

Antibiotic Prophylaxis for Infective Endocarditis: A Survey of Current Practice Amongst Pediatric Cardiology Providers



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INTRODUCTION

The 2007 American Heart Association (AHA) guidelines significantly reduced antibiotic prophylaxis (AP) for infective endocarditis (IE) to fewer patients with predisposing cardiac conditions (PCC) at highest risk of poor outcomes. We sought to study the current prescribing practices of pediatric cardiology providers and their satisfaction with AHA guidelines.

METHODS

Email survey of American Academy of Pediatrics (AAP) section on Cardiology and Cardiac Surgery (SOCCS). Clinical cases including 6 different PCC lesions were presented and providers responded if they would provide AP or not. Clinical scenarios were divided into three groups (red) clearly not indicated for AP, (green) clearly meets criteria for AP, (yellow) AP could be indicated or not depending on interpretation of guidelines by the provider. A comparison of AP rates by those who completed training before and after 2007 was performed. Providers were also asked if they would prescribe AP for non-dental procedures. Providers were asked their satisfaction level with current guidelines in addressing the AP needs for their practice. Data analyzed was limited to those who completed the full survey and those following 2007 AHA guidelines.

Practice Type	N	%
University Hospital	114	65.9
Non-U Hospital	31	17.9
Private	21	12.1
Other	6	3.5
Military	1	0.6
Status of Training		
Completed	161	93.1
Fellow	12	6.9
Sub-Specialty		
Peds Cardiology	165	95.4
Adult Congenital	5	2.9
Peds CV ICU	2	1.2
Peds CT Surgery	1	0.6
Geographic Location		
US	163	94.2
Other	10	5.8
Years of Experience		
12 or more	85	49.1
Less than 12	81	46.8
No response	7	4.0

Table 1: Demographics of respondents, all respondents who completed the full survey and endorsed using the AHA 2007 guidelines in the practice. Of note, all respondents were physicians (MD, DO, with or without PhD)

Procedure	Providers who would provide AP (%)
Tonsillectomy	72.9
Adenoidectomy	71.3
Tongue Piercing	66.3
Anal Dilation	55.9
Esophageal	45.6
Tattoo	39.3
Non-neonatal Circumcision	33.3
Ear Piercing	27.2

Table 2: Rates of providers who would provide AP to a patient with complex congenital heart disease status post-surgical repair with residual cyanosis and shunt undergoing other noncardiac procedures. Tonsillectomy and adenoidectomy are listed in the AHA guidelines as being reasonable for which to provide AP. The other procedures have no data or guidelines to support AP. A red background indicates that the AHA would not recommend AP for this procedure and green background for those procedures that the AHA clearly would indicate AP.

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Primary Lesion	Current status (surgical repair, residual lesions, valve)	% Providers Yes to AP
Coarc s/p repair	Gortex®, trileaflet	13.3
	Gortex®, bicuspid, no stenosis	17.3
	Gortex®, bicuspid, with stenosis	29.5
	Bovine, trileaflet	10.5
	Bovine, bicuspid, no stenosis	15.6
	Bovine, bicuspid, with stenosis	25.1
ToF Monocusp	Mild PR, mild PS	24.0
	Mild PR, moderate PS	30.6
	Severe PR, mild PS	30.2
	Severe PR, moderate PS	35.5
AV canal left AV sutured - left AV dysfunction	No left valve regurg/stenosis	4.0
	Mild to mod left AV valve regurg	29.5
	Severe left AV valve regurg	38.4
	Mild to moderate left AV valve stenosis	27.2
	Severe left AV valve stenosis	34.7
AV canal left AV sutured - right AV dysfunction	Trivial right AV valve regurg	5.3
	Mild right AV valve regurg	9.9
	Moderate right AV valve regurg	21.8
	Severe right AV valve regurg	26.5
	No mitral regurg	0.6
MVP	Mild mitral regurg	4.0
	Moderate mitral regurg	12.1
	Severe mitral regurg	16.8
	No surgery, mild tricuspid regurg	4.0
Ebstein	No surgery, severe tricuspid regurg	12.2
	Cone procedure, mild tricuspid regurg	24.7
	Cone procedure, severe tricuspid regurg	39.8
PDA	No intervention, audible murmur	14.5
	No intervention, no audible murmur	1.7
	Amplatzer® closure, no residual shunt	1.7
	Amplatzer® closure, tiny residual shunt	70.5
ToF Melody®	Mild Melody regurg, mild Melody valve stenosis	84.1
	Mild Melody valve regurg, moderate Melody valve stenosis	88.2
	Severe Melody valve regurg, mild Melody valve stenosis	87.5
	Severe Melody valve regurg, moderate Melody valve stenosis	89.8

Table 3: The 35 clinical scenarios, rates of AP by providers. A red background indicates that the AHA clearly would not recommend AP for this condition, green background for those conditions that the AHA clearly would indicate AP, and yellow for when AP is not clearly indicated but could be considered indicated depending on a provider's interpretation of the AHA guidelines. Grouping was determined by authors. The raw percentage of providers who would provide AP is enumerated and the black bar represents this percentage demonstratively.

Coarc s/p repair (Coarctation of the aorta with repair in infancy), PS (pulmonary valve stenosis), PR (pulmonary valve regurgitation), ToF Monocusp (Tetralogy of Fallot status post-surgical repair with Monocusp repair of pulmonary valve, without residual ventricular septal defect (VSD)), regurg (regurgitation) AV (Atrioventricular) canal defect with patch repair of atrial septal defect (ASD) and VSD with no residual shunt and suture repair of cleft of the left AV valve, MVP (Unrepaired mitral valve prolapse), Ebstein (Acyanotic Ebstein anomaly), PDA (Patent ductus arteriosus)

RESULTS

There were 215 responses (54% response) and after exclusion n=173. AP rates for the 35 PCCs are shown in table 3 and for procedures in table 2. Rates for PCCs with clear indication for AP ranged 70.5-89.8%. For PCCs where AP is clearly not indicated, AP rates ranged 1.7-29.5%. PCCs where interpretation of the guidelines may play a role, AP rates were 9.9-39.8%. In a post-hoc comparison of providers who completed training before 2007 and those after, there was a significant difference in 16 scenarios in all of which the providers with more experience endorsed AP more often. Other factors found to be significant were left AV dysfunction in AV canal repairs, bicuspid valves in a coarc repair, stenosis of that BAV within a coarc, and surgical repair of Ebstein or PDA. Providers were generally satisfied with the guidelines with 88.4% saying they fit their practice needs well or very well.

CONCLUSIONS

Rates of AP given by providers still very significantly 12 years since the most recent guidelines. Level of experience may play a role in the variations but is not the sole factor. Level of residual valvular abnormality has an apparent positive trend with increasing AP rates.