Interventions for visual field defects in people with stroke

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Visual field defects (VFD) affect around one fifth of stroke survivors. They typically cause loss of up to half of an individual's vision, severely limiting the sensory information they receive about their environment. VFDs impact on practical aspects of daily life, social activities are negatively affected, and psychological effects include loss of self-confidence. A range of interventions exist: these are proposed to work through restitution of the lost visual field; compensation via behaviour changes; substitution using a device or extraneous modification; or assessment/screening, ensuring diagnosis and treatment.

In this Cochrane review we aimed to determine the effects of any intervention targeting visual field defects in people with stroke.

Methods We searched 9 databases including MEDLINE, Embase, CINAHL, and clinical trials databases to May 2018. We also searched reference lists, hand-searched journals and conference proceedings, and contacted experts. We included randomised trials in adults after stroke (and mixed populations): the primary outcome was ability in activities of daily living (ADL). Two reviewers independently screened abstracts, extracted data and appraised risk of bias due to allocation concealment, masking, incomplete outcome data and other sources. Outcome data were pooled in meta-analyses, and quality assessed using the GRADE approach.

Main results We included 20 studies (n=547/732; stroke/total participants), with a mean of 36 stroke participants (range 10-87). Eleven studies compared an intervention with placebo, control, no treatment or standard care: three explored restitution, four compensation, three substitution and one assessment/screening.

Restitution: very low quality evidence showed that visual restitution therapy had a beneficial effect on quality of life (one study, n=19, Odds Ratio (OR) 13.00, 95% CI 2.07 to 81.48), but no effect on visual field. Limitations with these data however mean it is not possible to draw a clear conclusion about therapy effectiveness.

Compensation: low quality evidence showed scanning training improved quality of life (two studies, n=96, mean difference (MD) 9.36, 95% CI 3.10 to 15.62) (Fig 1). There was low or very-low quality evidence of no effect on visual field, extended ADL, reading, and scanning ability. Low-quality evidence also showed no significant increase in adverse events.

Substitution: very low-quality evidence suggested no effect on ADL, extended ADL, quality of life or reading. Prisms benefited scanning ability (one study, n=39, MD 9.80, 95% CI 1.91 to 17.69) but with increased odds of an adverse event (primarily headache)(one study, n=59, OR 87.32, 95% CI 4.87 to 1564.66).

Assessment/Screening: very low-quality evidence suggested that assessment by an orthoptist had no effect on ADL.

Conclusions We found limited evidence relating to VFD in stroke: the effectiveness of interventions is still not clear. Whilst our analysis suggests scanning training may benefit quality of life, further research is likely to alter this result.

Implications for practice Scanning training may be effective in improving quality of life for stroke survivors with VFD, without risk of side effects. However, it is not clear if other approaches are effective, and the use of prisms may lead to minor adverse events.

Implications for research Adequately powered randomised controlled studies that compare an intervention with appropriate control are needed to determine effectiveness.

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Figure 1. Forest plot of compensatory interventions (scanning training) versus control, placebo or no intervention, for quality of life outcomes

(attached as a separate file)

Disclosures: Fiona Rowe was the chief investigator for the VISION trial (Rowe 2010), funded by the Stroke Association: Alex Pollock was also involved in this study. Fiona Rowe was a co-investigator for the Jarvis 2012 trial, funded by the University of Liverpool**.** Christine Hazelton has carried out non-randomised studies in to the effectiveness of a number of scanning training interventions, including the intervention studied by Roth 2009, and is developing further project proposals in this area. No other interests are known.

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