



# Applying seating knowledge to MSCCS

### Paragon Mobility & Raz Design Inc.



- Function including safety
- Pressure and skin integrity

management

- Posture and positioning
- Comfort personal preferences



## Function and Safety



#### **Function: Activities and Tasks Using MSCCs**



## Going to the toilet is a complex activity

- 'Peeing and pooing' it takes time!
  - "STOP, PAUSE, POSITION, RELAX, LET TIME PASS"
- Menstruation and monthly hygiene
- Toilet reading!

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- Print media (books, magazines, newspapers)
- Electronic devices (ebooks, mobile / cell phone)
- Social media (Facebook, Instagram, Twitter, email)
- Sitting time and quiet time
- Private space for phone calls and webinars
- Sex exploring and/or rediscovering sexual functioning



## Functional Activities and Tasks Using MSCCs

- Transferring on / off
- Propelling and manoeuvring
- Showering, bathing, cleaning the body
- Toileting tasks including bowel management
- Undressing, dressing, drying off
- Positioning and repositioning
- ... in a demanding / hazardous environment!
  - Hard surfaces, sharp edges  $\rightarrow$  tiling, glass
  - Wet, slippery surfaces
  - Complex sensory environment noisy, low lighting, reduced vision from steam / fog





## Comfort



## **Comfort** ... includes personal and subjective preferences

- Physical (usually measured as discomfort)
- Personal preferences:
  - Environment (e.g. design and set up of rooms)
  - Independence and assistance in activities and tasks
  - Care relationships (e.g. family members as caregivers versus paid caregivers)
  - Privacy (e.g. in intimate care tasks)
- Dignity



#### ... now and as the person's needs and preferences change

## **Comfort** ... impacts Quality of Life (QoL)

"My mom comes by when I'm on the toilet to see what is wrong. I don't want to ask for help. It's uncomfortable to have my mom watch me on the toilet." Nicholas, et al., 2007; p. 4<sup>1</sup>

*"Bathroom is one of the first places that older adults face with* <u>challenge</u> and <u>fear</u>. Difficulty or dependence in body-cleaning affect older adults' daily lives dramatically."

*"If most or all of the [physical and psychological] obstacles described by families could be eliminated, many more individuals with multiple and severe disabilities would be able to exercise at least some degree of control over their own bodily functions..."* Pivato, 2009; p. 162<sup>3</sup>



## Posture and Positioning

## The goal: MSCC aperture is fully positioned over the toilet bowl





## MSCC frames must be high enough to fit over a toilet





May need additional clearance for under seat frame and commode pan runners



Wheelchair Frame

MSCC Frame

## Compensate with tilt-in-space and postural supports



## Posture and positioning challenges

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18"W base frame

18"W back frame

MSCCs are designed to be wide and high enough to roll back over a toilet





- Torso fit
- Lateral stability and balance
- Propulsion efficiency

18"W base frame 14"W back frame





#### **MSCC** seats have apertures



F

P: Pressure F: Force A: Area

As seat surface areas DECREASE, interface pressures on the body INCREASE.

### Seat contouring promotes offloading

Contouring cradles the pelvis, loads the sub- greater trochanters, and offloads the ischial tuberosities

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*Contouring improves pressure distribution* 



Relief channel offloads the coccyx and sacrum

Raised front section ensures loading on proximal and distal thighs, and assists with keeping the pelvis in position

#### Seat design and materials ...

- increase immersion, envelopment, and offloading
- improve pressure distribution



Molded 4 models



Visco-Foam Interface (VFI) 10 models

#### **Pelvic positioning is crucial!**



 Ischial Tuborisities (ITs) "float" INSIDE the seat aperture

 Sub- Greater Trochanters (GTs) are loaded to support the pelvis

Image © Was-a-bee / Wikimedia Commons / CC-BY-SA-3.0

### **MSCC** set-up is crucial!



Back support

Arm support height, position

Footplate position / angle

#### Weight Bearing Through Arms/Footrests

## Arm support 😽 **Footplates** X Max: 93 mmHg

Raz Molded Seat- 16"D

Raz Molded Seat- 16"D



Raz Molded Seat- 16"D

Arm support 🗹

Max: 57 mmHg

**Footplates** 

#### Seat: IPAS (Ischial Pelvic Alignment System)





#### **5" of fore/aft adjustment** Allows the aperture to be aligned with the user's ITs



### Tilt-in-space

- offloads pressure onto the person's back
  - assists with stability during tasks
  - may be needed in the MSCC although not required for the wheelchair





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## Questions ...

#### Thank you for attending.



