SAEM Jeopardy 2019
BOD vs RAMS vs Editors
Presented by
Sex & Gender in EM Interest Group
AWAEM
ADIEM
Created by Jeannette Wolfe
Winners
- Most Points
- Most Spirit
- Most Team Tweets
BOD

Amy Kaji
Ali Raja
Chris Carpenter
# SAEM19 #boardroom
RAMS

Chad Mayer
Wendy Sun
Shana Zucker

#SAEM19 #batteringham
HERE ARE TODAY’S CATEGORIES
Broken Hearts
Sex and Drugs
Crash and Boom
(not enough) Diversity
Action Plan
<table>
<thead>
<tr>
<th>Basic Definitions</th>
<th>Broken Hearts</th>
<th>Sex and Drugs</th>
<th>Crash and Boom</th>
<th>(not enough) Diversity</th>
<th>Action Plan</th>
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This refers to one’s chromosomal and hormonal make up.
Biological Sex
Gender refers to the roles and expectations a person has within a sociocultural context.
Every cell has a sex every person is gendered
A person who’s biological sex aligns with their gender identity is called this
Cisgender
Cisgender  Transgender
This chromosome contains approximately 426 genes
Y

X = 1169 genes
Med School
Different
- Chromosomes
- Hormonal Influences
- Gendered exposures
- Epigenetics
Reality

XY ≠ XX

next
Take home mantra
Sex Matters in Medicine
In sex and gender based research SABV refers to this
Sex as a Biological Variable
Think about biological sex like age
Correct term for someone who’s assigned sex at birth is female, has a male gender identity and is physically attracted to females.
Straight Transgender Man
(or more simply, a human being)
Gender identity is distinct from sexual orientation

Great resource: Madsen Gender and the Genome 2017
More likely to get bystander CPR if they collapse in public
Men

(also more likely to start CPR)
Men: 45%
Women: 39%

Odds of overall survival 23% greater in men
Perceptions

- sexuality concerns
- frailness
- confusion about what distress looks like in women
In this sex, amongst healthy adults baseline BNP is higher and in patients with heart failure its value is less correlated with prognosis.
Female
Women
Concentric failure
- HFpEF

Men
Eccentric failure
- HFrEF
Who is more likely to be found in a shockable rhythm after cardiac arrest?
Males
LA ROSC study

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
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<tbody>
<tr>
<td>shockable</td>
<td>35%</td>
<td>22%</td>
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<tr>
<td>STEMI</td>
<td>32%</td>
<td>23%</td>
</tr>
<tr>
<td>Survival/CPC 1-2</td>
<td>24%</td>
<td>16%</td>
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Bosson JAHA 2016
Women are more likely to get this cardiac condition, shown on the following ultrasound clip, which can be seen after a huge catecholamine surge.
Takotsubo Cardiomyopathy

> 80% in women but men may have worse outcome
The Cleveland Clinic decreased their gender gap in 30 day STEMI deaths after initiating a standardized protocol, specifically they decreased the absolute mortality of women by this percentage (within 5%)
4%
Protocol

- Standardized cath activation
- STEMI safe handoff checklist
- Immediate transfer to open room
- Radial artery access
30 day mortality

Before

After

Males

Females
Ethanol and likely zolpidem get chewed up by this stomach enzyme that is revved up by testosterone.
Alcohol dehydrogenase
Until 2016 approximately this percentage of basic science research was done on male animals (within 10%)
80%
Female mice more variable?
Debunked
2016 NIH funding requirement - basic scientists must include sex as a variable
As recuronium and alcohol are water soluble, for same dose this sex will have greater effect
Females
(less total body water, more concentrated)
The CDC estimates that this percentage of mothers take 4 or more drugs during their pregnancy (within 10%)
This medication side effect is more likely to occur in women
Prolonged QTc
Women account for 70% QTc deaths

- Testosterone ↑ K+ channels
- ↑ K+ channels faster repolarization shorter QTc

Oskui 2013
J of American Heart Association
Common drugs
Flouroquinolones
Opioids
Antiemetics
A 2015 evaluation of young Kansas drivers found this sex more likely to be involved in T-bone impacts
Female
## Kansas Study

<table>
<thead>
<tr>
<th>Females</th>
<th>Males</th>
</tr>
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<tbody>
<tr>
<td>Side impact</td>
<td>Frontal</td>
</tr>
<tr>
<td>Weekday</td>
<td>After dark/weekend</td>
</tr>
<tr>
<td>Intersections</td>
<td>Off roads</td>
</tr>
<tr>
<td>Involve pedestrians or animals</td>
<td>Less likely to be belted</td>
</tr>
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</table>

_Amarasingha 2014 J Safety Resus_
In 2017, males made up this percentage of people fatally injured in motor vehicle crashes (within 10%)
Fatalities

Men
- 71% driver
- 49% passenger
- 88% bicyclists
- 91% motorcyclists
- 99% truck driver

NHTSA FARS
Male risk factors
- More miles on road
- Increased alcohol use
- Increased speed

NHTSA FARS
Volvo engineers created “Linda” a virtual test dummy with this special characteristic
Pregnancy

media.volvocars.com
Estimate fetal loss due to crashes several times greater than infant/child accident death
Belt over abdomen
- increases force 3-4x to abdomen

Autoevolution.com
In 2011, many cars saw their star safety ratings go down after new regulations mandated posting results of front seat passenger testing using this
female test
dummies
2011 Sienna 35 mph passenger crash
- 40% severe injury
- industry 15%

Overall Front Star Rating ★★★★★
Combines Driver and Passenger star ratings into a single frontal rating. The frontal barrier test simulates a head-on collision between two similar vehicles, each moving at 35 mph.

Front Driver Side ★★★★★
Front Passenger Side ★★★★★

NHTSA
According to a 2011 study evaluating NASS CDS data, in comparable crashes involving belted drivers, women are this % more likely to sustain a severe injury compared to men (within 10%)
Anatomical and biomechanical differences
- steering wheel
- window
- head rest

Image from: Kelly French/Guardian
In 2018 the FDA approved 59 new drugs with trials involving about 44,000 pts. This percentage of drug evaluation was done on patients older than 65 (within 10%)
15%
### FDA Drug Trials Snapshots

#### Table 1. Demographic Subgroups in 2018

<table>
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<tr>
<th>DEMOGRAPHIC SUBGROUPS</th>
<th>WOMEN</th>
<th>WHITE</th>
<th>BLACK or AFRICAN AMERICAN</th>
<th>ASIAN</th>
<th>HISPANIC</th>
<th>AGE 65 AND OLDER</th>
<th>UNITED STATES</th>
</tr>
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<tr>
<td>AVERAGE</td>
<td>56%</td>
<td>69%</td>
<td>11%</td>
<td>10%</td>
<td>14%</td>
<td>15%</td>
<td>47%</td>
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*Data presented in this report are from 60 snapshots as one drug was approved for two indications.*
In 2017 this percentage of EM residents were under represented minorities (within 5%)
13% (less than OB, IM, Peds and surg)
EM strategies for diversity

- Increased engagement in minority student organizations
- Tailored visiting clerkships
- Second look weekends
Highland’s case study since 2006
12% to 27% URM
*98% pass rate
Fewer black male medical school applicants than 30 years ago
In 2019, the Lancet published a study evaluating millions of papers and correlated the likelihood of reporting biological sex in write up and published papers and this*
Female gender of first or last author
Biological sex reporting*

- 67% clinical journals
- 69% public health
- 31% biomedical
Unchecked, we don’t report what’s not on our radar
Great power in a well-placed nudge

- IRB
- grant funding
- journal submissions
- editorial review process
- conference abstracts
This country recently admitted that several of its medical schools added points to male applicants test scores to limit the entrance of women
Japan
“Women mentally mature faster than men and at the time they take the university examination, women tend to have a higher communication ability……we were thinking of compensating the gap between male and female to secure fairness in the judgement."

Hiroyuki Daida, Dean of Juntendo's Faculty of Medicine
DAILY DOUBLE
The percentage of the 2017 medical school class that self-identified as LGBT (within 5%)
30% of LGBT medical students conceal their sexual orientation during medical school.
Name one of two traits that female EM residents got discordant feedback about compared to their male peers in a qualitative study that examined over 1000 written evaluations.
Autonomy & Assertiveness

Mueller Journal of Graduate Education 2017
Dayal Jama Internal Med 2017

- > 33,000 evals
- no diff PG1
- men > women PG3
- across all 23 competencies
- evaluator’s gender no change
Action Plan

- Recognize potential for bias
- Commit to giving better feedback
Feedback formula
- Ask permission
- State intention
- State behavior
- Describe impact
- Check learner’s perspective
- Identify specific change
Resources:

Book: Thanks for the Feedback

Podcast: seX & whY podcast #10 (sexandwhy.com)
A recent Georgia Tech study examining driverless cars visual recognition systems suggests, that currently people with this trait are more likely to get hit because the technology doesn’t adequately recognize them.
Dark Skin

Wilson arxiv.org
About 5% less accurate

Wilson arxiv.org
Who is on research teams is increasingly important
Diverse teams
- More innovative
- More profitable
More powerful if inclusion championed by a *white guy*

Minorities and women judged *less competent* if advocate for diversity
Action Plan

Gut check
- Who’s on your project team

Recruit
- Someone who thinks differently
After event company Bizzabo released their survey results this past November, this new meaning for the word “manels” exploded on social media.
“Man only panels”
60,000 events
- 2013-2018
- almost 70% male
WOMEN IN MATH
FOR ALL MATH LOVERS
TIME 6:30 PM
MCB
GUEST SPEAKERS ON TOPICS
RESEARCH DONE IN DATA
SCIENCE, CYBERSECURITY, NUMBER THEORY, AND
DYNAMICAL SYSTEMS FROM FOUR BYU MATH
PROFESSORS.
THERE WILL BE TREATS
ALL LEVELS OF MATH WELCOME.
email womeninmath@mathematics.byu.edu for details
Medical Meetings

- 2013-2017
- North American conferences
- Overall increased 24-34%
- Lots of variation
  - 0-82%
Why it’s important

Speaker
- Academic springboard

Audience
- Changes perception & culture
Action Plan

Review
- EM grand round speaker list

Commit
- to increasing diversity
Resources:

- ADIEM speaker list
- AWAEM
  - time management series
- Feminem’s Speaker Bureau
- Jeopardy Game
According to the 2015 US Transgender Survey, this percentage of respondents reported that in the past year they avoided needed health care evaluation due to fear of being mistreated (within 10%)
23%

2015 US Transgender survey
LGBTQ

Disproportionate:

- chronic health issues
- psychological disorders
- addiction
- STD
- trauma
- worse if minority
Samuels 2018
Annals of EM
quotes
Action Plan

Next transgender pt
- Confirm name
- Confirm pronoun
- Professionally update rest of care team
A recent study suggests that pregnant women who find out they are having girls (compared to women having boys or choosing not to find out) change their behavior in this way...
Become much more risk averse
“Gender”

starts before birth*

next
Sex          Gender
Separate when possible as different "fixes"

- Biological sex
  tech adjustments
- Gender
  education
  system catches to mitigate bias
Action Plan

The next article you read notice if potential

- Sex differences
- Gender differences
- Authors’ radar
What is the take home mantra of this talk?
Sex matters in medicine
Winners
Most points
Best team spirit
Most tweets
Thank you
Twitter
@WolfeJeannette
sexandwhy.com
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