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## Social media as a tool to rewrite the narrative for women in cardiothoracic surgery

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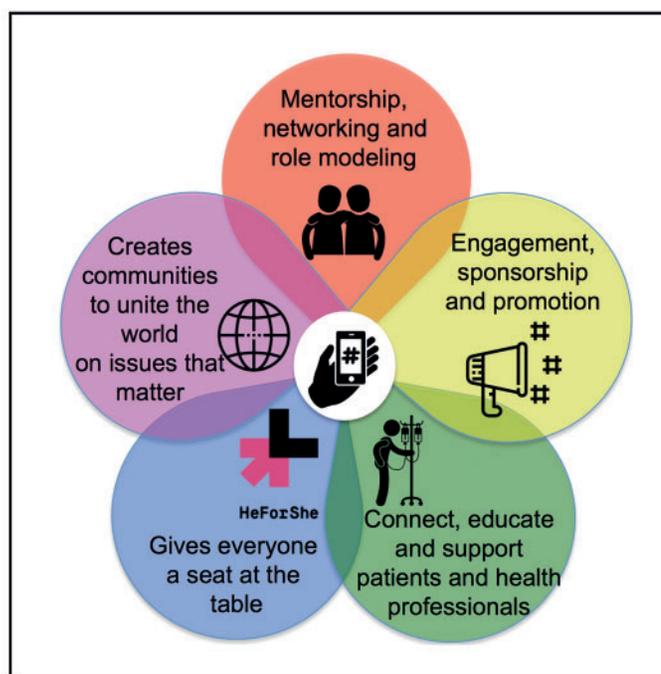
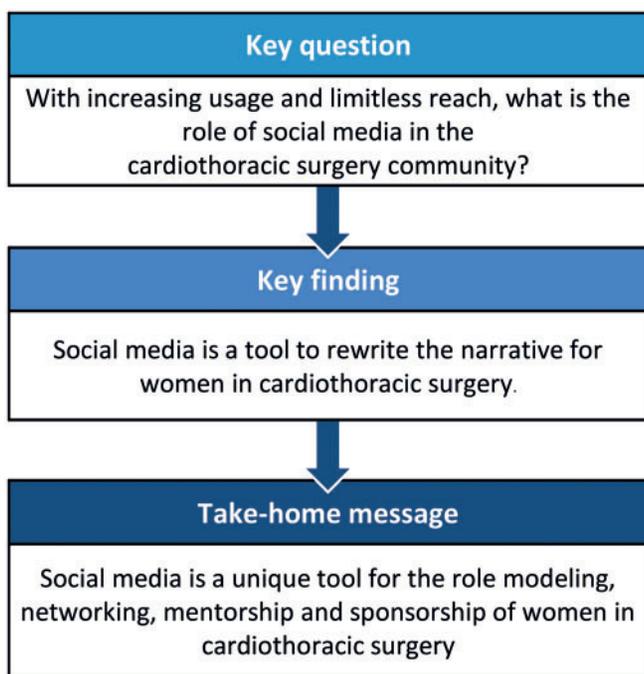
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### Summary

To deliver the best possible care, the global surgical workforce should mirror the diverse society it is entrusted to serve. Cardiothoracic surgery remains amongst the most under-represented of the surgical specialties for women. Herein, we describe the role of social media in the cardiothoracic surgery community and its potential to rewrite the narrative for women in cardiothoracic surgery.

**Keywords:** cardiothoracic surgery workforce • diversity • social media • women

## INTRODUCTION

For more than a decade, women medical students have comprised nearly half of their student bodies; however, upon graduation, women remain significantly under-represented in a number of key specialties [1], including most surgical fields [2, 3]. This imbalance in representation of sexes has been particularly slow to change in the area of cardiothoracic surgery. The American Board of Thoracic Surgery (ABTS) certified its first 3 female diplomats in 1961, and it took until 1980 for the total number of women with ABTS certificates to reach 10 [4]. Nonetheless, since that era, the presence of women in the field of cardiothoracic surgery has grown dramatically. Over time, female leaders have ascended the ranks, achieved positions of prominence, and continue to change the perception of what it means to be a cardiothoracic surgeon [5, 6].

Such changes are highly welcomed, and the future for women cardiothoracic surgeons looks brighter than ever. To enable our field to grow, we must continue to adapt, to allow cardiothoracic surgery to attract the best and brightest trainees, regardless of sex (or race, age or sexual orientation). We have made enormous strides, but leaders in our field seeking additional growth must be cognizant of the fact that, at this point in time, women still represent a gross minority, accounting for <4% of diplomats ever certified by the ABTS and fewer than 5% of practicing cardiothoracic surgeons [4, 6].

Academic surgery is an area of cardiothoracic surgery in which women remain less likely than men to become full professors despite adjustment for age, years since residency, publication number, clinical trials participation, grants and surgical subspecialty [7, 8]. Women continue to be under-represented as grand rounds speakers, visiting professors, leaders of national organizations, members of grant panels and editorial boards [9]. As of February 2018, the editorial boards of the four most prominent cardiothoracic surgery journals, *Interactive CardioVascular and Thoracic Surgery*, *European Journal of Cardio-Thoracic Surgery*, *The Journal of Thoracic and Cardiovascular Surgery* and *The Annals of Thoracic Surgery*, are comprised of 8%, 6%, 8% and 18% women, respectively. Female surgical trainees are also subject to less operative time and less autonomous operating than their male counterparts, vital in the development as a surgeon [10].

In this study, we describe the role of social media in the cardiothoracic surgery community and its potential to enhance traditional surgical training and mentorship for women in cardiothoracic surgery.

### The emerging role of social media in healthcare

In recent years, as worldwide utilization of social media has grown exponentially, the exploitation of its potential benefits by physicians has been slow, particularly among surgeons [11, 12]. Individual physicians, hospitals and medical organizations have been appropriately cautious, with good reason. Reported concerns have included reluctance to engage in casual interactions, avoiding the oversharing of inappropriate or inaccurate information and the potential public presentation of any representation that could detrimentally impact the respect of our patients and colleagues [13]. Apprehensive about potential vulnerability, surgeons have thoughtfully considered the impact of their online content, focussing on prevention of violations of patient privacy

and avoidance of unprofessional public content that may reflect poorly on the entire field of practice [14].

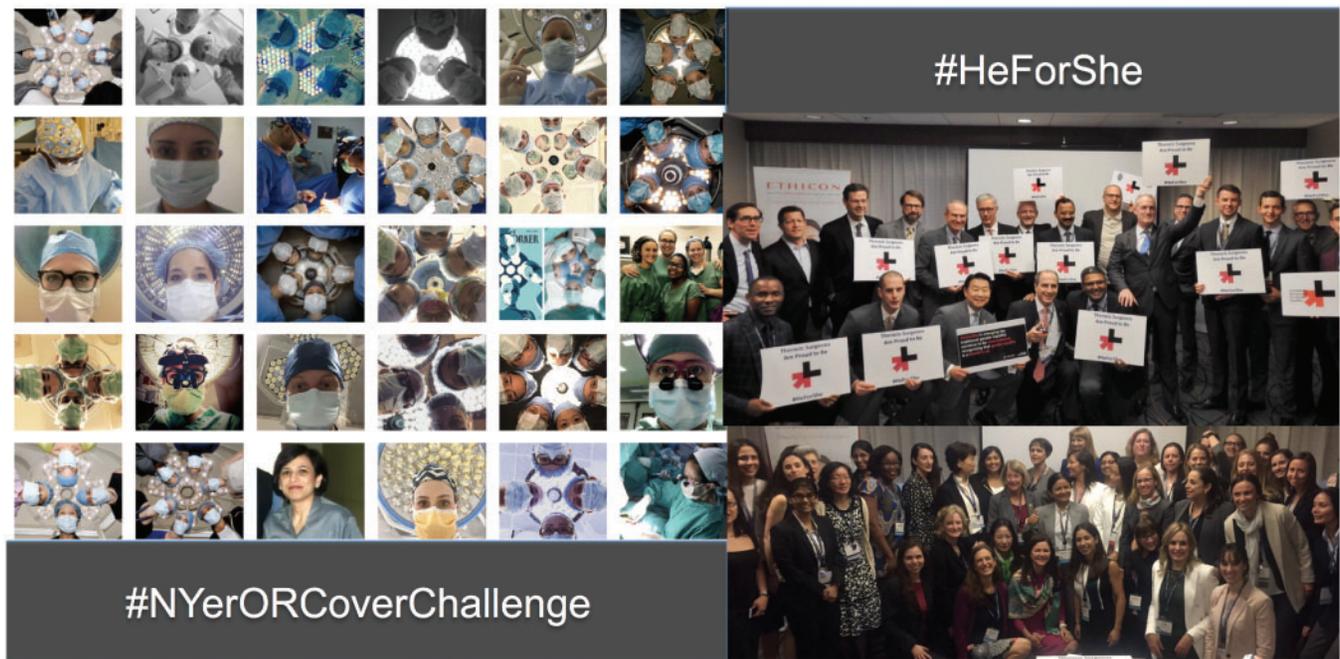
In general, social media is still felt to be underutilized in the healthcare domain compared to other vocational fields, although the scepticism regarding the usefulness of social media and mistrust of its safety is slowly dissipating [15]. A published survey of Australian physicians revealed that three-quarters of respondents participated in social media activities, with the majority reporting regular usage on a weekly basis [13]. Furthermore, as leaders in healthcare social media have educated surgeons regarding the potential benefits to their practices and for public interest, to advance scholarly activity, interest in taking advantage of the benefits of social media reached a tipping point [11, 16, 17]. As the proportion of surgeons participating in social media has increased, so too has a shift occurred in the types of social media interaction taking place, with rapid growth in the utilization of social media for professional purposes [11, 18].

Keeping up to date with professional standards and networking with surgical colleagues used to involve reading monthly journals and catching up at national meetings, if time allowed. Social media is one way this has been transformed. We can now share interesting articles and findings instantly, with a reach far wider than traditional means. Special interest groups are also flourishing and allowing surgeons to share experiences and advice on their career pathway. Cardiothoracic surgery is now poised to utilize social media as a catalyst for the much-needed change.

### How the cardiothoracic surgery community connects online

The Cardiothoracic Surgery Network (CTSNet) [19] was one of the pioneering websites with a mission to connect the global cardiothoracic community. CTSNet is a not-for-profit organization jointly overseen by the Society of Thoracic Surgeons (STS), the American Association for Thoracic Surgery (AATS) and the European Association for Cardiothoracic Surgery (EACTS) [20]. With its primary visibility via its website, CTSNet functions as a portal for online education resources, including videos, journals, interviews with noted surgeons and learning resources for trainees. It also includes profile pages for cardiothoracic surgeons, a job board and link to major cardiothoracic surgery journals. CTSNet was established in 1996 [20] and continues to grow and provide more information to surgeons and trainees, including ways to connect with and contact other users via a surgeon's directory.

Social media has emerged as a modern and effective tool in the online world of cardiothoracic surgery. The importance of harnessing the power of social media has been recognized by two of the leading journals in the field, *The Annals of Thoracic Surgery* and *The Journal of Thoracic and Cardiovascular Surgery*, who have jointly sponsored the establishment of the Thoracic Surgery Social Media Network (TSSMN) [21]. The TSSMN collaborative aims are to bring social media attention to key articles and highlight accomplishments within the specialty. Key leaders in cardiothoracic surgery and innovators in social media were selected to spearhead this project as delegates for the TSSMN, tweeting under the hashtag #TSSMN and in support of the organizational handle @TSSMN. On Twitter, among all TSSMN delegates as of September 2018, there are currently 153 853



**Figure 1:** Cardiothoracic surgery's take on the #NYerORCoverChallenge and #HeForShe campaigns.

followers with over 10 400 tweets to date. Regular TSSMN tweetchats garner participants from around the world to discuss the latest in cardiothoracic surgery in what has become an online journal club on important or topical issues in the specialty.

For women specifically, many countries have groups to address issues around encouraging and supporting women in a surgical career, from the Association of Women Surgeons, the Women in Surgery committees of the American College of Surgeons and the Royal Australasian College of Surgeons to the Women in Surgery Forum at the Royal College of Surgeons of England (the latter with a network of over 5000 members). In addition, Women in Thoracic Surgery (WTS) [4, 5, 22] formed in 1986 with a mission statement to mentor and educate young women thoracic surgeons has matured into a well-respected organization with activities including educational awards, scholarships and a mentoring program. WTS also maintains a strong online and social media presence to promote women in this field as well as offers travelling scholarships for further training and mentoring [4].

On social media, hashtags have played a pivotal role to inspire and connect women surgeons around the globe. In 2015, Dr Heather Logghe, a general surgical resident at the time, founded the hashtag #ilooklikeasurgeon [23] resulting from women surgeons who often have their positions queried due to 'failure' to conform to stereotypes of what a surgeon should be. In 2017, American endocrine surgeon, Dr Susan Pitt encouraged thousands of women surgeons to pose in their operating rooms for the #NYerORCoverChallenge following the New Yorker magazine featuring a cover with four female scrub team members [6, 24]. Social media has also provided a voice for men to become agents of change for the advancement of women through the #HeForShe campaign [6]. These campaigns capture the imagination of both current and aspiring surgeons and leave behind them a roll call of role models for anyone across the world to reach. They were also the basis for connecting innumerable

surgeons from around the world, laying the foundations for mentorship, sponsorship, collaboration and education. Furthermore, they have simultaneously paved the way in demonstrating the power and the necessity for connection beyond our own geography. Cardiothoracic surgery's take on the #NYerORCoverChallenge and #HeForShe campaign are shown in Fig. 1.

### **'The problem is not the pipeline; it is the process': the importance of connection**

As we have detailed above, women remain under-represented in clinical and academic cardiothoracic surgery at every level. Recruitment and advancement of female cardiothoracic surgery faculty is not currently hindered by the 'pipeline', but rather the process. There are more than enough outstanding female candidates to fill cardiothoracic surgery leadership positions today. However, a significant leak in the pipeline occurs between medical school and cardiothoracic residency training, and this leak continues through to tenured faculty positions, full professorships and surgical leadership positions [25–28].

Outside of medicine, disparities in the process have been well documented. Noted business and management publication, Harvard Business Review refers to this as a 'second wave of sexism'; it is much less easy to identify and therefore address than overt sexism of the past. At workplace assessments, women are more likely than their male counterparts to receive feedback that details the strengths of the team rather than the individual [29–32]. They are also more likely to receive comments or adjectives in their reporting that have negative connotations such as bossy, rather than assertive [29–32].

Process issues may contribute to the increasing degrees of sex disparity observed moving up the echelon. Committees to recruit faculty and to promote them to local and national leadership

positions are predominantly men [33–38]. From research in the medical realm, it has been shown that managers are more likely to employ a candidate who is similar to themselves [30, 39, 40]. Both schemas may influence the perception of a candidate's attributes and qualifications [29–32].

Even a small disadvantage for women with regard to performance evaluations may result in diminished educational and academic opportunities, and lower funding and publication rates [30]. The resulting lower career success rate may thus perpetuate and amplify poor evaluations and contribute to the observed sex disparities [10, 31]. Without a concerted effort to increase diversity and improve the sex balance of leadership positions in cardiothoracic surgery, the *status quo* will change very slowly.

Mentoring is one such way in which some of these process effects can be diminished. Mentoring is seen as a vital tool in the development of a surgical career [41, 42]. However, very few women surgeons actually have a mentor, or a mentor with whom they feel comfortable with [3]. The lack of sex-matched mentors in cardiothoracic surgery, particularly in one's geographic location, is one potential barrier for the surgeon to access the full benefits of mentoring and reach their full career potential.

Social media is a unique form of communication, in that it transcends some of these traditional barriers to mentorship. Through online connection, surgeons can connect with anyone around the world to facilitate mentoring, role modelling, sponsorship and education [3]. Increasing bodies of research are beginning to demonstrate how social media may be able to have a role in mentoring, education and collaboration to facilitate the advancement of women in cardiothoracic surgery [3].

### Change: why it's needed and social media's role in facilitation

In the corporate world, diversity, beyond sex, has been studied much more than it has been in medicine and surgery. The findings of these investigations have shown that diversity is not merely a social justice exercise, it has been shown that it improves productivity and increases creativity. Companies with greater diversity within their executive committees outperform their peers by a significant margin.

McKinsey has been examining the effect of diversity in the workplace for several years and their latest report *Delivering through Diversity 2018* examined over 1000 companies covering 12 countries [43]. Their latest research reaffirms the global relevance of the correlation between diversity (defined as a greater proportion of women and ethnically/culturally diverse individuals) in the leadership of large companies and financial performance [43]. Companies in the top quartile for sex diversity on executive teams were 21% more likely to outperform on profitability and 27% more likely to have superior value creation [43]. But it is not just sex. Companies in the top quartile for ethnic/cultural diversity on executive teams were 33% more likely to have industry leading profitability [43]. In a global analysis of 2400 companies conducted by Credit Suisse, organizations with at least one female board member yielded higher return on equity and higher net income growth than those that did not have any women on board [44].

Working with people different from oneself challenges the mind to overcome its ways of thinking and sharpen its

performance. In a series of experiments conducted in Texas and Singapore, investigators put financially literate people in simulated markets and asked them to price stocks [45]. The participants were placed in either ethnically diverse or homogenous teams. The research found that individuals who were part of the diverse teams were 58% more likely to price stocks correctly, whereas those in homogenous groups were more prone to pricing errors [45]. Diverse teams are more likely to constantly re-examine facts and remain objective. They may also encourage greater scrutiny of each member's action, keeping their joint cognitive resources sharp and vigilant [45]. By breaking up workplace homogeneity, team players may become more aware of their own potential biases that can otherwise blind them to key information and even lead them to make errors in their decision-making processes. These skillsets and group characteristics may have applicability in clinical settings.

### The evidence for social media in facilitating the mentorship and networking of women in cardiothoracic surgery

We currently do not yet have data to show that more women are engaging with surgical careers as a result of social media engagement. However, a recent study published by our group in the *American Journal of Surgery* [3] aimed to explore whether social media may be a useful supplement for women in surgical specialties lacking exposure to same-sex mentors at their own institution (Fig. 2). In the study, we conducted a survey of 282 respondents [3], 136 (48.2%) reported careers in surgical specialties with 27 (9.5%) in cardiothoracic surgery. Comparisons were made among medical as compared to surgical specialties and cardiothoracic surgery. Compared to those in medical specialties, those in surgical specialties were more likely to perceive that the specialty is dominated by the opposite sex (cardiothoracic surgery 94% vs other surgical specialty 64% vs medical specialty 25%,  $P < 0.001$ ) and to lack exposure to same-sex mentorship at their own institution (cardiothoracic surgery 59% vs other surgical specialty 36% vs medical specialty 25%,  $P < 0.001$ ). Compared to medical specialties, respondents in surgical specialties were more likely to report that social media allowed them to build a larger network of same-sex mentorship than they could have been able to achieve (cardiothoracic surgery 93% vs other surgical specialty 68% vs medical specialty 13%,  $P < 0.001$ ) (Fig. 2).

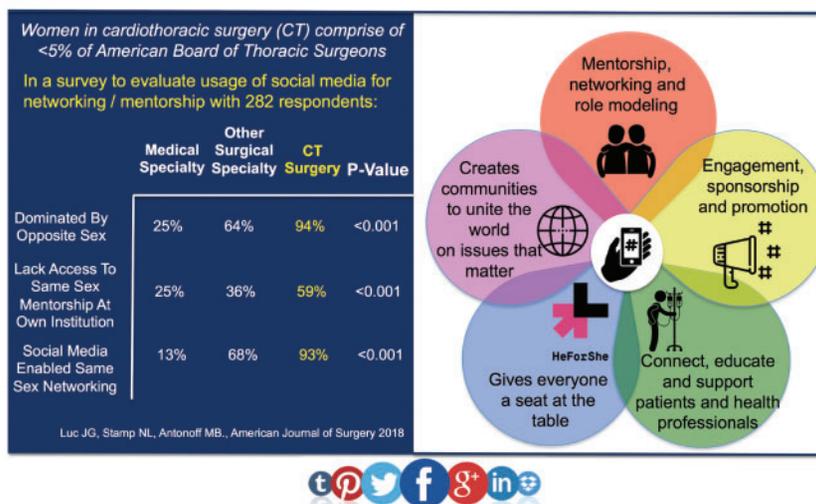
Exploring social media mentorship traits valued by respondents in the study [3] demonstrated that those in cardiothoracic surgery were significantly more likely to value same-sex mentorship on social media than other respondents (cardiothoracic surgery 69% vs other surgical specialty 46% vs medical specialty 20%,  $P < 0.001$ ). Other criterion ranked in descending order of importance included approachability, shared specific field of interest, availability, quick response time, easy access, acknowledgement of confidentiality, opportunities to connect with leaders in the field, option for a dysynchronous relationship and a high frequency of posting.

### Looking toward the future

In recent years, diversity has become a topic of great interest in medicine and surgery. Women in surgery still remain vastly

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Authors: Nikki L. Stamp, Jessica G.Y. Luc, Maral Ouzounian, Farah Bhatti, Tamara Ni Hici, Mara B Antonoff



**Figure 2:** The evidence of social media in the networking and mentorship of cardiothoracic surgeons and potential to rewrite the narrative for women in cardiothoracic surgery.

under-represented; however, there has been a definite shift in the zeitgeist surrounding this topic. From tackling bullying, discrimination and sexual harassment to increasing programs to directly influence women into choosing a career in surgery via scholarships or sponsorship, individuals and surgical organizations alike are no longer awaiting a natural evolution but are instead seeking it out.

Despite this concerted effort, barriers to the inclusion of women in cardiothoracic surgery still exist. Some of these relate to perceptions around lifestyle, working hours, having a family or concerns around bullying [46–49]. Some of these barriers require a system-based approach such as providing workplaces that cater for parenting for example, although there are many other pressing cultural and process changes that need to happen.

Social media is a tool to fill gaps in current efforts to promote women in medicine and in cardiothoracic surgery. Furthermore, given its global reach, it may be particularly potent. As there are less women in cardiothoracic surgery than a number of other surgical specialties, they have less opportunities for mentoring. They may also be exposed to negativity, unconscious bias or systemic biases without mentors they identify with or by simply being in a sense, 'unusual' in their workplaces. In the online world of social media, women cardiothoracic surgeons are not unusual and in fact, by virtue of their position, women who practice in or are interested in cardiothoracic surgery are afforded a kind of membership to a group of women surgeons who can offer mentoring, role modelling and education or academic collaboration [6, 23, 24, 50].

In the past few years, as social media use among physicians has grown, there has been more research to demonstrate its utility (Fig. 2). Among the strengths of social media use for physicians, benefits in networking, mentoring and education for the individual have been demonstrated. Social media affords the ability to follow a conference whether or not one attends [51], discuss pertinent papers to improve the readership of journal articles [52–54] or journals themselves [21, 55, 56], have all been

demonstrated via research. The benefit to the individual surgeon, trainee or student is less clear, but a growing body of evidence suggests that social media has the ability to bridge barriers experienced by the individual [3].

In a market that is ever more competitive, anything that gives an applicant for a training position or job applicant an edge is more important than ever. For female candidates in cardiothoracic surgery, this could prove to be even more true. Using social media to build networks of supporters and sponsors, and keep up with the latest research and learn from experienced surgeons all from a smart phone or computer may give women in cardiothoracic surgery a competitive edge. While, of course, this remains to be seen, anecdotally speaking, the advantage of connection stands to benefit women greatly [3].

### CONCLUSION

Women remain under-represented in cardiothoracic surgery both in sheer numbers and in representation at higher levels [4, 5]. Social media use is a way of taking that inequity into our own hands, arming ourselves to be the best and brightest candidates, to form networks that can negate some of the biases that we face. It is often stated that there is power in numbers and that is true when it comes to women in surgery. In our centres, our operating rooms, our academic lives, we are a lone voice. Together, we are much more knowledgeable, connected and powerful to affect change and be the best possible clinicians we can be.

The existence of this article is one of the best possible advertisements for the ways in which social media can advance women in cardiothoracic surgery. For the purposes of writing this article, the authors have all met and connected online via social media groups or discussions specifically aimed at either cardiothoracic surgeons or women in surgery. Following these online introductions, the group has met at major cardiothoracic conferences and has begun and maintained a collaborative that

promotes scholarship and mentorship. The members of this group have written several published articles and collaborated on research and case presentations at major conferences. The authors represent a diverse group of cardiothoracic surgeons, both in clinical specialty, ethnicity, age, seniority and geography spanning 4 countries and 5 timezones across the globe. In a few short years, each of the authors has imparted knowledge, mentored, been mentored and learnt far more than each could in isolation, geographically separated. Social media is here to stay, and as women in cardiothoracic surgery, we look forward to its growing role in championing the creation and maintenance of excellent clinicians in the field of cardiothoracic surgery.

**Conflicts of interest:** none declared.

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