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Attorneys for Plaintiffs

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF IDAHO

LINDSAY HECOX, et al.,

Plaintiffs,

v.

BRADLEY LITTLE, et al.,

Defendants.

No. 1:20-cv-184-CWD

EXPERT DECLARATION OF JOSHUA D. SAFER, MD, FACP, FACE, IN SUPPORT OF PLAINTIFFS' MOTION FOR PRELIMINARY INJUNCTION

I, Joshua D. Safer, MD, FACP, FACE, have been retained by counsel for Plaintiffs Lindsay Hecox and Jane Doe, with her next friends, Jean Doe and John Doe, as an expert in connection with the above-captioned litigation.

1. The purpose of this declaration is to offer my expert opinion on: (1) medical and scientific concepts relevant to the attempted regulation of transgender and intersex girls and women playing sports; (2) policies of elite athletic organizations in limiting eligibility to compete in women's sports, including based on serum testosterone levels; (3) policies in non-elite contexts regarding eligibility to compete in women's sports; (4) the questions that have arisen when entities have attempted to define a person's sex for purposes of competing in women's sports; and (5) whether the available scientific evidence supports the assertion that transgender girls and women have an unfair "athletic advantage" if they compete in girls' and women's athletics in different contexts.

2. In preparing this declaration, I reviewed the legislative findings for H.B. 500, as enacted, and the sources cited therein.

3. I have knowledge of the matters stated in this declaration and have collected and cite to relevant literature concerning the issues that arise in this litigation in the body of this declaration and in the attached bibliography.

4. In preparing this declaration, I relied on my scientific education and training, my research experience, and my knowledge of the scientific literature in the pertinent fields. The materials I have relied upon in preparing this declaration are the same types of materials that experts in my field of study regularly rely upon

when forming opinions on the subject. I may wish to supplement these opinions or the bases for them as a result of new scientific research or publications or in response to statements and issues that may arise in my area of expertise.

PROFESSIONAL BACKGROUND

5. I am a Staff Physician in the Endocrinology Division of the Department of Medicine at the Mount Sinai Hospital and Mount Sinai Beth Israel Medical Center in New York, NY. I serve as Executive Director of the Center for Transgender Medicine and Surgery at Mount Sinai. I also hold an academic appointment as Professor of Medicine in Mount Sinai's Icahn School of Medicine. A true and correct copy of my CV is attached hereto as Exhibit A.

6. I have been Board Certified in Endocrinology, Diabetes and Metabolism by the American Board of Internal Medicine since 1997.

7. I graduated from the University of Wisconsin in Madison with a Bachelor of Science degree in 1986. I earned my Doctor of Medicine degree from the University of Wisconsin in 1990. I completed intern and resident training at Mount Sinai School of Medicine, Beth Israel Medical Center in New York, New York from 1990 to 1993. From 1993 to 1994, I was a Clinical Fellow in Endocrinology at Harvard Medical School and Beth Israel Deaconess Medical Center in Boston, Massachusetts. I stayed at the same institution, serving as a Clinical and Research Fellow in Endocrinology under Fredric Wondisford, from 1994 to 1996.

8. Since 1997, I have evaluated and treated patients along with conducting research in endocrinology. Since 2004, my patient care and research has

been focused on the medicine/science specific to transgender individuals. I have led several other programs either in transgender medicine or in general endocrinology. In particular, I served as the Medical Director of the Center for Transgender Medicine and Surgery, Boston Medical Center, Boston, MA (2016-2018); as the Director of Medical Education, Endocrinology Section, Boston University School of Medicine, Boston, MA (2007-2018); as the Program Director for Endocrinology Fellowship Training, Boston University Medical Center, Boston, MA (2007-2018); and as Director of the Thyroid Clinic, Boston Medical Center, Boston, MA (1999-2003).

9. I have authored or coauthored over 100 peer-reviewed papers including many critical reviews; textbook chapters; and case reports in endocrinology and transgender medicine.

10. Among my publications are the latest review of transgender medicine in the New England Journal of Medicine and the latest review of transgender medicine in the Annals of Internal Medicine. *See* Safer JD, Tangpricha V. Care of transgender persons. *N Engl J Med* 2019; 381:2451-2460; Safer JD, Tangpricha V. Care of the transgender patient. *Ann Intern Med* 2019; 171:ITC1-ITC16. I am also a co-author of the sections of UpToDate which relate to gender-affirming hormone treatment for transgender people. UpToDate is an evidence-based, physician authored on-line medical guide and is currently the most widely used such guide among medical providers.

11. I was the inaugural President of the United States Professional Association for Transgender Health ("USPATH"). I am also Secretary and Co-Chair of the Steering Committee of TransNet, the International Consortium for Transgender Medicine and Health Research. I have served in several other leadership roles in professional societies related to endocrinology and transgender health. These societies include the Alliance of Academic Internal Medicine, the American College of Physicians Council of Subspecialty Societies, the American Board of Internal Medicine, the Association of Program Directors in Endocrinology and Metabolism, and the American Thyroid Association.

12. Since 2014, I have held various roles as a member of the World Professional Association for Transgender Health ("WPATH"), the leading international organization focused on transgender health care. WPATH has approximately 2,000 members throughout the world and is comprised of physicians, psychiatrists, psychologists, social workers, surgeons, and other health professionals who specialize in health care for transgender individuals. From 2016 to the present I have served on the Writing Committee for Standards of Care for the Health of Transsexual, Transgender, and Gender Nonconforming People.

13. I have served in various roles as a member of the Endocrine Society since 2014. I served as a Task Force member to develop the Endocrine Treatment of Transgender Persons Clinical Practice Guideline from 2014 to 2017. As part of this task force of nine experts, a methodologist, and a medical writer, I co-authored the "Endocrine Treatment of Gender-Dysphoria/Gender Incongruent Persons: An

Endocrine Society Clinical Practice Guideline," ("Endocrine Society Guidelines"), available at https://academic.oup.com/jcem/article/102/11/3869/4157558.

14. I have served as a Transgender Medicine Guidelines Drafting Group Member for the International Olympic Committee ("IOC") since 2017.

15. I have also served since 2019 as a drafting group member of the transgender medical guidelines of World Athletics, formerly known as the International Amateur Athletic Federation ("IAAF").

16. I have not previously testified as an expert witness in either deposition or at trial. I am being compensated at an hourly rate of $250 per hour for preparation of expert declarations and reports, and $400 per hour for time spent preparing for or giving deposition or trial testimony. My compensation does not depend on the outcome of this litigation, the opinions I express, or the testimony I provide.

RELEVANT MEDICAL AND SCIENTIFIC BACKGROUND

17. "Gender identity" is the medical term for a person's internal, innate sense of belonging to a particular sex/gender. *See* Endocrine Society Guidelines, Tbl.1 *and* Safer JD, Tangpricha V. Care of transgender persons. *N Engl J Med* 2019; 381:2451-2460, Tbl.1.

18. Although the detailed mechanisms are unknown, there is a medical consensus that there is a significant biologic component underlying gender identity. Safer JD, Tangpricha V. Care of transgender persons. *N Engl J Med* 2019; 381:2451-2460; Safer JD, Tangpricha V. Care of the transgender patient. *Ann*

Intern Med 2019; 171:ITC1-ITC16. An individual's gender identity is durable and cannot be changed by medical intervention.

19. "Gender" is an imprecise term that can cause confusion and should be avoided for the sake of clarity. The term "gender" is sometimes used interchangeably with the term "sex." In addition, the term "gender" is sometimes used as shorthand for "gender identity" and sometimes used as shorthand for "gender roles" and "gender expression." But "gender identity," "gender roles" and "gender expression" are different things.

20. Gender roles are behaviors, attitudes, and personality traits that a society (in a given culture and historical period) designates as masculine or feminine and/or that society associates with or considers typical of the social role of men or women. *See* Endocrine Society Guidelines Tbl.1. The convention that girls wear pink and have longer hair, or that boys wear blue and have shorter hair, are examples of socially constructed gender roles.

21. By contrast, "gender identity" does not refer to a set of socially contingent behaviors, attitudes or personality traits that a society designates as masculine or feminine. It is largely a biological phenomenon.

22. Gender expression is how a person communicates gender identity to others. *See* Safer JD, Tangpricha V. Care of transgender persons. *N Engl J Med* 2019; 381:2451-2460, Tbl.1. For example, a person with a female gender identity might express her identity through typically feminine outward expressions of gender like by wearing longer hair or more typically feminine clothing.

23. The phrase "biological sex" is an imprecise term that can cause confusion. A person's sex encompasses the sum of several different biological attributes, including sex chromosomes, certain genes, gonads, sex hormone levels, internal and external genitalia, other secondary sex characteristics, and gender identity. Those attributes are not always aligned in the same direction. *See* Endocrine Society Guidelines; Safer JD, Tangpricha V. Care of transgender persons. *N Engl J Med* 2019; 381:2451-2460.

24. Before puberty, boys and girls have the same levels of circulating testosterone. After puberty, the typical range of circulating testosterone for non-transgender women is similar to before puberty (<1.7 nmol/L), and the typical range of circulating testosterone for non-transgender men is 9.4-35 nmol/L. *See* Endocrine Society Guidelines (p 3888) *and* Safer JD, Tangpricha V. Care of transgender persons. *N Engl J Med* 2019.

25. Based on research comparing non-transgender pubertal and post-pubertal boys and men with non-transgender pubertal and post-pubertal girls and women, there is a medical consensus that the difference in testosterone is generally the primary known driver of differences in athletic performance between elite male athletes and elite female athletes. *See* Handelsman DJ, et al. Circulating testosterone as the hormonal basis of sex differences in athletic performance. *Endocrine Reviews* 2018; 39:803-829, (p 803).

26. Even though there are ranges of testosterone that are considered typical for non-transgender men and women, many non-transgender women have testosterone outside the typical range.

a. Approximately 6% to 10% of women have a condition called polycystic ovary syndrome (PCOS), which can raise women's testosterone levels up to 4.8 nmol/L.

b. Some women have "46,XY DSDs," a group of conditions where individuals have XY chromosomes but are born with typically female external genitalia and assigned a female sex at birth. Among individuals with 46,XY DSD some may have inactive testosterone receptors (a syndrome called "complete androgen insensitivity syndrome, CAIS") which means they don't respond to testosterone despite very high levels. Typically, these individuals have female gender identity and have external genitalia that are typically female. They do not develop the physical characteristics associated with typical male puberty.

c. Other individuals with 46,XY DSD may have responsive testosterone receptors. These individuals may have female gender identity but at puberty they may start to develop higher levels of testosterone along with secondary sex characteristics that are typically masculine.

WORLD ATHLETICS AND IOC POLICIES FOR WOMEN WITH HYPERANDROGENISM

27. Beginning in 2011, World Athletics (then known as IAAF) began requiring that women with elevated levels of circulating testosterone lower their

levels of testosterone below a threshold amount in order to compete in women's sports. Under the 2011 regulations, women with hyperandrogenemia (defined as serum testosterone levels above the normal range) were allowed to compete only if they demonstrated that they had testosterone levels below 10 nmol/L or that they had CAIS, preventing their bodies from responding to testosterone.

28. In 2014, the Court of Arbitration for Sport (CAS) suspended the IAAF regulations. CAS accepted the IAAF position that testosterone is a key factor for competitive athletic advantage but asked the IAAF to provide additional evidence to demonstrate that differences were relevant at the levels of testosterone being considered for determination of eligibility in the women's category of competition.

29. The IAAF then issued revised regulations in 2018 after a study that showed a significant improvement in athletic performance among women with higher testosterone levels for some sports. *See* Bermon S, Garnier P-Y. Serum androgen levels and their relation to performance in track and field: mass-spectrometry results from 2127 observations in male and female elite athlete. *Br J Sports Med* 2017; 51:1309-1314.

30. The regulations also lowered the maximum testosterone threshold to 5 nmol/L.

31. The revised regulations were upheld by the Court of Arbitration for Sport in 2019.

WORLD ATHLETICS AND IOC POLICIES FOR TRANSGENDER WOMEN

32. Formal eligibility rules for the participation of transgender women in the Olympics were published in 2003. The rules required that transgender women athletes could compete in women's events only if they had genital surgery, a gonadectomy, and legal documentation of sex.

33. However, many transgender women are treated with medicines alone and don't have gonadectomy. As well, many jurisdictions do not have systems to document the sex of transgender people. In some jurisdictions, being transgender is illegal, and revelation that someone is transgender can be unsafe.

34. Therefore, in 2015, the IOC adopted new guidance modeled after the IAAF's 2011 regulations for non-transgender women with hyperandrogenism. Under the new IOC guidance, transgender women must demonstrate that their total testosterone level in serum has been below 10 nmol/L for at least one year prior to competition. The 10 nmol/L threshold was the same threshold set by the IAAF's 2011 regulations.

35. In 2019, the IAAF adopted regulations based on the IOC guidance except that the testosterone threshold level was lowered to 5 nmol/L, which was the same threshold set by the IAAF's 2018 regulations for non-transgender women with hyperandrogenism that had been upheld by the CAS when contested.

36. The IOC and IAAF rules are consistent with the Endocrine Society Guidelines for the treatment of transgender women, which recommend that transgender women treated with hormone therapy target circulating testosterone

levels to a typical female range at or below 1.7 nmol/L (Endocrine Society Guidelines, p 3887) and with the study of testosterone levels achieved by medically treated transgender women in practice (Liang JJ, et al. Testosterone levels achieved by medically treated transgender women in a United States endocrinology clinic cohort. *Endocrine Practice* 2018; 24:135-142).

TRANSGENDER AND INTERSEX ATHLETES IN NON-ELITE CONTEXTS

37. The policies developed by World Athletics and the IOC for transgender athletes were based on the particular context of elite international competition. Not all of the same considerations apply in other contexts.

38. Most of the athletes competing in elite international competitions have already completed puberty. But in high school, athletes' ages could typically range from 14-18, with different athletes in different stages of pubertal development. Increased testosterone begins to affect athletic performance at the beginning of puberty, but those effects continue to increase each year of puberty until about age 18, with the full impact of puberty resulting from the cumulative effect of each year. As a result, testosterone provides less of an impact for a 14, 15, or 16-year old than it does for a 17 or 18-year old. The concerns that animated the World Athletics and IOC policies are more attenuated at the high school or junior high school level.

39. The NCAA allows transgender women to participate on the same teams as other women after one year of testosterone suppression as part of gender transition. The NCAA policy does not require ongoing testosterone testing, which is required at the elite levels. Under the NCAA policy, which has been in effect since

2011, transgender student-athletes certify that they have been on hormone therapy for a period of one year.

40. Unlike in scholastic contexts in the United States, World Athletics and the IOC have to develop policies that cannot be manipulated by different governments that are not bound by the rule of law. For example, there have been many well-known examples of state-sponsored doping scandals. The Russian Olympic team is currently banned from international competition due to an organized doping effort.

IDAHO'S EFFORTS TO BAR ATHLETIC COMPETITION BY TRANSGENDER WOMEN AND GIRLS

41. Under the newly passed Idaho law, an individual whose sex is disputed for purposes of competing in athletic activities for women and girls is instructed to "verify the student's biological sex" by providing a signed physician statement after an examination relying only on one or more of the following: the student's reproductive anatomy, genetic makeup, or normal endogenously produced levels of testosterone. None of these physiological characteristics alone or in any combination can "verify" sex, nor are any of them alone or in any combination accurate proxies for athletic advantage.

42. As noted above, one does not verify sex by a examining these characteristics, alone or in combination. A person's sex is made up of multiple biological characteristics and they may not all align as typically male or female in a given person.

43. A person's genetic make-up and internal and external reproductive anatomy are not useful indicators of athletic performance and have not been used in elite competition for decades.

44. A blood test is generally used to test circulating testosterone. The blood test does not distinguish between exogenous and endogenous testosterone. Exogenously administered testosterone can be identified with a urine test. However, the urine test will only determine that there is current use of exogenous testosterone. The urine test is not relevant when the person is not taking exogenous testosterone. The urine test will not measure what endogenous testosterone levels would be absent suppression. For a person suppressing testosterone as part of a medically prescribed treatment plan for gender dysphoria, neither blood testing nor urine testing would specify testosterone levels without suppression. There is no way to test for "normally produced" endogenous testosterone without taking people off of prescribed medication, which would be dangerous.

45. Though the IOC, World Athletics, and the NCAA require certain athletes with higher levels of endogenous testosterone to suppress their levels or at least undergo testosterone suppression treatment in order to compete in women's athletics, Idaho's new rule creates an outright bar based on endogenous testosterone without even specifying the endogenous serum testosterone level that one would need to demonstrate to "verify" sex. Under the Idaho rule, no amount of reduction of one's testosterone level could ever be adequate. Further, as noted above, people without active testosterone receptors experience none of the athletic

impact of the hormone despite having high levels of circulating testosterone. They too would appear to be disqualified under Idaho's rule.

46. The legislative findings for H.B. 500 contend that even after receiving gender-affirming hormone therapy, women and girls who are transgender have "an absolute advantage" over non-transgender girls. This assertion is based on speculation and inferences that have not been borne out by any evidence.

47. First, these arguments overlook the population of transgender girls and women who, as a result of puberty blockers at the start of puberty and gender affirming hormone therapy afterward, never go through a typical male puberty at all. These girls never experience the effects of high levels of testosterone and accompanying physiological changes. They go through puberty with the same levels of hormones as other girls and develop typically female physiological characteristics, including muscle and bone structure. Idaho's law would bar them from participation in female athletics with absolutely no medical or scientific basis even based on the standards set forth in the legislative findings.

48. A transgender woman who has not gone through a typical male puberty is similarly situated to a woman with XY chromosomes who has complete androgen insensitivity syndrome, and it has long-been recognized that women with CAIS have no athletic advantage simply by virtue of having XY chromosomes. *See also* Handelsman DJ, et al. Circulating testosterone as the hormonal basis of sex differences in athletic performance. *Endocrine Reviews* 2018; 39:803-29, (p 820,

summarizing evidence rejecting hypothesis that physiological characteristics are driven by Y chromosome).

49. The legislative findings also state that "benefits that natural testosterone provides to male athletes is not diminished through the use of puberty blockers and cross-sex hormones." This is not true. As noted above, puberty blocking treatment completely blocks the production of testosterone and someone who has undergone both puberty blocking treatment and then gender affirming hormone therapy to initiate puberty consistent with gender identity would have none of the impacts of testosterone on the body that would be typical for a non-transgender male. It is also not true that gender-affirming therapy – even for those who have not undergone puberty blocking treatment – does nothing to minimize the impact of testosterone on the body. In fact, consistent use of testosterone blockers and estrogen has a significant impact on the body.

50. The legislative findings also note that "Men generally have 'denser, stronger bones, tendons, and ligaments' and 'larger hearts, greater lung volume per body mass, a higher red blood cell count, and higher hemoglobin" and suggest that such characteristics lead to athletic advantage and cannot be altered by sustained gender-affirming hormone therapy. However, the noted higher red blood cell count and higher hemoglobin are both testosterone dependent. They are both reduced as part of sustained gender-affirming hormone therapy. And there is currently no evidence that the remaining noted physiological characteristics actually are

advantages when not accompanied by high levels of testosterone and corresponding skeletal muscle.

51. The only study examining the effects of gender-affirming hormone therapy on the athletic performance of transgender female athletes is a small study of eight long-distance runners. The study showed that after undergoing gender-affirming interventions, which included lowering their testosterone levels, the athletes' performance had reduced so that relative to non-transgender women their performance was now proportionally the same as it had been relative to non-transgender men prior to any medical treatment. In other words, a transgender woman who performed at about 80% as well as the best performer among men of that age before transition would also perform at about 80% as well as the best performer among women of that age after transition. *See* Harper J. Race times for transgender athletes. *Journal of Sporting Cultures and Identities* 2015; 6:1-9.

52. In fact, it may be that some of the body changes from endogenous puberty result in poorer net performance for transgender women relative to cisgender women.

53. For example, the fact that transgender women who go through typically male puberty will tend to have larger bones than non-transgender women may actually be a *disadvantage*. Having larger bones without corresponding levels of testosterone and muscle mass would mean that a runner has a bigger body to propel with less power to propel it.

54. Similarly, in a sport where athletes compete in different weight classes (*e.g.* weight lifting), the fact that a transgender woman has bigger bones may be a disadvantage because her ratio of muscle-to-bone will be much lower than the ratio for other women in her weight class who have smaller bones.

55. Even if it could be demonstrated that larger bones or lungs can slightly enhance the athletic performance of transgender women even after they lower their level of testosterone, that finding would have to be placed in context. Larger lungs and hearts generally correlate to a person's size, so there are significant intra-sex variations of heart and lung size even among women who are not transgender.

56. There are also myriad genetic variations among athletes that can enhance athletic performance. In the academic literature these are referred to as "performance enhancing polymorphisms" or "PEPs." A PEP is a variation in the DNA sequence that is associated with improved athletic performance. For example, variations in mitrochondrial DNA have been associated with greater endurance capacity and greater mitochondrial density in muscles. Other PEPs are associated with blood flow or muscle structure. *See* Ostrander EA, et al. Genetics of athletic performance. *Annu Rev Genomics Hum Genet* 2009; 10:407-429. These variations have proven to have a significant impact on athletic ability, unlike bone or lung size in transgender women.

57. After a transgender woman lowers her level of testosterone, there is no inherent reason why her physiological characteristics related to athletic

performance should be treated differently from the physiological characteristics of a non-transgender woman.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on April 24, 2020

Joshua D. Safer, MD, FACP, FACE

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Bhasin S, et al. Testosterone dose-response relationships in health young men. *Am J Physiol Endocrinol Metab* 2001; 281:E1172-E1181.

Hagmar M, et al. Hyperandrogenism may explain reproductive dysfunction in Olympic athletes. *Med Sci Sports Exercise* 2009; 41:1241-1248.

Handelsman DJ, et al. Circulating testosterone as the hormonal basis of sex differences in athletic performance. *Endocrine Reviews* 2018; 39:803-829.

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CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on the 30th day of April, 2020, I filed the foregoing electronically through the CM/ECF system, which caused the following parties or counsel to be served by electronic means, as more fully reflected on the Notice of Electronic Filing:

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DATED this 30th day of April, 2020.

/s/ Richard Eppink

EXHIBIT A

CURRICULUM VITAE

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March 26, 2020
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Academic Training

1990 MD University of Wisconsin School of Medicine, Madison, WI
1986 BSUniversity of Wisconsin, Madison, WI, Economics

Postdoctoral Training

1994 - 1996 Clinical and Research Fellow, Endocrinology, under Fredric Wondisford, Harvard Medical School - Beth Israel Deaconess Medical Center, Boston, MA
1993 - 1994 Clinical Fellow, Endocrinology, Harvard Medical School and Beth Israel Deaconess Medical Center, Boston, MA
1990 - 1993 Intern and Resident, Department of Medicine, The Mount Sinai School of Medicine, Beth Israel Medical Center, New York City, NY

Academic Appointments

2019 - present Professor of Medicine, Icahn School of Medicine at Mount Sinai, New York, NY
2006 - 2018 Associate Professor of Medicine and Molecular Medicine, Boston University School of Medicine
1999 - 2005 Assistant Professor of Medicine, Boston University School of Medicine
1996 - 1999 Instructor in Medicine, Harvard Medical School
1993 - 1996 Fellow in Medicine, Harvard Medical School

Hospital Appointments

2018 - present Staff Physician, The Mount Sinai Hospital, New York City, NY
2018 - present Staff Physician, Mount Sinai Beth Israel Medical Center, New York City, NY
1999 - 2018 Staff Physician, Boston University Medical Center, Boston, MA
2001 - 2006 Staff Physician, Veterans Administration Boston Health Care, Boston, MA
1996 - 1999 Staff Physician, Beth Israel Deaconess Medical Center, Boston, MA
1990 - 1993 House Staff, Beth Israel Medical Center, New York City, NY

Other Medical Staff Appointments

2004 - 2013 Staff Physician, Massachusetts Institute of Technology Medical, Cambridge, MA
1994 - 1999 Physician, Harvard Vanguard Medical Associates, Boston, MA
1987 - 1996 Captain, United States Army Reserve, Medical Corps

Honors:

2019	Fellow, American College of Endocrinology
2019	Preaw Hanseree Memorial Lecture, University of Wisconsin-Madison
2017	Lesbian, Gay, Bisexual and Transgender Health Award, Massachusetts Medical Society
2012	Outstanding Service Award, Association of Program Directors in Endocrinology and Metabolism
2007	Fellow, American College of Physicians
2004	Boston University School of Medicine Outstanding Student Mentor Award
2001	Abbott Thyroid Research Advisory Council Award
1996	Knoll Thyroid Research Clinical Fellowship Award, Endocrine Society
1995	Trainee Investigator Award for Excellence in Scientific Research, American Federation for Clinical Research (AFCR)
1994	Trainee Investigator Award for Excellence in Scientific Research, AFCR
1990	The University of Wisconsin Medical Alumni Association Award
1988-1990	Senior Class President, University of Wisconsin, School of Medicine

Licensure and Certification

1997	Board Certification in Endocrinology, Diabetes and Metabolism, American Board of Internal Medicine, recertified 2007, 2017
1994	Board Certification in Internal Medicine, American Board of Internal Medicine, recertified 2007
1993	Massachusetts License Registration #77459, inactive
1990	New York License Registration #187263-1

Departmental and University Committees

Boston Medical Center

2016-2018	Physician Satisfaction Task Force, Department of Medicine
2016-2018	Transgender Patient Task Force
2006-2017	Pharmacy and Therapeutics Committee, Health Net Plan

Boston University School of Medicine

2009-2018	Admissions Committee
2005	Review Committee, Department of Medicine Pilot Project Grants
2000	Residency and Fellowship Core Curriculum Committee,
2000-2018	Internship Selection Committee, Residency Program in Medicine

Boston University Goldman School of Dental Medicine

2003-2018	Course Directors Committee, Goldman School of Dental Medicine

Teaching Experience and Responsibilities

Icahn School of Medicine at Mount Sinai

2019-present Lecturer in Endocrinology, Second-year Pathophysiology Course

Tufts University School of Medicine

2016-2018 Lecturer in Endocrinology, Second-year Pathophysiology Course

Boston University School of Medicine

2003-2018 Course Director, Disease and Therapy - Endocrinology Section

1999-2018 Regular lectures to medical students, residents, and fellows on thyroid disease, diabetes insipidus, and transgender medicine

Boston University Goldman School of Dental Medicine

2002-2018 Course Director, General Medicine and Dental Correlations

2002-2018 Course Director, Medical Concerns in the Dental Patient

Major Administrative Responsibilities

2018-present	Executive Director, Center for Transgender Medicine and Surgery, Mount Sinai Health System, New York City, NY
2016-2018	Medical Director, Center for Transgender Medicine and Surgery, Boston Medical Center, Boston, MA
2007-2018	Director, Medical Education, Endocrinology Section, Boston University School of Medicine, Boston, MA
2007-2018	Program Director, Endocrinology Fellowship Training, Boston University Medical Center, Boston, MA
1999-2003	Director, Thyroid Clinic, Boston Medical Center, Boston, MA

Other Professional Activities

Professional Societies: Memberships

2016-present	United States Professional Association for Transgender Health (USPATH)
2014-present	World Professional Association for Transgender Health (WPATH)
2007-present	Association of Program Directors in Endocrinology and Metabolism (APDEM)
2007-present	Association of Specialty Professors (ASP), Alliance of Academic Internal Medicine (AAIM)
1999-present	American Association of Clinical Endocrinologists
1998-2018	American Thyroid Association
1995-present	Endocrine Society
1994-present	American College of Physicians
1994-1996	American Federation for Medical Research
1993-2018	Massachusetts Medical Society

Professional Societies: Offices Held and Committee Assignments

International

International Olympic Committee (IOC)

2017-present	Drafting Group Member, Medical Guidelines, International Olympic Committee

World Professional Association for Transgender Health (WPATH)

2016-present	Writing Committee Member, Standards of Care for the Health of Transsexual, Transgender, and Gender Nonconforming People
2016-2018	Co-Chair, Scientific Committee, International Meeting, Buenos Aires - 2018
2015-2016	Chair, Scientific Committee, International Meeting, Amsterdam - 2016
2015-present	Task Force Member, Global Education Initiative
2015-present	Media Liaison

TransNet – International Consortium for Transgender Medicine and Health Research

2014-present	Secretary and Co-Chair, Steering Committee

National

United States Professional Association for Transgender Health (USPATH)
2018-2019 President

Alliance of Academic Internal Medicine
2016-2019 Chair, Compliance Committee
2016-2017 Committee member, Compensation
2015-2016 President, Association of Specialty Professors (ASP)
2014-2017 Council member
2014-2019 Task Force member, Program Planning
2014-2019 Work Group member, Survey Center
2013-2015 Chair, Program Planning Committee, ASP
2012-2017 Council member, ASP
2012-2013 Chair, Membership Services Committee, ASP
2010-2015 Chair, Program Directors Site Visit Training Seminar, ASP
2007-2013 Committee member, Membership Services, ASP

American College of Physicians
2016-2018 Council of Subspecialty Societies member

Endocrine Society
2017-present Advisory Board member, Transgender/Disorders of Sex Development
2017-present Committee member, Clinical Endocrine Education
2014-present Media Liaison for Transgender Medicine
2014-2017 Task Force member, Endocrine Treatment of Transgender Persons Clinical Practice Guideline

American Board of Internal Medicine
2013-2018 Task Force member, Endocrinology Procedures
2013 Task Force member, ASP/AAIM/ACGME/ABIM Joint Next Accreditation System Internal Medicine Subspecialty Milestones

Association of Program Directors in Endocrinology and Metabolism
2017-2018 Secretary-Treasurer
2012-2018 Task Force member, Next Accreditation System Endocrinology Milestones
2011-2012 Task Force member, Procedures Accreditation
2010-2012 Council member
2009-2016 Chair, Site Visit/Curriculum Web-Toolbox Committee

American Thyroid Association
2006-2009 Publications Committee member
2004 Program Committee member

Editorships and Editorial Boards

2018-present Associate Editor, *Transgender Health*
2017-present Editorial Advisory Board, *Endocrine News*
2016-present Transgender Section Co-Editor, *UpToDate*

2015-present	Editorial Board, *Transgender Health*
2015-present	Editorial Board, *International Journal of Transgender Health*
2013-2018	Associate Editor, *Journal of Clinical & Translational Endocrinology*
2007-present	Editorial Board, *Endocrine Practice*

External Medical Advising and Consulting

International

2016-present	International transgender athlete guidelines, Medical and Scientific Commission, International Olympic Committee

National

2017	Transgender medical and surgical treatment, National Collegiate Athletic Association,
2017	Safety for transgender medical treatment, Food and Drug Administration, United States
2015-present	Transgender workforce and military readiness, Department of Defense, United States
2014	Transgender prison population health, Federal Bureau of Prisons, United States

Regional

2011-2018	Transgender prison population health, Massachusetts Department of Correction

Past Other Support

2018-2020	Keith Haring Foundation, **PI: Joshua D. Safer**, Pilot Program to Develop Clinical Program in Transgender Medicine for Children and Adolescents
2015-2016	R13 HD084267, **Multi-PI: Joshua D. Safer**, TransNet: Developing a Research Agenda in Transgender Health and Medicine
2014-2015	Boston Foundation, Equality Fund, **PI: Joshua D. Safer**, Pilot Program to Educate Physicians in Transgender Medicine
2013-2014	Evans Foundation, **PI: Joshua D. Safer**, A Pilot Curriculum in Transgender Medicine
2001-2003	Thyroid Research Advisory Council, **PI: Joshua D. Safer**, Thyroid Hormone Action on Skin
2001-2002	Evans Foundation, **PI: Joshua D. Safer**, Thyroid Hormone Action on Skin
1996-2001	K08 DK02423, **PI: Joshua D. Safer**, Characterization of Central Resistance to Thyroid Hormone

Conferences Organized

International Conferences

World Professional Association for Transgender Health

November, 2020 Bi-annual meeting, Planning Committee, Hong Kong (scheduled)

November, 2018 Bi-annual meeting, Scientific Co-Chair, Buenos Aires, Argentina

June, 2016 Bi-annual meeting, Scientific Co-Chair, Amsterdam, Netherlands

November, 2015 Global Education Initiative, inaugural conference, Chicago, IL

TransNet – International Consortium for Transgender Health and Medicine Research

May, 2016 International meeting to set transgender medicine research priorities, Amsterdam, Netherlands

May, 2015 NIH conference to set transgender medicine research priorities, Bethesda, MD

June, 2014 Inaugural meeting, Chicago, IL

National Conferences

May, 2020 Topics in Surgery Course for Gender Affirmation Procedures, Mount Sinai Hospital and WPATH, New York City, NY (scheduled)

February, 2019 Live Surgery Course for Gender Affirmation Procedures, Mount Sinai Hospital and WPATH, New York City, NY

April, 2018 Live Surgery Course for Gender Affirmation Procedures, Mount Sinai Hospital and WPATH, New York City, NY

January, 2017 United States Professional Association for Transgender Health (USPATH) bi-annual meeting, Los Angeles, CA

November, 2015 NIH/Alliance for Academic Internal Medicine - Physician Researcher Workforce Taskforce Meeting, Washington, DC

October, 2015 National Internal Medicine Subspecialty Summit, Atlanta, GA

June, 2013 Special Symposium: "Transgender Medicine – What Every Physician Should Know" Annual Meeting of the Endocrine Society, San Francisco, CA

April, 2011 2011 ASP Accreditation Seminar "Meeting the ACGME and RRC-IM Standards for Successful Fellowship Programs" Arlington, VA

Alliance for Academic Internal Medicine

April, 2015 2015 ASP Accreditation Seminar "Moving Your Fellowship Program Forward" Spring Meeting, Houston, TX

April, 2014 2014 ASP Accreditation Seminar "NAS for Medical Subspecialties Is Almost Here" Spring Meeting, Nashville, TN

May, 2013 2013 ASP Accreditation Seminar "A Changing Landscape in Subspecialty Fellowship Education" Spring Meeting, Lake Buena Vista, FL

April, 2012 2012 ASP Accreditation Seminar "Meeting ACGME and RRC-IM Standards for Successful Fellowship Programs" Spring Meeting, Atlanta, GA

Invited Lectures and Presentations

International

January, 2020 "Transgender Medicine", World Professional Association for Transgender Health Global Education Initiative, Hanoi, Vietnam

September, 2019 "Transgender Women" International Association of Athletics Federations (IAAF), Lausanne, Switzerland

November, 2018 "Transgender Medicine", World Professional Association for Transgender Health Annual Meeting, Buenos Aires, Argentina

October, 2018 "Transgender Medicine", Canadian Endocrine Diabetes Meeting, Halifax, NS, Canada

June, 2018 "21s-Century Strategies: Transgender Hormone Care" CMIN Summit 2018, Porto, Portugal

February, 2017 "A 21st-Century Framework to for Transgender Medical Care" Sheba Hospital, Tel Aviv, Israel

October, 2016 "A 21st-Century Approach to Hormone Treatment of Transgender Individuals" EndoBridge, Antalya, Turkey

May, 2016 "Transgender Women" International Olympic Committee Headquarters, Lausanne, Switzerland

October, 2015 "Workshop on Guidelines for Transgender Health Care" Canadian Professional Association for Transgender Health, Halifax, NS

March, 2015 "Endocrinology - Hormone Induced Changes" Transgender Health Care in Europe, European Professional Association for Transgender Health, Ghent, Belgium

June, 2014 "What to Know to Feel Safe Providing Hormone Therapy for Transgender Patients" International Congress of Endocrinology, Chicago, IL

September, 2011 "Transgender Therapy – The Endocrine Society Guidelines" World Professional Association for Transgender Health, Atlanta, GA

February, 2007 "Treating skin disease by manipulating thyroid hormone action" Grand Rounds, Meier Hospital, Kfar Saba, Israel

March, 2004 "New Directions in Thyroid Hormone Action: Skin and Hair" Grand Rounds, Meier Hospital, Kfar Saba, Israel

National

June, 2020 "Transgender Medicine", Inova Fairfax Medicine Grand Rounds, Fairfax, VA (scheduled)

June, 2020 "Transgender Medicine", Mount Sinai Hospital Internal Medicine CME, New York, NY (scheduled)

May, 2020 "Transgender Medicine", Mount Sinai/World Professional Association for Transgender Health Special Topics in Surgical Care CME, New York, NY (scheduled)

March, 2020 "Transgender Medicine", Science Hub lecture, Endocrine Society Annual Meeting, San Francisco, CA (scheduled)

December, 2019 "Transgender Medicine", Vanderbilt University Surgery Grand Rounds, Nashville, TN

November, 2019 "Transgender Medicine", Medical College of Wisconsin CME, Milwaukee, WI

September, 2019 "Transgender Medicine", Beth Israel Deaconess Medicine Grand Rounds, Boston, MA

September, 2019 "Transgender Medicine", United States Professional Association for Transgender Health Annual Meeting, Washington, DC

June, 2019 "Transgender Medicine", Mount Sinai Hospital Internal Medicine CME, New York, NY

April, 2019 "A 21st-Century Strategy for Hormone Treatment of Transgender Individuals" National Transgender Health Summit, Oakland, CA

March, 2019 "Transgender Medicine" National Eating Disorders Meeting, New York, NY

January, 2019 "Transgender Medicine" Yale School of Medicine Obstetrics and Gynecology Grand Rounds, New Haven, CT

January, 2019 "Transgender Medicine" Yale School of Medicine Endocrinology Grand Rounds, New Haven, CT

January, 2019 "Transgender Medicine" Drexel School of Medicine Medicine Grand Rounds, Philadelphia, PA

September, 2018 "Current Guidelines and Strategy for Hormone Treatment of Transgender Individuals" Minnesota-Midwest Chapter - American Association of Clinical Endocrinologists Annual Meeting, Minneapolis, MN

July, 2018 "21st-Century Strategies for Transgender Hormone Care" Ohio River Valley Chapter - American Association of Clinical Endocrinologists Meeting, Indianapolis, IN

June, 2018 "21s-Century Strategies: Transgender Hormone Care" University of Connecticut School of Medicine, Hartford, CT

May, 2018 "A 21st-Century Strategy for Hormone Treatment of Transgender Individuals" American Association of Clinical Endocrinologists Annual Meeting, Boston, MA

March, 2018 "21st-Century Strategies for Transgender Hormone Care" New Jersey Chapter - American Association of Clinical Endocrinologists Meeting, Morristown, NJ

February, 2018 "A Strategy for the Medical Care of Transgender Individuals" Keynote Address for the International Society for Clinical Densitometry Annual Meeting, Boston, MA

November, 2017 "A 21st-Century Strategy for Hormone Treatment of Transgender Individuals" National Transgender Health Summit, Oakland, CA

September, 2017 "Transgender Therapy – The Endocrine Society Guidelines" Endocrine Society: Clinical Endocrinology Update, Chicago, IL

May, 2017 "Transgender Medicine – a 21st Century Strategy for Patient Care" University of Arizona College of Medicine, Tucson, AR

April, 2017 "Transgender Care Across the Age Continuum" Annual Meeting of the Endocrine Society, Orlando, FL

March, 2017 "A 21st-Century Approach to Hormone Treatment of Transgender Individuals" Brown University School of Medicine, Providence, RI

March, 2017 "What to Know: A 21st-Century Approach to Transgender Medical Care" United States Food and Drug Administration (FDA), Washington, DC

February, 2017 "A 21st-Century Approach to Transgender Medical Care" United States Professional Association for Transgender Health, Los Angeles, CA

February, 2017 "A 21st-Century Approach to Hormone Treatment of Transgender Individuals" Southern States American Association of Clinical Endocrinologists Annual Meeting, Memphis, TN

December, 2016 "Transgender Medical Care in the United States Armed Forces" Global Education Initiative, World Professional Association for Transgender Health, Arlington, VA

December, 2016 "Foundations in Hormone Treatment" Global Education Initiative, World Professional Association for Transgender Health, Arlington, VA

November, 2016 "Developing a Transgender/Gender-Identity Curriculum for Medical Students" Association of American Medical Colleges National Meeting, Seattle, WA

September, 2016 "A 21st-Century Approach to Hormone Treatment of Transgender Individuals" Endocrine Society: Clinical Endocrinology Update, Seattle, WA

August, 2016	"A 21st-Century Approach to Hormone Treatment of Transgender Individuals" Oregon Health and Science University Ashland Endocrine Conference, Ashland, OR
March, 2016	"State-of-the-Art: Use of Hormones in Transgender Individuals" Annual Meeting of the Endocrine Society, Boston, MA
October, 2015	"What Every Endocrinologist Should Know to Feel Safe Providing Hormone Therapy for Transgender Patients" University of Utah School of Medicine, Salt Lake City, UT
April, 2015	"What to Know –to Feel Safe Providing Hormone Therapy for Transgender Patients" Pritzker School of Medicine, University of Chicago, Chicago, IL
March, 2015	"What to Know –to Feel Safe with Hormone Therapy for Transgender Patients" Annual Transgender Health Symposium, Medical College of Wisconsin, Milwaukee, WI
May, 2014	"Transgendocrinology" Annual Meeting of the American Association of Clinical Endocrinologists, Las Vegas, NV
May, 2013	"Transgender Therapy – Hormone Action and Nuance" National Transgender Health Summit, Oakland, CA
April, 2013	"Transgender Therapy – What Every Provider Needs to Know" Empire Conference: Transgender Health and Wellness, Albany, NY
April, 2013	"Transgender Therapy – What Every Endocrinologist Needs to Know" University of Maryland School of Medicine, Baltimore, MD
November, 2012	"Transgender Therapy – What Every Endocrinologist Should Know" New York University School of Medicine, New York, NY
May, 2010	"Transgender Treatment: What Every Endocrinologist Needs to Know" Brown University School of Medicine, Providence, RI
November, 2009	"New Directions in Thyroid Hormone Action: Skin and Hair" Emory University School of Medicine, Atlanta, GA
November, 2009	"Primary Care Update in the Treatment of Thyroid Disorders" Emory University School of Medicine, Atlanta, GA
October, 2008	"Topical Iopanoic Acid Stimulates Epidermal Proliferation through Inhibition of the Type 3 Thyroid Hormone Deiodinase" Annual Meeting of the American Thyroid Association, Chicago, IL
February, 2005	"New Directions in Thyroid Hormone Action: Skin and Hair" Endocrinology Grand Rounds, University of Minnesota, Minneapolis, MN
February, 2005	"Thyroid Hormone Action on Skin and Hair: What We Thought We Knew" Dermatology Grand Rounds, University of Minnesota, Minneapolis, MN

December, 2004 "Transgender Therapy: The Role of the Endocrinologist" Endocrinology Grand Rounds, Brown Medical Center, Providence, RI

November, 2003 "New Directions in Thyroid Hormone Action: Skin and Hair" Endocrinology Grand Rounds, Dartmouth Medical Center, Hanover, NH

Regional

April, 2020 "Transgender Medicine", New York University Endocrinology CME, New York, NY (scheduled)

February, 2020 "Transgender Medicine", Englewood Hospital Medicine Grand Rounds, Englewood, NJ

February, 2020 "Transgender Medicine", Endocrinology Grand Rounds, Columbia College of Physicians and Surgeons, New York, NY

January, 2020 "Transgender Medicine", CEI, Lake Placid, NY

November, 2019 "Transgender Medicine", Weill Cornell Reproductive Endocrine Grand Rounds, New York, NY

November, 2019 "Transgender Medicine", Acacia Network Grand Rounds, New York, NY

October, 2019 "Transgender Medicine", American Association of Clinical Endocrinologists - New Jersey, annual meeting, Morristown, NJ

October, 2019 "Transgender Medicine", Community Health Network annual conference, New York, NY

October, 2019 "Transgender Medicine", Westchester Medical Center Medicine Grand Rounds, Valhalla, NY

September, 2019 "Transgender Medicine", Weill Cornell Reproductive Endocrine CME, New York, NY

September, 2019 "Transgender Competency for Medical Providers", Working Group on Gender, Columbia College of Physicians and Surgeons, New York, NY

April, 2019 "Transgender Medicine", Weill Cornell Urology Grand Rounds, New York, NY

June, 2018 "21^{s}-Century Strategies: Transgender Hormone Care" Medicine Grand Rounds, Staten Island University Hospital, Staten Island, NY

February, 2018 "Transgender Medicine – 21st Century Strategies for Patient Care" Medicine Rounds, Newton-Wellesley Hospital, Newton, MA

October, 2017 "Transgender Medicine – 21st Century Strategies for Patient Care" Medicine Rounds, Beth Israel-Milton Hospital, Milton, MA

September, 2017 "Transgender Medicine – 21st Century Strategies for Patient Care" Obstetrics-Gynecology Grand Rounds, Brigham and Women's Hospital, Boston, MA

June, 2017 "State-of-the-Art: Hormone Therapy for Transgender Patients" Reproductive Endocrinology Rounds, Massachusetts General Hospital, Boston, MA

May, 2017 "A 21st-Century Strategy for Medical Treatment of Transgender Individuals" Boston Medical Center and Boston University School of Medicine, Boston, MA

March, 2017 "A 21st-Century Strategy for Medical Treatment of Transgender Individuals" Tufts Medicine Grand Rounds, Boston, MA

January, 2017 "What to Know: A 21st-Century Approach to Transgender Medical Care" Internal Medicine Rounds, Brigham and Women's Hospital, Boston, MA

March, 2016 "State-of-the-Art: Hormone Therapy for Transgender Patients" Obstetrics-Gynecology Rounds, Brigham and Women's Hospital, Boston, MA

November, 2015 "What Every Endocrinologist Should Know to Feel Safe Providing Hormone Therapy for Transgender Patients" Endocrinology Rounds, Tufts Medical Center, Boston, MA

May, 2015 "What Every Endocrinologist Should Know to Feel Safe Providing Hormone Therapy for Transgender Patients" Endocrinology Rounds, Massachusetts General Hospital, Boston, MA

December, 2014 "What to Know to Feel Safe Providing Hormone Therapy for Transgender Patients" Endocrinology Rounds, Beth Israel Deaconess Medical Center, Boston, MA

November, 2013 "Transgender Therapy – What Every Physician Should Know" Medicine Grand Rounds, Boston Veterans Administration Hospital, Boston, MA

May, 2005 "Transgender Therapy: The Role of the Endocrinologist", Endocrinology Rounds, Tufts-New England Medical Center, Boston, MA

January, 2004 "New Directions in Thyroid Hormone Action: Skin and Hair", Endocrinology Rounds, Brigham and Women's Hospital, Boston, MA

October, 1999 "The Many Faces of Hypothyroidism", Medicine Grand Rounds, Bedford Veterans Administration Hospital, Bedford, MA

Institutional, Icahn School of Medicine at Mount Sinai, New York, NY

April, 2020 "21st-Century Strategies for Transgender Hormone Care", Colorectal Medicine CME (scheduled)

March, 2020 "Transgender Medicine", Frontiers in Science (scheduled)

October, 2019 "Transgender Medicine", East Harlem HOP rounds, New York, NY

October, 2019 "Transgender Medicine", Mount Sinai HIV rounds, New York, NY

August, 2019 "Transgender Medicine", Mount Sinai Endocrinology Fellows Conference, New York, NY

February, 2019 "Transgender Medicine", Mount Sinai Endocrinology Grand Rounds, New York, NY

February, 2019 "Transgender Medicine", Mount Sinai Ob-Gyn Grand Rounds, New York, NY

April, 2018 "21st-Century Strategies for Transgender Hormone Care", HIV Grand Rounds

Institutional, Boston University School of Medicine, Boston, MA

March, 2017 "State of the Art Hormone Therapy for Transgender Patients", Section of Infectious Disease

January, 2017 "What you need to know – to supervise care for our transgender patients at BMC", Section of Endocrinology

February, 2016 "State of the Art Hormone Therapy for Transgender Patients", Department of Medicine

November, 2015 "What the Family Medicine Physician Should Know to Feel Safe Providing Hormone Therapy for Transgender Patients", Department of Family Medicine

November, 2014 "What the Anesthesiologist Should Know to Feel Safe Providing Hormone Therapy for Transgender Patients", Department of Anesthesia

January, 2014 "Update on the Current Guidelines for Transgender Hormone Therapy", Section of Endocrinology

October, 2011 "Transgender Therapy – What Every Physician Should Know", Department of Medicine

February, 2011 "Current Guidelines for Transgender Hormone Therapy: What Every Endocrinologist Should Know", Section of Endocrinology

November, 2005 "Thyroiditis and Other Insults to Thyroid Function" Core Curriculum in Adult Primary Care Medicine

November, 2005 "Interpretation of Thyroid Function Tests Made Easy" Core Curriculum in Adult Primary Care Medicine

January, 2005 "Transgender Therapy: The Role of the Endocrinologist" Endocrinology Grand Rounds

December, 2004 "Update in Endocrinology: Thyroid" Medicine Grand Rounds

January, 2004 "New Directions in Thyroid Hormone Action: Skin and Hair" Medicine Grand Rounds

March, 2003 "Thyroid Hormone Action on Hair and Skin" Endocrinology Grand Rounds

November, 1999 "Central Resistance to Thyroid Hormone – From Bedside to Bench" Endocrinology Grand Rounds

Curriculum development with external dissemination

2014-present Web site for Association of Program Directors of Endocrinology and Metabolism (APDEM), which serves as ***the primary resource for endocrinology fellowship program directors throughout the United States and Canada***.

- Sample curricula
- Streaming lectures to support specific curricular needs to feel programmatic gaps at certain programs
- New assessment forms that map skills to milestones that conform to Next Accreditation System (NAS) standards of the Accreditation Council for Graduate Medical Education (ACGME)

2013-present Dissemination of Transgender Medicine Curriculum with local modification to institutions in the United States and Canada

Curriculum adopted

Johns Hopkins School of Nursing (sample video: http://vimeo.com/jhunursing/review/97477269/abbcf6d33a)
Ohio State University College of Medicine
University of British Columbia, Faculty of Medicine
University of Central Florida College of Medicine
Tufts University School of Medicine

Curriculum in development

Dartmouth School of Medicine
University of Vermont College of Medicine

Work in progress in preparation for sharing transgender curriculum

Albany Medical College
Emory School of Medicine
George Washington University Medical School
Hofstra School of Medicine
University of California – San Diego School of Medicine
University of Kentucky College of Medicine
University of Louisville School of Medicine
University of Michigan Medical School
University of Minnesota Medical School
University of Nebraska School of Medicine
University of Pennsylvania School of Medicine
Washington University School of Medicine

2013-2015 Co-author of the ***Medical Subspecialty Reporting Milestones used for evaluation of Internal Medicine subspecialty medicine fellowship programs throughout the Unites States*** by the Accreditation Council for Graduate Medical Education (ACGME).

https://www.acgme.org/acgmeweb/Portals/0/PDFs/Milestones/InternalMedicineSubspecialtyMilestones.pdf

2011-2014 Web site content expert for APDEM, which served as ***the primary resource for endocrinology fellowship Program directors throughout the United States and Canada***. Materials included sample curricula, streaming lectures to support specific curricular needs to feel programmatic gaps at certain programs, and guidance dealing with ACGME site-visits

Other curriculum development

2019-present Massive Open On-line Course (MOOC) curricular content. Transgender Medicine for General Medical Providers, Icahn School of Medicine at Mount Sinai (https://www.coursera.org/courses?query=transgender%20medicine%20for%20general%20medical%20providers&)

2016-2018 Curricular Content to teach transgender hormone therapy in the LGBT elective at Harvard Medical School

2016-2018 Curricular Content to teach transgender hormone therapy at Tufts University School of Medicine.

2011-2018 Fully revised curriculum for the Boston University Medical Center Fellowship Training Program in Endocrinology, Diabetes and Nutrition.

2010-2018 Curricula to teach transgender hormone therapy at Boston University School of Medicine.

2006-2014 Written examination in endocrinology to complement the multiple-choice examination for medical students — validation relative to success later in medical school is in progress.

Bibliography: (ORCID # 0000 0003 2497 8401)

Names of mentees are underlined throughout the bibliography section

** currently most influential papers are noted with double asterisks

Original, Peer-Reviewed Articles

1. **Safer JD**, Langlois MF, Cohen R, Monden T, John-Hope D, Madura J, Hollenberg AN, Wondisford FE. Isoform variable action among thyroid hormone receptor mutants provides insight into pituitary resistance to thyroid hormone. *Mol Endocrinol* 1997;11(1):16-26. PMID 8994184

2. Langlois MF, Zanger K, Monden T, **Safer JD**, Hollenberg AN, Wondisford FE. A unique role of the beta-2 thyroid hormone receptor isoform in negative regulation by thyroid hormone - mapping of a novel amino-terminal domain important for ligand-independent activation. *J Biol Chem* 1997;272(40):24927-24933. PMID 9312095

3. **Safer JD**, Cohen RN, Hollenberg AN, Wondisford, FE. Defective release of corepressor by hinge mutants of the thyroid hormone receptor found in patients with resistance to thyroid hormone. *J Biol Chem* 1998;273(46):30175-30182. PMID 9804773

4. **Safer JD**, O'Connor MG, Colan SD, Srinivasan S, Tollin SR, Wondisford FE. The TR-beta gene mutation R383H is associated with isolated central resistance to thyroid hormone. *J Clin Endocrinol Metab* 1999;84(9):3099-3109. PMID 10487671

5. **Safer JD**, Fraser LM, Ray S, Holick MF. Topically applied triiodothyronine stimulates epidermal proliferation, dermal thickening, and hair growth in mice and rats. *Thyroid* 2001;1(8):717-724. PMID 11525263

6. Tangpricha V, Chen BJ, Swan NC, Sweeney AT, de las Morenas A, **Safer JD**. Twenty-one gauge needles provide more cellular samples than twenty-five gauge needles in fine needle aspiration biopsy of the thyroid. *Thyroid* 2001;11(10):973-976. PMID 11716046

7. **Safer JD**, Crawford TM, Fraser LM, Hoa M, Ray S, Chen TC, Persons K, Holick MF. Thyroid hormone action on skin: diverging effects of topical versus intraperitoneal administration. *Thyroid* 2003;13(2):159-165. PMID 12699590

8. Santini F, Ceccarini G, Montanelli L, Rosellini V, Mammoli C, Macchia P, Gatti G, Pucci E, Marsili A, Chopra IJ, Chiovato L, Vitto P, **Safer JD**, Braverman LE, Martino E, Pinchera A. Role for inner ring deiodination preventing transcutaneous passage of thyroxine. *J Clin Endocrinol Metab* 2003;88(6):2825-2830. PMID 12788895

9. **Safer JD**, Crawford TM, Holick MF. A role for thyroid hormone in wound healing through keratin gene expression. *Endocrinology* 2004;145(5):2357-2361. PMID 14736740

10. **Safer JD**, Crawford TM, Holick MF. Topical thyroid hormone accelerates wound healing in mice. *Endocrinology* 2005;146(10):4425-4430. PMID 15976059

11. Saha AK, Persons K, **Safer JD**, Luo Z, Holick MF, Ruderman NB. AMPK regulation of the growth of cultured human keratinocytes. *Biochem Biophys Res Co* 2006;349(2):519-24. PMID 16949049

12. **Safer JD**, Ray S, Holick MF. A topical PTH/PTHrP receptor antagonist stimulates hair growth in mice. *Endocrinology* 2007;148(3):1167-1170. PMID 17170098

13. **Safer JD**, Persons K, Holick MF. A thyroid hormone deiodinase inhibitor can decrease cutaneous cell proliferation in vitro. *Thyroid* 2009;19(2):181-185. PMID 19191748

14. Ariza MA, Loken WM, Pearce EN, **Safer JD**. Male sex, African-American race/ethnicity, and T3 levels at diagnosis are predictors of weight gain following medication and radioactive iodine treatment for hyperthyroidism. *Endocr Pract* 2010;16(4):609-616. PMID 20350916

15. Abraham TM, de las Morenas A, Lee SL, **Safer JD**. In thyroid fine needle aspiration, use of bedside-prepared slides significantly increased diagnostic adequacy and specimen cellularity relative to solution-based samples. *Thyroid* 2011;21(3):237-242. PMID 21323589

16. Huang MP, Rodgers KA, O'Mara R, Mehta M, Abuzahra HS, Tannenbaum AD, Persons K, Holick MF, **Safer JD**. The thyroid hormone degrading Dio3 is the primary deiodinase active in murine epidermis. *Thyroid* 2011;21(11):1263-1268. PMID 21936673

17. Toraldo G, Bhasin S, Bakhit M, Guo W, Serra C, S, **Safer JD**, Bhawan J, Jasuja R. Topical androgen antagonism promotes cutaneous wound healing without systemic androgen deprivation by blocking beta-catenin nuclear translocation and cross-talk with TGF-beta signaling in keratinocytes. *Wound Repair Regen* 2012;20:61-73. PMID 22276587

18**. **Safer JD**, Pearce EN. A simple curriculum content change increased medical student comfort with transgender medicine. *Endocr Pract* 2013;19(4):633-637. PMID 23425656
   - First ever demonstration of the effectiveness of an evidence-based approach to teaching transgender medicine to medical students

19. Thomas DD, **Safer JD**. A simple intervention raised resident-physician willingness to assist transgender patients seeking hormone therapy. *Endocr Pract* 2015;21(10):1134-42. PMID 26151424

20. Mundluru SN, **Safer JD**, Larson, AR. Unforeseen ethical challenges for isotretinoin treatment in transgender patients. *Int J of Womens Dermatol* 2016;2(2):46-48. PMID 28492004

21. Eriksson SES, **Safer JD**. Evidence-based curricular content improves student knowledge and changes attitudes towards transgender medicine. *Endocr Pract* 2016;22(7):837-841. PMID 27042742

22. Chan B, Skocylas R, **Safer JD**. Gaps in transgender medicine content identified among Canadian medical school curricula. *Transgender Health* 2016;1(1):142-150. PMID 29159305

23. Myers SC, **Safer JD**. Increased rates of smoking cessation observed among transgender women receiving hormone treatment. *Endocr Pract* 2017;23(1):32-36. PMID 27682351

24. Berli J, Knudson G, Fraser L, Tangpricha V, Ettner R, Ettner F, **Safer JD**, Graham j, Monstrey S, Schecter L. Gender confirmation surgery: What surgeons need to know when providing care for transgender individuals. *JAMA Surgery* 2017;152(4):394-400. PMID 28196182

25. Kailas M, Lu HMS, Rothman EF, **Safer JD**. Prevalence and types of gender-affirming surgery among a sample of transgender endocrinology patients prior to state expansion of insurance coverage. *Endocr Pract* 2017;23(7):780-786. PMID 28448757

26. Liang JJ, Gardner IH, Walker JA, **Safer JD**. Observed deficiencies in medical student knowledge of transgender and intersex health. *Endocr Pract* 2017;23(8):897-906. PMID 28534684

27. Park JA, **Safer JD**. Clinical exposure to transgender medicine improves students' preparedness above levels seen with didactic teaching alone: A key addition to the Boston University model for teaching transgender health care. *Transgender Health* 2018;3(1),10-16. PMID 29344576

28. Liang JJ, Jolly D, Chan KJ, **Safer JD**. Testosterone levels achieved by medically treated transgender women in a United States endocrinology clinic cohort. *Endocr Pract* 2018; 24(2):135-142. PMID 29144822

29. Chan KJ, Jolly D, Liang JJ, Weinand JD, **Safer JD**. Estrogen levels do not rise with testosterone treatment for transgender men. *Endocr Pract* 2018; 24(4):329-333. PMID 29561193

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"Transgender Health AMA" Reddit. July 24, 2017. Expert responses to questions about transgender medicine.
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over 150,000 views, over 4200 comments

"Gender Revolution with Katie Couric" National Geographic Channel. Couric, Katie. February 6, 2017.
Extended interview with Katie Couric threaded into a 2-hour television special. Trailer:
https://www.youtube.com/watch?v=y93MsRaC6Zw
broadcast in 143 countries

"Is gender identity biologically hard-wired?" Judd, Jackie. PBS NewsHour. May 13, 2015.
Extended interview for Jackie Judd http://www.pbs.org/newshour/bb/biology-gender-identity-children/
estimated just over 1,000,000 viewers per Nielsen

Innovation	**Significance/impact**
Development and leadership of the Transgender Medicine Clinical Center, Mount Sinai Health System and Icahn School of Medicine at Mount Sinai	• The Center for Transgender Medicine and Surgery at Mount Sinai is the first comprehensive center for transgender medical care in New York and the most comprehensive program in the United States • The Center is one of only several such centers in North America that are housed in academic teaching hospitals where care can be integrated • The Center is a model for such care delivery in North America.
Development and leadership of the Transgender Medicine Clinical Center at Boston Medical Center	• The Center for Transgender Medicine and Surgery at BMC is the first comprehensive center for transgender medical care in New England • The Center is one of only several such centers in North America that are housed in academic teaching hospitals where care can be integrated • The Center is a model for such care delivery in North America.
Development and dissemination of the seminal reviews that are most widely cited in the lay press that explain the concept that gender identity is a biological phenomenon (see bibliography section above, e.g. PMID: 25667367).	• The concept that gender identity is a biological phenomenon has been a key component of the recent culture change in favor of mainstream medical care for transgender individuals (see media section above)
Development and dissemination of new and influential curricular content to teach the biology of gender identity in conventional medical education (see curriculum section above)	The teaching of evidence-based approaches to transgender medical care to: • Medical students (see bibliography section above, e.g. PMID 23425656 and PMID 27042742) • Physician trainees (see bibliography section above, e.g. PMID 26151424) • Practicing physicians (see invited lectures section above) serves as a crucial component to the gained credence given to care for transgender individuals in conventional medical settings.
Development and dissemination of seminal reviews supporting the safety of transgender hormone treatment regimens (see invited lectures section above)	• Once mainstream medical providers learn of the biology underlying gender identity, their biggest concern is the relative safety of the medical interventions relative to the benefit. • The development and dissemination of the seminal reviews and lectures supporting the safety of current treatment regimens serves as a further crucial component to the culture change among conventional medical providers in favor of routine medical care for transgender individuals