

Entrepreneurial Women in Radiology: Role Models of Success

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Abstract

Radiology is undeniably male dominated. Alongside surgery and orthopedic surgery, academic radiology ranks near the bottom in having the lowest proportion of full-time female faculty members. Despite many efforts to recruit talented women, the pipeline entering the radiologic disciplines continues to flow at a trickle. One factor is the relative lack of role models for female medical students. Entrepreneurial women in radiology can lead the field with their innovation and creativity, courage, and commitment. In this article, the authors highlight two entrepreneurial female radiologists who shared their success stories at the American Association for Women Radiologists' session at the 2015 ACR annual meeting. Their successes underscore the potential for such women to serve as role models to female medical students and even college undergraduates. Despite the gender gap in radiology, the field has yielded some exceptional women who can take on challenges, overcome barriers and assume risks, create strategies and processes to operationalize their visions, secure funding, and expand their enterprises to make sustainable impacts both at home and abroad. As we move toward more patient- and family-centered care models and become increasingly visible to diverse populations, there is no better time for female leaders in radiology to inspire the next generation to join our essential and rewarding specialty.

Key Words: Leadership, entrepreneurship, women, gender equity, role models, radiology

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THE ENTREPRENEURIAL CHALLENGE AND THE GENDER GAP

It is useful to frame this discussion in the context of entrepreneurship, with parallels drawn to the business and science communities. An entrepreneur is one who organizes, manages, and assumes the risks of a business or enterprise. An inherent capacity for creative, assertive leadership is generally associated with men; this assumption is reinforced by the fact that there are few female leaders as role models in the corporate world. Despite achieving gender parity in the American

workforce during the past 40 years, women account for only 3.2% of the chief executive officers (CEOs) of *Fortune* 500 companies [1]. Women have gained little ground during the past decades in exercising entrepreneurship. In 1999, fewer than 5% of American startup businesses receiving venture capital had women on their executive teams [2]. Although that number rose to 18% in 2013, still only 2.7% of more than 6,500 such companies had women as their CEOs [3].

Variables that may account for this gender gap in the business world include greater access to networks for men and a perception that women may not have the requisite skills for driving financial success. The gender gap seems particularly striking in technology and engineering sectors such as Silicon Valley and "STEM" (science, technology, engineering, and mathematics) fields [4]. The gender ratio of executives in technology companies in the Silicon Valley 150, the San Francisco Bay area's top technology companies, is 89% men, 11% women [5]. Despite objective evidence that women perform as well as men and are equally interested in pursuing science and engineering degrees,

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adherence to commonly held beliefs about lesser aptitude and implicit bias remain barriers [6,7].

WHY IS GENDER BALANCE IMPORTANT?

Our industry counterparts recognize the potential drag on their competitiveness should they fail to aggressively correct lapses in gender equity. For example, Intel committed \$300 million to diversifying its workforce over the next three to five years [8]. The 10,000 Women initiative launched by the Goldman Sachs Foundation was designed to provide business education, access to mentors and networks, and the links to capital for underserved women operating small businesses around the world [9]. For those women who beat the odds and become entrepreneurial leaders, what are the factors predictive of success? Although there is no clear formula, successful women tend to demonstrate resilience, assertiveness, abstract reasoning, openness, risk taking, and empathy [10]. These women can serve as role models for the next generation, and this is certainly applicable to the specialty of radiology.

The stagnant progress in closing radiology's gender gap is likely multifactorial [11]. We cannot dismiss mounting evidence that unconscious or implicit bias leads to undervaluing of women in academia and science overall [12]. The strong identification of radiology with the physical sciences and STEM disciplines may further reinforce a perception of our field as unwelcome territory for women. Women in STEM fields report isolation, a perception that they must both repeatedly prove their worth and conform to a gender-role tight-rope (ie, in balance between "too feminine to be competent, and too masculine to be likable") [4]. The relative lack of direct patient contact is often put forth as a potential deterrent to female medical students selecting radiology as their field of choice, with some data to support this as a factor [13]. A paucity of role models and mentors for medical students is a perpetual issue as well [14]. We chose herein to highlight the successes of women in radiology who have excelled in creative ways that directly affect patients. Increasing the visibility of these and similar success trajectories may inspire more women to seek careers in our field [15].

Indeed, if our trainee pipeline is not fueled, then prospects for increasing gender diversity in practices and leadership positions remain limited. Among academic clinical departments, radiology ranks along with surgery and orthopedic surgery for having the lowest proportion of full-time female faculty members [16]. The percentage of women in surgery has seen gains from 2003 to 2013

(from 40.7% to 45.9%), whereas the figure for radiology has not changed during this same time period (from 25.9% to 26.8%). Without specific and thoughtful intervention, our long-standing gender gap may continue to perpetuate a culture unwelcoming to female trainees [17]. The ACR's Commission on Women and General Diversity and the American Association for Women Radiologists represent two organized efforts to influence this prospect [18,19]. The discipline of radiology and imaging sciences depends on nurturing the best and brightest innovators [20]. By not attracting the full spectrum of female medical student talent to careers in radiology, our field's lack of diversity will be at a strategic disadvantage in a rapidly changing health care environment.

ENTREPRENEURSHIP IN RADIOLOGY: TWO ROLE MODELS OF SUCCESS

By way of example, featured here are the success stories of two entrepreneurial women radiologists who successfully articulated their vision, created strategies and mastered logistics, executed innovative plans, and mobilized needed funding at home and abroad. Stamatia Destounis, MD, is currently a clinical professor, and Kristen DeStigter, MD, is currently a vice chair of radiology. They, and women like them, can serve as role models for the new generation of medical students, most of whom are unaware of and unfamiliar with radiology as a specialty field.

ROLE MODEL OF SUCCESS AT HOME: DELIVERING PATIENT-CENTERED IMAGING CARE

Early Patient-Centered Radiology

In the early 1970s, a pioneering radiologist, Wende W. Logan-Young, MD, envisioned a personal breast imaging center that would take into consideration each patient's physical and emotional well-being. Dr Logan-Young's clinic became one of the first freestanding centers dedicated to mammography in the country. Although it started small, with minimum overhead, the patient base slowly grew and expanded. Breaking tradition, Dr Logan-Young persuaded referring physicians to accept that the clinic would give the mammographic results directly to patients immediately after their examinations and established this as standard practice from the day the clinic opened its doors in 1975 [21]. In 2008, Dr Logan-Young passed the torch of leadership to Dr Destounis and her partners, who have carried on the mission of open communication and patient-centered

practice, and to educate patients, referring providers, residents and medical students.

Making It All Work

A successful practice must have dedicated and educated staff members. Patient advocates provide personal and emotional support. All team members are knowledgeable and courteous and promote the vision and mission of the facility. Constant innovation in imaging technology is also paramount. Becoming involved with the local and state chapters of the American Cancer Society allowed Dr Destounis to stay updated on the latest breast imaging research, participate in clinical trials, and implement new imaging modalities. Review of clinical outcomes, quality and performance metrics, and patient satisfaction has kept the practice evolving in a positive and meaningful direction for all patients.

Business Growth Without Compromise

Recognized as an ACR Center of Excellence, the practice has grown nearly five times in volume since 1993. The practice has established itself as a second-opinion referral base for New York and neighboring states. Its unique brand of personalized service has continued to improve: patients can have same-day diagnostic evaluations and biopsies, if necessary; a radiologist sees all diagnostic patients; and pathology results are provided within 24 to 48 hours by a radiologist, who can directly answer any questions and concerns at that time. A genetic assessment program began in 2011 and has grown to two genetic counselors and four support staff members [22].

Maintaining a high-volume outpatient breast imaging center is challenging on two fronts: (1) the high-quality clinical operation and (2) the business and finances. The clinical operation requires strong commitment to quality, standardized care, and advanced technology. The business and financial challenges include updating the business plans as well as marketing available new technology and clinical research to referring providers and patients alike. It is imperative to investigate promising technologies to improve breast cancer detection and maintain a practice that is competitive in the region.

ROLE MODEL OF SUCCESS ABROAD: BRINGING OBSTETRIC ULTRASOUND TO RURAL AFRICA

Low-resource countries do not have access to the simplest lifesaving medical imaging technology. This health disparity motivated Dr DeStigter and her team to make a global impact by bringing ultrasound technology to rural

Africa. Dr DeStigter founded a nonprofit organization, secured supporters, and designed a program by leveraging the idea of “public-private partnerships.” Benefits of the nongovernmental organization–facilitated multiple-stakeholder initiative include shared values and individual capabilities that synergistically produce strong programs that are locally sustainable, globally scalable, clinically credible, and economically viable. Imaging the World (ITW) integrates medical knowledge and business acumen to create innovative imaging partnerships that are sustainable and scalable.

ITW offers high-quality, point-of-care obstetric ultrasound examinations as part of routine antenatal care in rural Uganda. Dr DeStigter trained local health care workers to perform the ultrasound examinations, which have improved early diagnosis of high-risk pregnancies and appropriate management of women and their babies. To date, ITW has performed more than 50,000 obstetric scans, changed 23% of birth plans, and increased antenatal visits and deliveries at rural health centers by 70%. More important, husbands now accompany their wives to the clinics, reflecting a dramatic cultural shift that has profound implications for improving women’s and children’s health.

Taking the First Steps Toward the Goals

The first step for ITW was to become a legitimate and trusted organization in Africa and in the eyes of potential partners. Attaining this goal involved registering as a nongovernmental organization in Uganda, developing project charters with stakeholders, and creating a board of directors, an executive leadership team, and working groups. All of these preparatory business activities needed to be completed before ITW could begin its clinical programs. With strong support from major global partners among the charitable foundations and corporates, ITW implemented its pilot program in rural Uganda in 2010. Currently 10 health facilities in three districts operate with integrated ultrasound services.

Developing a Sustainable Model

Ultrasound is ideal for efficient clinical service expansion: the same system can be applied to obstetric and gynecologic as well as to abdominal, pediatric, breast, and cardiac imaging. ITW introduces each new program and/or clinical service with an eye toward building additional capacity, strengthening clinical and educational capabilities, conducting community outreach, expanding in-country government collaborations, and meeting rigorous quality assurance standards. ITW also entered

into research agreements and developed new collaborations with local and international organizations. Such global efforts convinced local policymakers about the need for integrating imaging into patient care and the economic rewards of improving health care for the underserved.

Expanding Clinically and Geographically Through Return of Investments

ITW has gained the trust of the Ugandan Ministry of Health, local health care providers, and the communities for delivering clinical excellence. ITW's sustainable business model has allowed each clinic to operate independently and funnel net revenue back into their respective programs so that clinics can fund significant purchases such as ambulances, facility renovations, and new medical equipment. This strategy enables ITW to expand its operations farther into other regions in Africa (Malawi).

To train ultrasonographers effectively, ITW recently introduced an ultrasound training curriculum into a three-year nursing program at the Uganda Nursing School Bwindi. In Bwindi, there has been only one registered nurse per 40,000 people; the nursing school's graduates are crucial to changing health care. Students sign an agreement to practice in rural Uganda for three years, thus ensuring that the ultrasound skills they learn will be used in the regions of greatest need.

Through her successful work, Dr DeStigter has proved that visionary radiologists can apply the tools and techniques common among businesses and large-scale charitable operations to become compassionate global entrepreneurs.

ENTREPRENEURSHIP: ROLE MODELS FOR SUCCESS

Drs Destounis and DeStigter are clearly role models for medical students and radiologists. Despite the perceived lack of gender equity in our field, such success stories showcase exceptional female radiologists who overcame barriers, faced challenges, assumed business risks and challenges, created strategies and processes to operationalize their visions and passion, secured the needed funding, and expanded their enterprises to make a sustainable impact and growth.

In the business world, women have achieved groundbreaking success in recent years. Ginni Rometty was appointed as the first female CEO in the century-old technology company IBM. Sheryl Sandberg, the chief operating officer of Facebook, and Marissa Mayer, the

CEO of Yahoo, are just two well-known examples. The pipeline in the business world is improving. The percentage of female MBA students is approaching one-third at Harvard and Wharton. A study by Catalyst showed that *Fortune* 500 companies with the highest representation of women on their boards of directors attained significantly higher financial performance compared with those with the lowest representation—on average by 53% [23]. The positive correlation between gender equity, as well as racial and ethnic diversity, on boards and corporate performance is evident across most industries, from consumer discretionary to IT [24].

What are the common characteristics of these successful business women [25]?

- Successful business women: articulate their achievements and get credit for their performance.
- Know their strengths and weaknesses. Insights and self-knowledge are key.
- Proactively seek recognition, whereas many women wait to be asked.
- Build networks and cultivate relationships with colleagues (male and female).
- Develop negotiation skills; women do not negotiate as often as men do, in part because of social expectations or stereotypes.

How can entrepreneurship and success in the business world be translated into the field of radiology? Here are five key steps that drive success:

1. Have a clear vision and articulate your vision to convince supporters.
2. Actively network with those who share your vision.
3. Develop a strategy and business plan.
4. Negotiate to mobilize resources.
5. Develop a process and metrics that measure success.

SUMMARY

Radiology is male dominated. There are many efforts under way to identify ways to recruit women into the field. As seen in the practice of breast imaging, we are moving toward more patient- and family-centered care models and must demonstrate the value of the care we deliver in the rapidly changing health care landscape. Thus, there has been no better time in history for entrepreneurial female radiologists to emerge as innovative and successful leaders and serve as role models for the next generation. If the main ingredients of success are resilience, energy, and compassion, female radiologists should have it all.

TAKE-HOME POINTS

- The gender gap in the business world presumably is due to greater access to networks for men and a perception that women may not have the requisite skills for driving financial success.
- Entrepreneurial characteristics of creative and assertive leadership are often perceived as male qualities.
- The long-standing gender gap in radiology may become an impediment to a diverse radiology workforce and represents a lost opportunity for not fully leveraging the intellectual capital of women.
- For female radiologists to be successful entrepreneurs, it is essential that they have clear visions and innovative ideas, articulate and convince supporters to provide resources, generate concrete business plans, build teams to work toward the common goals, and develop processes and metrics to measure success.
- Successful female radiologist-entrepreneurs represent a game-changing group who can serve as inspirational role models for medical students and those preparing to choose specialty careers.

REFERENCES

1. Barsh J, Yee L. Unlocking the full potential of women at work. Available at: http://www.mckinsey.com/Client_Service/Organization/Latest_thinking/~media/McKinsey/dotcom/client_service/Organization/2012_May_Women_Matter/Unlocking_full_potential_of_women_at_work_v2.ashx. Accessed July 1, 2016.
2. Brush CG, Carter NM, Gatewood E, Greene PG, Hart MM. Venture capital access in the new economy: is gender an issue? In: Hart DM, ed. *The emergence of entrepreneurship policy: governance, start-ups and growth in the knowledge economy* Cambridge, United Kingdom: Cambridge University Press; 2003:141-54.
3. Brush CG, Greene PG, Balachandra L, Davis AE. Diana report: women entrepreneurs 2014: bridging the gender gap in venture capital. Available at: <http://www.babson.edu/academics/centers/blank-center/global-research/diana/documents/diana-project-executive-summary-2014.pdf>. Accessed July 1, 2016.
4. Williams JC. The 5 Biases Pushing Women Out of STEM. Harvard Business Review. Available at: <https://hbr.org/2015/03/the-5-biases-pushing-women-out-of-stem>. Accessed July 1, 2016.
5. Fenwick & West, LLP. Gender diversity in Silicon Valley: a comparison of Silicon Valley public companies and large public companies. Available at: http://www.fenwick.com/FenwickDocuments/Gender_Diversity_2014.pdf. Accessed July 1, 2016.
6. National Academy of Sciences, National Academy of Engineering, Institute of Medicine. Beyond bias and barriers: fulfilling the potential of women in academic science and engineering. Available at: <http://www.nap.edu/catalog/11741/beyond-bias-and-barriers-fulfilling-the-potential-of-women-in>. Accessed July 1, 2016.
7. Banaji MR, Greenwald AG. *Blind spot: hidden biases of good people*. New York: Delacorte; 2013.
8. Guynn J. Intel pledges diversity by 2020, invests \$300 million. USA Today. Available at: <http://www.usatoday.com/story/tech/2015/01/06/intel-diversity-brian-krzanich-keynote-ces-2015/21361475>. Accessed May 5, 2016.
9. Goldman Sachs. Investing in the power of women—a report on the 10,000 Women program. Available at: <http://www.goldmansachs.com/citizenship/10000women/news-and-events/10kwprogressreport.html>. Accessed May 5, 2016.
10. Caliper Research and Development Department. Women leaders research paper. Available at: <http://www.calipermedia.calipercorp.com.s3.amazonaws.com/whitepapers/us/Women-Leaders-2014.pdf>. Accessed July 1, 2016.
11. Forman HP, Larson DB, Kaye AD, et al. Masters of radiology panel discussion: women in radiology—how can we encourage more women to join the field and become leaders? *AJR Am J Roentgenol* 2012;198:145-9.
12. Moss-Racusin CA, Dovidio JF, Brescoll VL, Graham MJ, Handelsman J. Science faculty's subtle gender biases favor male students. *Proc Natl Acad Sci U S A* 2012;109:16474-9.
13. Fielding JR, Major NM, Mullan BF, et al. Choosing a specialty in medicine: female medical students and radiology. *AJR Am J Roentgenol* 2007;188:897-900.
14. Jaggi R, Griffith KA, DeCastro RA, Ubel P. Sex, role models, and specialty choices among graduates of US medical schools in 2006-2008. *J Am Coll Surg* 2014;218:345-52.
15. Downs JA, Reif LK, Hokeroro A, Fitzgerald DW. Increasing women in leadership in global health. *Acad Med* 2014;89:1103-7.
16. Association of American Medical Colleges. The state of women in academic medicine: the pipeline and pathways to leadership. Available at: <https://members.aamc.org/eweb/upload/The%20State%20of%20Women%20in%20Academic%20Medicine%202013-2014%20FINAL.pdf>. Accessed July 1, 2016.
17. Carr PL, Gunn CM, Kaplan SA, Raj A, Freund KM. Inadequate progress for women in academic medicine: findings from the National Faculty Study. *J Womens Health (Larchmt)* 2015;24:90-9.
18. Lightfoote JB, Fielding JR, Deville C, et al. Improving diversity, inclusion, and representation in radiology and radiation oncology part 2: challenges and recommendations. *J Am Coll Radiol* 2014;11:764-70.
19. Lightfoote JB, Fielding JR, Deville C, et al. Improving diversity, inclusion, and representation in radiology and radiation oncology part 1: why these matter. *J Am Coll Radiol* 2014;11:673-80.
20. Roubidoux MA, Packer MM, Applegate KE, Aben G. Female medical students' interest in radiology careers. *J Am Coll Radiol* 2009;6:246-53.
21. Hoffman NY, Janus J, Destounis S, Logan-Young W. When the patient asks for the results of her mammogram, how should the radiologist reply? *AJR Am J Roentgenol* 1994;162:597-9.
22. Chaliki H, Loader S, Levenkron JC, Logan-Young W, Hall WJ, Rowley PT. Women's receptivity to testing for a genetic susceptibility to breast cancer. *Am J Public Health* 1995;85:1133-5.
23. Joy L, Carter NM, Wagner HM, Narayanan S. The bottom line: Corporate performance and women's representation on boards. *Catalyst* 2007. Available at: <http://www.catalyst.org>. Accessed April 21, 2016.
24. Hunt V, Layton D, Prince S. Why diversity matters. Available at: <http://www.mckinsey.com/business-functions/organization/our-insights/why-diversity-matters>. Accessed July 1, 2016.
25. Symonds M. 10 Traits of women business leaders: they're not what you think. *Forbes*. Available at: <http://www.forbes.com/sites/mattsymonds/2012/08/08/10-traits-of-women-business-leaders-its-not-what-you-think/print/>. Accessed July 1, 2016.