Facial Palsy Therapy: Can Novel 'Smart Spectacles' Help People Smile?

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Summary: One third of people diagnosed with acute onset facial paralysis (facial palsy) end up with permanent disabilities; these can include an inability to smile. Guidelines recommend tailored facial exercises (TFEs); but not many patients can access this specialist therapy. 'Smart spectacles' (linked to a smartphone) could deliver TFEs to more people. A national study is reported on this new technology.

Introduction: In the United Kingdom (UK), 23,000 people annually are diagnosed with facial palsy (acute onset facial paralysis). For nearly one third this will result in a permanent disability, including in some the inability to smile. In addition to initial pharmacological therapy, guidelines recommend tailored facial exercise (TFE) therapy repeated every day. However, not all patients are currently able to access such specialist physical therapy. 'Smart specs' (using miniaturized sensors in the frames to measure facial movement) are currently being developed. Linked to a smartphone, these could allow people to practice TFEs discreetly, provide immediate feedback, and supply data on outcomes to the patient and their clinician.

Methods: Modelling of introduction of Facial Remote Activity Monitoring Eyewear (FRAME) into treatment pathways for patients with facial palsy. This included: (i) review on effectiveness of TFE therapy; (ii) national surveys (medical staff, facial therapy specialists and patients) to gather data on access to TFE therapy; (iii) Delphi Exercise to identify consensus on key outcome measures; and, (iv) economic modelling to estimate cost-effectiveness and determine a range of acceptable costs for the technology. In parallel, research to examine target markets to inform product development, and production of integral commercialization plan.

Results: Searches short-listed ten studies to add to the three included in the 2011 Cochrane review. Surveys indicate approximately thirteen percent of eligible UK patients access personalized TFE therapy. Estimated annual expenditure on hospital treatments for facial palsy patients is currently GBP >80 million (>USD 106 million) compared with <£0.5 million (<USD 0.66 million) on TFE therapy. Patients with permanent defects can suffer a loss of up to two quality-adjusted life years (QALYs).

Conclusions: Findings from this study, particularly in relation to costs and benefits, will inform the design of a subsequent randomized controlled trial. A novel wearable technology could make a major difference to people's lives, as well as generating potential efficiencies for healthcare.

Supplement Publishing Consent: Yes

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