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Scoping for a return-on-investment tool for dementia

Executive Summary

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Dementia is an increasingly common condition in old age in England. Some cases of dementia could be prevented if action is taken to address some of the known risk factors (in early, mid- and later life). The research question addressed in this report is whether recent research now provides sufficient evidence on the economic return to risk-reduction activities to support development of a return-on-investment tool to support local commissioning decisions around investing in actions to reduce the risk of dementia. Such a tool could potentially support local commissioning decisions around investing in dementia risk-reduction.

The initial focus has been on three of the twelve known modifiable risk factors: low education, physical inactivity and hearing loss. These were selected because, according to the evidence assembled by the Lancet Commission, they are relevant at different points in the life-course. The Lancet Commission had suggested that there would be a 7.1% reduction in dementia prevalence if the 'low education' risk factor was eliminated (after accounting for associations with other risks). Eliminating 'physical inactivity' would reduce dementia risk by approximately 2%. Hearing loss was calculated by the Lancet Commission to be the risk factor with the largest weighted population attributable fraction.

The two specific research questions were:

1. What is the state of evidence on these three risk factors for dementia, and what are the underlying mechanisms of action?
2. What is the state of evidence on interventions to address these risk factors?

To address the first question, we rapidly scoped the available evidence that confirms these risk factors (affecting incidence of dementia) and the underlying mechanisms of action. To address the second, we rapidly scoped the literature on interventions to address these risk factors, targeted on individuals or on communities/populations.

We found consistent evidence for the protective effects of education (at least up to and including early adulthood) with regards to dementia risk. Given that primary and secondary education are mandatory in the UK, any 'intervention' in this area would need to focus on removing any barriers to participation in education, reducing school absences, improving school education and encouraging post-compulsory education. Evidence is less clear on the benefits (in terms of dementia incidence) of continuing formal education into adulthood.

Physical activity and exercise are potentially modifiable protective mid-life factors for dementia, but there is still a gap in understanding how best to improve development and delivery of physical exercise interventions. Multiple factors influence participation in physical activity, including individual preferences, interpersonal factors, perceived environment, community or organisational factors, and policy. Identifying behaviour change techniques can positively affect levels of physical activity.

There is strong evidence of an association between hearing loss and dementia. Use of hearing aids can reduce dementia risk and cognitive decline, but a significant challenge is how to increase use of hearing aids. To strengthen the evidence base for the impact of reducing hearing loss on cognitive decline, more controlled studies are required and further research is needed into the effectiveness of cochlear implants for patients with the most severe hearing loss.

Looking across the three risk factors, no study has yet examined the full pathway from receipt of an intervention to incidence of dementia (usually decades later). This means that any return-on-investment tool would need to be built by piecing together evidence from a series of separate studies. This would be challenging because studies employ different criteria for including individuals, different definitions or specifications for risk factors, different ways to characterise interventions and different measures of outcomes and costs. Another challenge is the difficulty in specifying some risk factors with precision. Specifying interventions has also proved hard, in turn complicating the calculation of intervention costs. A further challenge for a return-on-investment tool is the wide variance around estimated associations, the cumulative effect of which would be to make an ROI tool very imprecise. This becomes especially problematic given the substantial time lags between most interventions and their impact on dementia incidence, and thence on financial savings.

The overarching conclusion is that it is currently not feasible to develop a return-on-investment tool for dementia prevention. Such a tool may become more feasible as further evidence accumulates on the effects of the risk factors on dementia, on the effectiveness and cost of interventions to reduce those risks, on actions needed to incentivise people to engage in interventions and on how to encourage policy makers to adopt community-level risk-reduction strategies.

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