III.1 Case Detection And Screening for Glaucoma

There are no systematic reviews or studies that provide evidence for direct or indirect links between glaucoma screening and visual field loss, visual impairment, optic nerve damage, intraocular pressure, or patient-reported outcomes. Also economic simulation models of cost effectiveness of screening report inconclusive results with large uncertainties. There is no evidence that interventions (e.g., training) improve opportunistic case finding.

III.2 Clinical and Cost Effectiveness of Diagnostic Tests Used for Screening, Detection and Monitoring for Glaucoma

No randomized screening, diagnostic and follow-up trials reporting the clinical effectiveness or cost-effectiveness have been published. Although there are numerous comparative diagnostic studies there is no evidence which test or combination of tests improve patient outcomes at a sustainable cost. There is a high degree of variability in the design and conduct of largely cross-sectional studies of diagnostic accuracy of technologies for glaucoma. Diagnostic studies typically compare the performance of a small number of technologies, and indirect comparisons with other tests have to be interpreted with caution (e.g., because of differences in population, study definitions, reference standard, etc.). The risk of bias of diagnostic study designs is an additional concern. One of the major challenges to evaluate a diagnostic test in glaucoma is the lack of a perfect reference standard. There are multiple diagnostic technologies that can be potentially used to detect glaucoma. Diagnostic studies have been conducted in a variety of settings (e.g., screening, case detection in the community, and diagnosis at hospital eye services).

III.3 Treatment of Glaucoma and Ocular Hypertension in Preventing Visual Disability

There is high-level evidence that treatment (including medical, laser, and surgical treatments) decrease intraocular pressure and reduce the risk of development (e.g., in patients with OHT) and deterioration (i.e., in patients with established glaucoma) of optic nerve damage and visual field loss compared to no treatment. However, the direct effects of treatments on visual impairment and the comparative efficacy of different treatments are not clear. Which treatments improve patient-reported outcomes is also unclear. Based on the economic simulation models in the US, UK, Holland, and China, treating glaucoma appears to be cost effective compared to ‘no treatment’. There is uncertainty whether to treat none, some or all patients with ocular hypertension. When treated, the cost-effectiveness models of different therapeutic interventions give variable results.

Comment:

All published simulation models are based on characteristics of participants enrolled in relatively small and tight randomized controlled trials (RCTs) which may not include all important predictors in the general population and every-day practice. In addition, RCTs may give an optimistic
impression of outcomes compared to ‘real life’ with poorer compliance and adherence to care both in patients and clinicians in implementing the guide lines and care protocols. As the data of glaucoma induced visual disability are limited, the blindness rates in the modeling studies have different estimates. Similarly, the data on utility values and influence of glaucoma severity in health status are limited. Retrospective observational data is incomplete and selective. Reliable and ‘realistic’ data (preferably from large randomized trials or prospective cohorts of ‘usual patients’) is not available so far.

III.4 Follow-Up Protocols And Models Of Care

There is no solid evidence of the optimum monitoring schemes, (e.g. frequency and timing of visits, technologies to be used for detecting progression) for patients with manifest glaucoma and ocular hypertension. Some modeling and retrospective studies suggest that more treatment may allow less frequent monitoring visits in ocular hypertension and stable glaucoma. One RCT suggests that shared care may save costs.