

# Thinking About Cardiology?

## A General Internist's Perspective

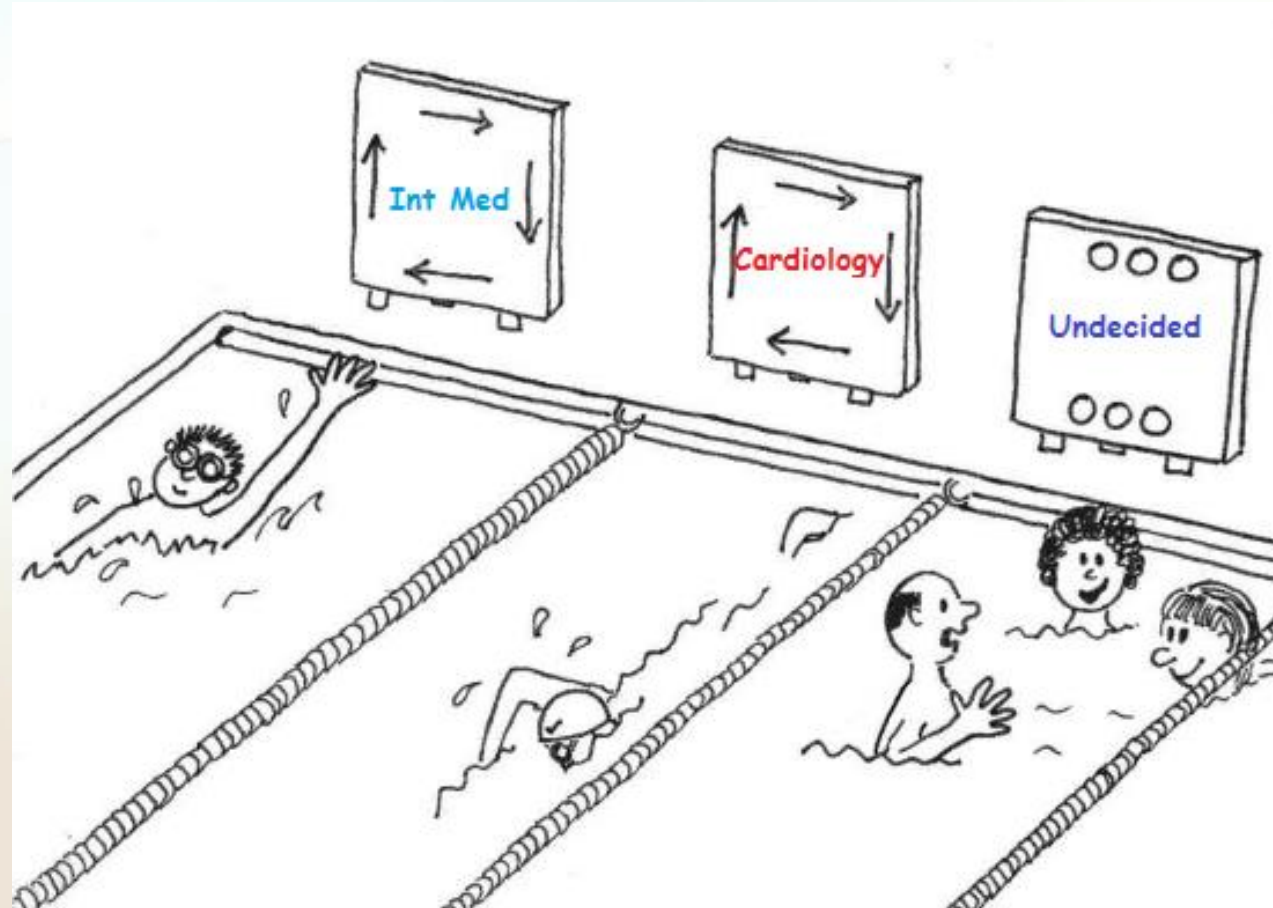
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# Caveat Emptor



# The Choices

Abdominal Transplant Surgery.....  
Adolescent Medicine.....  
Allergy and Immunology.....  
Brain Injury Medicine.....  
Breast Imaging.....  
**Cardiovascular Disease.....**  
Child Abuse.....  
Child and Adolescent Psychiatry.....  
Colon and Rectal Surgery.....  
Developmental and Behavioral Pediatrics.....  
Endocrinology, Diabetes, and Metabolism.....  
Female Pelvic Medicine and Reconstructive  
Surgery.....  
Gastroenterology.....  
Geriatric Medicine.....  
Gynecologic Oncology.....  
Hand Surgery.....  
Headache Medicine.....  
Hematology.....  
Hematology and Oncology.....  
Hospice and Palliative Medicine.....  
Infectious Disease.....  
Interventional Pulmonology.....  
Interventional Radiology.....  
Laryngology.....  
Maternal-Fetal Medicine.....  
Medical Genetics.....  
Medical Toxicology.....  
Minimally Invasive Gynecological Surgery.....  
Neonatal-Perinatal Medicine.....  
Nephrology.....  
Neuroradiology.....

Obstetric Anesthesiology.....  
Oncology.....  
Pain Medicine.....  
Pediatric Anesthesiology.....  
Pediatric Cardiology.....  
Pediatric Critical Care Medicine.....  
Pediatric Emergency Medicine.....  
Pediatric Endocrinology.....  
Pediatric Gastroenterology.....  
Pediatric Hematology/Oncology.....  
Pediatric Hospital Medicine.....  
Pediatric Infectious Diseases.....  
Pediatric Nephrology.....  
Pediatric Pulmonology.....  
Pediatric Rehabilitation Medicine.....  
Pediatric Rheumatology.....  
Pediatric Sports Medicine.....  
Pediatric Surgery.....  
Pediatric and Adolescent Gynecology.....  
Psychosomatic Medicine.....  
Pulmonary Disease.....  
Pulmonary Disease and Critical Care Medicine.....  
Reproductive Endocrinology.....  
Rheumatology.....  
Sleep Medicine.....  
Spinal Cord Injury Medicine.....  
Sports Medicine.....  
Surgical Critical Care.....  
Surgical Oncology.....  
Thoracic Surgery.....  
Vascular Neurology.....  
Vascular Surgery.....

# The Basic World of Cardiovascular Medicine

## Interventional

- Coronary intervention
- Electrophysiology
- Percutaneous valve replacement

## Non-Invasive

- Stress Tests/Nuclear Studies
- Echocardiography
- Office Cardiology (complex patients and unexpected walk-ins)

# “I like Cardiology because...”

- Clinically stimulating—many options
- Compensation
- Lifestyle/Prestige
- Surgical component
- Other?

# Perspective Changes with Time/Experience

- “Last year I matched into a very competitive specialty for an IMG: categorical surgery. I was happy and amazed. Then I started my internship and realized I should have gone with my other choice – medicine. I started thinking, ‘This is it. I will rot in the OR for the rest of my life.’ Then I realized I can live without the OR. I told my PD I wanted to switch.”



-BoardVitals physician



# Intangible Pre-requisites for Cardiology

## ➤ **Must be an Adrenaline Junkie**

- prerequisite to thrive
- allows you to tolerate a life of *interruption* and *inconvenience*

## ➤ **Mesh Capability With Desire**

- know what you don't know and what you can't do
- important to mesh your capabilities with your desires

## ➤ **Must Like Talking/Explaining to Patients, Family**

## ➤ **Must carefully choose Soul Mate**

- “greatest attribute in a life partner is not their tolerance of your profession, it's their understanding that you *are* your profession”
- find someone who knows that asking you to stop practicing medicine is like asking a musician to put down their instrument
- Reciprocate by realizing that family life is not all about you



# Adaptability: Life continues to happen...

- “As a fellow, I was about to bolt out the door to the cath lab when I noticed spots on my 4-year-old's face. Chicken pox blew through all my contingency plans. **Innovation** and **perseverance** are key in any profession, but you will need more of it to be a *parent* and a *cardiologist* whose schedule is full of procedures that took days or weeks to precertify and plan.”

Melissa Walton-Shirley, MD



# Other Adrenaline-filled Specialties

## Why not *Emergency Medicine*?

- *little follow-up* on how patients fared
- incessant trail of pregnant 14-year-olds with *pelvic inflammatory disease* and *drug seekers* who had "accidentally" flushed their oxycodone.

## Why not *Pulmonary/Critical Care*?

- Don't want to manage *sepsis, mechanical ventilation*
- *Work hours*

# Preparation as a Medical Student

- Acquire/Develop **strong fundamentals**: heart sounds, ECG, clinical exam, pathophysiology, communication
- **USMLE scores**: depends on the fellowship program
- **Get Research experience**: for higher-power programs
- **Interviews**: during PGY 2-3
- **Emotional Intelligence**
- **Time Management skills**: significant other

"You don't have to be brilliant to be a doctor. You have to be hard working and have good character. That's what makes good doctors."

# Department of Medicine

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## Cardiovascular Disease Fellowship Program

The three-year Cardiovascular Disease fellowship program with a complement of 21 fellows at Feinberg School of Medicine provides advanced training in all aspects of cardiovascular medicine and fulfills the eligibility requirements set forth by the American Board of Internal Medicine for the subspecialty examination in cardiovascular diseases. Our fellowship program is in constant evolution with ongoing input from both fellows and faculty members. We are committed to providing our fellows with the best clinical and research training in cardiology. The program is directed by faculty members in the Division of Cardiology, who have appointments in the Northwestern University Feinberg School of Medicine's Department of Medicine.

### Requirement and Eligibility

Those qualified to train with us must successfully complete training within an ACGME-accredited Internal Medicine residency program and secure full medical licensure in the state of Illinois prior to starting their Cardiovascular Disease fellowship. If applicable, applicants must possess a valid visa and ECFMG certification. Our program accepts applications via **ERAS** exclusively and we only fill our positions via the **NRMP** match.

### Application Process

In order to be considered for our 2018 Cardiovascular Disease fellowship class, candidates must have the following documents available to us for download from ERAS by July 31, 2017:

- Photograph
- ERAS Application
- Curriculum Vitae
- Personal Statement
- MSPE
- Transcripts
- Three Letters of Recommendation (One must be written by your Internal Medicine Residency Program Director)
- USMLE Steps I, II, and III Scores



## Applicants

### How to Apply

Thank you for your interest in the Cardiovascular Disease Fellowship program at The University of Chicago. We offer six first-year fellowship positions each academic year (the academic year runs July 1 – June 30). A completed application must be submitted through Electronic Residency Application Service (ERAS) and received by the committee no later than August 31. After we receive the completed application your file will be reviewed and you will be notified regarding the advisability of an interview. Applications must be eligible for certification in Internal Medicine by the American Board of Internal Medicine and must be licensed by the State of Illinois at the time they begin their fellowship.

The ERAS application should include:

- A complete ERAS application
- An ERAS-provided medical school transcript
- MSPE
- USMLE scores
- Three to four letters of recommendation (at least one letter must be from the Program Director)
- An ERAS-provided personal statement
- A list of any research papers and publications
- Photo
- ECFMG Certified by December 10<sup>th</sup>

**\*For additional information on fellowship training expectations, the Accreditation Council for Graduate Medical Education has published a list of its requirements [here](#).**

### Application Deadlines:

July 15<sup>th</sup> : Completed applications sent to our program for review

September 30: Application deadline – new application will not be reviewed after this date

August – October: Interviews scheduled and conducted

### Visas

International Medical Graduates (Graduates of medical schools outside of the United States and Canada)

#### Visa Requirements:

J1 Visa (preferred): sponsored by the Educational Commission for Foreign Medical Graduates

H-1B Visa: sponsored by the University of Chicago Medicine – Programs assume all financial cost related to the H-1B visa.

If you have additional questions please contact Diane Hill, Education Coordinator, at [dhill4](#)

**Table 1** Fellowship Match Summary, 2018 Appointments

Specialty	No. of Applicants+		Positions Offered	No. of Pgms	No. of Matches		% Filled		Ranked Positions		Unfilled Pgms
	U.S. Grads++	All Apps			U.S. Grads	All Apps	U.S. Grads	All Apps	U.S. Grads	All Apps	
<b>Allergy and Immunology</b>											
Allergy and Immunology	93	141	140	85	83	123	59.3	87.9	811	1,161	15
<b>Anesthesiology</b>											
Obstetric Anesthesiology	21	27	38	27	19	25	50.0	65.8	46	101	13
Pain Medicine	287	438	335	98	231	331	69.0	98.8	1,654	2,355	3
Pediatric Anesthesiology	145	189	213	55	141	177	66.2	86.4	823	1,136	18
<b>Emergency Medicine</b>											
Medical Toxicology*	34	40	47	27	3	3		74.5	130	148	9
<b>Family Medicine</b>											
Sports Medicine*	179	364	266	170	132	196	73.6	96.6	1,355	2,464	7
<b>Internal Medicine</b>											
Cardiovascular Disease	571	1,261	894	203	514	886	57.5	99.1	4,958	8,493	5
Endocrinology, Diabetes, and Metabolism	121	327	295	144	117	274	39.7	92.9	1,009	2,369	17
Gastroenterology	373	759	496	183	304	489	61.3	98.6	3,365	5,323	6
Geriatric Medicine*	71	199	387	139	66	176	17.1	45.5	303	876	104
Hematology	66	77	14	3	12	14	85.7	100.0	105	119	0
Hematology and Oncology	402	788	553	140	332	548	60.0	99.1	2,926	5,071	3
Hospice and Palliative Medicine	206	339	319	137	173	271	54.2	85.0	1,027	1,679	35
Infectious Disease	163	350	394	151	158	321	40.1	81.5	1,095	2,561	51
Interventional Pulmonology**	18	38	35	31	13	32	37.1	91.4	95	261	2
Nephrology	91	304	474	163	91	285	19.2	60.1	679	2,158	94
Oncology	8	67	10	4	1	10	10.0	100.0	8	85	0
Pulmonary Disease	12	110	31	15	4	30	12.9	96.8	18	173	1
Pulmonary Disease and Critical Care Medicine	320	789	568	151	288	565	50.7	99.5	2,422	4,925	3
Rheumatology	135	322	221	108	118	218	53.4	98.6	948	2,074	3

US Grads:  
90% match



# Cardiology

How Can I Help as a Medical Student - I?





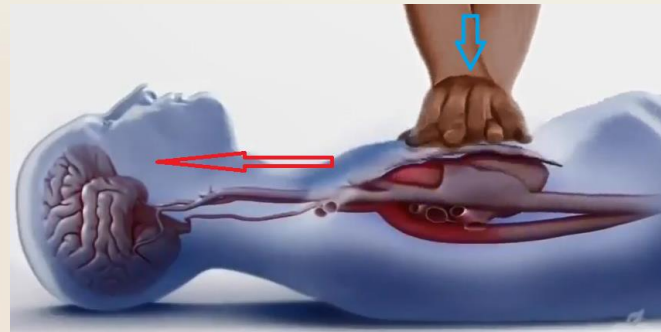
# Master the Fundamentals

- Optimize delivery of **oxygen**

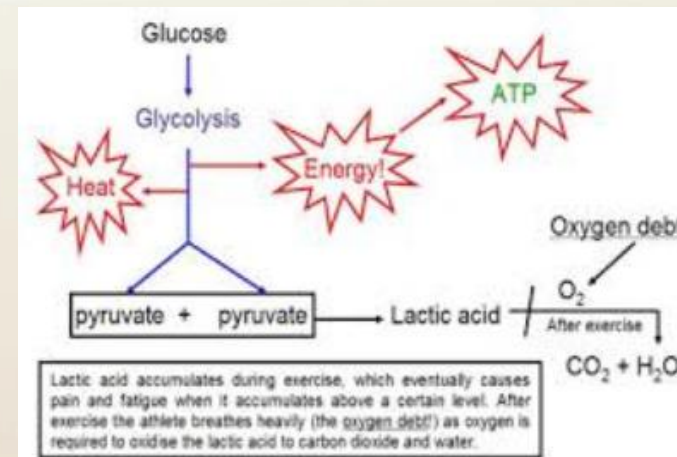
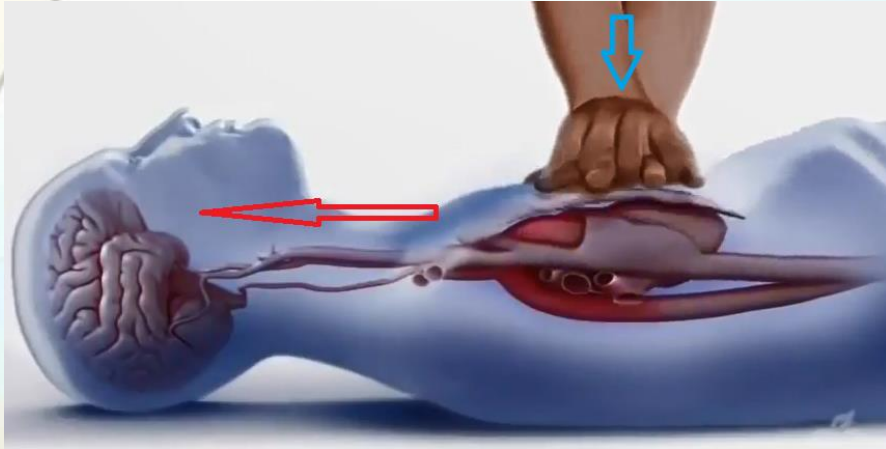


YOU should be the one applying the two-thumb mask technique (ie, the learned skill)... while an assistant does the squeezing of the bag with your guidance on how fast & how much squeeze.

- Optimize **blood flow** and **perfusion**



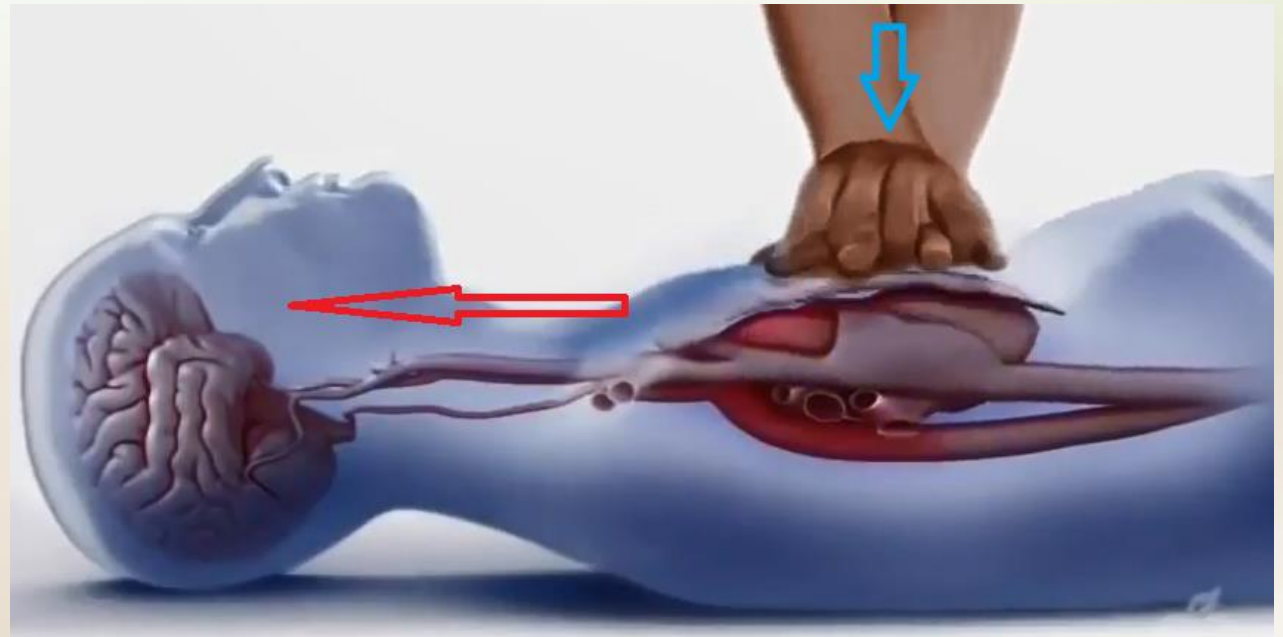
# Pearls for the Medical Student as EMT



# Blood Flow/Perfusion

## ACLS/Chest Compressions

- CPR really should be called CCR (cardio-cerebral resuscitation)
  - [Video Chest Compressions](#)
- When is it OK to stop compressions?
  - [Focus on Compressions](#)
- [ACLS Updates to know](#)



How Do You Know What You Are Doing Is Actually  
Doing Something?



# End-Tidal CO<sub>2</sub>

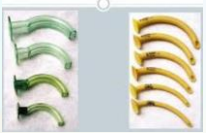


- **Confirm ETT placement**
- **Guide compression quality:** improve technique or switch providers if <10 mmHg with goal >20 mmHg
- **Consider ROSC for an abrupt sustained increase to a normal level (35-40 mmHg) or of at least 10 mmHg above previous baseline**
- **Help guide the decision on when to terminate CPR:** Levels <10 mmHg after 20 minutes indicate a very low chance of achieving ROSC

# Airway Management Pearls for MS-I



Bag-Valve Mask Ventilation



Oropharyngeal and/or Nasopharyngeal Adjunct



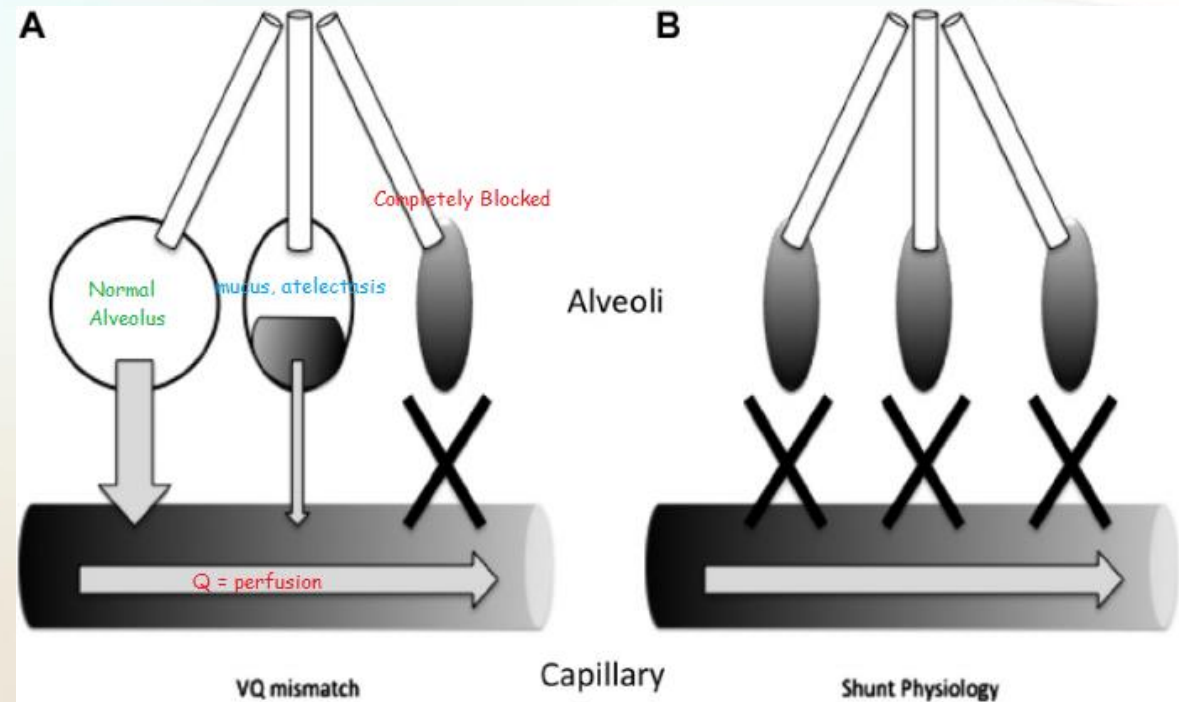
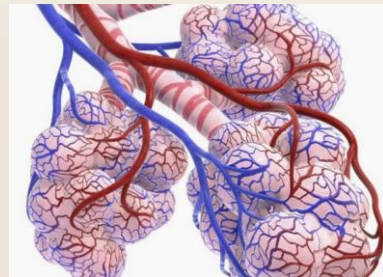
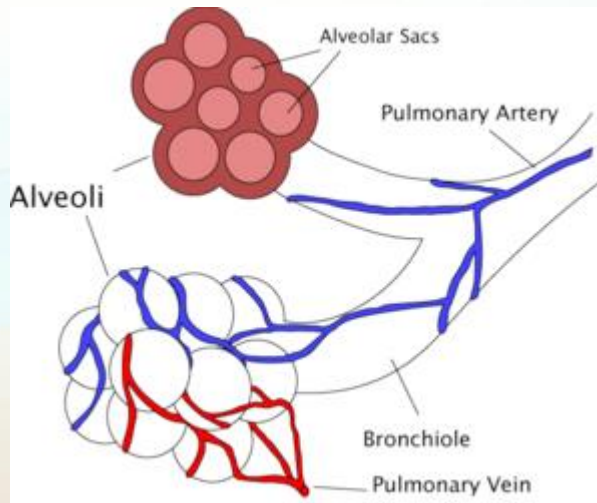
Supraglottic Device/Laryngeal Mask Airway



Endotracheal Intubation



# Airway Management for MS-I



# Bag Valve Mask Ventilation

- Don't "bag" faster if pulse oximetry is low. . .
- Check pulse oximetry (%) and/or blood gas (PaO<sub>2</sub>)



# Ventilation

## Two-Hand Technique



YOU should be the one applying the two-thumb mask technique (ie, the learned skill). . . while an assistant does the squeezing of the bag with your guidance on how fast & how much squeeze.

- ❑ Rescue Breathing: 1 breath every 6 seconds
- ❑ CPR: 30:2

# Oxygenation

## HYPOXIA VERSUS HYPOXEMIA

Hypoxia is defined as a reduction of oxygen supply at the tissue level, which is not measured directly by a laboratory value

Patients may not indicate signs of hypoxemia

Hypoxemia is defined as a condition where arterial oxygen tension or partial pressure of oxygen (PaO<sub>2</sub>) is measured to be

< 80 mm Hg

Patients will also experience hypoxia

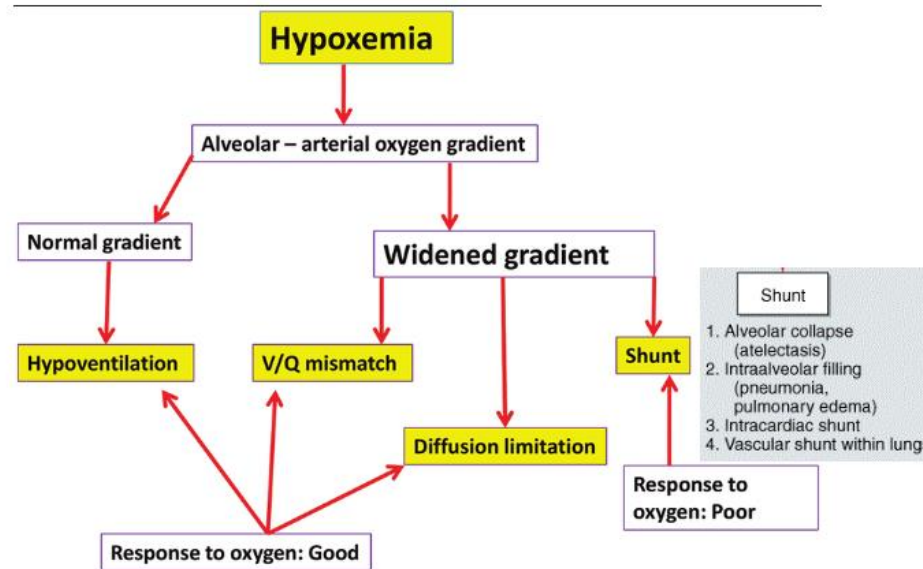
pedicu.com

## CLASSIFICATION OF HYPOXEMIA

Classifications	PaO <sub>2</sub> (rule of thumb)
Normal	80-100 mm Hg
Mild hypoxemia	60-80 mm Hg
Moderate hypoxemia	40-60 mm Hg
Severe hypoxemia	<40 mm Hg

This classification is based on predicted normal values for a patient who is less than 60 years old and breathing room air. For older patients, subtract 1 mm Hg for every year over 60 years of age from the limits of mild and moderate hypoxemia.

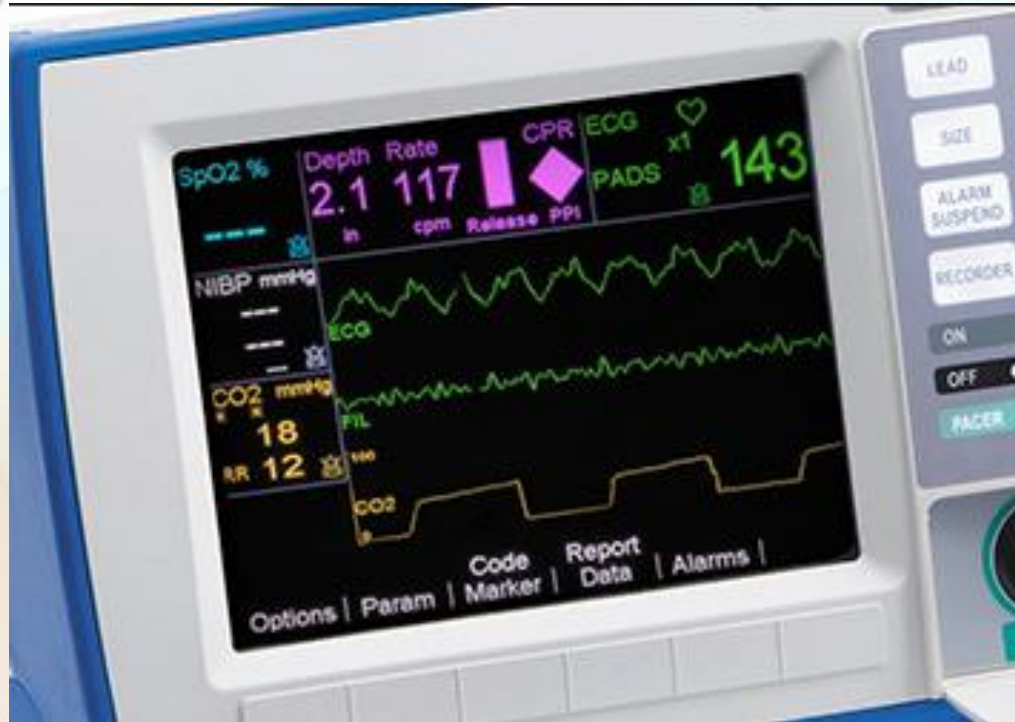
A PaO<sub>2</sub> of less than 40 mm Hg represents severe hypoxemia at any age.



How Do You Know What You Are Doing Is Actually  
Doing Something?



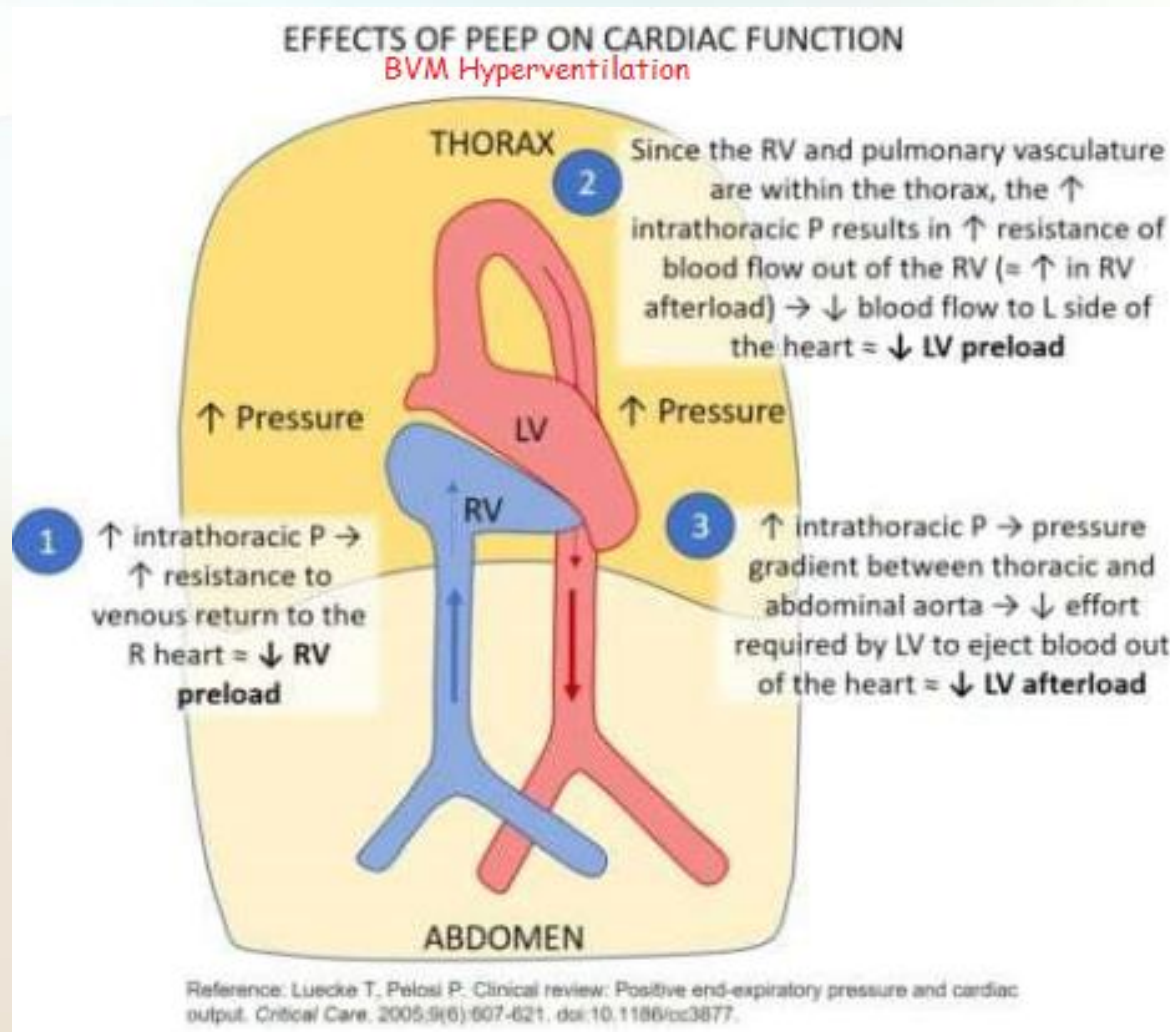
# End-Tidal CO2



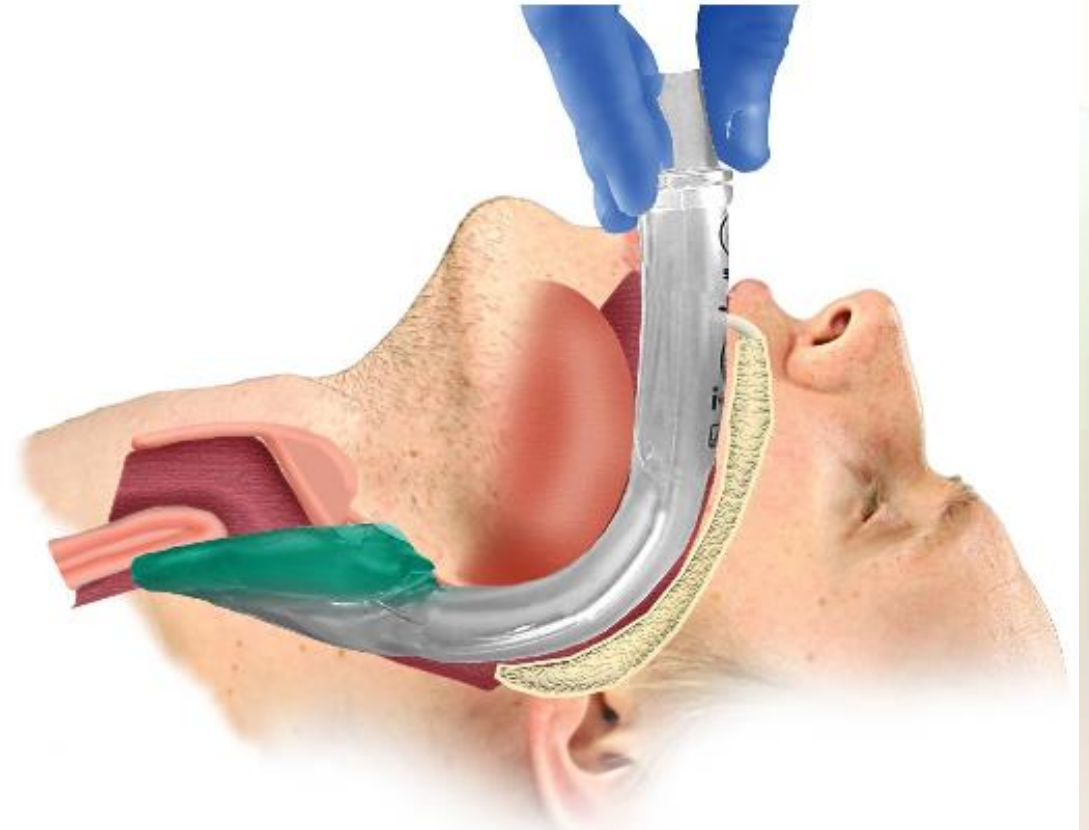
Validate that air is being delivered to the lungs



# Bagging Too Fast → BP Falls



# Laryngeal Mask Airway (LMA)





RAMP foot pedal controller

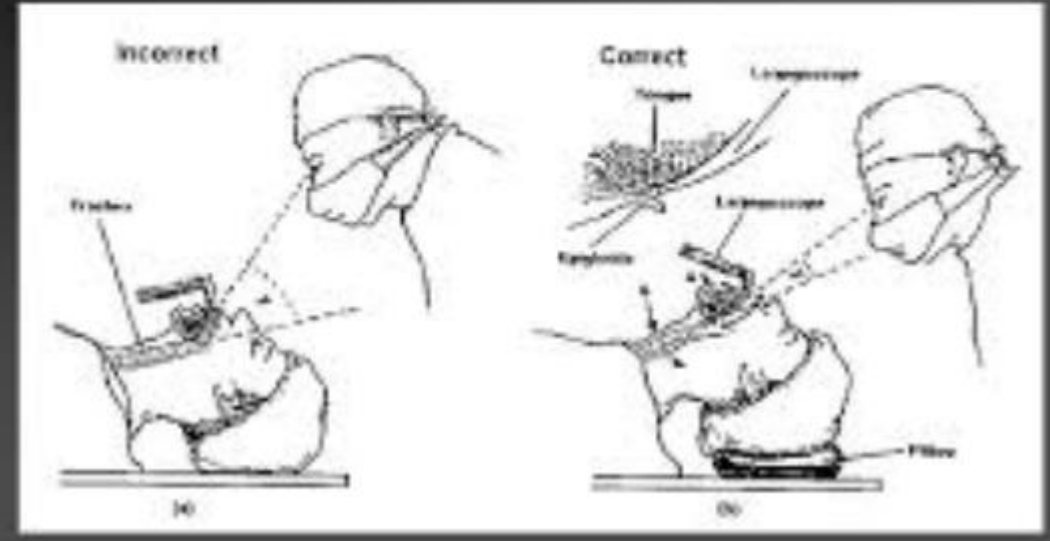
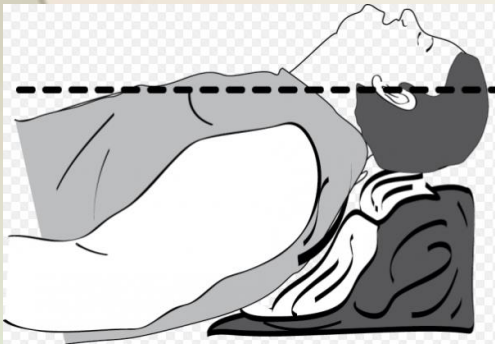


RAMP joystick controller



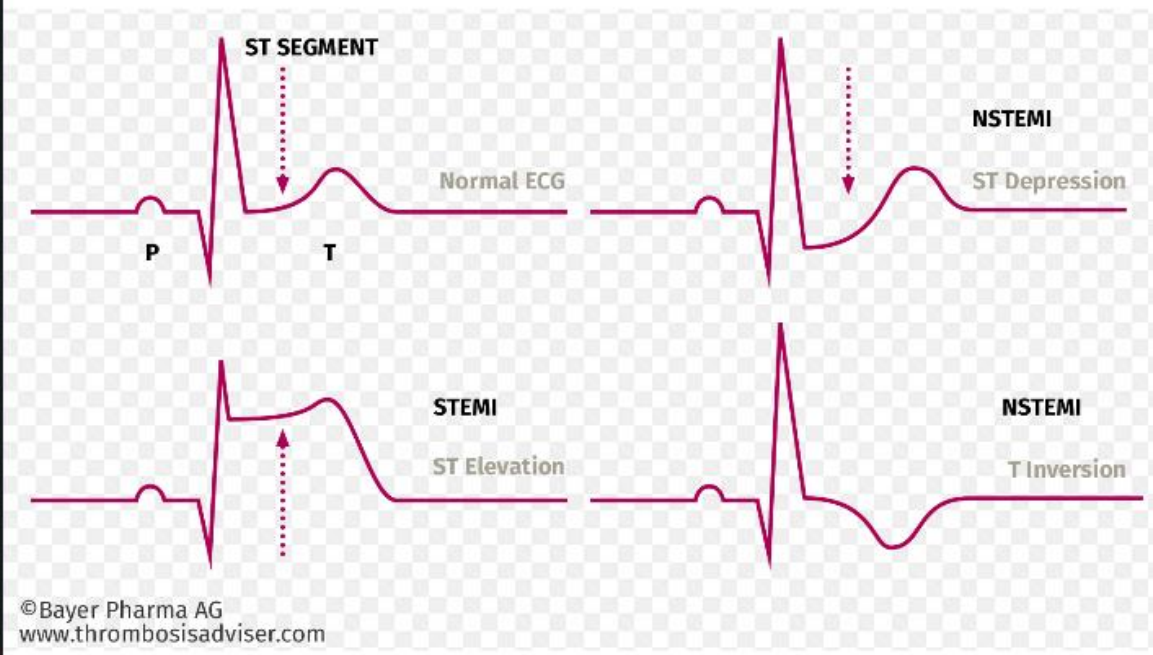
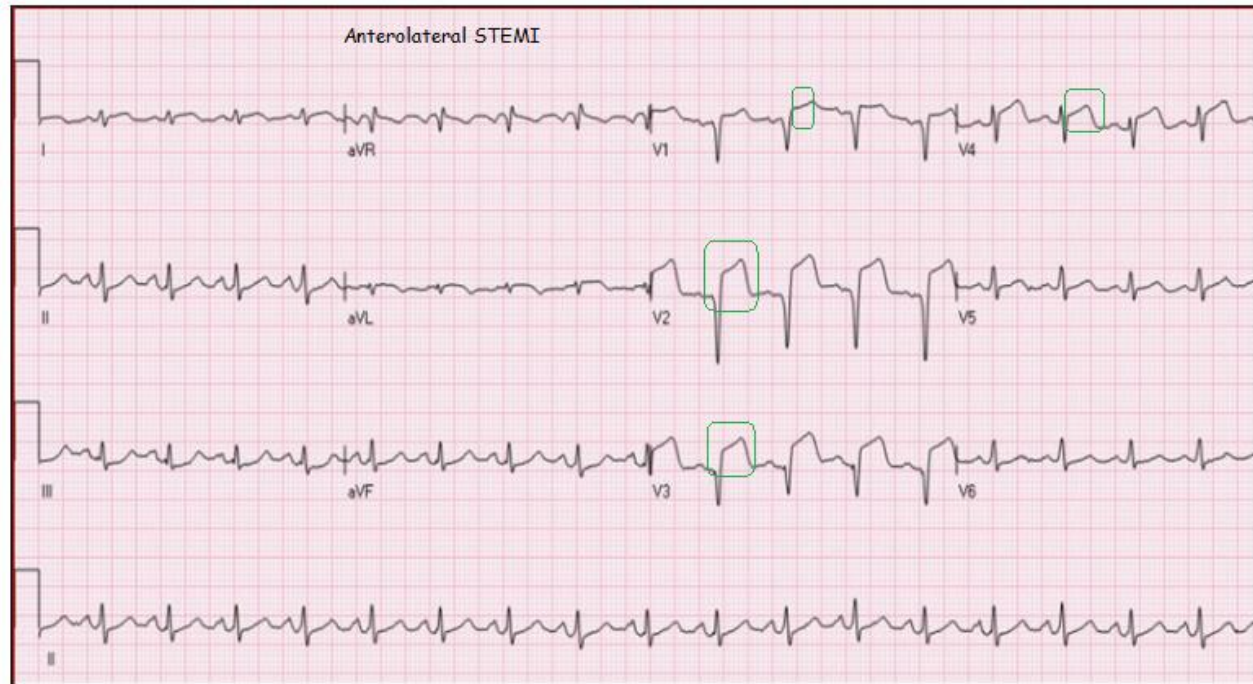
Laryngeal view

## Technique of Endotracheal Intubation (in a ideal setting)





# Recognize STEMI vs NSTEMI



# Summary

# Airway Management Pearls for MS-I



Bag-Valve Mask Ventilation



Oropharyngeal and/or Nasopharyngeal Adjunct



Supraglottic Device/Laryngeal Mask Airway



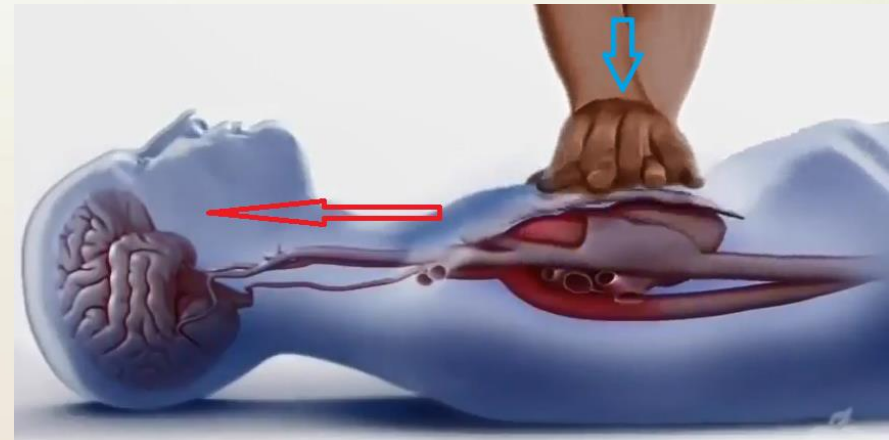
Endotracheal Intubation



# Blood Flow/Perfusion

## ACLS/Chest Compressions

- CPR really should be called CCR (cardio-cerebral resuscitation)
- When is it OK to stop compressions?
- ACLS reminders





Questions?



# Cardiology Survey Data

## Medscape 2018

## Sample Size:

- **20,329 respondents** across 29+ specialties met the screening criteria and completed the survey; results were weighted to the American Medical Association's physician distribution by specialty, state and gender.
- Screening Requirements: **Respondents were required** to be currently practicing physicians in the United States.
- Data Collection: **Via online** survey collection site
- Recruitment Period: **November 21, 2017 to February 21, 2018**

## Sample Error:

- The sampling error is  $\pm 0.69\%$  at a **95% confidence level** using a point estimate of 50%.

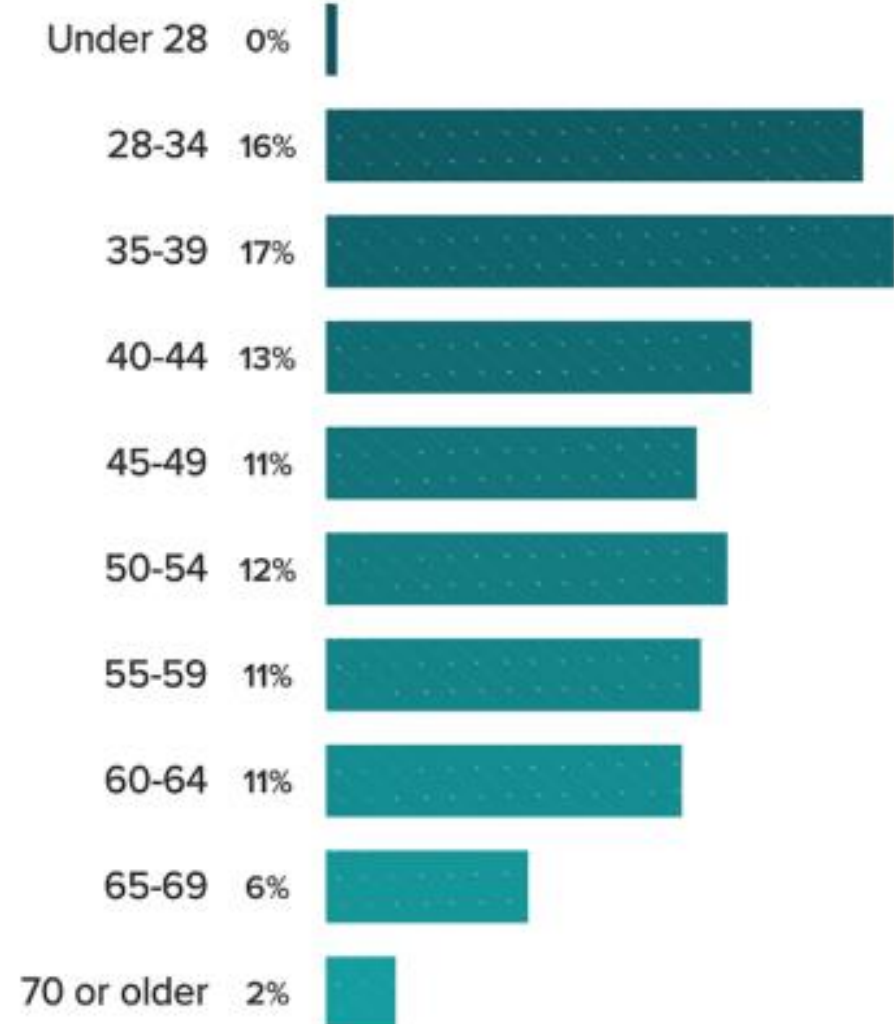
## Survey Demographics

BY GENDER



66% ● Men    34% ● Women

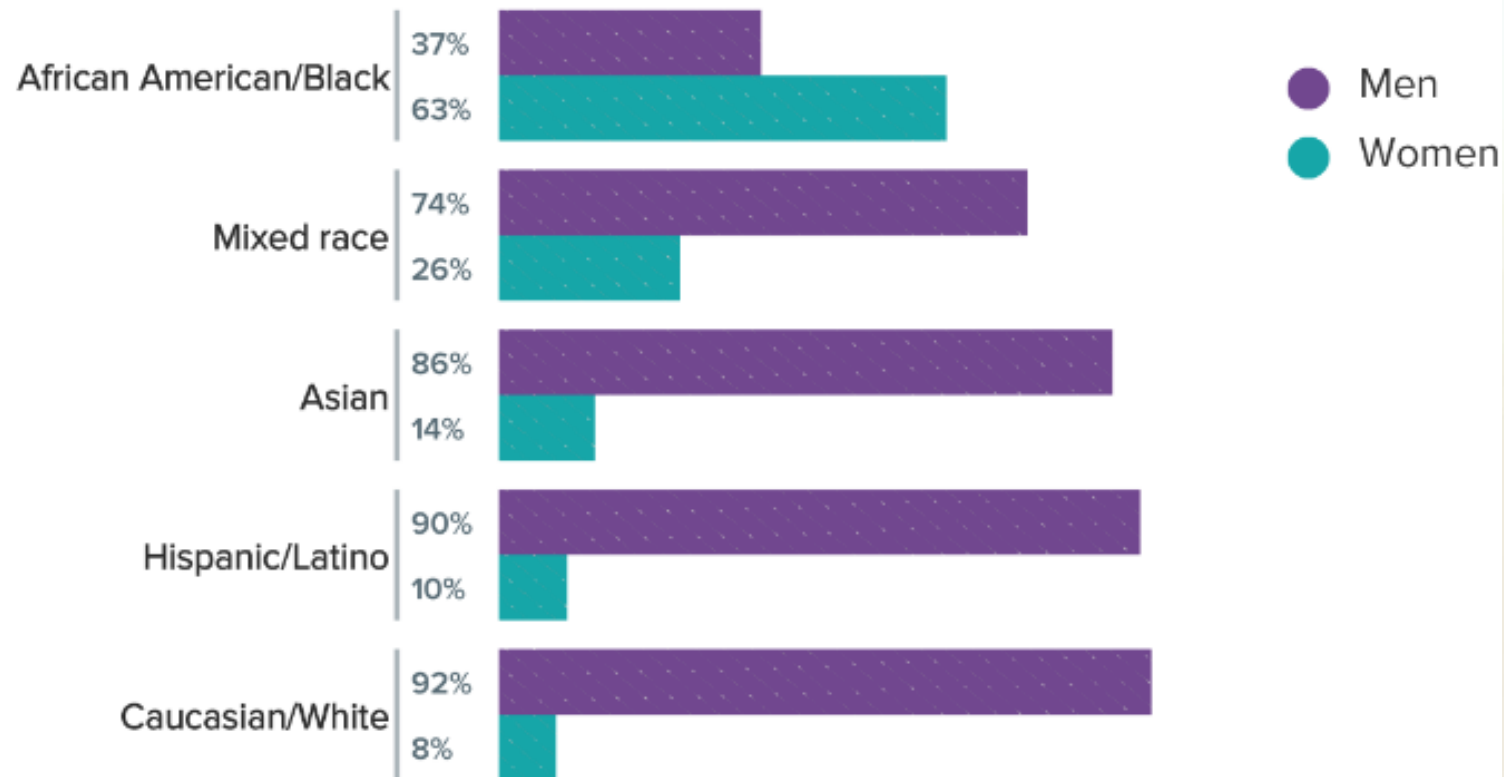
BY AGE



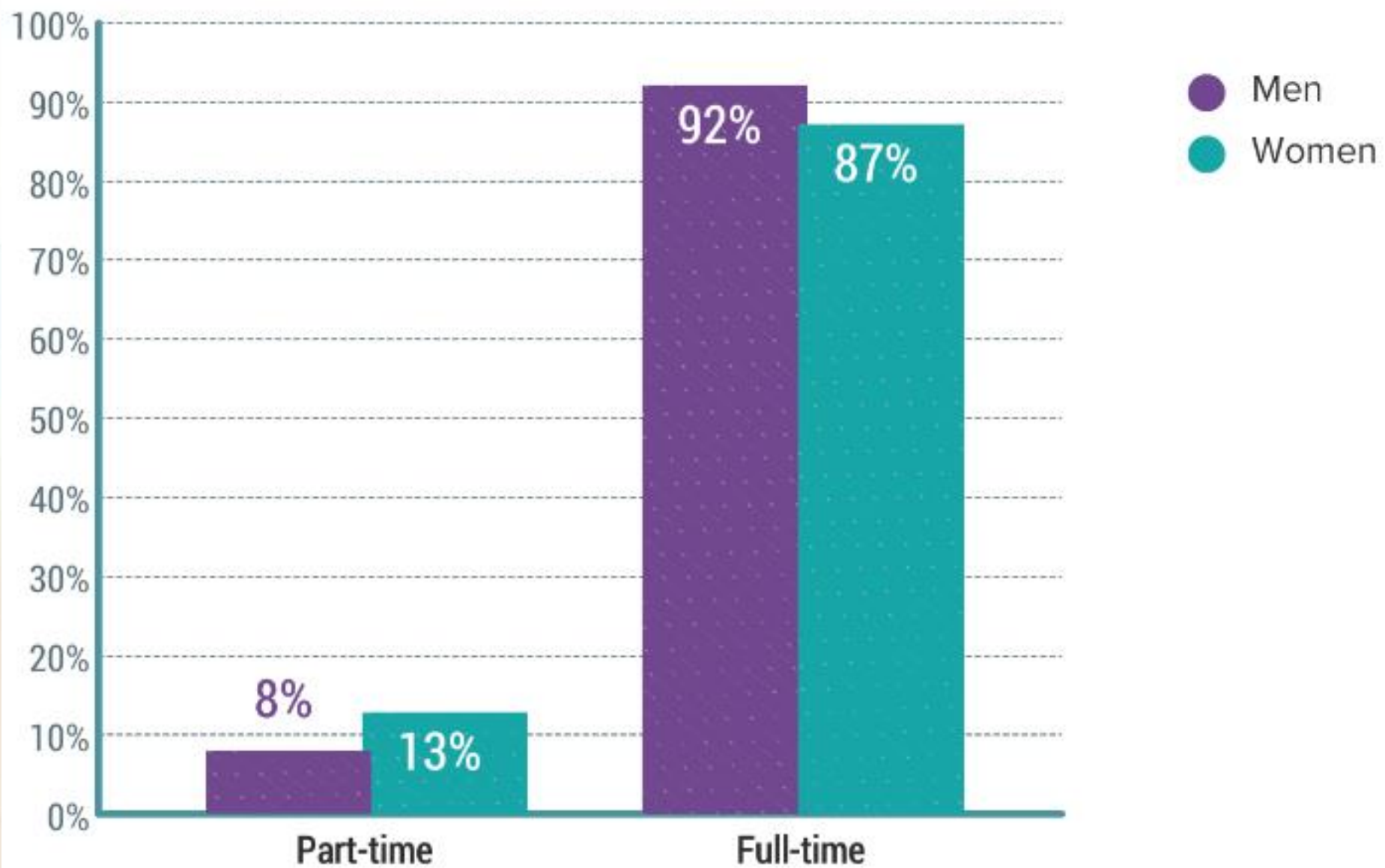


# Ethnicity, Diversity, Gender

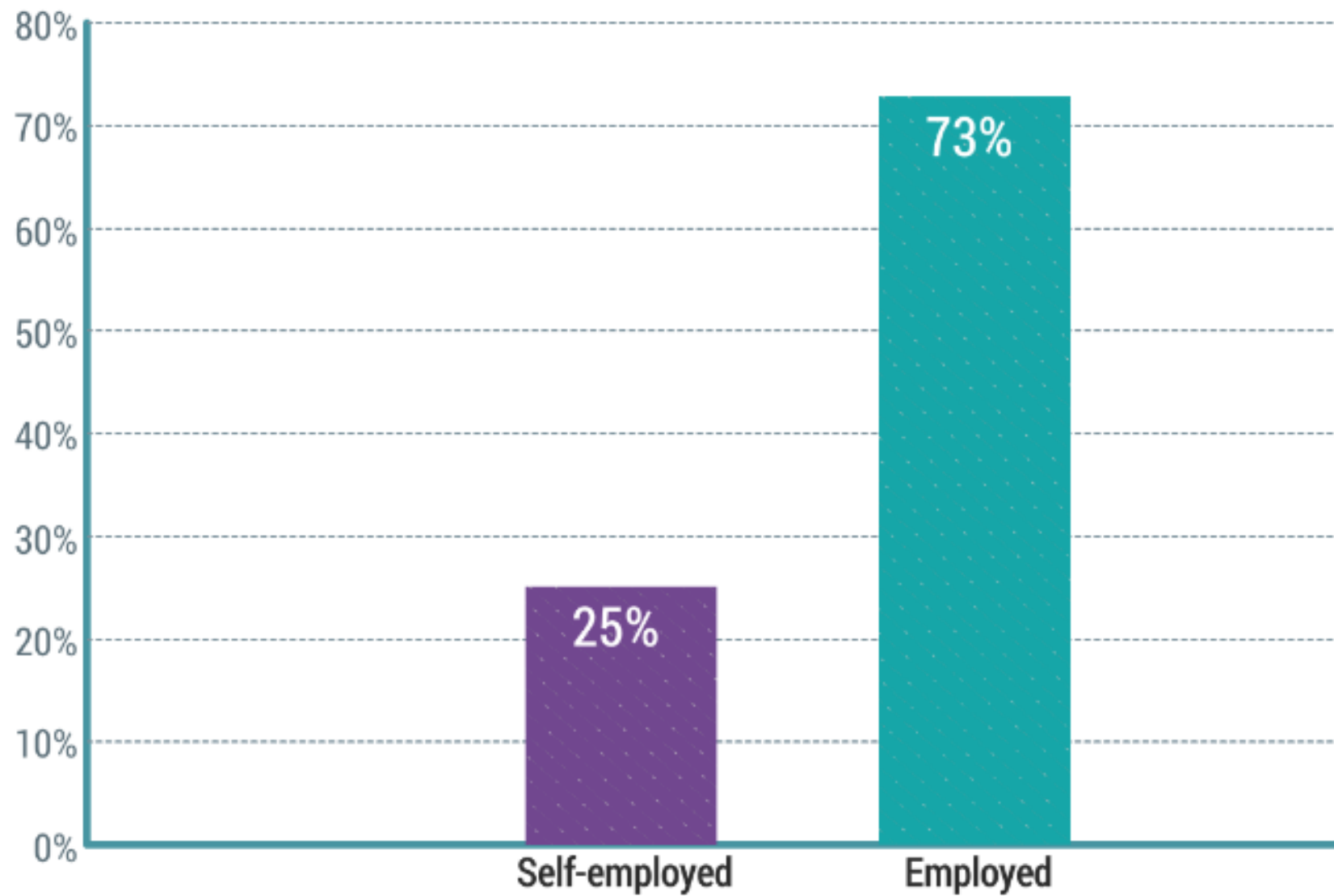
Gender of Cardiologists, by Race/Ethnicity



## Cardiologists Working Part-time, by Gender



## What Percentage of Cardiologists Are Employed vs Self-employed?



# Patient Contact Hours

## Hours per Week Cardiologists Spend Seeing Patients



# Patient Contact Hours

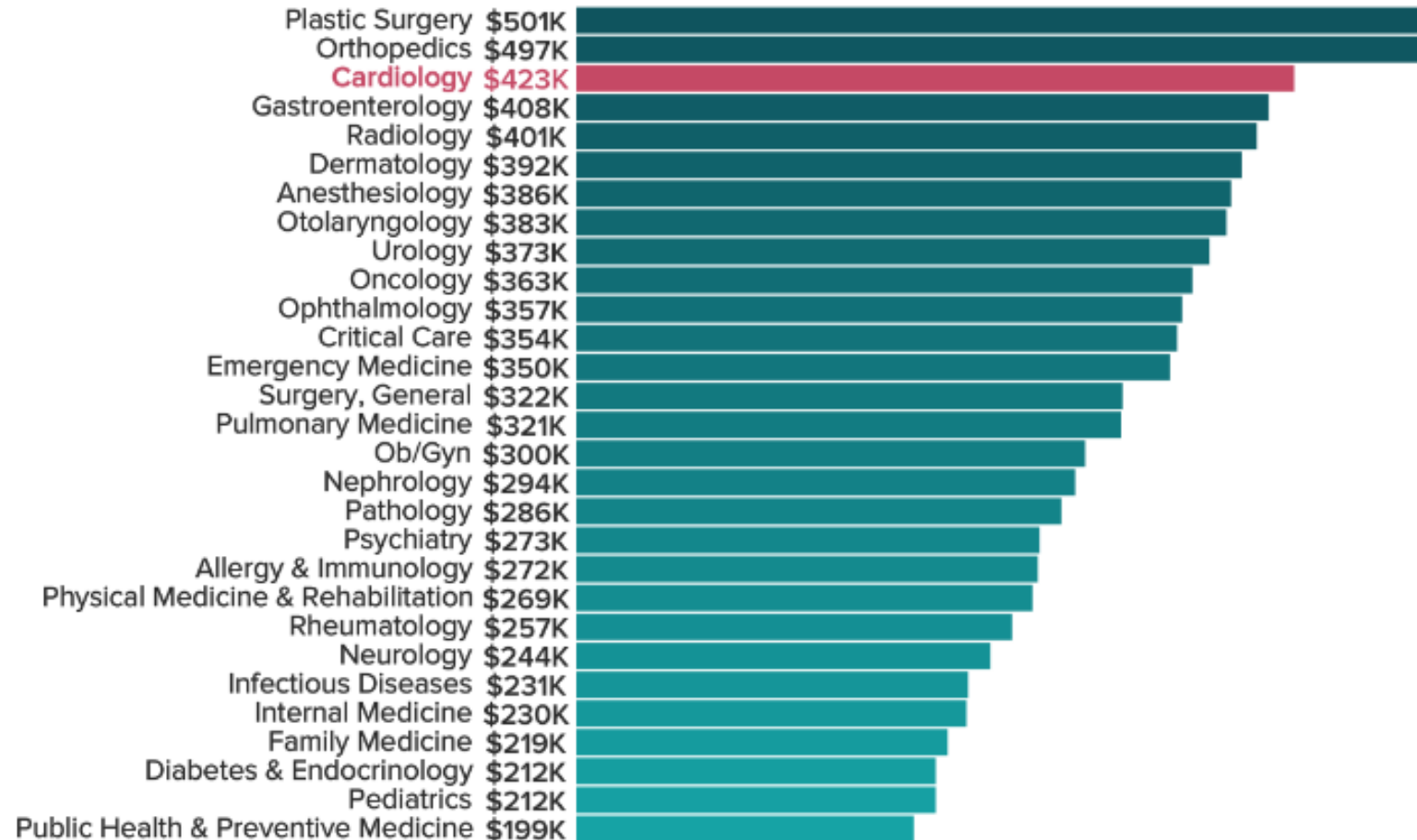
Minutes Cardiologists Personally Spend With Each Patient





# Average Annual Salaries by Specialty

## How Much Do Cardiologists Earn?



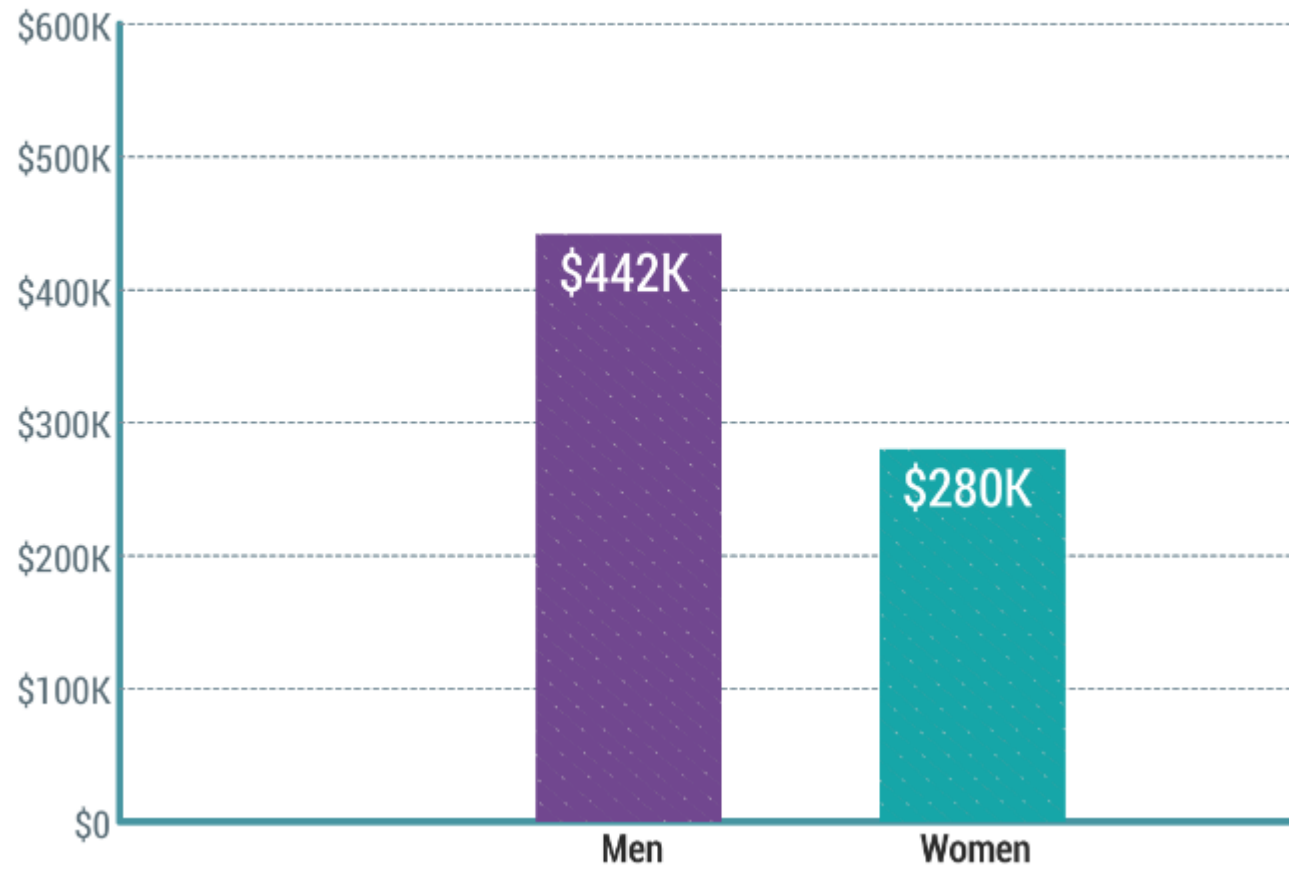
# Compensation by Location: 2017

Cardiologist Compensation by Geographic Area



# Compensation by Gender

Which Cardiologists Earn More: Men or Women?

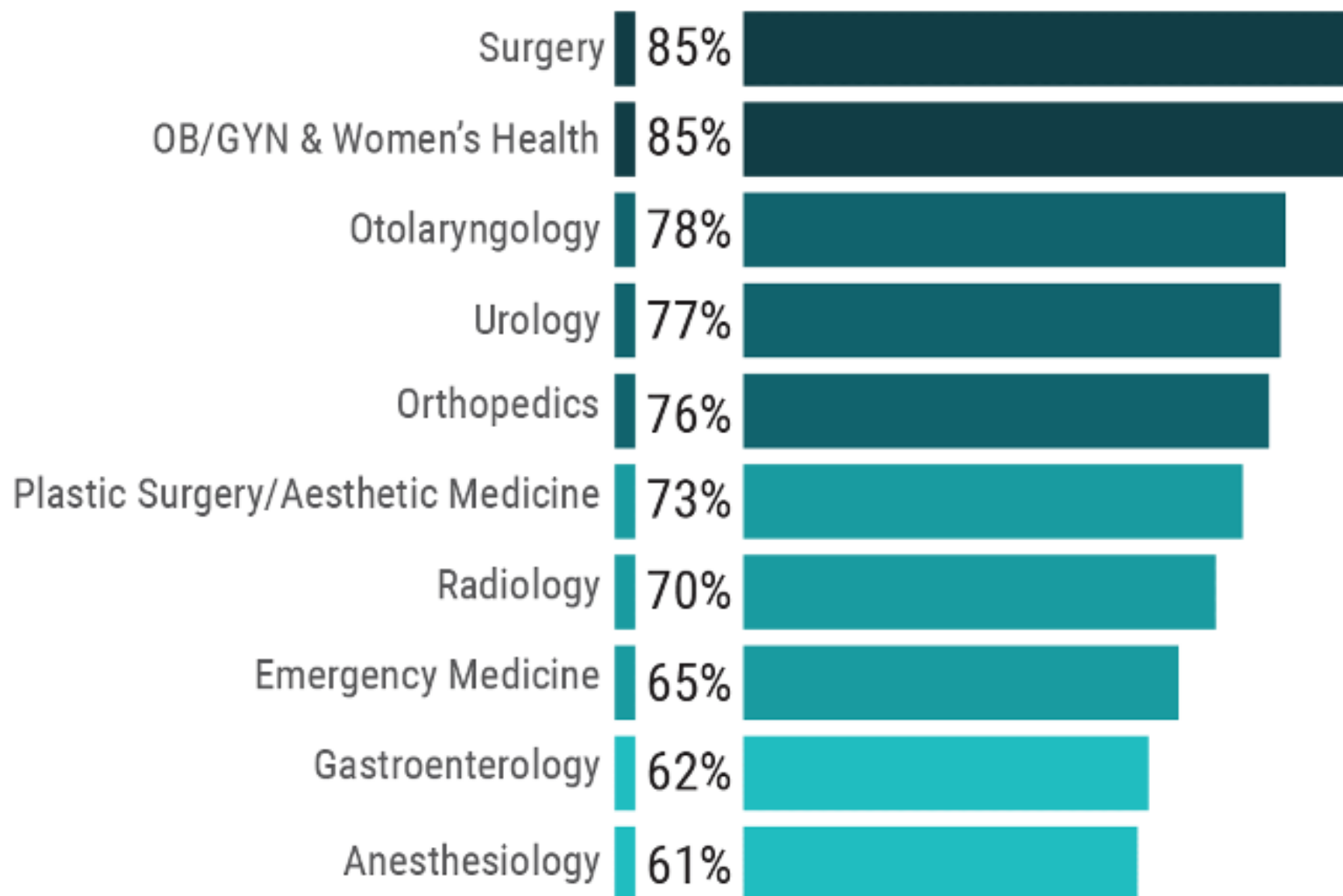


# Administrative Burden

Hours per Week Cardiologists Spend on Paperwork and Administration

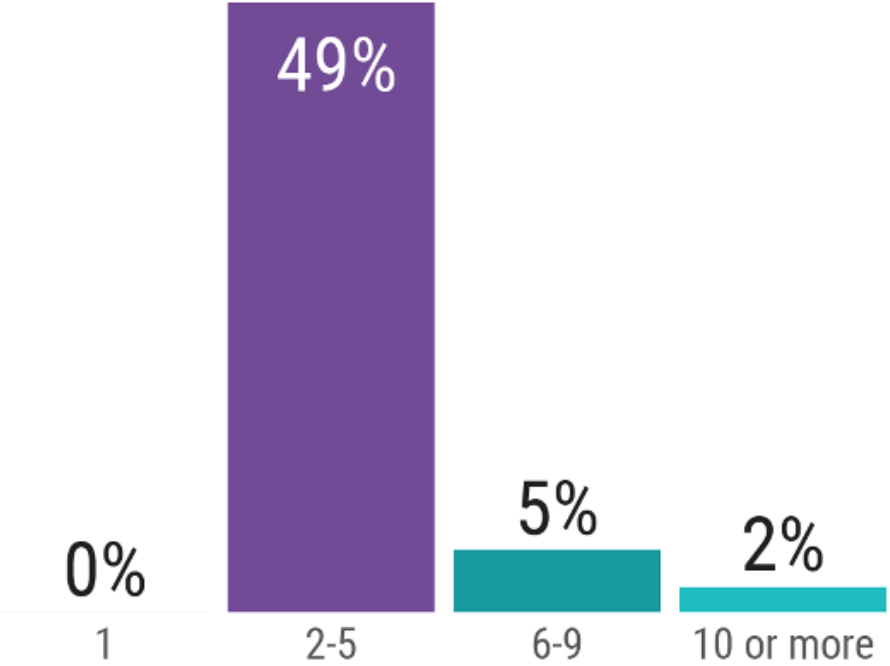


## Top 10 Specialties for Lawsuits

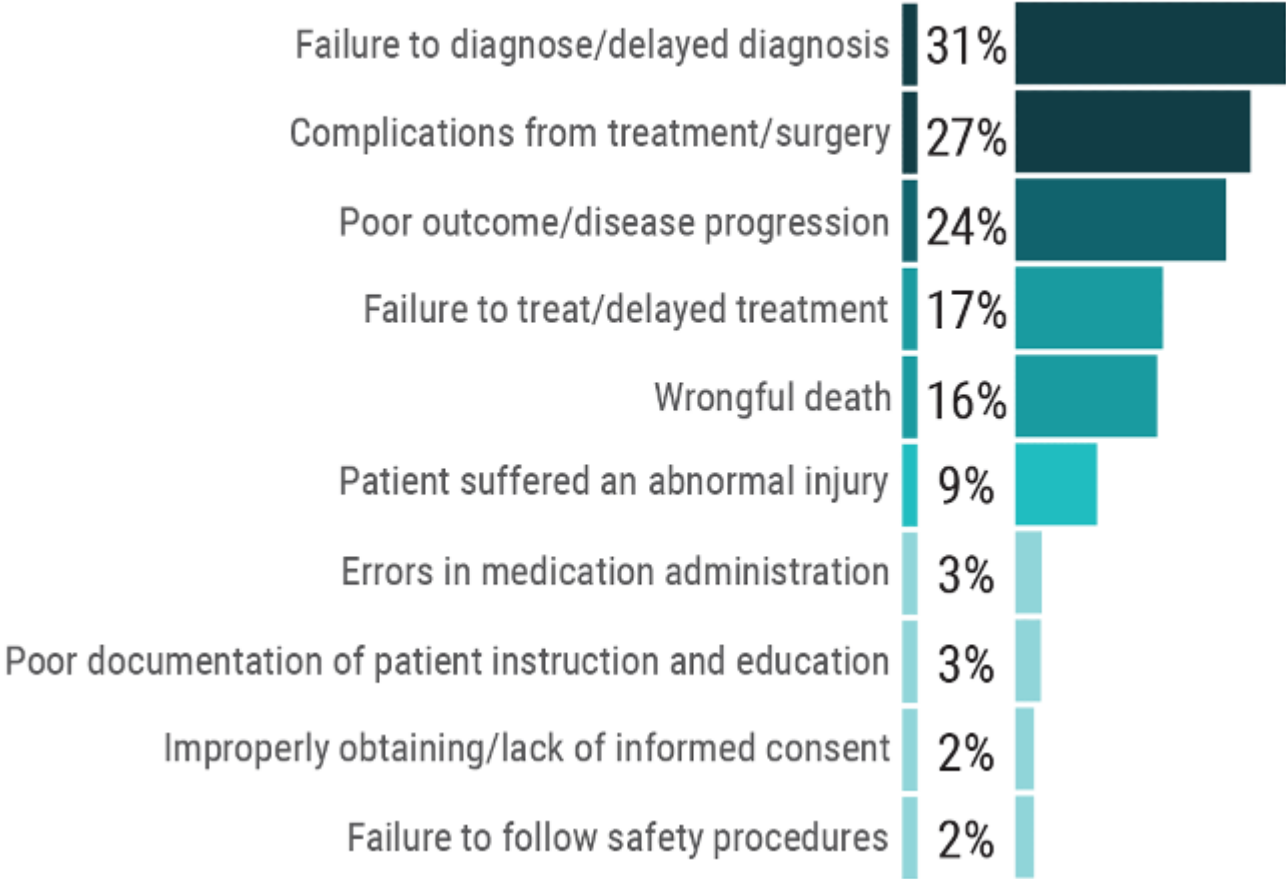




### How Many Malpractice Lawsuits Have Physicians Been Named In?

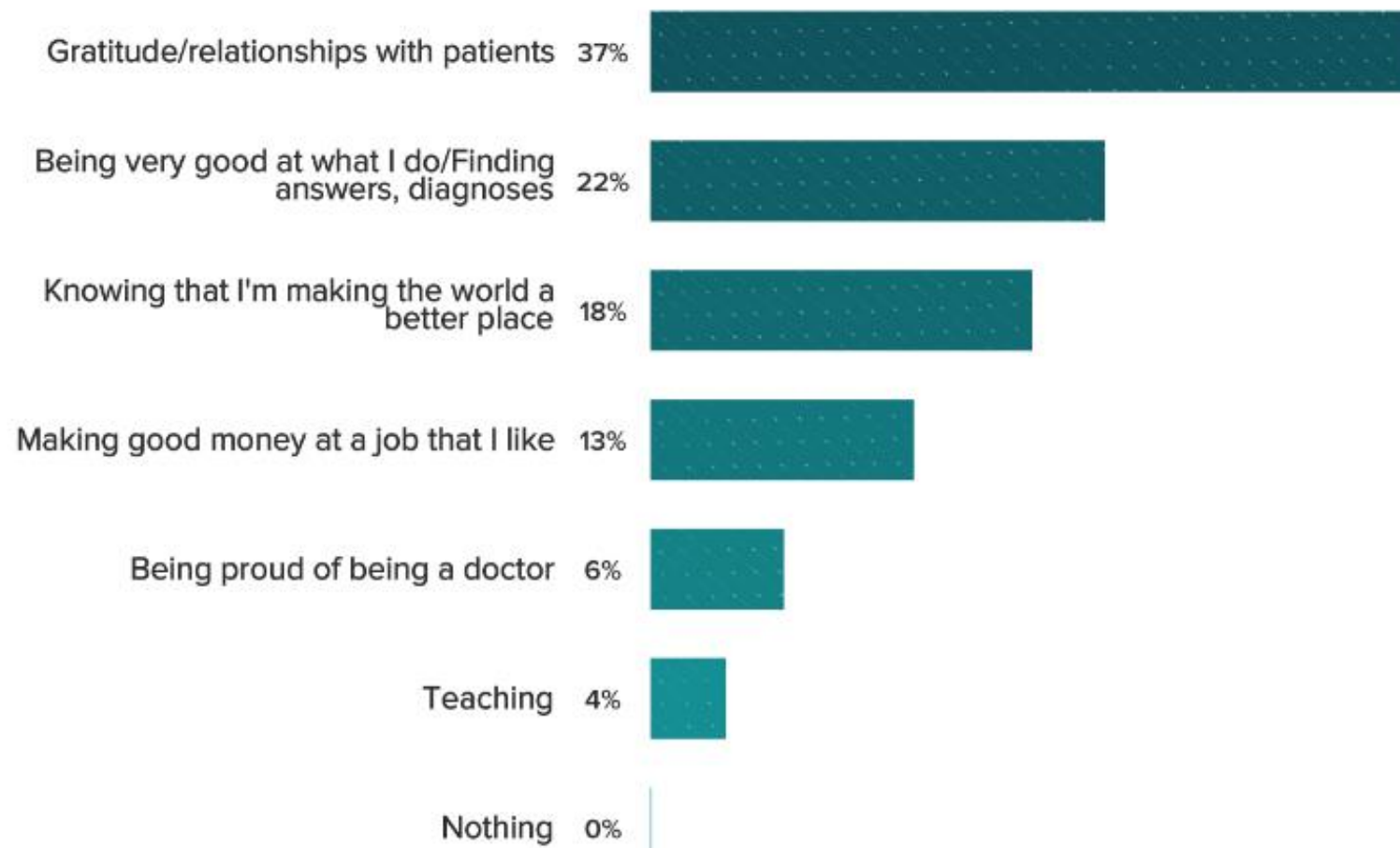


### What Was the Reason for the Lawsuit?



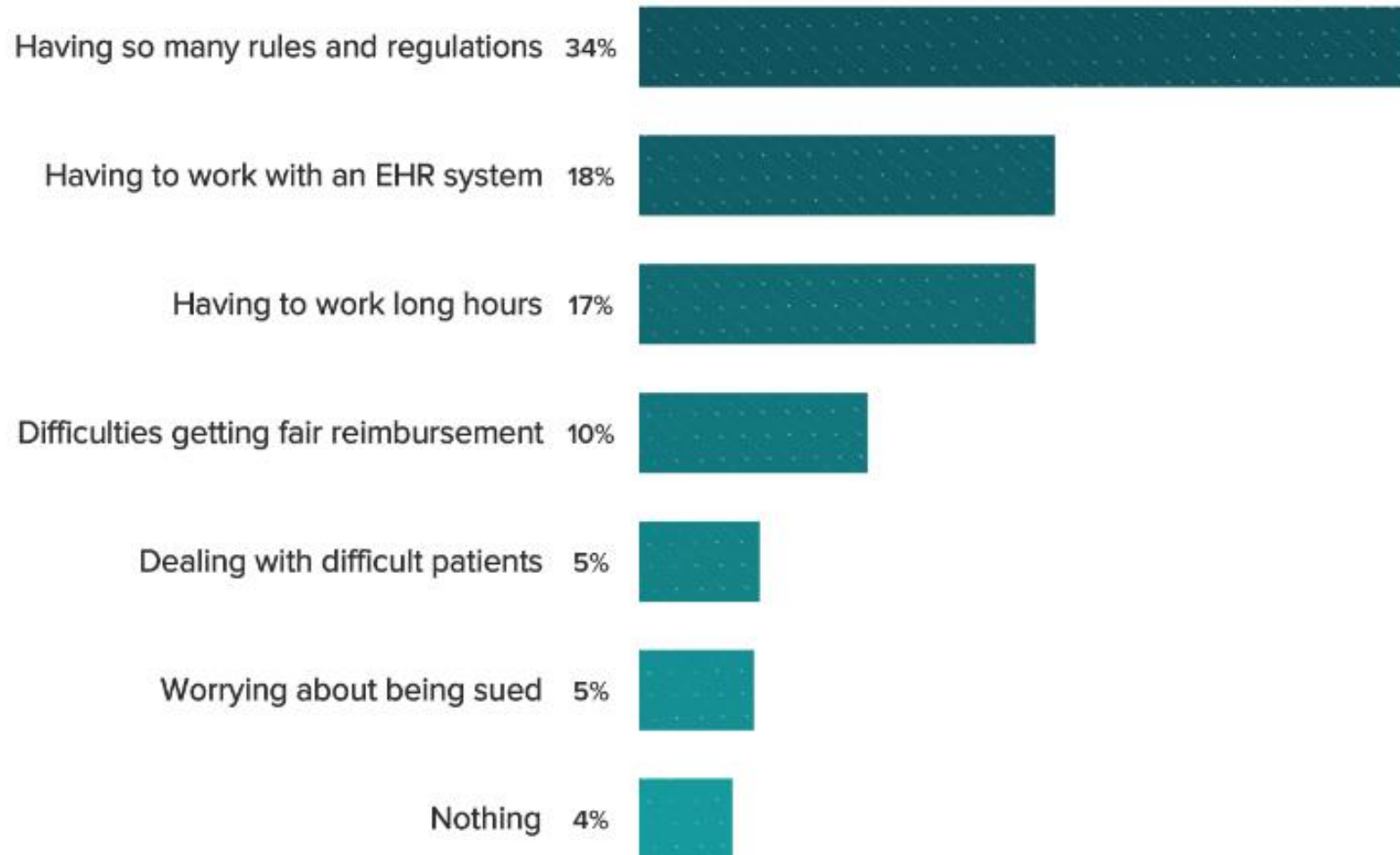
# Most Rewarding Aspect

## What Is the Most Rewarding Part of Your Job?



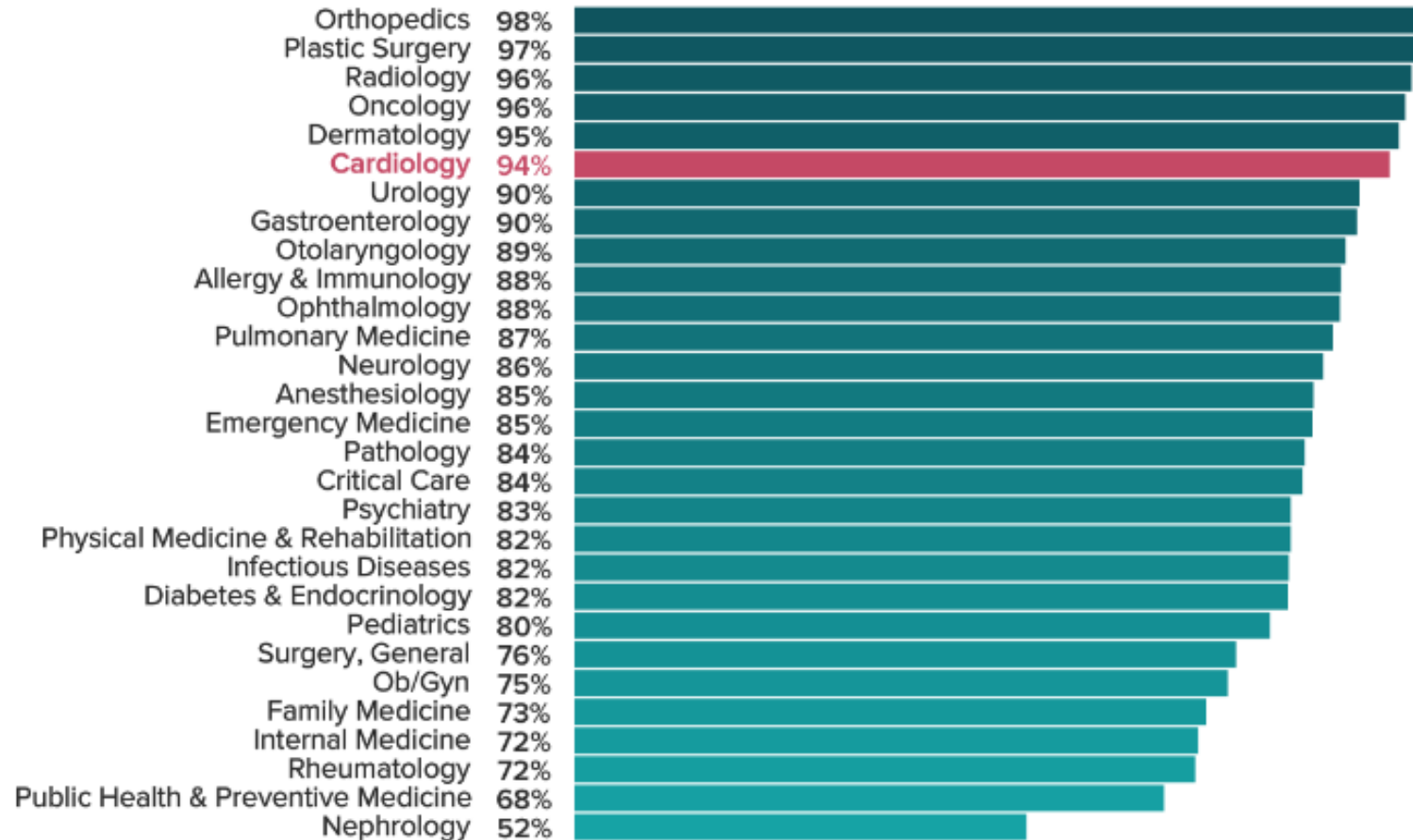
# Most Challenging Aspects

What Is the Most Challenging Part of Your Job?



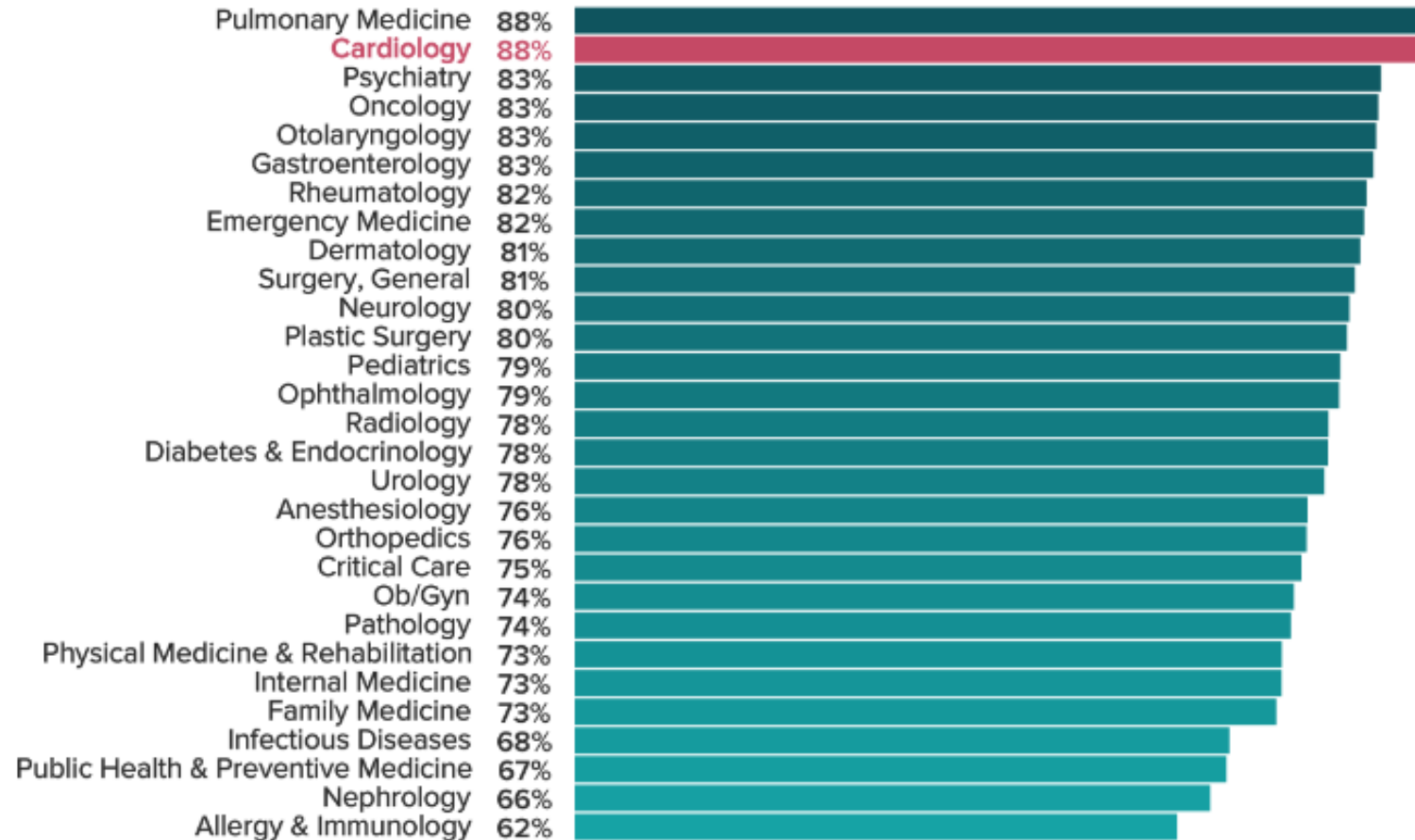
# Choose Cardiology Again?

## Would Cardiologists Choose the Same Specialty?



# Choose Medicine Again?

## Would Cardiologists Choose Medicine Again?





# References

1. Walton-Shirley, Melissa. **To Be or Not to Be a Cardiologist**. January 25, 2017. [https://www.medscape.com/viewarticle/874911#vp\\_2](https://www.medscape.com/viewarticle/874911#vp_2)
2. Results and Data: Specialties Matching Service. 2018 Appointment Year. February 2018. <http://www.nrmp.org/wp-content/uploads/2018/02/Results-and-Data-SMS-2018.pdf>
3. Medscape Cardiology Compensation Report 2018. <https://www.medscape.com/slideshow/2018-compensation-cardiologist-6009651#2>
4. Medscape Malpractice Report 2017. <https://www.medscape.com/slideshow/2017-malpractice-report-6009206>