

**Question**

**Should amiodarone vs lidocaine be used for children with shock refractory VF/pVT**

<p><b>PROBLEM:</b> Shock refractory ventricular fibrillation/pulseless ventricular tachycardia (VF/pVT)</p> <p><b>OPTION:</b> Amiodarone plus standard care</p> <p><b>COMPARISON:</b> Lidocaine plus standard care</p> <p><b>MAIN OUTCOMES:</b> Survival to discharge with good neurologic outcome/ survival to discharge (Critical outcomes) ROSC (important outcome)</p> <p><b>SETTING:</b> OHCA/IHCA</p> <p><b>PERSPECTIVE:</b> Patient perspective</p>	<p><b>BACKGROUND:</b> In 2015, amiodarone or lidocaine were recommended for pediatric cardiac arrest with refractory or recurrent VF/pVT based on one in-hospital study (Valdes) No data are available to guide recommendations for pediatric out-of-hospital arrest. Amiodarone has been recommended as the anti-arrhythmic of choice for VF in adults, largely based on two studies - Kudenchuk 1999 (amiodarone vs placebo) and Dorian 2002 (amiodarone vs lidocaine) – reporting improved survival to hospital admission, but no improvement in hospital discharge.</p>
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**Assessment**

	JUDGEMENT	RESEARCH EVIDENCE	ADDITIONAL CONSIDERATIONS
<b>PROBLEM</b>	<p><b>Is the problem a priority?</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> No</li> <li><input type="radio"/> Probably no</li> <li><input checked="" type="radio"/> <b>Probably yes</b></li> <li><input type="radio"/> Yes</li> <li><input type="radio"/> Varies</li> <li><input type="radio"/> Don't know</li> </ul>	<p>52% IHCA patients receive anti-arrhythmic drug(s) (Valdes)</p> <p>There are no data to estimate the percentage who receive anti-arrhythmic drugs during OHCA</p>	<p>There is potential for increasing number of lives saved lives saved.</p>
<b>DESIRABLE EFFECTS</b>	<p><b>How substantial are the desirable anticipated effects?</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> Trivial</li> <li><input type="radio"/> Small</li> <li><input checked="" type="radio"/> <b>Moderate</b></li> <li><input type="radio"/> Large</li> <li><input type="radio"/> Varies</li> <li><input type="radio"/> Don't know</li> </ul>	<p>There is a low frequency of VF/pVT in children and the number with recurrent or refractory is likely lower. However, if drug administration results in successful resuscitation, then the number of lives saved will increase.</p>	
<b>UNDESIRABLE EFFECTS</b>	<p><b>How substantial are the undesirable anticipated effects?</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> Large</li> <li><input type="radio"/> Moderate</li> <li><input checked="" type="radio"/> <b>Small</b></li> <li><input type="radio"/> Trivial</li> <li><input type="radio"/> Varies</li> <li><input type="radio"/> Don't know</li> </ul>	<p>Frequency of adverse events has not been documented in children.</p>	<p>Hypotension and bradycardia have been observed in the non-arrest pediatric population given amiodarone. Hypotension is more frequent in the adult population receiving amiodarone preparations with Polysorbate 80</p>

			Kudenchuk, 1999) If the aqueous preparation is administered, hypotension is less frequent. Other adverse events include thrombophlebitis and need for temporary external pacing. Seizures may be observed in patients who develop toxic lidocaine levels.
CERTAINTY OF EVIDENCE	<p><b>What is the overall certainty of the evidence of effects?</b></p> <ul style="list-style-type: none"> <li><input checked="" type="radio"/> <b>Very low</b></li> <li><input type="radio"/> Low</li> <li><input type="radio"/> Moderate</li> <li><input type="radio"/> High</li> <li><input type="radio"/> No included studies</li> </ul>	Very low for both amiodarone and lidocaine.	
VALUES	<p><b>Is there important uncertainty about or variability in how much people value the main outcomes?</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> Important uncertainty or variability</li> <li><input type="radio"/> Possibly important uncertainty or variability</li> <li><input type="radio"/> Probably no important uncertainty or variability</li> <li><input checked="" type="radio"/> <b>No important uncertainty or variability</b></li> </ul>	No important uncertainty or variability.	Most people would agree on ROSC, survival to hospital discharge, survival with good neurologic at hospital discharge. Longer term outcomes, HRQoL not addressed in available studies
BALANCE OF EFFECTS	<p><b>Does the balance between desirable and undesirable effects favor the intervention or the comparison?</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> Favors the comparison</li> <li><input type="radio"/> Probably favors the comparison</li> <li><input checked="" type="radio"/> <b>Does not favor either the intervention or the comparison</b></li> <li><input type="radio"/> Probably favors the intervention</li> <li><input type="radio"/> Favors the intervention</li> <li><input type="radio"/> Varies</li> <li><input type="radio"/> Don't know</li> </ul>	Odds ratio favors lidocaine compared to amiodarone or no anti-arrhythmic drug but statistically significant only for ROSC and not for critical outcomes of hospital discharge or hospital discharge with good neurologic outcome.	.

RESOURCES REQUIRED	<p><b>How large are the resource requirements (costs)?</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> Large costs</li> <li><input type="radio"/> Moderate costs</li> <li><input type="radio"/> Negligible costs and savings</li> <li><input type="radio"/> Moderate savings</li> <li><input type="radio"/> Large savings</li> <li><input type="radio"/> Varies</li> </ul> <p>X <b>Don't know</b></p>	<p>No formal cost-effectiveness studies have been performed. Both drugs are in wide use in-hospital, and it is unknown how widely they are used during pediatric OHCA. Additional resource requirements include ICU costs for non-survivors and neurologically damaged patients requiring long-term care.</p> <p>There are potential costs to major changes in guidelines including implementation and re-training.</p>	<p>Will vary across ILCOR Councils – for local determination. Already used in many settings.</p>
CERTAINTY OF EVIDENCE OF RESOURCES REQUIRED	<p><b>What is the certainty of the evidence of resource requirements (costs)?</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> Very low</li> <li><input type="radio"/> Low</li> <li><input type="radio"/> Moderate</li> <li><input type="radio"/> High</li> </ul> <p>X <b>No included studies</b></p>	<p>No studies identified.</p>	
COST EFFECTIVENESS	<p><b>Does the cost-effectiveness of the intervention favor the intervention or the comparison?</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> Favors the comparison</li> <li><input type="radio"/> Probably favors the comparison</li> <li><input type="radio"/> Does not favor either the intervention or the comparison</li> <li><input type="radio"/> Probably favors the intervention</li> <li><input type="radio"/> Favors the intervention</li> <li><input type="radio"/> Varies</li> </ul> <p>X <b>No included studies</b></p>	<p>No studies identified.</p>	<p>Not formally studied</p>
EQUITY	<p><b>What would be the impact on health equity?</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> Reduced</li> <li><input type="radio"/> Probably reduced</li> <li>X <b>Probably no impact</b></li> <li><input type="radio"/> Probably increased</li> <li><input type="radio"/> Increased</li> <li><input type="radio"/> Varies</li> <li><input type="radio"/> Don't know</li> </ul>	<p>Uncertain as no relevant studies were identified. Probably no impact.</p>	
ACCEPTABILITY	<p><b>Is the intervention acceptable to key stakeholders?</b></p> <ul style="list-style-type: none"> <li><input type="radio"/> No</li> <li><input type="radio"/> Probably no</li> <li>X <b>Probably yes</b></li> <li><input type="radio"/> Yes</li> </ul>	<p>In wide use currently</p>	

	<ul style="list-style-type: none"> <li>○ Varies</li> <li>○ Don't know</li> </ul>		
FEASIBILITY	<p><b>Is the intervention feasible to implement?</b></p> <ul style="list-style-type: none"> <li>○ No</li> <li>○ Probably no</li> <li><b>X Probably yes</b></li> <li>○ Yes</li> </ul> <ul style="list-style-type: none"> <li>○ Varies</li> <li>○ Don't know</li> </ul>	In wide use for in-hospital cardiac arrest.	

**Summary of judgements**

	JUDGEMENT							IMPLICATIONS
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		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	

	JUDGEMENT							IMPLICATIONS
<b>CERTAINTY OF EVIDENCE OF REQUIRED RESOURCES</b>	Very low	Low	Moderate	High			No included studies	
<b>COST EFFECTIVENESS</b>	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	
<b>EQUITY</b>	Reduced	Probably reduced	Probably no impact	Probably increased	Increased	Varies	Don't know	
<b>ACCEPTABILITY</b>	No	Probably no	Probably yes	Yes		Varies	Don't know	
<b>FEASIBILITY</b>	No	Probably no	Probably yes	Yes		Varies	Don't know	

### Conclusions

We suggest amiodarone or lidocaine be used in the treatment of pediatric shock-refractory VF/pVT (weak recommendation, very low quality evidence).