QUESTION

Should Video Laryngoscopy vs. Laryngoscopy without Video be used for Endotracheal Intubation?	
POPULATION:	Endotracheal Intubation
INTERVENTION:	Video Laryngoscopy
COMPARISON:	Laryngoscopy without Video
MAIN OUTCOMES:	First Pass Success (RCT); Intubation Success (RCT); Time to Intubation; Esophageal Intubation;
SETTING:	Cardiac Arrest
PERSPECTIVE:	
BACKGROUND:	
CONFLICT OF INTERESTS:	

ASSESSMENT

Problem
Is the problem a priority?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ No ○ Probably no ○ Probably yes ● Yes ○ Varies ○ Don't know	Advanced airway management is a critical aspect of advanced life support for individuals suffering cardiac arrest in order to provide effective ventilation to protect against aspiration of gastric contents. The 2019 ILCOR Consensus on Science and Treatment Recommendations (CoSTR) recommends either supraglottic airway or tracheal intubation when performing advanced airway management in cardiac arrest. (Soar 2019) Tracheal intubation during cardiac arrest presents unique challenges including challenges related to both patient-factors (e.g. shock, aspiration risk), scene-factors (e.g. intubation in non-intensive care or operating room settings), and resuscitation factors (e.g. ongoing chest compressions complicating laryngoscopic view). (Khandlewal 2014; Wang 2019) These unique challenges increase the risk of adverse effects of tracheal intubation including failed intubation attempts, excess pauses on chest compressions, and complications including esophageal intubation. Identifying the optimal approach to tracheal intubation during cardiac arrest resuscitation is a priority.	The ILCOR Advanced Life Support Task Force identified this question as critical following an evidence update. Data from cardiac arrest registries in the United States finds that most patients who suffer cardiac arrest undergo tracheal intubation. (Andersen 2017, Mcmullan 2014)

Desirable Effects
How substantial are the desirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS

○ Trivial ○ Small ● Moderate ○ Large ○ Varies ○ Don't know	Across 3 RCTs (n = 331) and 13 observational studies (n ≈ 30,000) of adults undergoing tracheal intubation during cardiac arrest, the use of video laryngoscopy (VL) compared with direct laryngoscopy (DL) was associated with improved procedural outcomes but no demonstrated difference in patient-centered outcomes. For **first-pass tracheal intubation success**, pooled RCT evidence (very low certainty, downgraded for risk of bias, inconsistency, indirectness, and imprecision) showed no difference between VL and DL (RR 0.88, 95% CI 0.63–1.22). Observational data generally favored VL, with 8 of 12 studies reporting statistically significant higher success rates with VL. For **overall intubation success**, very low-certainty evidence from 3 RCTs showed no difference (RR 1.00, 95% CI 0.90–1.12), while 5 of 6 observational studies favored VL. For **esophageal intubation**, rates were consistently lower with VL (1 RCT: 4.3% vs 0%; pooled observational data: 5.6% vs 1.4%), a clinically meaningful absolute risk reduction (~4%, NNT ≈ 25). No benefit of VL over DL was demonstrated for **ROSC, survival,** or **survival with good neurologic** outcome in any observational study. These outcomes were not reported in any RCT. The potential desirable effects of VL are primarily procedural (improved first-pass and overall success, reduced esophageal intubation, better glottic view, and fewer compression interruptions). These may translate into safer airway management and improved team efficiency, particularly among less experienced operators or in difficult airway conditions. However, since improvements have not been shown to extend to patient-important outcomes (ROSC or survival), the overall magnitude of benefit is judged **moderate**. See additional information, including citations, in GRADE Tables.	Given the overall burden of cardiac arrest globally, even modest desirable impacts could be large on the population scale.

Undesirable Effects
How substantial are the undesirable anticipated effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ Large ○ Moderate ● Small ○ Trivial ○ Varies ○ Don't know	Across 3 RCTs and multiple observational studies of adult cardiac arrest, there was no consistent evidence of increased harm with VL compared to DL. Two RCTs found no difference in time to intubation between VL and DL (Kim 2016, Arima 2014) and one RCT reported fewer chest-compression interruptions with VL (Kim 2016). Observational studies were mixed for time to intubation (some faster with VL), and no study identified higher rates of complications (e.g., esophageal intubation—actually lower with VL, a desirable effect). Undesirable effects specifically attributable to VL (e.g., prolonged attempts, CPR pauses, aspiration) were not consistently observed. See additional information, including citations, in GRADE Tables.	

Certainty of evidence
What is the overall certainty of the evidence of effects?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS

● Very low ○ Low ○ Moderate ○ High ○ No included studies	The overall certainty of evidence was assessed seperately for randomized trials and for non-randomized studies. The certainty of evidence was judged to be very low across all outcomes assessed in both randomized trials and non-randomized studies, owing to a high risk of bias, unmearued confounders, incomplete (or no) adjustment for measured potential confounders, and indirectness. See additional information, including citations, in GRADE Tables.	RCT data is limited to small, randomized trials with methodological concerns. All randomized trials were published between 2014 and 2017, when technology and training for video-assisted laryngoscopy was not as advanced.

Values

Is there important uncertainty about or variability in how much people value the main outcomes?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ Important uncertainty or variability ● Possibly important uncertainty or variability ○ Probably no important uncertainty or variability ○ No important uncertainty or variability	We have not identified any cardiac arrest tracheal intubation studies that specifically addressed how patients valued the different outcomes.	The importance of the outcome of first pass success and overall success is uncertain (Nauka 2023). The COre Outcome Set for Cardiac Arrest (COSCA, Haywood, 2018) identfies ROSC as an important outcome for efficacy studies. Survival and survival with good neurologic outcome are generally recognized as important by COSCA.

Balance of effects

Does the balance between desirable and undesirable effects favor the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ 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	As above, the number and suspected importance of desirable outcomes likely favor the intervention.	

Resources required

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS

○ Large costs ○ Moderate costs ○ Negligible costs and savings ○ Moderate savings ○ Large savings ○ Varies ● Don't know	No studies regarding the cost effectiveness of the intervention were identified.	Studies from the operating theatre have found that video laryngoscopy is cost-effective (Zhang 2021) Resources required likely depends upon training needs, and number of video-capable of laryngoscopes needed (e.g. for hospital settings vs. pre-hopsital settings).

Certainty of evidence of required resources

What is the certainty of the evidence of resource requirements (costs)?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ Very low ○ Low ○ Moderate ○ High ● No included studies	We identified no included studies.	The type of video-capable laryngoscope used varied substantially across included studies.

Cost effectiveness

Does the cost-effectiveness of the intervention favor the intervention or the comparison?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ 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	No studies regarding the cost effectiveness of the intervention were identified.	Studies from the operating theatre have found that video laryngoscopy is cost-effective (Zhang 2021)

Equity

What would be the impact on health equity?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS

○ Reduced ○ Probably reduced ○ Probably no impact ○ Probably increased ○ Increased ● Varies ○ Don't know	We did not find any studies regarding the impact of the intervention on health equity.	Although cost effectiveness studies have found video-laryngoscopy to be cost effective in some settings, the initial investment in supplies and training may be high for low resource settings.

Acceptability
Is the intervention acceptable to key interest-holders?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ No ○ Probably no ● Probably yes ○ Yes ○ Varies ○ Don't know	No studies regarding acceptability identified.	Airway operators with less tracheal intubation experience may find video laryngoscopy to be more acceptable as compared to airway operators with more experience (Cox, 2023; Muhs 2025)

Feasibility
Is the intervention feasible to implement?

JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
○ No ○ Probably no ● Probably yes ○ Yes ○ Varies ○ Don't know	No studies regarding feasibility were identified.	

SUMMARY OF JUDGEMENTS

	JUDGEMENT						
PROBLEM	No	Probably no	Probably yes	**Yes**		Varies	Don't know
DESIRABLE EFFECTS	Trivial	Small	**Moderate**	Large		Varies	Don't know
UNDESIRABLE EFFECTS	Large	Moderate	**Small**	Trivial		Varies	Don't know
CERTAINTY OF EVIDENCE	**Very low**	Low	Moderate	High			No included studies
VALUES	Important uncertainty or variability	**Possibly important uncertainty or variability**	Probably no important uncertainty or variability	No important uncertainty or variability			
BALANCE OF EFFECTS	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

RESOURCES REQUIRED	Large costs	Moderate costs	Negligible costs and savings	Moderate savings	Large savings	Varies	**Don't know**
CERTAINTY OF EVIDENCE OF REQUIRED RESOURCES	Very low	Low	Moderate	High			**No included studies**
COST EFFECTIVENESS	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
EQUITY	Reduced	Probably reduced	Probably no impact	Probably increased	Increased	**Varies**	Don't know
ACCEPTABILITY	No	Probably no	**Probably yes**	Yes		Varies	Don't know
FEASIBILITY	No	Probably no	**Probably yes**	Yes		Varies	Don't know

TYPE OF RECOMMENDATION

Strong recommendation against the intervention	Conditional recommendation against the intervention	**Conditional recommendation for either the intervention or the comparison**	Conditional recommendation for the intervention	Strong recommendation for the intervention
○	○	●	○	○

CONCLUSIONS

Recommendation

- There is insufficient evidence to recommend an approach to tracheal intubation using video laryngoscopy over direct laryngoscopy during cardiac arrest resuscitation (weak recommendation, low certainty of evidence)
- To improve tracheal intubation first pass success, overall success, and to reduce rates of inadvertent esophageal intubation, it may be reasonable to perform video laryngoscopy during cardiac resuscitation in settings where this equipment is available and airway operators are well trained in the use of the device. (Good Practice Statement)

Justification

· This topic was prioritized by the Advanced Life Support Task Force given the expanded use of video laryngoscopy in cardiac arrest and other emergency airway management settings.
· Existing Consensus on Science and Treatment Recommendations for Advanced Airway Management During Adult Cardiac Arrest do not differentiate between video laryngoscopy and direct laryngoscopy.
· Airway management during cardiac arrest is uniquely challenging as a result of ongoing chest compressions, airway contamination, and restricted positioning, which may either enhance or diminish any performance advantages of video laryngoscopy.
· The Advanced Life Support Task Force included both randomized and non-randomized studies, recognizing that existing randomized trials remain few, small, and have numerous methodological flaws while non-randomized data provide important real-world information despite a very high risk of bias.
· Across included studies, there was substantial heterogeneity in video-capable laryngoscopy device type, operator experience, and arrest setting (OHCA vs IHCA), which were considered by the task force in arriving at treatment recommendations.
· In addition to studies of tracheal intubation during cardiopulmonary resuscitation, the Task Force considered indirect evidence comparing video laryngoscopy to direct laryngoscopy among patients not in cardiac arrest in the operating room and in non-elective and emergent tracheal intubations outside of the operating room. The indirect evidence considered generally matched findings from the cardiac arrest population, with a higher rate of first pass success and overall tracheal intubation success. In a Cochrane Review (Hansel 2022) that included six randomized trials comparing video laryngoscopy to direct laryngoscopy in prehospital settings (including two in cardiac arrest populations Arima 2014 & Ducharme 2017), there was no benefit of video capable as compared to non-video capable laryngoscopy.
· No data was identified from cardiac arrest populations regarding the cost-effectiveness of video-capable laryngoscopes. Indirect evidence from tracheal intubation in the operating theatre suggest that video-laryngoscopy is cost effective.
· The Task Force noted potential procedural advantages (e.g., higher first-pass success, reduced esophageal intubation) when performing video laryngoscopy although these advantages do not currently translate into improved rates of ROSC, survival, or survival with good neurologic outcomes.
· The recommendation that there is insufficient evidence to recommend an approach to tracheal intubation using a laryngoscope with video capability over a laryngoscope without video capability during cardiac arrest resuscitation was arrived at by consensus of the Advanced Life Support Task Force, based upon mixed data when assessing proximal and procedural outcomes favoring video-capable laryngoscopy and no benefit to either approach when assessing more patient-important outcomes such as survival or survival with favorable neurologic outcome.
· The Task Force considered that in the absence of evidence supporting a different approach to tracheal intubation in the cardiac arrest population as compared to standard practice in non-elective tracheal intubation settings, it would be reasonable for airway operators to procced with their standard approach to laryngoscopy during cardiac arrest resuscitation.

Subgroup considerations

No specific subgroups were examined.

Implementation considerations

Monitoring and evaluation

Research priorities

· There were no studies directly comparing different types of video-capable laryngoscopes, including no comparisons of hyperangulated vs. standard geometry laryngoscope bladers.
· There were limited studies directly assessing whether the impact of video laryngoscope use was different based upon the experience and skillset of the airway operator.
· The cost effectiveness of a switch to video-capable laryngoscopes is unknown. This is especially true for the pre-hospital setting and in low-resource settings.
· There was no study exploring tracheal intubation adjuncts (e.g. elastic bougie) as they related to video-capable vs. non-video-capable laryngoscopy.
· The training and experience requirements for each tracheal intubation laryngoscopic approach is uncertain.