



Beyond Bikini Medicine

SEX AND GENDER SPECIFIC MEDICINE IN MEDICAL EDUCATION

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Founding President, American College of Women's Health Physicians
Past President, AMWA 2021**

I have No conflicts of interest to Declare

Who We Are:

(A Little 27-Year History Lesson)

Vision:

To integrate sex and gender knowledge into medical and other health professions education and practice to improve healthcare for all

1996: ACWHP – American College of Women’s Health Physicians



2008: Women’s Health Working Group. An AMWA committee



2012: Sex and Gender Women’s Health Collaborative. 501c3



► Supporters: AMWA, ACWHP, SWHR, LWBIWH

2018: Sex and Gender Health Collaborative: An AMWA committee

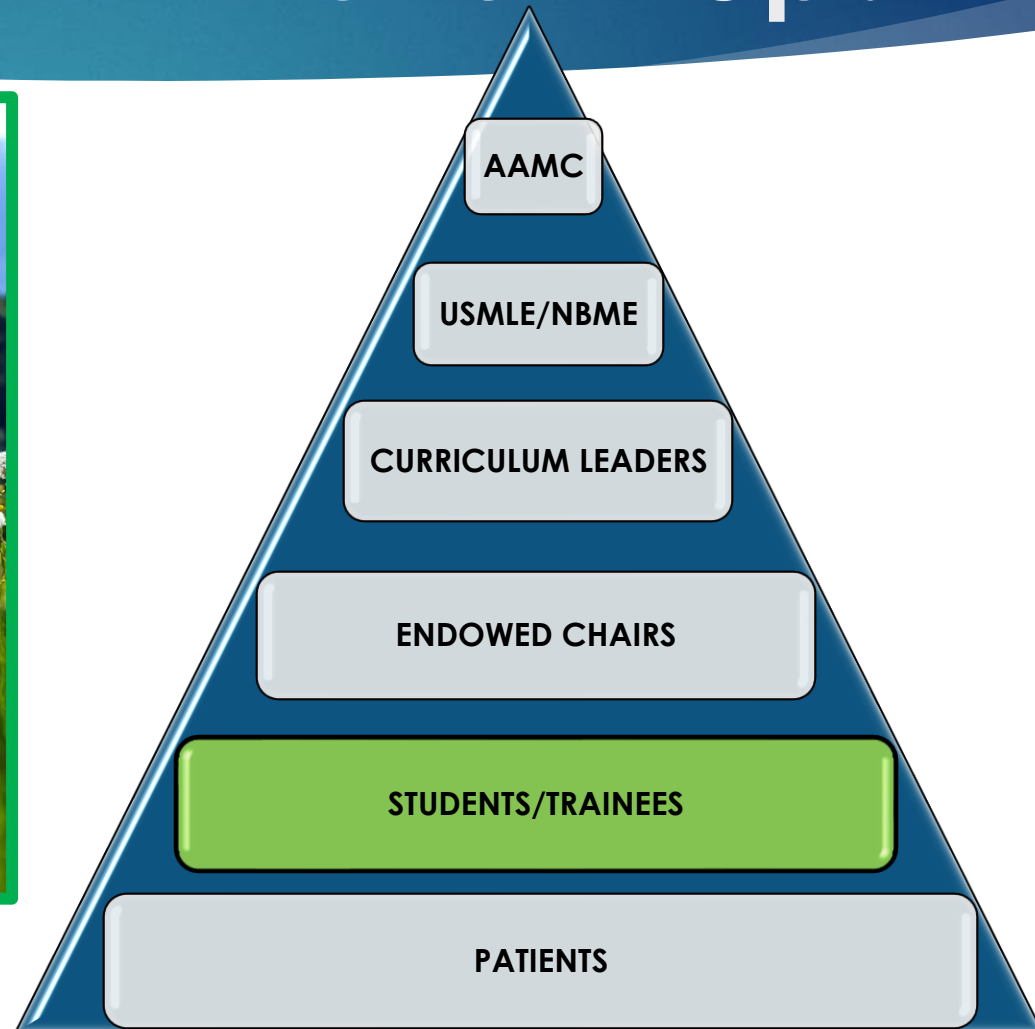


> 8000 Premedical and Medical Student Membership

Influencers: Top-Down? Bottom-Up?



Which Strategy is Most Effective?



Mentorship Committee

Co-Chairs:

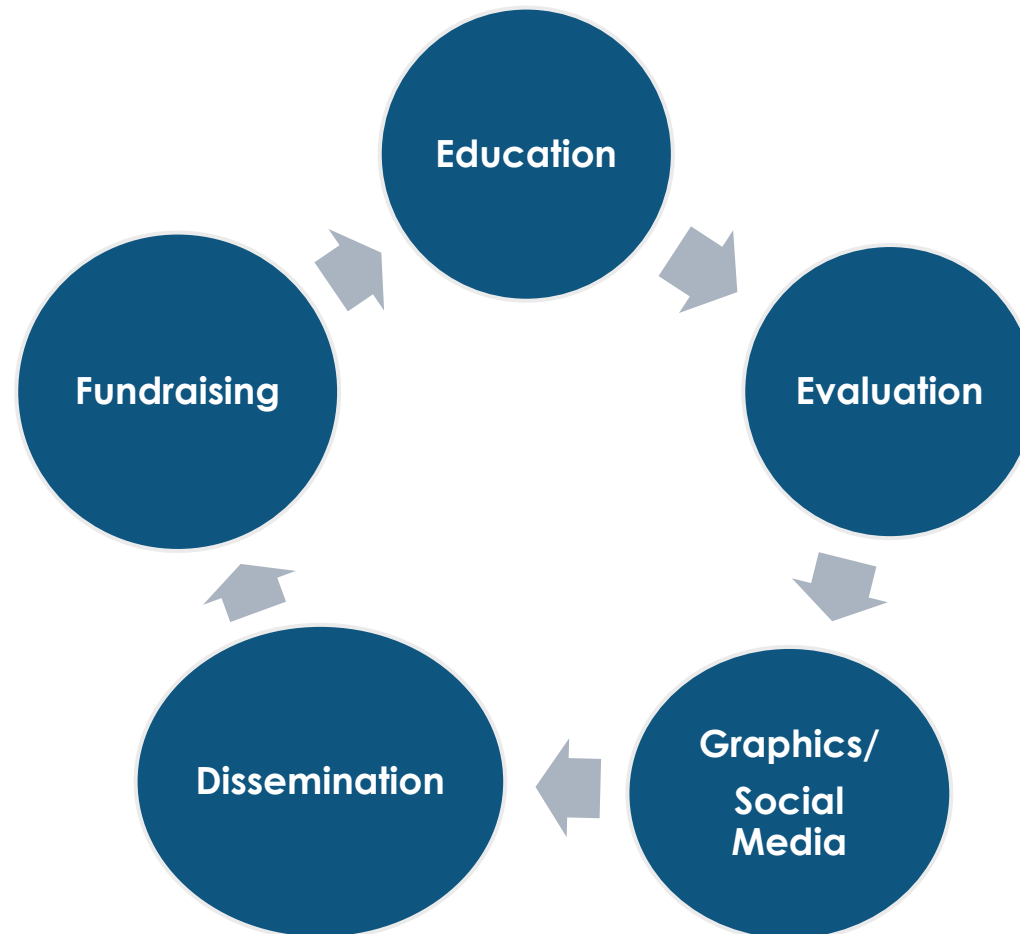
- ▶ Deborah Gomez Kwolek, MD, Harvard Medical School
- ▶ Janice Werbinski, MD, Western Michigan University Homer Stryker MD SOM



AMWA Premedical and Medical Student Volunteers

- ▶ 218 volunteers at June 2022 inaugural meeting
- ▶ 5 Subcommittees with leadership

SCHC Mentorship Subcommittee Structure



Student/Faculty Engagement

201 Students formed teams of 3

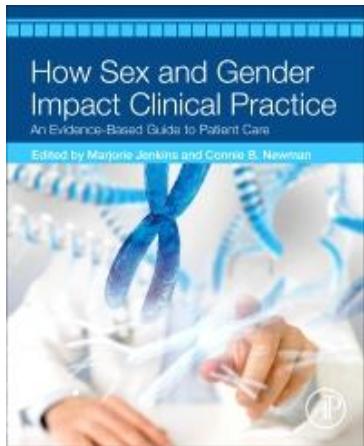
- 67 diseases or conditions researched for sex and gender differences
- Students paired with 21 experts in the field(s) to create Fact Sheets



Sneha
Chaturvedi

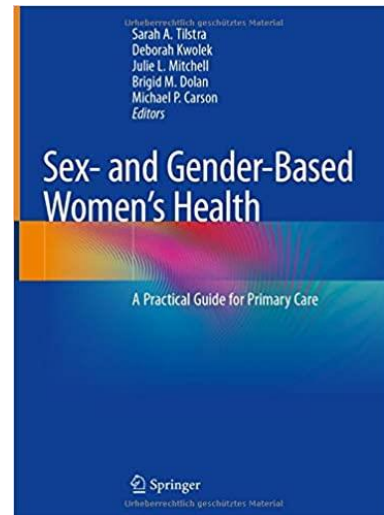
Resources

Students were given the chapters of these textbooks applicable to their topic:

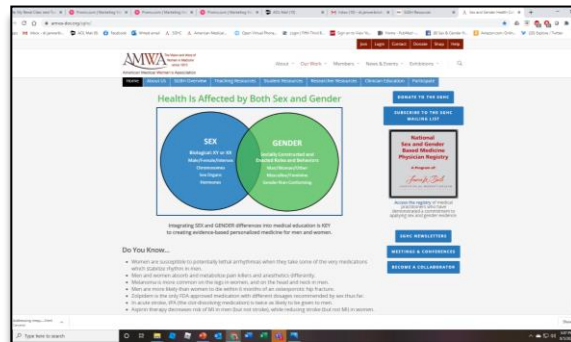


How Sex and Gender Impact Clinical Practice: An Evidence-Based Guide to Patient Care **Marjorie R. Jenkins** and Connie B. Newman, editors.

Sex-and Gender-Based Women's Health Sarah A. Tilstra, **Deborah Kwolek**, Julie L. Mitchell, Brigid M. Dolan, Michael P. Carson, editors.



Website Resources



Amwa-doc.org/sghc

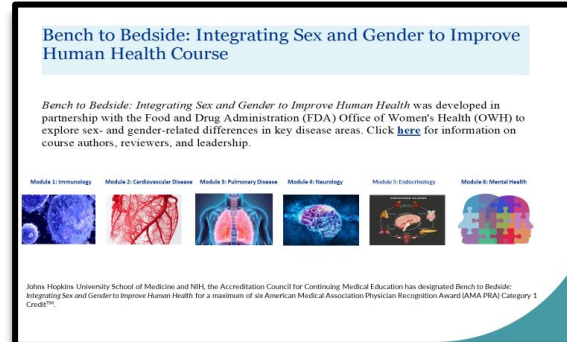
Supported by AMWA

Case studies

Fact Sheets

Student Resources

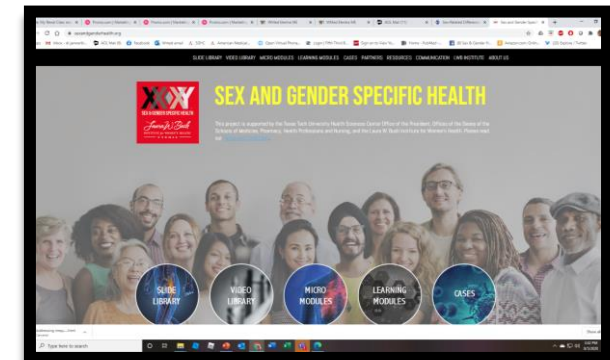
Faculty Resources



ORWH.NIH.Gov

e-Learning Modules

Bench to Bedside:
Integrating Sex and
Gender to Improve
Human Health



Sexandgenderhealth.org

Supported by Laura W. Bush Institute for
Women's Health

[Basic Pub Med Sex and Gender Health
Database Search Tool](#)

[Advanced Pub Med Sex and Gender
Health Database Search Tool](#)

Fact Sheet Topics

CARDIOVASCULAR DISEASE			NEUROLOGIC DISORDERS		
CVD			Alzheimer's Disease		
Acute Coronary Syndrome			Stroke		
HF wih preserved EF			Migraine		
HF with low EF			Autism Spectrum Disorder		
SCAD			ADHD		
HTN			Parkinsons		
ENDOCRINE DISORDERS			INFECTIOUS DISEASE		
Diabetes Mellitus			Sepsis		
Lipid Abnormalities			STI		
Metabolic Syndrome			Covid 19		
Obesity			HPV		
Chronic Kidney Disease					
ORTHOPEDIC DISORDERS			PSYCHIATRIC DISORDERS		
Osteoporosis			Anxiety		
Sports Injury			Depression		
Osteoarthritis			Eating disorders		
SLE,Ankylosing Spondylitis					
TBI			ADDICTION MEDICINE		
			Opioid Use Disorder		
GI DISORDERS			Alcohol Use Disorder		
IBD			Nicotine Use Disorder		
IBS					
GERD					
			PAIN SYNDROMES		
ONCOLOGY			Fibromyalgia		
Lung Cancer			Interstitial Cystitis		
Melanoma			Chronic Pelvic Pain		
Multiple Myeloma					
Colorectal Cancer			PULMONARY DISORDERS		
Benign Brease Disease			Asthma		
Breast Cancer			Sleep Apnea		
Bladder Cancer			COPD		
Brain Tumors					
Leukemia					
Lymphoma					

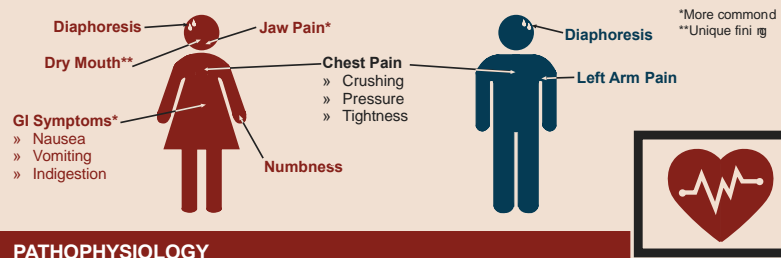
Fact Sheet Template

WOMAN/FEMALE	BOTH/DIVERSE POPULATION DATA*	MAN/MALE
RISK FACTORS	RISK FACTORS	RISK FACTORS
PREVALENCE	PREVALENCE	PREVALENCE
PREVENTION	PREVENTION	PREVENTION
PRESENTATION	PRESENTATION	PRESENTATION
PATHOPHYSIOLOGY	PATHOPHYSIOLOGY	PATHOPHYSIOLOGY
DIAGNOSTIC/SCREENING	DIAGNOSTIC/SCREENING	DIAGNOSTIC/SCREENING
TREATMENT	TREATMENT	TREATMENT

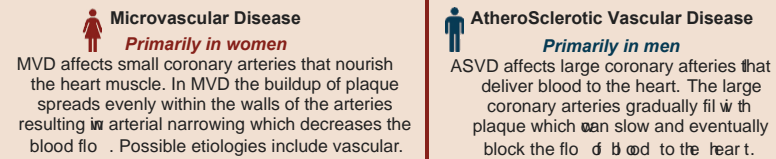
RISK FACTORS

Women	Both	Men
<ul style="list-style-type: none"> History of Pre-Eclampsia >35" Waist Size Total Cholesterol >170 mg/dl HDL Cholesterol <50 mg/dl >55 years old 	<ul style="list-style-type: none"> BP >130/85 FBS >100mg/dl FH of CVD Triglyceride >150 mg/dl LDL Cholesterol >100 mg/dl Smoking Stress Low Exercise 	<ul style="list-style-type: none"> >40" Waist Size Total Cholesterol >200 mg/dl HDL Cholesterol <40 mg/dl

SYMPTOMS



PATHOPHYSIOLOGY



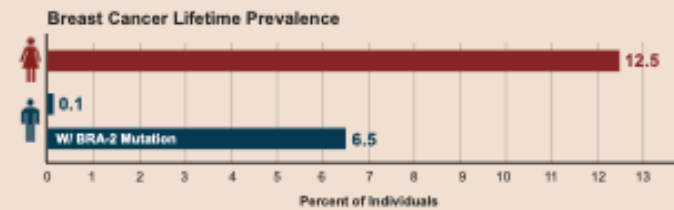
DIAGNOSTICS

Microvascular Disease	Atherosclerotic Vascular Disease
<ul style="list-style-type: none"> Often missed by conventional testing 50% of women have no coronary artery blockage MINOCA (MI with No Obstruction of Coronary Artery) Better diagnostic tools are: <ul style="list-style-type: none"> SPECT (Single Photon Emission Computerized Tomography) High-Sensitive Troponin Test HS Troponin Level >14mg/L diagnoses heart muscle damage 	<ul style="list-style-type: none"> Conventional tests are more accurate Arteriogram Exercise Stress Test Troponin Level >22mg/L diagnoses heart muscle damage

TREATMENTS

Women	Men
<ul style="list-style-type: none"> Vasodilators (NTG, ACE inhibitors, ARBs) Glycoprotein 2B/3A Anticoagulants Statins not useful for primary prevention Daily ASA not recommended for primary prevention 	<ul style="list-style-type: none"> Traditional antihypertensives Traditional anticoagulants

SEX DIFFERENCES: LIFETIME PREVALENCE



SEX DIFFERENCES: RISK FACTORS



SEX DIFFERENCES: SCREENINGS

Women	Men
<ul style="list-style-type: none"> Recommendations vary If risk >20% annual mammogram with MRI 	<ul style="list-style-type: none"> Guidelines not clear Exam is more accurate than x-ray

TREATMENT

- Treatment is usually the same for both sexes, and may include:
 - Chemotherapy
 - Surgery (lumpectomy vs mastectomy)
 - Radiation (if high grade tumor or positive sentinel node)
 - Anti-Hormone Therapy
 - If ER+ or PR+

SEX AND GENDER DIFFERENCES: SURVIVAL



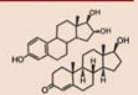
To Learn More or Get Involved
Visit us at amwa-doc.org/sghc or email us at sghcstudents@amwa-doc.org
Source: Laura W. Bush Institute for Women's Health, Sex & Gender Specific Health Learning Module
sexandgenderhealth.org



Hormonal Basis for Sex Differences

- Estrogen, testosterone, and other androgens regulate lipid metabolism in the liver.
- Puberty:** HDL-C falls in boys during puberty and remains 10 mg/dL lower in adult men compared to adult women
 - Pregnancy:** Changes in estrogen levels increase LDL-C, HDL-C, and TG
 - Menopause:** Small increase in LDL-C
 - Estrogen treatment** (eg. some oral contraceptives): May increase TG
 - Polycystic ovary syndrome:** Increase in TG and decrease in HDL-C
 - Male hypogonadism:** Increased LDL-C and TG, which may be corrected by testosterone replacement
 - Male anabolic steroid use:** Very low HDL-C

Abbreviations
HDL-C: high density lipoprotein "good" cholesterol
LDL-C: low density lipoprotein "bad" cholesterol
TG: triglycerides



Prevalence

- In American adults ages 20 years and older from 2015-2018:
- LDL-C \geq 130 mg/dL: 27.4% males, 28.1% females
 - HDL-C < 40 mg/dL: 26.6% males, 8.5% females
 - Mean TG: 100.6 mg/dL males, 86.8 mg/dL females (normal TG \leq 150 mg/dL)



Clinical Presentation

- Dyslipidemia** (abnormal lipid balance) is **usually asymptomatic**.
 - Elevated TG and decreased HDL-C are criteria in **metabolic syndrome**, which has a **higher rate in women** (RR 2.6 compared to 1.98 in men).
 - Residual effects of hypercholesterolemia (high cholesterol) include chest pain, heart attacks, and ischemic stroke while those of elevated TG include pancreatitis.
- In both sexes, there is a positive correlation between LDL-C elevation and atherosclerotic cardiovascular disease (ASCVD), the national leading cause of death. Compared to men, women have an onset of ASCVD 10 years later.**

Treatment

- Statins should not be used during pregnancy.
- Reduction of LDL-C with statins is the same in men versus women.
- Reduction in ASCVD with statins is similar in women and men with the same level of ASCVD risk.
- Females are less likely than males to receive statin dosing at the guideline-recommended intensity** (36.7% for females vs. 45.2% for males).
- Females are more likely to not be offered statin therapy** despite being eligible (18.6% females versus 13.5% males).
- Elderly women are at higher risk of myopathy** (muscle disease) than men.

Fundraising

- ▶ **AMWA Raffle**
- ▶ **Venture Devils Pitch for a SexGen MD App**
 - Will apply again for Fall Cycle
 - Arizona State University
- ▶ **Applied for NIH R-25 (GENDER) Grant:**

“Galvanizing Health Equity Through Novel and Diverse Educational Resources”

Funding is used to defray registration and travel costs for students to present the work



Julia
Lorence



Amanda
Maxfield

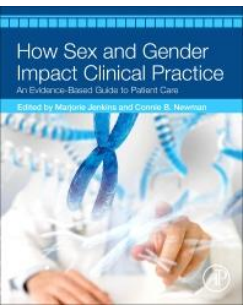
Dissemination

Student Abstracts Presented at > 20 National Conferences

- ▶ SGIM Regional Meetings
- ▶ Nexxus
- ▶ WIMS
- ▶ AMWA
- ▶ NIH ORWH

Free Textbooks delivered to 35 Medical School Curriculum Leaders

- ▶ *How Sex and Gender Impact Clinical Practice: An evidenced-based guide to patient care*. Jenkins, MJ, Newman, CB



National Presentations

Mar 2023: CITI Program Course: K Templeton, C Hunter, C Paul, J Werbinski
Why Sex and Gender Matter From Research to Patient Care

Mar 2023: AAMC: N Bairey Merz, B Abramson (Toronto) J Werbinski
AAMC Building Better Curriculum Webinar

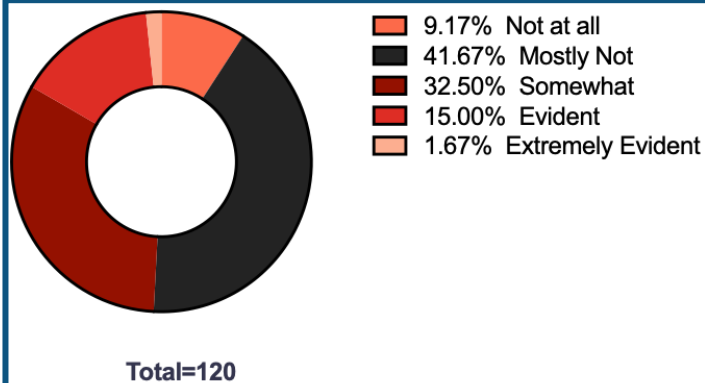
Feb 2023: NPR 1A: J Werbinski Addressing Womens' Healthcare Concerns

Feb 2024: USC: 21st Annual Innovations In Medical Education Conference
Feb 15-16, 2024. (Submitted Interactive Skill-Building Workshop Proposal)

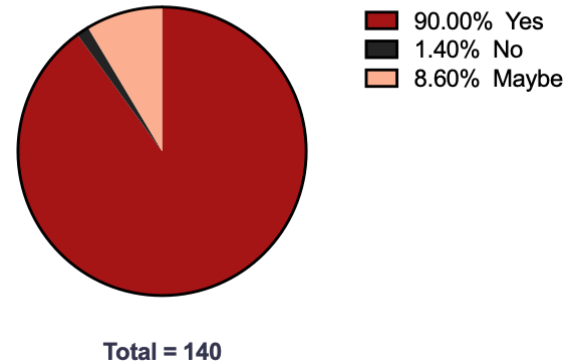
Evaluation

Designed surveys to gauge knowledge of student participants

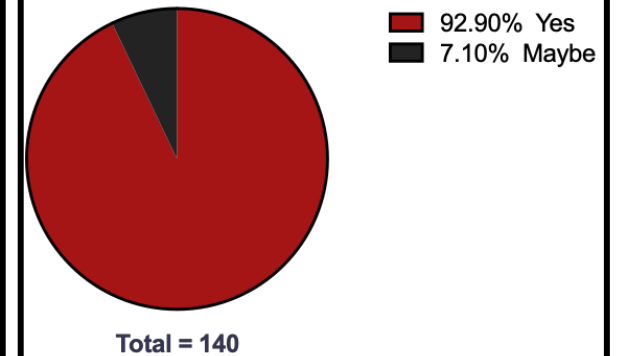
To what extent is sex and gender medicine evident in your curriculum?



Would you be interested in continuing work on this project?



Would you recommend this project to others?



“I had genuinely never even considered that gender might impact response to medication (this was my factsheets topic), so even confronting the topic alone was a learning experience.”

“I was very surprised to see how little research has been done on sex and gender differences of so many disorders and diseases. It seems like medical practitioners don't even have access to knowledge that can be life saving since money has not been put into the research.”

Social Media

Teams forming to take data from Fact Sheets to:

- ▶ AMWA Student Communication Sites
- ▶ Twitter (X)
- ▶ Facebook
- ▶ Instagram
- ▶ You Tube Videos

Do Not Hesitate To Save a ♀ Woman's Life During Cardiac Arrest

Despite tremendous improvement in CPR and first responder defibrillation, survival rates for women have not improved significantly

Women receive bystander CPR between 23% to 27% less than Men

People assume chest compressions must be performed differently on men and women, which is not true

Other Misconceptions include :

- Fear of potentially inappropriate touching or exposure and being accused of sexual assault ending in a lawsuit
- Fear of causing physical injury
- The idea that breasts make CPR more challenging

The chances of injury from CPR are generally low, and legal action is unlikely because variations of Good Samaritan laws offer some protection in all 50 states



Future Strategies

Scholar Rx Bricks Modules

Laura Bush Institute of Women's Health Site

Social Media Posts

SexGenMD App?

Embed in all EMRs and Up To Date

Your thoughts?_____

What is a Brick?

(Hosted by Scholar RX)

- **Rx Bricks uses short, high-yield, interactive lessons called “bricks.”**
- **Modular, flexible, and customizable.**
- **Content is broken down into the smallest cohesive learning units, or "bricks", and organized around basic science topics or clinical concepts.**
- **Each brick uses clear language to explain and contextualize key topics, many in less than 20 minutes.**
- **Provides built-in review tools (quizzes) to test understanding of the content right away.**



What are your Ideas?

WE ARE OPEN TO YOUR SUGGESTIONS GOING FORWARD

Thank you for your interest and support