



*In Education, Research, & Clinical Care:*  
***Sex~~X~~ Makes a Difference***

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**Lubbock, TX**

*May 11, 2017*



## Disclosure

- ✓ No financial disclosures
- ✓ Representative of Texas Tech Univ HSC
- ✓ The information provided by the speaker are her own and not meant to represent official statements of U.S. Food and Drug Administration



## Learning Objectives

- ✓ Understand the unique terms sex and gender
- ✓ Recognize the limitations of applying a one-sex lens in research, education and clinical care
- ✓ Apply a sex and gender lens to achieve personalized patient-centered care



# Starting on the same page

*Definitions*



# Institute of Medicine Definitions

Source: [Exploring the Biological Contributions to Human Health: Does Sex Matter](#) (2001)



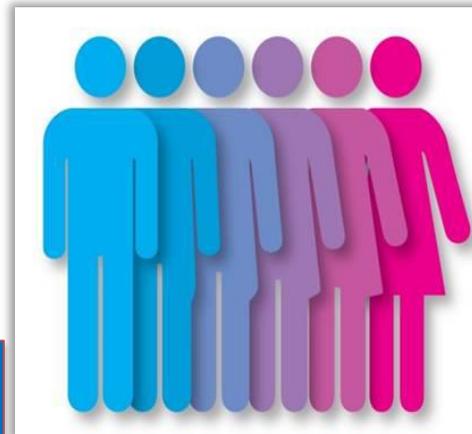
## SEX



- Chromosomal
- Physiological
- Typically binary
  - Male/Female

## GENDER

- Environmental
- Society
- Spectrum
  - Masculine/Feminine
  - Man/Woman
  - Both
  - Neither





**Sex**



Biological construct

**Gender**



Social construct  
(external)

**Gender Identity**



Gender conception of self  
(internal)

**Transgender**



Gender identity differs from  
the person's sex at birth



# Stimulation of Organs Women's Reproductive Organs



Breasts

NOT  
"bikini medicine"

Ovaries

Uterus





# **Sex and Gender in Biomedical Research and Health Policy**



1977

FDA Mandate:  
Women of  
childbearing  
age in clinical  
trials

In 1977, the FDA recommended that premenopausal women capable of becoming pregnant be excluded from early phases of drug trials.

*(Including all women using reliable methods of contraception, women whose male partners had had vasectomies or used condoms, and women who were "single.")*

Although the FDA guidelines pertained only to early phases of drug development, in practice the participation of women in all phases was affected



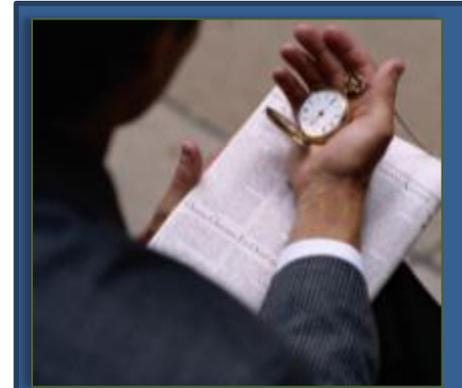
**1985**

Women's  
Health: Report  
of the Public  
Health Service  
Task Force

“the historical lack of research focus on women’s health concerns had compromised the quality of health information available to women as well as the health care they receive”



- **Consider** the inclusion of women in the study populations for all clinical research efforts.
  - Exceptions would be studies of diseases which exclusively affect males or where involvement of pregnant women may expose the fetus to undue risks.
- General differences **should be** noted and evaluated.
- If women are not to be included, a clear rationale **should be** provided for their exclusion.



1986

NIH Inclusion  
Policy:  
*voluntary*



1992

GAO Study  
FDA

Women were **significantly underrepresented in drug trials**

Even when women were included, **data were not analyzed** sufficiently

Recommended ensuring drug companies consistently include **“sufficient numbers of women in drug testing”**



1993

NIH Reformation  
Act  
NIH Office of  
Research in  
Women's Health  
established

## 1993 NIH REVITALIZATION ACT

Women & minorities to be included in clinical research

Ensure that valid scientific analysis **could be** performed in determining whether differences existed between women and minorities in relation to other study subjects

Include both sexes in adequate numbers to ensure data **could be** analyzed for an effect of gender on safety and efficacy of proposed intervention or drug.

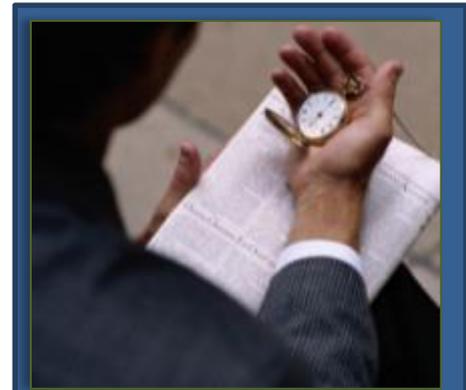


## Food and Drug Modernization Act:

Congress directs FDA to develop guidance on inclusion of women and minorities in clinical trials

## Demographic Rule requires sponsors:

- Tabulate the trial population by age group, sex, and race in **Investigational New Drug (IND)** applications
- Analyze safety and efficacy by age group, sex, race, and other variables as appropriate in **New Drug Applications (NDA)**



1997

FDA:  
Modernization  
Act  
Demographic  
Rule



U.S. Department of Health and Human Services

**FDA** U.S. Food and Drug Administration  
Protecting and Promoting *Your* Health

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## Drugs

Home > Drugs > Drug Approvals and Databases

### Drug Approvals and Databases

Approved Drugs

## Drug Trials Snapshots

SHARE | TWEET | LINKEDIN | PIN IT | EMAIL | PRINT

Sign Up for Email Updates about Drug Trials Snapshots

**DRUG TRIALS SNAPSHOTS**

### WHAT IS THE PURPOSE OF DRUG TRIALS SNAPSHOTS?

Drug Trials Snapshots provide consumers with information about who participated in clinical trials that supported the FDA approval of new drugs. The information provided in these Snapshots also highlights whether there were

<http://www.fda.gov/Drugs/InformationOnDrugs/ucm412998.htm>



## % Women Reported in FDA Drug Trial Snapshots (cardiovascular drugs approved since Jan 2014)

BRAND NAME	INDICATION	WOMEN
UPTRAVI	Pulmonary arterial hypertension	80%
REPATHA	Hypercholesterolemia (HoFH)	50%
SAVAYSA	Reduce risk of pulmonary embolism in VTE patients	43%
PRALUENT	Hyperlipidemia	40%
SAVAYSA	Reduce the risk of stroke in a Afib patients	38%
KENGREAL	Blood thinner following heart procedure	28%
CORLANOR	Heart failure	24%
ENTRESTO	Heart failure	22%

Source: <http://www.fda.gov/Drugs/InformationOnDrugs/ucm412998.htm>



United States Government Accountability Office

Report to Congressional Requesters

October 2015

# NATIONAL INSTITUTES OF HEALTH

Better Oversight  
Needed to Help  
Ensure Continued  
Progress Including  
Women in Health  
Research

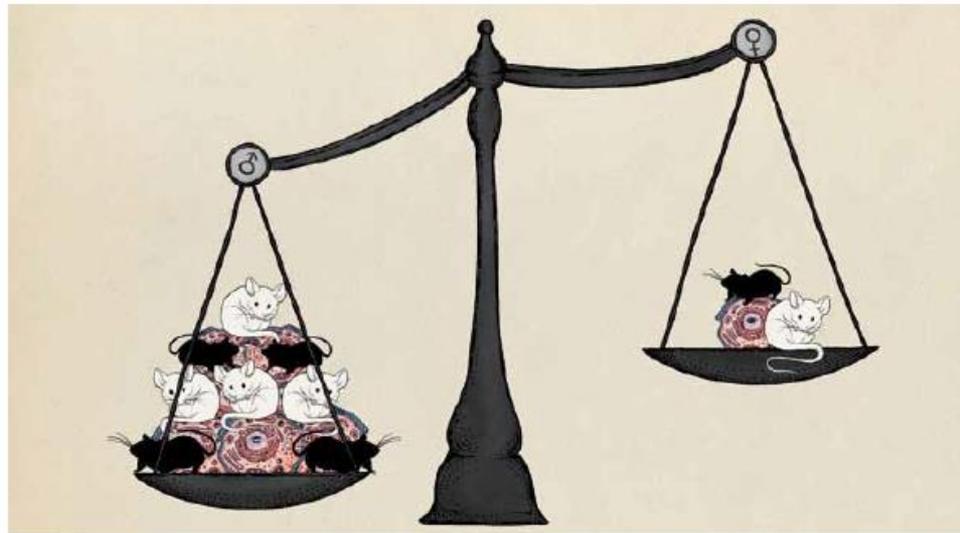


- 57% of 2014 NIH-funded clinical trials subjects were women
- **No data element** in NIH's data system to indicate whether an awardee's study should or does include plans for an analysis in research outcomes by sex
- NIH **lacks summary data**, such as the percentage of awardees in a given year with trials designed to identify potential differences in clinical outcomes by sex
  - **Compromises** NIH's monitoring of Inclusion Policy implementation
  - **Limits** NIH's assurance that it is supporting research that can be used to shape improved medical practice for both women and men



## NEW RESEARCH POLICY January 2016

COMMENT



## NIH to balance sex in cell and animal studies

Janine A. Clayton and Francis S. Collins unveil policies to ensure that preclinical research funded by the US National Institutes of Health considers females and males.

# THE COLBERT REPORT

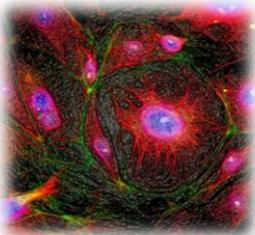
MENU ▾





# BIAS in the RESEARCH PIPELINE

Cell-  
Based



Animal-  
Based



Human  
Trials



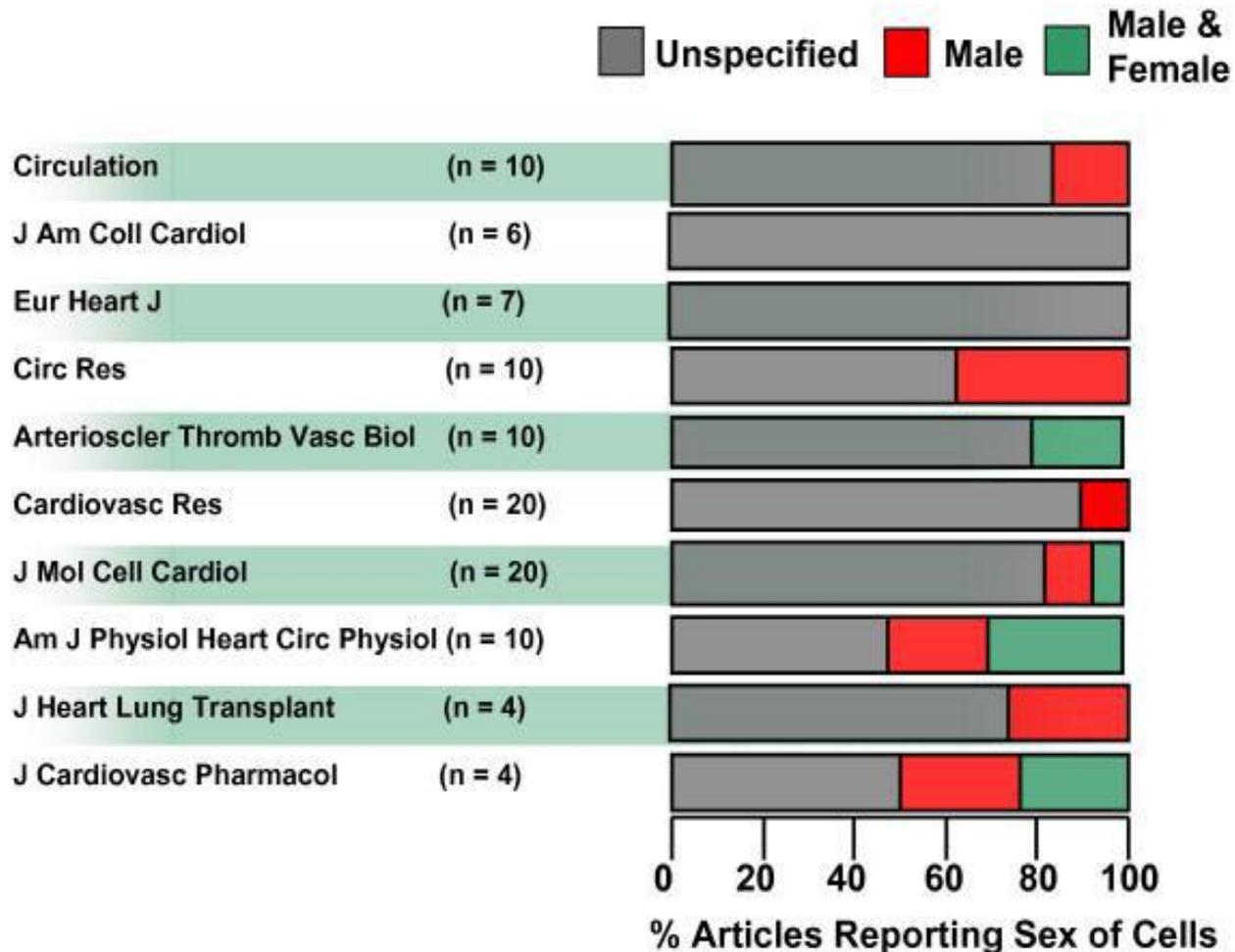
Clinical  
Care





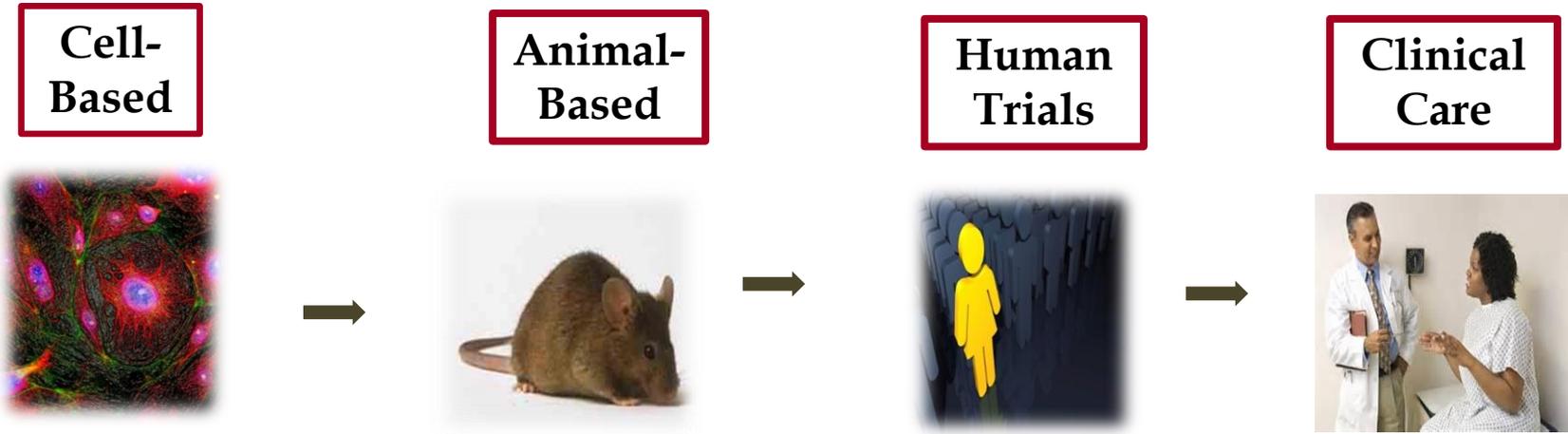
Taylor, K. et al. (2011). Reporting of Sex as a Variable in Cardiovascular Studies using Cultured Cells. *Biology of Sex Differences*, 2 (11), 1-7.

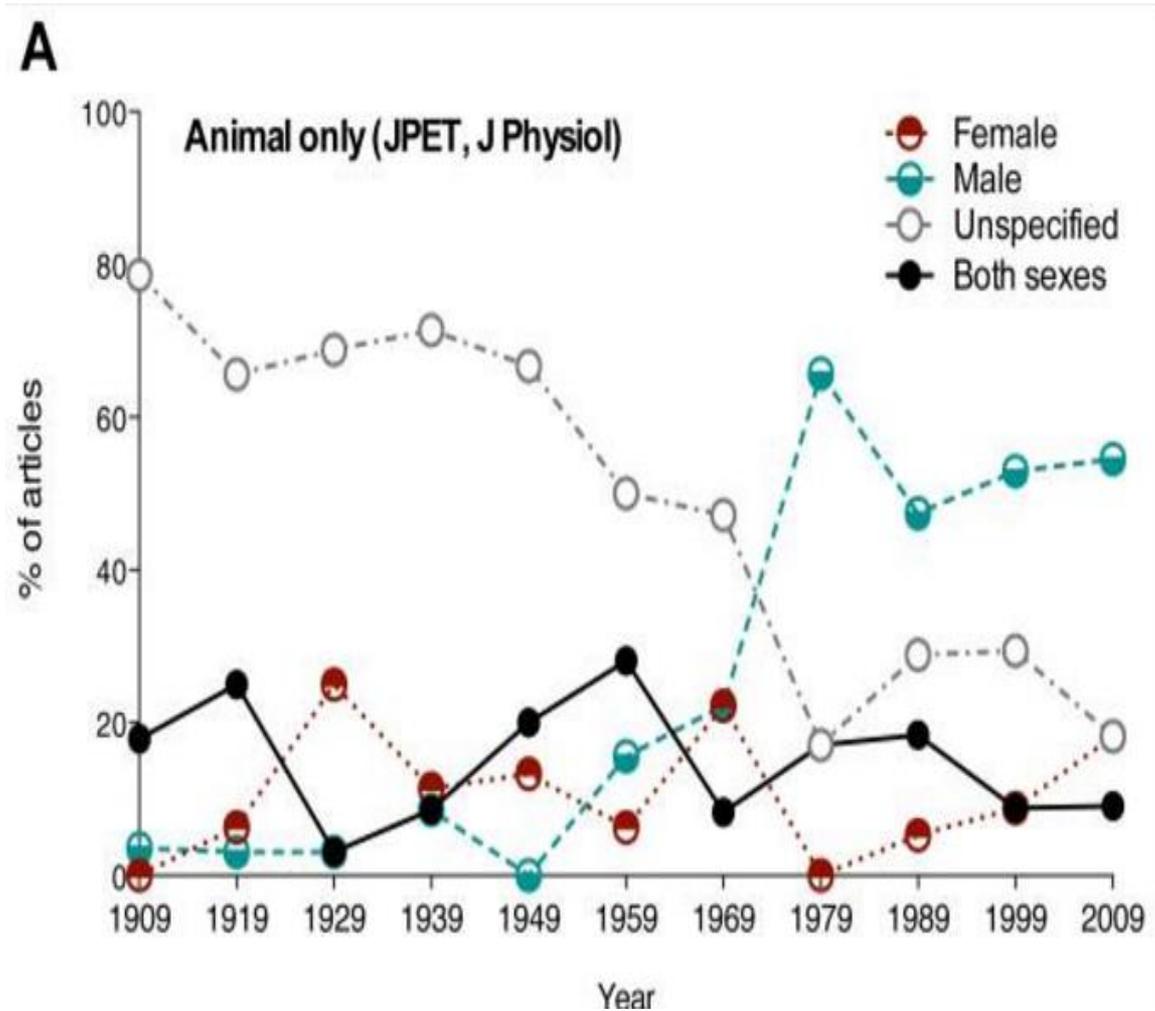
## Percentage of articles reporting sex of cells in experiments





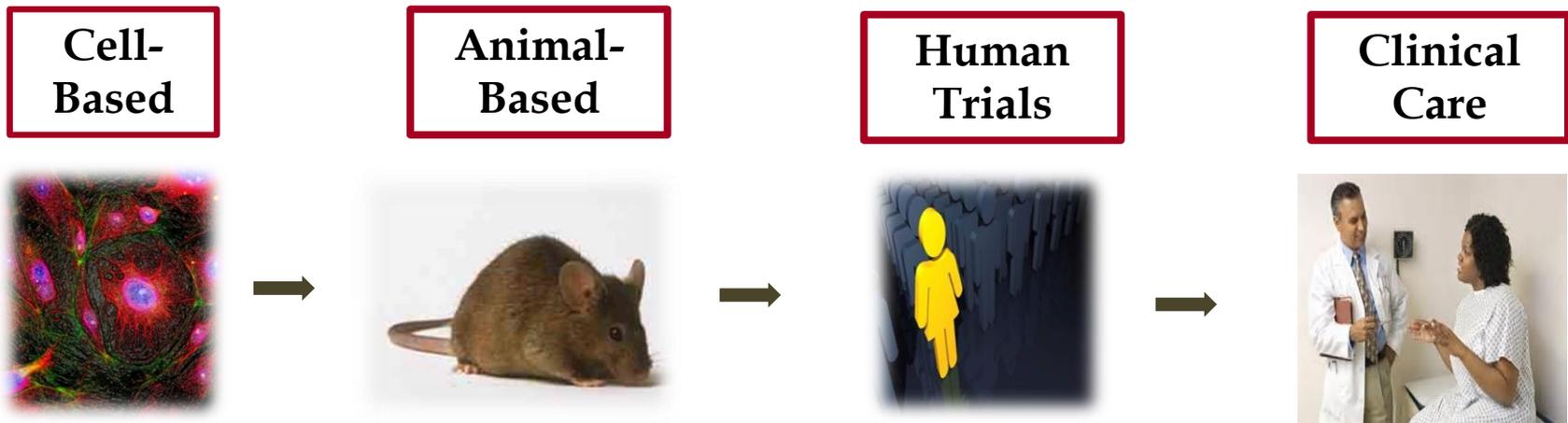
# BIAS in the RESEARCH PIPELINE





Beery AK, Zucker I. Sex Bias in Neuroscience and Biomedical Research. *Neuroscience and biobehavioral reviews*. 2011;35(3):565-572.

## BIAS in the RESEARCH PIPELINE





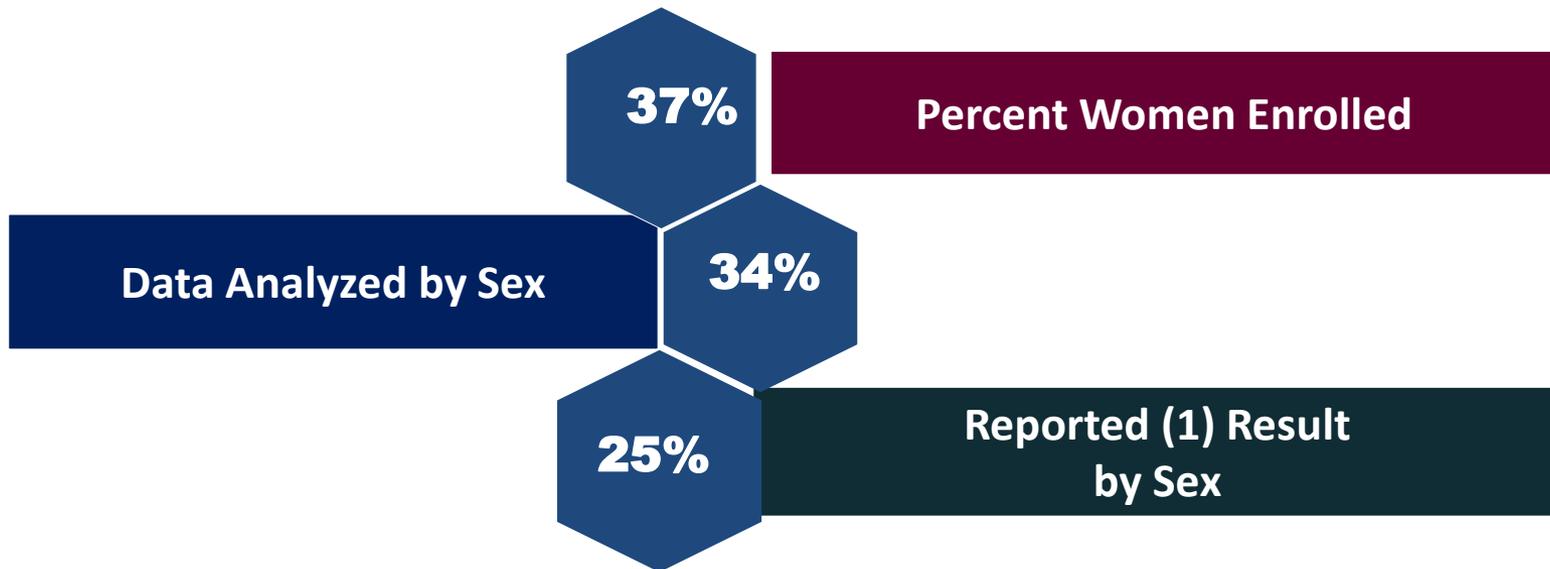
## Review of Federally Funded RCTs 9 Major Scientific Journals in 2009

1. New England Journal of Medicine
2. Journal of the American Medical Association
3. Annals of Internal Medicine
4. American Journal of Medicine
5. Journal of Clinical Oncology
6. Circulation
7. Clinical Infectious Disease
8. Obstetrics and Gynecology
9. American Journal of Obstetrics and Gynecology

Geller S et al. Inclusion, analysis, and reporting of sex and race/ethnicity in clinical trials: have we made progress? J Womens Health 2011;20(3):315-320.



# Sex in Clinical Trials: Inclusion, Analysis and Reporting: n= 87



Geller S et al. Inclusion, analysis, and reporting of sex and race/ethnicity in clinical trials: have we made progress? J Womens Health. 2011;20(3):315-320.



## Coronary Drug Project

To determine whether regular administration of lipid modifying drugs (clofibrate, nicotinic acid, *estrogen*, dextrothyroxine) to men with a documented myocardial infarction would result in significant reduction in total mortality over a 5 year period.

*Source: ClinicalTrials.gov*

**1973**



## **Flibanserin**

- Drug for treatment of hypoactive sexual desire disorder in women
- Safety studies conducted determine interaction of drug with ETOH
  - 18 of 20 subjects were men
- Post-marketing safety studies in women were required by FDA at the time of drug approval

**2015**

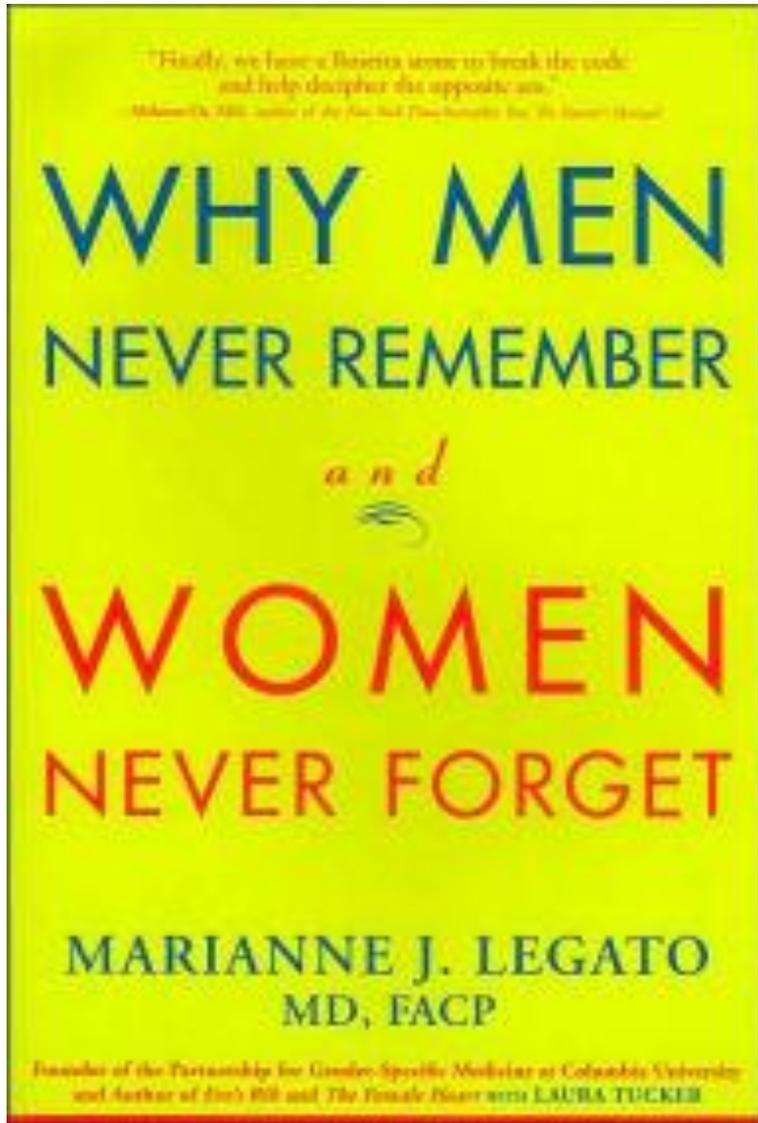


## The Issue

When biomedical research is biased our abilities are limited when teaching future clinicians evidence-based care for all



*Are men and women  
really the same?*



## RESEARCH

CHRISTMAS 2014: GOING TO EXTREMES

# The Darwin Awards: sex differences in idiotic behaviour

 OPEN ACCESS

Ben Alexander Daniel Lendrem *student*<sup>1</sup>, Dennis William Lendrem *project manager, Institute of Cellular Medicine*<sup>2</sup>, Andy Gray *consultant orthopaedic trauma surgeon*<sup>3</sup>, John Dudley Isaacs *director, Institute of Cellular Medicine*<sup>2</sup>





# EVIDENCE OF DIFFERENCES

**Cardiovascular**  
**Suicide**  
**Sudden Death**  
**Aneurysms**  
**Impulsivity**  
**Cardiomyopathy**  
**Autism**  
**Antisocial**



**Autoimmune**  
**Depression**  
**Arrhythmia**  
**Hip Fractures**  
**Cholecystitis**  
**Irritable Bowl**  
**Migraine**  
**Alzheimers**





**Cardiac Resynchronization Therapy in  
Women: US Food and Drug Administration  
Meta-analysis of Patient-Level Data**

(Zusterzeel R., et al. *JAMA Intern Med.* 2014;174(8):1340-1348)

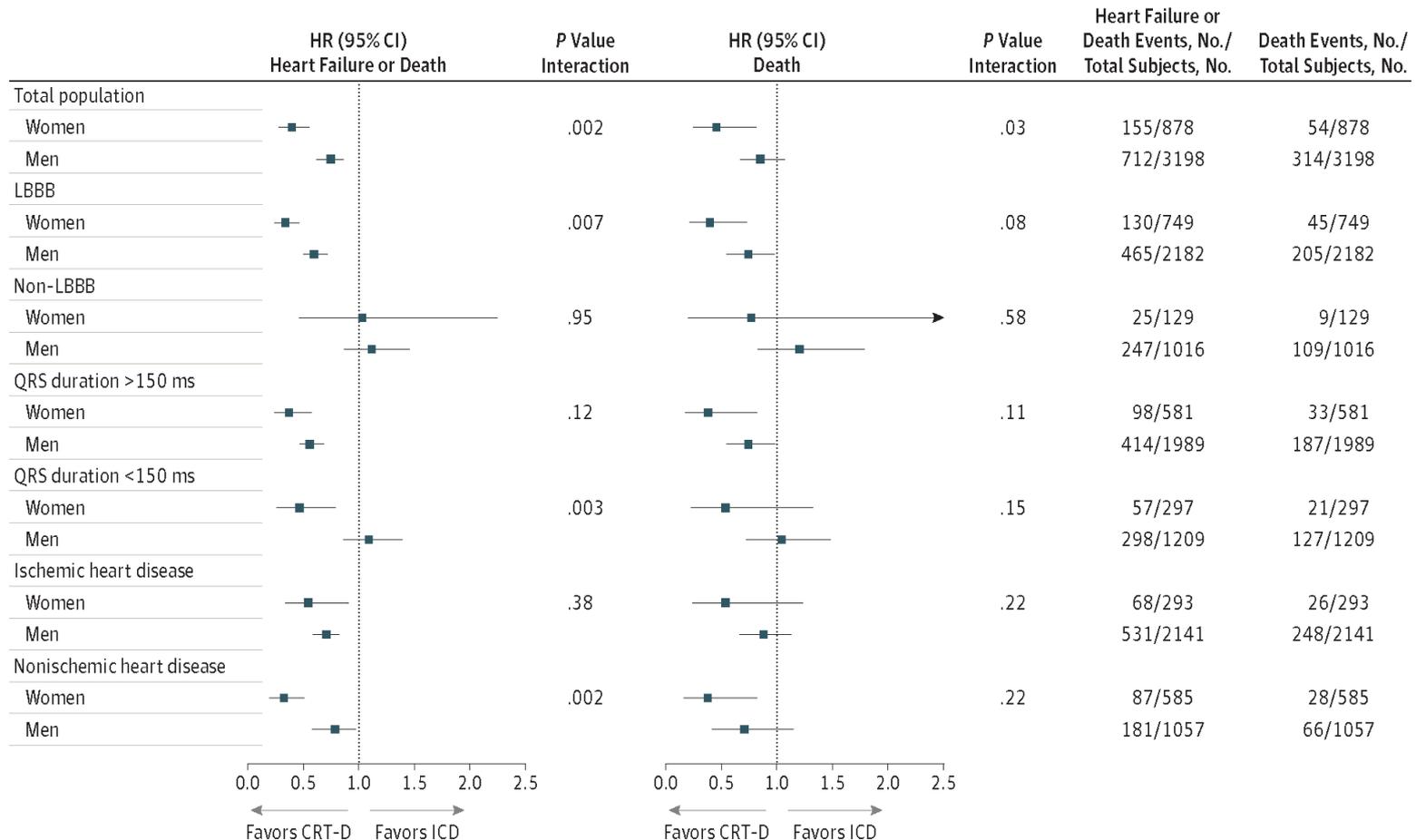


## Cardiac Resynchronization Therapy

- Combined 3 clinical trials CRT-D vs. Implantable Cardioverter Defibrillator (ICD) in patients with mild heart failure (New York Heart Class II)
- 22% of the combined subjects were women



## CRT-D to ICD HRs for Outcomes by Sex Combined Study Population



CRT-D indicates cardiac resynchronization therapy; HR, hazard ratio; ICD, implantable cardioverter defibrillator; LBBB, left bundle branch block; ms, milliseconds. *P* values represent sex-by-treatment interactions.



## Results

- Overall, women benefited more than men.
- Neither group benefited with LBBB and QRS of  $<130$  milliseconds.
- The majority benefited from LBBB with QRS of  $>150$  milliseconds.



## Results

- The main difference came in patients with LBBB and a QRS of 130 to 149 milliseconds.
- Women had a 76 percent reduction in heart failure (absolute difference 23%) or death and a 76 percent reduction in death alone (absolute difference 9%), but there was no significant benefit in men.



## This finding matters because....

Cardiovascular clinical guidelines limit the Class I indication for CRT-D to patients with LBBB and QRS of 150 milliseconds or longer.

**8 out of 10 discontinued medications between  
1997-2001**

**Women experienced the majority of adverse events  
including death**



# Prescription Drugs with Evidence of Greater Health Risks for Women

Pondimin (fenfluramine hydrochloride)	Appetite suppressant	Valvular heart disease
Redux (dexfenfluramine hydrochloride)	Appetite suppressant	Valvular heart disease
Seldane* (terfenadine)	Antihistamine	Torsades de Pointes (potentially fatal irregular heartbeat)
Posicor (mibefradil dihydrochloride)	Cardiovascular	Lowered heart rate in elderly women and adverse interactions with 26 other drugs
Hismanal (astemizole)	Antihistamine	Torsades de Pointes
Rezulin (troglitazone)	Diabetic	Liver failure
Propulsid <sup>b</sup> (cisapride monohydrate)	Gastrointestinal	Torsades de Pointes
Lotronex (alosetron hydrochloride)	Gastrointestinal	Ischemic colitis (intestinal inflammation due to lack of blood flow)

QVAL WHITE TAB  
Side 1: AMB 10  
Side 2: 5421

TAKE ONE TAB  
AT BEDTIME AS  
SLEEP

**AMBIEN 10MG**

QTY 30

NO REFILLS - DR.



KIA  
162-EMK

Warning sign with yellow and black diagonal stripes.

Black sandal lying on the grass.



**SEX & GENDER  
MEDICAL EDUCATION**



## The Issue

When medical education does not integrate evidence and awareness of sex and gender into curricula it creates a gap in knowledge which ultimately affects the treatment of patients



# 2011 Climate Survey Medical School Faculty\*

- Distributed to the 2011 AAMC New Horizons Group + 30 DO Schools (159)
- **70%** of responding **46** US medical schools did not have formal sex and gender specific integrated medical curriculum
- **83.1% did not** have and integrated women's health curricula **outside** of traditional Ob/Gyn
- Overall **lack of coverage** in health topics where sex and gender-based evidence exists



# The Evidence

Endothelial  
Dysfunction:  
Normal Coronary MI  
7X > women

**Heart**

**Bones**

Men are under-  
screened & under-  
treated for  
osteoporosis

Women:  
>organ toxicity  
<amounts over  
<amount of time

**ETOH**

**RX**

2014 FDA recommends  
1/2 -maximum  
zolpidem dosing in  
women



# **Perspective of Students and Faculty**

## ***National Surveys***

RESEARCH

Open Access



# Sex and gender in medical education: a national student survey

Marjorie R. Jenkins<sup>1\*</sup>, Alyssa Herrmann<sup>2</sup>, Amanda Tashjian<sup>2</sup>, Tina Ramineni<sup>2</sup>, Rithika Ramakrishnan<sup>2</sup>, Donna Raef<sup>1</sup>, Tracy Rokas<sup>3</sup> and John Shatzer<sup>4</sup>





## DEMOGRAPHICS

- Students from a total of **205** schools including regional campuses participated
- **153** schools met the final inclusion criteria
- **1,191** students completed the survey
- **1,097** met the final inclusion criteria

School Year	MS 1	MS 2	MS 3	MS 4	5+ Years
% of respondents	25.4	33.7	21.5	17.6	1.8
Gender	Female		Male	Other	
% of respondents	74.3		25.2	0.5	



## MEDICAL STUDENT ATTITUDES AND PERCEPTIONS

I am familiar with  
the topic of sex and  
gender medicine

85%

Medical education  
should include  
teaching of sex and  
gender

96%

94%

My medical  
education includes  
teaching of sex and  
gender differences

63%

59%

Knowing sex and  
gender medicine  
improves one's ability  
to manage patients

The majority of  
medical knowledge is  
based on data  
obtained from males



## Moderate to Extensive Coverage

	Medical History	Domestic Violence	Substance Use	Mental Health	Nutrition
Florida (59)	73.3	64.4	70.7	76.3	36.8
FSU (2)	100	0	100	100	0

	Pharm	Pulmonary	Cardiology	Rheum	ID	Endo
Florida (59)	56.9	59.3	68.4	69.1	62.7	80.7
FSU (2)	0	0	100	100	0	100



# Survey Question:

Are there evidence-based health differences between men and women within these topics?

Topic	Yes	
	Male	Female
Presenting symptoms of MI	83.5	83.6
Dosing of Zolpidem	<b>20.4</b>	<b>10.6</b>
Outcomes after low impact fractures in adults	<b>59</b>	<b>39.3</b>
Risk factors for the development of osteoporosis	92.2	85.5



There are evidence-based health differences between men and women in regard to....**YES**

	MI	Aspirin	Domestic Violence	Zolpidem	Narcotic Addiction	Smoking Cessation
Florida (59)	95.2	58.7	71.0	12.9	37.1	46.0
FSU (2)	100	0	100	0	0	0



## Surveys: Key Points

- Students perceive sex and gender differences are important to the ability to manage patient care: 96%
- There is discordance between expressed knowledge and perceived amount of exposure within curricular topics
- There is marked inconsistency across topics in regard to the reported and observed inclusion of sex and gender differences within medical education.

**Formal approach to integration of sex and gender evidence into medical education is needed.**



## PARTICIPANTS' SURVEY RESULTS



### *An Overview*

I am familiar with the topic of sex and gender differences in health and disease.

PRE-TEST: 81% Agree/Strongly Agree POST-TEST: 93% Agree/Strongly Agree

Does your institution require OSCEs or other simulated patient cases in women's health?

PRE-TEST: 28% No/Unsure/No, but Interested POST-TEST: 37% No/Unsure/No, but Interested

The FDA should consider recommending dosages based on the sex of the patient.

PRE-TEST: 69% Agree/Strongly Agree POST-TEST: 97% Agree/Strongly Agree

Sex and gender based medicine is a fundamental aspect of precision medicine.

PRE-TEST: 40% Strongly Agree POST-TEST: 81% Strongly Agree

"The resources that were made available to Summit participants are outstanding, and they will facilitate the promotion of additional curricular emphasis of this area."

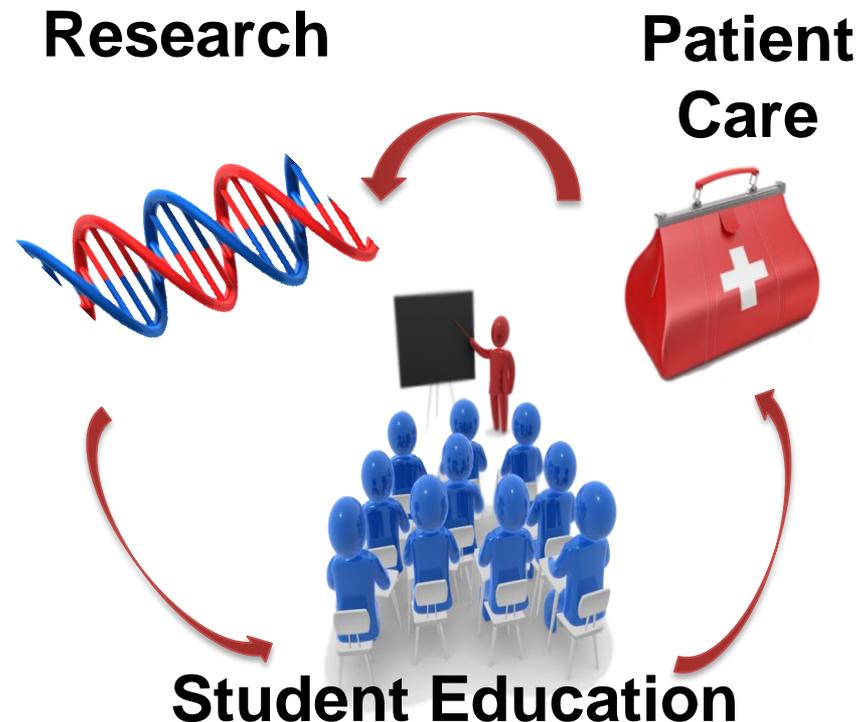
"I will develop a proposal for our curriculum committee that we include sex- and gender-specific material in all our courses and clerkships...I will also request that student assessments include items about sex- and gender-based differences."



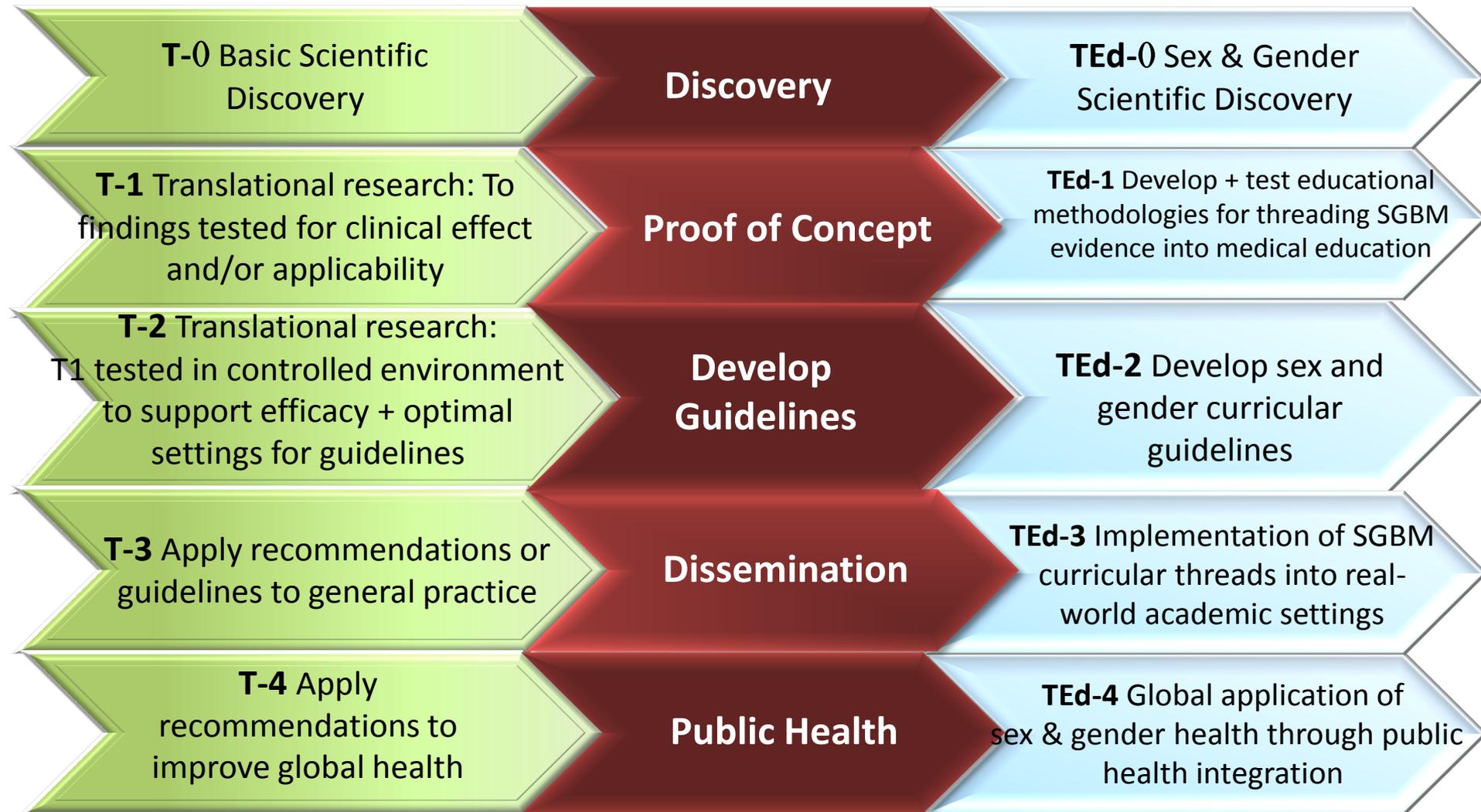
# Curricular Integration

***“A scientific discovery, regardless of its potential, will ever impact patients, prevent deaths, or improve lives without first being transformed into clinical knowledge.***

***Such transformation occurs in the learning environment!”***

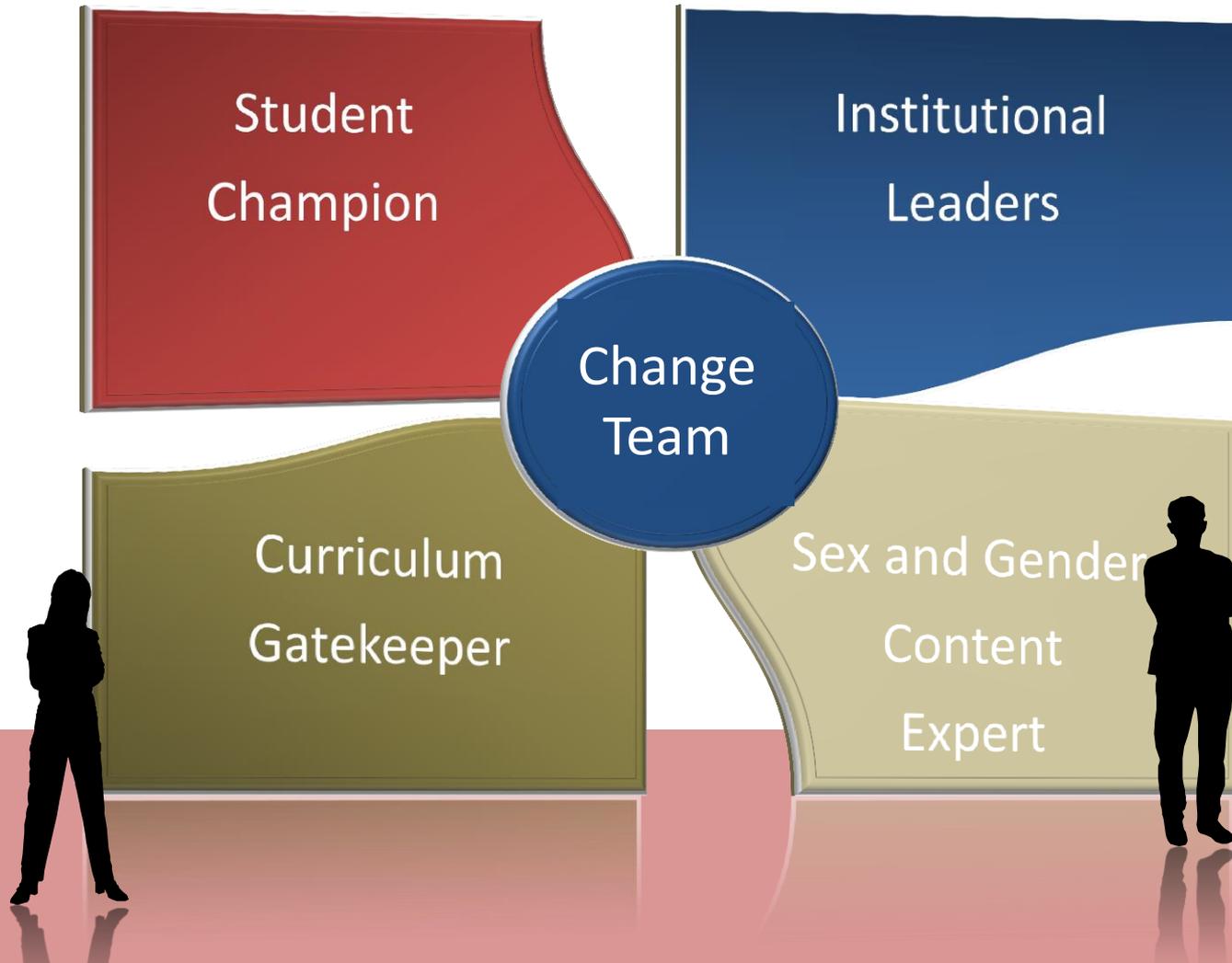


# A Framework of Translation Education





# Team Model for Curricular Change





## Undergraduate Medical Education

## GME

## CME

Basic Science  
Normal  
Anatomy and  
Physiology  
1

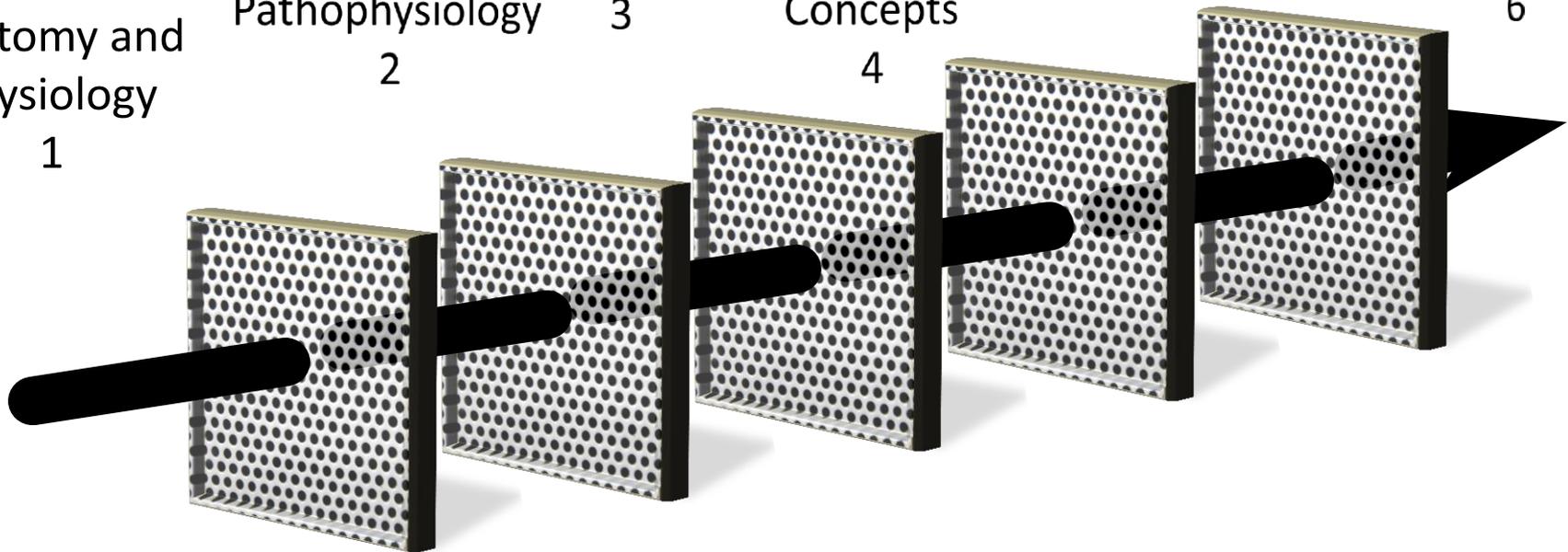
Pathophysiology  
2

Clinical  
Clerkships  
3

Advanced  
Clinical  
Concepts  
4

Residency  
5

Clinical  
Practice  
6



## Sex and Gender Filter: UME to Clinical Practice



# Common Barriers to Integrating New Information into Curricula

- Resources
- Time
- Faculty  
Development

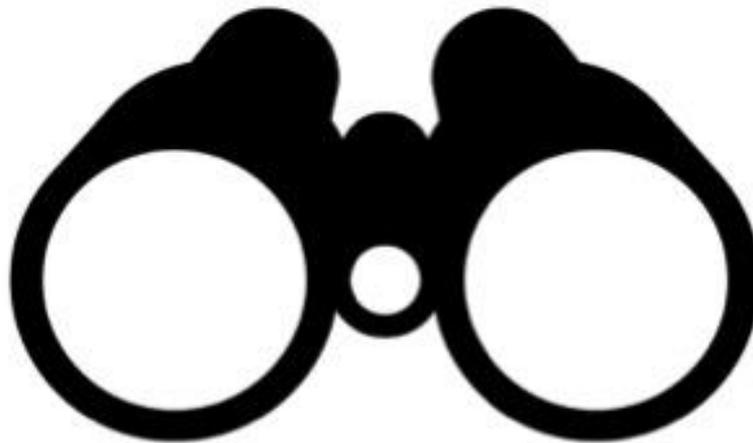


# Resources *and* Time



## Development of a PubMed Based Search Tool for Identifying Sex and Gender Specific Health Literature

Michael M. Song, PharmD,<sup>1</sup> Cheryl K. Simonsen, MLIS,<sup>2</sup> Joanna D. Wilson, DO,<sup>3</sup> and Marjorie R. Jenkins, MD<sup>3</sup>





[www.sexandgenderhealth.org](http://www.sexandgenderhealth.org)

**Username :**  
present\_preview  
**Password:**  
Present\_preview

Repository of  
Sex and Gender  
Tools for Health  
Professions

The screenshot shows the SGSH website homepage. At the top, there is a navigation menu with links for Slide Library, Learning Modules, Cases, Communication, Partners, Resources, CME/CPD, and Contact Us. Below the menu is a red header with the SGSH logo and the text "SEX AND GENDER SPECIFIC HEALTH". A paragraph below the header states: "This project is supported by the Office of the President, Offices of the Deans of the Schools of Medicine, Pharmacy, Allied Health Sciences and Nursing, and the Laura W. Bush Institute for Women's Health. Please read our [Terms and Conditions](#)." Below this is a large photograph of four diverse people smiling. At the bottom, there are three columns of text: "A. WHAT IS SGSH?" (Sex and gender are both basic human variables and important health determinants.), "B. PROJECT SUMMARY" (The TTUHSC SGSHC project began in the School of Medicine in 2010), and "C. ABOUT US" (Texas Tech Health Sciences Center, Laura W. Bush Institute for Women's Health). The footer contains the XXY logo, "SEX & GENDER SPECIFIC HEALTH" text, copyright information "All original content © 2014 TTUHSC LWBIWH. All rights reserved.", and the "Laura W. Bush INSTITUTE for WOMEN'S HEALTH" logo.



## Slide Library

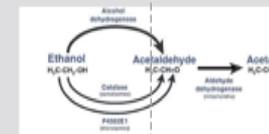
- Ready to use
- Speaking points
- Reference articles
- Level of evidence

Jenkins M., Casanova R., et. al. [www.sgsh.org](http://www.sgsh.org)

Indent More

### Metabolism:<sup>1</sup>

- Ethanol to Acetaldehyde via *alcohol dehydrogenase* (ADH).
- Aldehyde to Acetate via *aldehyde dehydrogenase* (ALDH).
- Acetate used as energy for the body.



<http://pubs.nsl.gov/publications/AA7/A472.htm>

### Alcohol Metabolism

Sex and Gender Based Medicine

#### Speaker Notes:

- At the liver, ethanol is broken down in several steps to produce energy for the body:<sup>1</sup>
- First, Ethanol is metabolized into Acetaldehyde via alcohol dehydrogenase (ADH).
- Next, Acetaldehyde is broken into Acetate via aldehyde dehydrogenase (ALDH).
- Acetate is used as fuel for the body.

#### Reference Citation w/ Level of Evidence:

1. Li, T.K., et al. (1985). Genetic variability of enzymes of alcohol metabolism in human beings. *Annals of Emergency Medicine*, 15(9), 997-1004. <http://www.sciencedirect.com/science/article/pii/S0196064486801184#>

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Date Submitted  
2/1/2016

Last Revision Date

#### Keywords for search engine

- Alcohol, Distribution and Metabolism



## Slide Library

- Peer reviewed
- Add to existing lectures
- Searchable

SGSH

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This library is intended to be a resource for faculty to introduce and reinforce the importance of sex- and gender-based medical research in a variety of health topics. Slide sets are available for download as a whole topic or according to subtopics and is searchable by keywords. If you are interested in submitting your slides, please visit the ["For Authors"](#) page. Contents of the SGSH website are protected by copyright law and are intended for use of authorized users only. If you have questions about obtaining access and payment of the annual fee, please [contact us](#).

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#### Categories

- All
- Alcohol
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- Breast Cancer
- Colon Cancer
- Depression
- Diabetes
- Lung Cancer
- Multiple Myeloma
- Osteoporosis
- Sleep Disorders
- Urinary Tract
- Infection

#### Alcohol Metabolism

SGSH | Gender | Endocrinology

Author: Susan E. Bergeson

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#### Alcohol Use Disorder

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Author: Susan E. Bergeson

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#### Conclusions

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#### Epidemiology of Alcohol Abuse

SGSH | Gender | Endocrinology

Author: Susan E. Bergeson

SUBSCRIPTION ONLY

#### Sex and Gender Differences in Alcohol Use Disorder

SGSH | Gender | Endocrinology

Author: Susan E. Bergeson

SUBSCRIPTION ONLY

#### Alcohol-Related Pathology

SGSH | Gender | Endocrinology

Author: Susan E. Bergeson

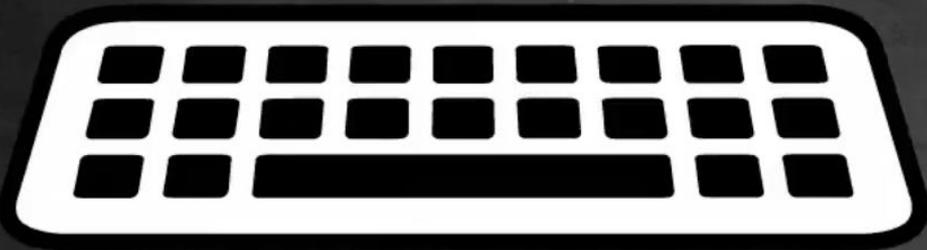
SUBSCRIPTION ONLY

previous
1
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next

Jenkins M., Casanova R., et. al. [www.sgsh.org](http://www.sgsh.org)



# Slide Library Author Guide





## Learning Modules

- IPE
  - Built in
  - SGSH

**HOME**   **MODULE 1. OSTEOPOROSIS**   PART 1   PART 2   PART 3   My Account   Sign Out

PART 1

Biology Researcher   Doctor   Nurse

1. Introduction  
2. Initial Cases  
3. Objectives  
4. Experts  
5. Case Solution  
6. Summary  
7. Assessment

**Dr. Filmore**

Nice to meet you. Alexis mentioned that you might be coming by my office. I can visit with you as soon as I finish responding to a few emails. While you're waiting, I'd like you to watch a short video that will give you a basic background of bone biology. Just click on the the arrow and watch the video. When you're done, I'll meet you in the conference room just around the corner.

**Bone Remodeling: Osteoblasts and Osteoclasts**

Used by permission of Amgen.

XXX HEALTH   SEX & GENDER SPECIFIC HEALTH   All original content © 2014 TTUHSC LWBIWH. All rights reserved.   *James W. Cook* INSTITUTE for WOMEN'S HEALTH TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER



## Learning Modules

- Cases follow male and female patient through disease process

The screenshot shows a web-based learning module interface. At the top, there is a navigation bar with 'HOME', 'MODULE 1. OSTEOPOROSIS', 'PART 1', 'PART 2', and 'PART 3'. On the right of this bar are 'My Account' and 'Sign Out' links. Below the navigation bar, the current section is 'PART 1' and 'Initial Cases'. A left-hand menu lists seven items: 1. Introduction, 2. Initial Cases (highlighted in orange), 3. Objectives, 4. Experts, 5. Case Solution, 6. Summary, and 7. Assessment. The main content area is titled 'Initial Cases' and contains two paragraphs of text. The first paragraph describes watching a patient interview with Mrs. Liu. The second paragraph explains that a partially completed medical chart for Mrs. Liu is shown to the right, and users can type information into the chart as they listen to the interview. Below the text is a small image of a female doctor. To the right of the text is a video player showing a 3D-rendered scene of a doctor (Mrs. Liu) in a room. Below the video player is an 'Interactive SMART Board' with several form fields: 'Age:', 'Last Mammogram Date:' (with 'Select' and 'Results' dropdowns), 'Last colonoscopy Date:' (with 'Select' and 'Results' dropdowns), 'Last osteoporosis screening Date:', 'Exercise regimen', 'Alcohol Frequency', and 'Current Medication'. A 'Check Answer' button is located at the bottom right of the SMART Board. At the bottom of the page, there is a footer with logos for 'XXX SEX & GENDER SPECIFIC HEALTH', 'All original content © 2014 TTUHSC LWBWH. All rights reserved.', and 'Institute for Women's Health TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER'.



## Learning Modules

- Pre- and post-test
- USMLE Type Questions
- Attitudes
- Knowledge

HOME
MODULE 1. OSTEOPOROSIS
My Account Sign Out

Pretest

1. As people age, \_\_\_\_\_ which leads to bone resorption exceeding bone formation resulting in osteoporosis.

Osteoneogenesis exceeds osteoclastogenesis  
 Osteoclastogenesis exceeds osteoneogenesis  
 Osteoclastogenesis exceeds osteoblastogenesis  
 Osteoblastogenesis exceeds osteoclastogenesis

2. The 3 phases of bone healing include:

Reactive, preparative and remodeling phases  
 Reactive, regenerative and remodeling phases  
 Proactive, preparative and remodeling phases  
 Reactive, preparative and regenerative phases

3. Which of the following medications increases the risks of osteoporosis?

Combination oral contraceptives  
 Cephalosporins  
 Selective Serotonin Reuptake Inhibitors  
 Statins

4. Most osteoporosis research is done on:

Middle-aged men

10. What percentage of adverse drug events can be prevented in the older adults ?

12 %  
 22 %  
 32 %  
 42 %

11. Osteoblasts are derived from monocytes from the bone marrow.

True  
 False

12. Women have higher morbidity than men after a hip fracture.

True  
 False

13. There is valid evidence that most osteoporosis medications do not work as well on women as on men.

True  
 False

SEX & GENDER SPECIFIC HEALTH

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INSTITUTE for WOMEN'S HEALTH  
TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER



## Learning Modules

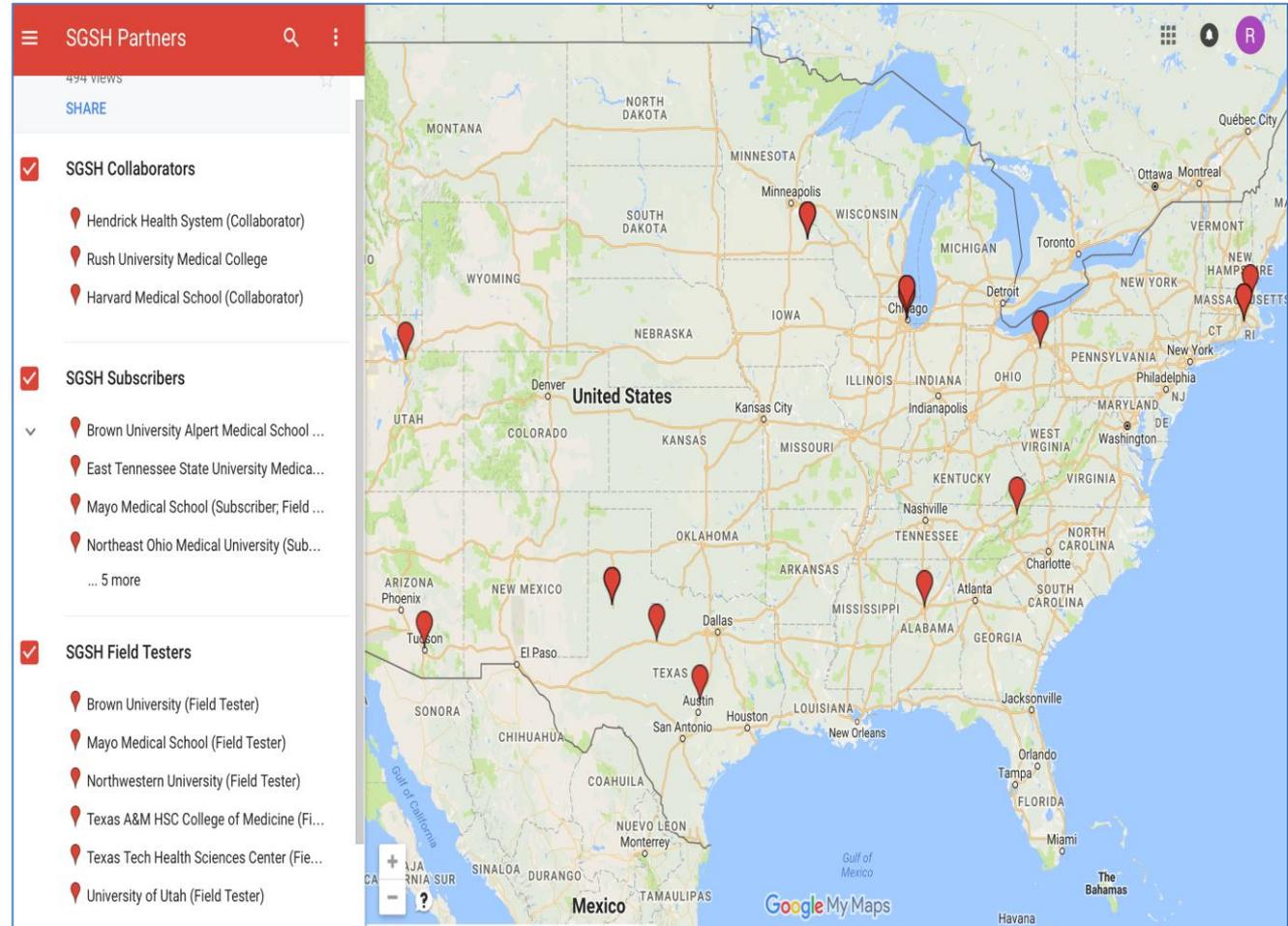
- Interactive
- Peer reviewed
- Stand alone
- Incorporate into existing course

The screenshot shows the SGSH (Sex and Gender Specific Health) website interface. At the top, there is a navigation bar with links for Slide Library, Learning Modules, Cases, Communication, Partners, Resources, CME/CPD, Contact Us, and Sign Out. The main content area features a green header with the SGSH logo and the title "SEX AND GENDER SPECIFIC HEALTH". Below the title, there is a prompt: "Please select a module." and a warning: "Wi-Fi speed will impact the time required to complete each learning module due to video load time. We highly recommend that you used high speed Internet when viewing the learning modules. Please refer to our [Terms and Conditions of Use](#) prior to using these learning modules." The main content area is divided into five numbered modules, each with a green background and a corresponding image: 1. OSTEOPOROSIS (image of a skeleton with a yellow pencil pointing to the hip); 2. DIABETES (image of a human torso with internal organs highlighted in red); 3. Coming Soon ASCVD (image of an elderly couple sitting outdoors); 4. Coming Soon Alcohol Use Disorder (image of a woman holding her head in pain next to a glass of beer); 5. Coming Soon Infectious Disease (image of a human torso with a red heart and blue virus particles). The footer contains the SGSH logo, the text "SEX & GENDER SPECIFIC HEALTH", the copyright notice "All original content © 2014 TTUHSC LWBWH. All rights reserved.", and the logo for the "Lamar's Book INSTITUTE for WOMEN'S HEALTH TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER".



## Learning Modules

Field Tested





To access these curricular  
materials

[www.sexandgenderhealth.org](http://www.sexandgenderhealth.org)

**Username : present\_preview**

**Password: Present\_preview**



## Continuing Professional Development

Emergency Medicine: Y Does X Make a Difference? Resources

**Sex and Gender in a Medical  
Emergency:  
Y Does X Make a Difference?**

**Alyson McGregor, M.D., MA**  
**Assistant Professor in Emergency Medicine**  
**Brown University**

*Laura W. Bush*  
**INSTITUTE for WOMEN'S HEALTH**  
TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER

Menu

- ▼ Course Start
  - Title Page
  - McGregor Introduction
  - Menu
  - Course Objectives
  - Emergency Departments
  - Emergency Medicine Research
  - Other specialties
  - Research
  - Collaboration
  - Summary of Section
- ▼ Part 2
  - Case Study #1
    - PMH
    - ECC
    - Workup
    - Myth
    - Fact
    - Heart Disease and Women
      - Typical vs. Atypical
      - Early Warning Signs
      - Gender Differences
      - Referral Bias
      - Risk Factors in Young Women
    - Aspirin
    - Atherosclerosis
    - Stress Testing
    - AHA Update
    - Heart Health
  - ▼ Case Study #2
    - Case Study #2
    - Case Study Video

◀ PREV    NEXT ▶



# Publications



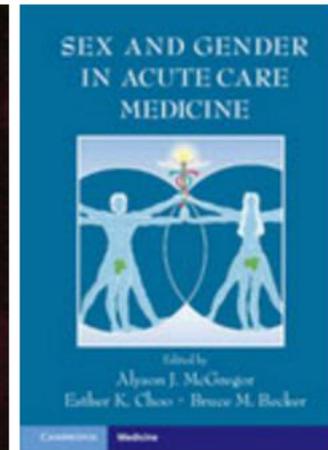
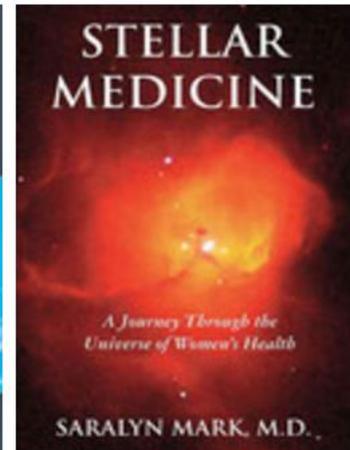
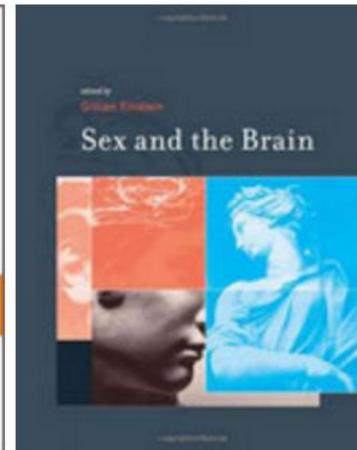
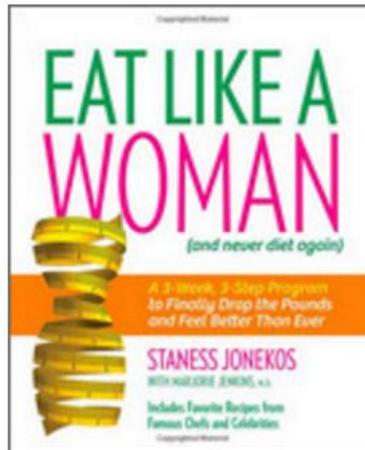
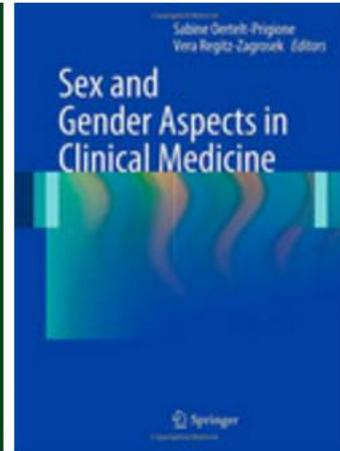
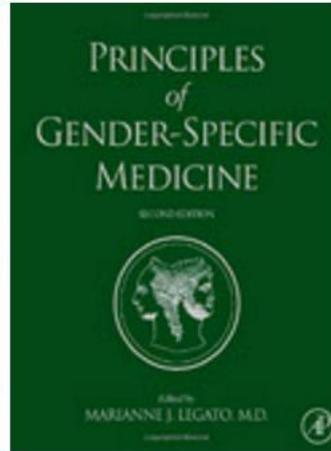
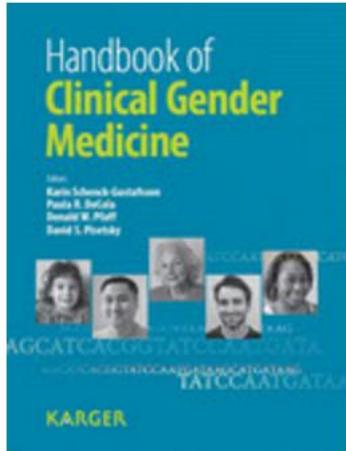
## **Journal Supplement**

Sex and in Gender Medical Education

October 2016

[OPEN ACCESS](#)

# TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER





## SEX & GENDER BASED MEDICINE RESOURCES

### MEDICAL EDUCATION CURRICULAR MATERIALS

CHARITE UNIVERSITY HOSPITAL  
Institute of Gender in Medicine  
eGender Curriculum  
<http://gender.charite.de/en/index.php>

CHR INSTITUTE OF GENDER AND HEALTH  
Gender, Sex, & Health Research Case Book  
[www.chr-nsc.gc.ca/44062.html](http://www.chr-nsc.gc.ca/44062.html)

DREXEL UNIVERSITY COLLEGE OF MEDICINE  
Gender and Ethnic Medicine Project  
<http://webcampus.drexelmed.edu/gen/default.htm>

SEX AND GENDER WOMEN'S HEALTH COLLABORATIVE  
<http://www.sgbhc.org>

TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER, LAURA W. BUSH INSTITUTE FOR WOMEN'S HEALTH  
Sex and Gender Specific Health Curriculum  
<http://www.sexandgenderhealth.org>

### CONTINUING MEDICAL EDUCATION COURSES

NIH ORWH THE SCIENCE OF SEX AND GENDER IN HEALTH  
<http://sexandgendercourse.od.nih.gov>

TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER, LAURA W. BUSH INSTITUTE FOR WOMEN'S HEALTH  
Y Does X Make A Difference CME Series  
<http://www.laurabushinstitute.org>

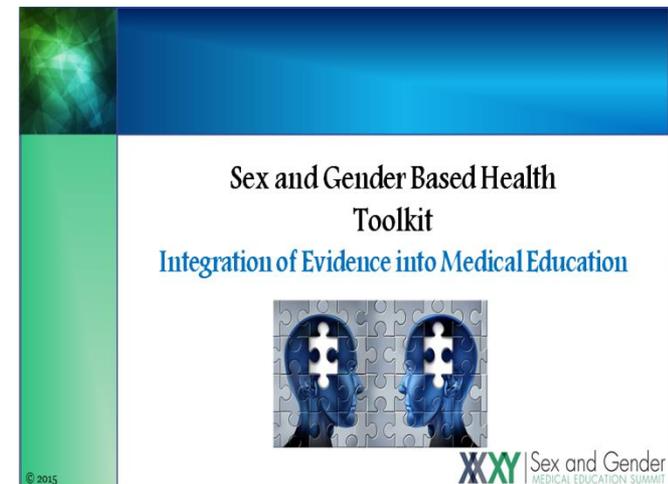
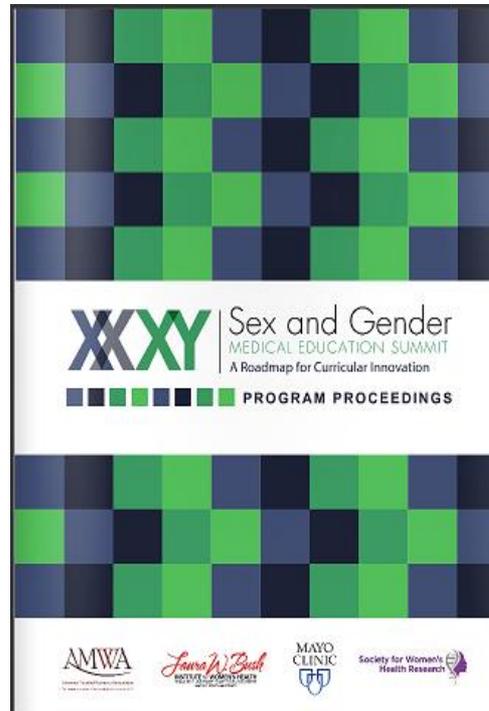
### RESEARCH INTEGRATION TOOLS

CHR INSTITUTE OF GENDER AND HEALTH  
Sex and Gender in Biomedical Research  
<http://www.chr-nsc-gb-edh.ca>  
Webinars  
<http://www.chr-nsc.gc.ca/6973.html>

KAROLINSKA INSTITUTET CENTRE FOR GENDER MEDICINE  
<http://ki.se/en/research/tools-for-sex-and-gender-analysis-in-health>

NATIONAL INSTITUTES OF HEALTH - OFFICE OF RESEARCH ON WOMEN'S HEALTH  
<http://orwh.od.nih.gov/>

STANFORD UNIVERSITY EUROPEAN COMMISSION US NATIONAL SCIENCE FOUNDATION  
Gendered Innovations in Science, Health & Medicine, Engineering, and Environment  
<http://genderinnovations.stanford.edu>





# SAVE THE DATE



## 2018 Sex & Gender Health Education Summit

*Advancing Curricula through a Multidisciplinary Lens*

*April 8-10, 2018 University of Utah*

*Salt Lake City, Utah*

[www.sgbmeducationsummit.org](http://www.sgbmeducationsummit.org)

**\*\*** *faculty travel grants available* **\*\***

Sponsors:





## Not Knowing The Difference Doesn't Mean There Is No Difference





# Thank you

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or

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