Goal: Academic Medicine “Innovation”
Structure: Problem, Approach, Outcomes, Next steps
10 references, up to 3 exhibits
2000 words

Title
A holistic and collaborative curricular approach to gender and sex inclusivity in a multidisciplinary course guided by iterative exchange with student experts

PROBLEM
Healthcare disparities for individuals who identify as transgender, nonbinary, gender-expansive, and intersex (TGEI) are well documented; and, students, educators, and scholars perceive significant gaps in this area of medical training.¹ TGEI medical students and physicians regularly witness anti-TGEI stigma and discrimination directed toward themselves and TGEI patients.² TGEI students and allies invested in reducing these healthcare disparities desire updated curriculum that will reduce experiences of anti-TGEI stigma and discrimination in clinical practice.³ Recent publications have identified a variety of strategies for integrating TGEI health content into curricula.⁴⁵ Some approaches to change have focused on addition of 1-2 hours of dedicated curriculum time (AAMC 2014), which in some cases students perceive as inadequate.³

While building dedicated curriculum time is important, it is equally important to consider the ways in which the exclusion and invisibility of TGEI identities are systematically perpetuated in the existing core curriculum.⁷ A fundamental challenge is that in medicine, biologically essentialist language, which conflates gender identity and expression with biological sex assigned at birth, can be found throughout curricular activities, internally and externally generated teaching materials, in research studies, and even in policy at the highest levels. If sex assigned at birth is used clinically, and gender identity is dismissed as clinically irrelevant, TGEI patients are assumed to be cisgender by default. These assumptions and binary model of gender and physiology can have negative ramifications in terms of partnership with TGEI patients, as well as generating an incomplete provider understanding of individual patient physiology that may be impacted by organ inventory, hormone exposure, sex-related genes, and chromosomes.⁶ Practical, detailed guidelines regarding how to frame biomedical science information in a way that is scientifically accurate, inclusive to TGEI populations and contests biological essentialism of sex do not yet exist.

In winter of 2020 the faculty authors (TBF, JLS, LR), who direct a core interdisciplinary foundational science course in the curriculum of a public medical school, received feedback that some of their course materials continued to perpetuate biological essentialism and exclusion of TGEI identities. Students articulated a perception of disconnect between the university’s stated commitment to diversity, equity, and inclusion and the reality of classroom-based learning, which included inadequate information on the health needs of TGEI communities. Several student activists, some of whom identify as TGEI and others who identify as sexual minorities, reported one of their major motivations for entering the field of medicine
was to reduce healthcare disparities in TGEI and LGBTQIA+ communities. TGEI students and other activists often spent hours outside the classroom gathering relevant literature and findings on the needs of TGEI patient populations in an effort to educate their classmates and educators by supplementing incomplete curricular materials. These students were motivated to improve the inclusivity of their curriculum to advance social justice and have their identities more completely affirmed within their curriculum. Faculty partnering with these students allowed for research on the healthcare needs of TGEI patients to be integrated into core curricular materials, and directly benefitted TGEI students and other student advocates by unburdening them from being the only people responsible for bringing in relevant information on TGEI health into the curriculum. Students reported engaging in similar advocacy efforts to promote change to core curriculum within other courses, and reported that without active partnership from faculty, there was little ability to advance the inclusion of TGEI identities into core curriculum. Furthermore, some TGEI students faced anti-TGEI stigma and negative academic consequences for their advocacy from faculty who dismissed and denied their concerns that there was limited accurate information on TGEI identities being included in medical education.

While discussions had been occurring at curriculum committee meetings about the need for improvement in this area, little change had occurred. Recognizing the absence of a formalized curricular approach, or faculty educators with expertise in TGEI who have support to direct such efforts, faculty authors took a phased and structured approach including relevant stakeholders, most importantly directly and proactively engaging students with lived experience as individuals with or allies of TGEI identities, to dismantle TGEI oppression and exclusion in this course. Student authors on this work (AG, JB, JZ, AL, JL) represent a coalition of 30+ queer, transgender, non-binary, and student advocates from all medical school classes at the UCSF School of Medicine. In this Innovations report we describe the efforts and impact of our student-faculty partnership. The aim of this work is to generate dialogue and promote anti-oppressive approaches nationally.

**APPROACH**

The following efforts were undertaken within an 8-week course that presents foundational sciences related to the renal, endocrine, and gastrointestinal systems to 1st-year medical students. In the months leading up to the 2021 course offering, faculty and staff overseeing the course engaged in a multi-stage iterative process informed by best practices and discussions with student advocates and other curricular leaders. Faculty authors developed materials focused on antiracism to promote inclusion and representation of TGEI identities. Specific areas of focus included learning materials (e.g. readings, slides, patient vignettes), assessments, and lab values with sex-based reference ranges. Faculty integrated a focus on TGEI inclusion into the typical course planning cycle, framing tasks within each stage of curricular planning at the level of months and weeks in advance, and throughout the course. This process was informed by collaboration with student experts at each stage of revisions and as areas emerged that faculty members did not feel equipped to address with their existing resources.

**Timeline**
Several months in advance – development of a shared mental model of gender-inclusivity
Faculty launched the overhaul of the course several months in advance with outreach to all educators about plans and goals. In this phase, faculty authors focused on developing a shared mental model of how to apply gender-inclusive language to our teaching materials, shaped by principles provided to faculty authors in previous iterations of the course and in conversations with student advocates. Faculty authors arranged meetings with the whole curricular team to discuss resources and iteratively begin applying new understanding to our course materials. Faculty authors systematically searched faculty-developed written reading materials and lecture slides for references to sex and gender, and communicated with authors of those materials to discuss and decide on final wording changes. Through these discussions, faculty authors developed a set of principles and recommendations intended for use by educators, that was refined throughout planning and the course based on input from student advocates. The most recent version of these collaboratively developed guidelines (Figure 1) focus on 1) developing the ability to distinguish between sex and gender as distinct constructs neither of which are fully captured by a binary model and 2) steps to take to eliminate cisnormativity (the assumption that all individuals are cisgender), endosexnormativity (the assumption that sex is an immutable, biological reality that is exclusively dimorphic) and biological essentialism of sex (the presumption that an individual’s sex assigned at birth defines their gender identity).
Target level understanding aims for medical educators and suggested curricular interventions

First - Develop the ability to distinguish between sex and gender as distinct constructs:

- **Sex is assigned at birth** and is based on external genitalia, historically based on a male/female binary in Western society.

- **Gender identity is self-identified and non-pathologic**, and diverse variation in each person’s gender identity and expression exist.

- **Gender identity does not indicate any aspects of physiology**, including chromosomes, sex-related genes, gametes, hormones, or anatomy.

Throughout history, healthcare providers have paired sex assigned at birth with an imposed **gender identity** (cisnormativity) prior to an individual’s ability to self-identify.

For non-binary, and gender-expansive individuals, presuming gender based on sex assigned at birth is marginalizing and oppressive and is a reflection of biological essentialism.

- **Sex assigned at birth as a proxy for understanding physiology fails** to capture the diversity of chromosomes, sex-related genes, hormones, and anatomy that exist for many intersex and transgender individuals.

Next - Begin to dismantle the associations between gender and aspects of physiology in medicine:

- In discussing studies that have enrolled or stratified patients based on gender or sex, include context about whether or how TGEI individuals were included, and how gender and sex categories were determined. In many cases this could be as simple as: “patients in the study were asked to identify as men or women, other genders were not included.” Many historical research studies exclude and thus limit how we might apply their findings to TGEI people.

- Similarly, address limitations of clinical tools and laboratory reference ranges that are based on study populations that historically excluded TGEI people and people of color, and if known, give more specificity about how ranges are determined and what ranges are appropriate to use for TGEI patients according to organ inventory and hormone exposure.

- Do not describe sex or gender as a non-modifiable risk factor. Gender is an aspect of identity that is modifiable over the course of a person’s life. Gender-affirming care recognizes the potential acquisition or loss of new risk factors as organ inventory or hormone exposure is modified in accordance with a person’s particular identity.

- Go an extra step when teaching associations between gender and physiologic and/or medical conditions by explaining whether associations are truly related to gender, or aspects of biology. For example, if a disease is more prevalent among women, if it is known, explain whether this association is explained by estrogen, body mass, or social factors like sexism.

- Replace terminology such as “pregnant woman” with “pregnant person” to be inclusive of nonbinary people and trans men who carry pregnancies; “erections in men” with “erections” is inclusive of trans women and non-binary/gender expansive people with penises.

- Increase representation of TGEI persons in cases, but be careful to avoid associating TGEI people only with stigmatized conditions. For example, include TGEI patients interacting with the health care system for annual primary care visits, heart conditions, reproductive health concerns, and more - not only with STIs and mental health concerns.

- Include TGEI individuals in a higher percentage of cases than is represented on a population level. This allows students to master these skills in a preclinical environment before going on to clinical rotations where they will inevitably encounter TGEI patients.

**Figure 1: Target level understanding aims for medical educators and suggested curricular interventions:** Educators must first begin to break down their own assumptions about gender and sex (first step), then integrate a more inclusive approach into the curriculum (next step).
**Weeks in advance – development of guidelines for patient case gender identity**

This phase focused on how individuals with diverse gender identities are represented in the course. Faculty authors created a document to track patient identities across small group sessions to ensure representation of diverse gender identities. Based on initial drafts from TGEI student leaders, course leadership developed a preliminary approach for how to address gender and sex in patient cases. Consultation with student authors representing a consortium of 30+ LGBTQIA+ student advocates from all medical school classes led to rich iterative discussions and adaptations to our initial approach. Multiple discussions with the curriculum leadership team, our curriculum Dean, and student authors allowed us to fully understand strengths and limitations in applying these guidelines. Student authors produced the final set of recommendations (Figure 2) to guide presentation of gender and sex-related features in all patient cases through the course. The main goal of these guidelines is to uphold the principles from Figure 1, with the added goal of embracing a gender-affirming approach to care. They represent students’ and faculty’s evolving understanding of the approach that is most affirming to the broadest diversity of LGBTQIA+ and especially TGEI patients. This framework may evolve based on forthcoming robust research into TGEI patient and clinician preferences regarding inclusive representations of patient gender and sex. While different healthcare institutions may make different choices regarding their specific curricular frameworks for gender and sex inclusivity, all should strive to cultivate nuanced understanding of historical harms to TGEI communities and critical thinking to innovate more inclusive approaches to patient care.
Clinical Case Vignette/Patient Introduction Recommendations

Always include a patient's gender identity, pronouns, and, if pertinent to care, relevant aspects of their biology, which interrupts the assumption of cisgenderism that occurs when only stating sex assigned at birth.

CL is a 46-year-old non-binary person (pronouns they/them/their) with breasts who presents for a mammogram.

If sex is relevant to a patient's clinical circumstances, then include sex assigned at birth unless more specific information about a patient's sex is known.

CL is a 46-year-old non-binary person (pronouns they/them/their, AFAB) who presents to your clinic to discuss birth control.

If no sex information is relevant to the case, introduce a patient with their gender and pronouns or use their pronouns throughout the clinical vignette:

CL is a 46-year-old non-binary person (pronouns they/them/their) who presents to the ED with a broken ankle.

In case vignettes involving a baby or child, introduce the child in the context of the child's relationship to the parent or parents, to indicate that the child's gender identity was assigned by the child's parents.

Parents bring in their 4 year daughter, CL (AFAB) to the pediatrician for her well child visit.

In case vignettes in which family members are referenced, use the family member's gender terminology but do not presume that these individuals are cisgender or endosex (not intersex). When providing information about ancestors' genetic contributions, avoid unnecessary gendering and refer to the relevant sex information only.

CL is a 46-year-old non-binary person (AFAB) presents to your office inquiring about BRCA testing. They tell you that their mother and their maternal uncle, who is trans, both had breast cancer in their 40s.

Additional examples:

AB is a 23-year-old gender person (they/them, AMAB, diagnosed with CAH) who presents for fertility consultation.

CD is a 46-year-old non-binary person (ey/em/eir - pronounced "ey/em/heir") with breasts presenting for a mammogram.

EF is a 20-year-old woman with a uterus presenting to your clinic with amenorrhea.

GHI is a 30-year-old intersex non-binary person (pronouns they/them/their, karyotype XXY) with Hemophilia A presenting for family planning consultation.

JK is a 86-year-old man (he/him) who presents to the ED with acute shortness of breath.

A mother brings her 3 year-old child, LM (AMAB, parents have not assigned a gender, no pronouns) to your pediatric clinic for a well child visit.

NO is a 27-year-old woman (she/her/hers) with a penis who presents to urgent care with a urinary tract infection.

PQ is a 34-year-old man (he/him or they/them), G1P0, with a uterus who presents for a prenatal visit.

RS is a 68-year-old non-binary person (ze/hir/hirs - pronounced "zee/heer/heers") who presents to the ED with shortness of breath.

A couple brings their 2 week-old daughter, TU (AFAB) to the pediatrician for her first check up.

WV is a 23-year-old woman (AMAB) who presents to primary care for her new patient appointment.
**Figure 2: Clinical Case Vignette/Patient Introduction Recommendations:** These recommendations dismantle inherent associations between gender and biology by explicitly stating the patient’s gender, pronouns, and relevant reproductive organs or sex assigned at birth, in the introduction of each case vignette. This framework acknowledges that gender is a fundamental piece of identity for all patients, both cisgender and TGEI.

**Weeks in advance – further faculty development and updates to teaching materials**
In this phase, faculty authors focused on providing just-in-time faculty development to educators in our course, working with them to update slides, quizzes, and exams. These efforts supplemented DEI training that all faculty were required to complete. Checklists based on information in figures 1 and 2 were provided to lecturers and small group facilitators and discussed in faculty development sessions.

**During the course – preemptive outreach to students and addressing lapses**
Knowing this approach would not be perfect, faculty authors arranged a meeting partway through the course to hear about student experiences, and student authors provided real-time feedback based on their experiences within the course. This approach opened the door to hear the student voice, with sensitivity to the burden that is placed on students in oppressed groups to educate others.

**During the course – addressing lapses**
When the course launched, faculty authors quickly realized that there were materials that were left un-updated, and that faculty would sometimes slip in their use of gendered language during lectures. Faculty began providing advance notice to learners regarding discordance between language used in prerecorded lessons that had not yet been revised and other curricular activities. Faculty authors also monitored and commented on anti-oppression lapses during and after lectures using strategic posts to the student forum and live ‘corrections’ in the Zoom chat. Student advocates reached out throughout the course to provide feedback on ongoing lapses in real time, and faculty authors used this feedback as an opportunity to further partner with students and offer gratitude and recognition for their ongoing work to improve the curriculum.

**Evaluation**
Course evaluation questions evaluated the effectiveness of our efforts, including open-ended and multiple-choice items. Ad hoc comments received via discussions with students, staff and faculty were also included. For multiple-choice questions, means and standard deviations are provided. For open-ended questions, content analysis was performed to categorize the valence of each response (positive, negative, and/or neutral) and to determine what aspects of the curriculum were mentioned. Selected exemplar excerpts highlight common findings.

**OUTCOMES**

**Student feedback**
Of the 165 students in the class of 2025, 45 were randomly assigned to evaluate our course. Responses to the multiple-choice and open-ended questions suggested that our approach was generally considered effective in helping promote understanding of TGEI patients’ needs and
TGEI-centered microaggressions (Figure 3) by most students. However, some students expressed confusion and distraction from our approach, discussed in more detail below.

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<th>Question</th>
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| **Mandatory MCQ:** REGN’s anti-oppression approach allowed me to have an integrated understanding of the health needs of sex and gender minority patients. (1-5 scale, strongly disagree – strongly agree) | • N=43 responses  
• Mean: 3.95  
• Standard deviation: 0.79 |
| **Optional MCQ:** REGN’s changes helped me to understand how to dismantle common microaggressions against transgender people in healthcare curricula. (1-5 scale, strongly disagree – strongly agree) | • N=21 responses  
• Mean: 4.00  
• Standard deviation: 0.95 |
| **Mandatory OEQ:** REGN took steps to dismantle oppression in learning materials, to support the goals of providing a more inclusive learning environment for students, and equipping students to provide inclusive effective care to patients across all aspects of identity including gender, sex, and race. Changes included modified learning materials, real-time Zoom chat-based corrections during lecture, and anticipatory posts to provide context for older learning materials. Describe how 1-2 of these and/or other aspects of REGN’s anti-oppression approach were supportive and/or detrimental to your learning. | • N=45 responses  
• N=36 relevant to TGEI  
• Valence:  
  o Positive: 23 (63.9%)  
  o Negative: 5 (13.9%)  
  o Neutral: 8 (22.2%) |
| **Optional OEQ:** Comment on the strengths of REGN and make constructive suggestions for improvement. Comments about parts of REGN (i.e., lectures, small groups, labs, reader) and the learning environment (including cultural sensitivity and inclusivity) are particularly helpful. Please be respectful and specific. | • N=17 responses  
• N=5 relevant to TGEI  
• Valence:  
  o Positive: 3 (60.0%)  
  o Neutral: 2 (40.0%) |

**Figure 3: Student feedback on our approach:** 45 students were randomly assigned to evaluate the course in both multiple choice (MCQ) and open ended question (OEQ) formats. A subset of those students completed an additional, optional MCQ and OEQ.

All comments regarding language used in curricular materials were positive, expressing gratitude for curricular language materials being sex- and gender-inclusive, for example: “I thought that the modified learning materials were incredible. I loved seeing so much trans and non-binary representation and it really made me feel like not only the course directors, but UCSF as a whole, was committed to teaching us how to be the most inclusive clinicians we could be.” And, “I think changing the jargon to using ‘people with ovaries’ or the like is a critical step in providing a more inclusive environment.”

Comments regarding anticipatory emails and real-time chat corrections were mixed. Positive comments expressed appreciation that these communications provided factual information and promoted an inclusive learning environment: “I felt that the real time Zoom corrections were
timely; they helped address factual inaccuracies, and helped reframe our thinking towards what factors actually put a population at risk, in real time. The anticipatory posts were great. I think it really helped to have a warning going into them, not only as a trigger warning but also it just made me feel like the course directors were paying attention to the material we would be seeing and acknowledging problematic parts of it.” And, “The real time corrections showed that the instructors cared about creating a positive learning environment and were actively trying to create an inclusive learning environment.”

A smaller number of comments reported these communications were distracting, unnecessary, and even deleterious to learning: “In my opinion, both the real-time Zoom chat-based corrections during lecture and the anticipatory posts to provide context for older learning materials seemed unnecessary and were detrimental to my learning. All of the chats sent during synchronous learning served more as distractions from the lecturers. And the forum posts about old learning materials seemed like something done as a chore.”

Curricular governance and dissemination
We presented our approach at curriculum governance meetings, and several aspects of our approach have been widely implemented in the broader curriculum. For example, the guidelines we developed for inclusive language in patient case vignettes have been endorsed by university administrators and begun to be implemented in the remaining courses in the pre-clerkship curriculum. Leadership from many pre-clerkship blocks requested consultations from course leadership, which has allowed us all to learn together, and has allowed the course faculty who oversaw this gender inclusion work to transition from the perspective of novices in gender inclusion to a perspective of experts in gender inclusive curriculum implementation. Several clerkship leaders have consulted with us and adapted the case guidelines for didactic presentations and are utilizing our faculty development materials.

NEXT STEPS
Course leadership faculty in medical education are uniquely positioned in overseeing entire blocks of curriculum to help modify medical curriculum within their courses. By partnering with the right stakeholders, course leadership can undergo iterative work to make their entire courses more inclusive of sex and gender diversity. Local faculty experts within each institution with expertise in TGEI health can be a valuable resource in deconstructing cisnormativity and biological essentialism throughout the curriculum. Short of having access to faculty experts, students with lived experience as TGEI and their allies can and should be considered important partners in curriculum change. It is critical for faculty who lack expertise or lived experience related to TGEI identity to partner with faculty who have expertise in TGEI inclusion, and students who identify as TGEI. In partnership with course leadership, these key stakeholders can work collaboratively to oversee curricular reform within courses of medical education at no cost to the institution, in contexts without funding to invest in faculty and community expertise. Throughout this work, it is important to constructively respond to student feedback, as opposed to engaging in unconstructive behaviors like ignoring student advocacy, expecting students to do supplemental work without meaningful faculty effort, or punishing students for their advocacy. In particular, marginalized students like TGEI students may have an emotional
component of their feedback given the personal impact of oppressive curriculum, and it is crucial these students are not characterized as being unprofessional for their advocacy, thereby delegitimizing and possibly silencing their ongoing advocacy. Unfortunately, such responses to feedback thwart collaborative learning and may support an environment with anti-TGEI in which structural marginalization of TGEI patients in medicine or medical education is denied.

Several recent publications describing faculty-student partnerships in implementing antiracism curricula in health professions education may provide models for promoting TGEI inclusion in medical school curricula.\(^8\)–\(^10\) Faculty without the lived experience of TGEI identity need help developing competence and confidence to shift their language to promote a more inclusive classroom environment. Additionally, using the resources within this publication can be of use to these faculty without lived experience looking to begin this work. This would improve the learning experience for TGEI students and provide valuable learning opportunities non-TGEI students as well, ultimately contributing to education of physicians who can better care for TGEI patients.

Once course leadership faculty have made efforts to oversee curricular reform within individual courses, and these faculty members have received adequate training around deconstructing cisnormativity and biological essentialism, these faculty members can step into a role of experts in curriculum implementation to help other course leadership faculty initiate similar curricular reform in their courses. In order to make the work of curricular reform for gender and sex inclusion more ongoingly sustainable and widespread across all blocks of medical education, medical schools must financially invest in experts in TGEI health, including faculty members, community advocates, and students, to do a comprehensive audit of the entire medical school curriculum. Following this audit, course leaders in every block of curriculum can then change the curriculum longitudinally to add appropriate TGEI representation and education. This effort should be associated with ongoing year to year updates so that there is ongoing anti-oppressive curriculum reform.

REFERENCES


