Reframing Vision Impairment for the Australian National Disability Insurance Scheme

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ABSTRACT

Australia has recently undergone a major shift in the way people with disability are supported, with the implementation in 2013 of the National Disability Insurance Scheme (NDIS). Disability support including people with vision impairment will be determined using a series of validated tools to develop a negotiated plan between the NDIS and the person. Due to the immediate roll-out of the NDIS, an urgent need exists for access to suitable tools for the planning process. Discussions in 2014 between the National Disability Insurance Agency (NDIA) and key stakeholder organisations revealed that a tool to measure the severity of a person's vision impairment is not currently available.

It is vital that eye health professionals become aware of the NDIS process and the reporting requirements. It is also crucial that eye health professionals as experts support the development of the NDIS tools, to ensure the outcome considers the person's broad visual function rather than relying exclusively on clinical measurements to best define the person's support needs. This paper aims to report on a preliminary method rather than a tool that has been developed and recommended to the NDIA. The method has drawn on the Model of Visual Functioning, proposed by Corn (1983) that portrays vision as a multifactorial and complex entity. The method reflects the model's approach by adjusting the severity of a person's vision impairment when additional factors are present that impact on the person's visual function. The strengths and limitations of the method are also discussed.

Keywords: vision impairment, disability, visual function

INTRODUCTION

Australia has recently undergone a major shift in the way people with disability are supported, with the implementation in 2013 of the National Disability Insurance Scheme (NDIS). Impetus for the NDIS stemmed from an inquiry by the Australian Government Productivity Commission[1] after extensive criticism that people with disability were experiencing systematic disadvantage within a system that was unable to meet their needs or the needs of their family and carers.[2] The Council of Australian Governments accepted and has welcomed the NDIS and heralded it as 'a substantial and important reform that will fundamentally change the nature of disability care and support in Australia'.[3] Vision impairment has been included in the group of disabilities considered eligible for NDIS funding support since it meets the NDIS criterion as a permanent sensory impairment that can result in a person having substantially reduced functional capacity, and substantially reduced participation in communication, social interaction, learning, mobility, self-care, and self-management over their lifetime.[4] Therefore it is vital that eye health professionals become aware of the NDIS processes and the potential reporting requirements.

The NDIS has been constructed on a foundation of discrete objectives, one of which is that it will 'provide reasonable and necessary support'[5] to people with disability including those with vision impairment. The National Disability Insurance Agency (NDIA), the independent statutory agency responsible for implementing the NDIS, will work in partnership with the person with disability to complete a 'Support Needs Assessment' that identifies core areas of functional capacity that are significantly and permanently impaired and that present specific challenges for the person.[4] The range of life functions assessed include learning and applying knowledge; general tasks and demands; communication; mobility; self-care and special health care needs; domestic life activities; interpersonal interactions and relationships; community, social and civic life; education and training; and employment.[4]

NDIS roll-out across Australia commenced in 2013, and NDIA staff, otherwise known as 'planners', immediately started assisting people with NDIS support planning. This activity created an urgent need for access to suitable tools to be used in the planning process that addressed functional capacity. To investigate the availability of such tools, the NDIA convened meetings early in 2014 with key disability stakeholder organisations including those in

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vision impairment, where it was clearly acknowledged that such a tool was not available. As a preliminary measure, the decision was made to develop a method based on the clinically informed opinions of the members from the key vision impairment stakeholder organisations. As a starting point, the method would describe the process that NDIA planners could use to identify the severity of the person's vision impairment using the clinical measurements available in a standard ophthalmology report, with an adjustment for the impact of factors known to affect a person's visual functioning.

The purpose of this paper therefore, is to inform the reader of the method that has been recommended for use in the NDIA planning process to determine the severity of a person's vision impairment; this method is currently awaiting approval with the NDIA. The paper will also identify and discuss the strengths and limitations of this proposed method. The author plans further exploration of this topic with the aim of developing a method that will identify the functional impact of a person's vision impairment, and suggest its use in the NDIA planning process. This information will be shared in future publications.

THE PROCESS

Developing the concept of visual function for the method recommended to the National Disability Insurance Agency

Traditionally, the system used to determine the severity of a person's vision impairment has been to apply clinical measurements recorded in an ophthalmology report, such as visual acuity and visual fields, to defined categories of vision impairment in the World Health Organization International Classification of Disease Version 10 (WHO ICD-10).[6] These categories include mild, moderate, and severe vision impairment and blindness. However, this practice may underestimate visual function. It is widely acknowledged that there is a weak correlation between clinical measurements such as visual acuity and the way a person uses their vision, also known as their visual function.[7-9] This lack of correlation has also been explored by Colenbrander who commented that clinical measurements provide a threshold parameter for the physiological function being measured, but they are not necessarily indicative of a threshold performance or of 'the most relevant performance level for activities of daily living'.[9]

The development of the method discussed in this paper and recommended to the NDIA began with identification of an exemplar of visual function. A literature review revealed the Model of Visual Function, proposed by Corn.[10] This model was chosen as it recognised the importance of clinical measurements as a component of the person's visual function, but more importantly captured visual function as a multifactorial and complex entity. The model included three dimensions: visual abilities, visual environment and individuality. Visual abilities according to Corn encompass visual acuity, visual field, ocular motility, visual brain function, contrast sensitivity and colour perception. Visual environment encompasses illumination, colour, complexity, time and contrast; while individuality encompasses cognition, perception, physical, psychological and personal characteristics.[10] Corn explained the complex relationship between the three dimensions of visual functioning as follows: 'to elicit, maintain or maximise visual functioning, each component of all three dimensions must be present in the minimum amount needed to create the volume required by an individual at any given moment to meet the visual demands of a particular task'[10] (p. 374).

The Model of Visual Functioning was used as a point of reference during the method's development to ensure where possible, that the outcome focusses on the person's visual reality and not exclusively on their clinical findings. For the purpose of this project, the original model was modified slightly and can be seen in Figure 1. This modification was done to better reflect common clinical terminology and was approved by Corn (personal communication).[11]

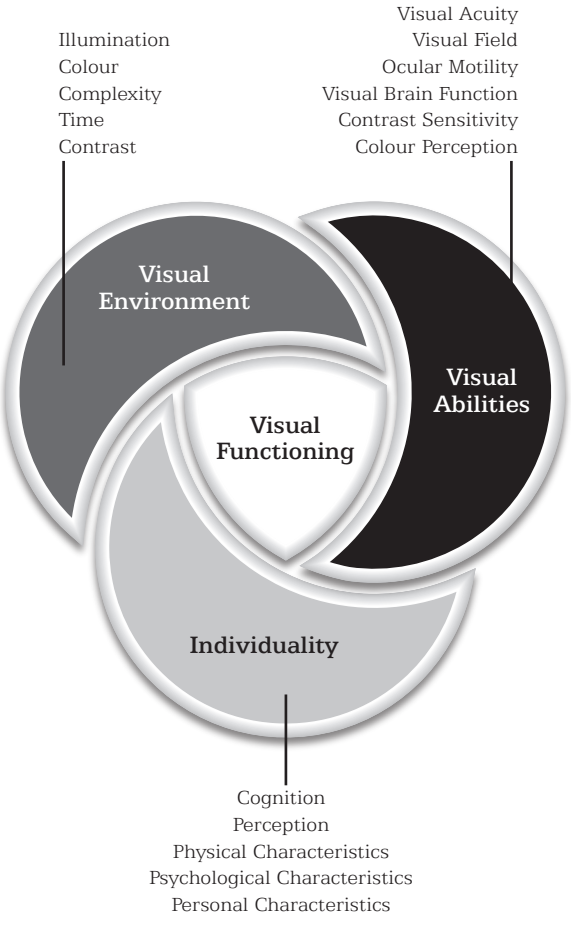

Figure 1. Model of Visual Functioning (Modified from the Corn Model of Visual Functioning).[10]

The method recommended to the National Disability Insurance Agency

The method recommended to the NDIA is presented in Figure 2. It will be contained in a booklet that provides definitions of near and distance visual acuity, visual fields, vision impairment, and a brief description of the various types of the visual acuity tests. These definitions and descriptions will be included as it is likely that NDIA planners will have general rather than expert knowledge of vision impairment and may not be skilled at interpreting measurements from an ophthalmology report.

The proposed method begins with determining the severity of the person's vision impairment from their clinical measurements. The level of severity of the vision impairment is then adjusted, depending on whether additional factors, known to affect visual function, are present.

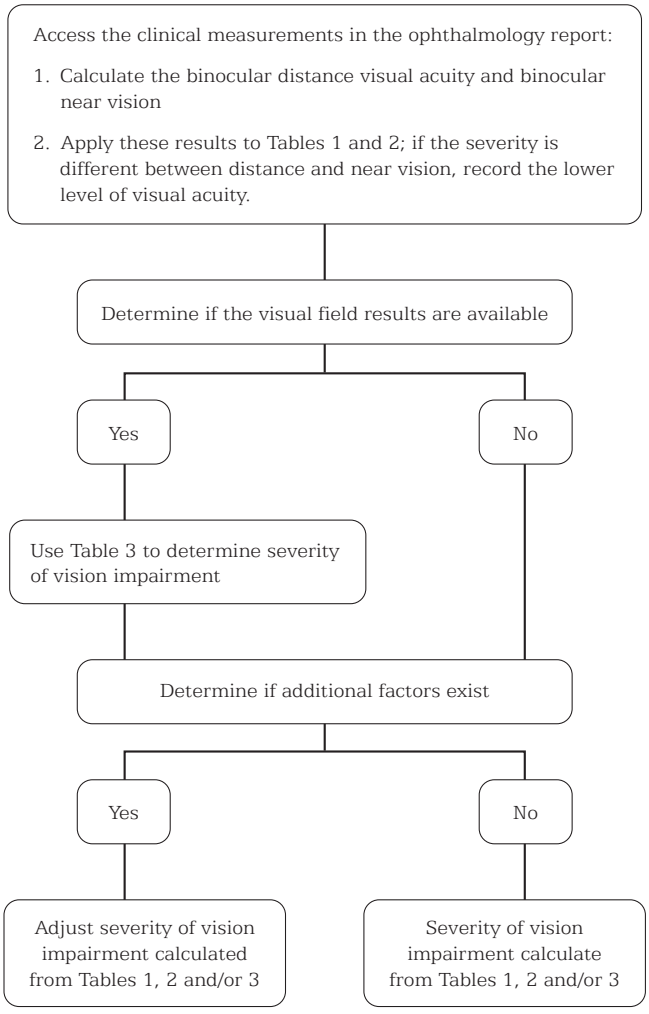

Figure 2. Method recommended to the NDIA to determine the severity of the person's vision impairment.

Determining the severity of the person's vision impairment from their clinical measurements

The method begins by instructing the NDIA planner to locate the clinical measurements within the ophthalmology report and then, to calculate the person's binocular visual acuity in order to gain a more comprehensive understanding of the person's visual ability.[12] For the purposes of determining vision impairment by the NDIA planner, this is defined as visual acuity with both eyes open. As ophthalmology reports frequently provide monocular clinical measurements, this calculation will be necessary, and is made using the approach proposed by Rubin et al who found that a person's binocular visual acuity can be closely predicted by their better monocular acuity.[13] It is recommended, therefore, that binocular visual acuity be calculated from the visual acuity of the better-seeing eye, noted in the ophthalmology report. Once the binocular visual acuity is known, the NDIA planner is directed to tables that outline the common visual acuity tests and notation of measurements. Within these tables the WHO ICD-10[6] categories for vision impairment have been used, and the range of visual acuity per level of impairment is indicated by a shaded band, as evident in Table 1.

Table 1. Binocular corrected Snellen's visual acuity notations

	Tested at 6 metres	Tested at 3 metres
No vision impairment	6/6	3/3
	6/7.5	
	6/9	3/4.5
	6/12	3/6
Mild vision impairment	6/18	3/9
Moderate vision impairment	6/24	3/12
	6/36	3/18
	6/48	3/24
	6/60	3/30
Severe vision impairment	5/60 (6/72 equivalent)	
	4/60 (6/90 equivalent)	
	3/60 (6/120 equivalent)	
Blindness	2/60 (6/180 equivalent)	
	1/60 (6/360 equivalent)	
	1/120 (6/720 equivalent)	

It is well recognised that most activities of everyday life are performed at distances less than six metres which is the standard testing distance used for distance visual acuity.[12] The sole reliance on distance visual acuity measurements to determine the severity of vision impairment will prevent the method from including important information about the person's visual function at near. Therefore the method recommended to the NDIA also includes the person's near vision. As the WHO ICD-10[6] does not currently include near vision, an arbitrary approach has been taken to determine the severity of vision impairment using the N series of near vision, with the categories indicated in Table 2. The determination of the severity of near vision impairment was calculated by using a visual acuity conversion for near reading tests,[14] and then applying the WHO ICD-10[6] categories.

Table 2. Near vision by the N series

No vision impairment	N5
	N6
Mild vision impairment	N7
	N8
Moderate vision impairment	N10
	N12
	N16
	N18
Severe vision impairment	N20
	N24
	N32
	N36
	N48

The potential exists for a discrepancy between the calculated severity of vision impairment for near vision and distance visual acuities when using Tables 1 and 2. One example of this discrepancy occurs when a person has visual acuity of 6/60 indicating moderate vision impairment but near vision of N8 indicating mild vision impairment. When such a discrepancy occurs it has been recommended that the more severe vision impairment level is accepted. For this example the person would therefore be assessed as having moderate vision impairment.

To gain a broad impression of the person's visual function the method recommended to the NDIA also includes the measurements of visual field testing, when available. As the WHO ICD-10[6] methodology has been criticised for providing a limited understanding of visual field loss,[15] the current WHO ICD-10[6] classification for visual field loss was modified and presented in combination with distance visual acuity, for ease of interpretation by the NDIA planner (see Table 3). The most common types of visual field loss have been included. However, when the person's visual field loss varies from the examples given, it is recommended that an expert be consulted for further interpretation.

Table 3. Calculation of the severity of vision impairment when both binocular distance visual acuity and visual field defects are reported

Moderate vision impairment	• Binocular visual field of < 20 degrees and visual acuity from 6/6 to 6/36 • Homonymous hemianopia and visual acuity from 6/6 to 6/12
Severe vision impairment	• Binocular visual field of < 20 degrees and visual acuity of 6/60 to 1/60 • Binocular visual field of < 10 degrees, regardless of visual acuity level • Homonymous hemianopia and visual acuity level < 6/18

Adjusting the severity of vision impairment for additional factors that affect visual function

Once the NDIA planner has determined the severity of the person's vision impairment from the clinical measurements, they will be asked to consider the presence of additional factors that could impact on the person's visual function; examples of such factors are provided. This adjustment will permit an outcome that more closely reflects the person's visual reality.[9] If any additional factors are identified, the NDIA planner is instructed to adjust the level of calculated severity of vision impairment to the next, more severe level. This process is presented in Figure 3 where a calculated mild level of vision impairment is adjusted to a moderate level, a moderate level is adjusted to a severe level, and a severe level is adjusted to blindness.

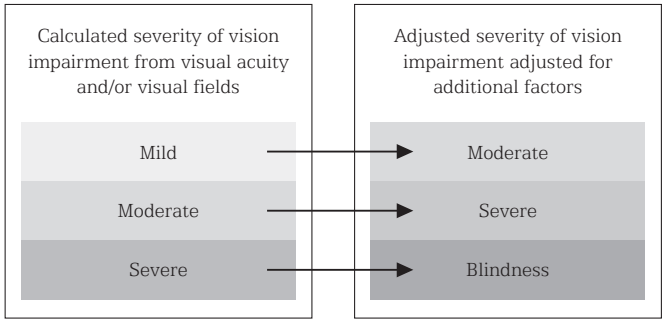

Figure 3. Adjustment of the level of severity of vision impairment.

To assist NDIA planners the following common scenarios and explanations are provided when such an adjustment should occur. These include in the presence of:

Nystagmus, photophobia and/or visual fatigue

It is well recognised that people with vision impairment frequently experience nystagmus, photophobia and visual fatigue[7] and that these factors, in isolation or in combination, will significantly worsen the person's visual function from that indicated by the recorded visual acuity and visual fields. Therefore it is recommended that, where possible, the severity of the person's vision impairment is adjusted to the next more severe level.

Cortical vision impairment (CVI)

It is recommended that any person who has been diagnosed with CVI should be considered to have severe vision impairment, regardless of the reported visual acuity and visual fields. This adjustment to the level of their vision impairment accommodates for the characteristic behaviours associated with CVI and their ongoing interference with visual functioning despite the person's visual acuity.[16]

Dual sensory loss or deafblindness

It is recommended that any person who has been diagnosed with dual sensory loss or deafblindness should be considered to have severe vision impairment, regardless of the reported visual acuity and visual fields. This adjustment to the level of their vision impairment balances the compounding influence of vision and hearing impairment.

A deteriorating eye/vision condition

Despite initial clinical measurements that are within normal limits, it has been recommended that people diagnosed with eye conditions that will deteriorate in the future to severe vision impairment and blindness be considered to have moderate vision impairment from the time of their diagnosis. This permits early intervention strategies such as orientation and mobility training, particularly given that the onset of vision impairment may be sudden and severe in such conditions. Examples of eye conditions that are known to deteriorate include age-related macular degeneration (wet and dry), retinal dystrophy, retinitis pigmentosa, Stargardt's disease, Stickler's syndrome, high myopia and retinal detachment.

No conventional measurement of visual function

It may not be possible to test a person's visual abilities, especially in the case of people with multiple disabilities. In such a situation, the ophthalmology report may refer to such observed visual behaviours as fixing and following or the person turning their eyes to a light source. In this situation, it is recommended that the person should be considered to have severe vision impairment until future retesting indicates otherwise.

A brain injury with disturbance to visual functioning other than visual acuity and visual fields

A person with a brain injury may have intact visual acuity and visual fields, but show a disturbance to specific areas of their visual functioning; for example, altered visual recognition, perception and eye movement defects. It is recommended that expert opinion be sought to determine the severity of vision impairment in these people.

Once the NDIA planner has identified the presence of additional factors that could impact on the person's visual function, they will be instructed to adjust the level of severity of vision impairment using Figure 3 as a guide. The adjusted level then becomes the level used in the NDIA planning process. If no additional factors are identified, then the original level of vision impairment determined from Tables 1, 2 and 3 will be used in planning.

The following scenario provides an example of adjustment to the severity of the person's vision impairment when additional factors known to impact on visual function are present. A person with oculocutaneous albinism will have reduced visual acuity due to foveal hypoplasia, nystagmus and defective fundus pigmentation.[17] It is likely that he or she will also experience varying levels of photophobia dependent on their environment,[18] and also high levels of visual fatigue.[19] As a result, their vision will vary from the threshold visual acuity reported in the ophthalmology report, to a lower level of visual function depending on their environment and the visual reserve they can draw upon. Adjusting the severity of vision impairment calculated from the person's visual acuity levels to a more severe level will reflect the known impact of the nystagmus, photophobia and/or visual fatigue, and will thus provide a more accurate impression of their visual function.

DISCUSSION

A prime NDIS objective is to provide funding that will secure 'reasonable and necessary support'[4] for people with disability, so that they can 'participate in and contribute to social and economic life to the extent of their ability'.[3] To achieve this objective, suitable tools should be employed to determine the needs of the person.[4] This paper has proposed a preliminary method, rather than a tool that can be applied to the planning process for people with vision impairment. It is suggested that this method is appropriate for the immediate NDIA planning requirements as it begins to capture the complex nature of visual function, by inclusion of clinical measurements and by adjusting for factors that can impact on visual function.

Several limitations exist in the method described in this paper. First, due to the precipitous roll-out of the NDIS and the subsequent urgent need for an approach to support NDIA planning, it has not yet been possible to evaluate this

method. Such an evaluation is planned and it is the author's intention to report on this in future publications. Second, the method described here employs only one dimension of the Model of Visual Functioning,[10] ie visual abilities, and falls short of measuring the resulting consequence for the individual[20] when vision impairment is present, by not attending to the person's visual environment or their individuality. The utility of a NDIS plan is that it describes the whole person and not just their particular disability or health condition.[4] As Rubin et al comment 'disability is defined at the level of the entire individual'.[13] To meet this need, future planned work will focus on broadening the scope of the method to the development of a tool that will assess the functional impact of vision impairment. The Model of Visual Functioning[10] will be used as a framework to guide this development, and ensure that the tool better defines the person, their visual function and their support needs.

CONCLUSION

There is no doubt that Australia's recent major paradigm shift in disability support aligns with the aspirations that eye health professionals hold for their patients with vision impairment, that the NDIS will deliver a support system that adequately meets people's needs. As has been shown in this paper, eye health professionals can and should be encouraged to make a positive contribution to ensuring this outcome, by offering clinically informed opinions that will represent Australians with vision impairment and help shape the NDIS as it evolves.

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