



King's Research Portal

DOI:

[10.1097/CCM.0000000000003114](https://doi.org/10.1097/CCM.0000000000003114)

Document Version

Peer reviewed version

[Link to publication record in King's Research Portal](#)

Citation for published version (APA):

Mehta, S., Rose, L., Cook, D., Herridge, M., Owais, S., & Metaxa, V. (2018). The speaker gender gap at critical care conferences. *Critical Care Medicine*. <https://doi.org/10.1097/CCM.0000000000003114>

Citing this paper

Please note that where the full-text provided on King's Research Portal is the Author Accepted Manuscript or Post-Print version this may differ from the final Published version. If citing, it is advised that you check and use the publisher's definitive version for pagination, volume/issue, and date of publication details. And where the final published version is provided on the Research Portal, if citing you are again advised to check the publisher's website for any subsequent corrections.

General rights

Copyright and moral rights for the publications made accessible in the Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognize and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the Research Portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the Research Portal

Take down policy

If you believe that this document breaches copyright please contact librarypure@kcl.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.

The speaker gender gap at critical care conferences

Sangeeta Mehta MD, Louise Rose PhD, Deborah Cook MD, Margaret Herridge MD, Sawayra Owais HBSc, Victoria Metaxa MD.

Author affiliations:

Sangeeta Mehta MD FRCPC. Professor, Department of Medicine and Interdepartmental Division of Critical Care Medicine, Sinai Health System, University of Toronto, Toronto, Ontario, Canada.

Louise Rose RN, PhD. TD Nursing Professor in Critical Care Research, Sunnybrook Health Sciences Centre, Associate Professor, Lawrence S. Bloomberg Faculty of Nursing and Interdepartmental Division of Critical Care Medicine, University of Toronto, Toronto, Canada.

Deborah J. Cook MD MSc. Distinguished Professor of Medicine, Clinical Epidemiology & Biostatistics, Academic Chair of Critical Care Medicine, McMaster University, Hamilton, Ontario, Canada.

Margaret Herridge MD FRCPC MPH. Professor of Medicine, Department of Medicine and Interdepartmental Division of Critical Care Medicine, University Health Network, University of Toronto, Toronto, Ontario, Canada.

Sawayra Owais HBSc MSc (Candidate), Neuroscience Graduate Program, McMaster University, Hamilton, Ontario, Canada.

Victoria Metaxa MD, PhD. Consultant in Critical Care and Major Trauma, King's College Hospital; Honorary Clinical Lecturer in Critical Care, King's College London, London, UK.

Corresponding author

Sangeeta Mehta MD

Mount Sinai Hospital

600 University Ave, Suite 18-216

Toronto, Ontario, Canada M5G 1X5

Telephone: 416 586 4800 ext 4604

Fax 416 586 8480

Geeta.mehta@utoronto.ca

Twitter @geetamehta0

Reprints will not be ordered

Financial support: none

Key words: gender, parity, equity, critical care, gender gap, conferences

Word count Abstract 241; Manuscript 1733

Abstract

Objective: To review women's participation as faculty at 5 critical care conferences over 7 years.

Design: Retrospective analysis of 5 scientific programs to identify the proportion of females, and each speaker's profession based on conference conveners, program documents, or internet research.

Setting: Three international (ESICM, ISICEM, SCCM) and two national (CCCF, UK SOA) annual critical care conferences held between 2010 and 2016.

Subjects: Female faculty speakers

Interventions: None

Measurements and Main Results: Male speakers outnumbered female speakers at all 5 conferences, in all 7 years. Overall, women represented 5%-31% of speakers, and female physicians represented 5%-26% of speakers. Nursing and allied health professional (AHP) faculty represented 0%-25% of speakers; in general, more than 50% of AHPs were women. Over the 7 years, SCCM had the highest representation of female (27% overall) and nursing/AHP (16%-25%) speakers; notably, male physicians substantially outnumbered female physicians in all years (62%-70% vs 10%-19%, respectively). Women's representation on conference program committees ranged from 0-40%, with SCCM having the highest representation of women (26%-40%). The female proportions of speakers, physician speakers, and program committee members increased significantly over time at the SCCM and UK SOA conferences ($p < 0.05$), but there was no temporal change at the other 3 conferences.

Conclusions: There is a speaker gender gap at critical care conferences, with male faculty outnumbering female faculty. This gap is more marked among physicians than speakers representing nursing and allied health professionals. Several organizational strategies can address this gender gap.

There is a persistent and pervasive gender gap in the visibility of women in academic critical care [medicine](#). While women are reasonably represented in critical care professions, they are under-represented as speakers and chairs at critical care conferences (1-3), on guideline panels (4), and editorial boards (5-7). In this perspective, we review women's participation as faculty at 5 national and international critical care conferences, [discuss the limitations of existing research on the gender gap](#), and provide suggestions to improve gender parity, [and appeal for the generation of broad gender data within our specialty](#).

We determined the proportion of female speakers and female organizing committee members at these conferences, from 2010 to 2016: the European Society of Intensive Care Medicine (ESICM) congress, International Symposium on Intensive Care and Emergency Medicine (ISICEM), Society of Critical Care Medicine conference (SCCM), Critical Care Canada Forum (CCCF), and UK Intensive Care Society State of the Art Meeting (UK SOA). We obtained the scientific program from respective program documents or websites, or if unavailable, from conference conveners. We then tabulated the proportion of female speakers, and established each speaker's profession. If the speaker's sex or profession was unclear, we searched for photos and biographies, or queried conference conveners. We also tabulated the proportion of female physician, nurse and allied health professional speakers (AHP). The Mount Sinai Hospital Research Ethics Board (REB) reviewed this manuscript and confirmed that it was exempt from REB approval.

At every conference, male speakers outnumbered female speakers (Figure 1). The gender gap was more marked among physician speakers than the nursing and AHP groups (Table 1). Of all of the conferences, SCCM had the highest representation of female (27% overall) and nursing/AHP (16%-25%) speakers; however, male physicians substantially outnumbered female physicians in all years (62%-70% vs 10%-19%, respectively). At CCCF, female speakers ranged from 20%-31%; and female physicians represented 16%-26% of speakers. At the ESICM and ISICEM conferences, women comprised 15%-18% and 5%-12% of speakers, respectively; however female physicians represented only 11%-16% of ESICM speakers. Program committee membership was available on the websites of 3 conferences; of these, SCCM had the highest representation of women (26%-40%). At the SCCM and UK SOA conferences, the female proportions of speakers, and physician speakers increased significantly over time ($p < 0.05$). The female proportion of program committee members increased over time at SCCM ($p = 0.003$). There was no temporal change in these proportions at the other 3 conferences.

What is the target proportion of women speakers?

The target proportion of women is a matter of debate, and various representative targets have been proposed. To mirror the gender demographics of our specialty, female physicians should comprise at least 30-40% of conference speakers. In 2016, 28% of Canadian critical care graduates were women (A Fox-Robichaud, President, Canadian Critical Care Society, personal communication), and currently, women comprise 35% of the University of Toronto Pediatric and Adult Critical Care Medicine faculty (<http://www.criticalcare.utoronto.ca>). Further, approximately 30% of physicians writing the American Board of Internal Medicine critical care certification exam were women from 2011-2015 (www.ABIM.org). In the UK, 33% of physicians practicing Anaesthetics and Intensive Care in 2015 were women, although this may be shifting as women comprised 41% in the <40 year age group (8). Females comprised 35% of critical care trainees in France over the last 5 years (A Combes, personal communication), 35% in Australia between 2007-2014 (M McCarty, Director, Workforce Data, Analysis & Planning, Department of Health, personal communication), and 42% women were enrolled in the Scandinavian European Diploma in Intensive Care program between 2001 and 2017 (GH Sigurdsson, Chair Scandinavian Postgraduate Training program in Intensive Care Medicine, personal communication).

While there is likely international variation in the proportion of women who practice critical care medicine, many low- and middle-income countries do not collect data regarding the number of practicing intensivists nor their gender composition, particularly countries without a formal critical care training program or certification. In Brazil, 45% of physicians who received critical care certification in 2016 were women, and overall 26% of certified intensivists are women (LA Tannous, Brazilian Society of Intensive Care Board Certification Committee, personal communication). In Argentina, 51%-54% of physicians who completed critical care training between 2015 and 2017 were women (A Gonzalez, Argentinian Society of Critical Care, personal communication). In China, 46% of Chinese Society of Critical Care Medicine members are women (Du Bin, personal communication). In India, 32% of trainees taking the Part 2 critical care examination from 2015 to 2017 were women; and 20% of the College of Critical Care Medicine members are women (PK Jain, Chair, College of Critical Care Medicine, personal communication); however the latter may underestimate women in practice as membership is not mandatory. While these data indicate that female physicians are well-represented in critical care training programs and practice in low- and middle-income countries, we cannot extrapolate to all countries.

It has been suggested that the proportion of conference speakers should reflect the proportion of female conference delegates or the society membership; however, many congresses (e.g. ISICEM) do

not record delegate (e.g. ISICEM, UKSOA, CCCF) or speaker (e.g. SCCM) gender data, and attendance is not predicated on national society membership. Nevertheless, using these data as benchmarks, the speaker gender gap persists. For example, in 2016, 39% of ESICM congress attendees and 29% of ESICM members were women but only 15%-18% of speakers were women. Within SCCM, in 2016 27% of 3287 physician-members were women, and 29% of physicians attending the annual congress were women, and 27% of speakers were women. At CCCF in 2015 and 2016, 43% of conference attendees and 21% of speakers were women.

Whether the benchmark is representation of the proportion of women in practice, in training, as society members, or conference delegates, the speaker gender gap persists.

Extent of the problem and potential reasons

Women's under-representation at academic conferences extends to other medical specialties and Science, Technology, Engineering, Math, and Medicine (STEMM) fields (9-12). In an audit of scientific meetings (2012-2014) of 6 Australasian specialty colleges, including anesthesiology, critical care, and surgery, male speakers outnumbered female speakers at every conference (9), and the allocated speaking time was shorter for women than men (9,12). Notably, critical care had the lowest female representation of the 6 specialties, at less than 20% in each of the 3 years.

The R reasons for the gender gap at critical care conferences have not been rigorously evaluated. Reasons are complex and multifactorial, and may include habitual invitations to male colleagues or perceptions of fewer female invitees in the field from whom to sample. While it has been hypothesized that women more often decline invitations because of personal or professional obligations, contrary evidence shows -no difference in the extent to which women value or decline speaking invitations (11, Kass), and the frequency and reasons for declinations within critical care are not published. Implicit gender biases - which associate men with science - may disfavour female invitees (4,13). Selecting fewer female conference speakers relative to those working in the specialty perpetuates the stereotype and further contributes to implicit bias (14). Speaker gender disparity may also reflect differential sponsorship, which is defined as public support and promotion by an influential person. Women may be under-sponsored compared to men, and therefore less frequently proposed as speakers by conference planners (15).

The reason for the gender gap is not that female scientific leadership is globally lacking in critical care. While female scientific leadership may vary internationally, from 1994-2016, 41% of 280 publications by the Canadian Critical Care Trials Group (www.CCCTG.ca) were first-authored by a

woman, including 7 of 17 (41%) published in the New England Journal of Medicine; while overall, 89 of 276 (32%) publications had female senior authors. Data from other international critical care research consortia would be useful to establish women's expertise and define benchmarks.

Impact of the speaker gender gap and possible benefits of closing it

The detriments of the gender gap are difficult to measure, and have not been explored. There are no studies which have evaluated the impact of the speaker gender gap on the scope of topics, on delegate engagement or satisfaction, on conference attendance or evaluations, nor on women's experience of marginalization. While we strongly believe that all conference delegates benefit from exposure to the broad perspectives which arise from gender, social, racial, professional, and geographic diversity, the impact of greater gender and other speaker diversity has not been objectively evaluated.

The dearth of evidence supporting the benefits of narrowing the speaker gender gap does not reduce the legitimacy of the pursuit of gender equity. The benefits of including women are not in question, and in 2018 gender parity need not be defended. Nevertheless, given that research foci may be gendered (Johnson), narrowing the speaker gender gap may expand the breadth and balance of scientific topics that are presented. As an example, female speakers may be more likely to advocate for women's health, as there is positive correlation between women's authorship and the likelihood of a study including gender and sex analysis (Nielsen). Finally, delegate engagement, reflected in the number of questions, may be influenced by the gender of the speaker and chair (Davenport, Hinsley, Glassberg)

As an example of a positive and proactive initiative, the Guideline for Inclusion of Women, Minorities, and Persons with Disabilities in NIH-Supported Conference Grants states "...NIH affirms that the value of scientific meetings is enhanced by including participants from all segments of the scientific population and, when appropriate, members of the lay community, in both the planning and conduct of such meetings." (<https://grants.nih.gov/grants/guide/notice-files/NOT-OD-03-066.html>)

For invited conference faculty, there are tangible and valuable benefits. Speaking opportunities at prestigious academic venues are important for professional development, and they represent currency for career advancement. National and international presentations are considered a measure of research impact, and are frequently required for academic promotion. Conference exposure attracts mentees, and sponsors, and collaborators, and opens doors to leadership and networking opportunities, without which, female academics may not experience the same career advancements as their male peers.

The support of our critical care community for both women and men pursuing academic careers is expected today. Professional societies and conference planners, through symposia, congresses and scientific meetings, can champion fairness and diversity by modelling gender parity, thereby showcasing their commitment to changing the status quo. A potential positive consequence is increased contributions of women who advance professional society causes. Such engagement may in turn promote agencies to develop new activities that benefit the constituents and the mission of our professional societies. Moreover, delegates may be inspired by female role models at the podium to pursue research or scholarly careers.

Strategies to reduce the gender gap

While individual contributions such as mentoring, sponsorship, and speaking up about inequity are invaluable, major change requires organizational initiatives. Given that female representation in symposia correlates with the number of women on the organizing committee, a potential starting point is gender parity on program committees, which serve as gender gatekeepers. Female conveners are more likely to sponsor women, and less likely to convene all-male panels (16-18). Establishing a critical care speaker's bureau that lists women and their research foci could be a useful resource (e.g., FeminEM.org, anneslist.net, academia-net.org, BiasWatchNeuro.com). Family-friendly initiatives such as childcare and nursing suites may enable more female speakers and delegates to attend conferences (19). Further, collecting data on invitees and reasons for declining may be illuminating.

Some critics of gender equity initiatives may comment that attending to equity for conference speakers may impair a program's scientific quality – a view lacking factual veracity. We do not propose arbitrary percentages of women, nor do we propose gender parity over excellence. Our proposals are based on representation of the gender demographic of our specialty and the provision of equal opportunities for women and men. We advocate for the invitation of women who are as qualified and accomplished as their male peers, who have demonstrated success in their fields, and who would undoubtedly enrich a program. Quotas are not at odds with meritocracy, and have been successfully enforced in government and the private sector. A recent Swedish study concluded that government female quotas raised the competence of male politicians where it raised female representation the most, primarily through resignations of mediocre men (20).

~~Indeed,~~ a progressive example of gender and social diversity within critical care is the Social Media and Critical Care Medicine (SMACC) conference, which sponsors speakers from low and middle-income countries, highlights topics relevant to diversity, and provides complimentary onsite

childcare (www.SMACC.net.au). At SMACC 2017, approximately 41% of 2500 delegates ~~were~~ female, 41% of speakers were female, and the organizing committee was composed of 8 women and 8 men (R Harris, SMACC Co-Convener, personal communication); demonstrating their declared commitment to “gender equality in critical care, and ... ensure that female representation is equal to...males, both on the organizing committee and the speaker panel”.

Herein, we suggest 4 organizational strategies to increase women’s participation as speakers in critical care conferences.

1. **We propose** that conferences have policies for the program committee, speakers, and chairs, which include gender equity objectives.
2. **We propose** that approximately 40% of conference program committees are women, and that these female conveners are involved in speaker selection.
3. **We propose** that conferences publish gender and profession metrics for the program committee, speakers, chairs and delegates.
4. **We propose** developing a speaker’s directory listing women with academic careers in critical care and their scholarly foci.

Gender equity strategies should proceed in parallel with measurement of their impact. We urge societies to seek members’ perspectives regarding specific content, suggested speakers, and the perceived benefits of greater speaker diversity. The impact of gender balance on the scope of topics, quality of the presentations, approachability of speakers, and overall delegate satisfaction could be obtained from qualitative and quantitative data in conference evaluations and delegate feedback. Responsive and dynamic organizational processes can lead to change!

With committed leadership and community engagement, gender parity for conference speakers is feasible. Medical science is increasingly interdisciplinary, interprofessional, and international (4), representing the collective work of diverse female and male scholars. Critical care conferences should reflect this reality.

Acknowledgements

We express our sincere appreciation to Sarah Brennenstuhl for statistical analyses.

Figure Legend

The represented percentages of female speakers include physicians, nurses and allied health professionals. The proportion of female speakers increased significantly over time ($p < 0.05$) at the SCCM and UK ICS conferences.

References

1. Metaxa V. Is this (still) a man's world? *Critical Care* 2013; 17:112.
2. Weinacker A, Stapleton RD. Still a man's world, but why? *Critical Care* 2013; 17:113.
3. Amrein K, Stoisser S, Hoffmann M. Women at medical conferences 2016 - still hitting their head at the glass ceiling. *Wien Klin Wochenschr* 2017;129(7-8):287-288. doi: 10.1007/s00508-016-1157-8.
4. Mehta S, Burns K, Machado F, et al: Gender parity in Critical Care Medicine. *Am J Respir Crit Care Med* 2017;196(4):425-429. doi: 10.1164/rccm.201701-0076CP.
5. Morton MJ, Sonnad SS. Women on professional society and journal editorial boards. *J Natl Med Assoc* 2007; 99:764-771.
6. Amrein K, Langmann A, Fahrleitner-Pammer A, et al: Women underrepresented on editorial boards of 60 major medical journals. *Gend Med* 2011;8(6):378-87.
7. Erren TC, Groß JV, Shaw DM, et al: Representation of women as authors, reviewers, editors in chief, and editorial board members at 6 general medical journals in 2010 and 2011. *JAMA Intern Med* 2014; 174(4):633-5. doi: 10.1001/jamainternmed.2013.14760.
8. The state of medical education and practice in the UK. GMC report, 2016 http://www.gmc-uk.org/SOMEPEP_2016_Full_Report_Lo_Res.pdf 68139324.pdf. Figure 18, page 35.
9. Modra LJ, Austin DE, Yong SA, et al: Female representation at Australasian specialty conferences. *Med J Aust* 2016; 204(10):385.
10. Castañeda S, Roman-Blas JA, Cohen-Solal M, et al: Is lecturing in Rheumatology Satellite Symposia a male attribute? *Rheumatol Int*. 2014; 34(2):287-288.
11. [Nittrouer CL, Hebl MR, Ashburn-Nardo L, Trump-Steele RCE, Lane DM, Valian V. Gender disparities in colloquium speakers at top universities. Proc Natl Acad Sci USA. 2018;115\(1\):104-108. doi: 10.1073/pnas.1708414115. Epub 2017 Dec 18](#)[Schroeder J, Dugdale HL, Radersma R, et al: Fewer invited talks by women in evolutionary biology symposia. J Evol Biol 2013; 26\(9\):2063-2069.](#)
12. Carley S, Carden R, Riley R, et al: Are there too few women presenting at emergency medicine conferences? *Emerg Med J* 2016; 33(10):681-3.
13. Nosek BA, Smyth FL, Hansen JJ, Devos T, Lindner NM, Ranganath KA, Smith CT, Olson KR, Chugh D, Greenwald AG, Banaji MR. Pervasiveness and correlates of implicit attitudes and stereotypes. *Eur Rev Soc Psychol* 2007; 18:36-88.
14. Raymond J. Most of us are biased. *Nature* 2013;495:33-34.

15. Patton EW, Griffith KA, Jones RD, et al: Differences in mentor-mentee sponsorship in male vs female recipients of National Institutes of Health Grants. *JAMA Intern Med* 2017;177(4):580-582. doi: 10.1001/jamainternmed.2016.9391.
16. Martin JL. Ten simple rules to achieve conference speaker gender balance. *PLoS Comput Biol* 2014 20; 10(11):e1003903.
17. Sardelis S, Drew JA. Not "Pulling up the Ladder": Women who organize conference symposia provide greater opportunities for women to speak at Conservation Conferences. *PLoS One* 2016 ~~28~~;11(7):e0160015.
18. Casadevall A, Handelsman J. The presence of female conveners correlates with a higher proportion of female speakers at scientific symposia. *MBio* 2014;5(1):e00846-13.
19. Knoll MA. A physician-mother's call to action at a medical meeting. November 29, 2016. <http://www.kevinmd.com/blog/2016/11/physician-mothers-call-action-medical-meeting.htm>.
20. Besley T, Folke O, Persson T, Rickne J. Gender quotas and the crisis of the mediocre man: theory and evidence from Sweden. *American Economic Review* 2017. ISSN 0002-8282

[Neilsen MW, Andersen JP, Schiebinger L, Schneider JW. One and a half million medical papers reveal a link between author gender and attention to gender and sex analysis. *Nature Human Behaviour* 2017; 1:791-796](#)

[Johnson CS, Smith PK, Wang C. Sage on the stage: women's representation at an academic conference. *Personality and Social Psychology Bulletin* 2017; 43\(3\): 493-507.](#)

[Kass D, Choo EK. When will we have enough women speakers in emergency medicine? *Emerg Med J.* 2016;33\(10\):680. doi: 10.1136/emermed-2016-206088. Epub 2016 Aug 17.](#)

[Hinsley A, Sutherland WJ, Johnston A. Men ask more questions than women at a scientific conference. *PLoS One.* 2017 Oct 16;12\(10\):e0185534. doi: 10.1371/journal.pone.0185534. eCollection 2017.](#)

[Davenport JRA, Fouesneau M, Grand E, Hagen A, Poppenhaeger K, Watkins LL. Studying Gender in Conference Talks -- data from the 223rd meeting of the American Astronomical Society. \[www.arXiv:1403.3091v1\]\(http://www.arXiv:1403.3091v1\) \[physics.soc-ph\] \(Submitted on 12 Mar 2014\)](#)

Formatted: No bullets or numbering

Glassberg E, N. Telis N, Gunter C. Fine-scale demography and behavior of male and female human geneticists. Presented at Am Society of Human Genetics Annual Meeting, October 2017