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| Question | | | |  |
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| Population: In patients requiring resuscitation or providers learning to deliver resuscitation |  |  |  |
| Intervention: The use of a cognitive aid |  |  |
| Comparison: No use of a cognitive aid |  |  |
| Main outcomes: Survival, quality of performance during actual resuscitations, performance during simulated resuscitations |  |  |
| Setting: Resuscitation, critical care, emergency medicine, surgical emergencies. Includes the use of cognitive aids/checklists during the event, and does not include cognitive aids/checklists before/in preparation for an event (eg surgical safety checklist). |  |  |
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| Assessment | | | | |
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|  | **Criteria** | **Judgements** | **Research evidence** | **Additional considerations** |
| Problem | **Is there a problem priority?** | ○ No  ○ Probably no  ○ Uncertain  ○ Probably yes  X Yes  ○ Varies | This question was last addressed in 2010 where no recommendation could be made due to lack of evidence.  Our search revealed no studies examining cognitive aid use during real cardiac arrest events therefore the TF agreed to focus on 2 indirect sources of evidence: 1) trauma resuscitation and 2) simulated cardiac arrest events | Resuscitation councils are recommending cognitive aids by publishing/providing pocket cards and flow sheets. ILCOR itself is debating publishing universal algorithm. Evidence of effectiveness of CA unclear |
| Benefits & harms of the options | **What is the overall certainty of this evidence?** | ○ No included studies  x Very low  ○ Low  ○ Moderate  ○ High | **The relative importance or values of the main outcomes of interest:**   | **Outcome** | **Relative importance** | **Certainty of the evidence (GRADE)** | | --- | --- | --- | | Patient survival | Critical | Very low | | Quality of performance during actual resuscitations | Important | Very low | | Time to start CPR between course conclusion and 1 year | Important | Very low | | Chest compression rate between course conclusion and 1 year | Important | Very low | | Chest compression depth between course conclusion and 1 year | Important | Very low | | Chest compression fraction between course conclusion and 1 year | Important | Very low | | Ventilation between course conclusion and 1 year | Important | Very low | | Time to start CPR at course conclusion | Important | Low | | Chest compression rate at course conclusion | Important | Very low | | Chest compression depth at course conclusion | Important | Low | | Chest compression fraction at course conclusion | Important | Very low | | Ventilation at course conclusion | Important | Low | | Evidence inconsistent, indirect and of low quality/has significant bias. No uncertainty to the value of the main outcomes (ie survival). But studies are variable in how study and report these outcomes. Desirable anticipated effects variable among studies but clear signal from trauma studies that trauma teams perform more tasks and more efficiently when using cognitive aids. Undesirable effects (ie delay in starting CPR) consistently a problem among small number of studies which examined this. Uncertain if this is true in a real clinical environment |
| **Is there important uncertainty about how much people value the main outcomes?** | ○ Important uncertainty or variability  ○ Possibly important uncertainty or variability  ○ Probably no important uncertainty or variability  x No important uncertainty or variability  ○ No known undesirable outcomes |
| **Are the desirable anticipated effects large?** | ○ No  ○ Probably no  ○ Uncertain  X Probably yes  ○ Yes  ○ Varies |
| **Are the undesirable anticipated effects small?** | ○ No  ○ Probably no  X Uncertain  ○ Probably yes  ○ Yes  ○ Varies |
| **Are the desirable effects large relative to undesirable effects?** | ○ No X Probably no  ○ Uncertain  ○ Probably yes  ○ Yes  ○ Varies |
| Resource use | **Are the resources required small?** | ○ No  ○ Probably no  x Uncertain  ○ Probably yes  ○ Yes  ○ Varies | No evidence | Resources required to develop cognitive aid unknown. Resources required to train people how to use aid is unknown. |
| **Is the incremental cost small relative to the net benefits?** | ○ No  ○ Probably no  x Uncertain  ○ Probably yes  ○ Yes  ○ Varies | No evidence | Costs to develop and train unknown |
| Equity | **What would be the impact on health inequities?** | ○ Increased  ○ Probably increased  ○ Uncertain  X Probably reduced  ○ Reduced  ○ Varies | Lashosher n=3422 reported median survival rate for all centres, 92.1% pre vs 95.2% post, OR 1.02, NS. When stratified by severity of injury, in most injured ISS>25 (n=341) survival rate 57.2% pre vs 74% post (OR 0.51, p=0.018) | Only studied in trauma patients and mostly only lay providers for CPR in simulated environment. 1 large trauma study included low resource settings as well as high resource settings. All other studies were in developed countries. Care providers in low resource settings with less access to education may benefit from point of care resources like cognitive aids, although this has not specifically been studied |
| Acceptability | **Is the option acceptable to key stakeholders?** | ○ No  ○ Probably no  x Uncertain  ○ Probably yes  ○ Yes  ○ Varies | No evidence | General acceptability to using cognitive aids so evidence to suggest NOT using them may need to be strong |
| Feasibility | **Is the option feasible to implement?** | ○ No  ○ Probably no  ○ Uncertain  X Probably yes  ○ Yes  ○ Varies | No evidence | Studies did not report feasibility concerns in providing intervention. Given they reported outcomes in participants who used them, we will assume it is feasible to use. However human factors-based studies examining HOW providers use cognitive aids would be of great value |

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| RecommendationQuestion: | | | | | |
| **Balance of consequences** | Undesirable consequences clearly outweigh desirable consequences in most settings | Undesirable consequences probably outweigh desirable consequences in most settings | The balance between desirable and undesirable consequences is closely balanced or uncertain | Desirable consequences probably outweigh undesirable consequences in most settings | Desirable consequences clearly outweigh undesirable consequences in most settings |
|  | ○ | X (for lay providers) | ○ | X (for health care providers) | ○ |

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| **Type of recommendation** | We recommend against offering this option | We suggest not offering this option | We suggest offering this option | We recommend offering this option |
|  | X (for lay providers) | ○ | X (for health care providers) | ○ |
| **Recommendation** | We recommend against the use of cognitive aids for the purposes of lay providers initiating CPR (weak recommendation, low certainty of evidence).  We suggest the use of cognitive aids for health care providers during trauma resuscitation (weak recommendation, very low certainty of evidence). In the absence of studies on cardiopulmonary resuscitation no evidence based recommendation can be issued.  There is insufficient data to suggest for or against the use of CA in lay provider training.We suggest the use of cognitive aids for training of health care providers in resuscitation (very weak recommendation, very low certainty of evidence). | | | |
| **Justification** | Consistent evidence for potentially significant delays in lay providers initiating CPR. Almost no evidence for or against use in HCPs using cognitive aids during cardiopulmonary resuscitation but reasonable evidence in trauma resuscitation, which may be a similar clinical environment. | | | |
| **Subgroup considerations** | Lay providers initiating CPR-delays. Inconsistent evidence on whether it helps lay providers with other metrics of quality CPR (ie rate, depth, CCF)  Healthcare providers for cardiac arrest-almost no evidence (1 very small pilot study) but trauma resuscitation literature may be extrapolated | | | |
| **Implementation considerations** | Unknown how providers would benefit most from using cognitive aids. Unsure of resources required to effectively implement their use in the resuscitation environment. | | | |
| **Monitoring and evaluation** |  | | | |
| **Research possibilities** | Impact of using cognitive aids on patient outcomes and health care provider performance in real cardiac arrest. Human factor analysis of cognitive aid properties that may affect it’s impact | | | |