# Question

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| | OHCA |
| | EMR offer dispatch assisted CPR |
| | bystander CPR without dispatch assistance |
| | Neurologically intact survival, survival (including sustained ROSC). |
| | OHCA |
| | Guideline |
| | Out-of-hospital cardiac arrest (OHCA) is a significant cause of death worldwide with an annual rate of over 400,000.<br>Survival rates for OHCA victims, the current average rate remains very low at approximately 10%. Good quality CPR is likely to improve outcomes. |
| | Nil |

# Assessment

| Judgement | Research evidence | Additional considerations |
|---|---|---|
| ○ No<br>○ Probably no<br>○ Probably yes<br>● Yes<br>○ Varies<br>○ Don't know | Out-of-hospital cardiac arrest (OHCA) is a significant cause of death worldwide with an annual rate of over 400,000.<br>Survival rates for OHCA victims, the current average rate remains very low at approximately 10%.<br>A victim is almost 4 times more likely to survive a cardiac arrest event when someone witnesses their arrest and performs CPR while emergency personnel are enroute.<br>Up to 85% of all cardiac arrests occur in homes and public places and more than half are witnessed by someone who could intervene - unfortunately, unassisted bystander CPR rates have remained astoundingly low over the past decade, rarely exceeding 35%. | |

| Judgement | Research evidence | Additional considerations |
|---|---|---|
| ○ Trivial<br>○ Small<br>○ Moderate<br>● Large<br>○ Varies<br>○ Don't know | These question addresses patients/cases where dispatch assisted CPR is offered compared to patients/cases where bystander CPR without dispatch assist is offered in adults and children with presumed cardiac arrest in out-of-hospital settings. Rescuers are given the option to follow instructions.<br>**Adjusted results:**<br>Neurologically intact survival 1 month: OR 1.00 (95% CI 0.91 to 1.10): Certainty Very Low<br>Neurologically intact survival Hospital Discharge: OR 1.12 (0.94 to 1.34): Very Low<br>Survival to one month **better**: OR 1.13 (1.06 to 1.20): Very Low<br>Survival to hospital discharge: OR 0.95 (0.83 to 1.09) : Very Low<br>Sustained ROSC: OR 1.04 (0.94 to 1.14): Very low<br>Survival to hospital: OR 1.09 (1.04 to 1.14): Very low<br>Shockable Rhythm: OR 1.02 (0.95 to 1.09): Very low<br>All sensitivity analyses confirmed a more favourable outcome with DA-CPR except that for survival with good neurologic outcome at 1 month (adjusted OR 0.98 (0.89-1.08). | Additional considerations include: rates of recognition of OHCA; motivation of dispatchers; time to deliver DA-CPR; time to arrival of EMS; existing bystander CPR rates; willingness of bystanders to commence CPR; quality of CPR being delivered at time of call; and quality of CPR finally being delivered.<br>Desirable effects best estimated by the evaluation of the adjusted results from the included studies. Unadjusted results were available for more studies, and a larger number of patients.<br>**Unadjusted results are included below for comparison**<br>Neurologically intact survival 1 month **worse**: OR 0.73 (95% CI 0.68 to 0.77): Certainty Low<br>Survival 1 month **worse**: OR 0.76 (0.60 to 0.96): Low<br>Survival to hospital discharge **worse**: OR 0.73 (0.64 to 0.84): Low<br>Sustained ROSC **worse**: OR 0.77 (0.61 to 0.97): Low<br>Shockable rhythm **worse**: OR 0.78 (0.65 to 0.93): Very low<br>Other prespecified outcomes not significant. |

| Judgement | Research evidence | Additional considerations |
|---|---|---|
| ○ Large<br>○ Moderate<br>● Small<br>○ Trivial<br>○ Varies<br>○ Don't know | Rescuers were given the option to follow instructions. Unfortunately the desired outcome (survival of the event) is not guaranteed and rescuers may suffer trauma either way.<br>**Adjusted results:**<br>Neurologically intact survival 1 month: OR 1.00 (95% CI 0.91 to 1.10): Certainty Very Low<br>Neurologically intact survival Hospital Discharge: OR 1.12 (0.94 to 1.34): Very Low<br>Survival to one month **better**: OR 1.13 (1.06 to 1.20): Very Low<br>Survival to hospital discharge: OR 0.95 (0.83 to 1.09) : Very Low<br>Sustained ROSC: OR 1.04 (0.94 to 1.14): Very low<br>Survival to hospital: OR 1.09 (1.04 to 1.14): Very low<br>Shockable Rhythm: OR 1.02 (0.95 to 1.09): Very low<br>All sensitivity analyses confirmed a more favourable outcome with DA-CPR except that for survival with good neurologic outcome at 1 month (adjusted | Overall effects best estimated by the evaluation of the adjusted results from the included studies. Unadjusted results were available for more studies, and a larger number of patients.<br>**Unadjusted results are included below for comparison:**<br>Neurologically intact survival 1 month **worse**: OR 0.73 (95% CI 0.68 to 0.77): Certainty Low<br>Survival 1 month **worse**: OR 0.76 (0.60 to 0.96): Low<br>Survival to hospital discharge **worse**: OR 0.73 (0.64 to 0.84): Low<br>Sustained ROSC **worse**: OR 0.77 (0.61 to 0.97): Low<br>Shockable rhythm **worse**: OR 0.78 (0.65 to 0.93): Very low<br>Other prespecified outcomes not significant. |

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| | OR 0.98 (0.89-1.08). | |
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| Judgement | Research evidence | Additional considerations |
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| ● Very low<br>○ Low<br>○ Moderate<br>○ High<br>○ No included studies | Adjusted results from observational studies only. Downgraded for risk of bias. | Confounded by a number of factors including: rates of recognition of OHCA; motivation of dispatchers; time to deliver DA-CPR; time to arrival of EMS; existing bystander CPR rates; willingness of bystanders to commence CPR; quality of CPR being delivered at time of call; and quality of CPR finally being delivered.<br>Certainty of evidence from unadjusted data: Low |
| | | |

| Judgement | Research evidence | Additional considerations |
|---|---|---|
| ○ Important uncertainty or variability<br>○ Possibly important uncertainty or variability<br>● Probably no important uncertainty or variability<br>○ No important uncertainty or variability | Main outcome is survival, and neurologically intact survival. People may actually vary in whether they desire CPR in the event of a cardiac arrest, but COSCA has confirmed importance of these outcomes. The vast majority of the population have not declared that they don't.<br>No published evidence regarding this intervention for quality of life in survivors. | COSCA: Haywood K, Whitehead L, Nadkarni VM, Achana F, Beesems S, Bottiger BW, et al. COSCA (Core Outcome Set for Cardiac Arrest) in Adults: An Advisory Statement From the International Liaison Committee on Resuscitation. Resuscitation. 2018;127:147-63. |
| | | |

| Judgement | Research evidence | Additional considerations |
|---|---|---|
| ○ Favors the comparison<br>○ Probably favors the comparison<br>● Does not favor either the intervention or the comparison<br>○ Probably favors the intervention<br>○ Favors the intervention<br>○ Varies<br>○ Don't know | **Adjusted results:**<br>Neurologically intact survival 1 month: OR 1.00 (95% CI 0.91 to 1.10): Certainty Very Low<br>Neurologically intact survival Hospital Discharge: OR 1.12 (0.94 to 1.34): Very Low<br>Survival to one month **better**: OR 1.13 (1.06 to 1.20): Very Low<br>Survival to hospital discharge: OR 0.95 (0.83 to 1.09) : Very Low<br>Sustained ROSC: OR 1.04 (0.94 to 1.14): Very low<br>Survival to hospital: OR 1.09 (1.04 to 1.14): Very low<br>Shockable Rhythm: OR 1.02 (0.95 to 1.09): Very low<br>All sensitivity analyses confirmed a more favourable outcome with DA-CPR except that for survival with good neurologic outcome at 1 month (adjusted OR 0.98 (0.89-1.08). | **Unadjusted results:**<br>Neurologically intact survival 1 month **worse**: OR 0.73 (95% CI 0.68 to 0.77): Certainty Low<br>Survival 1 month **worse**: OR 0.76 (0.60 to 0.96): Low<br>Survival to hospital discharge **worse**: OR 0.73 (0.64 to 0.84): Low<br>Sustained ROSC **worse**: OR 0.77 (0.61 to 0.97): Low<br>Shockable rhythm **worse**: OR 0.78 (0.65 to 0.93): Very low<br>Other prespecified outcomes not significant. |
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| Judgement | Research evidence | Additional considerations |
|---|---|---|
| ○ Large costs<br>○ Moderate costs<br>○ Negligible costs and savings<br>○ Moderate savings<br>○ Large savings<br>● Varies<br>○ Don't know | No relevant published data was identified for review.<br>Existing systems may be in place, but additional training will be required to introduce Dispatch Assist instructions.<br>Widespread availability of phone equipment (landline/mobile), phone reception, and loudspeaker mode may be a limitation and require resources.<br>Community education may increase likelihood of following instructions. | |
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| Judgement | Research evidence | Additional considerations |
| ○ Very low<br>○ Low<br>○ Moderate<br>○ High<br>● No included studies | No relevant published data was identified for review. | |
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| Judgement | Research evidence | Additional considerations |
| ○ Favors the comparison<br>○ Probably favors the comparison<br>○ Does not favor either the intervention or the comparison<br>○ Probably favors the intervention<br>○ Favors the intervention<br>○ Varies<br>● No included studies | Pubmed search: (("Cost-Benefit Analysis"[Mesh]) AND ( "Heart Arrest"[Mesh] OR "Out-of-Hospital Cardiac Arrest"[Mesh] OR "Death, Sudden, Cardiac"[Mesh] )) AND "Emergency Medical Dispatcher"[Mesh]<br>No relevant published data was identified for review. | One study identified suggested that bystander CPR appeared “cost-effective”: Geri G, Fahrenbruch C, Meischke H, Painter I, White L, Rea TD, Weaver MR. Effects of bystander CPR following out-of-hospital cardiac arrest on hospital costs and long-term survival. Resuscitation. 2017 Jun 1;115:129-34. |
| | | |
| Judgement | Research evidence | Additional considerations |
| ○ Reduced<br>○ Probably reduced<br>○ Probably no impact<br>○ Probably increased<br>○ Increased<br>○ Varies<br>● Don't know | No relevant published data was identified for review. | |
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| Judgement | Research evidence | Additional considerations |
| ○ No<br>○ Probably no<br>● Probably yes<br>○ Yes<br>○ Varies<br>○ Don't know | No relevant published data was identified for review.<br>Rescuers have requested assistance and could expect instructions for them to carry out.<br>Unaware of any perverse community implications (other strategies to promote CPR are widely accepted). | |
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| Judgement | Research evidence | Additional considerations |
| ○ No<br>○ Probably no<br>● Probably yes<br>○ Yes<br>○ Varies<br>○ Don't know | Some limitations to the maximal benefit of implementation that were identified in existing studies include: how instructions for DA-CPR are delivered (DA protocol, dispatcher handling delays induced by the caller); motivation of dispatcher, the previous training experience and compliance rate of bystanders; and the quality of the CPR provided before and after instructions. | |

# Summary of judgements

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| | No | Probably no | Probably yes | **Yes** | | Varies | Don't know |
| | Trivial | Small | Moderate | **Large** | | Varies | Don't know |
| | Large | Moderate | **Small** | Trivial | | Varies | Don't know |
| | **Very low** | Low | Moderate | High | | | No included studies |
| | Important uncertainty or variability | Possibly important uncertainty or variability | **Probably no important uncertainty or variability** | No important uncertainty or variability | | | |
| | 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 |
| | Large costs | Moderate costs | Negligible costs and savings | Moderate savings | Large savings | **Varies** | Don't know |
| | Very low | Low | Moderate | High | | | **No included studies** |
| | Favors the comparison | Probably favors the comparison | Does not favor either the intervention or the comparison | Probably favors the intervention | Favors the intervention | Varies | **No included studies** |
| | Reduced | Probably reduced | Probably no impact | Probably increased | Increased | Varies | **Don't know** |
| | No | Probably no | **Probably yes** | Yes | | Varies | Don't know |
| | No | Probably no | **Probably yes** | Yes | | Varies | Don't know |

# Type of recommendation

| Strong recommendation against the option | Conditional recommendation against the option | Conditional recommendation for either the option or the comparison | Conditional recommendation for the option | Strong recommendation for the option |
|---|---|---|---|---|
| ○ | ○ | ● | ○ | ○ |

# Conclusions

Draft from ESR:
**We recommend that emergency medical dispatch centers have systems in place to enable call handlers to provide CPR instructions for adult patients in cardiac arrest. (strong recommendation, very-low-certainty evidence)**

**We recommend that emergency call takers provide CPR instructions (when required) for adult patients in cardiac arrest. (strong recommendation, very-low-certainty evidence)**

As expected, unadjusted outcomes suggest against addition of dispatch CPR instructions as patients receiving bystander CPR without the need for dispatch assistance generally have more favorable prognostic characteristics. When known confounders are taken into consideration in adjusted analysis, patients outcomes for patients receiving dispatch assisted CPR from untrained bystander equals outcomes for patients receiving CPR from bystanders able to do CPR without any dispatch instructions. We regard equivalent outcomes for these two patients cohorts as evidence in support of dispatch assisted CPR when required.

Impact of:
Quality of bystander CPR (eg. ventilations)
Training of bystander