

International Best Practice Guidelines

BPG3A

A Clinical Application Guide to Standardized Wheelchair Seating Measures of the Body and Seating Support Surfaces

Clinical Application Guide to Standardized Wheelchair Seating Measures

Use of this document

As a code of practice, this Best Practice Guideline (BPG) takes the form of guidance and recommendations. It should not be quoted as if it were a specification, and particular care should be taken to ensure that claims of compliance are not misleading.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Preface

The Best Practice Guideline (BPG3B) document is a manual that was the initial product of a two year project funded by the Paralyzed Veterans of America (PVA) Education Foundation. The overall goal of this project was to support and advance clinical practice and fundamental research in wheelchair seating. This project focused on increasing the adoption of standardized measures and terminology related to wheelchair seated posture and seating equipment parameters. The primary purpose of this clinical guide is to translate a highly technical international standard into a format and language that is easier to understand and be clinically useful. The standard, titled ISO 16840 (2006): *Wheelchair seating -- Part 1: Vocabulary, reference axis convention and measures for body segments, posture and postural support surfaces*, was published in 2006.

This introduction includes a review of the history behind this work, as well as an overview of the content, scope, and intended use of the manual.

The current version (November, 2013) of the Guide is posted as BPG3B. A final chapter is in preparation, and will be posted as BPG3C: this covers the location of postural support devices.

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National and International standards and codes of practice, as well as professional experience, change over time, and the intent is that this document shall be updated from time to time, not least through the ISO processes. This document is therefore being placed on a publically available website (www.pmguk.co.uk) where individuals can place their comments, and updates can be posted.

The PMG website platform has been designed to allow readers of the BPGs from around the world to add their comments, and corrections needed where errors are spotted, so these can be considered in revisions.

Background

The development of wheelchair seating as a sub-specialty of rehabilitation services has been happening over the last several decades. This practice involves the selection and provision of wheelchair seating products that provide improved body support, movement control, and injury prevention for the wheelchair user. Inherent in this selection process is the measurement and communication of the postural measures of the seated person, as well as the orientation, location, and linear measures of the person's seating support surfaces.

A significant impediment to further development in this field has been the existence of tremendous variation in the use of terminology related to both the postural measures of a seated individual, as well as measures of seating support surfaces. Standard terms and definitions have been lacking for communication of critical postural information and support surface parameters in a way that is useful to

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therapists, suppliers, researchers and manufacturers providing wheelchair seating devices and services.

There is also a clinical need to be able to quantify the change in posture of an individual which occurs after seating technology intervention, or which may occur over an extended time during use of the device. This needs to be done in a way that is consistent and reproducible with time, and by techniques that are commonly used in different clinics so that the information gathered is communicated in an unambiguous fashion.

In 1998 a task group of experienced clinicians and engineers initiated a collaborative work effort of ISO and the Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) to develop terminology standards related to measures of the seated person and their seating supports. During its development process, the draft concepts were frequently shared with researchers and clinicians in Europe, Australia, Japan and North America in an attempt to ensure that the final product was clinically relevant. After an eight year effort, ISO published ISO 16840-1:2006 *Wheelchair seating -- Part 1: Vocabulary, reference axis convention and measures for body segments, posture and postural support surfaces*. This standard is a complex document that specifies:

1. A global coordinate system for measurement
2. Standard terms and definitions for describing the angular orientation and linear dimensions of a person seated in a wheelchair, and
3. Standard terms and definitions for describing the angular orientation, linear dimensions, and coordinate locations of seating support surfaces.

It is important to note that this standard does not prescribe a specific clinical methodology for taking these measurements, but only *defines the term and the convention* for determining the value of a measure. Additionally, it does not re-define terms for dynamic physiological movements (such as flexion or extension) which are already commonly used medical terms, but rather provides an alternative vocabulary for describing the static posture of a wheelchair seated individual that is more clinically useful for our field.

Although the completion of the ISO standard was a significant achievement, there had been minimal adoption of the terms and measures included in the standard to date by practitioners. It is difficult for individual clinicians and other stakeholders to access this document and apply the information into their practice because standards documents are highly technical by necessity, difficult to understand, and costly to purchase.

The purpose of the clinical Guide was to extract the terminology and principles contained in the ISO standard and present them in a format and language that is comprehensible, clinically useful, and accessible to those who are involved in wheelchair seating evaluation, product selection and provision, and research. It is hoped that this Guide will ultimately facilitate incorporation of these standardized seating terms and measures into common clinical practice, as well as promote collaborative research in the field of wheelchair seating.

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All international standards are 'living documents' because they are routinely reviewed and revised as needed. In May 2011 during an ISO committee meeting, concurrent with the development of this clinical Guide, some of the foundational principles of the original ISO 16840-1:2006 standard were identified as needing revision. Because the development of this Guide has provided insight into the revisions needed, it was decided that revisions to the standard would commence following completion of this guide. The content of this clinical Guide is based on the anticipated revision to ISO 16840-1:2006, which is in progress. Around the same time it is intended that this Guide be published as an ISO Technical Report: ISO TR 16840-8.

Acknowledgement

The Standard and the Guide have been compiled from the work of an international committee which has been led by Kelly Waugh and Barbara Crane from the USA, and has included input from, amongst others:

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