Visagie, S., Scheffler, E., & Schneider, M. (2013)	The aim of this article was to explore the extent to which wheelchair services delivery in a rural, remote area of South Africa was aligned with South African National guidelines on the provision of assistive devices. In South Africa (SA) wheelchair and seating provision fall under the provision of assistive devices. Findings show that SA has ratified the UNCRPD and has put a National Policy in place. The South African (SA) National Rehabilitation Policy was found to guide general rehabilitation services and the provision of wheelchairs. Finding show that rehab service provision in rural SA is inadequate. Furthermore wheelchair service delivery in rural SA is also inadequate. Policy was found to be disregarded in rural areas of SA however guidelines are in place. National Guidelines on Provision of Assistive Devices stipulate key responsibilities and requirements with regard to the provision of assistive devices / wheelchairs. The Guidelines include specific protocols with regards to key steps in the provision of wheelchairs. Findings show that the guidelines follow a similar structure to the WHO guidelines however they are seldom used.
<b>Journal of Occupational Therapy</b>	'Effectiveness in wheelchair service provision'	England	White, E. and Lemmer, B. (1998)	The authors of this study highlight the effectiveness in wheelchair service provision in the England. The literature identifies the main piece of legislation covering wheelchair services in England, which is the National Health Service Act 1977. The literature highlights the historical background of wheelchair services in the UK and addresses the McColl's report 1986. Findings show that the McColl's report put recommendations in place for wheelchair services throughout the UK and as a result wheelchair services transferred to the National Health Service (NHS). Findings show that a framework specific to wheelchair services was draw up, and a client centred approach was taken to wheelchair delivery. It recommended that carer's involvement in the provision of an effective wheelchair service was found to be vital. In addition the Disablement Service Authority (DSA) was set up principally to improve wheelchair services in England as they were found to vary.

<b>European Geriatric Medicine</b>	The provision of wheelchairs for older people in the United Kingdom	England	Green, G., & Young, J. (2011)	The authors of this research have identified that there are 160 designated National Health Service (NHS) Wheelchair Centres in the UK and each wheelchair service has a statutory responsibility described in the NHS Act of 1977 to provide and maintain equipment for all ages with long term mobility problems. Findings reveal that it is the general practitioner who has the responsibility to prescribe an NHS wheelchair. In addition accredited assessors – physiotherapists and occupational therapists also assess clients for the provision of wheelchairs in the UK. Findings reveal that there is an expectation that a wheelchair will make life easier for user and carer. Furthermore wheelchair design can limit moving a wheelchair, therefore careful assessment, individualised prescription and negotiated compromises can optimise outcomes. In addition it was found that patient review and reassessment is important to maximise the contribution that a wheelchair can make.
<b>British Journal of Occupational Therapy</b>	Planning wheelchair service provision in motor neurone disease: implications for service delivery and commissioning	England	Rolfe, J. (2012)	The purpose of this study was to identify a timeline for mapping the different types of wheelchairs used by people with motor neuron disease from diagnosis to death. Findings show that there can be lengthy delays in supplying wheelchairs, which when provided are no longer appropriate. In addition guidelines have been recommended to map the needs of clients which then can be shown to boards and to commissioning consortia. In England criteria is used to allocate wheelchairs and this can be an effective method for controlling demand. However for MND clients it was found that it can prohibit the provision of the most appropriate wheelchair. Unfortunately this can then lead to multiple assessments and inappropriate wheelchair provision. Recent government policy across England promotes third sector involvement to improve wheelchair services and NHS wheelchair services and the MNDA have been set up in England to improve SPEED.
<b>Scandinavian Journal of Disability Research</b>	Older People and Dissatisfaction with Wheelchair Services'	Scandinavia	Stewart, J., Sapey, B., Humphreys, L., Francis, B., & Donaldson, G. (2008)	The authors of this study found that those respondents who were most dissatisfied with the agencies responsible for providing wheelchairs were amongst the oldest and frailest of disabled people. In this study the authors of this study discuss hierarchies of disablement and health service policy and practice. Findings show that the majority of respondents viewed wheelchairs as potentially liberating and the environment was a barrier, in addition the individuals viewed their impairments as limiting their lives. However since this study the department of health published a good practice guide for the improvement of wheelchair services for both user and carer.

<b>Disability and Rehabilitation: Assistive Technology</b>	Clinical standards for National Health Service wheelchair and seating services in Scotland	Scotland	Dolan, M. J. (2012)	The article is the first publication on the first clinical standards for HSE wheelchair and seating services in Scotland. In 2005 a review of the Wheelchair and Seating Services in Scotland was conducted, finding highlighted a system that was under resourced; in addition WSSs reflected a fragmented system with no uniformity similar to that what was found in wheelchair services in England. In 2009 the Wheelchair and Seating Services Modernisation Action Plan was put into action to modernise wheelchair services in Scotland. In addition it was recognised that clinical standards needed to be developed for the National Health Service wheelchair and seating services in Scotland. The standards were developed for the health service to provide a more “safer, reliable, person-centred and effective services. There are five clinical standards in total that that include “Assessment of mobility and mobility needs, Specialist assessments, Clinical follow up and planned review, Equipment provision and management, Quality management and services improvement”. The standards ensure that there is consistency across NHS wheelchair and seating services in Scotland.
<b>Australian occupational therapy journal</b>	Development of clinical guidelines for the prescription of a seated wheelchair or mobility scooter for people with traumatic brain injury or spinal cord injury	Australia	Lukersmith, S., Radbron, L., & Hopman, K. (2013)	This research article introduces the reader to clinical guidelines for the prescription of a seated wheelchair or mobility scooter for people with traumatic brain injury and spinal cord injury. Findings show that in 2009 the Health Support Services – Enable NSW and the NSW lifetime care supports authority funded the development of clinical guidelines to assist with the prescription of a seated wheelchair or mobility scooter for an adult with traumatic brain injury or spinal cord injury were developed. The guidelines are neither rigid nor mandatory regulations therefore each clinician can choose whether or not to use them when prescribing a wheelchair. There are no existing guidelines on wheelchair prescription in Australia. As a result Clinical guidelines were developed for evidence-based guidance on best practice for the prescription of a wheelchair or mobility scooters. The guidelines inform and guide the therapist. Neither rigid nor mandatory the clinician can choose whether or not to use the guidelines when prescribing a wheelchair.

<b>Australian Occupational Therapy Journal</b>	Standards for wheelchair prescription	Australia	Di Marco, A., Russell, M., & Masters, M. (2003)	This paper describes the process of establishing an evaluation of wheelchair prescription practices by occupational therapists in a spinal injury rehabilitation unit in South Australia. The literature review identified the challenges associated with wheelchair prescription and there were found to be no published standards of practice for wheelchair prescription. Furthermore there have been found no guidelines available to guide practice regarding manual wheelchair prescription. The authors recommend the development of standards of practice to monitor performance in wheelchair prescription, however the research shows that for systems to work support is needed from both clinical staff and management.
<b>Technology and disability</b>	Re-conceptualizing disability and assistive technology: Australian consumers driving policy change	Australia	Layton, N., & Wilson, E. (2009)	This article found that their government and service system was constraining rather than an enabling force. This article presents two key components of policy and practice change in the area of assistive technology. The findings show that the assistive technology supply sector in Australia is small and fragmented and wheelchairs must be purchased by the individual themselves or through compensation schemes. Furthermore the delivery of many health and welfare resources is split across the three tiers of governments in Australia. Many recommendations have been made and reconstructing local issuing centres into one state wide centre has been put forward.
<b>International Journal of Therapy and Rehabilitation</b>	Provision of assistive technology in Scandinavia: a system to strive for	Scandinavia	Winchcombe, M. (2003)	The author of this editorial describes the developments that have occurred in the wheelchair and seating services in the UK, the author also makes reference to the Scandinavian countries. The literature suggests that assistive technology in Sweden, Denmark, Norway and Finland is a fundamental issue of equal rights. Unlike the UK the prescription of assistive technology is straightforward and highly regulated in these countries. Furthermore in Scandinavia assistive technology is top of the equal rights agenda therefore greater government commitment is evident in these countries. Assistive technology in Scandinavia is supported by governments and perceived positively and part of everyday life.



Table 3: Grey Literature Findings

<u>Grey Literature</u>	<u>Title</u>	<u>Year</u>	<u>Key Findings</u>
<b>World Health Organisation</b>	World Health Organisation Guidelines on the provision of Manual Wheelchairs in less resourced settings	2008	This document is based on research conducted by the World Health Organisation (WHO). The findings showed that there was a considerable difference and an inconsistency in the delivery of mobility devices from one country to the next. To resolve this problem the WHO came together with a number of stakeholders to develop a set of guideline. The “guidelines on the provision of manual wheelchairs in less resourced setting” were published in 2008; to provide countries with a framework to improve the way in which people receive wheelchairs and to ensure that the wheelchairs were appropriate. The WHO guidelines set out to promote personal mobility and want to enhance quality of life of wheelchair users. The WHO guidelines have 8 superior steps that address referrals and appointments, to assessment, prescription, funding and ordering, product preparation, fitting, training and follow up, maintenance and repair. Throughout these guidelines low income countries are encouraged to implement this framework and EU states are encouraged to ratify the UN Convention on the Rights of Persons with Disabilities. The “Joint Position Paper on the Provision of Mobility Devices in Less Resourced Settings” was developed in response to further concerns in relation to personal mobility and mobility devices. Since the development of the 2008 guidelines it has been found that governments across the globe continue to overlook the provision of mobility devices. The WHO has highlighted that the mobility needs of people with disabilities are not being met. Developed in response to the growing global concerns in relation to personal mobility and mobility device. Despite the efforts of stakeholders at the international, national, regional and local levels, the mobility needs of people with disabilities are not being met. This document aims to guide and support countries, in the implementation of the relevant articles within the United Nations Convention on the Rights of Persons with Disabilities such as Article 20 – Personal mobility that states parties shall take effective measures to ensure personal mobility with the greatest possible independence for persons with disabilities.
<b>World Health Organisation</b>	Join Position Paper on the Provision Of Mobility Devices in less resourced settings; A Step Towards Implementation of the Convention on the Rights of a Person with Disabilities (CRPD) related to personal mobility	2011	

Title		Country	Year	Key Findings
<b>Rehabilitation Engineering and Assistive Technology Society of North America (RESNA)</b>	Wheelchair Service Provision Guide	USA	2011	The purpose of the wheelchair service provision guide is to provide an appropriate framework for identifying the essential steps in the provision of a wheelchair. The guidelines were developed and intended for all stakeholders of wheelchair mobility and the seating industry including consumers, family members, care givers, social services and health care professionals, suppliers, manufacturers, finding source personnel and policy makers. These steps have been found to share many similarities with the WHO Guidelines.
<b>Faculty of Medicine Department of Physical Therapy</b>	Guidelines for provision of wheelchairs in progressive neuromuscular	Canada	The University of British Columbia (2013)	This is a document that was published from the University of British Columbia however the information was limited and the links supplied from the web site were inaccessible. The literature exposed variation in the prescription of wheelchair and training practices across Canada. There were no visible documented evidence based guidelines for the provision of wheelchairs. In 2013 researcher in British Columbia, Canada came across the United Kingdom’s guidelines for the provision of wheelchairs. On been granted permission from the UK, researchers in British Columbia started to adapt the UK Best Practice Guidelines. Findings show that the guidelines are to be utilises by occupational and physical therapists working with wheelchair and seating systems in British Columbia. However there is no further information visible and it is unclear whether or not these guidelines have been utilised.
<b>4<sup>th</sup> All African Wheelchair Congress Report</b>	Standardisation of Provision of Mobility Assistive Devices in South Africa	South Africa	Scheffler (2007)	This document is based on the 4 <sup>th</sup> all Africa wheelchair congress “appropriate wheelchair services for Africa”. The main topics covered at the event were the impact of wheelchairs on quality of life, partnership for appropriate wheelchair services, wheelchair technology training, wheelchair services and poverty reduction strategy, standards, conventions on guidelines, professionalization of wheelchair services. The document focused on Africa and South Africa – there are a number of findings that came to light however national policy in South Africa was address and this was most appropriate for this study. A nation policy was created in South Africa that recognised the way assistive devices could be used to improve the quality of life of people with disabilities. The policy was launched at local level and later expanded to national level. Elsje Scheffler outlined how national policy recognises the way assistive devices improve quality of life of people with disabilities. A Key point recognised “ <i>South Africa may seem far ahead of other countries with the policy; however it began with a few people starting something small in one province and it later expanded to a national policy</i> ”. This statement is extremely encouraging to an Irish context.

<b>Standardisation of Provision of Assistive Devices in South Africa</b>	A Guideline For Use In The Public Sector	South Africa	The Department Of Health (2003)	This is a government report that has published guidelines for the public sector on the provision of assistive devices. The report highlights the South African government's commitment to improve the quality of life of people with disabilities. The document will provide people in the public sector with a policy framework which will ensure the provision of assistive devices is equitable and appropriate. The document also places an obligation on service users to ensure that the devices are properly cared for. It identifies that assistive devices are to be provided by appropriately trained rehabilitation providers.
<b>Wheelchair Summit: 25<sup>th</sup> February</b>	Outputs from the day	England	NHS England (2014)	The aim of this summit was to develop a shared understanding of the problems with the current commissioning of wheelchairs in the UK. In addition identify what a high quality service was from a user's perspective, to agree what needs to happen locally and nationally to improve the commissioning of wheelchairs and to develop a group of commissioners and facilitate improving services. What was found on the day of the summit: services are not stream line and the process needs clarity and consistency across the country. The services users requirements were as follows: service users want to be involved in wheelchair design and delivery, they want waiting times to be reduced and repair teams should be mobile and able to visit service users to repair chairs.
<b>Care Services Improvement Partnership</b>	Out and About wheelchairs as part of a whole system approach to independence.	England	Department of Health (2006)	This document provides an overview of the current state of wheelchair provision in England. Outlines how timely and appropriate provision can contribute to health, well being, independence and inclusion.
<b>Standards for Better Health</b>	Health Care Standards for Wheelchair Services under the NHS	England	National Wheelchair Managers Forum (2005; 2010)	This document has been put in place as the NHS recognised that people with mobility impairments were entitled to first class wheelchair services. As a result the minimum national standards and best practice framework were put in place for wheelchair and specialised services throughout the UK. The document identifies that the provision of wheelchairs stems from s29 National Health Service Act 1977. The document acknowledges that the national standards must be read within the context of the department of health's framework.
<b>Programme Manager Wheelchair and Specialised Seating services Programme</b>	Local innovations in wheelchair and seating services	England	Department of Health (2010)	Document offers guidance for wheelchair services. Document aims to support Primary Care Trusts and local wheelchair service managers in their commissioning and delivery of wheelchair and seating services.

<b>Healthier Scotland Scottish Government</b>	Wheelchair and Seating Services Modernisation Action Plan	Scotland	National Health Service (2009)	This document was put in place as it sets out the actions that must be implemented in the NHS in Scotland to take wheelchair and seating services forward. This document outlines the key activities needed in the NHS and other agencies to meet recommendations made to develop the NHS wheelchair and seating services over the next three years. This action plan incorporates the recommendations from the Moving Forward report. It is expected that services will be provided locally but delivered to national standards of quality.
<b>Healthier Scotland Scottish Executive</b>	Moving Forward	Scotland	National Health Service, Scotland (2006)	The Document is a review of National Health Service Wheelchair and Seating Services in Scotland. What it found was that 40 recommendations for improvements in the delivery of NHS Wheelchair and Seating Services in Scotland needed to be made. All of the 40 recommendations are visible within the report. It is evident from the report that serious gaps were found however these gaps hope to be filled once recommendations are complete.
<b>Clinical Healthcare Quality Standards for Wheelchair and Seating Services</b>	Wheelchair and Seating Services Modernisation Project	Scotland	(2010)	This document identifies the clinical health care standards for wheelchair and seating services in Scotland. The standards apply to all territorial NHS boards in Scotland. The standards are intended to support equity of service provision across the NHS in Scotland. Five clinical standards have been developed and should be read in conjunction with the wheelchair and seating services quality improvement framework. The Standards were developed by wheelchair and seating services eligibility and standards working group. Standards are issued as good practice recommendations not as mandatory guidelines.
<b>Enable New South Wales and Lifetime Care &amp; Support Authority (LTCSA)</b>	Guidelines for the prescription of a seated wheelchair or mobility scooter for people with a traumatic brain injury or spinal cord injury	Australia	Enable NSW and Lifetime Care & Support Authority (2011)	Australia ratified the United Nations Convention on the Rights of Persons with Disabilities in 2009 and not long afterward the guidelines were developed and are specific to spinal cord injury or traumatic brain injury however can be adapted to all areas. The guidelines were developed and intended to inform and guide the therapist on clinical actions and decisions when prescribing a wheelchair, however these guidelines do not replace the need for clinical reasoning, judgement and/or supervision. There is a framework put in place and the therapist is recommended to follow a step by step process so that the person is provided with the best possible service.

<b>The Australian Rehabilitation and Assistive Technology Association (ARATA)</b>	Assistive Technology within the National Disability Insurance Scheme (NDIS). ARATA's NDIS Policy Statement	Australia	Summers, M. and Walker, L. (2013) (2012)	There is currently no national accreditation structures for assistive technology practitioners or suppliers involved in assessment, prescription, customised fitting, repairs or maintenance in Australia. It was recognised that a through, individualised, person centred approach was needed to prescribe wheelchairs in Australia. In 2012 a framework was put in place for a national AT credentialing and accreditation system. The credentialing and accreditation system will identify, develop and continually enhance assistive technology services across Australia. In addition if the document is implemented service of delivery will be more economical and effective. Currently no assistive technology standards are mandatory.
<b>An Option Paper</b>	Executive Summary National Credentialing and Accreditation for Assistive Technology Practitioners and Suppliers: An Option Paper'			

## **DISCUSSION**

There is a substantial amount of government documents, reports and policies in relation to disability, although there is limited literature documenting wheelchair policy, provision and guidelines worldwide. Therefore, the researcher went to great lengths to compile a high quality overview. Possibly the most notable piece of international legislation policy that came to light during this study was the United Nations Convention on the Rights of Persons with Disabilities. This international Convention protects the human rights of people with disabilities and wheelchair provision is openly enshrined within the Convention (WHO 2008). The majorities of countries within this study had ratified the Convention despite this the United States of America and Ireland have only signed up. Evidence suggests, countries that ratify the Convention are obliged to adapt or implement national legislation to fulfil the Conventions requirements (UNCRPD 2006).

From scoping numerous government documents it is unclear whether or not each country that has ratified the Convention has actually followed through and fulfilled the convention requirements. For example, article 20 and 26 of the Convention specifically emphasize personal mobility and rehabilitation, and findings from South Africa show that there is a national rehabilitation policy and guidelines in place to ensure the provision of assistive devices. However the national rehabilitation policy and the national guidelines were put in place before the Convention was ratified, as a result there is no clear evidence in the findings to suggest the South African government has actually adapted their national policy to fulfil the Convention requirements. From critiquing government documents, one could argue that wheelchair provision in South Africa is most impressive, as in terms of implementing policy and guidelines South Africa has advanced well in comparison with other countries. However scientific literature exposes huge discrepancies in wheelchair and seating service provision as policy is disregarded in rural parts of South Africa (Visagie et al 2013).

Evidence suggests that South Africa is not alone; findings from Australia and the U.K. reveal similar findings. Evidence from Australia indicates that wheelchair delivery varies significantly between regional, rural and remote areas (Lukersmith et al 2013). This evidence can be directly linked back to the earlier findings that show that governments have made progress in relation to wheelchair provision, however “good intentions were not backed up by political will” as evidence suggests the provision of mobility devices is overlooked by governments in national and local policy (WHO 2011; Gowran et al 2009, p.3). These findings can be related to our own country, recent events in Ireland indicate there is a marked lack of documentation, guidelines, standards and policy in relation to wheelchair provision even though there are an estimated 40,000 people who use wheelchairs (Independent 2014; Tiernan 2013). And while literature suggested that member states ratify the convention and implement a national policy on wheelchair provision we know from previous findings that wheelchair provision is overlooked by governments in national and local policy (WHO 2008; WHO 2011). Unfortunately this has further repercussions for countries as literature highlights that poor or inappropriate wheelchair provision contributes to increased physical impairments, depression, isolation and often death (Tiernan 2013).

### **Wheelchair provision policy guidelines in other countries**

Over the last century wheelchair provision has become more globally active. Literature suggests that low income countries struggle to provide wheelchairs as they have limited human and infrastructural resources. The WHO developed the “Guidelines for the provision of Manual Wheelchairs in less resourced settings” for low income countries. From the findings these guidelines would appear to be the most comprehensive framework that has been developed globally. These guidelines address the whole wheelchair service delivery and promote personal mobility from the time a person is referred right through to follow up. Since the development of the guidelines countries have started to introduce similar, for example the U.S has put a wheelchair guide in place and in essence the framework is based on a similar model to the WHO guidelines. However the U.S guidelines do not refer to national policy or standards that the WHO guidelines recognise as paramount in wheelchair provision. Therefore it could be argued from these findings that wheelchair provision is inappropriate, these findings also clarify why “off the shelf” purchases are most popular in the U.S. (Eggers et al 2009; Greer et al 2012).

A national policy can ensure that users receive wheelchairs that meet minimal requirements and are supplied by trained personnel. Findings suggest that inappropriate prescribing in the U.S led to a waste of resources which Gowran *et al* (2011) describes in literature as unsustainable. Research shows that countries who fail to provide sustainable wheelchair and seating provisions can inevitably cause a wide range of implications for a wheelchair user (Fitzgerald *et al* 2005). This evidence puts forward a highly compelling argument in support of Gowran *et al* (2011), who suggests the WHO guidelines should be adopted by all countries not just low income.

### **Improvements in services**

A key theme that became visible throughout the research was “improvements in wheelchair and seating services”. The majority of countries within the research highlighted commonalities in their wheelchair delivery systems. Literature from the U.K, Australia, the U.S. and Ireland has highlighted similar concerns about wheelchair delivery systems. Services were found to be under resourced, fragmented and unsustainable and the majority of countries had at some stage made improvements or were looking to make improvements in their wheelchair and seating services. Initially focusing on the United Kingdom the research findings expose a wheelchair system that differs to varying degrees across the country.

Findings show that England and Scotland have made the most recent changes to improve their wheelchair and seating services, yet both countries share a history of systems that lack uniformity. Bearing this in mind findings reveal reports from both Wales and Northern Ireland that show wheelchair services have started to be reformed. The first improvements in wheelchair services were found to take place in the UK after the McColl’s report 1986. In 2009 the UK ratified the UNCRPD and soon afterwards wheelchair services started to be reformed. However from the findings it is difficult to say whether or not these changes started to occur in wheelchair services as a direct result of the Convention terms. In 2009 new health care standards for the NHS wheelchair services were published and assistive technology was placed within the health and social care policy these changes were to ensure improvements were made in wheelchair services throughout the country. In addition national minimum standards and a best practice framework ensured a person centred service with a “get it right first time and keep it right” vision for England.



Scotland's wheelchair and seating services were redesigned and improved as a result of five clinical standards being developed through policy. It could be argued from critiquing the WHO guidelines that Scotland's wheelchair and seating system will remain fragmented as the government did not implement all eight WHO steps. However this would appear to be irrelevant as literature reveals that not all people need every step of the WHO guidelines (Green et al 2012). We know from earlier findings that wheelchair provision in Ireland is not straight forward as there is a severe lack of guidelines, standards and policy. Likewise earlier literature suggests that Ireland has no clear pathway of wheelchair service provision, assessment or prescription (Tiernan 2013; Gowran 2012). Looking in from the outside it would appear from the above findings that both England and Scotland's wheelchair and seating systems are flawless and a high-quality example for Ireland to lead from. However findings from the "Wheelchair Summit" earlier this year reveal that the wheelchair and seating system in England requires much further improvements. It would appear from the findings that all of the good work that went into reforming the wheelchair and seating system in England was irrelevant.

Problems that were identified over a decade ago remain (White et al 1998). Recent findings reveal no clarity or consistency across the country while waiting times and supply chains need to be further improved. Furthermore "the number of people in unsuitable wheelchairs indicates that standards of wheelchair assessment, prescription and advice are inadequate" in England (Dimond 2010, p.183). Evidence shows that wheelchairs are abandoned when services are inconsistent and repair time and maintenance is poor therefore huge amounts of resources are wasted each year (Fitzgerald *et al* 2005). These findings raise a question as to what is actually needed to develop a robust wheelchair and seating service. It could be argued that the English government put in place all of the recommended steps. This evidence is pivotal and an opportunity for Ireland to learn from mistake made in the past and present, but moreover a prime chance for the Irish government to put appropriate policies in place to support the provision of wheelchair and seating. Occupational therapists are the key clinicians involved in the assessment and prescription process; however as a new graduate it can be undesirable and frustrating to be part of a system that keeps people waiting and where there is little or no follow up or management services available.

Out of all of the countries Norway is the only country that is of a similar size population to Ireland. Wheelchair provision in Norway is highly regulated by the Ministry of Labour and Social Inclusion, and the Norwegian Labour and Welfare Service. From the literature review we acknowledged that wheelchair provision was not prioritised in government policies however Norway is the exception (Gowran et al 2011). Findings show Norway has national policy and standards in place for the provision of assistive technologies. The UK and Norwegian national standards share similarities in that they both describe the quality of service that can be expected by the public. However unlike the UK, the Norwegian national standards are regularly updated and ensure people receive the same service throughout the country. Bearing this in mind Norway has a much smaller population in comparison to the UK; there are 160 designated wheelchair centres in England in comparison to 19 assistive technology centres in Norway.

Findings show that Ireland and England experience similar issues with their wheelchair and seating systems such as waiting times, follow up, management and repairs. While England has clinical standards in place the system has failed to meet people's needs as is evident in the findings from the "wheelchair summit" earlier this year. Norway's assistive technology centres are responsible for identifying needs and follow up times, each centre in Norway also has the responsibility to make any adaptations or adjustments in addition all repairs, technical services and maintenance is carried out within these centres. The Norwegian government's dedication and commitment through policy, standards and guidelines ensures equal and timely services throughout the country. As a result Norway's assistive technology system has been found to be the most desirable in place thus far. There is no real reason as to why Ireland cannot have a similarly assistive technology delivery system put in place; however until the Irish government put a national policy in place Ireland's wheelchair and seating systems will remain the same.

## **LIMITATIONS**

McKinstry *et al* (2013) acknowledge there are a number of justified criticisms for a scoping review, for example the analysis can only be as good as the documents the researcher's scopes and uses. In this study an increased number of documents were yielded as there were numerous data bases and web site searched. However the researcher found this confusing at times and struggled on regular occasions. As there were so many documents retrieved significant documents may have been neglected. Evidence suggests scoping reviews can include poor quality or low level evidence which can misinterpret findings and lead to misleading conclusions (McKinstry *et al* 2013)

## **CONCLUSION**

On the basis of the published literature alone the researcher has come to the following conclusion. National policy guidelines and standard are paramount to the prescription of an appropriate wheelchair. However at a time where there is a demand for high quality wheelchair and seating services wheelchair provision globally is fragmented, costly and unsustainable. This research has shown that government policies cannot be underestimated; policy helps shape countries and who we are as citizens. Policy contributes to the ways in which we are treated and what services we have to access too. Policies hugely influence the lives of all people with disabilities and for people who use wheelchairs this is particularly true. The researcher has learned that policy dictates the way services are provided however it is not just about a government putting policy in place, governments need to be an enabling force and not constraining. In Ireland there are major issues with wheelchair and seating service and this can now be linked directly back to the lack of policy, guidelines and standards in the country. Norway assistive technology system provides a fine example of what can be achieved, when governments and stakeholders come together to develop a system. Norway national standards are regularly updated and monitored, the government are committed and the assistive technology centres provide all services under the one roof. If the Irish government could follow the Norwegian governments lead Ireland's wheelchair and seating services could aspire to be premium.

None the less as the provision of wheelchairs in Ireland remains unregulated at present it is hoped that combining research and working together will help promote and address this matter. This study is part of a bigger project being undertaken at the University of Limerick which aims to highlight the need for national policy relating to wheelchair and seating provision in Ireland. The following statement is encouraging to us fellow occupational therapists as it is a reminder to keep advocating for wheelchair provision. “South Africa may seem far ahead of other countries with policy; however it began with a few people starting something small in one province and it later expanded to a national policy” (Scheffler 2007, p.13).

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