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Emerging technology to improve rehabilitation for most common single nerve disorder (Bell's palsy) and cost-effectiveness of innovation

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Statement of Problem: Acute onset facial nerve paralysis (FNP) is the most common disorder affecting a single nerve. This distressing neurological condition means patients lose the ability to move facial muscles on the affected side of the face. Overall, one in 60 individuals (usually aged 30-will be affected) over the course of their lifetime. Evidence on effective intervention, apart from drug therapy within 72 hrs, supports the benefits of tailored facial exercise (TFE) therapy. Smart wearables (FRAME emerging technology) consisting of spectacles with miniaturized sensors to measure facial movement, linked to a smartphone, could potentially improve TFE delivery by specialist centers. A major National Institute of Health Research study is reported.

Methodology & Theoretical Orientation: HTA study to model costs and benefits of introduction of this emerging technology. Stages included: Estimation of size of problem; updated systematic review of effectiveness of physical therapy; three national surveys (medical staff, facial therapy specialists and patients) to gather data on current treatment pathways and access to TFE therapy; Delphi Exercise to identify consensus on key outcomes and technology introduction; economic modeling.

Findings: 22,500 FNP cases annually in the United Kingdom (UK), cumulative number since 2000 over 427,000; TFE can improve facial function for moderate paralysis and chronic cases and reduce sequelae in acute cases; only 17% of eligible UK patients currently access personalized TFE therapy, with patients traveling up to 200 miles; Delphi panel identified important patient benefits from this emerging technology but also barriers to introduction and economic modeling confirms potential for cost-effective introduction.

Conclusion & Significance: This emerging wearable technology could make a major difference to FNP patients' lives, as well as generating potential efficiencies for healthcare. Findings from this study will inform the final design and introduction of this technology.

Recent Publications

1. Baugh R F, Basura G J, Ishii L E, et al. (2013) Clinical practice guideline: Bell's palsy. Otolaryngol Head Neck Surg 149(3 Suppl):S1-27.
2. Holland N J and Weiner G M (2004) Recent developments in Bell's palsy. BMJ 329(7465):553-7.
3. Teixeira L J, Valbuza J S and Prado G F (2011) Physical therapy for Bell's palsy (idiopathic facial paralysis). The Cochrane database of systematic reviews (12):CD006283.

4. Szczepura A, Khan A J, Holliday N, Nduka C, Neville C, Johnson K, Mistry H and Oxford S (2018) Facial palsy therapy: can novel 'smart spectacles' help. International Journal of Technology Assessment in Health Care 34(S1):76-76.

Biography

Ala Szczepura has an established track record in health technology assessment (HTA) with over thirty years' experience in policy research and economic evaluation in health care. She has specific research interests in evaluation of new and emerging technologies; re-design, delivery and assessment of digital services; and provision of services to meet the needs of diverse populations. She has published over 150 peer-reviewed scientific articles in these areas, and has been actively involved in development of the NHS R&D programme since its inception. She currently holds a Cross-Faculty Chair at Coventry University with the aim of strengthening interdisciplinary research to address key future technological challenges for health and social care services. She was the winner of the 'Services to Medicine' category in the First English Women's Awards 2018.

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