

The Speaker Gender Gap at Critical Care Conferences

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

Design: Retrospective analysis of five 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 (European Society of Intensive Care Medicine, International Symposium on Intensive Care and Emergency Medicine, Society of Critical Care Medicine) and two national (Critical Care Canada Forum, U.K. Intensive Care Society State of the Art Meeting) 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 five 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 faculty represented 0–25% of speakers; in general, more than 50% of allied health professionals were women. Over the 7 years, Society of Critical Care Medicine had the highest representation of female (27% overall) and nursing/allied health professional (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% to 40%, with Society of Critical Care Medicine 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 Society of Critical Care Medicine and U.K. Intensive Care Society State of the Art Meeting conferences ($p < 0.05$), but there was no temporal change at the other three conferences.

Conclusions: There is a speaker gender gap at critical care conferences, with male faculty outnumbering female faculty. This gap is more marked among physician speakers than those speakers representing nursing and allied health professionals. Several organizational strategies can address this gender gap. (*Crit Care Med* 2018; XX:00–00)

Key Words: conferences; critical care; equity; gender; gender gap; parity

There is a persistent and pervasive gender gap in the visibility of women in academic critical care medicine. Although women are reasonably represented as critical care professionals, they are underrepresented 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 five national and international critical care conferences, discuss limitations of existing research on the gender gap, provide suggestions to improve gender parity, and call for more data on this issue in our specialty.

We determined the proportion of female speakers and female organizing committee members at these five 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 (SCCM) conference, Critical Care Canada Forum (CCCF), and U.K. Intensive Care Society State of the Art Meeting (ICS 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

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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 (AHP) speakers. The Mount Sinai Hospital Research Ethics Board (REB) reviewed this article and confirmed exemption from REB approval.

At each conference, male speakers outnumbered female speakers (Fig. 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% to 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 three conferences; of these, SCCM had the highest representation of women (26–40%). At the SCCM and ICS 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 three conferences.

WHAT IS THE TARGET PROPORTION OF WOMEN SPEAKERS?

In 2016, 28% of Canadian critical care graduates were women (A. Fox-Robichaud, President, Canadian Critical Care Society,

personal communication, 2016), and currently, women comprise 35% of the University of Toronto Pediatric and Adult Critical Care Medicine faculty (<http://www.criticalcare.utoronto.ca>). Approximately 30% of physicians writing the American Board of Internal Medicine critical care certification examination were women from 2011 to 2015 (www.ABIM.org). In the United Kingdom, 33% of physicians practicing Anesthetics and Intensive Care in 2015 were women, although this may be shifting as women comprised 41% in the less than 40-year age group (8). Females comprised 35% of critical care trainees in France over the last 5 years (A. Combes, personal communication, 2017), 35% in Australia between 2007 and 2014 (M. McCarty, Director, Workforce Data, Analysis & Planning, Department of Health, personal communication, 2017), and 42% women were enrolled in the Scandinavian European Diploma in Intensive Care program between 2001 and 2017 (G.H. Sigurdsson, Chair, Scandinavian Postgraduate Training Program in Intensive Care Medicine, personal communication, 2017).

Although 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 (L.A. Tannous, Brazilian Society of Intensive Care Board Certification Committee, personal communication, 2017). 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, 2017). In China, 46% of Chinese Society of Critical Care Medicine members are women (B. Du, Past-President, Chinese Society of Critical Care Medicine, personal communication, 2017). 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 (P.K. Jain, Chair, College of Critical Care Medicine, personal communication, 2017); 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.

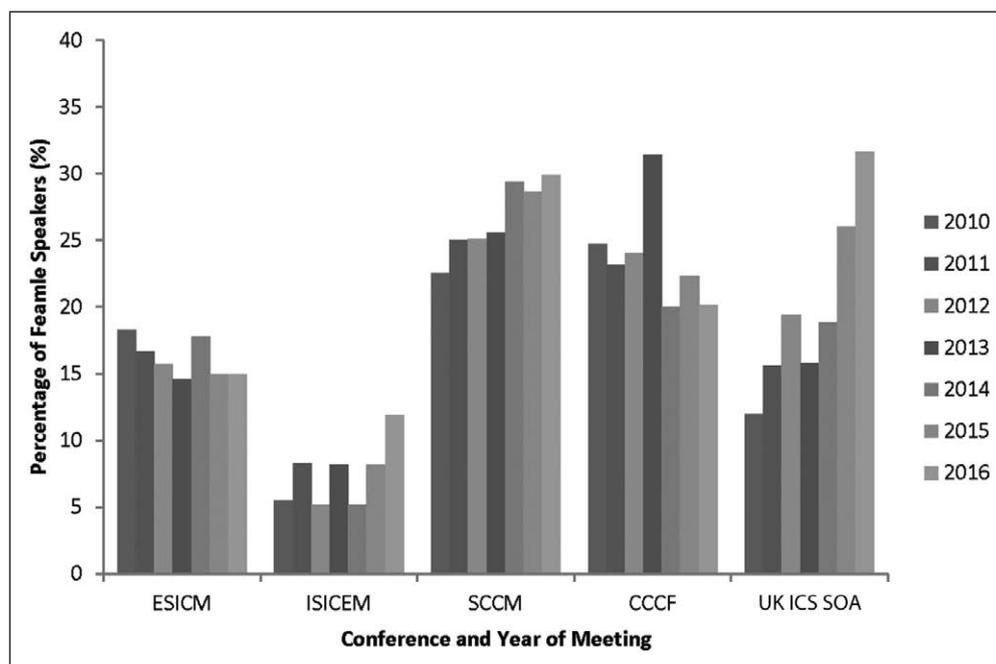


Figure 1. Proportion of female speakers between 2010 and 2016 at three international and two national critical care conferences. The represented percentages of female speakers include physicians, nurses, and allied health professionals. The proportion of female speakers increased significantly over time ($p < 0.05$) at the Society of Critical Care Medicine (SCCM) conference and U.K. Intensive Care Society State of the Art Meeting (UK ICS SOA) conferences. CCCF = Critical Care Canada Forum, ESICM = European Society of Intensive Care Medicine, ISICEM = International Symposium on Intensive Care and Emergency Medicine.

TABLE 1. Female Representation Among Conference Speakers and Program Committees

Congress	2010, n (%)	2011, n (%)	2012, n (%)	2013, n (%)	2014, n (%)	2015, n (%)	2016, n (%)
European Society of Intensive Care Medicine	n = 274	n = 282	n = 229	n = 254	n = 259	n = 300	n = 207
Female speakers	50 (18)	47 (17)	36 (16)	37 (15)	46 (18)	45 (15)	31 (15)
Female physicians	30 (11)	40 (14)	32 (14)	34 (13)	41 (16)	41 (14)	25 (12)
Nursing and allied health ^a	26 (9)	9 (3)	6 (2)	5 (1)	8 (3)	7 (2)	8 (3)
Female nursing and allied health	20 (7)	7 (2)	4 (2)	3 (1)	5 (2)	4 (1)	5 (2)
Program committee	4/14 (29)	3/15 (20)	1/15 (7)	0/15	3/17 (18)	3/17 (18)	4/17 (23)
International Symposium on Intensive Care and Emergency Medicine	n = 220	n = 241	n = 253	n = 232	n = 233	n = 245	n = 218
Female speakers	12 (5)	20 (8)	13 (5)	19 (8)	12 (5)	20 (8)	26 (12)
Female physicians	12 (5)	20 (8)	13 (5)	19 (8)	11 (5)	20 (8)	23 (12)
Nursing and allied health ^a	3 (1)	5 (2)	3 (1)	4 (1)	4 (1)	4 (1)	7 (3)
Female nursing and allied health	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.4)	0 (0)	3 (1)
Society of Critical Care Medicine	n = 368	n = 328	n = 335	n = 305	n = 378	n = 339	n = 351
Female speakers ^b	83 (23)	82 (25)	84 (25)	78 (26)	111 (29)	97 (29)	105 (30)
Female physicians ^c	44 (12)	32 (10)	44 (13)	43 (14)	73 (19)	49 (14)	56 (16)
Nursing and allied health ^a	66 (17)	83 (25)	71 (21)	62 (20)	63 (16)	77 (22)	78 (22)
Female nursing and allied health	39 (11)	50 (15)	40 (12)	35 (11)	38 (10)	48 (14)	49 (14)
Program committee ^d	10/38 (26)	11/38 (29)	13/40 (33)	13/44 (30)	15/48 (31)	18/50 (36)	21/53 (40)
Critical Care Canada Forum	n = 85	n = 108	n = 79	n = 121	n = 105	n = 161	n = 139
Female speakers	21 (25)	25 (23)	19 (24)	38 (31)	21 (20)	36 (22)	28 (20)
Female physicians	14 (16)	20 (19)	13 (16)	31 (26)	16 (15)	28 (17)	25 (18)
Nursing and allied health ^a	12 (14)	7 (6)	9 (11)	8 (6)	6 (5)	9 (5)	3 (2)
Female nursing and allied health	7 (8)	5 (5)	6 (8)	7 (6)	5 (5)	8 (5)	3 (2)
Program committee	0/8	0/8	0/7	2/9 (22)	2/11 (18)	2/11 (18)	2/12 (17)
U.K. Intensive Care Society State of the Art Meeting	n = 50	n = 109	n = 98	n = 95	n = 101	n = 123	n = 117
Female speakers ^e	6 (12)	17 (16)	19 (19)	15 (16)	19 (19)	32 (26)	37 (32)
Female physicians ^f	6 (12)	13 (12)	14 (14)	7 (7)	15 (15)	25 (20)	24 (21)
Nursing and allied health ^g	0 (0)	7 (6)	8 (8)	14 (15)	8 (8)	16 (13)	18 (15)
Female nursing and allied health ^h	0 (0)	4 (4)	5 (5)	8 (8)	4 (4)	7 (6)	13 (11)

OR = odds ratio.

^aRepresents men and women in nursing and allied health professions.Society of Critical Care Medicine conference had a significant change by year for ^bfemale speakers (OR, 1.06; 95% CI, 1.01–1.11; $p = 0.007$); ^cfemale physicians (OR, 1.09; 95% CI, 1.03–1.15; $p = 0.005$); and ^dfemale proportion of program committee (OR, 1.21; 95% CI, 1.07–1.35; $p = 0.0025$).U.K. Intensive Care Society State of the Art Meeting (ICS SOA) had a significant change by year for ^efemale speakers (OR, 1.20; 95% CI, 1.09–1.32; $p < 0.001$); ^ffemale physicians (OR, 1.26; 95% CI, 1.13–1.41; $p < 0.001$); ^gnursing and allied health professionals (OR, 1.24; 95% CI, 1.08–1.42; $p = 0.002$); and ^hfemale nursing and allied health professionals (OR, 1.25; 95% CI, 1.05–1.50; $p = 0.013$).*n* represents the total number of speakers at each conference. We were unable to identify the Program committees for International Symposium on Intensive Care and Emergency Medicine and U.K. ICS SOA on their respective websites.

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 do not record delegate gender data (e.g., ISICEM, U.K. ICS SOA, CCCF) or speaker gender data (e.g., SCCM), and attendance is not predicated on national society membership. 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, 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.

The optimal proportion of female speakers is debatable; various representative targets have been proposed. To mirror the gender demographics of our specialty, female physicians would comprise 30–40% of conference speakers. Whether the benchmark is representation of the proportion of women in practice, in training, as society members or as conference delegates, the speaker gender gap persists.

EXTENT OF THE PROBLEM AND POTENTIAL REASONS

Women's underrepresentation at academic conferences extends to other medical specialties and Science, Technology, Engineering, Math, and Medicine fields (9–12). In an audit of scientific meetings (2012–2014) of six 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 six specialties, at less than 20% in each of the 3 years.

The 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. Although 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, 13). The frequency and reasons for declinations within critical care are not published. Implicit gender biases—which associate men with science—may disfavor female invitees (4, 14). Selecting fewer female conference speakers relative to those working in the specialty perpetuates the stereotype and further contributes to implicit bias (15). Speaker gender disparity may also reflect differential sponsorship, which is defined as public support and promotion by an influential person. Women may be undersponsored compared with men and therefore less frequently proposed as speakers by conference planners (16).

The reason for the gender gap is not that female scientific leadership is globally lacking in critical care. Although female scientific leadership may vary internationally, from 1994 to 2016, 41% of 280 publications by the Canadian Critical Care

Trials Group (www.CCCTG.ca) were first authored by a woman, including seven 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 understand one metric reflecting women's academic leadership.

IMPACT OF THE SPEAKER GENDER GAP AND POSSIBLE BENEFITS OF CLOSING IT

Consequences of the gender gap are difficult to measure. We found no studies that have evaluated the impact of the speaker gender gap on the scope of topics, on delegate engagement or marginalization, or on conference attendance. Although 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 diversity in speaker gender and other domains has not been objectively evaluated.

Given that research foci may be gendered (17), 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 (18). Finally, delegate engagement, reflected in the number of questions, may be influenced by the gender of the speaker and chair (19–21).

As an example of a positive and proactive initiative, the Guideline for Inclusion of Women, Minorities, and Persons with Disabilities in the National Institutes of Health–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 requisite data to establish national and international profile for academic promotion. Conference exposure attracts mentees, sponsors, collaborators, and opens doors to leadership and networking opportunities, without which female academics may not experience the same career advancements as their male peers.

Support from the critical care community for both women and men who are pursuing academic careers is an expectation today. Professional societies and conference planners, through symposia, congresses, and scientific meetings, can champion fairness and diversity by modeling 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. Furthermore, delegates may be inspired by female role models at the podium to pursue research or scholarly careers.

The dearth of evidence supporting the benefits of narrowing the speaker gender gap does not reduce the legitimacy of pursuing gender equity. We are unaware of data indicating that males give superior, unbiased presentations and that delegates learn more when conference speakers are predominantly male. In 2018, gender parity need not be defended.

STRATEGIES TO REDUCE THE GENDER GAP

Although individual contributions such as mentoring, sponsorship, and speaking up about inequity are invaluable, major change likely 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. Female conveners are more likely to sponsor women and less likely to convene all male panels (22–24). Establishing a critical care speakers' bureau that lists women, their credentials, 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 (25). Further, collecting data on invitees and reasons for declining may be illuminating.

Some critics of gender equity initiatives may assert that prioritizing equity for conference speakers may impair a program's scientific quality—a view lacking factual veracity. We do not propose gender parity over excellence, nor do we propose arbitrary percentages of women. Nevertheless, quotas do not have to be 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 primarily through resignations of mediocre men (26). Our proposals are based on representation of the gender demographic of our specialty and the provision of equal opportunities for equally meritorious women and men. We advocate for the invitation of women who are as qualified and accomplished as their male peers and who would enrich a program.

A progressive example of gender and social diversity within critical care is the Social Media and Critical Care (SMACC) Medicine conference, which sponsors speakers from low- and middle-income countries, highlights topics relevant to diversity, provides complimentary onsite childcare, and tracks speaker diversity (www.SMACC.net.au). At SMACC 2017, approximately 41% of 2,500 delegates were female, 41% of speakers were female, and the organizing committee was composed of eight women and eight men (R. Harris, SMACC Co-Convener, personal communication, 2017), demonstrating their declared commitment to “gender equality in critical care, and ... to ensure that female representation is equal to ... males, both on the organizing committee and the speaker panel”.

Herein, we suggest four 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 based on merit.
- 2) **We propose** that 30–40% of conference program committees are women and that these female conveners are involved in speaker selection.
- 3) **We propose** that conferences publish gender, professional background, and academic metrics for the program committee, speakers, chairs, and delegates.
- 4) **We propose** developing an international speaker's directory listing women with academic careers in critical care, their credentials, and their scholarly foci.

Measurement of impact should proceed in parallel with strategies ensuring gender equity. We encourage societies to seek members' perspectives regarding specific content, suggested speakers, and the perceived benefits of greater speaker diversity. The impact of gender balance on presentation content or quality, speaker approachability, and 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.

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