

Challenges faced by people with Reduced mobility In navigating pedestrian crossings.

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Abstract

The tactile cone has been designed and installed as an accessible adaptation for use by certain sectors of the population under specific circumstances. There are several reasons where there would not be an audible signal at a pre designated crossing point and it is in its absence that the cone has been designed to give a tactile indication of the commencement of the green man phase.

But why is it required, who uses it and how is it used?

Importantly for all concerned there is more at stake here than purely the design, purchase and installation of any accessibility adaptation as it is why the equipment is required and how it is accessed and used that ultimately determines whether it is an effective solution to the identified problem. Looking at each user group individually highlights the specific requirements and it is in doing so that we see where weaknesses in the current adaptive systems lie. Understanding the problem as experienced by the end user is paramount to ensuring that this is avoided as this knowledge can guide our approach to the solution and help ensure all of our adaptations are equitable. With direct links to be drawn between age and disability with our population over 65 set to double by 2050 the need to find cost effective and user led solutions has never been greater.

Introduction

The Visually Impaired.

There are many accessibility options available and each provides a different level of service to the end user. With many different end users each with specific requirements how certain are we that the solutions we provide suit their needs.

An independent blind or visually impaired person uses one of two forms of mobility aid. The guide dog or the long cane. These are the only two aids available at this time and if used effectively provide the user with an efficient and effective means of mobility. The training for each differs with professionally delivered training program's being provided by registered charities and public organisations and individuals in both cases.

How do Guide Dog Owners, Long Cane users and others access pedestrian crossings utilising the mobility techniques and procedures

available.

The Guide Dog owner.

A guide dog's training is split into three main areas.

- Straight Line,
- Right Shoulder Work,
- General Obedience.

“Obedience” is of course self-explanatory and forms the foundation on which all other work is built. “Right Shoulder Work” is the learnt ability to avoid all obstacles on the right hand side of the guide dog owner and involves the dog being taught to take into consideration the clearance required to avoid the handler colliding with street furniture and obstacles. Utilising the sound of the traffic and other ambient noise the “Straight Line” maintains the guide dog owner’s orientation and ensures that the team has a clue as to their direction of travel at all times.



Following the “straight Line” will always lead the team to a kerb edge and with the dog taught to stop and sit on arrival the handler avoids walking into the road. The ideal position at a pedestrian crossing is the middle of the tactile paving as from this point there is more of a chance of reducing the impact of slight deviation on crossing the road and increases the chance of alighting within the tactile paving on the other side of the road.

Following arrival at the kerb edge the GDO must locate and operate the “push button box” which should be positioned on their right but may be beyond reach or obscured by other pedestrians. This involves a right turn by the team and an arm sweep in order to make contact. Of course due to planning and installation restrictions this may not be possible and the push button may be at some distance to the optimum point for crossing. If there is no audible signal the GDO must always make contact with the tactile cone underneath the crossing control box to ensure that the green man phase has been initiated. With other pedestrians taking a chance and crossing during the red man phase this is the only way to ensure at the green man phase is operational.



Depending on the position of the “push button box” the GDO may not be able to take up a central position again and will be forced to cross from the extremity of the paving. In the case of a cone being at distance from the crossing the guide dog owner

does not have enough time or perceives there not to be enough time to carry out the aforementioned procedures and risks undermining the “straight line” kerb approach and stop/sit aspect of their training. This is highly dangerous and can lead to a degradation of the dog’s skills and an increased chance of accident on the part of the pedestrian.

Long Cane Users

The long cane user employs similar orientation techniques and again aims to arrive at the kerb edge in the middle of the tactile paving. In this situation they must “square off” with the kerb edge in order to ascertain the correct angle of departure from the down kerb. With most cane users being right handed the pedestrian finds themselves reaching across their



body to interact with the “push button” or places the long cane in the other hand whilst feeling for the rotation. It is this and the subsequent repositioning and direction assertion which can again cause issues in utilising the correct crossing procedure.

Reduced Mobility.

Pedestrians living with reduced mobility could be defined as those in mobility vehicles, using wheel chairs or suffering from general old age and other associated conditions. These pedestrians find it challenging to reach the button and in the case of the wheelchair and mobility vehicle users the consequential difficulty of ensuring a straight approach to the crossing edge can be a massive challenge. The tactile cone is no longer an issue but it is important with the absence of an audible signal that the signal box is in line of sight. Again the time required for positioning prior to the green man indication being transmitted is highly relevant be it in reality or perceived to the amount of time available for crossing. Reaching and operating the “push button” can



be a challenging procedure for those with reduced mobility and this can lead to a reduced independence and lack of engagement with certain crossings.

In all cases the initiation of the green man sequence starts with the pedestrian making contact with the crossing push button and it is here where the design and set up of the adaptations become critically important.



Taking into consideration the requirement for the dog to sit at the kerb edge, the long cane user to “square off” in the centre of the crossing and the wheel chair and others to operate the button and position correctly themselves correctly prior to crossing the road it is increasingly apparent that there is reduced time available to cross the road safely. In all cases should the user choose not to engage or worse still engage using detrimental techniques there are potentially serious consequences.

Current adaptability solutions take several forms.

Increased crossing times.

There have recently been calls for crossing times to be increased. Although this potentially solves the issues of pedestrians road crossing time the knock on effect on traffic congestion could be dramatic. There is also an increased chance of the driver ignoring red lights at the end of the sequence when they believe the road to be clear.

Camera monitoring

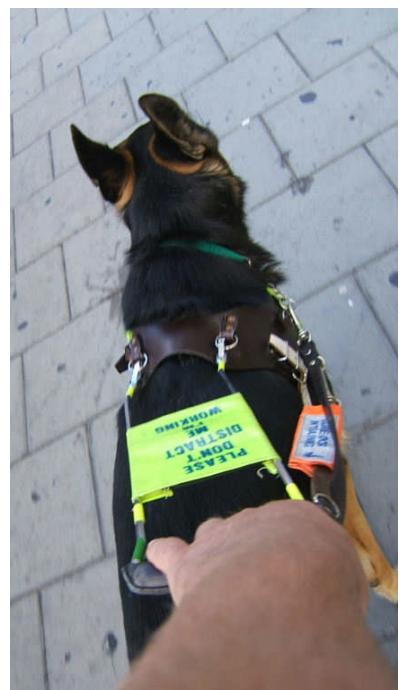
and surveillance of the crossing. This can be costly and does not take into consideration the challenges faced by those in their initial interaction with the “crossing push button”.

RFID key fob design.

Some issues with battery life and charging and it being “another item” in the pocket of the user. This solution does not also lend itself to being deployed in numerous localities due to the cost to the user and the requirement to pre order the hardware.

The Guide Dog Owner Experience.

“I follow my dog, the road on my right, the sound of the traffic on the main road keeping me straight. People are passing me on both sides and I am aware that I am in the middle of the pavement. I keep walking but my dog slows and I respond to his warning. We come to a halt and I step up to his head and shoulders. I can feel the



tactile paving under my feet and I know I have come to a pedestrian crossing. I reach out to the right and feel for the pedestrian control box but it isn't there. I stretch my arm a little more and search a little further but still no box. I'm aware I must look quite lost to passers-by but I have to find the pole.

I then remember the last time I crossed here. Its back against the wall and I'm going to have to look for it there. We turn back to the wall and edge forward sweeping my hand in front of me. I'm cautious as the last time I did this I really hurt my wrist. I eventually come into contact with the pole and again catch my wrist in the process. I press the button and turn towards the road although I feel a little disorientated. I stand next to the pole holding onto the cone underneath the box as at this time of night I know there is no audible signal and it will revolve when the green man comes on. I have to drop the handle as the call button is on the wrong side and I can't hold the harness handle and hold the cone at the same time. The green man comes on and the tactile cone revolves. I pick up the handle again and give the command "forward" to my dog. Luckily he understands where I want him to go and he moves off towards the kerb edge. I feel like an age has passed since I felt the cone revolve. He tries to sit when we get back to the kerb edge as he has been trained to do but I urge him on "no time for sitting lad, we don't have time". We don't stop, he's confused and I'm not even sure if I'm going straight. I hope he sits at the next kerb he comes to as I feel I have de-trained him slightly by overshooting this kerb. I remember why I don't come this way very often and make a mental note not to come this way again." [1]

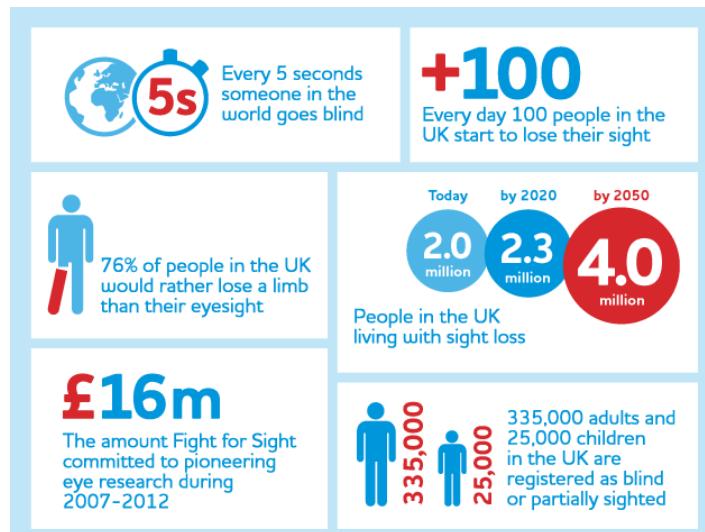
It's as bad as it's going to get!

Visual Impairment

- There are 1.86 million people in the UK with sight loss
- It is predicted that by 2020 the number of people with sight loss will rise to over 2,250,000.
- By 2050, the numbers of people with sight loss in the UK will double

to nearly four million [2]

- There are an estimated 40,000 people aged 0-25 who are blind or partially sighted. About 16,000 of them are younger than 16 years old. [3]
- Sight loss affects people of all ages, but **as we get older we are increasingly likely to experience sight loss.** [4]



- 1 in 5 people aged 75 and over are living with sight loss. [4]
- 1 in 2 people aged 90 and over are living with sight loss. [4]
- Sight loss affects people of all ages but especially older people: 1 in 5 people aged 75 and 1 in 2 aged 90 and over are living with sight loss. [4]
- Nearly half of blind and partially sighted people feel 'moderately' or 'completely' cut off from people and things around them.[4]

Wheel chair mobility.

"The environment around me makes it hard for me to do many of the things I want to do in my wheelchair."



Wheelchair users do not feel that using a wheelchair is necessarily negative, indeed it can be liberating, and that while they clearly relate their own limitations to their impairment, they also strongly identify with environmental, design and attitudinal barriers around them. [5]

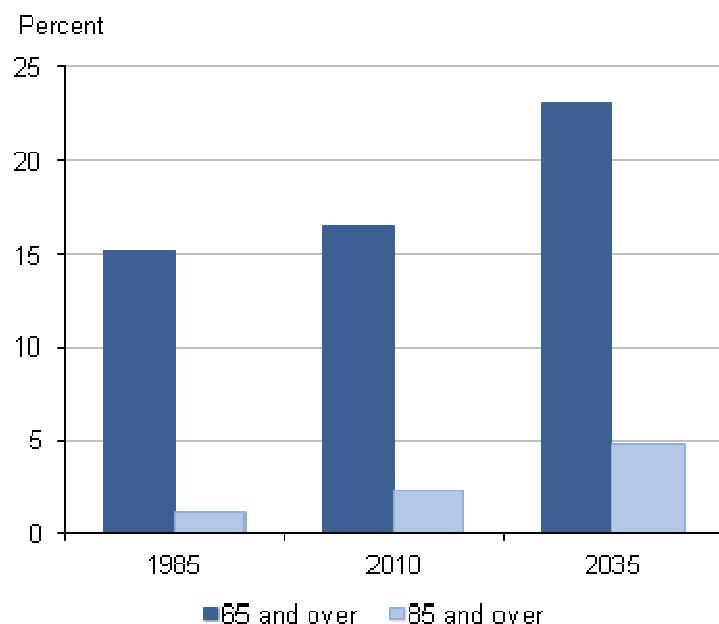
- 750,000 or so wheelchair users in the UK, which is 1.5% of the population,
- Only 28% of wheelchair users are under the age of 60.6.

Age Concerns.

Disability is strongly related to age:

- 2.1% of 16-19 year olds are recorded as having

- a disability;
- 31% for those between the ages of 50-59 years; and
 - 78% of people aged 85 or over. [6]



Office for National Statistics, National Records of Scotland, Northern Ireland Statistics and Research Agency

10 million people in the UK are over 65 years old. The latest projections are for 5½ million more elderly people in 20 years' time and the number will have nearly doubled to around 19 million by 2050.

Within this total, the number of very old people grows even faster. There are currently three million people aged more than 80 years and this is projected to almost double by 2030 and reach eight million by 2050. While one-in-six of the UK population is currently aged 65 and over, by 2050 one in-four will be. [7]

Conclusion

Guide Dog Owners, Long cane users, wheel chair and motability vehicle users and many others require solutions which take into consideration their specific requirements. MyIn understanding their needs we must be aware that they belong to an increasing proportion of our population. Disability is directly linked to age and our population is increasing dramatically.

Nowhere more is this relevant than in the over 65 age group. This group of people are increasingly mobile but increasingly will be accessing our society whilst living with disability. I believe we are not only duty bound to provide adaptations to ensure their continued mobility and their access to society but also to ensure that the solutions we provide are specific to their needs and equitable for all.

Appendices.

1. Alan B., Guide Dog Owner, Edinburgh 2013.
2. Lesley-Anne Alexander. *Sight Lost UK 2012. The latest evidence.* Royal National Institute for the Blind, 2012.
3. Institute for Public Policy Research report: *Work for disabled people.* http://www.efds.co.uk/resources/facts_and_statistics
4. Action for blind people:<https://www.actionforblindpeople.org.uk/about-us/media-centre/facts-and-figures-about-issues-around-sight-loss/> Access Economics, 2009
5. Bob Sapey, John Stewart, Glenis Donaldson: *The Social Implications of Increases in Wheelchair Use.* Department of Applied Social Science Lancaster University, 2004

6. English Federation of Disability Sport:

http://www.efds.co.uk/resources/facts_and_statistics

7. Richard Cracknell: *The Aging Population*. Key Issues for the New Parliament, 2010.

<http://www.parliament.uk/business/publications/research/key-issues-for-the-new-parliament/value-for-money-in-public-services/the-ageing-population/>