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| Question EIT 637 (Learning formats preceding face to face training in advanced courses; formerly named Precourse Preparation for Advanced Courses) |  |
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| Population: students who are taking advanced life support courses in an educational setting, |  |  |  |
| Intervention: does precourse preparation for advanced courses (eg. e-learning or pre-testing combined with face to face training)  |  |  |
| Comparison: compared with a traditional course (face to face training) |  |  |
| Main outcomes: change cognitive knowledge, skill performance at course conclusion, skill performance at 1 year, skill performance in actual resuscitations, increase survival rates, skill performance at time between course conclusion and 1 year |  |  |
| Setting: advanced life support courses |  |  |
| Perspective: (a) learning formats as a preparation of a traditional course and (b) e-learning formats as part of a blended learning approach reducing face to face training time  |  |  |

| 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  | As an ongoing development in education a variety of learning formats have been introduced into international ALS courses (a) as a preparation to the course, and (b) as e-learning formats as part of a blended learning approach reducing face to face training time. It is therefore important to evaluate the current evidence |  |
| Benefits & harms of the options | **What is the overall certainty of this evidence?**  | ○ No included studies ○ Very low **X** Low ○ Moderate ○ High  | **The relative importance or values of the main outcomes of interest:** (a) very low for learning formats as a preparation to the course(b) low for e-learning formats as part of a blended learning approach reducing face to face training time. In terms of reducing face to face time without losing educational effectiveness the overall certainty is moderate.

| **Outcome** | **Relative importance**  | **Certainty of the evidence (GRADE)**  |
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| Overall, equal learning effects for both forms of course delivery are reported. Effects however, seem to depend on the learning preference of course participants  | Savings for course providers / increased flexibility for learners | Very low to moderate |

(a) Higher course success rate may be relevant to learners (and course providers).(b) Desirable effects (savings for course providers / increased flexibility for learners) are likely to be relevant.Undesirable effects include for the question (a) the necessity to produce and disseminate learning material prior to the course. (b) the necessity to set up a learning environment and produce learning material in advance.For both questions, the alternative learning format may not be accepted by learners. As long as a traditional course version is still offered, the desirable effects clearly outweigh the undesirable effects.  |  |
| **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 ○ Uncertain ○ Probably yes **X** Yes ○ Varies  |
| **Are the desirable effects large relative to undesirable effects?**  | ○ No ○ Probably no ○ Uncertain ○ Probably yes **X** Yes ○ Varies  |
| Resource use | **Are the resources required small?**  | ○ No ○ Probably no ○ Uncertain **X** Probably yes ○ Yes ○ Varies  | High initial investment, but substantial return of investment is likely. In the long run an e-learning alternative will be substantially less expensive. Resources need to be prepared only once. It has to be kept in mind however, that resources are still needed for the maintenance of an online system.  |  |
| **Is the incremental cost small relative to the net benefits?**  | ○ No ○ Probably no ○ Uncertain ○ Probably yes **X** Yes ○ Varies  | See the point above  |  |
| Equity | **What would be the impact on health inequities?**  | ○ Increased ○ Probably increased ○ Uncertain ○ Probably reduced **X** Reduced ○ Varies  | (a) no effects on equity (b) More Health Care Providers will be able to attend ALS courses. | This point especially applies to limited resource settings. |
| Acceptability | **Is the option acceptable to key stakeholders?**  | ○ No ○ Probably no ○ Uncertain ○ Probably yes **X** Yes ○ Varies  | (a) Increased learner success will increase acceptability for course participants, (acceptability: probably yes) (b) Increased learner flexibility will increase acceptability for course participants, while lower costs of course delivery including less face-to-face instructor time will increase acceptability for both, participants and course providers. Increased standardisation of learning content will increase acceptability for course providers. |  |
| Feasibility | **Is the option feasible to implement?**  | ○ No ○ Probably no ○ Uncertain **X** Probably yes ○ Yes ○ Varies  | Implementation will depend on the willingness and resources of course providers to produce an adequate learning environment (e.g. web platform) and precourse learning material in advance.  |  |

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| Recommendation Question: |
| **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** |

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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** |
| **Recommendation**  | We recommend distributing precourse learning formats preceding face to face training for participants of ALS courses (based on very-low- to low-certainty evidence). In addition, we strongly recommend providing the option of e-learning as part of a blended learning approach to reduce face to face training time in ALS courses (strong recommendation, very-low- to low-certainty evidence). |
| **Justification**  | Given the higher flexibility for learners and the savings of resources the TF recommends providing the option of such formats for ALS courses (e.g. a 1 day’s equivalent of e-learning plus one day of a face-to-face course).  |
| **Subgroup considerations**  | For the case of learning formats as a preparation of a traditional course desirable consequences probably outweigh undesirable consequences in most settings while in the case of e-learning formats as part of a blended learning the desirable consequences clearly outweigh undesirable consequences.In making this recommendation, the TF takes into account that learning styles may differ substantially and that face-to-face courses may be more effective for some groups of learners. |
| **Implementation considerations**  | Return of investment of e-learning will be more pronounced if more learners get the opportunity to use the resources. This should be considered when developing learning material (e.g. by providing the material on a national level, or within the learners’ native cultural context). |
| **Monitoring and evaluation**  | Close monitoring and evaluation within accredited courses is recommended and appears feasible. |
| **Research possibilities**  | Potentials to optimize the educational impact of learning formats preceding face to face training need to be explored. |