Head-Up : co-designing novel neck orthosis for neck weakness in MND

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Motor Neurone Disease
Introduction
Introduction
Introduction
Introduction
Current Provision
Current Provision
Range of motion

Disease progression

Support
Project Plan

CO-DESIGN PROCESS

MANUFACTURING & CE MARKING

USER EVALUATION

FORWARD STRATEGY

IPR & COMMERCIAL FEASABILITY

PROJECT MANAGEMENT
Project Plan

CO-DESIGN PROCESS

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IPR & COMMERCIAL FEASABILITY

PROJECT MANAGEMENT
Co-design
Comfort and pain means different things to different people

How do we compare the subjective feedback from different people when you only have a small group of carers and patients?
Comfort Assessment
Comfort Assessment

- No discomfort
- A little discomfort
- A little painful
- Very uncomfortable
- Very painful
- Severe pain
Comfort Assessment

Test Population

- Female
- Male
Comfort Assessment

Normalised perceived discomfort for all four collars

Time (hours)

Increasing perceived discomfort

Aspen
Philadelphia
Headmaster
Stro II
Participants differing levels of agreement with various statements

- Strongly agree
- Agree
- Agree somewhat
- Disagree somewhat
- Disagree
- Strongly disagree

- No restriction to breathing
- No difficulties eating
- No problems drinking
- No restriction to swallowing
- Offered support
- No perspiration
- Visually attractive
- Complete free movement
- Easy to fit
- No frustration
Results
Results

Stro II
Results

Philadelphia
Neck Weakness
D3PLOT: M1 + M2
Conclusions

• All collars increase discomfort against time
• Trade-off between movement and support
• Unintuitive fitting
Conclusions

- Developed 'empathetic' methodology
- Visual recording method for pain and discomfort
- Relating subjective user feedback to numerical models
“Although I cannot move and I have to speak through a computer, in my mind I am free.”

- Stephen Hawking
Thank you

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