

# Women Vascular Surgeons and Radiation Survey

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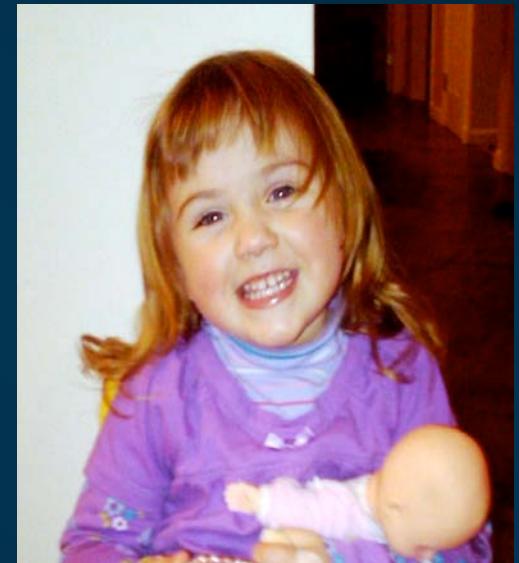


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Paolo age 7  
Present and participated in 6 EVAR



Chiara age 3.5  
Present and participated in 4 EVAR and 5 TEVAR



# Common Facts

- **Effects of Ionizing Radiation on the Fetus**
  - derived from animal studies
  - human exposures to diagnostic and therapeutic radiation
  - human exposure to atomic bomb radiation
    - 1945 Hiroshima and Nagasaki
    - 1986 fallout of the Chernobyl nuclear power plant explosion



# Risks of Ionizing Radiation During Pregnancy

- Related to the stage of pregnancy and adsorbed dose\*
- More significant during organogenesis and in the early fetal period, somewhat less in the 2nd trimester, and least in the 3rd trimester



\* "Radiation Exposure and Pregnancy." Health Physics Society Fact Sheet found at <http://hps.org/publicinformation/ate/faqs/pregnancyandradiationexposure.html>

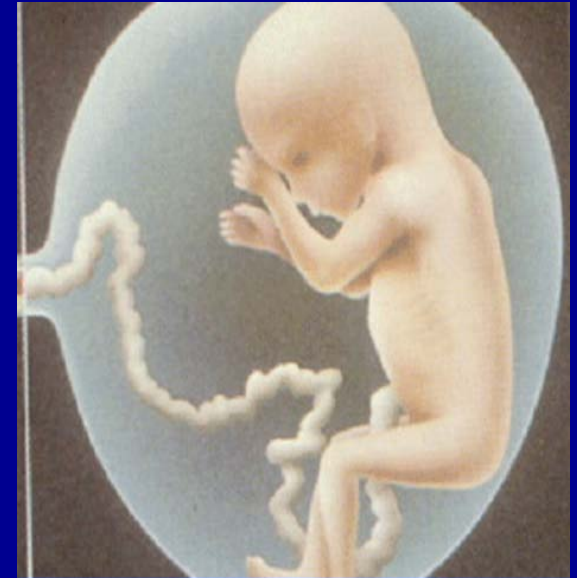


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# Effects of Ionizing Radiation on the Fetus

- Vary depending on the fetal stage of development and the magnitude of the doses\*
- Different effects at each time frame during pregnancy\*\*
  - growth retardation, malignancies, and neurological effects such as small head size, severe mental retardation, intellectual deficit, and seizures \*\*\*



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\* Osei EK, et al. The British Journal of Radiology, 72 (1999), 773-780.

\*\* Otake M, et al. RERF TR2-88. Japan: Radiation Effects Research Foundation, 1988.

\*\*\* National Radiological Protection Board. Doc NRPB 1993;4:7-14.



# The Department of Health Recommendations

## Dose Equivalent to Embryo/ Fetus

- “ the licensee or registrant shall ensure that the dose equivalent to an embryo/fetus during the entire pregnancy, due to the occupational exposure of a declared pregnant woman, does not exceed five millisieverts (0.5 rems).”
- “The licensee or registrant shall make efforts to avoid substantial variation above a uniform monthly exposure rate to a declared pregnant woman so as to satisfy the limit in 105 CMR 120.218 (A).”



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The Department of Health Recommendations  
120.218: Dose Equivalent to an Embryo/Fetus. 105  
CMR-320: Department of Public Health.



# General Requirements Regarding Administrative Controls

- Fetal dose is influenced by operational factors
  - settings used on the automatic dose rate control system
  - magnification will reduce the field of view of the intensifier and the dose rate to the patient will increase
  - quality of the tube
  - electronic gain controls
  - methods used by the manufacturer to control image clarity and dose rates\*



# The Pregnant Operator

- Careful planning, understanding of the risks, and minimization of radiation dose can address many concerns regarding the pregnant operator
- Education should be readily available to every woman operator of child-bearing potential.



# The Pregnant Operator

- In most cases, pregnant operators may safely perform procedures without the risk of fetal injury or death.
- In general, malformations only occur above a threshold dose of 100-200 mGy (10,000-20,000 mrem) during a pregnancy\*
- All institutions are required to publish radiation safety standard operating procedures concerning pregnant operators
  - state-to-state differences



# The Pregnant Operator

- Once a pregnancy declaration is made, or even before in some cases, the employee can request an additional badge to monitor fetal radiation.
- This ‘abdominal’ badge (or ‘fetal’ badge) is worn in addition to the standard badge and is secured to the lower abdomen under a lead apron to estimate the dose received by fetus when protected by lead.



# Effort to Reduce Exposure

- Radiation dose is cumulative
- Minimizing fluoroscopy time
- Careful case planning to reduce unnecessary imaging, or using ultrasound guidance when possible, may be used as long as it does not affect patient care or interventional outcomes
- Stepping away (ideally more than six feet) away from the table, or even into the anteroom, during imaging runs



# Effort to Reduce Exposure

- Doubling the distance between the operator and the radiation source will reduce the exposure by 4.
- If the pregnant operator cannot step away from the table, movable lead shields should be employed and placed between the x-ray beam and the operator
- Collimation of the radiographic beam by using metal tubes, cones or diaphragms



# ALARA

- **The principle of ALARA (as low as reasonably achievable)**
- **Important practice in both pregnant and non-pregnant operators**
- **Reduce time and distance from the radiation source**



# Program Guidelines for Pregnant Vascular Surgeons, Fellows and Residents

- In 2010, over half of the medical students are women
- Standard guidelines are important
- Despite the fact that women comprise approximately 50% of the average graduates they still occupy fewer than 25% of training positions in general surgery and less than 20% of the vascular fellowship positions



# New Paradigm of Training in Vascular Surgery

- Attempt to increase the number of female vascular residents or fellows
- More efficient in instructing the vascular and endovascular surgery of today
- Hopefully be more attractive to women and men as it shortens considerably the years of training
  - only 18 female students that applied for the vascular residency in 2008; number almost doubled in 2009 with 33 female applications



# Written Policies Regarding Pregnancy and Vascular Training

- Lack of written policies causes confusion and frustration among candidates applying for and those already participating in a residency program.
- Standardized policies to protect pregnant female residents, at least during the crucial weeks of gestation
- Written information regarding pregnancy and radiation can address concerns up front and prevent loss of potential candidates who are qualified to enter vascular residencies
  - recent survey among female medical students
  - 31% expressed concerns regarding exposure to radiation that might affect their health and their childbearing potential



# Written Policies Regarding Pregnancy and Vascular Training

- Reticent to ask about the existence of such a policy within the program fearing that would affect ranking
- Program that is viewed by women and men as “family friendly” and sensitive to work-family issues would be more attractive to the current generation of candidates
- IDEAL: clearly written safety guidelines regarding the amount of radiation permissible during pregnancy and options for fair redistribution of duties and rotations during pregnancy will guide residents throughout these years



# Proposed Program Guidelines for Pregnant Radiology Residents:

A project supported by the American Association for Women Radiologists and the Association of Program Directors in Radiology.<sup>1</sup>

Meghan E. Blake, MD, M. Elizabeth Oates, MD, Kimberly Applegate, MD, MS, Ewa Kuligowska, MD

**A clear acceptance of this type of policy by Vascular Surgery leadership will send a strong message to others**



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# A Proposal for Development of Guidelines

- The development of guidelines can be initiated through the Program Directors of Vascular Surgery
- Contribution from the directors of the training programs is critical to developing fair and balanced guidelines and eventual implementation by the Society of Vascular Surgery



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# First Step in Developing of Guidelines

- **Survey of**
  - female trainees
  - established female vascular surgeons
  - program directors in vascular surgery
- **to determine current practices with respect to pregnancy and radiation exposure guidelines**



# Radiation Safety Survey of APDVS Members

Trainee Radiation Exposure During Pregnancy



1. Please answer the following questions regarding your institution's current policies on radiation exposure for pregnant trainees/radiation workers.

99 PD's

	Yes	No	Don't Know	Response Count
Does your program currently have a written policy, a set of guidelines or offer other special accommodations, for pregnant residents or fellows (e.g., scheduling, rotations) exposed to radiation?	28.1% (9)	53.1% (17)	18.8% (6)	32
Does your institution and/or department have a written policy applicable to other pregnant radiation workers (faculty radiologists, vascular surgeons, technologists, etc.)?	40.6% (13)	21.9% (7)	37.5% (12)	32
			answered question	32
			skipped question	0



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# Radiation Safety Survey of APDVS Members

Have pregnant F/R expressed concerns?

Can Pregnant F/R receive counseling re: rad exposure?

Are fluoro limits set for pregnant trainees?

Access to additional means of rad reduction?

Access to additional means of monitoring?

Would allow trainee to alter her schedule?

2. Please answer the following questions regarding pregnant residents/fellows in your program. If your program has not had any pregnant trainees to base your judgment, select N/A.

	Yes	No	Don't Know	N/A	Response Count
Have pregnant residents/fellows expressed concerns to you over radiation exposure?	28.1% (9)	31.3% (10)	0.0% (0)	40.6% (13)	32
Can pregnant Vascular Surgery trainees receive counseling regarding radiation exposure to the fetus from a medical physicist and/or faculty member at your institution?	71.9% (23)	0.0% (0)	9.4% (3)	18.8% (6)	32
Are limits or restrictions placed on fluoroscopy and/or interventional work for pregnant Vascular Surgery trainees?	25.0% (8)	25.0% (8)	21.9% (7)	28.1% (9)	32
Do the pregnant trainees or other personnel at your institution have access to any additional means of radiation reduction (e.g., double-lead aprons, pregnancy lead)?	71.9% (23)	3.1% (1)	6.3% (2)	18.8% (6)	32
Do the pregnant trainees or other personnel at your institution have access to any additional means of monitoring (e.g., extra dosimeter badges or fetal badge)?	68.8% (22)	0.0% (0)	12.5% (4)	18.8% (6)	32
Would you allow a pregnant trainee to change her rotation schedule to minimize radiation exposure?	75.0% (24)	3.1% (1)	3.1% (1)	18.8% (6)	32

9/32

23/32

8/32

23/32

22/32

24/32

Comments

7

answered question

32

skipped question

0



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# Radiation Safety Survey of APDVS Members

3. Please answer the following questions regarding the development of future policies/guidelines regarding radiation exposure of pregnant trainees.

	Yes	No	Don't Know	Response Count
Do you support development of a national "standard" policy or set of guidelines—regarding pregnancy during vascular surgery residency/fellowship?	75.0% (24)	12.5% (4)	12.5% (4)	32
Would you incorporate into your program, either in part or in whole, such a national "standard" policy or set of guidelines?	81.3% (26)	6.3% (2)	12.5% (4)	32
			Comments	6
			answered question	32
			skipped question	0



# Radiation Safety Survey of APDVS Members

## 2. Please answer the following questions regarding pregnant residents/fellows

Comments		
1	Recent experience with two pregnant fellows	Nov 5, 2010 3:08 PM
2	Recent experience with two pregnant fellows	Nov 5, 2010 3:08 PM
3	2c: fellow would have to declare pregnancy officially	Nov 5, 2010 3:40 PM
4	Ohio state law requires any employee who is exposed to radiation review a 2-hour training video and we have instituted a seperate meeting with our hospital physicist to discuss the hazards	Nov 5, 2010 3:53 PM
5	We have had trainees who were pregnant and arranged rotations accordingly. Also arranged meeting with RSO so appropriate monitoring is done	Nov 5, 2010 6:19 PM
6	we have never had a pregnant trainee.	Nov 5, 2010 6:33 PM
7	We had 2 residents in the last year	Nov 18, 2010 3:13 PM




# Radiation Safety Survey of SVS Female Members

Radiation and Pregnancy



## 1. Choose your practice setting.

		Response Percent	Response Count
	<b>Academic Practice</b>	52.8%	28
	Private Practice/Teaching Program	9.4%	5
	Private Practice/No Resident or Fellow Interaction	17.0%	9
	Currently in a Vascular Surgery Fellowship/Residency	15.1%	8
	Other	5.7%	3
		<b>answered question</b>	<b>53</b>
		<b>skipped question</b>	<b>0</b>



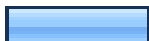



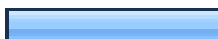

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Survey sent to 181 female vascular surgeons



# Radiation Safety Survey of SVS Female Members


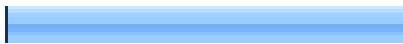
## 2. How long have you practiced?

		Response Percent	Response Count
Currently in a vascular surgery fellowship/residency		17.0%	9
Less than 1 year		3.6%	2
 1 to 5 years		37.7%	20
5 to 15 years		26.4%	14
15 to 30 years		15.1%	8
More than 30 years		0.0%	0
		<b>answered question</b>	<b>53</b>
		<b>skipped question</b>	<b>0</b>



# Radiation Safety Survey of SVS Female Members

3. Were you pregnant during your training or practice as a vascular surgeon?

		Response Percent	Response Count
Yes		52.8%	28
No		47.2%	25
answered question			53
skipped question			0



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# Radiation Safety Survey of SVS Female Members

Were you pregnant during your vascular training?

Did you perform Endo procedures during pregnancy?

Did you feel supported by institution during pregnancy to monitor flouro exposure?

Did you wear fetal badge?

Any complications that altered daily routine (skip procedures or limit call)?

Did your program support you?

Were you treated fairly during pregnancy?

Work accommodations made to allow you to perform s/ stress on Fetus?

## 4. Please answer the following questions related to your experience as a pregnant vascular trainee.

	Yes	No	Don't know/No answer	Response Count
Were you pregnant during your vascular training?	48.1% (13)	48.1% (13)	3.7% (1)	27
Did you perform endovascular procedures during the pregnancy?	68.4% (13)	10.5% (2)	21.1% (4)	19
Did you feel supported by your institution during the pregnancy to monitor your flourosopic exposure (i.e counseling by a physicist)?	44.4% (8)	33.3% (6)	22.2% (4)	18
Did you wear a fetal badge (an extra badge at waist line under lead)?	42.1% (8)	36.8% (7)	21.1% (4)	19
Were there any complications during the pregnancy that caused you to alter your daily routine as an endovascular specialist (i.e stop doing those procedures or limit call)?	5.3% (1)	73.7% (14)	21.1% (4)	19
Did your program support you?	63.2% (12)	10.5% (2)	26.3% (5)	19
Did you feel you were treated fairly during the pregnancy?	68.4% (13)	5.3% (1)	26.3% (5)	19
Were accommodations made to allow you to perform to the best of your ability without putting excessive stress on the pregnancy/fetus?	52.6% (10)	26.3% (5)	21.1% (4)	19
			Comments	11
			answered question	27
			skipped question	26

27/27

19/27

18/27

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19/27

19/27



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# Radiation Safety Survey of SVS Female Members

Have you been pregnant while in practice?

Did you perform Endo procedures during pregnancy?

Did you feel supported by institution during pregnancy to monitor fluoro exposure?

Did you wear fetal badge?

Any complications that altered daily routine (skip procedures or limit call)?

Did your program support you?

Were you treated fairly during pregnancy?

Work accommodations made to allow you to perform s/ stress on Fetus?

## 5. Please answer the following questions related to your experience as a pregnant vascular surgeon.

	Yes	No	Don't know/No answer	Response Count
Have you been pregnant while in practice?	82.1% (23)	17.9% (5)	0.0% (0)	28
Did you perform endovascular procedures during the pregnancy?	81.5% (22)	7.4% (2)	11.1% (3)	27
Did you feel supported by your institution during the pregnancy to monitor your fluoroscopic exposure (i.e. counselling by a physicist)?	51.9% (14)	33.3% (9)	14.8% (4)	27
Did you wear a fetal badge (an extra badge at waist line under lead)?	50.0% (13)	34.6% (9)	15.4% (4)	26
Were there any complications during the pregnancy that caused you to alter your daily routine as an endovascular specialist (i.e. stop doing those procedures or limit call)?	14.8% (4)	74.1% (20)	11.1% (3)	27
Did your program support you?	66.7% (18)	18.5% (5)	14.8% (4)	27
Did you feel you were treated fairly during the pregnancy?	76.9% (20)	11.5% (3)	11.5% (3)	26
Were accommodations made to allow you to perform to the best of your ability without putting excessive stress on the pregnancy/fetus?	40.7% (11)	37.0% (10)	22.2% (6)	27
			Comments	12
			answered question	28
			skipped question	25

28/28

27/28

27/28

26/28

27/28

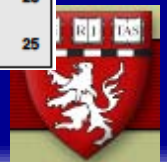
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26/28

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# Radiation Safety Survey of SVS Female Members

**6. Whether or not you were yourself pregnant during training or practice, please answer the following questions:**

	Yes	No	Don't know/No answer	Response Count
Do you feel that establishment of guidelines for pregnant trainees/attendings in Vascular Surgery would be helpful?	90.6% (48)	7.5% (4)	1.9% (1)	53
Do you feel that establishment of a transparent policy for radiation safety for trainees during pregnancy would aid in the recruitment of talented women into the field?	77.4% (41)	20.8% (11)	1.9% (1)	53
Do you feel that a radiation policy accepted and supported by the leadership of the Society for Vascular Surgery would be helpful and encouraging to those women who are pregnant or planning to become pregnant during training or practice?	90.6% (48)	3.8% (2)	5.7% (3)	53
			Comments	21
			answered question	53
			skipped question	0




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# Radiation Safety Survey of SVS Female Members

1. Please answer the following questions related to your experience as a

## Comments

- |   |  |                      |
|---|--|----------------------|
| 1 | Still delivered quite early and found that RRC limited maternity leave to 6 wks.   | Oct 22, 2010 8:57 PM |
| 2 | I had absolutely no support from radiation safety. In addition there is very little information out there regarding proper protection and risks for pregnant vascular surgeons. I took no extra precautions for either pregnancy and performed procedures up until my delivery day both times. This is a new issue for vascular specialists, as it was not a risk for the prior generation of vascular surgeons. | Oct 22, 2010 9:08 PM |
| 3 |  I think your survey should also include whether residents use community lead or have personal lead and if they know whether that lead is periodically checked for cracks or damage. I frequently worry that residents are getting more exposure than faculty by using old damaged community OR lead.                            | Oct 22, 2010 9:29 PM |
| 4 | I didn't feel comfortable over 18 years ago telling my program that I was pregnant, I just used extra lead and tried to keep a distance. Now our fellows are much more supported by the program.   | Oct 22, 2010 9:32 PM |





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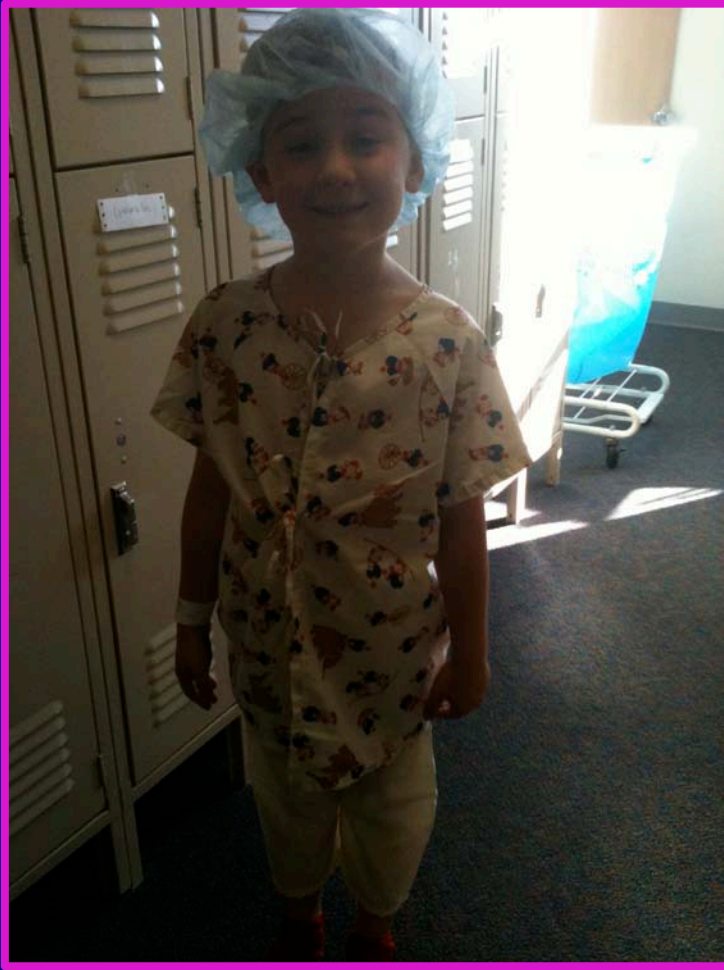
# Radiation Safety Survey of SVS Female Members

## 1. Whether or not you were yourself pregnant during training or practice, please

	Comments	
18	 I am glad you are doing this. My program director told me more than once that he did not know what to do with me. He was concerned about my radiation exposure in an abstract way, but placed the burden on me to deal with it without any support in place to do so. For example, I was doing a bypass with my program director and another fellow. My staff was out of the room when it came time to do the completion angio. I asked the other fellow to do it while I stepped outside of the room. When my staff arrived during the completion angio, he didn't understand why i was standing outside the room while it was being performed. As the senior fellow, I was "in charge" and had to supervise the junior fellow (who was very competent by the way). I was pregnant, he was the staff - I felt he should have stepped in to help the other fellow (if he needed it) and let me leave for 10 minutes to protect my baby. I was annoyed particularly in light of the fact that we had just had the conversation in which he said, "he has no experience with pregnancy and radiation, his counts are always high, do what u need to do."	Oct 27, 2010 3:23 PM
19	Do other specialties have already established guidelines? Cardiology, IR, gastroenterology and urology are all areas that involve the significant use of radiation.	Oct 27, 2010 4:13 PM
20	this is much needed	Oct 27, 2010 4:47 PM
21	 yes this would be great, it would have to have the buy in and strong support of the SVS male members/leadership. I was very lucky at my program, but i've heard of many others not quite so lucky and supported	Nov 14, 2010 3:38 AM



# Comments or Questions?



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# A Proposal for Development of Guidelines

- **The following principles should be considered**
  - **Clear definition of occupational radiation dose limits during the 9- months of pregnancy**
  - **Strict measures to decrease exposure during fluoroscopic procedure/exam including**
    - **availability of maternity aprons to pregnant residents**
    - **Encouragement of low magnification use during the procedures and collimation.**
    - **Strict dosimetry and monitoring utilizing fetal monitoring badge and badge under lead in accordance with ALARA principles.**



# A Proposal for Development of Guidelines (con't)

- Delineation of resident role when pregnant and redistribution of responsibilities
  - pregnant residents should be reassigned to rotations not exposed to significant radiation at least for the crucial gestational weeks
- Pregnant residents should be expected to participate fully in the residency
  - adjustments in rotation schedule with an effort made to not detract from their experience or that of their co-residents
  - all residents should be expected to make up for missed rotations and calls during pregnancy or maternity leave before they complete their training.



# Radiation Safety Survey of SVS Female Members

## 1. Please answer the following questions related to your experience as a

	Comments	
5	Did Gen surg residency at ECU in Greenville, NC - Vascular attendings were great about supporting me (pregnant chief yr). Did Vasc Fellowship in Albany - All attendings were extremely supportive about radiation safety and allowed me to continue to practice if safety measures were taken for myself and baby. Great experience.	Oct 22, 2010 9:50 PM
6	I was pregnant my research year, but took call once a month. I requested not to do any endo cases and that was fully supported by my faculty and colleagues.	Oct 23, 2010 1:29 AM
7	There were no complications that caused me to my routine, but I did alter it (i.e. limit number of endo cases, extra lead, etc.)	Oct 24, 2010 6:16 AM
8	My fellowship program was very supportive during my pregnancy. I was pregnant during the last 6 months of my fellowship. I did not notify my program until I was 5 months pregnant.	Oct 25, 2010 6:20 PM
9	I did not receive individual counseling, rather I had to read some material prior to being assigned a fetal badge. To obtain a fetal badge, I had to inform my program director which I felt was unfair. I did not intend to tell him until after my first trimester had passed. My program stated they supported me, but I was not allowed to limit my cases. For example, I wanted to avoid cases that were purely diagnostic such as preop angiograms or lysis checks where no intervention was anticipated. Some staff were fine with it, others no.	Oct 27, 2010 3:13 PM
10	I was very lucky and supported. I was a 2nd year fellow and the 2nd half of the year I was pregnant. 2nd year is our "open" year, 1st year is our "endo" year, so I wasn't expected to do many endo cases, but there were some to be done. I did a few cases, wore double lead and as soon as I told the faculty they told me not to do any endo cases unless I really wanted to. They never pressured me to do an endo case, although I did pressure myself a few times when things were really busy and I knew it would really help.	Nov 14, 2010 3:37 AM
11	We were never counseled at any point about radiation during our fellowship and did not have badges. When I approached the physicists, they were shocked! I got a badge which I wore sometimes. I also wore two pieces of lead.	Dec 1, 2010 3:46 PM



# Radiation Safety Survey of SVS Female Members

## 2. Please answer the following questions related to your experience as a

	Comments	
3	<p>as with many practicing surgeons, I had a difficult pregnancy. I remember reading a study done by an ent doc a few years ago that suggested female surgeons have more pregnancy complications. I had early bleeding, required a month of bedrest at 14 weeks, followed by an ileofemoral dvt requiring lovenox for the remainder of my pregnancy, then preterm rupture of membranes, and delivery at 34 weeks via csection. My baby required bipap and got several intentional xrays after birth. I was diligent about radiation exposure, but did not alter my cases because I was pregnant. I used a shield when possible, made a conscious effort to use extension tubing and other measures to get farther from the II, and kept close tabs on my exposure badge results. I also hauled my personal lead to the two hospitals that we work at so I would not have to use "unchecked" community lead. One important thing that your questionnaire doesn't mention...is if women are getting their lead evaluated to make sure it is free of cracks and still protective. Community lead in the OR is often abused, improperly stored, and at risk to be damaged...thus not protective. I worry most about this with students and residents who do not own their own lead.</p> <p>Besides the time off for bedrest and avoidance of really long cases late in my pregnancy, I do not think I made any significant changes to my practice. I share call with 7 surgeons who allowed me to manipulate the call schedule so I could stack my weekend calls at the end of the year long after hte pregnancy was over. I gave a couple complex aortic reconstructions to my partners in the sixth and seventh months of my pregnancy. They were happy to do them. My senior partner also volunteered to assist me in a complex acutely thrombosed type IV TAAA I aquired on a call night.</p> <p>I'd be very curious to see the results of your survey. Please distribute when completed.</p>	Oct 22, 2010 9:29 PM
4	<p>I stopped doing endovascular procedures during my last month of pregnancy because of discomfort wearing lead. I stopped taking call at 36 weeks.</p>	Oct 23, 2010 12:22 AM



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# Radiation Safety Survey of SVS Female Members

- 5 I am currently 27 wk pregnant with my second pregnancy. I sought information from the consultant physicist and the radiation safety officer as well as searching information from the web and what literature was available. I also spoke to "MotherRisk--from the Toronto Hospital for Sick Children--an information line available for anyone with questions about teratogens in pregnancy. I obtained an extra half apron and have used an additional wheeled lead shield draped for sterility, which though uncomfortable, gives me additional reassurance. We do not have a ceiling mounted system and are using a C-arm, which is less than optimal. I avoided endovascular procedures during my first trimester. I was pregnant last year as well, but had a stillbirth at 37 1/2 wk NYD (child had duodenal atresia-not likely related to any fluoroscopic procedures). I also obtained a radiation badge from the radiation safety office in our Diagnostic Imaging department. My colleagues were supportive of whatever I wished to do. It was more difficult last year when I had not divulged my pregnancy. Oct 23, 2010 12:46 AM
- 6 I pretty much did the same things during the pregnancy. I did have a meeting with the radiation safety officers and they assured me and fetal monitoring was made me feel comfortable. Oct 24, 2010 5:01 PM
- 7 When I was 6 months pregnant my call was increased and I was forced to take Interventional Radiology Call. Oct 24, 2010 5:18 PM  
When I was 33 weeks pregnant, I had fetal decelerations and was hospitalized for 3 days. After this I obtained a note from my Obstetrician stating that I could not take call for the remainder of the pregnancy.



# Radiation Safety Survey of SVS Female Members

## 2. Please answer the following questions related to your experience as a

	Comments	
8	I spoke with a radiation physicist who provided counseling while pregnant. Wearing a fetal badge requires admission of pregnancy long before amniocentesis and/or establishment of a viable pregnancy. My program did not support me however in switching holiday call. My due date was the first week of January and I was scheduled for Christmas call. I spoke with my Chairman in August once my amnio was completed to request an earlier holiday call (Labor Day or Thanksgiving) and I was advised that it would likely not be possible to switch call.	Oct 25, 2010 3:14 AM
9	There was a dramatic shift in the practice during the last 3 months of my pregnancy making my workload very heavy and I was very busy yet I was left out of decision making for the division. There was a feeling that I was not included in decisions because "I would be on maternity leave for 2 months". I was marginalized significantly yet I was so busy clinically that I could not really assert myself as I wanted to.	Oct 25, 2010 6:20 PM
10	I took call and did cases until 3 days before I delivered- I went into right heart failure for 6 weeks after I delivered- I took 11 weeks off which was planned- my albumin at the time of delivery was 2.5- I was pre-eclamptic and did not appreciate it. I also was put on extra call the first month I came back to pay back- I negotiated to get it spread out over 6 months as I had a newborn- duh!	Oct 26, 2010 5:18 PM
11	I was still pregnant when I started as faculty (at the same institution where I did my fellowship) and did no endo cases, was very supported, and the last big case I did I actually got hypoglycemic about 5 hours into it and one of my partners scrubbed me out for 30 minutes so I could eat. I didn't do any more long cases after that and was very supported	Nov 14, 2010 3:37 AM
12	I absolutely hated having to do fluoro during my second pregnancy. On my first I didn't do any, but during the second the endovascular program took off and I felt that I needed to "keep up" I did all the things that you are supposed to do, but there was some protective "mother" thing in me that just felt like it was wrong.	Nov 20, 2010 10:19 PM



# Radiation Safety Survey of SVS Female Members

## 1. Whether or not you were yourself pregnant during training or practice, please

	Comments	
1	Women in vascular surgery is a reality and this is a HUGE concern for young women contemplating the field. I think SVS guidelines would establish a baseline.	Oct 22, 2010 9:00 PM
2	I think it depends on what the radiation policy would look like. If it recommends no or limited radiation exposure during pregnancy that is not practical. If it recommends and makes available additional lead protection or monitoring it would be extremely useful.	Oct 22, 2010 9:13 PM
3	I don't even know if there are policies for non-pregnant women. I should know this.	Oct 22, 2010 9:53 PM
4	I am 33 years old and I am planning in having family. I was surprised with the little education about radiation in general (radiation safety) we receive during training without even mentioning pregnancy....Now I am starting my practice and still don't know what to do during pregnancy. There are very few guidelines, if any, published about the topic.....	Oct 22, 2010 10:26 PM
5	I think that far too little teaching about personal safety is provided during training and in practice. Watching a 10 year old VHS tape about radiation safety was about what I had to do to get a certificate in my state. It was inadequate. Practical up-to-date information and tips from experts should be included not only in training programs but in SVS-sponsored educational programs and meetings. Thanks for doing this survey!	Oct 23, 2010 12:26 AM
6	Will the results of any surveys or recommendations be available to at least those of us who participated in the survey?	Oct 23, 2010 12:47 AM



# Radiation Safety Survey of SVS Female Members

## 1. Whether or not you were yourself pregnant during training or practice, please

	Comments	
7	This is a huge deal and I think a concern for many potential women medical students. I was pregnant during my training and got through it w/support of my faculty.	Oct 23, 2010 1:31 AM
8	I would suggest that you reach out to the interventional radiology community, the SIR, since they have been dealing with this for years. There is really no reason to reinvent the wheel. A specific person who might be helpful is Dr. Vicki Marx in Interventional Radiology at USC. She has been all over the radiation issue for years.	Oct 23, 2010 3:10 PM
9	This topic was a major concern of mine when deciding whether or not to do a vascular fellowship. And I receive a lot of questions from students and residents on this subject. A policy accepted by the SVS would definitely be helpful. Thanks.	Oct 24, 2010 6:23 AM
10	I suspect that most women that want to be a vascular surgeon and want to have a family will figure out how to do it. However, being sensitive to these concerns may help recruit a few more women into the field. Policies and required guidelines for trainees for women only may hinder instead of help the issue. Programs may not want to deal with trying to meet requirements and choose male over female applicants. Perhaps it would be better addressed by not separating out the women and having safety requirements for all trainees since we know this should be emphasized more anyway.	Oct 24, 2010 12:18 PM
11	What I know now is that as long as you practice and comply with radiation safety guideline, the fetal risk is minimal. Women who are pregnant do not have to do anything special. We can keep working just fine till the time of delivery.	Oct 24, 2010 5:03 PM
12	All institutions already have these policies in place, these are state laws.	Oct 24, 2010 11:33 PM
13	As a current fellow who is thinking about becoming pregnant in the future, I wish there were better established and easily available guidelines for residents and fellows in training. What I know, I have learned because I have asked female RNs and techs who have been pregnant while working in the cath labs.	Oct 24, 2010 11:44 PM
14	Radiation safety should be advocated for all. For most women, doing many of the things suggested like wearing a fetal badge, etc requires women to reveal pregnancy earlier than most women likely would do so. Is there good evidence based medicine on radiation exposure during pregnancy? My understanding is that most data is derived data from Hiroshima and Chernobyl.  I would support radiation guidelines that do not require a fetal badge or wearing an extra skirt (ie do not require divulging pregnancy early).	Oct 25, 2010 3:19 AM
15	This is a topic that sorely needs to be addressed as all of our types of training programs take place during child-bearing years. Our current integrated vascular residents, men included, are concerned about the radiation received even with our monitoring policies in place and the women feel especially vulnerable	Oct 25, 2010 1:37 PM
16	I wholeheartedly would support a statement or guidelines put out by the SVS in collaboration with radiation safety experts for women in vascular surgery. It would have been very helpful and reassuring to me to have a place to read about the safety issues during my pregnancy. As it was, I spent time reading information on my own but I still was very concerned about this issue.	Oct 25, 2010 6:22 PM
17	I think this would help to recruit women into vascular surgery	Oct 26, 2010 5:19 PM

