

Evidence-to-decision table

Problem		
Is the problem a priority?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> No <input type="radio"/> Probably no <input type="radio"/> Probably yes <input checked="" type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/> Don't know 	<p>The ageing population means that the absolute numbers of those living with cognitive decline or dementia continue to rise, with an estimated prevalence of 75 million by 2030 and a new case of dementia diagnosed every three seconds(1) Anything that could reduce the incidence of cognitive decline or dementia would have huge importance for individual health, society and health care providers. Studies have shown that increased cognitive activity can have a buffering effect against rapid cognitive decline(2).</p>	
Desirable Effects		
How substantial are the desirable anticipated effects?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> Trivial <input checked="" type="radio"/> Small <input type="radio"/> Moderate <input type="radio"/> Large <input type="radio"/> Varies <input type="radio"/> Don't know 	<p><i>Desirable effects</i></p> <p>Cognitive stimulation versus usual care or no intervention in healthy older adults</p> <p>Only cognitive function reported as a critical outcome. No evidence on dementia or mild cognitive impairment (MCI).</p> <p>For cognitive function, the volume of evidence is moderate (10 RCTs)(3) and quality of evidence is very low. No meta-analysis was conducted. The review narratively reported that 50% of studies showed cognitive stimulation in healthy older adults improved cognitive outcomes in at least one cognitive domain (executive function, attention, memory, language and/or processing speed).</p> <p>Cognitive training versus usual care or no intervention in healthy older adults</p> <p>Only cognitive function reported as a critical outcome. No evidence on dementia or MCI.</p> <p>For cognitive function, the volume of evidence is moderate (14 RCTs)(4) and quality of evidence is low. The review conducted a meta-analysis which showed that cognitive training in</p>	<p>Kane et al.(7) and Butler et al.(8) concluded that cognitive training in healthy older adults can improve cognitive function in the domain trained, but not in other domains.</p> <p>Mowszowski et al(9). found that 11 out of 13 trials found improvements in executive function (EF) after EF specific training in healthy older adults and some improvements in ADL.</p> <p>Santos et al reported that 47.6% of Brazilian cognitive raining studies showed positive results in favour of cognitive training in at least one cognitive domain.</p> <p>Shah et al.(10) concluded that some commercially available computerized brain training products can assist in promoting better cognitive function and Sala et al. (11)concluded that video game skills is weakly related cognitive ability.</p>

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	<p>healthy older adults has a moderate positive effect on overall cognitive functioning (Hedges' $g = 0.419$; 95% CI = 0.205 to 0.634).</p> <p>Cognitive stimulation versus usual care or no intervention in adults with MCI</p> <p>No evidence available, inestimable.</p> <p>Cognitive training versus usual care or no intervention in adults with MCI</p> <p>No data was available for MCI. For cognitive function the volume of evidence is moderate (16 ACTs)(5) and the quality of evidence is low. The meta-analysis on this outcome showed that cognitive training in adults with MCI has a small positive effect on cognition (Hedges' $g = 0.216$; 95% CI 0.076 to 0.356). For incident dementia the volume of evidence is low (2 RCTs) and the quality of evidence is very low. The results were reported narratively for this outcome. The review reported that one study found that half of the control group, but none of the intervention group, developed dementia at the 8 month follow up while another found that 6.7% of the control group and 11.9% of the intervention group developed dementia at the 2 year follow up.</p> <p>For quality of life and functional level, the volume of evidence is moderate (11 RCTs for quality of life and 20 RCT for functional level) (6)and quality of evidence is low. The meta-analysis on these outcomes showed that cognitive training in adults with MCI has a small positive effect on ADLs ($d = 0.32$, 95% CI 0.16 to 0.47) but not QoL ($d = 0.06$, 95% CI -0.11 to 0.22).</p>	<p>Yang et al.(12) found that memory focused interventions improved memory-related performance in people with cognitive disorders.</p> <p>Hill et al.(13) reported that computerized cognitive training has a positive effect on global cognition and psychosocial functioning in adults with MCI.</p> <p>Butler et al. (8)concluded that cognitive training in adults with MCI has no effect on cognitive function.</p>
<p>Undesirable Effects How substantial are the undesirable anticipated effects?</p>		
<p>JUDGEMENT</p> <ul style="list-style-type: none"> <input type="radio"/> Large <input type="radio"/> Moderate <input type="radio"/> Small <input type="radio"/> Trivial <input type="radio"/> Varies <input checked="" type="radio"/> Don't know 	<p>RESEARCH EVIDENCE</p> <p><i>Undesirable effects</i></p> <p>No data on undesirable outcomes were reported (7) (6) (5) (4) (3).</p>	<p>ADDITIONAL CONSIDERATIONS</p>

Certainty of evidence What is the overall certainty of the evidence of effects?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> Very low <input checked="" type="radio"/> Low <input type="radio"/> Moderate <input type="radio"/> High <input type="radio"/> No included studies 	<p>Cognitive stimulation versus usual care or no intervention in healthy older adults</p> <p>Findings:</p> <p>There is limited low quality evidence which showed that cognitive stimulation improves cognitive function in healthy adults.</p> <p>No evidence for MCI or incident dementia was available.</p> <p>Cognitive training versus usual care or no intervention in healthy older adults</p> <p>Findings:</p> <p>Certainty of the evidence is low for cognitive function which showed that cognitive training improves cognitive function in healthy adults.</p> <p>No evidence for MCI or incident dementia was available.</p> <p>Cognitive stimulation versus usual care or no intervention in adults with MCI</p> <p>No evidence available, inestimable.</p> <p>Cognitive training versus usual care or no intervention in adults with MCI</p> <p>Findings:</p> <p>There is low quality evidence to suggest that cognitive training improves cognitive functions and ADL in adults with MCI. There is very low quality of evidence that suggests cognitive training reduces incident dementia in adults with MCI.</p> <p>Low quality evidence suggests that cognitive training has no effect on QoL in adults with MCI.</p> <p>No evidence for effect of cognitive training on incident MCI is available.</p>	

Values		
Is there important uncertainty about or variability in how much people value the main outcomes?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Important uncertainty or variability ○ Possibly important uncertainty or variability ○ Probably no important uncertainty or variability ● No important uncertainty or variability 	<p>A review conducted by Anderson et al 2009(14) on public perceptions about cognitive health in the United States revealed that a large proportion of the population were concerned about declines in cognition or memory. Further studies in Australia(15) and the United Kingdom(16) (UK) and have shown a general trend of individuals being fearful of developing dementia.</p> <p>There is no evidence showing that individuals would oppose dementia risk reduction, or view cognitive decline favourably.</p> <p>Data from low and middle income countries is unavailable.</p> <p>There is no reason to believe there is important uncertainty about or variability in how much people value reducing the risk of cognitive decline and/or dementia.</p>	<p>Additional sources like the Saga Survey(17)and Alzheimer’s Research UK(18)have reported high percentage of people in the UK fear dementia, even more so than cancer, and feel a prognosis would mean their life is over (62%)</p>
Balance of effects		
Does the balance between desirable and undesirable effects favor the intervention or the comparison?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> ○ Favors the comparison ○ Probably favors the comparison ○ Does not favor either the intervention or the comparison ● Probably favors the intervention ○ Favors the intervention ○ Varies ○ Don't know 	<p>Cognitive stimulation versus usual care or no intervention in healthy older adults</p> <p>May favor the intervention (very low quality evidence), no adverse effects were reported</p> <p>Cognitive training versus usual care or no intervention in healthy older adults</p> <p>May favor the intervention (low quality evidence), no adverse effects were reported</p> <p>Cognitive stimulation versus usual care or no intervention in adults with MCI</p> <p>No evidence available, inestimable.</p> <p>Cognitive training versus usual care or no intervention in adults with MCI</p> <p>May favor the intervention (low to very low quality evidence), no adverse effects were reported</p>	

Resources required		
How large are the resource requirements (costs)?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> Large costs <input type="radio"/> Moderate costs <input type="radio"/> Negligible costs and savings <input type="radio"/> Moderate savings <input type="radio"/> Large savings <input checked="" type="radio"/> Varies <input type="radio"/> Don't know 	<p>Wide variety of interventions used and no data favouring one over another. Resources required are inestimable at this stage as none of the included studies provided information on this.</p> <p>Further research is required to determine mode of learning (e.g. pen-and-paper or computerised), domain targeted, and duration of cognitive intervention which would be efficacious for the target outcomes. Issues of adherence is another factor to consider in resource requirements, whereby more oversight may be required to ensure compliance. With respect to resources required, the data is scarce and inconclusive.</p>	<p>The cognitive stimulation and interventions may be resource-intensive especially if they are administered by psychotherapists working in high-income countries. Some features of the interventions, however, such as duration or frequency, could be adapted to particular settings, and could be administered by suitably trained and supported non-specialists.</p>
Certainty of evidence of required resources		
What is the certainty of the evidence of resource requirements (costs)?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> Very low <input type="radio"/> Low <input type="radio"/> Moderate <input type="radio"/> High <input checked="" type="radio"/> No included studies 	<p>Uncertain as evidence is limited and inconclusive, and due to lack of data on costing in the included studies. Also the resource costs are variable depending upon type of intervention.</p>	

Cost effectiveness Does the cost-effectiveness of the intervention favor the intervention or the comparison?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> Favors the comparison <input type="radio"/> Probably favors the comparison <input type="radio"/> Does not favor either the intervention or the comparison <input type="radio"/> Probably favors the intervention <input type="radio"/> Favors the intervention <input type="radio"/> Varies <input checked="" type="radio"/> No included studies 	Uncertain due to lack of data in the included studies. No evidence available on cost effectiveness of cognitive interventions for reducing the risk of cognitive impairment and/or dementia.	
Equity What would be the impact on health equity?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> Reduced <input type="radio"/> Probably reduced <input type="radio"/> Probably no impact <input checked="" type="radio"/> Probably increased <input type="radio"/> Increased <input type="radio"/> Varies <input type="radio"/> Don't know 	<p>A report from the Institute of Health on inequalities in cognitive impairment and dementia among older persons(19) studies health equities in England, They found that individuals with lower socioeconomic status (SES) were at increased risk of earlier onset of dementia, cognitive dysfunction at earlier stages of cognitive decline and impairment, and tend to have fewer resources to cope with symptoms, as compared to higher SES groups. Further, lower SES groups are likely to live and age in environments that are physically and economically less supportive of social connection physical activity or mental stimulation, which can increase the risk of cognitive impairment and dementia in later life.</p> <p>Based on this it is likely that interventions to reduce risk of cognitive decline and dementia will increase equity in health.</p>	
Acceptability Is the intervention acceptable to key stakeholders?		
JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<ul style="list-style-type: none"> <input type="radio"/> No <input type="radio"/> Probably no <input checked="" type="radio"/> Probably yes 	No data on acceptability were reported by the systematic reviews described above. However, there are no apparent reasons for which the intervention would not be acceptable to key stakeholders.	A small randomized study examined the feasibility and acceptability of a computerized cognitive stimulation (CCS) program and a computerized cognitive engagement (CCE)

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<ul style="list-style-type: none"> <input type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/> Don't know 		<p>program, and then compared their effects in older adults with MCI.(n=9 in CCS and n=10 in CCE). The patients attended a group weekly session for a duration of 3 months. All of the participants attended the 12 sessions and showed a high level of motivation. Attrition rate was very low (one dropout at M3 assessment).</p> <p>The authors concluded that both interventions were highly feasible and acceptable and allowed improvement in different aspects of cognitive and psychosocial functioning in subjects with MCI. However, this data is insufficiently robust and its findings cannot be generalized to the population at large.</p>
<p>Feasibility Is the intervention feasible to implement?</p>		
<p>JUDGEMENT</p>	<p>RESEARCH EVIDENCE</p>	<p>ADDITIONAL CONSIDERATIONS</p>
<ul style="list-style-type: none"> <input type="radio"/> No <input type="radio"/> Probably no <input checked="" type="radio"/> Probably yes <input type="radio"/> Yes <input type="radio"/> Varies <input type="radio"/> Don't know 	<p>Insufficient evidence to make a determination. Feasibility is depends on the cognitive training or stimulation intervention required for efficacious outcomes, for which further research is required.</p>	<p>See description of study above.</p>

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