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Job Task Analysis for

ARDMS Fetal Echo Specialty

August 18, 2008

JTA Parameters

Analysis Summary For: Fetal Echo Sonography Exam

Survey Dates:	**6/23/08-7/7/08**
Invited Respondents:	**414**
Surveys with Demographics:	**122 (completed demographics section)**
Completed Surveys:	**122 (completed all responses)**
Response Rate, Completed Surveys:	**29.5%**

Demographics

Educational Level

Educational Level		
Educational Level	**N**	**Percent**
Decline to state	1	1%
On-the-job training (apprenticeship)	15	12%
Formal education certificate program	29	24%
Formal education Associates degree	25	21%
Formal education Bachelors degree	36	30%
Formal education Masters degree	4	3%
Formal education MD	11	9%
Formal education PhD	1	1%
Total	**122**	

Table 1. Education Level

Graphically, the educational level of respondents is as follows:

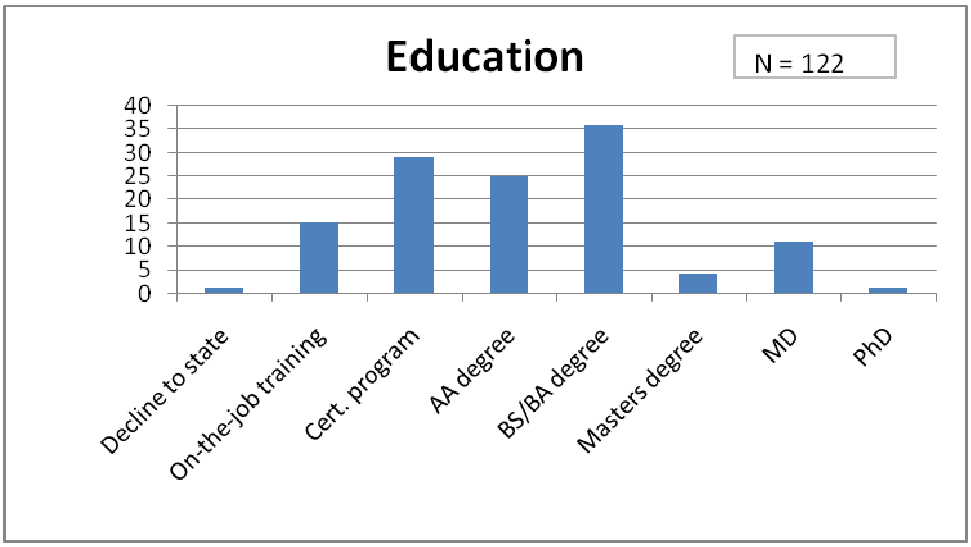

Figure 1. Educational Level

CAAHEP

CAAHEP is the largest programmatic accrediting organization in the health sciences field. In collaboration with its Committees on Accreditation, CAAHEP reviews and accredits nearly 2000 educational programs in nineteen (19) health science occupations. CAAHEP is recognized by the Council for Higher Education Accreditation (CHEA).

Respondents were asked whether they had graduated from a CAAHEP-approved program.

CAAHEP Graduate

	N	Percent
Decline to state	6	5%
No	53	43%
Yes	63	52%
Total	**122**	

Table 2. CAAHEP Classification All Respondents

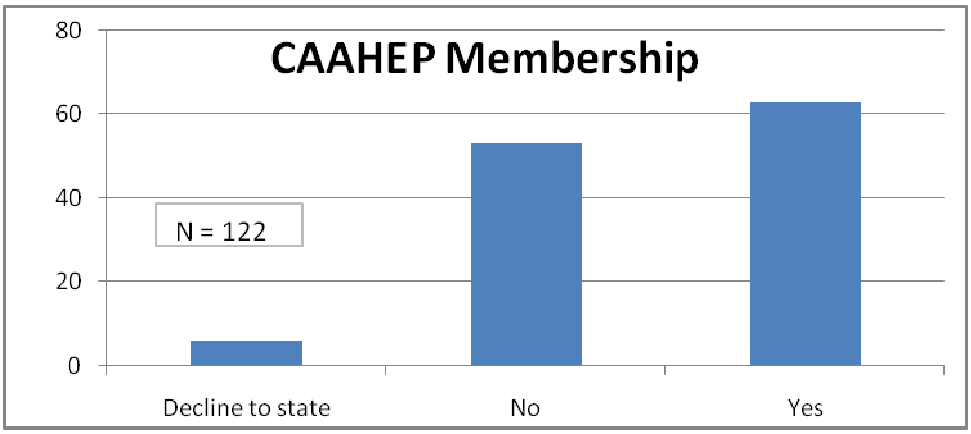

Figure 2. CAAHEP Graduate

Fetal Echo Exams Performed /Month

Table 3, Fetal Echo Exams Performed per Month shows the number of exams respondents typically conduct per month in their own practices.

Fetal Echo Exams/Month		
	N	**Percent**
Decline to state	2	2%
0-50	70	57%
51-100	33	27%
101-200	12	10%
201 or more	5	4%
Total	**122**	

Table 3. Fetal Echo Exam/Month

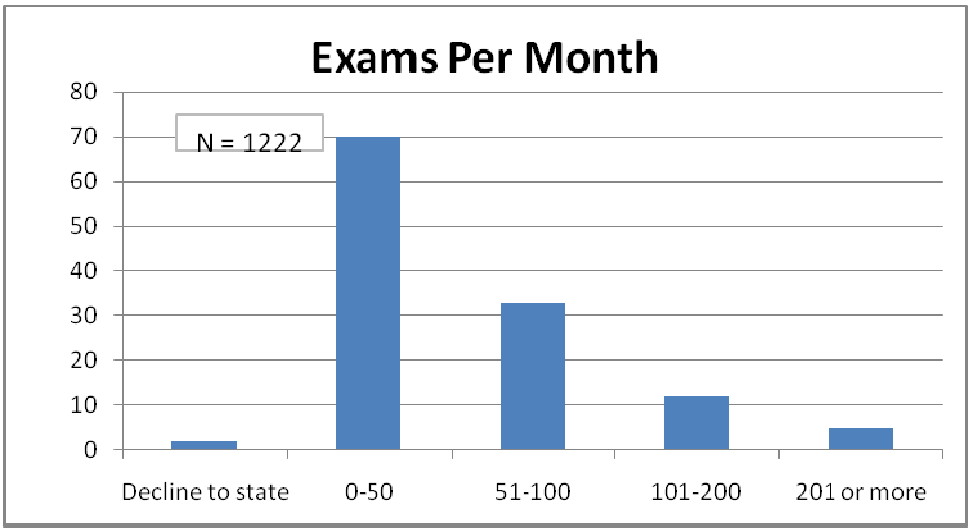

Figure 3. Fetal Echo Exams/Month

Fetal Echo Exams Performed in Laboratory/Month

Table 4, shows the number of Fetal Echo sonography exams conducted in the respondent's laboratory during the previous year.

Fetal Echo Exams in Lab/Month		
	N	**Percent**
Decline to state	1	1%
0-1000	86	71%
1001-2000	19	16%
2001-3000	10	8%
More than 3000	6	5%
Total	122	

Table 4. Fetal Echo Exams in Lab/Month

The results from Table 4 are presented graphically below.

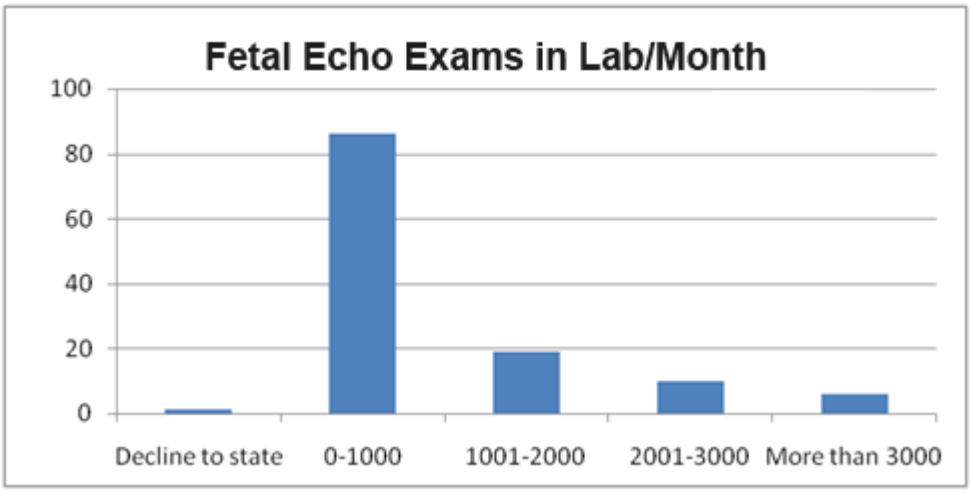

Figure 4. Fetal Echo Exams in Lab/Month

Years as a Fetal Echo Sonographer

The number of years the respondents have spent as a Fetal Echo Sonographer are tabulated in Table 5.

Years as FE Sonographer	N	Percent
Decline to state	1	0.8
0-5	5	4.1
6-10	24	19.7
11-15	32	26.2
16-20	23	18.9
More than 20	37	30.3
Total	**122**	

Table 5. Years as FE Sonographer

The results from Table 5, Years as a Sonographer are depicted graphically below.

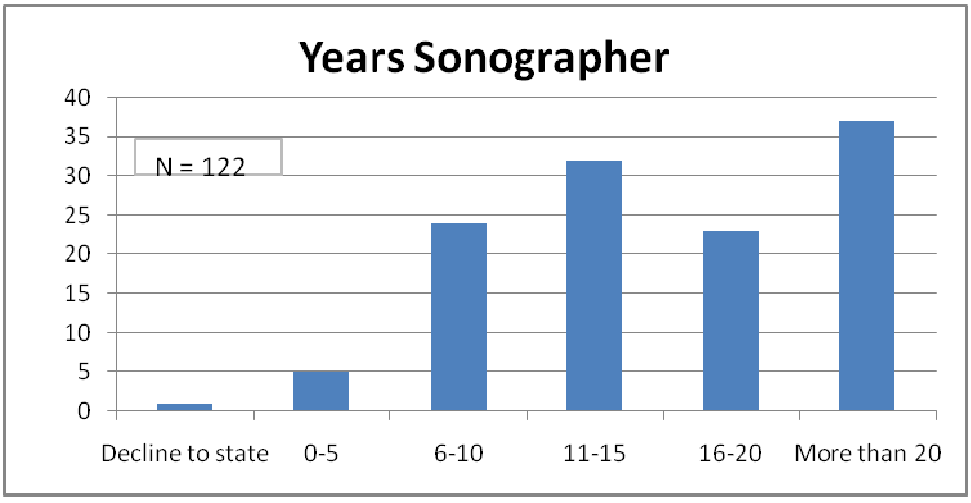

Figure 5. Years as FE Sonographer

Years in Profession

Table 6, Years in Profession shows the number of years the respondents have been in sonography profession.

Years in Profession		
	N	**Percent**
Decline to state	1	1%
0-5	47	39%
6-10	39	32%
11-15	19	16%
16-20	13	11%
More than 20	3	3%
Total	**122**	

Table 6. Years in Profession

As is evidenced in Figure 6, Years in Profession All Respondents, the distribution of practice experience peaks at zero to five years in practice. This means that while many of the respondents have been in sonographic practice for a long time, most of them are relatively new to fetal echocardiography.

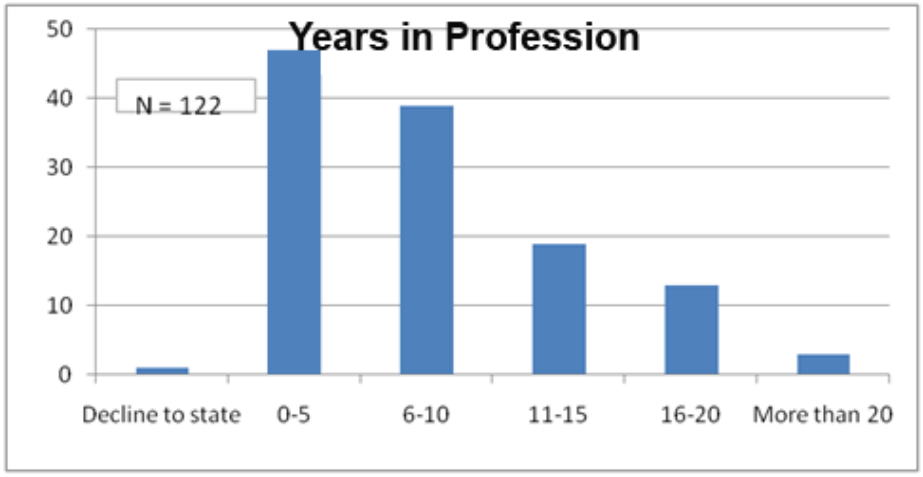

Figure 6. Years in Profession

Survey Topics Listings

Below are the complete topic listings as they appeared in the survey.

Topic ID	TEXT
1.	Anatomy and physiology
1.1.	Normal anatomy and physiology
1.1.1.	Do you establish fetal position?
1.1.2.	Do you assess fetal cardiac position/axis?
1.1.3.	Do you assess fetal abdominal situs?
1.1.4.	Do you demonstrate a fetal cardiac four-chamber view?
1.1.5.	Do you demonstrate apical four chamber view?
1.1.6.	Do you demonstrate subcostal 4 chamber view?
1.1.7.	Do you demonstrate a fetal cardiac five-chamber view?
1.1.8.	Do you demonstrate a fetal long axis view of the aorta?
1.1.9.	Do you demonstrate a fetal long axis view of the pulmonary artery?
1.1.10.	Do you attempt to demonstrate the spatial (criss-cross) relationship of the great arteries?
1.1.11.	Do you demonstrate a short axis view of the great vessels?
1.1.12.	Do you demonstrate a short axis view of the ventricles?
1.1.13.	Do you demonstrate the aortic arch?
1.1.14.	Do you demonstrate the ductal arch?
1.1.15.	Do you demonstrate the Inferior vena cava?
1.1.16.	Do you demonstrate the superior vena cava?
1.1.17.	Do you demonstrate the pulmonary veins?
1.1.18.	Do you demonstrate the foramen ovale?
1.1.19.	Do you demonstrate the three-vessel view (aorta, pulmonary artery, superior vena cava)?
1.1.20.	Do you demonstrate the number of umbilical cord vessels?
1.1.21.	Do you assess gestational age?
1.1.22.	Do you use chromosomal anomalies as an indication for performing fetal echocardiography exams?
1.1.23.	Do you use family history as an indication for performing fetal echocardiography exams?
1.2.	Organ development
1.2.1.	Do you use fetal arrhythmias as an indication for performing fetal echocardiography exams?
2.	Pathology
2.1.	Congenital anomalies
2.1.1.	Do you use fetal extracardiac malformations as an indication for performing fetal echocardiography exams?

Topic ID	TEXT
2.1.2.	Do you use genetic syndromes as an indication for performing fetal echocardiography exams?
2.1.3.	Do you use hydrops as an indication for performing fetal echocardiography exams?
2.1.4.	Do you use suspected cardiac abnormality on an outside scan as an indication for performing fetal echocardiography?
2.1.5.	Do you use thickened nuchal lucency as an indication for performing fetal echocardiography?
2.1.6.	Do you use two-vessel umbilical cord as an indication for performing fetal echocardiography?
2.1.7.	Have you identified a fetus with aortic valve stenosis?
2.1.8.	Have you identified a fetus with aortic valve dysplasia?
2.1.9.	Have you identified a fetus with mitral valve stenosis?
2.1.10.	Have you identified a fetus with mitral valve dysplasia?
2.1.11.	Have you identified a fetus with tricuspid valve stenosis?
2.1.12.	Have you identified a fetus with tricuspid valve dysplasia?
2.1.13.	Have you identified a fetus with Ebstein anomaly?
2.1.14.	Have you identified a fetus with a ventricular septal defect?
2.1.15.	Have you identified a fetus with an atrial septal defect?
2.1.16.	Have you identified a fetus with an atrioventricular septal defect?
2.1.17.	Have you identified a fetus with hypoplastic left heart syndrome?
2.1.18.	Have you identified a fetus with a hypoplastic right heart (tricuspid atresia and variants)?
2.1.19.	Have you identified a fetus with a single ventricle?
2.1.20.	Have you identified a fetus with d-Transposition of the Great Arteries (d-TGA)?
2.1.21.	Have you identified a fetus with l-Transposition of the Great Arteries (l-TGA))?
2.1.22.	Have you identified a fetus with truncus arteriosus?
2.1.23.	Have you identified a fetus with Tetralogy of Fallot?
2.1.24.	Have you identified a fetus with double outlet right ventricle?
2.1.25.	Have you identified a fetus with coarctation of the aorta?
2.1.26.	Have you identified a fetus with pulmonary valve atresia?
2.1.27.	Have you identified a fetus with a tumor / mass?
2.1.28.	Have you identified a fetus with complete heart block?
2.1.29.	Do you use oligohydramnios as an indication for performing fetal echocardiography exams?
2.1.30.	Do you use polyhydramnios as an indication for performing fetal echocardiography exams?
2.1.31.	Do you use pulsed-wave Doppler to assess flow across/within an aortic regurgitation or stenosis?
2.2.	Abnormal physiology
2.2.1.	Do you use pulsed-wave Doppler to assess flow across/within a pulmonary regurgitation or stenosis?

Topic ID	TEXT
2.2.2.	Do you use pulsed-wave Doppler to assess flow across/within a tricuspid regurgitation or stenosis?
2.2.3.	Do you use pulsed-wave Doppler to assess flow across/within a mitral regurgitation or stenosis?
2.2.4.	Do you use pulsed-wave Doppler as part of the fetal echocardiogram to assess valve stenosis?
2.2.5.	Do you use pulsed-wave Doppler as part of the fetal echocardiogram to assess valve regurgitation?
2.2.6.	Do you use pulsed-wave Doppler as part of the fetal echocardiogram to assess intracardiac shunts?
2.2.7.	Do you use continuous wave Doppler as part of the fetal echocardiogram to assess valve regurgitation?
2.2.8.	Do you use continuous wave Doppler as part of the fetal echocardiogram to assess valve stenosis?
2.2.9.	Do you use continuous wave Doppler as part of the fetal echocardiogram to assess intracardiac shunts?
2.2.10.	Do you use color flow Doppler as part of the fetal echocardiogram to assess valve regurgitation?
2.2.11.	Do you use color flow Doppler as part of the fetal echocardiogram to assess valve stenosis?
2.2.12.	Do you use color flow Doppler as part of the fetal echocardiogram to assess intracardiac shunts?
2.2.13.	Have you identified a fetus with aortic valve regurgitation?
2.2.14.	Have you identified a fetus with mitral valve regurgitation?
2.2.15.	Have you identified a fetus with tricuspid valve regurgitation?
2.2.16.	Have you identified a fetus with pulmonary valve regurgitation?
2.2.17.	Have you identified a fetus with pulmonary valve stenosis?
2.2.18.	Have you identified a fetus with pulmonary valve dysplasia?
2.2.19.	Have you identified a fetus with a pulmonary venous anomaly?
2.2.20.	Have you identified a fetus with a systemic venous anomaly?
2.2.21.	Were less than 50 percent of fetal echocardiograms in your lab performed to evaluate for a fetal arrhythmia?
2.2.22.	Have you identified a fetus with premature atrial contractions?
2.2.23.	Have you identified a fetus with premature ventricular contractions?
2.2.24.	Have you identified a fetus with atrial flutter?
2.2.25.	Have you identified a fetus with supraventricular tachycardia?
2.2.26.	Have you identified a fetus with ventricular tachycardia?
2.2.27.	Have you identified a fetus with bradycardia?
2.2.28.	Do you use IUGR as an indication for performing fetal echocardiography exams?
2.2.29.	Have you identified a fetus with a hypertrophic cardiomyopathy?
2.2.30.	Have you identified a fetus with a dilated cardiomyopathy?
2.2.31.	Do you use maternal drug exposure as an indication for performing fetal echocardiography exams?

Topic ID	TEXT
2.3.	Abnormal Perfusion and function
2.3.1.	Do you use maternal indications (diabetes, lupus, PKU, etc.) as an indication for performing fetal echocardiography exams?
2.3.2.	Do you routinely include m-mode as part of the fetal echocardiogram?
2.3.3.	Do you use m-mode as an important diagnostic component to evaluate chamber/vessel dimensions?
3.	Integration of data
3.1.	Incorporate outside data (Clinical assessment, H and P, Lab Values)
3.1.1.	Do you use m-mode as an important diagnostic component to evaluate fetal arrhythmias?
3.1.2.	Do you use m-mode as an important diagnostic component to evaluate fetal congenital heart disease?
4.	Protocols
4.1.	Clinical standards and guidelines
4.1.1.	Do you use m-mode as an important diagnostic component to evaluate pericardial effusions?
4.1.2.	Do you use harmonic imaging as part of the fetal echocardiogram?
4.1.3.	Do you routinely demonstrate the right atrium?
4.1.4.	Do you routinely demonstrate the right ventricle?
4.1.5.	Do you routinely demonstrate the left atrium?
4.1.6.	Do you routinely demonstrate the left ventricle?
4.1.7.	Do you routinely demonstrate the tricuspid valve?
4.1.8.	Do you routinely demonstrate the mitral valve?
4.1.9.	Do you routinely demonstrate the pulmonary valve?
4.1.10.	Do you routinely demonstrate the aortic valve?
4.1.11.	Do you routinely demonstrate the main pulmonary artery?
4.1.12.	Do you routinely demonstrate the branch pulmonary arteries?
4.1.13.	Do you routinely demonstrate the pulmonary veins?
4.1.14.	Do you routinely demonstrate the atrial septum and foramen ovale?
4.1.15.	Do you routinely demonstrate the ventricular septum?
4.1.16.	Do you routinely demonstrate the Inferior vena cava?
4.1.17.	Do you routinely demonstrate the superior vena cava?
4.1.18.	Do you routinely demonstrate the coronary sinus?
4.1.19.	Do you routinely demonstrate the aortic arch?
4.1.20.	Do you routinely demonstrate the ductal arch?
4.1.21.	Do you routinely demonstrate the brachiocephalic vessels?
4.1.22.	Do you routinely demonstrate the left ventricular outflow tract?
4.1.23.	Do you routinely demonstrate the right ventricular outflow tract?
4.1.24.	Do you routinely demonstrate the umbilical cord vessels?
4.1.25.	Do you routinely demonstrate the abdominal organs / situs (stomach, liver, spleen)?
4.1.26.	Do you routinely demonstrate the foramen ovale?

Topic ID	TEXT
4.1.27.	Do you routinely demonstrate the moderator band?
4.1.28.	Do you routinely demonstrate the papillary muscles?
4.1.29.	Do you use m-mode as an important diagnostic component to evaluate fetal heart rate?
4.1.30.	Do you use m-mode as an important diagnostic component to evaluate fetal cardiomyopathies?
4.1.31.	Do you use continuous wave Doppler as part of the fetal echocardiogram to assess pericardial effusion?
4.1.32.	Do you routinely measure fetal heart rate as part of the fetal echocardiogram?
4.2.	Measurement techniques
4.2.1.	Do you routinely measure LV shortening fraction as part of the fetal echocardiogram?
4.2.2.	Do you routinely measure LV ejection fraction as part of the fetal echocardiogram?
4.2.3.	Do you routinely measure RV shortening fraction as part of the fetal echocardiogram?
4.2.4.	Do you routinely measure RV ejection fraction as part of the fetal echocardiogram?
4.2.5.	Do you routinely use two-dimensional measurements of the aortic valve annulus?
4.2.6.	Do you routinely use two-dimensional measurements of the pulmonary valve annulus?
4.2.7.	Do you routinely use two-dimensional measurements of the mitral valve annulus?
4.2.8.	Do you routinely use two-dimensional measurements of the tricuspid valve annulus?
4.2.9.	Do you routinely use two-dimensional measurements of the main pulmonary artery?
4.2.10.	Do you routinely use two-dimensional measurements of the branch pulmonary arteries?
4.2.11.	Do you routinely use two-dimensional measurements of the aortic arch?
4.2.12.	Do you routinely use two-dimensional measurements of the ductal arch?
4.2.13.	Do you routinely use two-dimensional measurements of the chamber size?
4.2.14.	Do you routinely use two-dimensional measurements of the ventricular septal and wall thickness?
4.2.15.	Do you use three-dimensional ultrasound?
4.2.16.	Do you use compound imaging as part of the fetal echocardiogram?
4.2.17.	Do you use pulsed-wave Doppler to assess flow across/within the mitral valve?
4.2.18.	Do you use pulsed-wave Doppler to assess flow across/within the aortic valve?
5.	Physics and instrumentation
5.1.	Imaging instruments
5.1.1.	Do you use pulsed-wave Doppler to assess flow across/within the pulmonary valve?
5.1.2.	Do you use pulsed-wave Doppler to assess flow across/within the Inferior vena cava?
5.2.	Hemodynamics
5.2.1.	Do you use pulsed-wave Doppler to assess flow across/within the superior vena cava?
5.2.2.	Do you use pulsed-wave Doppler to assess flow across/within the ductus venous?
5.2.3.	Do you use pulsed-wave Doppler to assess flow across/within the aortic arch?
5.2.4.	Do you use pulsed-wave Doppler to assess flow across/within the ductal arch?
5.2.5.	Do you use pulsed-wave Doppler to assess flow across/within the foramen ovale?
5.2.6.	Do you use pulsed-wave Doppler to assess flow across/within the umbilical artery?

Topic ID	TEXT
5.2.7.	Do you use pulsed-wave Doppler to assess flow across/within the umbilical vein?
5.2.8.	Do you use pulsed-wave Doppler to assess flow across/within the middle cerebral artery?
5.2.9.	Do you perform pulsed-wave Doppler proximal to cardiac valves?
5.2.10.	Do you perform pulsed-wave Doppler distal to cardiac valves?