



Sex and Gender HEALTH EDUCATION SUMMIT *Innovative and Sustainable Curriculum Integration*



September 11 - 13, 2020 | Thomas Jefferson University | Virtual Meeting



American Medical Women's Association
The Vision and Voice of Women in Medicine since 1915



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



Jefferson
Thomas Jefferson University
HOME OF SIDNEY KIMMEL MEDICAL COLLEGE

Users are granted permission to utilize this work in part or in whole. This work has been designed to progress the integration of sex and gender evidence into health professions education, research, and clinical care. Please provide the following attribution: ©2020 Sex and Gender Health Education Summit.

For copyrighted material contained within the Proceedings, please contact the primary source for instructions to garner permission.



Sex and Gender HEALTH EDUCATION SUMMIT

Innovative and Sustainable Curriculum Integration



September 11 - 13, 2020 | Thomas Jefferson University | Virtual Meeting

SPONSORS



ACKNOWLEDGMENTS

PROCEEDINGS EDITORIAL TEAM

MARY K. ROJEK, PHD

Senior Editor, SGHE Summit Proceedings
Co-Founder, Past Chair, Co-Chair Elect
Sex and Gender Health Collaborative,
American Medical Women's Association

ELIZA LO CHIN, MD, MPH, FACP, FAMWA

PROGRAM DIRECTOR, SGHE SUMMIT
Executive Director, American Medical Women's Association
Assistant Professor (Vol), Univ. of California, San Francisco

JULIANA (JEWEL) M. KLING, MD, MPH, NCMP, FACP

CO-CHAIR, SGHE SUMMIT
Associate Professor of Medicine, Division of Women's Health
Internal Medicine, Mayo Clinic Arizona

REBECCA B. SLEEPER, PHARMD, FCCP, FASCP, BCPS

CO-CHAIR, SGHE SUMMIT
Senior Associate Dean of Curricular Affairs
Professor of Pharmacy Practice, Geriatrics
Texas Tech University Health Sciences Center
School of Pharmacy

GRAPHIC DESIGN

Elaine Qian, MS

ACKNOWLEDGMENTS

We would like to acknowledge the work and support of the SGHE Executive Planning Committee, Scientific Program Committee, Scientific Poster Committee, Local Host Committee, Outreach Committee, Thomas Jefferson University Office of Continuing Professional Development, as well as administrative support from the American Medical Women's Association.

EXECUTIVE PLANNING COMMITTEE

JULIANA (JEWEL) M. KLING, MD, MPH, NCMP, FACP

CO-CHAIR, SGHE SUMMIT
Associate Professor of Medicine, Division of Women's Health
Internal Medicine, Mayo Clinic Arizona

REBECCA B. SLEEPER, PHARMD, FCCP, FASCP, BCPS

CO-CHAIR, SGHE SUMMIT
Senior Associate Dean of Curricular Affairs
Professor of Pharmacy Practice, Geriatrics
Texas Tech University Health Sciences Center
School of Pharmacy

ANA MARIA LOPEZ, MD, MPH, MACP

HOST CO-CHAIR, SGHE SUMMIT
Professor and Vice Chair
Sidney Kimmel Cancer Center, Thomas Jefferson University

KAREN NOVIELLI, MD

HOST CO-CHAIR, SGHE SUMMIT
Vice Provost for Faculty Affairs
Vice Dean for Faculty Affairs and Professional Development
Sidney Kimmel Medical College, Thomas Jefferson University

ELIZA LO CHIN, MD, MPH, FACP, FAMWA

PROGRAM DIRECTOR, SGHE SUMMIT
Executive Director, American Medical Women's Association
Assistant Professor (Vol), Univ. of California, San Francisco

MARJORIE R. JENKINS, MD, MEDHP, FACP

SENIOR ADVISOR
Dean, University of South Carolina School of Medicine
Greenville, Chief Academic Officer, Prisma Health Upstate

ALYSON J. MCGREGOR, MD, MA, FACEP

SENIOR ADVISOR
Associate Professor of Emergency Medicine
Director, Division of Sex and Gender in Emergency Medicine
(SGEM); Director, SGEM Fellowship
Warren Alpert Medical School, Brown University

KATHARINE JENKINS, BS

ASSISTANT PROGRAM DIRECTOR
Graduate Student, Texas Tech University

ANNETTE MALLORY DONAWA, PHD

Assistant Provost
Office of Continuing Professional Development
Sidney Kimmel Medical College, Thomas Jefferson University

SARA GORDON, DDS, MS, FRCD

Associate Dean for Academic Affairs
Professor of Oral Medicine
University of Washington School of Dentistry

VIRGINIA MILLER, PHD

Professor of Surgery and Physiology
Director, Women's Health Research Center
Mayo Clinic, Rochester, MN

EXECUTIVE PLANNING COMMITTEE

CONNIE NEWMAN, MD, FACP, FAMWA

Adjunct Professor of Medicine
New York University Robert I. Grossman School of Medicine
Past President, American Medical Women's Association

SUSAN RAWLINS, RN, MS, WHNP-BC

Director of Professional Development
National Association of Nurse Practitioners in Women's Health

LORIE RICHARDS, PHD, OTR/L

Chair and Associate Professor
Occupational & Recreational Therapies
University of Utah

LAUREN WALTER, MD

OUTREACH CHAIR
Associate Professor, Emergency Medicine
University of Alabama at Birmingham

JANICE WERBINSKI, MD, FACOG

POSTER CO-CHAIR
Clinical Associate Professor Emerita
Western Michigan University
Homer R. Stryker M.D. School of Medicine
Founding Exec. Director, Sex & Gender Health Collaborative
President-elect, American Medical Women's Association

SCIENTIFIC PROGRAM COMMITTEE

JULIANA (JEWEL) M. KLING, MD, MPH, NCMP, FACP

CO-CHAIR
Associate Professor of Medicine, Division of Women's Health
Internal Medicine, Mayo Clinic Arizona

REBECCA B. SLEEPER, PHARM.D, FCCP, FASCP, BCPS

CO-CHAIR
Senior Associate Dean of Curricular Affairs
Professor of Pharmacy Practice, Geriatrics
Texas Tech Health Sciences Center, School of Pharmacy

ROBERT G. CARROLL, PHD

Associate Dean for Medical Education, Professor of Physiology
Brody School of Medicine, East Carolina University

TIMOTHY W. FARRELL, MD, AGSF

Associate Professor of Medicine, Division of Geriatrics
University of Utah School of Medicine
Physician Investigator, VA SLC Geriatric Research, Education,
and Clinical Center, Director, University of Utah Health
Interprofessional Education Program

LESLIE R. HALPERN, DDS, MD, PHD, MPH, FACS

Professor, Section Head, Oral and Maxillofacial Surgery
University of Utah, School of Dentistry

DAWNDRA SECHRIST, PHD, OTR

Assistant Dean, Outcomes and Assessment
Associate Professor
Texas Tech University Health Sciences
School of Health Professions (SHP)

MARCIA STEFANICK, PHD

Professor of Medicine and of Obstetrics and Gynecology
Stanford University

ELENA M. UMLAND, PHARM.D

Associate Provost, Interprofessional Practice and Education
Co-Director, Jefferson Center for Interprofessional Practice
and Education, Thomas Jefferson University
Associate Dean of Academic Affairs and Professor
Jefferson College of Pharmacy, Thomas Jefferson University

LOCAL HOST COMMITTEE

ANA MARIA LOPEZ, MD, MPH, MACP

CO-CHAIR
Professor and Vice Chair
Sidney Kimmel Cancer Center, Thomas Jefferson University

KAREN NOVIELLI, MD

CO-CHAIR
Vice Provost for Faculty Affairs
Vice Dean for Faculty Affairs and Professional Development
Sidney Kimmel Medical College, Thomas Jefferson University

NETHRA ANKAM, MD

Assist. Professor, Director Medical Student Education Program
Sidney Kimmel Medical College, Thomas Jefferson University

MARY BOUCHAUD, PHD, CNS, CCRN

Associate Professor, Program Director - FACT-1 Year
Prelicensure Program
Jefferson College of Nursing, Thomas Jefferson University

MELISSA ELGENDY

Development Associate
Sidney Kimmel Medical College, Thomas Jefferson University

DAVID JACK, PHD

Assistant Professor
College of Nursing, Thomas Jefferson University

BERNARD LOPEZ, MD

Associate Provost, Diversity & Inclusion
Associate Dean, Diversity & Community Engagement
Sidney Kimmel Medical College, Thomas Jefferson University

ROBIN NAPLES, MD

Clinical Associate Professor, Program Director Emergency
Medicine Residency
Sidney Kimmel Medical College, Thomas Jefferson University

LOCAL HOST COMMITTEE

DIMITRIOS PAPANAGNOU, MD, MPH

Assistant Dean, Faculty Development
Sidney Kimmel Medical College, Thomas Jefferson University

SHARON RAINER, PhD

Assistant Professor, Program Director - Family-Individual
across the Lifespan NP
College of Nursing, Thomas Jefferson University

JENNIFER SACHS

Medical Student, OB-GYN Society
Sidney Kimmel Medical College, Thomas Jefferson University

BHAVIK SHAH, PHARMD

Associate Professor of Pharmacy Practice
College of Pharmacy, Thomas Jefferson University

ELENA M. UMLAND, PHARMD

Associate Provost, Inter-professional Practice and Education
Co-Director, Jefferson Center for Interprofessional Practice and
Education, Thomas Jefferson University
Associate Dean of Academic Affairs and Professor
Jefferson College of Pharmacy, Thomas Jefferson University

CONTINUING PROFESSIONAL DEVELOPMENT

ANNETTE MALLORY DONAWA, PHD

Assistant Provost
Office of Continuing Professional Development
Thomas Jefferson University

CHRISTINE YEUNG

CME Project Manager
Office of Continuing Professional Development
Thomas Jefferson University

MARIE DESTIN

CME Planner, Office of Continuing Professional Development
Thomas Jefferson University

ARIEL LEVINE

CME Planner, Office of Continuing Professional Development
Thomas Jefferson University

OUTREACH

OUTREACH COMMITTEE

LAUREN WALTER, MD

CHAIR
Associate Professor, Emergency Medicine
University of Alabama at Birmingham

SHRUTI CHANDRA, MD, MEHP

Assistant Professor, Program Director, IEHP Telehealth
Facilitator, Certificate Program
Sidney Kimmel Medical College, Thomas Jefferson University

MICHAEL GONYEAU, BS PHARM, PHARMD, MED, FNAP, FCCP, BCPS, RPH

Clinical Professor and Interim Chair
Department of Pharmacy and Health Systems Sciences
Director of Undergraduate and Professional Programs
School of Pharmacy, Northeastern University

SARA GORDON, DDS, MS, FRCD

Professor of Oral Medicine
Associate Dean for Academic Affairs
School of Dentistry, University of Washington

SHANNON HAUGH

Marketing Manager
Sidney Kimmel Medical College, Thomas Jefferson University

LAURIE M. LAUZON CLABO, PHD, MS

Dean and Professor
College of Nursing, Wayne State University

LAKSHMI NARAYANAM

Medical Student, AMWA Member
Sidney Kimmel Medical College, Thomas Jefferson University

KELLY RIEGER, MSN, PNP

Chief Operating Officer, Show Me Your Stethoscope

LORIE RICHARDS, PHD, OTR/L, FAHA

Chair, Occupational and Recreational Therapies Department
Editor-in-Chief, American Journal of Occupational Therapy
University of Utah Health Sciences Center



OUTREACH

OUTREACH TEAM

KAYLA LI, MSC

Assistant Director, American Medical Women's Association

SNEHA CHATURVEDI, BA

Medical Student, Washington University in St. Louis
Media Specialist, Student Co-Chair, Sex and Gender Health Collaborative
American Medical Women's Association

NORA GALOUSTIAN, BA

Student Co-Chair, Sex and Gender Health Collaborative
American Medical Women's Association

OUTREACH INTERNS

Emmanuella Alawode
Seema Azim
Brianna Fitzpatrick
Sarah Gajasinghe
Benita Gollamudi
Lori Horhor, BA
Rhea Jacob
Sally Kwon Kim
Kristine Lalic, BA
Roshni Patel
Brittanie Phan

Sahara Rahman
Rebecca Samuels
Liliah Seluk
Sameera Shaik
Maryam Siddiqui
Keerthana Sivathanan
Sophia Velasco
Falisha Verma
Catherine Villaverde
Kathleen Walsh
Magda Wojtara

AV SUPPORT

Tully Vision, Inc.

EXHIBITORS

American Medical Women's Association
Drexel University College of Medicine
Thomas Jefferson University
Laura W. Bush Institute for Women's Health
Mayo Clinic
Philadelphia College of Osteopathic Medicine

WITH GRATITUDE

This Summit would not have been possible without the many institutional leaders who attended the Summit and the generous contributions from our sponsors: American Medical Women's Association, Laura W. Bush Institute for Women's Health, Mayo Clinic, Thomas Jefferson University, University of Utah Health, National Association of Nurse Practitioners in Women's Health, Brown University Division of Sex and Gender in Emergency Medicine, Florida State University College of Medicine, Drexel University College of Medicine, Philadelphia College of Osteopathic Medicine, and HealthyWomen.

"Sex and gender specific health is a need that needs to be filled. There are endless niches. It is the future of science."

-- Alyson J. McGregor, MD, MA, FACEP



SPEAKERS AND CONTRIBUTORS

ANTHONY BETTERIDGE, BS

Medical Student, Texas Tech University Health Sciences Center, School of Medicine
Co-Founder & CEO, VxMED

MARGARET BURNETT, PHD

Distinguished Professor of Computer Science
Oregon State University

ELIZA LO CHIN, MD, MPH, FACP, FAMWA

Executive Director, American Medical Women's Association
Assistant Professor (Vol), Univ. of California, San Francisco

CRAIG COX, PHARMD

Professor, Department of Pharmacy Practice
Vice Chair of Experiential Programs
Texas Tech University Health Sciences Center, Jerry H. Hodge School of Pharmacy

CHYREN HUNTER, PHD

Associate Director for Basic and Translational Research
Office of Research on Women's Health
National Institutes of Health

MARJORIE R. JENKINS, MD, MEDHP, FACP

Dean, University of South Carolina School of Medicine
Greenville, Chief Academic Officer, Prisma Health Upstate

JULIANA (JEWEL) M. KLING, MD, MPH, NCMP, FACP

Associate Professor of Medicine, Division of Women's Health
Internal Medicine, Mayo Clinic Arizona

MARIANNE LEGATO, MD, PHD (HON C), FACP

Professor Emerita of Clinical Medicine, Columbia University
Adjunct Professor of Medicine, Johns Hopkins University

ANA MARIA LOPEZ, MD, MPH, MACP

Professor and Vice Chair
Sidney Kimmel Cancer Center, Thomas Jefferson University

SARALYN MARK, MD

President and Founder, iGIANT®

ALYSON J. MCGREGOR, MD, MA, FACEP

Associate Professor of Emergency Medicine
Director, Division of Sex and Gender in Emergency Medicine (SGEM); Director, SGEM Fellowship
Warren Alpert Medical School, Brown University

VIRGINIA MILLER, PHD, MBA

Professor, Surgery and Physiology
Director, Women's Health Research Center
Mayo Clinic, Rochester, MN

MELISSA (MISSY) M. MORROW, PHD

Associate Professor of Biomedical Engineering, Mayo Clinic

KELLY RAGUCCI, PHARMD, FCCP, BCPS

Vice President of Professional Development
American Association of Colleges of Pharmacy

JOANNE ROLLS, MPAS, MEHP, PA-C

Associate Professor, Division of Physician Assistant Studies
Department of Family and Preventive Medicine
University of Utah School of Medicine

NICOLE SANDHU, MD, PHD, FACP, FAMWA

Associate Professor of Medicine, Mayo Clinic
President, American Medical Women's Association

REBECCA B. SLEEPER, PHARMD, FCCP, FASCP, BCPS

Senior Associate Dean of Curricular Affairs
Professor of Pharmacy Practice Geriatrics
Texas Tech Health Sciences Center, School of Pharmacy

KIMBERLY TEMPLETON, MD, FAOA, FAMWA

Professor, Orthopedic Surgery
Vice Chair, Diversity, Equity and Inclusion
University of Kansas

SANDI TENFELDE, PHD, APRN, WHNP-BC

Associate Professor
Loyola University Niehoff School of Nursing

CONNIE TYNE, MS

Executive Director, Laura W. Bush Institute for Women's Health, Texas Tech University Health Sciences Center

SIMON WILLIAMS, PHD

Associate Dean for Academic Affairs
Texas Tech University Health Sciences Center School of Medicine, Laura W. Bush Institute for Women's Health

What defines the phenotype -- nature or nurture? The expanding science of genomics makes it evident that the environment modifies and refashions gene expression from conception to the end of life. It is impossible and irrelevant to separate the two."

-- Marianne J. Legato, MD, PhD (HON C), FACP

WORKSHOP FACILITATORS

JULIANA (JEWEL) M. KLING, MD, MPH, NCMP, FACP

CO-CHAIR

Associate Professor of Medicine, Division of Women's Health
Internal Medicine, Mayo Clinic Arizona

REBECCA B. SLEEPER, PHARM.D, FCCP, FASCP, BCPS

CO-CHAIR

Senior Associate Dean of Curricular Affairs
Professor of Pharmacy Practice, Geriatrics
Texas Tech Univ. Health Sciences Center, School of Pharmacy

ROBERT G. CARROLL, PHD

Associate Dean for Medical Education, Professor of Physiology
Brody School of Medicine, East Carolina University

SNEHA CHATURVEDI, BA

Medical Student, Washington University in St. Louis
Media Specialist, Student Co-Chair, Sex and Gender Health
Collaborative, American Medical Women's Association

NORA GALOUSTIAN, BA

Student Co-Chair, Sex and Gender Health Collaborative
American Medical Women's Association

LESLIE R. HALPERN, DDS, MD, PhD, MPH, FACS

Professor, Section Head, Oral and Maxillofacial Surgery
University of Utah School of Dentistry

TRACY MADSEN, MD, SC, FACEP

Assistant Professor of Emergency Medicine, Division of Sex
and Gender, Warren Alpert Medical School, Brown University

ALYSON J. MCGREGOR, MD, MA, FACEP

Associate Professor of Emergency Medicine,
Director, Division of Sex and Gender in Emergency Medicine
(SGEM); Director, SGEM Fellowship
Warren Alpert Medical School, Brown University

CAROLINE PAUL, MD

Associate Professor of Pediatrics
University of Wisconsin School of Medicine and Public Health

MARY K. ROJEK, PHD

Co-founder, Past Chair, Co-Chair Elect
Sex and Gender Health Collaborative
American Medical Women's Association

LARA ROSTOMIAN, BA

Past President Premedical Division, American Medical
Women's Association

MARCIA STEFANICK, PHD

Professor of Medicine and of Obstetrics and Gynecology
Stanford University

KIMBERLY TEMPLETON, MD, FAOA, FAMWA

Professor, Orthopedic Surgery
Vice Chair, Diversity, Equity and Inclusion
University of Kansas

JUSTINA TROTT, MD

Clinical Professor of Medicine
Advisor to Women's Health Services National Community
Center of Excellence in Women's Health
Senior Fellow & Co-Director, Women's Health Policy Unit
RWJF Center for Health Policy, University of New Mexico

ELENA M. UMLAND, PHARM.D

Associate Provost, Inter-professional Practice and Education
Co-Director, Jefferson Center for Interprofessional Practice
and Education, Thomas Jefferson University
Associate Dean of Academic Affairs and Professor
Jefferson College of Pharmacy, Thomas Jefferson University

JANICE WERBINSKI, MD, FACOG

Clinical Associate Professor Emerita
Western Michigan University
Homer R. Stryker M.D. School of Medicine
Founding Executive Director, Sex and Gender Health
Collaborative, President-elect, American Medical Women's
Association

SCIENTIFIC POSTER COMMITTEE

JANICE WERBINSKI, MD, FACOG

CO-CHAIR

Clinical Associate Professor Emerita
Western Michigan University
Homer R. Stryker M.D. School of Medicine
Founding Executive Director, Sex and Gender Health Collaborative
President-elect, American Medical Women's Association

NJERI THANDE, MD

CO-CHAIR

Assistant Professor of Medicine, Yale School of Medicine

MARY BOUCHAUD, PHD, CNS, CCRN

Associate Professor, Program Director - FACT-1 Year
Pre-licensure Program
Jefferson College of Nursing, Thomas Jefferson University

SNEHA CHATURVEDI, BA

Medical Student, Washington University in St. Louis
Media Specialist, Student Co-Chair, Sex and Gender Health
Collaborative, American Medical Women's Association

SUYEON HONG

Fellow in Women's Health Research, Yale University

TABLE OF CONTENTS

- 1** ACKNOWLEDGMENTS
- 8** CHAIRS' STATEMENT
- 9** A WORD FROM OUR SPONSORS
- 11** SUMMIT OVERVIEW
- 12** KEYNOTE: GENDER SPECIFIC MEDICINE IN THE GENOMIC ERA
- 16** PRE-SUMMIT MODULE: ADOPTING CORE EDUCATIONAL TENETS FOR SEX AND GENDER SPECIFIC HEALTH (SGSH) EDUCATION
- 18** WORKSHOP A: ADOPTING CORE EDUCATIONAL TENETS FOR SEX AND GENDER HEALTH EDUCATION
- 20** STUDENT WORKSHOP
- 21** KEYNOTE: HIGH VALUE CARE: MEETING THE TRIPLE AIM THROUGH A SEX AND GENDER LENS
- 25** INTEGRATING SEX AND GENDER HEALTH EDUCATION INTO POSTGRADUATE TRAINING (PANEL)
- 30** EXPLORING THE RELEVANCE OF GENDERED INNOVATION IN ALL AREAS, INCLUDING COVID-19 (PANEL)
- 33** ADVOCATING FOR SEX AND GENDER INTEGRATION INTO BOARD AND LICENSING EXAMS: FIRSTHAND EXPERIENCE (PANEL)
- 39** WORKSHOP B: ADVOCATING FOR SEX AND GENDER IN LICENSING EXAMS BY DISCIPLINE
- 42** CERTIFICATION FOR LEARNERS IN SEX AND GENDER SPECIFIC HEALTH (PANEL)
- 45** BEST PRACTICES: EXAMPLES OF SUCCESSFUL INCORPORATION OF SGSH INTO CURRICULA (PANEL)
- 51** BRINGING IT ALL TOGETHER
- 52** APPENDIX
 - SCIENTIFIC POSTERS
 - SEX AND GENDER SPECIFIC HEALTH RESOURCES



CHAIRS' STATEMENT

Dear Colleagues,

Welcome to the 2020 Sex and Gender Health Education Summit.

Building on the work of the 2018 Summit, this meeting convenes faculty and students from around the world who represent medicine, nursing, dentistry, pharmacy, physical therapy, occupational therapy, emergency medical services, and other health professions. We are excited to present concepts in core educational tenets for sex and gender specific health as well as innovative ways to integrate these concepts into established curricula. Our hope is to train the next generation of healthcare providers to approach patient care through a sex and gender lens.

We would like to thank our 2020 Summit lead sponsors – the American Medical Women’s Association, Laura W. Bush Institute for Women’s Health, Mayo Clinic, and Thomas Jefferson University, our supporting sponsors – University of Utah Health, National Association of Nurse Practitioners in Women’s Health, Brown University Division of Sex and Gender in Emergency Medicine, Florida State University College of Medicine, HealthyWomen, Drexel University College of Medicine, and Philadelphia College of Osteopathic Medicine as well as our distinguished speakers and planning teams, without whom this Summit would not have been possible.

Sincerely,

ELIZA LO CHIN, MD, MPH, FACP, FAMWA

PROGRAM DIRECTOR, SGHE SUMMIT

Executive Director, American Medical Women’s Association

Assistant Professor (Voluntary), Univ. of California, San Francisco

JULIANA (JEWEL) M. KLING, MD, MPH, NCMP, FACP

CO-CHAIR, SGHE SUMMIT

Associate Professor of Medicine, Division of Women's Health

Internal Medicine, Mayo Clinic Arizona

ANA MARIA LOPEZ, MD, MPH, MACP

HOST CO-CHAIR, SGHE SUMMIT

Professor and Vice Chair

Sidney Kimmel Cancer Center, Thomas Jefferson University

KAREN NOVIELLI, MD

HOST CO-CHAIR, SGHE SUMMIT

Vice Provost for Faculty Affairs

Vice Dean for Faculty Affairs and Professional Development

Sidney Kimmel Medical College, Thomas Jefferson University

REBECCA B. SLEEPER, PHARMD, FCCP, FASCP, BCPS

CO-CHAIR, SGHE SUMMIT

Senior Associate Dean of Curricular Affairs

Professor of Pharmacy Practice, Geriatrics

Texas Tech University Health Sciences Center, School of Pharmacy



A WORD FROM OUR SPONSORS

AMERICAN MEDICAL WOMEN'S ASSOCIATION

The American Medical Women's Association was honored to partner again with the Laura W. Bush Institute for Women's Health and the Mayo Clinic -- and to welcome our new partner, Thomas Jefferson University, for the 2020 Sex and Gender Health Education Summit. During these challenging times, it is crucial that we continue to create and strengthen networks and platforms in health professionals' sex and gender health education, explore sex and gender differences with rigorous scientific methodology, raise awareness and disseminate knowledge, and further innovation in education and discovery. This Summit was built upon the remarkable work of the prior Summits and convened leaders across a multitude of health professions in an exciting multidisciplinary exchange of knowledge, ideas, and shared vision. We are confident that collaborative efforts across the health disciplines will continue to advance the crucial work of sex and gender health education and reduce disparities and inequities in research and care.

NICOLE P. SANDHU, MD, PHD, FACP, FAMWA
President 2020-2021, American Medical Women's Association



American Medical Women's Association
The Vision and Voice of Women in Medicine since 1915

LAURA W. BUSH INSTITUTE FOR WOMEN'S HEALTH

Congratulations to the 2020 Summit leadership team for producing an outstanding virtual program that brought us together and added to our knowledge and enthusiasm. It was our pleasure to share updates from the SexandGenderHealth.Org website that is dedicated to providing curricular resources, student study tools and short impactful videos highlighting sex and gender differences in a broad range of medical conditions. This website has been accessed by over 17,000 healthcare professionals and has 1,800 registered users. We proudly report that the Learning Modules have been used by 145 medical, nursing, and pharmacy schools in 14 countries. The website is also recognized by the NIH, which provides a recommended link.

The Laura W. Bush Institute for Women's Health team is looking forward to the 2021 Sex and Gender Health Education Summit! Our goal remains to fully integrate sex and gender differences into our learning environments so that there is no need for the specialized training that we are doing today. Personalized medicine will save lives, and we will not rest until it is a reality.

CONNIE TYNE, MSW
Executive Director, Laura W. Bush Institute for Women's Health
Texas Tech University Health Sciences Center

Laura W. Bush

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

A WORD FROM OUR SPONSORS

MAYO CLINIC

Mayo Clinic is honored to co-sponsor this important educational Summit. Having hosted the first Sex and Gender Medical Education Summit in 2015, we are committed to continue to support multiprofessional Summits to advance sex and gender health education concepts throughout all of the healthcare professions. The outcomes of this Summit are critical to improve patient care. Dr. William Mayo once said, "The best interest of the patient is the only interest to be considered, and in order that the sick may have the benefit of advancing knowledge, union of forces is necessary." This Summit has brought together the major healthcare professions - medicine, nursing, dentistry, pharmacy, and allied health. We are thankful for the opportunity to have facilitated that process.

VIRGINIA M. MILLER, PHD
Professor Emerita, Surgery and Physiology
Immediate Past Director, Women's Health Research Center
Mayo Clinic, Rochester, MN



THOMAS JEFFERSON UNIVERSITY

Thomas Jefferson University was honored to host the historic 2020 International Sex and Gender Health Education Summit, only the third Summit ever and the first fully virtual. This groundbreaking international and interprofessional sex and gender conference reflects well on Jefferson's patient-centered efforts and emphasis on interprofessional curricular innovations that impact care and improve outcomes. As health care professionals and educators, we recognize that sex and gender impact health, disease, and overall well-being.

Thomas Jefferson University was pleased to join and host this growing and evolving network of evidence-based interprofessional educators who integrate sex and gender curricular content into personalized and evidence-informed clinical practice. The excitement, enthusiasm, and commitment of the participants were palpable, even in the virtual space!

Thomas Jefferson University applauds the organizers in bringing together the best in the field to share perspectives, present curricular innovations, and engage in interprofessional conversations. We were proud to host this leading-edge conference.

MARK TYKOCINSKI, MD
Provost and Executive Vice President for Academic Affairs
Thomas Jefferson University



SUMMIT OVERVIEW

COVID-19 had an impact on the 2020 Sex and Gender Health Education Summit, as it did for many other things in our world. After a great deal of planning for an in-person Summit, the Summit Co-Chairs and planners reconfigured the 2020 Summit into a virtual format hosted by Thomas Jefferson University. The focus of the 2020 Summit was on the development of tenets for use across health professions, education about sex and gender differences and integration into health professions education, and support for advocacy.

At this Summit, we were honored to feature two prominent keynotes. Dr. Marianne J. Legato, an internationally renowned pioneer in the world of gender-specific medicine, explained how the evolving field of genomics has contributed to our understanding of sex and gender issues in medicine. She makes it clear that both sex and gender have a profound impact on health. She states, "The environment modifies and fashions gene expression from conception to the end of life." In the future, genetic engineering will shape our understanding of life. Dr. Marjorie R. Jenkins, a leader in the field of sex and gender health education, discussed high value care and how integration of sex and gender differences into clinical practice and medical education could improve the quality of patient care and outcomes, reduce healthcare costs, and improve population health. She provided examples related to cardiovascular disease and thyroiditis and showed how integrating sex and gender into education and practice would reduce medication and other errors and their associated morbidity and mortality.

This Summit also included several panel presentations. One panel focused on the integration of sex and gender into postgraduate training, including medical residency, basic sciences programs, and advanced practice nursing. Another panel examined gender bias in design and technology. Tools to assess bias in one's own systems and products were provided. A third panel identified the different steps that needed to occur in order to change board and licensing exams. These included: applying sex and gender to accreditation guidelines, integrating sex and gender into competencies, reporting of sex and gender differences in journal articles, and adopting the Sex and Gender Equity Research (SAGER) or similar guidelines. Another panel presented opportunities for certification in sex and gender health, either through the National Institutes of Health Office of Research on Women's Health or the Sex and Gender Specific Health website created by the Laura W. Bush Institute for Women's Health. Both sites are appropriate for faculty as well as students. The last panel focused on best practices and provided examples of successful integration of sex and gender knowledge into curricula, including emergency medicine at both the undergraduate and graduate level, a video mini-series for pharmacy education, and instructional design with continuous quality improvement for physician assistant education.

While the first workshop at this Summit focused on defining common Tenets for sex and gender health education, the second workshop focused on developing strategies for advocacy to share this vision. These strategies included: identifying key stakeholders, building awareness among educators and the public, creating a training pipeline, using assessment as a strategy, promoting student advocacy, and more.

There are many opportunities and resources for moving forward. Together, we will improve healthcare by improving sex and gender health professions education.

MARY K. ROJEK, PHD
Senior Editor
2020 Sex and Gender Health Education Summit Proceedings

"Sex and gender specific health goals need to be advanced with every available tool. This Summit helped shine light on areas for improvement, birth new research goals, and highlight the progress made by individuals and institutions that understand the value of sex and gender specific health advancement."

-- Simon Williams, PhD

KEYNOTE: GENDER SPECIFIC MEDICINE IN THE GENOMIC ERA

MARIANNE J. LEGATO, MD, PHD (HON C), FACP

Professor Emerita of Clinical Medicine, Columbia University

Adjunct Professor of Medicine, Johns Hopkins

The Growth of the Genomic Era

Today I offer you my view of the status of gender specific medicine in the genomic era. We are more alike than many realize. Nobel laureate Marshall Nirenberg was profoundly struck by the nearly identical similarity of the genomes of all of earth's creatures, despite the myriad of differences in how those codes were expressed. He said that it produced a profound sense of brotherhood with all forms of life on the planet. Having deciphered the structure of the genome, we have devised ever more efficient ways of modifying DNA scaffolding in real time. Once we understood the genetic code, we learned to create entirely new synthetic genomes that would produce functioning and completely new forms of life. We have harnessed increasingly sophisticated technology to not only restore and preserve optimal function, but to significantly amplify human powers.

The great paradox of this time in history is that in spite of all that we have accomplished, and in spite of our increasing ability to strengthen, restore, and improve human capacity and that of all living things, we are faced with immediate and too soon irreversible changes in the earth's atmosphere that will make our planet uninhabitable. Unchecked climate change will very soon engulf everything that lives on the earth. We are already suffering catastrophic blows from floods, hurricanes, drought, and rising temperatures that already make vast areas of the planet uninhabitable. Consequently, huge migrating populations without resources are being generated. Essentially, their needs cannot be met. New viruses and plagues assault us. We cannot even meet in groups to exchange ideas with each other in person. We are living in a time of enormous promise and unparalleled danger. It is a time of change.

Futurist Ray Kurzweil predicted that in the very near future, we will transcend the bounds of our genetic inheritance and unite humans and machines in a new evolutionary process. That union will produce an exponential expansion of the talents and skills embedded in the human brain by uniting them with technology of our own creation with vastly superior capacity to our own. He quotes Marshall McLuhan, "first we build the tools, then they build us." Kurzweil's crucially important insight is that the rate of discovery is not linear but exponential. One idea stimulates a whole new array of others.

The past fifty years have witnessed a profound series of changes in our approach to and our achievements in biomedical investigation. As a result, we have a radically new view of normal human biology and the pathophysiology of disease, and indeed, of the nature of life itself. There are four transformative changes in twenty first century biomedical science. First, the description and manipulation of the genome and the factors that regulate gene expression. Second, the development of synthetic biology – the technique of creating entirely new genomes which produce organisms with new functions. Third, technological advances that expand human competence. Finally, the design of independent machines of increasing complexity. In Kurzweil's view, "biology is a software process. Our bodies are made up of trillions of cells, each governed by this process. You and I are walking around with outdated software running in our bodies, which evolved in a very different era." Kurzweil says that the slow ordered process of genetic modification envisioned by Darwin and his colleagues is over. We are now able to change the process in real time by direct intervention.

Lamarck was one of the first epigenomic scientists. He understood that the environment modifies the phenotype. Darwin captured the importance of the male and female genome, with each modified by mutation and/or genomics in creating the new individual. Marshall Nirenberg decoded the human genome. Venter correctly predicted and proved that once we describe a chromosome, we can create entirely new

KEYNOTE: GENDER SPECIFIC MEDICINE IN THE GENOMIC ERA

ones. Church, perhaps the greatest of all genomic wizards, reminds us that we must use the astonishing new power of synthetic biology responsibly.

As Nirenberg pointed out over fifty years ago, there are enormous challenges to genomic manipulation. We are now in a genomic era. Kurzweil has been trying to answer whether manipulation of the genome is interfering with evolution, or if by definition, it is a continuation of the process. He views technological evolution as a continuation of biological evolution.

Genomic Debates Re: Gender Specific Questions

Today, I consider three questions among the many that are debated by genetics scholars in the gender specific community. First, which dominates the phenotype – is it biological sex or the environment? We can now answer that definitively. The second topic is to consider the trajectory of synthetic biology and some of the considerations we should debate as this science expands and affects life on our planet. A subset of this is: What is the impact of biological sex on gene expression? Will we be able or tempted to change that impact? Third, what are the molecular mechanisms underlying variations in sexual identity? Intersex has been studied more than other sexual identity issues. Gender identity and transgender have been explained in terms of the molecular basis in the sex specific brain. What is least understood is the biological basis of homosexuality.

The first question – Which factor predominates, is it biological sex or the environment? Is it ever possible to separate what is biologically hardwired from the impact of development, hormones, or the environment? What defines the phenotype – nature or nurture? The expanding science of genomics makes it evident that the environment modifies and refashions gene expression from conception to the end of life. It is impossible and irrelevant to separate the two. Leonard Schlain stated that “There is no gene controlled inheritable trait that cannot be altered by the environment. Humans enter the world as a work in progress. Nature/nurture is not an either/or duality, but, rather, represents a both/and type of complementarity.”

The second question – What will be the consequences of our ability to modify the human genome? The CRSPR technique allows us to modify genes cheaply and quickly. Evolution is no longer “natural selection.” With the advent of genetic engineering, we can - and are - changing the very nature of creative life. To quote Kurzweil, “biological evolution is too slow for the human species. Over the next few decades, it’s going to be left in the dust. Nature and the natural human condition generate tremendous suffering. We have the means to overcome that, and we should deploy it.” We have the unbounded opportunity to set things right. George Church at Harvard warns us of the need for constant surveillance and regulation of our new powers.

“Evolution is no longer “natural selection.” With the advent of genetic engineering, we can - and are - changing the very nature of creative life.”

-- Marianne J. Legato, MD, PhD (Hon C), FACP

A related question is – What is the impact of biological sex on gene expression? Will we be able to change that impact? We now know that sexual dimorphism is achieved, not only by hormones, but by the direct effect of X and Y genes. The discovery of the rare gynandromorphic zebra finch was illuminating. This finch has male plumage and testis on the right side of its body, and female plumage and an ovary on the left side. Its brain was also sexually dimorphic. The left side brain tissue was genetically female, while the right side was male. But the hormonal milieu of the bird was homogeneous. In their classic 2006 paper, Yang et al. proved that sex impacted genes' expression. They “saw striking and measurable differences in more

KEYNOTE: GENDER SPECIFIC MEDICINE IN THE GENOMIC ERA

than half of the gene expression pattern between males and females. [They] didn't expect that. No one has previously demonstrated this genetic gender gap at such high levels."

The studies of genomic science and sex raise important questions for our consideration. Will it be an advantage to retain two sexes? If we eliminate or modify biological sex in new forms of life before we understand the nature and extent of its impact on gene expression, what will be the consequences to form and function? Does the study of the impact of sex on gene expression deserve more attention? Genomic scientists operating at the molecular level are rarely considering the impact of biological sex on their data concerning genomic manipulation.

The third question – What are the variations of the sexed individual? To answer this, we need more investigations into the molecular biology of sex determination and the variations in human sexual behavior. We'll begin with some current definitions. Intersex is the population of individuals who endure discordance between chromosomal sex and genital anatomy. Gender identity (transgender/transsexual) concerns an individual's pervasive and persistent conviction that that he or she is not the sex that anatomy and chromosomal identity indicate. Sexual orientation concerns homosexuality and/or bisexuality. Instead of referring to the above as disorders of sex development, we should change it to variations in sex development.

Eric Vilain famously stated "If you want to know what sex a person is, simply ask him." The brain is sexually dimorphic and becomes so independently of development of the genitalia. Sexing of the brain happens very early in development. Androgens masculinize the brain. Although the mechanisms underlying the feminization of the brain are not fully explored, I believe that the shaping of the female brain is not a passive or default process. As has been recently discovered in the case of the female reproductive system, it is the result of active genetic and hormonal action on the developing embryo. Outstanding questions include: How much do we know about the mechanisms that produce variations in human sexuality? If treatment is indicated, what are the options? What research remains to be done?

"Although the mechanisms underlying the feminization of the brain are not fully explored, I believe that the shaping of the female brain is not a passive or default process. As has been recently discovered in the case of the female reproductive system, it is the result of active genetic and hormonal action on the developing embryo."

-- Marianne J. Legato, MD, PhD (Hon C), FACP

In the case of variations of sex development, each case is unique. It should be assessed by a multidisciplinary team that involves not just the patient, but the parents or guardians. As for surgical correction in the intersex child, if it is warranted or desired, there is a question of when it should be deployed. Remember that the timing and the degree of exposure of the developing brains to hormones is crucially important in determining gender identity. In the case of intersex individuals, there are convincing data on both sides of the question about surgical correction of the external and internal reproductive organs as close to the time of birth as possible. Others point out that a person's sexual identity is essentially irreversible, set very early in development, and cannot be changed substantively by environmental factors. 80% of children who suffer from gender confusion revert to accepting the sex compatible with their genitalia by the time of puberty. Others do not. For them, some experts advise a hormonal postponement of puberty until the situation is clarified. There is now considerable expertise in the endocrine treatment of the transgendered individual. This is an accepted therapy in maintaining a body which is sexually congruent with the sexual identity of the person.

KEYNOTE: GENDER SPECIFIC MEDICINE IN THE GENOMIC ERA

A final question arises – Can we find an underlying biological mechanism for homosexuality? How do we explain the absence of any consistent DNA markers of homosexuality and the heritability of the phenomenon? Rice and his colleagues have advanced the notion of epigenetically catalyzed sexual preference. They remind us that there has been no convincing molecular genetic evidence that homosexuality is familial. Although the heredity seems to be there, we don't understand the mechanism of how that is achieved. The series of maternal antibodies formed after successive male pregnancies act with increasing severity on the developing child, but cannot explain homosexuality in women. Rice and his colleagues postulate genome wide epi-marking that occurs early in development. These epi-marks influence androgen signaling and are manifest across all androgen sensitive tissues at the pre-implantation blastula stage. His theory is that one or more stronger than average epi-marks canalize sexual preference very early in development. Neither the genitalia nor the sexual identity are affected.

There are other theories for the basis of sexual preference ranging from the impact of early sexual experience, to neuroplasticity changes, to dual-gender macrochimeric tissue discordance, to differences in cerebral asymmetry and connectivity. The impact of early sexual experience during a critical period in one's development may have an impact. Sexual rewards strengthen the development of sexual behavior and induce sexually conditioned place and partner preference. Endogenous opioid activation forms the basis of sexual reward, which sensitizes hypothalamic and mesolimbic dopamine systems in the presence of cues that predict sexual reward. Woodson postulated a more fluid view of sexual preference in which the systems underlying learning and memory constantly shape and reshape the brain, continually changing how subsequent experiences will uniquely affect each individual.

Hanley's hypothesis is built on the idea of chimerism. A macrochimera is a single individual formed from cells originating in two or more separately fertilized embryos leading to large proportions of the resulting organism being formed by each original participating embryo. There would be large proportions of both sexes of cells in the central nervous system. Chimerism is not rare. Data are often ignored because there is no attendant phenotype, and it is difficult to make the diagnosis. In a mixed sex chimera, nerve cell sex ratios in the brain would be mixed in a continuum from all male to all female. Chimerism occurs in a patchwork fashion. Migration paths of cells can be complex, and their interactions can vary a great deal. This is, he says, "a logical basis for a range from transgender identification, to exclusively homosexuality and bisexuality."

The Scandinavian expert Savic said that homosexual men and women differed from same sex controls and showed features of the opposite sex in two mutually independent cerebral variables. These were measured in humans in the resting state who were not sexually aroused. One variable was cerebral, with cerebellar asymmetry measured by MRI. A second measurement of regional blood flow traced amygdala connections. In men, those connections come from the right amygdala, and were targeted to the sensorimotor cortex. In women, they were more pronounced from the left amygdala, and were targeted to the hypothalamus.

To conclude – How do we define a human? Is it based on our body, our genome, our behaviors, our self-awareness, our compassion, or our minds? Is it all of these, and then something more? What now may be obvious to most people about being human will become less so as we become progressively more integrated with technology, both inside and outside our bodies.

I conclude with these three ideas. First, the role of the physician will continue to change exponentially. Second, optimal patient care will involve experts that we currently do not access, ranging from clinical experts, to molecular biologists, to experts in technology, and a whole new spectrum of experts in new disciplines and fields. Third, and in summary, our idea of what it means to be human will change profoundly.

PRE-SUMMIT MODULE: ADOPTING CORE EDUCATIONAL TENETS FOR SEX AND GENDER SPECIFIC HEALTH (SGSH) EDUCATION

REBECCA B. SLEEPER, PHARM.D, FCCP, FASCP, BCPS

CO-CHAIR, SGHE SUMMIT

Senior Associate Dean of Curricular Affairs

Professor of Pharmacy Practice, Geriatrics

Texas Tech University Health Sciences Center, School of Pharmacy

One of the goals of this summit will be to produce core educational tenets for interprofessional education. Core tenets are integral to interprofessional agreement. However, each health profession has profession-specific competencies in accordance with each profession's accreditation body. Nonetheless, there are commonalities across professions that provide opportunities for advocacy for sex and gender specific health (SGSH) education. The core tenets that will be developed at this Summit will indicate what should be a part of every health professional learners' curriculum. They will allow for consistent messaging. Each profession will then tailor more specific competency statements to meet its own needs.

At the 2018 Interprofessional Sex and Gender Health Education Summit, we learned that while advances were being made in integrating sex and gender into health professions education, the various health professions were speaking different languages. This can make it difficult when trying to prospectively design a SGSH curriculum. It also makes assessment difficult.

There are common barriers to integrating SGSH into curricula. First, colleagues often don't understand what is meant by SGSH. There is a false perception that SGSH is already being taught adequately because many programs teach men's health or women's health. Men's health and women's health programs often focus on reproductive health and conditions that are unique to one sex, i.e., they are sex-exclusive. While this content is important, it is not equivalent to SGSH which is sex-inclusive. SGSH is much broader than men's health or women's health. It focuses on the organ systems and disease states that all patients share, regardless of sex. SGSH means recognizing the differences between men and women, and their importance in healthcare.

A second barrier is the false perception that SGSH applies to a specific specialty, e.g. obstetrics and gynecology, or a specific population, e.g. transgender. This is a gender-exclusive perspective, but SGSH is gender-inclusive. It applies to all genders and all patients, and it is relevant for all clinicians and all learners. Sex and gender specific health means that the personal variables of sex and gender should be considered for every cell, every organ system, every disease state, every patient, every time. SGSH is a component of patient centered care. It is also a model for how we should train learners to consider other personal variables such as age and race.

“Sex and gender specific health means that the personal variables of sex and gender should be considered for every cell, every organ system, every disease state, every patient, every time.”

-- Rebecca B. Sleeper, PharmD, FCCP, FASCP, BCPS

A third barrier is the conflation of sex and gender terminology in the clinical literature and in lay terms. At the 2018 Summit, Dr. Tracy Madsen defined sex and gender. Sex is a person's biological status determined by DNA (sex chromosomes as well as autosomes). Gender is a person's self-representation as a man or woman, or how that person is responded to by social institutions based on the individual's gender presentation. Gender is rooted in biology and it is shaped by environment and experience. Sex is a construct about biology, while gender is a construct about the sociocultural aspects of humans.

PRE-SUMMIT MODULE: ADOPTING CORE EDUCATIONAL TENETS FOR SEX AND GENDER SPECIFIC HEALTH (SGSH) EDUCATION

A fourth barrier is the belief that there is no room to add sex and gender content into an already overstuffed curriculum. Rather than creating a new sex and gender curriculum, this content can be embedded into the existing curriculum.

“SGSH is a component of patient centered care. It is also a model for how we should train learners to consider other personal variables such as age and race.”

--Rebecca B. Sleeper, PharmD, FCCP, FASCP, BCPS

Core tenets have already been incorporated into the concept of interprofessional education (IPE). The four main focus areas for IPE core tenets are: roles and responsibilities, values and ethics, communication, and teamwork. IPE is most robust when there is room for each profession to achieve the desired depth and breadth of learning, while being mindful of the universal concepts that all learners should be achieving. The design of any interprofessional education activity should begin with an exercise to identify that which is common, and that which is unique to each participating profession. The core tenets are a starting point for SGSH curricula for use across health professions.

There were initially ten primary tenets about what learners should be able to know and do that emerged from the 2018 Sex and Gender Health Education Summit. There was further discussion about whether the knowledge and skill tenets should be expanded or conflated to become core tenets for SGSH IPE. The working groups at this 2020 Summit will discuss whether to expand or condense the original ten tenets, and they will develop the core tenets for SGSH IPE.

Note: Dr. Sleeper presented the 10 original tenets from the 2018 Sex and Gender Health Education Summit in a 2020 pre-Summit video presentation which included the above discussion. These tenets were discussed in working groups at the beginning of the 2020 Summit. The results of the working group discussions are presented in the next section, Workshop A, which was moderated by Dr. Juliana Kling.

“The core tenets are a starting point for SGSH curricula for use across health professions.”

--Rebecca B. Sleeper, PharmD, FCCP, FASCP, BCPS



WORKSHOP A: ADOPTING CORE EDUCATIONAL TENETS FOR SEX AND GENDER HEALTH EDUCATION

JULIANA (JEWEL) M. KLING, MD, MPH, NCMP, FACP

CO-CHAIR, SGHE SUMMIT

Associate Professor of Medicine, Division of Women's Health
Internal Medicine, Mayo Clinic Arizona

Interprofessional groups discussed the general tenets that should be adopted to define Sex and Gender Health Education across all health professions. The tenets are intended to be global to enable each health profession to develop competencies within their disciplines and to guide curricular development and change.

During the 2018 Summit, we recognized the need to provide a common and simple language for sex and gender specific health education. The purpose of this workshop was to accomplish that goal.

Method: Working groups were given an initial list of ten tenets which were derived from the 2018 Summit and proposed by the Laura W. Bush Institute for Women's Health about what all health professionals should know and what they should be able to do with respect to sex and gender health education. Each group then discussed what was essential for inclusion in curricular goals.

Top 10 Tenets from 2018 Summit

What all health professionals should **KNOW**

1. Know accepted Sex and Gender Specific Health (SGSH) terminology
2. Differentiate male and female anatomy/physiology
3. Identify relevant SGSH epidemiology
4. Identify sex or gender differences in pathophysiology/clinical presentation
5. Identify sex or gender differences in therapeutic response
6. Recognize sex or gender based disparities in access to care or health policy

What all health professionals should be able to **DO**

7. Search and evaluate Sex and Gender Specific Health (SGSH) information
8. Apply SGSH considerations in clinical decision making and patient care
9. Incorporate SGSH in scientific inquiry and research design
10. Teach SGSH to others (peer health professionals or patients)

There were four common themes that emerged across all of the health professions working groups about the core tenets. Notably, all groups determined that while advocacy was not among the original list of tenets, it should be a component of SGSH education.



WORKSHOP A: ADOPTING CORE EDUCATIONAL TENETS FOR SEX AND GENDER HEALTH EDUCATION

Common Tenet Themes after 2020 Working Group Discussions

1. Understanding and teaching of SGSH definitions and concepts
2. Interpretation/use of published data and clinical literature
3. Application to practice
4. Advocacy

Additional issues were raised within the working groups and reflect issues that were addressed at the 2018 Sex and Gender Health Education Summit. These included:

1. Framing the issues in a language that is appropriate for curriculum development
2. Determining competencies within each health profession
3. Writing SMART learning objectives based on the tenets
4. Ensuring that the tenets lead to measurable competencies and milestones.

The next steps in the project will be to clarify and define a set of Common Tenets that can be used within each health profession.



STUDENT WORKSHOP

NORA GALOUSTIAN, BA

Student Co-Chair, Sex and Gender Health Collaborative

The 2020 Summit Student Workshop cultivated a productive and collaborative space for students across health professions to identify sex and gender health disparities, propose potential solutions for promotion in their schools, and execute action items successfully. First, students learned about what using a Sex and Gender Based Health (SGBH) lens in medicine entails. This includes reviewing and providing SGBH resources. There is a student tab with resources on AMWA's Sex and Gender Health Collaborative website: www.amwa-doc.org/sghc which offers resources for students.

Students participated in a round robin discussion to raise awareness and assess what they perceived as knowledge gaps within their own schools. They identified examples where a lack of a SGBH lens impacted their personal and professional lives. Specific topics discussed included: personal protective equipment (PPE) for women, uncomfortable white coats designed for women compared to men's white coats which are pleated, the lack of incorporating sex differences in medical school modules (including reproductive health courses and hormones), the lack of discussion about glucocorticoids in endocrine and reproductive health courses, the need to examine how many women were in research studies, a lack of access to information and current research about male contraceptives, how intimate area exams could be made more comfortable and professional, appropriate dialogue for sex and gender specific patient care -- including appropriate reactions to stillbirth and other pregnancy complications, and gender disparities in cardiopulmonary resuscitation (CPR).

Each student identified key action items aimed at targeting the specific topics that were raised during the workshop. Strategies for solutions included those at the individual school level as well as broader strategies. Examples of strategies included: holding specific professors accountable for including sex differences in their course curricula, asking educators questions about patient comfort and how or what providers could do to make the experience more comfortable (e.g. warm the lubricant or the speculum), engaging in dialogue with the providers with whom they have contact, standardizing and incorporating verbiage into their standardized patient encounters, collaborating with the design lab at one's school regarding PPE for women and white coats that fit women better, and creating educational content addressing gender disparities in CPR. Large-scale advocacy suggestions included: creating a position statement for companies to create PPE that fits women better, providing a detailed report on gender disparities in CPR, and proposing modifications to the American Heart Association (AHA) CPR curriculum to mitigate such disparities.

Students discussed issues about which they could advocate. This including advocating for companies to create N95 masks that fit women's faces. iGIANT® has worked on these issues and might be a potential collaborator. Currently, the U.S. Centers for Disease Control notes that facial hair works with masks, but they do not acknowledge that women have smaller jaw lines, a smaller nose, and a flatter or broader nose or face that may impact the fit of respiratory masks. Students could also advocate that other medical equipment which was designed for men's bodies be designed for women's bodies, e.g., surgical tools, syringes, etc. Students could advocate for changes in clinical practices such as warming speculums and vaginal lubricants prior to use. Students could also advocate for changes in CPR courses to address curriculum gaps, such as how to perform CPR on pregnant women, common symptoms of myocardial infarction in women, concerns about prosecution for assault if touching a woman's breast during CPR, the need to remove brassieres with wires prior to automated external defibrillator (AED), and the lack of female mannequins in training.

Students identified strategies that they could use to remedy these problems. These include: advocating for the use of female mannequins such as those available on Amazon, and creating educational tools demonstrating CPR on women. Within their schools, they could establish relationships with change agents such as curriculum deans and curriculum committees. Students could also include other students (both women and men) and groups in their advocacy efforts, e.g., members of the LGBTQIA+ community and patients. Students could also connect with those in other health professions for peer education activities and inter-professional trainings. Issues about pharmacokinetic differences related to sex and gender could be discussed, especially related to hormonal issues.

KEYNOTE: HIGH VALUE CARE: MEETING THE TRIPLE AIM THROUGH A SEX AND GENDER LENS

MARJORIE R. JENKINS, MD, MEDHP, FACP

Dean, University of South Carolina School of Medicine, Greenville
Chief Academic Officer, Prisma Health Upstate

High value care is vital to reducing the cost of healthcare delivery. The approach used by some healthcare organizations to lower the cost burden of our healthcare delivery system has been referred to as the Triple Aim approach. I assess the Triple Aim through a sex and gender lens. While the Triple Aim approach has been adopted by healthcare organizations, it has not yet been applied to models for high value care in medical education.

Up to 30% or \$765 billion dollars of annual healthcare expenditures in the U.S. have been identified as potentially avoidable. Many of these costs are due to unnecessary services. Physicians must lead the charge to reduce unnecessary costs. It is our professional responsibility to use healthcare resources judiciously.

Medicare as a share of the federal budget is second only to social security in cost to our country. The net federal Medicare outlay is \$605 billion dollars. While healthcare in the U.S. costs more, it does not give us better outcomes. Our life expectancy is 43rd out of 224 measured developed nations, and our healthcare costs are number one. Peter Drucker has stated "What gets measured gets managed." But, if it cannot be measured, it cannot be managed.

"High value care means that we give patients the highest quality care at the lowest possible cost."

-- Marjorie R. Jenkins, MD, MEDHP, FACP

The Triple Aim

The Triple Aim approach was developed by the Institute for Healthcare Improvement. Its three components are quality of care, cost, and population health. The goal is to improve the patient experience, improve the health of the population, and reduce the cost of care. High value care means that we give patients the highest quality care at the lowest possible cost. It is patient centered, safe, effective, timely, efficient, and equitable. Patients want us to keep them safe, help them stay well, navigate their care, treat them with respect, and provide them with the right care at the right time for the right reason.

Our medical school in Greenville was founded by Prisma Health, a \$4.6 billion healthcare organization, to create a new kind of doctor where we teach our students to stem unsustainable growth in healthcare spending, while ensuring that patients receive the care they need. Decreasing payment rates is a non-sustainable business model. As educators, we must be engaged in decreasing the cost of care by eliminating potentially avoidable utilization. In order to reduce healthcare costs and provide appropriate care to our patients, we must attend to sex and gender differences. Whether we are discussing patient medication errors, optimal management of thyroiditis, inpatient medication errors, or unnecessary pap smears, there is a high cost to the lack of consideration of sex and gender in clinical care.

Medication Problems and Errors

In the case of medication non-adherence, we know that women are more likely to experience polypharmacy, especially among the elderly. In every age group, women outnumber men in the number

KEYNOTE: HIGH VALUE CARE: MEETING THE TRIPLE AIM THROUGH A SEX AND GENDER LENS

of medications that they are taking at one time. Women are more likely to experience a drug-drug interaction, be it major, moderate or minor. Non-adherence to antihypertensive treatments is statistically significantly related to the number of medications and to gender, i.e. women. There is evidence that the cost of medication non-adherence among cardiovascular disease patients varies by gender. In one national study of cardiac patients, 10% skipped medication doses, 10% took less medication, and 12.8% delayed buying their medication. After adjusting for all confounding factors, gender was found to be significantly associated with non-adherence. Similarly, studies show significantly higher rates of non-adherence for diabetes medications due to a patient's gender. This has an impact not only on our patients, but on the healthcare delivery system, cost, and on population health. There is a sex and gender ripple effect that begins with polypharmacy in women, leading to increased drug-drug interactions, increased medication non-adherence, increased system costs due to inability to meet quality metrics and repeated hospitalizations, and ultimately at the population level - higher rates of morbidity and mortality.

As for patient experience, a 2020 Pennsylvania study found that women outnumbered men in drug-drug interactions and in drug adverse events. If the CDC counted deaths from preventable medication errors, then it would be the third leading cause of death in the U.S. We must address this, and we must tease out why women are having more adverse events. When I was at the FDA in 2015 - 2019, we had data showing that 76% of adverse drug events occurred in women. However, we haven't been able to determine why this is the case. These are preventable medication errors.

"If the CDC counted deaths from preventable medication errors, then it would be the third leading cause of death in the U.S."

-- Marjorie R. Jenkins, MD, MedHP, FACP

Cardiovascular Disease

Cardiac rehabilitation is a cost effective Class 1 recommended component of the continuum of care for patients with cardiovascular disease. In a Mayo Clinic study, those less likely to be referred for cardiac rehabilitation were women and those who were older. We need a systematic approach to cardiac referrals for women, which should be implemented in clinical practice. In addition, there are sex differences in coronary artery plaque distribution. In a Cleveland Clinic study of patients diagnosed with ST elevation myocardial infarction (STEMI), men were more likely to receive the standard of care according to clinical guidelines. The door to cardiac catheterization balloon time was also greater in women. Mortality at 30 days was 6% higher and statistically significant in women. In response, the Cleveland Clinic developed a protocol and trained their staff, including nurses, physicians, front staff, and other health care providers. After this intervention, guideline directed therapy increased to 80% in women, and door to balloon time decreased to 91 minutes. The Cleveland Clinic effectively removed implicit gender bias in decision making. If we allow implicit bias to impact diagnosis, testing, or treatment, the result may be gender and sex differences in morbidity and mortality.

Thyroiditis

Women are four times more likely to be diagnosed with Hashimoto thyroiditis than men. Managing Hashimoto thyroiditis is challenging, both for the clinician and the patient. Thyroid levels go up and down. They will stabilize and then flare ups will occur. Patients are sluggish or they have too much thyroid hormone. In one study of 150 euthyroid patients, 137 of whom were women, they were standardized to either thyroidectomy plus medical care or medical care alone. During 18 months of follow up, the medically managed group showed no change, but the thyroidectomy plus medical therapy group showed a

KEYNOTE: HIGH VALUE CARE: MEETING THE TRIPLE AIM THROUGH A SEX AND GENDER LENS

likelihood of chronic fatigue and improved quality of life. Their serum anti TPO antibody titers dropped rapidly post-operatively and were normal in almost every surgical patient. For clinicians to make a decision, they would want to know more about the risks versus the benefits and the surgical outcomes. With more data, I would potentially refer my patients with persistent anti TPO antibodies for thyroidectomy and medical replacement of the thyroid hormone.

“If we allow implicit bias to impact diagnosis, testing, or treatment, the result is gender and sex differences in morbidity and mortality.”

-- Marjorie R. Jenkins, MD, MEdHP, FACP

Sex Specific Population Health

On the topic of population health and physician accountability, we can look at the sex specific issue of pap smears and pelvic exams in asymptomatic non-pregnant young women. In a population based study of 2.6 million U.S. women aged 15 to 20 years, 54% had manual pelvic examinations last year which were potentially unnecessary. Of 2.2 million young women receiving pap smears in the past year, 72% were potentially unnecessary. This suggests that compliance with professional guidelines about these examinations and tests may be lacking. According to the 2018 guidelines, women aged 21 to 29 should have a pap smear every three years, and women aged 30 to 65 can have a pap test every three years or an HPV test every five years. Women over 65 should not have pap tests unless certain conditions are met. Estimates are that unnecessary pelvic exams and pap tests could cost more than \$123 million per year. In accordance with the triple aim, we factor in the patient's perspective. There is also anxiety, pain, fear, avoidance, and other costs of unneeded testing.

The main reason to perform a pap smear is screening and prevention of cervical cancer. Most deaths from cervical cancer occur in poor women, women from communities of color, non-U.S. born women, women in rural and remote settings, and trans men who have not undergone surgical transition. Physicians are the ones who have to make these decisions, follow appropriate guidelines, and lead the way.

In the case of prostate cancer in men, the United Kingdom has no recommendations for PSA screenings. Two years ago, the U.S. Preventative Services Task Force said that screening for men up to age 55 was a class C recommendation. For those over 70 years, it was a Class D recommendation to not do a PSA screening for prostate cancer. Keep in mind that African American men are 76% more likely to die from prostate cancer.

All screening guidelines should factor in the intersectionality of race, gender, and sex. Intersectionality should be considered in all examinations of health outcomes and incorporated when we write national guidelines because they will increase the validity of our guidelines. They can help us reduce mortality and morbidity.

Physician Education

We need to teach physicians to practice high value care. Studies find that if physicians see the cost of a test presented in electronic health records, it does not affect their behavior. Thus, education must begin earlier. We must begin to teach our students about the triple aims in undergraduate medical education. In our textbook, *How Sex and Gender Impact Clinical Practice: An Evidence-Based Guide to Patient Care*, I co-authored a chapter on high value care through a sex and gender lens. In our medical school in South

KEYNOTE: HIGH VALUE CARE: MEETING THE TRIPLE AIM THROUGH A SEX AND GENDER LENS

Carolina, we are teaching our students to lower costs, increase quality, and improve health. We are developing a curriculum around high value care. Other schools have also looked at high value care, how you incentivize for it, and they have created learning modules to teach these concepts. The Dell medical school is one of the leaders in the country, as well as the University of Minnesota. We've learned that with the challenges of incorporating sex and gender content into medical curricula, one can only make progress by engaging allies and working together with both healthcare delivery partners, and the clinical learning environment to ensure that they also value the Triple Aim. This is essential to achieve true integration, low cost, high quality care, and the population health improvement that we so desperately need in the U.S.

“There is a sex and gender ripple effect that begins with polypharmacy in women, leading to increased drug-drug interactions, increased medication non-adherence, increased system costs due to inability to meet quality metrics and repeated hospitalizations, and ultimately at the population level - higher rates of morbidity and mortality.”

-- Marjorie R. Jenkins, MD, MEdHP, FACP

Sex and Gender and the Quadruple Aim

Although I have discussed the Triple Aim, we can reframe the issue and view it as a Quadruple Aim. For the fourth aim, you should consider what it might be. The fourth aim is not set. You can choose what that is for your organization, and you can engage your leadership to select what that is. Some have chosen to focus on providers. Examples include increasing wellness, decreasing burnout, increasing provider satisfaction, provider education, and graduate and undergraduate medical education.

While your universities may not appreciate sex and gender medicine, they may appreciate it as a way to attain the quadruple aims in health care delivery. Find out what your university values, what your healthcare provider values, and what they are trying to do to see change in their environment. Get the evidence and then thread sex and gender through those high priority areas. That is a way that we can move the needle.



INTEGRATING SEX AND GENDER HEALTH EDUCATION INTO POSTGRADUATE TRAINING (PANEL)

POSTGRADUATE MEDICAL RESIDENCY TRAINING

JULIANA (JEWEL) M. KLING, MD, MPH, NCMP, FACP

Associate Professor of Medicine

Division of Women's Health Internal Medicine, Mayo Clinic Arizona

There are few published assessments about sex and gender based medicine in residency training. Most prior assessments have focused on women's health curricula. However, sex and gender medicine is much more than women's health, and women's health is much more than reproductive medicine or breast health. Assessments of medical school curricula show that gaps exist in training. For example, one study showed that 70% of medical school curricula did not formally integrate sex and gender topics. There are also gaps in the curricula of specialty areas.

Cedars Sinai Medical Center conducted an assessment of sex and gender content in residency training. They implemented an online survey with postgraduate physician trainees in many different specialty areas, including medicine, surgery, obstetrics/gynecology, among others. They asked how frequently gender medicine concepts were discussed in didactic lectures. About 40% reported never, and about 30% indicated sometimes. When asked if these concepts were discussed in their programs at all, 25% of residents indicated that they were never included, while 40% reported that they were sometimes included. Despite this, 65% thought that gender medicine concepts were important, and 60% agreed that a gender medicine curriculum should be implemented in their clinical program. Women residents were more likely to indicate that sex and gender medicine was important compared to their male counterparts. Similarly, women indicated that they almost always took gender into account when treating patients, whereas the men did not. The study's authors posit that this difference may be due to the fact that practice standards or guidelines typically reflect a normative male standard. Up until the 1990s, the majority of research was conducted on men, and that knowledge has informed our clinical practice.

We conducted an electronic survey of clinic residents at Mayo Clinic sites in Rochester NY, Scottsdale AZ, and Jacksonville FL. The Mayo Clinic has one of the largest training programs in the U.S., with 1,580 residents and over 250 residency and fellowship programs. We adapted a 2012 medical student survey. There were 271 responses for a 17.2% response rate. We focused on three different components: general knowledge questions, medical questions addressing sex and gender differences, and barriers to learning.

All Mayo Clinic residency programs were represented at all three sites, except for dentistry, genetics, speech and language pathology, and sports medicine. 27% of residents reported that they did not have any sex and gender based medicine (SGBM) in their education prior to residency. 26% reported that SGBM was not included in their current residency program, and only 24% had conducted research that included sex and gender as a variable beyond demographics. 15% stated that during their training, an instructor or preceptor had never discussed how a patient's sex or gender impacted their evaluation, interpretation, treatment, or counseling of a patient.

"Women (residents) indicated that they almost always took gender into account when treating patients, whereas the men did not."

-- Juliana (Jewel) M. Kling, MD, MPH, NCMP, FACP

INTEGRATING SEX AND GENDER HEALTH EDUCATION INTO POSTGRADUATE TRAINING (PANEL)

The study included medical knowledge questions. The majority of residents either selected an incorrect response or they were not sure for 48% of the knowledge questions. The majority of questions were answered incorrectly in cardiology, endocrinology, nephrology, neurology, psychiatry, and pharmacology. In open-ended responses, residents indicated that their clinical work or specialty did not depend on gender or sex differences in disease. Some thought sex and gender were only relevant to transgender individuals. They did not know that it applies to everyone and that it is relevant to all specialties. When asked about barriers to learning about the impact of sex and gender, responses included limited time, the small difference in outcomes that can be attributed to sex and gender, and viewing sex and gender as a fringe issue.

In summary, our findings show that residents are not systematically being taught concepts of sex and gender based medicine. They do not recognize that sex and gender impact every person and every body system. There is a lack of knowledge and understanding about the potential significance of sex and gender in health outcomes. This is a call to action to further integrate sex and gender concepts into postgraduate residency training.

“If we don’t look for differences, then we don’t know that there are differences or that sex and gender are relevant.”

-- Juliana (Jewel) M. Kling, MD, MPH, NCMP, FACP

First, we need a basic review of the definitions of sex and gender at all educational levels. We need to teach medical trainees that sex is a biological variable and gender is a sociocultural variable, and both are fundamental variables that affect every cell and every human being. Sex and gender need to be integrated into both research and clinical practice. We also need to clarify that the discipline goes beyond the study of reproduction or women’s health. Differences in women’s health are not just bikini medicine or breast or gynecologic health. Sex and gender based differences influence all organ systems and outcomes. If we don’t look for differences, then we don’t know that there are differences or that sex and gender are relevant. Linking sex and gender concepts to precision medicine or individualized medicine may make it more relevant to residents and enable them to understand why it’s important for all of their patients. For both undergraduate and graduate medical education, integration may be best achieved by embedding these concepts into existing curricula. We also need to conduct faculty development so that attending physicians and preceptors understand that sex and gender influences how patients present with a disease and how it should be evaluated and treated, so that they will integrate it into their clinical teaching.

“Linking sex and gender concepts to precision medicine or individualized medicine may make it more relevant to residents and enable them to understand why it’s important for all of their patients.”

-- Juliana (Jewel) M. Kling, MD, MPH, NCMP, FACP



INTEGRATING SEX AND GENDER HEALTH EDUCATION INTO POSTGRADUATE TRAINING (PANEL)

SEX AND GENDER MEDICINE: BACK TO BASICS IN GRADUATE EDUCATION

VIRGINIA MILLER, PHD, MBA

Professor, Surgery and Physiology
Director, Women's Health Research Center
Mayo Clinic, Rochester, MN

Concepts regarding definitions and implications of sex and gender need to be integrated into graduate medical education from basic science through clinical translational training. The human karyotype, present in every nucleated cell, consists of 22 sets of autosomes and one set of sex chromosomes - XX for female and XY for male. Every nucleated cell in the human body has a sex. All sex differences result from the imbalance of the X and Y chromosomes. These are chromosomal effects and are present at the earliest stages of development, even prior to the development of the gonads. With the development of the gonads and the production of sex steroid hormones, the interactions of genetic sex with hormonal modulation result in sex differences in incidence, prevalence, etiology, symptomatology, response to treatment, morbidity, and mortality from disease.

After the 2015 Sex and Gender Medical Education Summit, Dr. Marjorie Jenkins and I proposed an educational continuum in Clinical and Translational Sciences based on the process used to develop and bring drugs from basic science to phase three clinical trials: (a) the discovery phase, where key questions are developed and we examine how sex and gender impact cellular mechanisms, disease mechanisms, and treatment modalities; (b) the proof of concept component, where sex and gender based medicine (SGBM) educational methodologies are developed for threading sex and gender evidence into medical school education; (c) the development of sex and gender curricular guidelines; (d) the dissemination phase where SGBM curricular threads are disseminated into real-world academic settings and real-world concepts, from basic science to hands on training with patients; and (e) the global application of sex and gender health into public health, public policy, and clinical guidelines. It is the discovery phase where graduate education is key to the subsequent steps in medical education.

At the Mayo Clinic, we have incorporated sex and gender into our curriculum in some of our programs using a four R approach - the Right content, to the Right learner, at the Right time, with the Right modality. This was adopted at our Center for Clinical and Translational Science, our Building Interdisciplinary Research Careers in Women's Health (BIRCWH) scholars program, and our Specialized Center of Research Excellence (SCORE) on sex differences in the Core Center for Career Enhancement.

Fundamental topics that are critical to a sex and gender based medicine curriculum include the basic definitions of sex and gender and the hormonal effects on cellular processes, i.e., the role of sex chromosomes on different conditions and how they express in health and disease. Learners need to understand how sex and sex hormones may influence efficacy of pharmaceuticals, i.e. pharmacogenomics. Finally, concepts of sex and gender need to be incorporated into research study designs and data analysis. It is also important to consider the ethical aspects of not incorporating these concepts into health care delivery, which ultimately deepens health disparities. Incorporating sex and gender into education and practice can help eliminate disparities.



INTEGRATING SEX AND GENDER HEALTH EDUCATION INTO POSTGRADUATE TRAINING (PANEL)

A series of questions can be used to help researchers frame their research to consider sex as a biological variable. (1) Is there evidence of a sex difference in the disease, such as in incidence, prevalence, morbidity or mortality? (2) Is there an experimental model of the condition or disease? (3) Does the model demonstrate the same sex differences and expression of the organ system as might be observed in humans? (4) Are data lacking from an experimental model in one sex to compared to the other?

Gender is a psychosocial factor that can influence biology. There are many attempts to measure gender, but these scales may not be useful because they do not identify specific modifiable factors that might influence biology and affect susceptibility to a disease or change an outcome. Clinical intake information now includes questions about social factors that may affect health. For example, geographical location, the environment and whether it's at sea level, humid or cold, and environmental exposures related to pollution or the soil. Cultural expectations and restrictions are also components of gender. These may include living arrangements, family responsibilities, childcare and elder or sick family member care. Each of these may increase stress. Family and relationships also matter. Education levels may impact employment and income, both of which may affect access to health care and healthy living habits. Lifestyle habits are also important, such as activity level, engagement in risky behaviors, diet, and use of alcohol and recreational drugs. These factors differ by gender in prevalence, exposure, and impact. In addition, lifestyle factors may result in epigenetic changes. Epigenetic consequences can be carried forward for generations. Some of these gendered factors can be modified or changed. We need to understand how modifiable factors influence biology in both men and women. Other factors are not modifiable, such as race or age. In women, many adverse conditions of pregnancy may carry a lifelong susceptibility for disease in later years, and thus, they need to be noted.

Competency must be assessed as we develop sex and gender curricula. In graduate education, we must ensure that individuals can define sex and gender, and understand how they impact the disease mechanism, progression or treatment. Students in clinical practice need to understand how to integrate this information into their practices. Those in the basic sciences need to know how to integrate sex and gender into study designs and how to conduct statistical assessments.

“Because of sex specific chromosomes and hormones, there are sex differences in incidence, prevalence, etiology, symptomatology, response to treatment, morbidity, and mortality from disease.”

-- Virginia Miller, PhD, MBA

Going forward, a basic review of the definitions of sex and gender is warranted at all levels of education. They are fundamental variables that affect every cell and are relevant to every medical discipline. Concepts of sex and gender go beyond the study of reproduction. These concepts need to be embedded into existing curricula and linked to precision and individualized medicine. To accomplish this integration will require faculty who have a solid understanding of both the definitions of sex and gender and of how it affects every body system.



INTEGRATING SEX AND GENDER HEALTH EDUCATION INTO POSTGRADUATE TRAINING (PANEL)

LEVELING UP ADVANCED PRACTICE NURSING EDUCATION TO INCLUDE SEX AND GENDER

SANDI TENFELDE, PHD, RN, APRN, WHNP-BC

Associate Professor

Loyola University Chicago, Niehoff School of Nursing

Women's health nurse practitioners are now known as women's health and gender related nurse practitioners. We provide primary care to women across the lifecycle and to men with reproductive and sexual health needs. In providing care, we consider socio-cultural environments, including interpersonal, family, and community, and how the interrelationship of gender, class, culture, ethnicity, sexual orientation, economic status, and socio-political power changes the healthcare experience. In advanced practice nursing, there are different roles which include nurse, nurse anesthetist, nurse midwife, clinical nurse specialist, and nurse practitioner.

The National Organization of Nurse Practitioner Faculty (NONPF) guidelines outline competency areas, core competencies, and area specific competencies that support the inclusion of sex and gender into the curriculum for nurse practitioner education. One guideline addresses gender unique disease presentations. In this area, nurse practitioners need to evaluate gender specific interventions and outcomes, and integrate gender specific evidence into practice. Gender influences exercise, lifestyle, and familial factors which can predispose us to disease. Cultural and societal influences and stigma can be included as well. Sex as a biological variable is also related to this competency. All of this fits into the context of how we can improve our patients' health. These competencies can be used to guide curricular development about sex and gender.

There are existing resources such as modules that can be readily integrated into a curriculum. We do not have to reinvent the wheel. For example, I have found the modules from the Laura W. Bush Institute for Women's Health to be very useful. Another great resource is the textbook by Dr. Marjorie Jenkins and her team on sex and gender and health. Using existing resources makes it easier to integrate sex and gender content into your teaching materials and into your curriculum.

"There are existing resources such as modules that can readily be integrated into a curriculum. We do not have to reinvent the wheel."

-- Sandi Tenfelde, PhD, RN, APRN, WHNP-BC

There are various trends that can be capitalized upon to support the integration of sex and gender into curricula. Examples include the continued expansion of scientific knowledge, technology, informatics, the increasing complexity of the healthcare system, the need for improved patient outcomes, and the need for parity with other healthcare professionals. Within advanced practice nursing, there has been a national push to train students at the doctorate level. In October 2000, the American College of Nursing (ACN) published a position paper recommending that everyone transition the entry level degree for advanced practice registered nurses from a master's degree to a doctorate of nursing practice (DNP) by 2015. As we transition to the DNP, this is a good time to level up our teaching and make curricular changes to include sex and gender. You can examine trends within your own profession or university and determine what may help you integrate sex and gender content into your own curriculum.

EXPLORING THE RELEVANCE OF GENDERED INNOVATION IN ALL AREAS, INCLUDING COVID-19 (PANEL)

SOFTWARE + COVID: A COLLISION OF CRISES FOR WOMEN

MARGARET BURNETT, PHD

Distinguished Professor of Computer Science
Oregon State University, Corvallis, Oregon

Gender biases in software have been in the news lately, but only those arising from the reasoning process within the computer, i.e., “under the hood.” Less known are the “over the hood” biases in software-supported workflows. Statistically, these affect women more than other genders.

One example relates to how software supports online communication. Not only are there gender differences in verbal communication, but women are statistically more likely to use non-verbal communication than men. Online communication as it is currently supported offers few non-verbal cues. In fact, it sometimes reduces communication to an array of black boxes, entirely stripping out non-verbal cues.

Communication differences are not the only type of over-the-hood issue. Medical software has gender inequities due to workflows and the features that are supported. Gender inequities also exist in spreadsheets, E-learning systems, robot systems, mobile applications, websites, digital libraries, and in the software that is used daily in academia. These inequities have all been documented in various scientific publications. Research has shown this since about 2004.

The problem has been exacerbated during the COVID-19 pandemic lockdowns, when medical students and faculty alike had to switch to online learning. Since women often bear the primary responsibility for caring for children, lockdowns forcing everyone to be at home have raised issues for women trying to concentrate on medical education work while at the same time dealing with increased home responsibilities. This situation, on top of women having to do their work using gender-inequitable technologies, raised a collision of crises.

There are right ways and wrong ways to address these inequities. Some have mistakenly attempted to resolve inequities by a “shrink-it-and-pink-it” strategy. For example, Dell computers in 2009 decided to sell more laptops to women via pink laptops and an accompanying website with recipes. Similarly, BIC decided to produce pens that were pink and purple and sparkly, with an added “for Her” label. They also raised the price (a phenomenon some refer to as the “pink tax.”). Such approaches are problematic.

People do not divide into the buckets of “typical” men and “typical” women because there is little uniformity in gender expression within any gender. Thus, we cannot solve the problem of gender-inequitable technology products by dividing people into buckets, with a different version for each bucket. Instead, the inequities need to be treated as a debugging problem. When there are features that raise “inclusivity bugs,” we can adopt a debugging approach to address those bugs, one at a time. The solution is to debug the product rather than to create different versions for each (presumed) different bucket of people.



EXPLORING THE RELEVANCE OF GENDERED INNOVATION IN ALL AREAS, INCLUDING COVID-19 (PANEL)

The GenderMag Method (Gender-Inclusiveness Magnifier) pinpoints such bugs. I am a co-inventor of the GenderMag Method. It is a free method; anyone can download it. In the GenderMag Method, you customize one of the GenderMag personas by adding background and demographics. This may include variables such as gender, education level, age, specific interests, etc. However, you can't customize the personas' cognitive styles ("facets" in GenderMag). Those are fixed. For example, one facet is attitude toward risk in technology usage. Some people are risk-averse, while others are risk-tolerant. Inclusive technology supports the entire range of attitudes toward risk. You then "walk through" a task the software is supposed to support from the perspective of the persona you customized.

We analyzed data from seventeen real world teams that used the GenderMag Method on their own software products. They found inclusivity bugs in 12% to 100% of the features they examined using GenderMag. In one real world example, the creator tested their software product empirically on people, and women failed the tasks twice as often as men. After the product was debugged with GenderMag, the gender gap completely disappeared, and everyone's performance improved.

You can download the GenderMag Method and other resources for free at gendermag.org.

"There were gender equity biases in 12% to 100% in software features that were examined using the GenderMag Method."

-- Margaret Burnett, PhD



EXPLORING THE RELEVANCE OF GENDERED INNOVATION IN ALL AREAS, INCLUDING COVID-19 (PANEL)

iGIANT® (IMPACT OF GENDER/SEX ON INNOVATION AND NOVEL TECHNOLOGIES)

SARALYN MARK, MD

President, iGIANT®

In a one-size-fits-all world, men and women interact differently with technology, from medications to cars to smart phones and clothing. This is why the iGIANT® was developed - to accelerate the translation of research into gender and sex-specific design elements such as for products, policies, protocols, programs for health, IT, transportation, and retail sectors by engaging stakeholders in government, industry, academia, and advocacy.

This type of impact may not be immediately apparent to the economic calculus of a company or individuals. We see the world trying to operate with suboptimal designs at the outset of innovation when building products or services. Products don't fit properly, drugs aren't prescribed correctly, and devices aren't able to work as well from one individual to the next. The void or avoidance of a gender and sex specific perspective creates gaps and risks which can result in financial liability, inequity in quality, and inadequate treatment for diverse populations.

“The void or avoidance of a gender and sex specific perspective creates gaps and risks which can result in financial liability, inequity in quality, and inadequate treatment for diverse populations.”
-- Saralyn Mark, MD

Through roundtables, summits, challenges, scholarships, and an iGIANT® seal of approval for design elements, we promote improvements for men and women in safety, quality of life, and work performance. Roundtables raise awareness and empower participants to become ambassadors championing the development of design elements. Through these roundtables, members of the private and public sectors have interacted to explore opportunities to collaborate.

We have held more than 87 roundtables across the globe since the 2016 inception of iGIANT®, from the U.S. to Brazil, Poland, England, and beyond, including one held at the United Nations. We are now conducting them virtually during this pandemic and have reached participants around the globe. Participant organizations have included corporations, nonprofits, universities, and government agencies. The largest roundtable to date hosted 450 people during the American Association for Clinical Endocrinologists Conference in Boston in May 2018.

We have also launched 5 challenge competitions, including one with the space community and another with one of the largest student associations in the world where more than 240,000 high school students competed. Many more international competitions and STEM programs are being planned. Additionally, the iGIANT® has hosted specialty roundtables (summits) on artificial intelligence, design, and extreme environments, the latter of which included first responders, military, and astronauts. These summits will generate design elements that will not only innovate, but also disrupt the way men and women live and work on this planet and beyond.

We live in a dynamic and transformational time when issues surrounding sexual harassment and gender discrimination are being confronted directly. The iGIANT® is working toward giving men and women the tools, resources, and opportunities to do their jobs safely. Through its novel programs which inspire people to peer through a gender and sex lens so that they can envision innovative solutions, iGIANT® can play a role to improve the safety and quality of our lives, including work performance, for everyone on Earth and in space.

ADVOCATING FOR SEX AND GENDER INTEGRATION INTO BOARD AND LICENSING EXAMS: A FIRSTHAND EXPERIENCE (PANEL)

INTEGRATING SEX AND GENDER INTO MEDICAL LICENSING EXAMS

KIMBERLY TEMPLETON, MD, FAOA, FAMWA

Professor, Orthopedic Surgery
Vice Chair, Diversity, Equity and Inclusion
University of Kansas

The role of licensing exams is to assess competency to practice. There are a number of reasons that we should include sex and gender on licensing exams. First, inclusion on the exams could increase the visibility of this issue among educators and help drive curricular change. Second, and of primary importance, if we included sex and gender on the exams, we could ensure competency to care for all patients. How can we ensure that we are training people to take care of all patients if we don't know whether or not they understand the variables of sex and gender and their impact on health and disease?

“How can we ensure that we are training people to take care of ALL patients if we don't know whether or not they understand the variables of sex and gender?”

-- Kimberly Templeton, MD, FAOA, FAMWA

The U.S. Medical Licensing Exams (USMLE) are taken in medical school in two parts. Step 1 is taken at the end of the second year and emphasizes basic foundational science. The questions are organ system based, but also include interdisciplinary topic areas such as behavioral sciences, physiology, anatomy, genetics, and immunology as well as training appropriate competencies in medical knowledge, diagnosis, physical exam, communication skills, etc. Step 2 addresses how knowledge of basic science principles can translate into patient care. This two part exam, clinical knowledge and clinical skills, is used to determine the ability to provide patient care in a supervised residency program. Step 3 is taken during residency and assesses the ability to practice medicine and manage patients independently. Physicians must pass all three exams in order to obtain a license to practice medicine.

In order for topics to be included on licensing exams, there must be adequate evidence of the focus of the questions in the medical literature that is readily accessible to learners, and that is relevant and important for patient care. It must also be a subject that is taught in medical school. Unfortunately, sex and gender specific health is not consistently taught in medical schools across the country.

The majority of the current sex and gender content on the NBME exam reflects a classic or standard definition of sex based differences such as pregnancy, childbirth, puerperium, female reproductive system, male reproductive system, breast health diseases, etc. However, sex based differences extend far beyond this. For all organ systems, there are conditions that have sex and gender based differences.

“For all organ systems, there are conditions that have sex and gender based differences.”

-- Kimberly Templeton, MD, FAOA, FAMWA

Here are examples of topics that are on the NBME exams for which there is evidence of sex and/or gender based differences.

ADVOCATING FOR SEX AND GENDER INTEGRATION INTO BOARD AND LICENSING EXAMS: A FIRSTHAND EXPERIENCE (PANEL)

Concussions

Women are more likely to sustain a concussion for a given level of impact than would men, but men are more likely to return to sports sooner. While the explanation for this is not clear, this difference may be due to women's neck muscles being weaker and not responding as quickly when there is a head impact. The difference in neck muscle strength and response time is a sex based difference, but men's earlier return to sports is a gender based difference. There are also significant differences between men and women in terms of long-term symptoms. Women are at higher risk of axonal loss and post-concussion syndrome and have more prolonged and different symptoms after sports related concussions. As a clinician, if you're considering whether a patient has long term issues after a head injury and you're assessing for depression, then you will likely identify the man with a long-term head injury issue, but you may not necessarily identify the woman because a woman is more likely to have issues with noise sensitivity. Thus, you need to know the differences and you need to know how symptoms differ between women and men.

Osteoarthritis

Osteoarthritis (OA) is the most common cause of disability in the U.S. and around the world. Starting at about the age of 25 and for every decade thereafter, there is a greater prevalence of osteoarthritis in women compared to men. There are a variety of explanations for this. The sex based component refers to differences in injury risk and physiologic responses to these between women and men. There are also differences in cartilage response to sex hormones and in muscle strength that may contribute to OA risk. Sex-based differences in extremity alignment can also contribute to osteoarthritis risk among women, but there isn't the same correlation between anatomy and OA in men.

Ischemic Heart Disease

There is a higher risk of heart disease among men with high LDL. In contrast, heart disease in women tends to be related to high triglycerides. Women also tend to have different presentations of heart disease. They are more likely to present with fatigue, shortness of breath, diaphoresis, nausea, and vomiting. Women are much less likely than men to present with crushing substernal chest pain. Women with heart disease presenting with shortness of breath or diaphoresis are often thought to be having an anxiety attack and are sent home where they can complete their myocardial infarction. Women are more likely to have unstable angina or microvascular disease, making coronary angiography less diagnostic in women.

“When women present with shortness of breath or diaphoresis, they are often thought to be having an anxiety attack and are sent home where they can complete their myocardial infarction.”

-- Kimberly Templeton, MD, FAOA, FAMWA

Lung Carcinoma

Women are more likely than men to develop lung carcinoma as non-smokers and also for given levels of smoking. There are also differences in histology. Women are more likely to have adenocarcinoma, while men are more likely to have squamous cell carcinoma. This likely does not reflect only differences in sex hormones. Estrogen exposure risk has been shown to have both a higher or lower risk for some types of lung carcinoma. The impact of gender on lung carcinoma lies in the assumption that non-smokers, more frequently women, don't develop lung cancer, so they are not routinely screened. Therefore, women tend to be diagnosed at higher stages of lung cancer.

ADVOCATING FOR SEX AND GENDER INTEGRATION INTO BOARD AND LICENSING EXAMS: A FIRSTHAND EXPERIENCE (PANEL)

The above are all high impact and common conditions that affect patients. Patients are also becoming aware of these differences and are expecting sex and gender specific care. These topics can appear on NBME exams and are areas where there is the potential to include questions about sex and gender based differences.

Need to Translate Knowledge

In 2010, an Institute of Medicine (IOM) report on the status of women's health research noted that a significant issue was translating knowledge into clinical practice and public health policies. Both of these can be addressed by including this material in educational curricula and related examinations of trainees. Barriers to increasing sex and gender based content on the exams include the general lack of awareness of sex and gender differences and their impact on health, both within the general medical community and especially those involved in medical education and trainee assessment. In addition, these topics are not a standard part of medical school curricula beyond issues such as reproductive health, cardiology, and bone health. A survey of medical students about the content of medical school curricula was conducted by Jenkins et al. It demonstrated that the overwhelming majority of students knew that sex and gender medicine improved their ability to manage their patients. They thought that medical education should include this information, but only slightly more than half indicated that this information was included in their curriculum.

Inconsistent Reporting of Sex and Gender Differences

Published research, the sine qua non of curricular and examination development, does not routinely include results disaggregated by sex and gender. Although there are outstanding journals that address women's health and sex and gender based differences, the vast majority of the literature does not. In a study of ten high impact cardiovascular journals about cellular research, only about 30% of the studies reported the results based on the cells' sex. A 2011 review article examining randomized control trials which were published in high impact journals and covering a variety of conditions that could impact both sexes, found that only one quarter of the studies reported results based on sex. In 2015, the NIH stated that all studies needed to include sex as a variable, including studies of laboratory animals and cells. Since all cells have a sex, and the sex of animals and cells could impact a study's results, applying the results of a study on one sex to the opposite sex is questionable. We recently published a study that looked at reporting from high impact orthopedic journals. We found that only about one third of the articles on OA of the knee and rotator cuff injuries reported results based on sex. OA of the knee has a significantly higher prevalence among women than men. In rotator cuff injuries, people tend to think that there isn't a sex difference, but I believe that is because this hasn't been consistently assessed. We found that there was no statistically significant difference in reporting about sex differences between the two conditions, irrespective of whether sex differences have previously been reported to be significant or not. We also found no statistically significant difference in the rate of reporting based on sex with time, whether before or after the 2010 IOM report. In general, reporting results based on sex is still uncommon.



ADVOCATING FOR SEX AND GENDER INTEGRATION INTO BOARD AND LICENSING EXAMS: A FIRSTHAND EXPERIENCE (PANEL)

Adopting SAGER Guidelines

It is challenging to incorporate sex and gender differences into curricula or assessment exams when published research does not report results based on sex. One way to address this is through adopting the Sex and Gender Equity Research (SAGER) or similar guidelines. This initiative asks for sex and gender to be accounted for in all research studies and be noted in all sections of a research publication. For example, they recommend that in a results section, sex and gender analyses should be presented regardless of whether there was a positive or negative outcome. The data should be routinely disaggregated by sex and gender. If a sex and gender analysis was not conducted, the rationale and implications for not doing that analysis should be included. A variety of high impact journals have signed on to the SAGER guidelines, but not all. Among those that have signed on, however, it is not clear if they are abiding by the guidelines.

There are multiple routes to effecting change in curricula. Changing licensing exams is a top-down approach, but in and of itself, it is not sufficient. We also need a bottom up approach and to work with faculty (clinical and basic science), students, and schools to change curricula, which may ultimately lead to changes in the licensing exams. To change curricula, we will need a bi-directional approach, with input from multiple levels and multiple groups. None of this will happen until we improve the current quality of research. The SAGER and similar guidelines are a promising tool to help us effect that change. We also need to mentor students, residents, and faculty on how to assess the literature, how to assess lectures, and how to assess and change the curriculum.

“It is challenging to incorporate sex and gender differences into curricula or assessment exams when published research does not report results based on sex. One way to address this is through adopting the Sex and Gender Equity Research (SAGER) or similar guidelines.”

-- Kimberly Templeton, MD, FAOA, FAMWA



ADVOCATING FOR SEX AND GENDER INTEGRATION INTO BOARD AND LICENSING EXAMS: A FIRSTHAND EXPERIENCE (PANEL)

COLLEGES/SCHOOLS OF PHARMACY PERSPECTIVE

KELLY RAGUCCI, PHARMD, FCCP, BCPS

Vice President for Professional Development
American Association of Colleges of Pharmacy (AACP)

The Center for the Advancement of Pharmacy Education (CAPE) creates outcomes to guide curriculum planning, delivery, and assessment for all schools and colleges of pharmacy. These outcomes were last published in 2013 in the American Journal of Pharmaceutical Education. They were created by focusing on the desired end, i.e., the knowledge, skills, and attitudes that entry level graduates should possess. They are intended to be achievable at the end of a professional program and measurable within academic and practice environments that are evolving to meet a changing healthcare system. There are four broad domains within CAPE 2013. The first domain focuses on foundational knowledge that should be integrated throughout the curriculum. The second domain contains the essentials for practicing pharmacy and delivering patient centered care. The third domain presents effective approaches to practice and care. The fourth domain addresses personal and professional development. Sex and gender have been integrated to some extent into domains two and three. It should be noted that both the CAPE outcomes and entrustable professional activities (EPAs) are currently being revised and will be published in 2022.

“Sex and gender issues should ideally be threaded throughout the pharmacy curricula and not simply added in as separate men’s/women’s health modules.”

-- Kelly Ragucci, PharmD, FCCP, BCPS

Under the four broad domains, we have fifteen subdomains. These are designed to capture what students should be capable of doing upon graduation. Within domains two and three, the most relevant subdomains for this discussion are as follows: 2.1 (patient centered care), 2.4 (population based care), 3.2 (education), and 3.3 (patient advocacy). In order to have sex and gender issues threaded throughout our curriculum, these topics should be incorporated into multiple subdomains.

There are learning objectives under each subdomain. These learning objectives are not intended to be prescriptive. Each college or school is encouraged to expand or edit the learning objectives to meet their local needs. For example, subdomain 2.1 refers to providing patient centered care as the medication expert. This is where a pharmacy student would collect subjective and objective data, interpret the data, prioritize patient needs, develop a pharmacotherapy plan, implement the plan, monitor the patient, adjust the plan, and document appropriately. Sex and gender issues can be integrated by developing teaching scenarios and patient cases, into laboratory experiences, and even in clinical applications courses.

Population based care, subdomain 2.4, refers to how population factors influence patient centered care, and how they influence the development of practice guidelines and evidence based best practices. This can be accomplished by focusing on a target population and assessing their healthcare status needs. Faculty members often use the targeted population approach and include a module on men’s health or women’s health in the curriculum. It would be better, however, to thread sex and gender content throughout the curriculum. For example, if you are teaching about myocardial infarctions (MI) in the cardiology portion of pharmacology, it should be noted that women often present differently than men

ADVOCATING FOR SEX AND GENDER INTEGRATION INTO BOARD AND LICENSING EXAMS: A FIRSTHAND EXPERIENCE (PANEL)

when they're having an MI. Another example is that dosing differs in women versus men with different medications, and it is not just weight-based differences. Zolpidem is a good example where the maximum dose for men is ten milligrams, compared to five milligrams in women. Certain diseases are more prevalent in women than in men, and vice versa, and these should be discussed in the curriculum. If you are just adding a module into the curriculum, then you won't have time to address women's or men's health adequately.

Subdomain 3.2 addresses patient education. Pharmacists need to determine the most effective way to impart information and assess understanding. Subdomain 3.3 addresses patient advocacy. We need to ensure that patients' best interests are represented. We should empower patients to take responsibility for and take control of their health. This applies to men, women, and all patients of all ages.

Sex and gender issues must be incorporated longitudinally throughout the curriculum. Clinical applications courses provide a good example. These case-based courses reflect what students are learning in their larger pharmacotherapeutics courses. In these courses, students may be working independently, within teams, or in a hybrid educational model. Cases can also be incorporated in laboratories - community, hospital, clinical assessment or compounding laboratories. Cases should be created to be complex because in real life, patients tend to have more than one problem at a time and are often on multiple medications. Clinical assessment laboratories typically occur at the end of the third year just prior to experiential rotations where students have the opportunity to collect data, develop a pharmacotherapeutic plan, and practice patient counseling. This is done either with other students serving as patients, or via inter-professional simulations. Sex and gender can also be integrated into elective courses and community based extracurricular experiences. We need to ensure that our schools and colleges are providing all students with these experiences.

After graduation, students take the North American Pharmacist Licensure Examination (NAPLEX) which measures entry level baseline knowledge for a generalist pharmacist. Questions that are too advanced or specialized will not pass the validation stage of testing and will be excluded from the exam. For example, specific questions about sex and gender issues or geriatrics or pediatrics are excluded because the examination is generalized for an entry level pharmacist. However, there are 250 multiple choice questions that are case based. There is an attempt to make these cases diverse so that they include a mix of different ages, sex, ethnicities, disease states, medications, etc. There are many exam writers across the U.S. in different practice areas, and there are regional writing groups that meet regularly.

The National Association of Boards of Pharmacy (NABP) is the governing body responsible for the NAPLEX. They revised their blueprint and competency statements in 2015 for the NAPLEX so that it now includes two competency areas. The first area is ensuring safe and effective pharmacotherapy and health outcomes. In this section, one interprets, assesses, evaluates, and develops a pharmacotherapeutic plan, including effective documentation and communication. These are all things that students should have learned in the curriculum, and it mimics key outcomes. The second area assesses the safe and accurate preparation, compounding, dispensing, and administration of medications and the provision of healthcare products.



WORKSHOP B: ADVOCATING FOR SEX AND GENDER IN LICENSING EXAMS BY DISCIPLINE

JULIANA (JEWEL) M. KLING, MD, MPH, NCMP, FACP

Associate Professor of Medicine, Division of Women's Health
Internal Medicine, Mayo Clinic Arizona

REBECCA B. SLEEPER, PHARMD, FCCP, FASCP, BCPS

Senior Associate Dean of Curricular Affairs
Professor of Pharmacy Practice, Geriatrics
Texas Tech University Health Sciences Center, School of Pharmacy

Advocacy focused workshops were held in discipline specific groups to identify the key stakeholders in each discipline and to determine next steps toward curricular integration of sex and gender content. The disciplines and areas that were represented included: medicine, nursing, dentistry, physical/occupational therapy, and speech and language pathology, pharmacy, research, and other health professions educators. The results of the discussions are integrated below. Some disciplines are further ahead with the process of curricular integration, and thus all comments may not apply to every discipline at the current time. However, presenting the information in an integrated manner will be more useful to those working toward curricular change, will provide a guide toward the future, and will enable groups to learn from each other.

Barriers to Sex and Gender Integration

Many of the groups began by identifying some of the barriers to curricular integration. Some participants lacked information about the extent to which sex and gender differences were included in curricula, licensing exams, or clinical practice. Some believed that their licensing body was not ready to receive the information about curricular change, and thus another approach would be needed. Some did not have access to key individuals and stakeholders at the primary licensing organizations. A lack of buy-in from stakeholders at different key organizations was also problematic. Many professional societies did not have sex and gender specific guidelines for care. Both knowledge gaps and research gaps pointed to the need for more primary literature within disciplines, including in textbooks. Lastly, while buy-in from the top was necessary to effect change, it was not expected to be forthcoming among some groups.

Identify Key Stakeholders

Participants identified key stakeholders who might be able to assist with working toward curricular change efforts in the roles of allies, influencers, or regulators. These included the healthcare workforce, patients, students, faculty, health program leadership, journal editors, academic institutions, state boards, specialty groups, federal and state governments, federal research institutes, federal agencies, licensing bodies, accrediting bodies, and professional organizations and associations.

Build Awareness Among Educators

Several advocacy strategies were identified by workshop participants. At the early stages of change, it is critical to build awareness, both among individuals and organizations. This includes among other faculty members, fieldwork educators, program directors, students, professional societies, licensing bodies, and specialty or subspecialty groups where summit participants may be in a leadership position. Possible strategies included using listservs, publishing data about the percentage of questions in the question banks with a sex and gender aspect, and inviting representatives from the main academic and accrediting bodies in each specialty to attend the next SGHE Summit. It would be helpful if the scope of sex and gender health could be clarified for decision makers.

WORKSHOP B: ADVOCATING FOR SEX AND GENDER IN LICENSING EXAMS BY DISCIPLINE

Build Public Awareness and Build a Pipeline

Growing a scientifically literate public was viewed as a desirable goal. Patients and the public could also be informed about sex and gender differences via articles and reports in the popular press. This could be done via outreach to the media and advocating for inclusion of sex and gender content. Education could begin with youth, such as those in scouting. Undergraduates could also be taught about the importance of sex and gender so that they would have this knowledge prior to entering health professions training.

Assessment as a Strategy

Assessment in various forms was also identified as a strategy. Stakeholders, e.g. students, could be assessed about their knowledge of sex and gender. Organizations could be assessed for their inclusion of sex and gender content in their curricula, e.g. undergraduate institutions and health professions schools and program. This would provide a baseline for what is already being done. Professional organizations could also be assessed to determine whether sex and gender are included in official guidelines, position or competency statements, competencies, learning essentials, etc. It would also be wise to determine where your profession stands with respect to sex and gender in order to guide the adoption of the best strategy and identify what can reasonably be requested, i.e., the next steps.

Promote Student Advocacy

Workshop participants commonly identified student advocacy as a central route for curricular change. Students should be informed, encouraged, and empowered to advocate for change. Suggestions included the following: encourage students in their course and curriculum evaluations to identify the lack of sex and gender content, provide students with standardized language that they can use in their critiques, engage students in curriculum committees to thread sex and gender into learning objectives, include books about the impact of sex and gender health in health professions book clubs (e.g. *Invisible Women*), mentor students and trainees in how to assess research articles and lecture content for inclusion of sex and gender, empower students to ask questions, and work with students to help them approach licensing organizations about including sex and gender content. Students can also be supported in writing delegate statements to health professions societies and professional organizations. It would be helpful to identify a champion at each institution to support students in their efforts.

Educational Strategies

Educational strategies were also a significant area of discussion, particularly the importance of faculty development. Faculty could be taught about how, where, and why they could access sex and gender research, toolkits, and teaching materials. Workshop participants could develop sex and gender educational materials for continuing education, webinar series, institutes, and other dissemination routes. A train the trainer approach could be effective in faculty development. Educators could become certified in sex and gender content and knowledge. Participants could also help build a national library of sex and gender resources.

Research Publication Strategies

Advocacy also needs to occur in the research field. Journal editors should be persuaded to adopt the Sex and Gender Equity in Research (SAGER) guidelines or similar guidelines that encourage or require sex specific reporting in journals and textbooks. This would help to build the evidence for sex and gender differences, and it would encourage and enable researchers to adopt a sex and gender lens in their own work. Even in smaller studies, this reporting is important because it could contribute to future meta-analyses. Research courses should include training about sex and gender in research.

WORKSHOP B: ADVOCATING FOR SEX AND GENDER IN LICENSING EXAMS BY DISCIPLINE

Engaging Licensing and Accrediting Bodies

There are strategies for engaging with licensing bodies directly. One can begin by exploring the process for adding sex and gender related questions to licensing examinations. Existing exams can be reviewed to ensure that correct sex and gender terminology is being used in both oral and written portions. Advocates can also volunteer to write board and licensure exam questions. Health professions education accrediting bodies and council leaders can be targeted at graduate and postgraduate levels. For example, sex and gender could be added to core competencies or competency statements that guide curricular development. Advocates could also examine how sex and gender fit into existing standards. Representatives from these groups could be invited to attend future summits.

Build a SGHE Community

In order to advance sex and gender in education and practice, it will be helpful to build and participate within a sex and gender health education (SGHE) community. Shared resources can be adapted for use within different professions. Groups may join together in writing editorials and publishing in interprofessional and multidisciplinary journals. The Sex and Gender Health Collaborative of the American Medical Women's Association is also working to build this community by creating and providing a repository of educational resources, supporting SGHE summits, publishing articles, and advocating for changes in research, education, and practice. Future plans include building a speakers bureau.

Pharmaceutical Firms

An additional area for future advocacy is within pharmaceutical firms. Professional organizations may be able to advocate on behalf of the inclusion of sex and gender in studies. This could provide a benefit to pharmaceutical firms, especially if they can then market drugs more effectively. Zolpidem is an example of a drug requiring different dosing for men and women and that can be marketed differently.

In Your Own Work

There are many actions that individuals can take to advance sex and gender content in health professions education. You can integrate what is already known about sex and gender differences into your own teaching and practice, including knowledge of gender differences in communication styles. You can focus on sex and gender in your professional presentations and keynotes. You can work to ensure inclusion of sex and gender differences in future conferences, including by encouraging speakers to include that information in their presentations. When the core educational tenets are published, you can share them with your local, state, and national organizations. You can also reach out to the leaders in these organizations and identify a potential champion for inclusion of sex and gender content in education and practice, as well as in position statements in scientific and professional bodies. Within your own organizations, you can examine mission, vision, and goal statements to determine how sex and gender might align with existing goals and priorities. For example, sex and gender would be consistent with a diversity and inclusion mission, as well as with a health disparities and cultural competency mission. You can also encourage patients and the public to become sex and gender advocates.

There are many steps that can be taken to integrate sex and gender content into curricula, either individually or as a group. Everyone can start in small ways in their own institutions, courses, or with their own students. Collectively, substantive change can be achieved.

CERTIFICATION FOR LEARNERS IN SEX AND GENDER SPECIFIC HEALTH (PANEL)

ORWH INTERPROFESSIONAL EDUCATION: COURSES AND RESOURCES ON SEX AND GENDER AND WOMEN'S HEALTH

CHYREN HUNTER, PHD

Associate Director, Basic and Translational Research Program
Office of Research on Women's Health
National Institutes of Health

The Office of Research on Women's Health (ORWH) at the National Institutes of Health (NIH) is the first public health service office in the United States dedicated specifically to promoting women's health research within and beyond the NIH scientific community. Established in 1990, its mission is to enhance and expand women's health research, to include women and minority groups in clinical research, and to promote career advancement for women in biomedical careers. The ORWH crafts and implements the NIH strategic plan for Women's Health Research in partnership with NIH institutes and centers, and co-funds research on sex and gender and women's health. This strategic plan calls for sex and gender to be integrated into biomedical research so that every woman should receive evidence-based care, and promotes the careers of women in science so that they are able to reach their full potential.

One of the most important developments in recent years is the NIH policy on sex as a biological variable (SABV) developed by NIH Director Dr. Francis Collins, and ORWH Director Dr. Janine Clayton. This policy, effective January 2016, requires scientists to study both sexes as appropriate at the preclinical and clinical levels. It states the "NIH expects that sex as a biological variable will be factored into research designs, analyses, and reporting in vertebrate animal and human studies."

"NIH expects that sex as a biological variable will be factored into research designs, analyses, and reporting in vertebrate animal and human studies."

--NIH Notice NOT-OD-15-102

Consideration of Sex as a Biological Variable in NIH-funded Research

The SABV policy has improved the consideration of sex and gender in biomedical research. A recent study conducted by Weitowich and colleagues (2020) found that there have been improvements in the consideration of SABV in the biological sciences. They conducted a bibliometric analysis across nine biological disciplines for papers published in 34 journals in 2019 and saw increases in the percent of sex inclusive articles when compared with publications in 2009. There were significant increases in fields such as neuroscience, immunology, endocrinology, and physiology. The number of studies that provided an evidence-based rationale for a single sex study also increased from 2009 to 2019. Providing a rationale for a single sex study is required under the SABV policy. Unfortunately, for sex based analyses which are also part of the SABV policy, Weitowich and colleagues found that only one field, pharmacology, showed improvement in sex based analyses. When looking across all 10 disciplines, the percentage of articles that performed sex based analyses went down in 2019 compared to 2009. This publication and others like it highlight and confirm the need for continued education, awareness, and resources to reinforce the inclusion of sex and gender in biomedical research.



CERTIFICATION FOR LEARNERS IN SEX AND GENDER SPECIFIC HEALTH (PANEL)

ORWH has a new career development and Interprofessional Education landing page which contains an E-Learning tab, a Videocasts and Webinars tab, and a new Educational Resources tab. The goal of the Interprofessional Education landing page is to provide learners, including students, faculty, and investigators across the biomedical spectrum with an understanding of why the consideration of sex and gender is fundamental to rigorous research. We also provide tools and resources to investigators to help them incorporate sex and gender in their studies and also to advance their careers. orwh.od.nih.gov/career-development-education

ORWH is offering two new E learning courses. Bench to Bedside: Integrating Sex and Gender to Improve Human Health, was developed in collaboration with the Food and Drug Administration, and Sex as a Biological Variable: A Primer, was developed in collaboration with the NIH National Institute on General Medical Sciences. Registration is free for both the Bench to Bedside course and the SABV Primer. The registration tracks completion which enables participants to receive continuing education credits or a certificate of completion, respectively.

The Bench to Bedside course consists of six modules (immunology, cardiovascular disease, pulmonary disease, neurology, endocrinology, and mental health), each with five lessons. Each module takes approximately one hour to complete and is based on an interactive format that we hope encourages learning and knowledge retention.

The SABV Primer was created in partnership with the NIH National Institute of General Medical Sciences to clarify SABV policy and address perceived challenges in implementing the policy in research. The Primer will also help investigators apply the policy by helping them navigate how to incorporate SABV in research design, analyses, and reporting in basic, preclinical, clinical and population health. The Primer consists of four modules: (1) SABV and the Health of Women and Men, (2) SABV and Experimental Design, (3) SABV and Analyses, and (4) SABV and Research Reporting. Included in the Primer are knowledge checks, complete reference lists, and a companion instructor guide. A certificate will be available for those who complete all four modules.

The Videocasts and Webinars folder on the Interprofessional Education landing page contains seminars, webinars, and videos that will be useful for researchers, educators, and clinicians. This page also contains webinar recordings from the NIH Sex and Gender in Health and Disease Scientific Interest Group (SIG). The purpose of the ORWH sponsored Sex & Gender in Health and Disease SIG is to explore the influence of sex as a biological variable and gender as a social construct on health and disease across the lifespan, and to foster potential interdisciplinary collaborations among scientists who work on aspects of sex based research. Information on the NIH SIG is detailed in the NIH Catalyst newsletter under the heading of "The SIG Beat".

The Education and Resources folder of the Interprofessional Education landing page contains fact sheets and videos on mentoring, the inclusion of women in clinical trials, as well as advice from eminent women scientists as part of the "Pearls of Wisdom" series.

Many are familiar with the ORWH Sex and Gender course. This older course has now been updated and streamlined and can be found on the Interprofessional Education landing page. In addition, ORWH has a quarterly newsletter, "Women's Health in Focus at NIH," and a monthly publication, The Pulse, both of which are available to any who wish to subscribe.

CERTIFICATION FOR LEARNERS IN SEX AND GENDER SPECIFIC HEALTH (PANEL)

VIRTUAL REALITY-BASED INCORPORATION OF SGSH INTO HEALTH PROFESSIONS CURRICULA

SIMON WILLIAMS, PHD

Associate Dean for Academic Affairs
Texas Tech University Health Sciences Center, School of Medicine
Laura W. Bush Institute for Women's Health

ANTHONY BETTERIDGE, BS

Medical Student, Texas Tech University Health Sciences Center, School of Medicine
Co-Founder & CEO, VxMED

The Laura W. Bush Institute for Women's Health provides resources for incorporating Sex and Gender Specific Health into health professions curricula at sexandgenderhealth.org. This website contains resources such as a slide library of peer reviewed PowerPoint presentations about sex and gender differences in a range of diseases and mini modules for rapid, independent learning. The slide sets are created by faculty at Texas Tech University Health Sciences Center as well as at other universities. Faculty members are able to choose whether they want to use a single slide or the entire slide set for any condition in their own curricular materials. The standalone learning modules for students are free, but registration is required to access them. There are many topics including osteoporosis, alcohol use disorders, etc. Each module has a pre and post-test. Faculty members can track students' completion of the modules. There is a video library of sex and gender differences for a wide range of diseases. These videos range from approximately a few minutes to an hour in length. The videos can also be accessed on the Laura W. Bush Institute for Women's Health YouTube channel.

Recently, the Institute began collaborating with VxMED, a virtual reality-based technology that provides immersive and engaging learning experiences to teach sex and gender-related content. VxMED provides learners with the opportunity to interact with a patient in a virtual encounter and encourages the learner to employ their reasoning skills to utilize tools within the site to diagnose the patient. The experience is presented in a context that mimics a real clinical encounter and rewards the learner with experience points for correct decisions and behaviors.

With VxMed, students have a realistic patient where they review the history of the presenting illness and physical examination to determine the patient's problem, read about the patient's risk factors, and view a differential diagnosis to see what they should be considering. If the learner needs more information, they can access resources from the Sex and Gender Specific Health website and other sources, and can bring that information into the "exam room." Learners are able to ask questions, gather new information, and conduct laboratory tests. As the likelihood ratios change for different diseases with new information, the differential diagnosis presented on the screen also changes. This educational methodology helps students to learn clinical reasoning and how to diagnose a patient. This tool is also integrated into some of the modules on the Sex and Gender Specific Health website.

The vxmedc.com website can be accessed directly or via the Sex and Gender Specific Health website. Users can sign up for a free account and download the demonstration module from the Laura W. Bush Institute for Women's Health, Sex and Gender Specific Health website.



BEST PRACTICES: EXAMPLES OF SUCCESSFUL INCORPORATION OF SGSH INTO CURRICULA (PANEL)

SEX AND GENDER IN EMERGENCY MEDICINE

ALYSON J. MCGREGOR, MD, MA, FACEP

Director, Division of Sex and Gender in Emergency Medicine (SGEM)
Director, Sex and Gender in Emergency Medicine (SGEM) Fellowship
Associate Professor of Emergency Medicine
The Warren Alpert Medical School of Brown University

In 2010, I co-founded a division within our department of emergency medicine at the Warren Alpert Medical School of Brown University called Sex and Gender in Emergency Medicine (SGEM) - advancing care through person specific research, education, and advocacy. At that time, the NIH began to use the term sex as a biological variable to represent important sex differences. We began to refer to sex and gender as two unique but intertwined terms. This allowed for a more scientific conversation, and it provided a common language that we could all use.

The SGEM Division has created five educational programs that include a preclinical elective for MS1 and MS2; a clinical elective for MS3, MS4, PGY3, and PGY4; intersessions course for MS3; a longitudinal scholarly concentration for MS1-4; and a one or two year fellowship program with an offer of an advanced degree. These programs have been well received.

The pre-clinical elective is geared towards first and second year medical students and is comprised of 10 sessions, each 90 minutes long. Faculty include experts in various topics that explore sex and gender differences such as coronary artery disease, pharmaceuticals, mental health, LGBT, sexual assault, and sports medicine. Students are encouraged to become co-leaders, which helps with student engagement. The elective consists of an asynchronous portion with online sex and gender modules developed by the Laura W. Bush Institute for Women's Health (sexandgenderhealth.org) along with a syllabus of required and optional readings, TED talks, podcasts and videos. There is an optional final project where students work on a patient case write-up with the potential to be published on the Sex and Gender Health Collaborative (SGHC) website, which is now under the AMWA umbrella.

Our most popular educational program is a 2 week clinical elective for medical students and residents. Students spend 10-15 hours a week in the emergency department working alongside SGEM core faculty. Focused patient encounters help them attain proficiency in developing a sex and gender specific differential diagnosis and to reflect on any impact of sex/gender on presentation, diagnosis, or treatment. The student conducts a search of sex and gender differences using a PubMed search tool available at sexandgenderhealth.org, and presents the case to the attending or faculty member. This is an excellent search tool and provides focused literature demonstrating sex and gender differences. There is also an asynchronous learning component with assigned readings, podcast, digital materials, articles, textbooks, and online materials. Students have the option to publish a case write-up or do an evidence-based review of the issue.

Intersessions are unique to Brown University Medical School for third year medical students. They have small group learning sessions about topics that are chosen by the students which they think are important to their future lives as physicians. These may be topics that do not currently fit into a clerkship, e.g., medical ethics, gender medicine, or medical marijuana. We create cases in the beginning and review them in small groups. For example, in the case of a female patient with chest pain, we would discuss the sex specific risk factors, the alternative forms of heart disease that women are more susceptible to, etc.

BEST PRACTICES: EXAMPLES OF SUCCESSFUL INCORPORATION OF SGSH INTO CURRICULA (PANEL)

We also have an elective program called the scholarly concentration in which medical students undertake rigorous independent scholarship in a field that they're interested in and that intersects with public health medicine, the sciences, or the arts. It is a four year longitudinal mentorship program. The students work with a mentor who fosters them and looks for opportunities for student learning. Students choose the faculty members that are doing topics that they find interesting. They can get involved in planning research projects or with curriculum. Students can choose sex and gender as an area to focus on throughout their entire learning environment.

Finally, we have a SGEM fellowship program which can be a one or two year program. There are two tracks, one focused on clinical research and the second focused on education where they learn about curricular development. The program is tailored to each fellow's interest areas. It is an opportunity for individuals to create and develop their own career trajectory. We begin by teaching the fellow the history of how we got here and how we did not fully understand the importance of physiological and cultural differences between men and women. The fellows can dive deeply into the literature and identify gaps in knowledge about biological sex and gender and the impact on emergent or societal conditions. We help them focus on an area that they're passionate about and help them connect with potential collaborators. They also have the option to obtain an advanced degree such as in public health or clinical translational research, or complete online modules and certificate programs such as a health professions education certificate through Johns Hopkins.

Our successes include networking, steering committees, educational program development, scholarly production, and developing future leaders in sex and gender based medicine. One of the greatest successes in working through the curricular change process has been networking. It has been one of the strongest aspects of what we have accomplished through the Summits. Consider networking with the speakers or individuals on the various summit subcommittees. At your home institutions, consider creating a steering committee that engages student and curriculum leaders. If you are a curriculum leader, look for opportunities that already exist within your university for educational program development, including where you have electives that can be built. Starting with small steps can lead to a successful and fully integrated program. You can also publish your curriculum development projects. The SGEM Division has over 100 peer reviewed publications in sex and gender alone. Through these efforts, we are building the future leaders in sex and gender based medicine.

“Since we started our division of sex and gender in emergency medicine, we have been involved in over 100 peer reviewed publications in sex and gender alone.”

-- Alyson J. McGregor, MD, MA, FACEP

Our challenges have been in competing demands, curricular integration, and applicant recruitment. When you have a unique offering, it's challenging to get the word out. Once people know that these programs exist, then they are very much interested. Retention is also an issue when faculty members obtain amazing positions at other universities. However, they are then able to create similar programs at these other institutions. This is how the field grows. We have created leaders in our field who are moving sex and gender forward. Sex and gender specific health is a need that needs to be filled. There are endless niches. It is the future of science.

My new book, *Sex Matters: How Male-Centric Medicine Endangers Women's Health*, is designed to inform men and women about how our medical system has been created with layered biases, and to enable individuals to advocate for themselves to get the care that they need.

BEST PRACTICES: EXAMPLES OF SUCCESSFUL INCORPORATION OF SGSH INTO CURRICULA (PANEL)

INNOVATIVE MOVIE MINI-SERIES TO TRAIN HEALTH PROFESSIONAL PRECEPTORS & STUDENTS

CRAIG D. COX, PHARMD, FCCP, BCPS

Professor, Department of Pharmacy Practice

Vice Chair of Experiential Programs

Texas Tech University Health Sciences Center, Jerry H. Hodge School of Pharmacy

We created an innovative movie mini-series, "The Reason I Jump" to train healthcare professional students and preceptors. It is a collection of professionally produced videos where the learner has the flexibility to watch the episodes all in one day or over a period of several weeks. The videos are designed to build on each other. Sex and gender topics are incorporated into this innovative medium. The series is twelve episodes, and each episode ranges from ten to fourteen minutes in length. In addition to "The Reason I Jump," we have also developed five other full mini-series movies focused on a diversity of health professions and practice settings.

"We created an innovative movie mini-series to train healthcare professional students and preceptors...Sex and gender topics were incorporated into this innovative medium."

-- Craig D. Cox, PharmD, FCCP, BCPS

The intention of the mini-series is to prepare students and preceptors for rotations in a way that engages them and maintains their attention. The guiding principles for the mini-series included brevity, humor, and entertainment. Although each video episode has many standardized components, the storylines vary. Immediate expert feedback is embedded into the video for preceptors and students to respond to what the actors are doing. Preceptor and student learning pearls are also included at the end of each episode.

The videos are created with authentic and diverse context, real life scenarios, engaging storylines, and situations commonly encountered in practice. Making the characters realistic is important because that is what engages the viewers and makes them want to return to another episode to see what happens to them. The videos are created to incorporate a diversity of perspectives and opinions, be it student, preceptor, or team. They also represent diverse contexts such as different healthcare settings, e.g., hospitals, clinics, or nursing homes.

It takes about nine months to develop a mini-series. The most time consuming aspect is the conceptualization of the storyline and the characters. You must select a topic that matters and for which an engaging storyline can be created. The topic can be an issue that is current in the literature, or a hot topic, or a challenge that is being discussed at national meetings. Next, a team writes a script. It is best to include experts from the profession that is being represented to assist with script writing and to ensure that their perspective is represented accurately. A casting call identifies the actors for each series. Some of the actors are healthcare professionals, while others may be professional actors. A series may have between ten and fifty characters. A location is secured, a production company is hired, and a shooting schedule is created. Each series requires approximately ten full days of shooting over a period of two or three weeks. The entire process involves a great deal of paperwork, including waivers. The final product is reviewed and any necessary changes are made prior to dissemination.

BEST PRACTICES: EXAMPLES OF SUCCESSFUL INCORPORATION OF SGSH INTO CURRICULA (PANEL)

The mini-series is disseminated in a variety of ways. The episodes can be combined into a feature length film that is shown in a movie theater. While this approach does not allow for individual reflection between episodes, a reflection by experts is built into the film. Each episode can be presented individually to groups, with time built in for guided reflection after each episode. A facilitator guide directs discussions after each episode. For those who cannot attend a showing in person, the mini-series is also available for online learning which allows individuals to go at their own pace and reflect after each episode. When they input their answers to questions, they are presented with the same expert advice that they would have received in the facilitator guide, thus providing immediate feedback.

The facilitator guides range from fifty to eighty pages in length. Every episode has its own objectives, questions, and discussion points which vary by type of learner. One can choose for it to be focused on preceptors, students, or on an interprofessional team. The interprofessional version allows one to discuss the four Interprofessional Education Collaborative (IPEC) competencies. There is also an option to focus on a specific content area in the facilitator guide such as sex and gender specific training. For example, one could address how gender affects psychosocial communication with the patient or within the healthcare system – including symptom reporting, or how sex and gender differences affect access, presentations of diseases or conditions, treatment protocols, risk of injury, pharmacologic and pharmacodynamics differences, epidemiology, etc.

Over a period of six years, more than 10,000 preceptors and students have participated in one or more mini-series. The feedback has been overwhelmingly positive. 99% of preceptors would recommend a series to a colleague.

The video mini-series has had a positive impact on both immediate and long term learning. It is important that learners not only like the educational methodology, but that they learn from it. Our data show that our students and preceptors learn something immediately, retain it three months later, and when appropriate, have applied it to their practice at their site. The aspects of the video mini-series that participants most liked were the humor, emotional storylines, and flexibility to be able to learn on their own. We have published our outcomes in peer reviewed publications.

The videos can be accessed at sexandgenderhealth.org/templates-mini-series.html.

“We created an innovative movie mini-series to train healthcare professional students and preceptors ... Sex and gender topics were incorporated into this innovative medium.”

-- CRAIG D. COX, PharmD, FCCP, BCPS

BEST PRACTICES: EXAMPLES OF SUCCESSFUL INCORPORATION OF SGSH INTO CURRICULA (PANEL)

USING INSTRUCTIONAL DESIGN AND A CONTINUOUS QUALITY IMPROVEMENT MODEL FOR INCORPORATING SGSH CONTENT INTO PHYSICIAN ASSISTANT PROGRAM CURRICULA

JOANNE ROLLS, MPAS, MEHP, PA-C

Associate Professor, University of Utah School of Medicine
Education Director, University of Utah Transgender Health Program

Intentional models for course design can be combined with the process of continuous quality improvement to successfully integrate sex and gender specific health content into health science curricula. Instructional design is a process of systematic planning of instruction in relation to an identified goal, with sophisticated planning and continual improvement of later iterations.

The classic Dick and Carey instructional design model is also referred to as the systems approach model. It was first published in the late 1970s. These are the key steps:

- Identify global goals
- Analysis of the learners at baseline
- Write performance objectives, describing what our learners should be able to do after instruction is completed
- Develop assessment tools that align with the objectives
- Develop an instructional strategy
- Create teaching materials
- Develop and conduct formative and summative evaluation of students, teaching, content delivery, testing, and content

Based on the assessment, the components that need to improve are adjusted. The Dick and Carey model can be extremely helpful when generating de novo curricular content, and it is useful for making changes.

There are four major places where sex and gender specific health (SGSH) can intentionally be incorporated into the Dick and Carey instructional design model: the identification of instructional goals, baseline analysis, writing of performance objectives, and assessment for competence. One must ensure that assessment includes SGSH topics. This process demonstrates to learners and others the value of this content.

“Sex and gender specific health (SGSH) can intentionally be incorporated into ... the identification of instructional goals, baseline analysis, writing of performance objectives, and assessment for competence.”

-- Joanne Rolls, MPAS, MEHP, PA-C

Another model of instructional design is the spiral model, an iterative model which involves multiple, incremental approaches to developing and refining a design process based on evaluation and feedback. Testing and evaluation after implementation provides information on what should be adjusted and can lead to further planning and a repetition of the cycle. It is well suited for integrating SGSH content into existing curricular materials, or when correcting for deficits found in an accreditation process.

Curricular design and implementation is a dynamic process. You must think constantly about how well the

BEST PRACTICES: EXAMPLES OF SUCCESSFUL INCORPORATION OF SGSH INTO CURRICULA (PANEL)

implementation is proceeding. Are objectives being met? Are you measuring what you need to be measuring in order to know how well you're doing?

“Curricular design and implementation is a dynamic process. You must think constantly about how well the implementation is proceeding.”

-- Joanne Rolls, MPAS, MEHP, PA-C

The spiral model is similar to the Plan Do Study Act (PDSA) cycle or rapid improvement cycle utilized in health care quality improvement. This dynamic model allows for rapid change and application of changes. It can be integrated into course and curricular reviews.

I teach a foundational course on patient interviewing for physician assistant students. This course introduces students to patient interactions, social determinants of health, professional identity, and both simple and complex communication skills. Its positioning early in the curriculum creates an opportunity to demonstrate to the students that sex and gender specific health is a critical topic area and skill.

I began by highlighting to myself and to the curriculum committee that sex and gender specific health was going to be an instructional goal of this course, and I edited the syllabus to reflect this. I then did an analysis of where else in the curriculum this was being taught and determined what level of instruction needed to be introduced. In this case, foundational information about sex, gender, and related social determinants of health were not at all addressed in the curriculum, including health disparities information, health access issues, the concept of sexual and gender minorities, and health research disparities. I then wrote specific performance objectives around these concepts, followed by exam questions and an activity that is both an assessment and that measures student competence. Lastly, I developed the instructional materials, my lectures and learning activities, which highlighted this work.

The curriculum committee brought this concept to a higher level and incorporated the iterative model as part of our continuous review process for curriculum. For each course, we annually conduct a pre/post course meeting. Our program mission is to improve the quality of health and access to care by educating students to become highly proficient, socially conscious, and accountable physician assistants in the primary care model who have a commitment to the medically underserved. We recognized how integrating sex and gender specific health fits into our model and our mission, and also how a systematic approach to curriculum evaluation allows us to stay accountable to all aspects of our mission.

We determined that utilizing a systems based rapid cycling approach would allow us to demonstrate our value to our mission throughout every course, and hold faculty accountable to meeting our mission. We developed a checklist process in our course planning stage that includes a self-review of performance objectives and clinical cases used throughout the course to ensure that the course addresses sex and gender, social determinants of health, race, and sexual and gender minorities. A standardized checklist allows instructors to base their curricular review on a process with clear expectations, and receive feedback or additional ideas if the goals for curricular integration are not being met.

Using instructional design and quality improvement models provides many benefits. It can help to communicate our values to our learners. It provides an internal process-oriented method for staying accountable to ourselves and our learners in providing sex and gender specific health content. It is adaptable to a number of different didactic learning environments. The continuous cycling process compliments the dynamic nature of curricular delivery.

BRINGING IT ALL TOGETHER

JULIANA (JEWEL) M. KLING, MD, MPH, NCMP, FACP

Associate Professor of Medicine, Division of Women's Health
Internal Medicine, Mayo Clinic Arizona

REBECCA B. SLEEPER, PHARMD, FCCP, FASCP, BCPS

Senior Associate Dean of Curricular Affairs
Professor of Pharmacy Practice, Geriatrics
Texas Tech University Health Sciences Center, School of Pharmacy

Several action items were identified by the "Advocating for Sex and Gender by Discipline" healthcare professional specific work groups. The action areas of focus are in the following categories: publications, student advocacy in education, faculty development, and public advocacy. The goal is to increase awareness among stakeholders and to effect curricular change.

A white paper will be published which incorporates the core educational tenets agreed upon during the Summit. It will also provide an explanation of sex and gender specific medicine that can be used by various professions to advocate for sex and gender based inclusion in all professions. The white paper will be produced by an interdisciplinary writing group with volunteers from the Summit. Participants from the workshops will finalize the tenets, while the writing group will create the white paper.

In order to improve the quality of sex and gender publications, especially in research, key journals will be targeted and asked to pledge to follow the SAGER (or similar) guidelines of sex and gender specific data reporting. For those journals that have already made that pledge, they will be held accountable for following these guidelines. We will also determine how to encourage textbooks to follow SAGER guidelines.

Student advocacy is a key method to effect curricular change, but students need support in their advocacy. We will identify ways to encourage and support student involvement in the SGHE movement. We will draft standardized language that can be used by students to encourage inclusion of sex and gender specific topics in their curriculum and in clinical rotations. We will determine an appropriate space to grow and foster this work at the Sex and Gender Health Collaborative.

Faculty development is also key to curricular change. AMWA's Sex and Gender Health Collaborative could develop a speakers' bureau of those who understand and can discuss the importance of sex and gender specific health. There are now many educational resources that faculty can integrate into their courses. They will be encouraged to access these materials.

Public advocacy can also help to encourage the adoption of a sex and gender lens. Summit participants can help to grow a scientifically literate public through outreach with presentations, editorials, and publications



APPENDIX: SCIENTIFIC POSTERS

Ankam NS, Mitchell AB, Bell KA, Hass R, Lopez AM. *Inclusivity in action: Interprofessional curricula integrates two step question for sex and gender identity.*

Bharel S, Hannon M, Duffey K, Redfield R, Greidinger A, Onyeali R, Cheney-Peters D, Stewart E, Diemer G. *IM with her: Fostering career advancement of female internal medicine residents.*

Briskin CA, Kasoff MR, Mahabamunuge J, Morel KR, Tounkel I, Budrow J, Hart CB, Spiegel S, Risucci D, Koestler J. *Success of a student organized gender and sexuality seminar series.*

Carcieri A, Falleni AM, Gatewood LA, Rodriguez ML, Clark PG, Sweeney BA. *Innovative interprofessional collaboration: Addressing the need for education for health center workers around patients' sexual orientation and gender identity.*

Cheng Y, Khatchadourian N, Esguerra J, Seeley E, Abushukur Y, Feldman M, Randall E, Cheah C. *Bridging the gap: Increasing awareness of sex differences in opioid addiction using social media platforms. (HONORABLE MENTION)*

Christopher LE, Rohr-Kirchgraber TM. *The great gender divide: Gender-related discrepancies of N95 mask protection.*

Clark J, Chung P, Wolf A. *Healthcare professional students' attitudes, beliefs, and knowledge regarding transgender healthcare.*

Danielewicz MH, Hsiao T, Liantonio JJ, Collins E, Salzman BE, Parks SM. *Creating a medical home for transgender older adults: Challenges, education, and best practices.*

Filip A, Halpern E, Waad A. *Critical content - A novel graduate medical education intervention to address gender & sexual minority (GSM) differences in sexual development (DSD) health.*

Fleischer JG, Pallay RA, Corwin DS. *Comparison of sex specific data among hospitalized COVID-19 patients.*

Goss TN, Newman, C, Patric-Esteve J, Esquerra J, Templeton KJ. *Are state policymakers aware of sex and gender impacts on opioid use disorder? (HONORABLE MENTION)*

Handman R. *Dental hygiene student competence and comfort in treating transgender patients.*

Hannon M, Duffey K, Bharel S, Redfield R, Greidinger A, Stewart E, Diemer G. *Investigating gender disparities in internal medicine residency awards.*

Ho AP, Sassic J, Werbinski JL. *Finding a home: Recognizing the need for sex and gender based medicine instruction at WMed.*

Jochym NE. *Gender bias in diagnostic medicine: A novel preclinical selective proposal.*

Jochym NE. *Proposing the longitudinal inclusion of diagnostic test limitations in medical educational curriculum.*

Lindsay, NS, Rohr-Kirchgraber TM. *The impact of sex and gender in health and disease: An elective.*

Lindstrom KM, Rohr-Kirchgraber TM. *Women authors in medicine: A gender based study on authorship opportunities and its implications in promotions in medicine.*

Lopez, AM. *The evolution of gender specific medicine education: A historical overview.*

Morgan BJ, Essex G, Le M. *UCSF student attitude and preparedness for LGBTQIA+ patient care. (HONORABLE MENTION)*

Nelson NG, Simone NL, Lombardo JF, Shimada A, Leader AE, Murphy RC, Smith AP. *Survey results demonstrate provider knowledge gaps about cancer screenings for sexual and gender minority patients.*

Newell V, Jack D, Bouchaud M. *Revolutionizing health care access: Developing a mobile app for women and LGBTQIA+ community members.*

Newman C, Baum A. *A Lesson from COVID-19 in the importance of sex disaggregated data: Sex/gender differences in SARS-CoV2 infection and mortality rates.*

APPENDIX: SCIENTIFIC POSTERS

Oska S, Partiali B, Folbe A. *Diversity of dermatology trainees, 2014-2018.*

Pratt-Chapman ML. *Getting sexual and gender minority health "into the brick and mortar": A mixed methods implementation study.*

Ranier SR, Frederick D, Peoples L, Shiroff J. *Prioritizing lesbian, gay, bisexual and transgender health content in a family nurse practitioner program.*

Ryan EM, Melikan RE, Hannah L, Shuman HL, Files JA, Stonnington C, Kraus M, Kling JM. *AMWA IGNITE: A novel program for medical students addressing the unique challenges faced by women in medicine.*

Rydberg AM, Miller VM, Buras M, Quillen JK, Kling JM. *Sex and gender topics in medical student learners: Follow up. (WINNER)*

Schoenberger A, Christensen H, Overla S. *The female vaccine: The protective effect of female peers against stereotype threat in a simulated learning experience (SCLE).*

Sedaghat A, Rohr-Kirchgraber TM. *Chronic pain: The importance of a sex and gender based approach to treatment.*

Snyder M, Severn A, Enciso G, Stage A, Wellman L, Hooper B, Sriraman N, Kannarkat M. *One institution's multidisciplinary approach to integrating education of gender minority health into medical curricula.*

Stumbar S, Garba NA, Stevens M, Uchiyama E, Gray E. *Using a hybrid lecture and small group standardized patient case to teach the inclusive sexual history and transgender patient care.*

Stumpff KM, Hadley MR, Templeton KJ. *Sex based reporting of common musculoskeletal conditions.*

Taylor GE, Poole K, Girardo M, Kling JM. *Outpatient primary care practitioner access: Sex based preferences.*

Tilstra SA, Dolan BM, Mitchell JL, Carson MP, Kwolek DS. *Sex and gender based women's health: A practical guide for primary care. (WINNER)*

Tolo H, Conger RL, Magana V, Smoko JR, LaBodda SK, Polhemus SE, Pfister SL. *Medical students take lead to educate faculty on the use of sex and gender terminology in pre-clinical courses. (WINNER)*

Turner HJ, Snyder E, Das A, Kumar S, Godby R, Guthrie M, Walter L. *Undergraduate medical education - sex and gender based education: An institutional audit and integration project.*

Zanial N, Manchanda EC, Chary AN, Nadeau L, Verstreken J, Schappel E, Konstantopolous WM, Dobiesz V. *Interprofessional gender bias during emergency medicine residency training.*

Zapletal A, Vause-Earland T, Toth-Cohen S, Zimilover A, Bell KA. *Faculty development as a tool to impact culturally competent care of sexual and gender minorities.*

Posters are accessible at jdc.jefferson.edu/authors.html#H.

APPENDIX: SEX AND GENDER SPECIFIC HEALTH RESOURCES

MEDICAL EDUCATION CURRICULAR MATERIALS

CHARITÉ UNIVERSITY INSTITUTE OF GENDER
MEDICINE
eGender Curriculum
egender.charite.de/en/index.php

CIHR INSTITUTE OF GENDER AND HEALTH
Gender, Sex, & Health Research Case Book
cihr-irsc.gc.ca/e/44082.html

DREXEL UNIVERSITY COLLEGE OF MEDICINE
Gender and Ethnic Medicine Project
webcampus.drexelmed.edu/gem/default.htm

SEX AND GENDER WOMEN'S HEALTH
COLLABORATIVE
amwa-doc.org/sghc

TEXAS TECH UNIVERSITY HEALTH SCIENCES
CENTER LAURA W. BUSH INSTITUTE FOR
WOMEN'S HEALTH
Sex and Gender Specific Health Curriculum
sexandgenderhealth.org

CONTINUING MEDICAL EDUCATION COURSES

NIH OFFICE OF RESEARCH ON WOMEN'S HEALTH
orwh.od.nih.gov/career-development-education

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

RESEARCH INTEGRATION TOOLS

CIHR INSTITUTE OF GENDER AND HEALTH
Sex and Gender in Biomedical Research
cihr-irsc-igh-isfh.ca/?lang=en
Webinars: cihr-irsc.gc.ca/e/48641.html

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

NATIONAL INSTITUTES OF HEALTH – OFFICE OF
RESEARCH ON WOMEN'S HEALTH
orwh.od.nih.gov/career-development-education

STANFORD UNIVERSITY/EUROPEAN
COMMISSION/US NATIONAL SCIENCE
FOUNDATION
Gendered Innovations in Science, Health &
Medicine, Engineering, and Environment.
genderedinnovations.stanford.edu

LITERATURE SEARCH & DATABASE RESOURCES

CHARITÉ UNIVERSITY INSTITUTE OF GENDER
MEDICINE
GenderMed Database
gendermeddb.charite.de/?site=home&lang=eng

TEXAS TECH UNIVERSITY HEALTH SCIENCES
CENTER LAURA W. BUSH INSTITUTE FOR
WOMEN'S HEALTH
Pubmed Search Engine Tool
sexandgenderhealth.com

APPENDIX: SEX AND GENDER SPECIFIC HEALTH RESOURCES

CONSUMER AND PROFESSIONAL RESOURCES

EUROPEAN SOCIETY OF GENDER HEALTH AND MEDICINE gendermedicine.org

GENDERMAG. gendermag.org

iGIANT®. igiant.org

NATIONAL INSTITUTES OF HEALTH – OFFICE OF RESEARCH ON WOMEN'S HEALTH
orwh.od.nih.gov/career-development-education

SEX AND GENDER WOMEN'S HEALTH COLLABORATIVE amwa-doc.org/sghc

SOCIETY FOR WOMEN'S HEALTH RESEARCH
swhr.org

VxMED vxmedc.com

TEXTBOOKS

How Sex and Gender Impact Clinical Practice: An Evidence-Based Guide to Patient Care. Jenkins MR, Newman C. (Eds.) New York: Elsevier. 2021.

Sex Matters: How Male-Centric Medicine Endangers Women's Health and What We Can Do About It. McGregor A. New York: Hanchet Go. 2020.

Sex- and Gender-Based Women's Health: A Practical Guide for Primary Care. Tilstra S.A, Kwolek D, Mitchell JL, Dolan BM, Carson MP. (Eds.) Basel: Springer Nature. 2020.

Principles of Gender-Specific Medicine: Gender in the Genomic Era. 3rd ed. Legato M. (Ed.) London: Elsevier. 2017.

Sex and Gender in Acute Care Medicine. McGregor AJ, Choo EK, Becker B. (Eds.) Cambridge: Cambridge University Press. 2016.

Sex and Gender Aspects in Clinical Medicine. Oertelt-Prigione S, Regitz-Zagrosek V, (Ed.) Heidelberg: Springer-Verlag. 2012.

Sex and Gender Differences in Pharmacology. Regitz-Zagrosek V. (Ed.) Heidelberg: Springer-Verlag. 2012.

Handbook of Clinical Gender Medicine. Schenk-Gustafsson K, DeCola PR, Pfaff SW, Pisetsky DS, (Eds.) Basel: Karger. 2012.

Sex and the Brain: A Reader. Einstein G. Cambridge: MIT Press. 2007

JOURNALS

BIOLOGY OF SEX DIFFERENCES
Official Journal of the Organization for the Study of Sex Differences bsd-journal.com

CLINICAL THERAPEUTICS, ANNUAL THEMED ISSUE ON WOMEN'S HEALTH/GENDER MEDICINE
clinicaltherapeutics.com

GENDER AND THE GENOME
journals.sagepub.com/home/gng

JOURNAL OF WOMEN'S HEALTH
liebertpub.com

ORGANIZATIONS

THE FOUNDATION FOR GENDER-SPECIFIC MEDICINE, INC. gendermed.org

INTERNATIONAL SOCIETY OF GENDER MEDICINE
isogem.com

ORGANIZATION FOR THE STUDY OF SEX DIFFERENCES ossdweb.org

AMWA SEX AND GENDER HEALTH COLLABORATIVE amwa-doc.org/sghc

SOCIETY FOR WOMEN'S HEALTH RESEARCH
www.swhr.org

Thank you to our Supporters!



Join us virtually in 2021!
November 12-14, 2021



