

# Pediatric Cardiology Fellow Cardiac Morphology Curriculum: Assessing the Need



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## Introduction

Expert knowledge of cardiac anatomy is essential for the practice of pediatric cardiology.

Current cardiac morphology training is heterogeneous among fellowships:

- Variable nomenclature
- Access to pathology specimens
- Faculty expertise

Potential problems with current education:

- Miscommunication between providers utilizing different nomenclature systems
- Missed/Inaccurate anatomic diagnosis of congenital heart disease secondary to inadequate knowledge

## Aims

**Determine** the current training practices, **define** effective curricula structure and **assess** preferences for a standardized fellowship cardiac morphology curriculum.

## Methods

### Study Design

Cross sectional descriptive survey study

### Study Participants

ACGME accredited pediatric cardiology:

- Fellows & non-accredited fourth year fellows
- Program directors (PD) and Associate program directors (APD)

### Study Design

- Two *de novo* surveys developed using Qualtrics™ online software (fellows and PD/APD)
- Survey sent via email over 3 week period

## Methods

### Study Design

- Questions focused on
  - Current curricula format and effectiveness
  - Ideas for improvement
  - Potential clinical problems related to inadequate morphology knowledge
  - Preferences regarding learning method options for a standardized curriculum

### Data Analysis

- Descriptive statistics for demographic data
- Mean data calculated using ANOVA
- Thematic coding of open-ended responses by two investigators

## Results

101 Survey Responses

- 35 PD/APD from 32 Programs (54%)
- 66 Fellows (~16%)

### Demographic Data

Fellows (n=66)		Number	Percent
Gender	Male	38	58%
	Female	28	42%
Current year in fellowship	1	20	30%
	2	20	30%
	3	20	30%
	4 or greater	6	10%
Institutional program data (n=32)*		Number	Percent
Total number of categorical fellows			
	1-3	3	9%
	4-6	14	45%
	7-9	9	28%
	>10	6	18%
Number of affiliated cardiology faculty	6-10	5	16%
	11-15	10	31%
	16-20	8	25%
	21-30	2	6%
	31-40	3	9%
	>40	4	13%

## Results

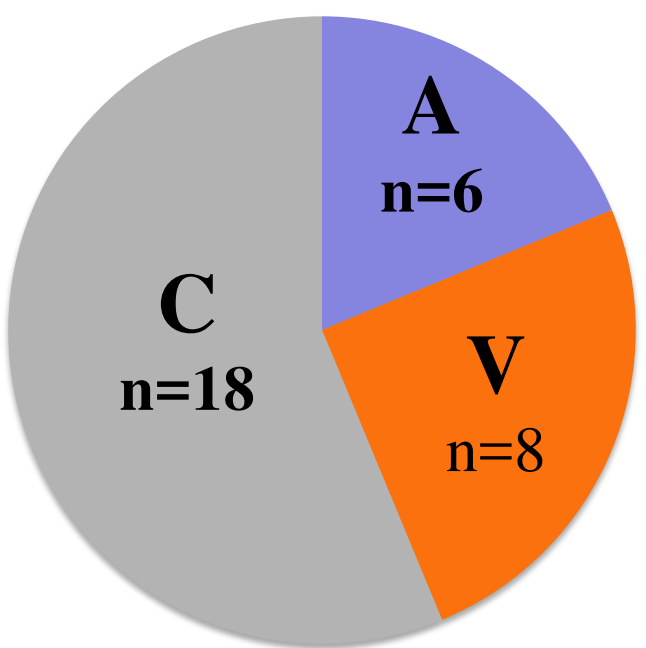
### Current Fellowship Teaching Practices

Programmatic Data

- 50% Utilize cardiologists & pathologists
- 75% Invite outside faculty
- 50% Send fellows outside institution

Program Primary Nomenclature

- 19% Andersonian (A)
- 25% Van Praagh (VP)
- 56% Combination (C)



### Thematic Responses from Fellows and PD/APD about Current Curriculum

#### Effective Training

Faculty expertise (n=22)

Hands on specimen exposure (n=14)

Visiting Expert (n=6)

#### Training Improvement

Increased structured teaching (n=16)

Improved access to heart specimens (n=10)

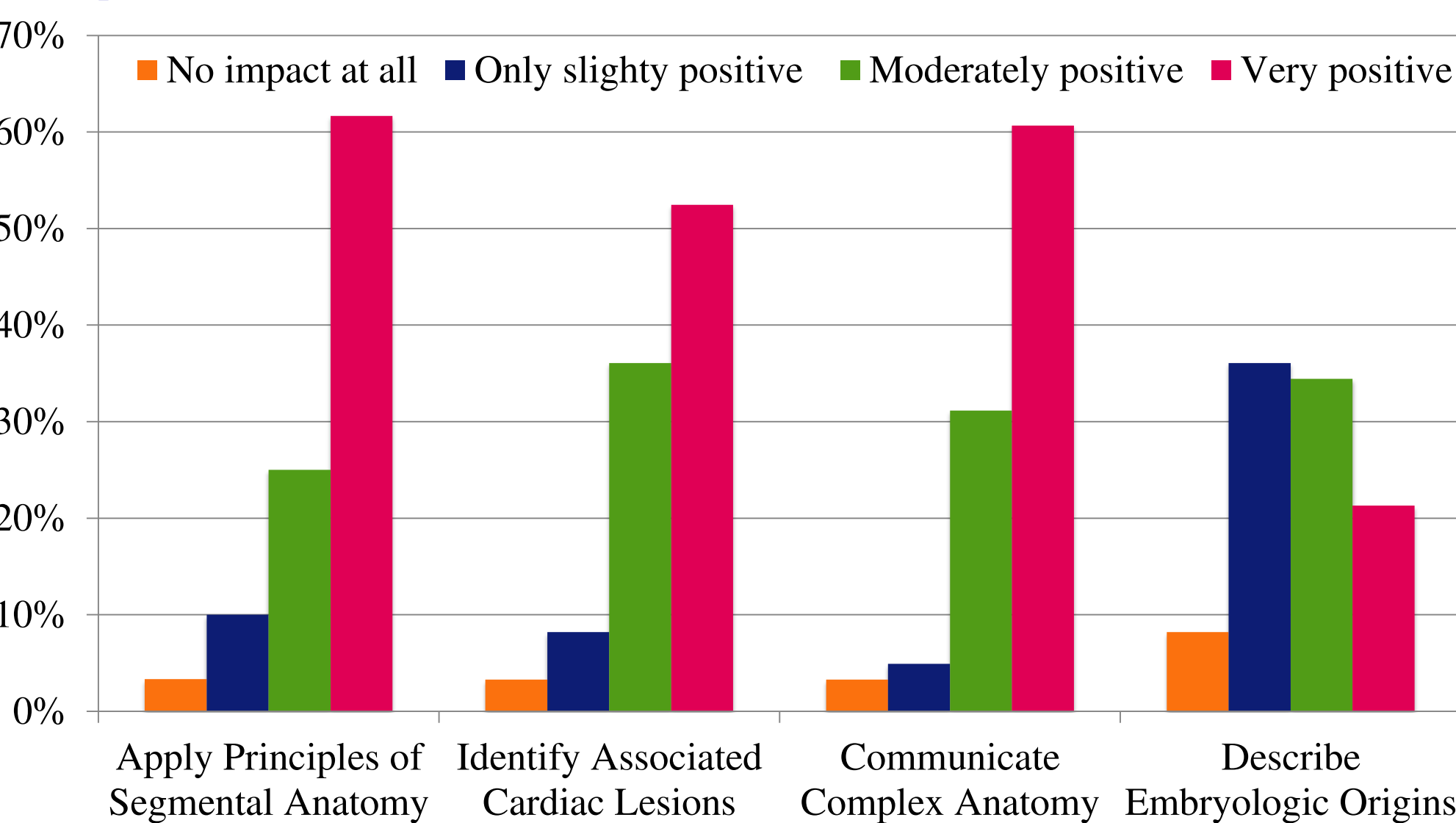
Fellow protected time (n=8)

Morphology incorporated with imaging (n=4)

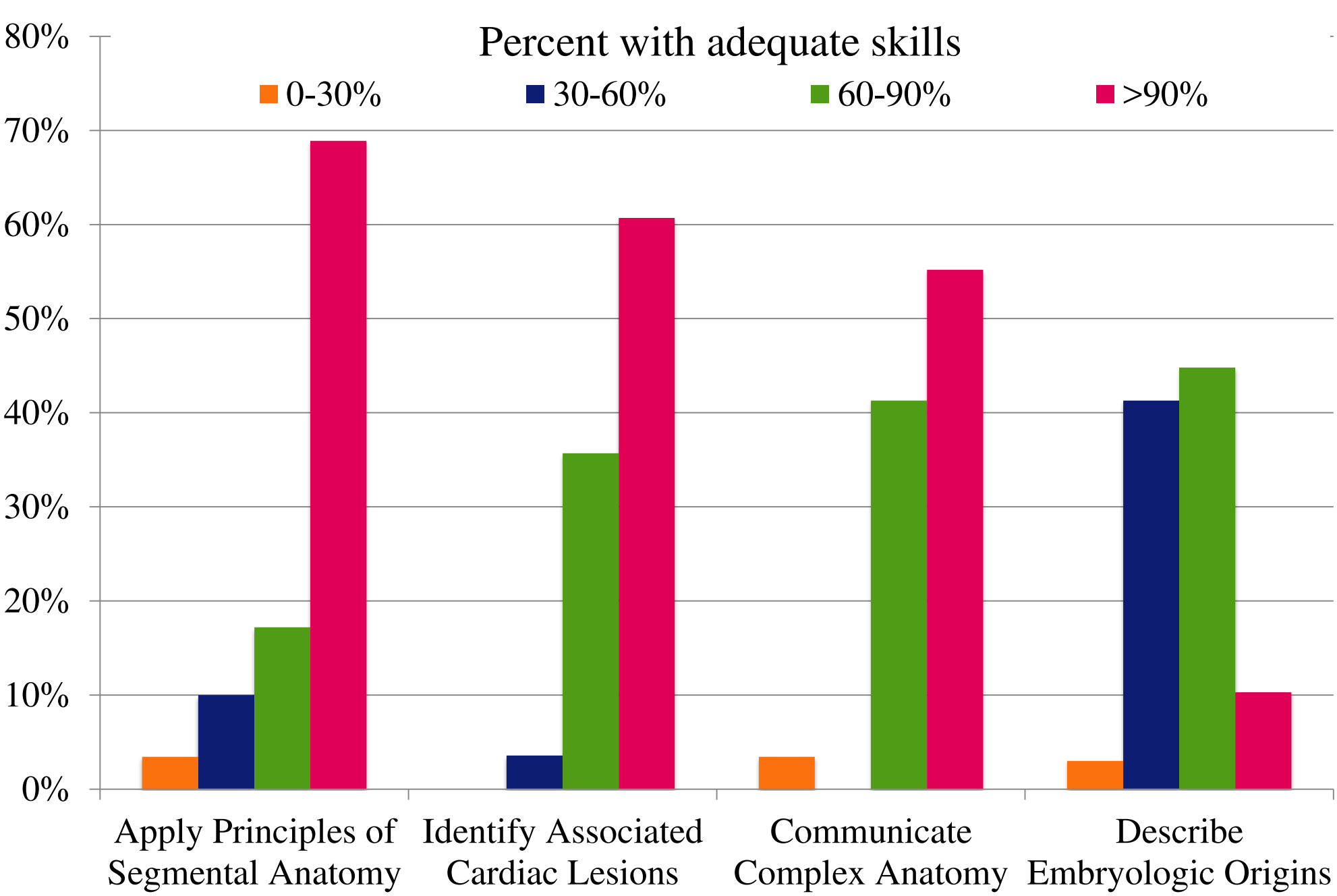
### Clinical Impact of Inadequate Knowledge

		n	Never	Occas.	Freq.
Miscommunication between cardiologist and surgeon	Dir	32	38%	62%	-
	Fel	62	42%	56%	2%
Inaccurate diagnosis due to lack of anatomic knowledge	Dir	32	53%	47%	-
	Fel	62	58%	39%	3%
Missed ID of commonly associated lesions in patient with cong. heart disease	Dir	32	53%	47%	-
	Fel	62	55%	43%	2%
Inaccurate description of identified heart lesion	Dir	32	22%	72%	6%
	Fel	62	37%	58%	5%

### Fellow Assessment of Current Curricular Impact on Skills



### Program Director Assessment of Recent Fellow Graduate Skills



## Conclusion

Fellowship cardiac morphology teaching is heterogeneous

PD/APDs perceive some recent graduates as lacking adequate morphology knowledge

Inadequate knowledge has potential patient safety impacts: missed diagnosis & miscommunication

Fellows and PD/APD expressed interest in an online cardiac morphology curriculum

## Next Steps

Creation of a standardized and accessible cardiac morphology curriculum to provide a consistent educational platform, with continual curriculum evaluation and improvement and assessment of fellow cardiac morphology competency.