



SBINews

The Member Newsletter of the Society of Breast Imaging



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Welcome Back!

#SBISummerSeries



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President's Column

OUR SBI MISSION:

To save lives and minimize the impact of breast cancer

OUR SBI VALUES:

Patient-centered and evidence-based care

Excellence in education

Scientific integrity

Collaboration and collegiality

Respect for diversity and inclusiveness



Emily Conant,
MD, FACR, FSBI
President of the SBI

Now that so many across the country have rolled up their sleeves for vaccinations and are beginning to venture out, we are all wondering, "What will the new normal be?" During the pandemic, many people were reluctant to seek breast care. However, breast imaging clinic attendance and imaging volumes are now rebounding. We are seeing the grave consequences of delayed or skipped screens and/or diagnostic breast evaluations. These delays are impacting not only patient outcomes but also the wellness of our workforce. Our technologists, nurses, trainees, radiologists, and other health care providers have all been experiencing heightened stress and anxiety over this incredibly challenging year. We need to work together to build new and improved breast care pathways along with wellness practices for our breast care teams.

Despite the challenges of the past year, we have many things to celebrate. Our society is stronger than ever, with over 3500 members. Our outgoing SBI president, Dr Jessica Leung, and our amazing administrative team kept us focused and moving forward despite the many challenges. Please join me in thanking Dr Leung for leading us through such turbulent times!

We must also celebrate the incredible success of the 2021 symposium! During the devastating pandemic, our SBI held a robust and successful virtual SBI/ACR Breast Imaging Symposium. Our innovative team leveraged novel applications attracting 3523 attendees from 109 countries—the largest number ever! While we certainly missed the in-person networking, the access and influence of the virtual platform were undeniable. The success was, once again, due to our incredible administrative support team and faculty who planned, collaborated, and tested and retested formatting to create the virtual symposium. Because of the enthusiastic feedback for the virtual meeting, the 2022 SBI Symposium Program Committee is actively working on a hybrid format to maximize accessibility for future symposia.

The productive committees and teams continue to work together to advance the main objectives of our society's strategic plan: expertise, influence, and personal and professional development for

breast imagers. Inherent to these objectives are robust educational programs combined with committee work to advance patient-centered and evidence-based care in breast imaging. Reflecting our mission and the society's growing membership, we have also created a new position on the Board of Directors: the director of membership and equity. This important position will serve as a liaison for our committee work and also for the entire membership. The position will ensure that we continue to build a more diverse and inclusive SBI. Please join me in welcoming Dr Laurie Margolies as the first director of membership and equity.

In addition to the new board position, the Mentorship Committee and the Inclusion Diversity Equity Alliance are actively involved in creating new online educational resources for patients and health care professionals. These resources advance the common goal of improving inclusion, diversity, and equity in breast care in collaboration with patient advocacy groups and other radiology organizations. As we work together to implement these important initiatives, it will take support and participation from all of us to ensure a more equitable society for all members.

As summer kicks off, so does the exciting lineup of the SBI's Summer Educational Series starting Wednesdays at 7 PM EDT from June 9 through July 28. Topics include the following:

- COVID Update—Screening + Vaccine
- All-Virtual Fellowship Interview Season—What Worked, What Didn't
- Breast Imaging Education Roundtable
- Risk Assessment and Current Screening Recommendations
- Dense Breasts
- Breast Procedures
- Breast Imaging Toolbox (including discussion of newer modalities)

On May 6, 2021, the US Preventive Services Task Force (USPSTF) publicly posted their final draft research plan including updates to their breast cancer screening guidelines. The exact date for finalization and release of these updated guidelines is unknown, but the SBI and our sister organization, the Canadian Society of Breast Imaging, are actively engaged in sending feedback to the USPSTF. Please look for important updates as the story continues to evolve.

Thank you again for all of your support and commitment to the society and breast care. It's a great honor to be able to work with you all toward our shared goal of improving our incredibly dynamic field of breast imaging.

Best regards,

A handwritten signature in black ink that reads "Emily F. Conant MD". The signature is written in a cursive, flowing style.

Emily Conant, MD, FACR, FSBI
President of the SBI

Editor's Note

By Shadi A. Shakeri, MD, FSBI (Twitter: @shadishakeriMD)

As we continue to discover how to best live through the COVID-19 pandemic, practicing self-care as physicians has become more urgent than ever. Because of the coronavirus health crisis, health care workers have suffered from immense stress, burnout, depression, and anxiety. Dr Rosenberg, the president of the American College of Emergency Physicians, spoke to the *New York Times* about the similarities between the COVID-19 pandemic and war trauma.¹



Shadi A. Shakeri, MD, FSBI

He discussed the “hidden trauma” health care workers face on the front line, stating that these effects are comparable to posttraumatic stress disorder.¹ Caring for patients, losing loved ones, losing colleagues, losing patients—we have certainly been through a lot in the past year.

One important way to heal and move forward as a community of physicians is to take time to care for ourselves. Whether that means seeking therapy, spending time with loved ones, or rejuvenating outdoors, it is imperative that we strive to appreciate ourselves and our strength. In a time when we have been so focused on our physical safety from the virus, it is essential that we spend time taking care of our mental health too. Practicing self-care can be any small act of kindness or mindfulness. Reading a book, taking a walk, simply sitting outside in the sun, or being extra kind to your mind and body are all ways to practice self-care.

When I first began thinking about the importance of self-care, I worried that these efforts would be considered selfish. However, a focus on self-care does not detract from our focus on serving communities through medicine. Nourishing and healing ourselves enables us to become stronger and more compassionate physicians who can better empathize with our patients. To have the mental capacity and strength to engage with our patients fully, we must dedicate a little time every day to practice charity and mindfulness with ourselves.

Several articles in this issue speak to the act of healing and making time for ourselves. Eric L. Rosen, MD, FSBI, discusses the importance of spending time in nature in his article “Nature and Wellness.” He imparts the significance of spending daily 15-minute chunks of time outside and the benefits of immersing oneself in

the wondrous natural world. The article “Why Academic Breast Radiology?” by Dr Kerger and Dr Sharma presents to trainees the expert advice of several breast radiologists in finding an appropriate work-life balance and choosing a fulfilling career track. In the same vein, Dr O’Brien’s article “Looking Forward: Breast Imaging Fellowship Applications for the 2023-2024 Academic Year” advises fellows on how to plan and prepare for the upcoming application season so that they are not overwhelmed.

Since this is my last column as editor of the newsletter, I want to thank those who have come before me and everyone who has contributed. It has been an honor to serve in this role, following the footsteps of Gary Whitman, MD, FACR, FSBI, and Peter Eby, MD, FACR, FSBI, and to work with the remarkably talented contributors and committee members. I am delighted to pass the baton to Vilert Loving, MD, MMM, FSBI, who will undoubtedly guide this excellent team with his visionary leadership to new heights. I have loved being in this role, and I thought it fitting to end my time as editor with a column focusing on self-care, a topic I think we all could spend more time thinking about in these stressful times. I am so thankful to have been given the privilege of your time for the past 2 years.

As always, I welcome your thoughts and suggestions. Please email me at sshakeri@ucdavis.edu.

Reference

1. Jacobs A. Frontline health care workers aren't feeling the “summer of joy.” *New York Times*. July 2, 2021. Accessed August 3, 2021. <https://www.nytimes.com/2021/07/01/health/covid-nurses-doctors-burnout.html>



Virtual ACR 2021: Recap and Looking Toward the Future

By Amy K. Patel, MD

The ACR Virtual Annual Meeting took place from May 15 to 19, 2021. The ACR Council, which represents councilors from all state societies, select specialty societies, military branches, and government services, worked tirelessly to adopt 44 resolutions. One of the most debated resolutions that was voted for adoption was Resolution 48, which supports parental, caregiver, and medical leave during training for residents in diagnostic radiology, interventional radiology, radiation oncology, and nuclear medicine.



Amy K. Patel, MD

The resolution includes support for 12 weeks of family/medical leave for residents without extension of training. Resolution 25, which calls for transparency and equitable practices regarding associates in practice equity transactions, was also heavily debated. This resolution mainly focuses on nonpartner radiologists who may not be aware of how a change in ownership of their practice affects their interests ranging from day-to-day practice and benefits to noncompete clauses. A task force will be creating an edited version of this resolution for potential passage by the ACR Board of Chancellors. Additional information on Council activity is available in the Report of Final Council (<https://www.acr.org/Login-Page?returnUrl=%2fLifelong-Learning-and-CME%2f-Meetings-and-Course-Calendar%2fACR-Annual-Meeting%2f-Meeting-Materials>).

Every year, the Moreton Lecture is delivered by an invited guest at the ACR Meeting. This year's lecture was given by Reshma Jagsi, MD, professor and deputy chair of radiation oncology at the University of Michigan and a sought-after speaker on the topics of gender and racial bias. She delivered a powerful analysis of the multitude of cultural and systemic barriers that prevent women from achieving leadership positions and competitive research support. She encouraged the entire field of radiology to advocate for change to ensure a more equitable future.

Another dominant theme of the annual meeting was health equity, included in a 2-part CME opportunity and, of course, the Moreton Lecture. In her impactful presidential address, Geraldine McGinty, MD, MBA, FACR, challenged radiology to advance health equity. She also unveiled the Radiology Health Equity Coalition, whose objective is to support those who strive to address health inequities in areas such as advocacy, research, artificial intelligence formulation, and medical student recruitment.

The annual meeting also featured an exemplary panel on imaging economics featuring Dr Lauren Golding, ACR Relative Value Scale Update Committee advisor and ACR MACRA [Medicare Access and CHIP Reauthorization Act] Committee chair.

One of the many high points of the meeting was an exciting first for the College: the election of internationally renowned radiologist

Beverly G. Coleman, MD, FACR. Dr Coleman is the first African American president in the nearly 100-year history of the College.

As always, the meeting wrapped up with Capitol Hill Day on Wednesday, May 19, when ACR members were encouraged to meet with elected members of Congress in their respective states. Although Hill Day was held virtually, over 450 radiologists and radiation oncologists participated in what was felt to be an extremely successful lobbying day. Topics that were discussed with elected officials included mitigating Medicare's physician payment cuts related to the ongoing evaluation and management (E/M) codes. E/M codes were recently restructured and revalued, resulting in increased payments for primary care and other office-based services to the detriment of subspecialties such as radiology. The goal of these cuts was to achieve budget neutrality. The ACR urged lawmakers to retain the current 3.75% increase to the Medicare Physician Fee Schedule (MPFS) conversion factor in 2022 to ensure fiscal stability for physicians and practices; encouraged them to consider long-term reforms to mitigate major shifts within the MPFS, including exploring alternatives to budget neutrality; and waive pay-as-you-go requirements associated with the American Rescue Plan Act to avoid an automatic 4% payment reduction in 2022.

Another topic discussed was a proposed amendment to the Protecting Access to Medicare Act of 2014. This amendment would avoid further delays of implementation of the appropriate use criteria (AUC) by enacting technical corrections to streamline the AUC imaging and ordering consultation process and provide further exclusions to ordering providers who participate in advanced alternative payment models and clinical trials.

Last, but certainly not least, the ACR members urged lawmakers to cosponsor and advance S 610/HR 1667, the Dr Lorna Breen Health Care Provider Protection Act. Dr Breen was an emergency physician in New York City who died by suicide in April 2020. Her death was preceded by weeks of caring for COVID-19 patients during the city's initial peak, and she feared she was "letting down" her colleagues and patients. She also felt that her career would be ended by seeking treatment, which she did eventually seek. This past spring the breast imaging community

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SBI Committee Updates

By Yasmeen J. Fields, CAE



Yasmeen J. Fields, CAE

The **SBI volunteer committees are the foundation for SBI's growth**, and the SBI's success is directly attributed to the many members, past and present, who have generously shared their knowledge, time, and expertise. Volunteers have contributed hundreds of hours this year to support the staff and society as a whole to carry out the objectives of the SBI strategic plan.

New leadership ushered in the 2021-2022 volunteer cycle for the **Communications and Advocacy Task Force (CATF)**. Dr Murray Rebner, who led the task force from its inception, recently transitioned the chair role to Dr Sally Friedewald. Drs Stamatia Destounis, Kelly Biggs, and Vilert Loving also joined the task force for this cycle. The CATF was established in 2018 with a set of objectives, in support of the strategic plan, to elevate the society in the areas of communication and advocacy. Dr Rebner and the task force successfully and effectively fulfilled the 2-year plan. The society is grateful for the work and dedication of outgoing CATF members Drs Amy Patel, Shadi Shakeri, Nicole Saphier, and Peter Eby.

The **CME and SAM Committee** met in June to welcome new committee members and review the current SBI education opportunities and future activities. The committee discussed the self-assessment module offered at the 2021 SBI/ACR Breast Imaging Symposium, the upcoming live summer webinars on the business of radiology, and new modality-specific opportunities. The Mammography Positioning in the Digital Era series, launched in 2018, is being reviewed by the committee for CME/CE renewal.

The **SBI Fellows Committee** held its spring business meeting via Zoom on April 26. Fellows were able to mingle for the first portion of the event before Dr Elizabeth Morris, chair of fellows, began reviewing business. The Fellows Committee reviewed and approved 9 new SBI fellows, each of whom was introduced by their supporting fellow during the meeting. For more details on these new fellows, please visit the "New SBI Fellows" article in this newsletter.

The **Patient Care and Delivery Committee** has been hard at work producing manuscripts from its recent member surveys. The article on transgender breast imaging practice patterns has been submitted to the *Journal of the American College of Radiology (JACR)*; part 1 of the COVID-19 survey was accepted by the *Journal of Breast Imaging (JBI)*; part 2 of the COVID-19 survey was accepted by *JACR*; and part 3 of the COVID-19 survey has been submitted to *JBI*. The axillary imaging manuscript has been submitted to *JBI*. The committee will begin working on white papers on various topics and developing a 21st Century Cures Act information sheet for members.

The **Mentorship Committee** received nearly 600 responses after deploying its mentor match interest survey to SBI members. Several members of the committee plan to use the results of the survey as the basis of an article to be published in *JBI*. The committee will formalize the program training and development to build its roster of qualified mentors, after which a beta group will be invited to participate in the mentor match.

The **Resident and Fellow Section Committee** promoted this year's breast imaging match with a social media campaign. Using the hashtag #MammoMatch2021, members of the committee shared their own and others' experiences of the Match process. The committee also has tentative plans for a lecture series to include such topics as core review for residents and fellows and an introduction to breast imaging for medical students.

Having presented 2 live panel discussions in the first quarter of 2021 ("Wellness Expert Panel" in January and "Why Academic Breast Radiology?" in March), the **Young Physician Section Committee** is currently working on content development for the Young Physician Section column in the SBI newsletter. The committee will also continue to develop membership engagement, retention, and recruitment for early-career physicians.

The **Inclusion Diversity Equity Alliance** will host a webinar series with the goal of improving diversity and inclusion for our members and community. Part 1, hosted live on Wednesday, July 21, focused on the LBGTQ+ community and how we can better serve this patient population. The series includes Julia Applegate, director of Equitas Health Institute, Columbus, Ohio, and Julie Thompson, medical director of Trans Health at Fenway Health, Boston, Massachusetts. Both individuals and organizations are nationally recognized as leaders for education, research, and community engagement in providing care and reducing disparities for LBGTQ+ persons.

The **Fellowship Match Committee** welcomed 4 new members, Lauren Friedlander, MD, Gunjan Senapati, MD, Lilian Wang, MD, and Samantha Zuckerman, MD. Dr Janine Katzen succeeded Dr Rachel Brem as committee chair. The committee has assisted in the update of the Match Agreement Form and is actively monitoring the shift from in-person to virtual-only

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Highlights From the 2021 SBI/ACR Breast Imaging Symposium

By Nidhi Sharma, MD

The leading theme of the first virtual SBI/ACR Breast Imaging Symposium was “Optimize and Innovate,” with the opening day focusing on screening and access to care. Screening mammography was a key topic in the scientific symposium.



Nidhi Sharma, MD

The program covered a myriad of screening-related subjects, including factors to guide screening improvements, thoughtful perspectives and scientific debate on various recommendations for screening mammography, the role of risk assessment and tailored screening paradigms, and newer modalities for breast screening.

Informative sessions recognized different practice patterns, metrics and challenges pertaining to various practices, and the administration of practices at local and national levels. Speakers also identified barriers to accessing breast imaging care and developed strategies for improved service lines. A highly engaging talk on harmonizing screening mammography was the highlight of the first morning. This session wrapped up with a high-powered panel discussion with enthusiastic virtual audience participation.

The program opened with our immediate past president, Jessica Leung, MD, FSBI, professor of radiology and section chief of breast imaging at MD Anderson Cancer Center, Houston, Texas, handing over the gavel to our new president, Emily Conant, MD, FSBI, professor and division chief of breast imaging and vice chair of faculty development at the Hospital of the University of Pennsylvania, Philadelphia. Dr Conant led the meeting with an opening address, welcoming members and attendees from around the world. She extended heartfelt appreciation and thanked multiple key staff members for their continued hard work and efforts in organizing the meeting. Dr Conant expressed special thanks to the program committee members, including scientific chair John Lewin, MD, FSBI, for putting together an outstanding virtual conference.

Michael N. Linver, MD, FACR, FSBI, director emeritus of X-Ray Associates of New Mexico, was awarded the SBI 2021 Gold Medal for his outstanding work and contributions to the society. Therese B. Bevers, MD, FAAFP, from MD Anderson Cancer Center, received the honorary 2021 SBI Fellow Award for her tremendous work in leading clinical cancer prevention.

Keeping in line with the theme of Friday’s plenary session, Jack Cuzick, PhD, FRS, CBE, from the University of London, England, gave a keynote lecture titled “Risk Assessment in the Age of Precision.” He discussed the role of risk assessment and tailored screening paradigms to improve breast cancer screening outcomes. Following the keynote lecture were interesting presentations by Bethany Niell, MD, PhD, FSBI, from Moffitt Cancer Center, on

implementing risk assessment in the imaging clinic and by Connie Lehman, MD, PhD, FSBI, from Massachusetts General Hospital, Boston, on quantitative imaging and artificial intelligence (AI). Dr Jessica Leung then eloquently discussed novel paradigms for precision screening using liquid biopsy. The highly informative morning session concluded with an excellent question and answer panel. The panel expanded our knowledge by answering audience and moderator questions on varied topics. This discussion included an exciting conversation regarding methods to optimize screening access to newer technologies. The session left everyone invigorated and looking forward to a stimulating afternoon of educational sessions, including topics such as the impact of COVID-19 on breast imaging, politics of access and influence, and economics of access.

True to the theme of Saturday’s plenary session, “Optimize and Innovate—Diagnosis and Management,” the morning program began with a keynote lecture titled “Less May be More: Oncologist View,” by Charles Geyer Jr, MD, deputy director of Houston Methodist Cancer Center. He emphasized that multigene panels have been transformative in characterizing estrogen receptor–positive, ERBB2 (formerly HER2)–negative breast cancer over the past 2 decades and discussed the role of trastuzumab for ERBB2–positive breast cancer.

Dr Lewin, in his role as chair of the symposium’s scientific session, followed the keynote lecture with scientific award presentations. The Gerald D. Dodd Jr Award for outstanding research by a medical student or resident was given to Hemal Grover, MD, from the Icahn School of Medicine, for her work titled “Factors Influencing Fellowship Choices Among Radiology Residents.” Dr Grover discussed various strategies to make breast imaging rotations intellectually challenging and encouraged programs to incorporate breast imaging into first-year rotations. Additional proposed changes included increasing residents’ involvement in consults, diagnostic workups, and discussions about results and encouraging more male breast radiologists to be role models and mentors. The Wendell G. Scott Award for outstanding research by a fellow was awarded to Jeremy S. Paige, MD, PhD, from the University of California, Los Angeles, for his work titled “Comparison of Breast Cancer Risk Model Assessment at the Individual Woman Level.” Dr Paige discussed the substantial variability in the models used to categorize women as having low or high risk for developing breast cancer and the need for more

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Why Academic Breast Radiology?

By Amy L Kerger, DO; Nidhi Sharma, MD

Choosing to pursue private practice or academic medicine is a major decision for many trainees and early-career radiologists beginning their job search. Some have had experience in only 1 type of practice or have had limited exposure to the other. Additionally, there is variability in each of these categories. There are definite differences between the daily routines of each practice that can help guide what might be the best fit for a breast radiologist. Several factors affect the right decision for your career.



Amy L. Kerger, DO



Nikhi Sharma, MD

Jessica W. T. Leung, MD, FSBI, immediate past president of the SBI and professor and chief of the Department of Breast Imaging, Division of Diagnostic Imaging, University of Texas MD Anderson Cancer Center, Houston, recently participated in an expert panel discussion on academic breast imaging as a career. Dr Leung shared her insights on a long, successful academic career. She said, “Life comes with challenges; so does our career. The overall theme is that we love what we do and in many ways it’s a privilege that we get to go to work every day and do what is enjoyable and most meaningful to us. The academics part adds the dimension of education and research in a more natural setting, which is icing on the cake.”

In traditional private practice, a large portion of the job is focused on clinical work: reading studies, doing biopsies, talking to patients, and engaging patients’ health care providers. In an academic practice, your career will be a mix of clinical work, research, education, service, and administration. Radiologists can craft their career in academic medicine on the basis of their interests. Most academic practices offer multiple nontenure tracks focused on 1 or more of these areas in addition to the traditional tenure track. This flexible model is appealing because it allows faculty members to perform a mix of activities while still being great clinicians. It also allows breast radiologists to focus on areas that make them feel happy and fulfilled, promoting success for the individual and institution.

Asked what satisfied her most during a day in her academic practice, Bonnie N. Joe, MD, PhD, professor and chief of breast imaging, University of California, San Francisco, replied, “Mentoring [and] seeing my faculty do well...every success of the group is a success for me; and the friends made along the way, the mentorship, the camaraderie has really helped sustain me.” She added that “taking good care of patients, diagnosing a difficult cancer, making a good call—it all matters.”

Debra L. Monticciolo, MD, past president of SBI and ACR, 2019 SBI Gold Medal recipient, and professor, Department of Diagnostic Radiology, Baylor Scott & White Health, Temple, Texas, shared some high points in her academic career that made

all the hard work feel worthwhile: “It’s the little things that stick out the most in my mind, really; the joy of working with patients and the difference you make in their lives has really been paramount.” She underscored the importance of academic practice, saying, “From an academic standpoint, I would highlight being able to work with other people on this panel, even better to do what you love with people that you respect, admire, and like to work with, and I’ve been really fortunate to have that. Also being in academics, being questioned by your trainees on a daily basis, really elevates your game and pushes you to get better.”

Over the years, hybrid models have become more prevalent. The hybrid model typically involves a private practice contract with an academic affiliation or a private practice that provides radiology services at a large hospital system with residency and fellowship training programs. Subspecialty focus in the robust breast imaging market tends to be more prevalent in academics, although this also can occur in private practice. Similarly, larger private practice and hybrid groups are getting involved in research and national multicenter trials.

Typically, compensation and time off tend to be higher in private practice but can be somewhat commensurate depending on the type and location of the academic practice. When comparing these factors, one should look at the salary, bonus, retirement benefits, CME allowance, and academic/administrative time allotted. Also, many academic universities have discounts on classes for employees and their families. Academic rank promotion (assistant, associate, full professor) and administrative work also yield improved compensation over time.

Dr Leung commented, “Academic jobs come in a variety of flavors, depending on the locale, size of the practice, and timing of the job market.” She was asked what can be negotiated in an academic job, to which she replied, “Salary is not hugely negotiable. If asking for academic time, try to substantiate why and how you would use the allotted time to good use. Also, part-time versus full-time opportunities can be negotiated based on institutional policies and staffing needs.”



At many institutions, one can choose an appointment in the clinical, research, or tenure track. These descriptions may vary depending on the institution, but the overall themes remain similar.

The clinical track is for a faculty member whose principal career focuses are outstanding teaching, clinical and translational research, and delivery of exemplary clinical care. Clinical faculty may focus on a mixture of academic pursuits such as scholarship of practice, integration, and education. They can accomplish this by distinguishing themselves in patient care, teaching, innovative educational programs, or research. Within this track, faculty further distinguish themselves by choosing a specific pathway: clinician-educator, clinician-scholar, or clinical excellence.

The clinician-educator pathway is measured by teaching evaluations, innovative teaching methods, curriculum development, and publications. These clinicians can also demonstrate outstanding clinical service through education of peers and faculty by invitations to serve on national continuing medicine education or societal leadership committees.

The clinician-scholar pathway is measured by excellence in basic science, translational science, clinical research, and/or health services research, as defined by grant funding and publications. This track allows faculty to blend clinical practice and research.

The clinical excellence pathway is focused on faculty who demonstrate exemplary clinical care or unique areas of emphasis in patient management. They can do this by building signature clinical programs, serving as preferred providers, and developing a regional and/or national reputation for clinical service expertise. In this pathway, faculty devote 80% or more of their time to patient care and administrative services.

A true research track is for faculty who focus entirely on research. Research faculty meet benchmarks of research productivity such as securing grant funding and publications. Faculty are expected to establish a national level of recognition for their expertise. This includes but is not limited to invitations to review manuscripts or grant applications, lectures at a scientific society or other university, consultation with industry or governmental agencies, requests for collaboration from other universities, and requests to serve in central roles on multicenter studies. In many institutions, faculty members on this track are expected to obtain extramural funding to cover 100% of their salary.

Linda Moy, MD, senior deputy editor of *Radiology*, professor in the Department of Radiology at New York University Grossman School of Medicine, New York, and internationally renowned researcher, highlighted the importance of carving a niche area of interest for one's career by finding a topic one genuinely likes. Be it patient advocacy, screening disparities, or basic/clinical research, developing a niche is critical, especially when

advocating for our patients. It is also important to collaborate with peers in the field who have similar research interests.

The tenure track is not widely used by clinical faculty in radiology at many institutions. To get promoted on the tenure track, a faculty member needs to demonstrate excellence in discovery and dissemination of new knowledge, with recognition at national and international levels for their area of scholarship. This includes successful competition for extramural funding from National Institutes of Health grants. Many faculty on this path achieve promotion through bench research, but this track is also available to faculty who develop clinical and translational research programs. Although this track may sound similar to the research track, it differs in that these faculty members are expected to create and disseminate novel ideas through scholarship and the timeline differs from that of the other tracks.

The panel closed with a great discussion on key strategies to establish a work-life balance. All the panelists shared advice for young faculty in academic practice. Most advice was related to the themes of persistence, making small progress steps each day, keeping things in perspective, learning to say no to some opportunities, taking time to reflect and set up career goals, and finding a mentor who understands, supports, and champions you, to name a few.

Dr Moy commented on challenging times in one's career: "It's particularly challenging when you're trying to balance family life and work, trying to raise young kids in an environment of increasing clinical workload." She shared the lessons learned in these difficult times, saying, "This stage shall pass. It's important to be really kind to yourself and set realistic goals. Discuss your goals and struggles with your mentors to stay accountable."

Dr Monticciolo suggested that everyone "make sure you're enjoying yourself and doing things that further your goals." On discovering the right track, Dr Monticciolo added, "If you feel beaten down and tired all the time, then you'll know you are on the wrong track. Make sure you don't get too far off that track before you try to reset yourself." Similarly, Dr Leung shared that "a sense of community is important, be it your close family and friends or work and national colleagues. Do things that you enjoy, like a good meal or exercise." Dr Moy had a great point: "You need to pencil a time on the calendar to be off all electronics and social media, including your phone, and [you] have to keep that promise to yourself. Think of your free time as your most important commodity." Dr Joe added, "Prioritize and make time for yourself [and] your family; take up a sport and do things that keep you grounded and relaxed."

For further discussion about why to choose academics as career in breast imaging, be sure to check out the recent SBI Young Physician Section moderated panel discussion featuring Dr Leung, Dr Monticciolo, Dr Moy, and Dr Joe: <https://fb.watch/6QJw5poeYd/>

EUSOBI Young Club at ECR 2021

By Elisabetta Giannotti, MD; Paola Clauser, MD; Doris Leithner, MD; Maria Adele Marino, MD; Thiemo van Nijmegen, MD, PhD; Mirjam Wielema, MD; F. J. Gilbert

Once more, due to the global COVID-19 pandemic, the annual European Congress of Radiology (ECR) was held entirely online. Therefore, the European Society of Breast Imaging (EUSOBI) Young Club (EYC) decided to transform the popular EUSOBI Meet the Expert session into a successful online “Meet the Expert - Breakfast Edition.” With daily delicious breakfast recipes, this section was an excellent fresh start to the day.

During the Meet the Expert session, experts in the academic field shared how to start a research career or a project and how to get a manuscript published. There was consensus that the process starts with working with other radiological and clinical colleagues, reviewing the literature, and identifying a topic of interest. The multidisciplinary meeting was the perfect environment to inspire research projects with clinical relevance. Those with less experience or early in their career might consider starting with retrospective studies or a literature review article. When the research is ready to be published, the audience and target of the journal should be considered while keeping in mind its impact factor. If a paper is rejected, there is no need to despair; while one may feel disappointed, rejection should create renewed effort to submit to another journal! Experts encouraged using critical and constructive reviews as opportunities to refine the paper and grow as a researcher. Learning how to review papers for a journal and working as a reviewer were recommended to stimulate individual growth as a researcher.

Small groups of attendees were able to discuss several different topics with a group of breast experts and had the opportunity to directly ask questions every day in an informal setting. From Wednesday until Saturday morning, at 9 AM central European time, interesting conversations took place between enthusiastic experts, EYC Committee members, and attendees from all over the world. Countries represented included the United Kingdom, Germany, Italy, Sweden, France, Belgium, the Netherlands, Spain, Slovenia, Switzerland, the United States, Russia, Saudi Arabia, Egypt, South Africa, India, Syria, and Japan. Even a 4-legged friend joined the meeting!

One hot topic was the differences in screening programs across the globe and their underlying rationales. Currently, nationwide screening programs are not ubiquitously available. For instance, in India there is an opportunistic system where private clinics offer annual checkups; however, this is mainly in the wealthy and healthy regions of the country. On the other hand, one of the attendees shared her experiences in developing and implementing a nationwide Russian screening program as part of her PhD.

Different diseases have different distributions around the world, causing each country to have different needs with regards to breast imaging. Lately, breast radiologists in India have encountered a

remarkably large number of patients with granulomatous mastitis. This may be because SARS-CoV-2 infection results in reactivation of latent tuberculosis. Tuberculosis is known to be endemic in some African and Asian countries, such as India and Pakistan; endemic tuberculosis is likely correlated with increasing numbers of granulomatous mastitis cases. This is something to consider in European countries also, especially in women who have moved from Africa or Asia.

Another COVID-19-related hot topic was the risk of developing enlarged ipsilateral axillary nodes after a SARS-CoV-2 vaccine and optimizing the timing of mammograms accordingly. Enlarged axillary lymph nodes can be part of a reactive response to infection/inflammation but could also be a sign of breast cancer. The frequency of enlarged lymph nodes is variable with different vaccines (data available from a clinical trial: clinical palpable nodes after receiving AstraZeneca or Pfizer vaccine, <2%; after receiving Moderna vaccine, 16%). The number of asymptomatic enlarged nodes visible on mammography is expected to be higher. The presence of enlarged axillary lymph nodes in a screening mammogram requires the woman to be recalled, and the mammographers must document vaccination status, timing of injection, type, and side.

Because of the potential for enlarged lymph nodes on the side of the vaccination, the Drug Safety Research Unit in the United States has advised that breast screening appointments should be scheduled to take place before women receive a first dose of the vaccine or 4 to 6 weeks after the second dose. However, the National Health Service Breast Screening Programme in the United Kingdom does not recommend advising women to delay a screening appointment after a COVID-19 vaccination and continues the screening program as usual. This is due to the 9- to 12-week gap between the first and second doses in the United Kingdom, increasing the time interval from the previous screen and the concern of nonattendance at screening or vaccination.

This topic has been picked up by the press. It is very likely that this will raise patients' concern, with the unintended risk of women missing their screening appointment. Consequently, it is important that radiological societies and national screening programs address the issue.



One of the hot topics currently is artificial intelligence (AI) and its implementation in breast imaging. Breast radiologists should not be afraid of AI but rather should embrace it. In the future, AI will definitely change the breast radiologist's role by improving reading time, quality, and patient outcomes and experiences. Breast imagers could have more time and resources available to focus on an increasingly personalized approach to screening, diagnosis, prognosis, and prediction. AI would enhance our role in patient care by allowing a more patient-tailored approach, moving toward the ultimate goal of precision medicine in breast cancer.

Every expert provided 3 top tips for the next generation of breast imagers. You can find these here: https://www.eusobi.org/content-eusobi/uploads/EYC_Meet-the-expert-2021_3TopTips.pdf.

Finally, 2 of the EUSOBI experts, current President Prof Fiona J. Gilbert and former President Prof Francesco Sardanelli, received the Gold Medal from the hands of Prof Michael Fuchsjaeger, European Society of Radiology president and EUSOBI board member. In their speeches, they addressed the exciting future and challenges that young radiologists will face in their career.

Defying the obstacles of the COVID-19 pandemic, experts and EYC members alike are looking forward to repeating this successful virtual event for the annual EUSOBI scientific meeting in fall 2021 and to continue building bridges, hopefully at the much-loved live event in Vienna in 2022.

Virtual ACR 2021: Recap and Looking Toward the Future (continued from page 5)

also lost Dr Gretchen Butler, a young radiologist who practiced at Hennepin County Medical Center. This loss further emphasizes the need for action in the house of medicine. This bill would offer extensive resources and support for health profession students, residents, and health care professionals and would commission a federal study into health care professional mental health, burnout, and barriers to seeking care, with particular attention to the impact of the pandemic.

ACR 2022 will be once again held in the Washington Hilton,

where the meeting has previously been held. Many are very excited about returning to the meeting's historic roots. We hope to see you there!

Further Reading

ACR announces virtual Hill Day legislative issues. American College of Radiology. May 13, 2021. Accessed June 30, 2021. <https://www.acr.org/Advocacy-and-Economics/Advocacy-News/Advocacy-News-Issues/In-the-May-15-2021-Issue/ACR-Announces-Virtual-Hill-Day-Legislative-Issues>

SBI Committee Updates (continued from page 6)

interviews. Three surveys, under the purview of Dr Lisa Mullen, were administered to evaluate Match trends across 3 groups: program directors, rising fellows who matched in 2020, and rising fourth-year residents who matched in June 2021. The committee, along with Society of Chairs of Academic Radiology Departments (SCARD) liaison Dr Gary Whitman, also sent a formal letter to SCARD requesting that specialty societies may abide by their own rules and regulations regarding programs outside the Match.

The **Social Media Committee** began the new volunteer cycle with a transition of leadership from Dr Amy Patel to Dr Mitva Patel and welcomed 4 new members, Drs Fatima Sharif,

Gretchen Stipek, Erin Kutay, and Linda Larsen. In addition, on June 9 the committee launched the 2021 #SBISummerSeries with a discussion on the impact of COVID-19 on breast centers. The discussion also focused on the COVID-19 vaccine in relation to breast screening. The series featured interesting topics, expert panels, and engaging conversations for professionals, providers, and patients. The series was shown on Wednesdays through June and July, live at 7 PM EDT, on Facebook, YouTube, and Twitter.

Nature and Wellness

By Eric Rosen, MD

Before the COVID-19 pandemic, I never could have imagined how this past year would progress. Like most, I had never experienced a global pandemic. At the beginning, I thought the threat would last several months and then we would be back to normal. However, all of our lives have been changed by COVID-19. Because of the unprecedented challenges of the pandemic, everyone has adopted new strategies for daily living. We have all sought new ways to remain positive so that we have enough energy to be present at work and give our patients the care they deserve. During this time, I have relied heavily on nature to restore and refresh my mindset.

I love nature and I am lucky that I can walk to work every day. Since it's California, most days are sunny. During these 20-minute strolls, I usually focus on the morning smells, the cool air, and the suburban neighborhood sounds. Although some mornings I am preoccupied with random worries or modern sounds (cars honking, music blaring, people talking), most of the time I focus on nature: birds chirping, squirrels scampering, flowers budding, and trees swaying and growing. Each day ends with the same routine, but in reverse. As I walk, I initially process the workday's events but find that I am quickly redirected to the natural environment.

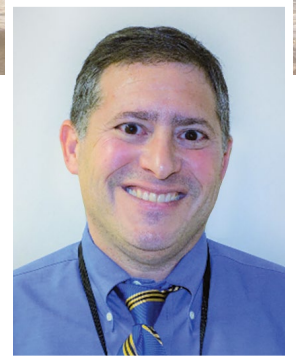
These micro-excursions in nature help me begin each day with curiosity and energy. When I arrive at work, I am calm and ready to experience the unfolding day. Likewise, I return home renewed in a way that I never experienced when I drove to work.

I realize that most people are not afforded the luxury of walking to work. However, I think we should all strive to spend 15 minutes outside at the beginning and end of our workday. For example, I used to walk my German shepherd before I left for work and when I got home. I used to delight in shifting my perspective to his; dogs are very focused on the present.

For me, my 20-minute walk to and from work is a mindful act. Mindfulness involves being fully present in each moment and has been shown to improve both mental health and well-being. Most people associate meditation with mindfulness, but there are numerous ways to practice mindfulness. Mindfulness is any activity that curbs our tendency to worry and allows us to focus on the present. When do you set aside time in your day to practice mindfulness?

Nature often finds a way to put everything into perspective, as I notice because I am constantly in awe of our beautiful world.

Recently I saw a photograph of the Milky Way, and I was floored. It was incredibly beautiful and profound. I found myself searching for places to view the Milky Way in California and was excited to see that Yosemite National Park, a 4-hour drive from me, has a perfect viewpoint. Since the Milky Way is only visible over the summer months and best seen when the moon is new, I reserved a tent in Curry Village and planned my trip for the optimal time. As I started the drive to Yosemite, I initially listened to NPR, my default radio station. About 2 hours in, I lost reception. Since I don't have Bluetooth and forgot my CDs, I just turned off the radio and drove in silence. Although I initially found my mind wandering toward worry and uncertainty, after 30 minutes I settled into a different rhythm. Off the highway, the road took me through several towns, and I soon found myself surrounded by trees: not just any trees, but huge redwoods and pines. With the windows down, I noticed that the air was filled with that balmy, resinous smell of pine sap and needles gently baking in the sun. I was engrossed in the experience. As I entered the Yosemite, I was unprepared for the awesomeness of the valley that opened up before me. There really aren't enough words to describe how beautiful this place is. And that was just the car drive! The whole weekend was filled with wonder, and I cannot remember thinking about anything more than the beautiful nature right in front of me. I achieved my goal of viewing the Milky Way from Glacier Point, atop a peak directly above Yosemite Valley across from Half Dome (see photo).



Eric Rosen, MD



Photo credit: Eric Rosen, MD

This experience highlighted how, at a basic level, getting out of our routine and spending time with nature can provide a mental break, foster mindfulness, and produce lasting positive memories.

We should all try to spend more time outside, whether it is just for a quick 15 minutes or for an immersive outdoor experience. It is a great way to practice self-care.

Highlights From the 2021 SBI/ACR Breast Imaging Symposium (continued from page 7)

research to better tailor risk assessment models to different populations. The late-morning session included discussions on paradigm shifts in ultrasound, magnetic resonance imaging, and molecular breast imaging, followed by a great live panel discussion. Continuing the theme of the day, the afternoon sessions included tumor board case-based presentations and scientific sessions focusing on cancer diagnosis and management.

The planning committee saved some great talks for Sunday's session, which had the theme "Optimize and Innovate—Practice Management." Donna Plecha, MD, chair of radiology at Case Western Reserve University, kicked off the morning by discussing trends in volumes of breast imaging studies, sharing Association of Administrators in Academic Radiology and other national benchmark data. Peter R. Eby, MD, FACR, FSBI, chief of breast imaging at Virginia Mason Medical Center, gave an innovative presentation discussing mergers and acquisitions in an unstable time. He won the audience members' hearts with his creative videography by presenting live from the shores of the Duwamish River and the hospital cafeteria. He emphasized the importance of setting priorities that support successful transitions for patients and staff members and creating a mission and vision to guide the team during rough times. Martha B. Mainiero, MD, FACR, FSBI, professor of diagnostic imaging at

Brown University, discussed the pertinent topic of wellness, associated risk factors, strategies for maintaining wellness, and stressors related to the COVID-19 pandemic. She advised that organizational interventions are effective and that leadership style matters. She concluded with the importance of cultivating meaning, control, and camaraderie at work and the importance of self-reflection to find inner peace and balance. The final morning sessions were aligned with invigorating practice management hot topics, including a chairperson's perspective and reimbursement issues. The session drew to a close with the topic of the role of AI in practice management, presented by Linda Moy, MD, FSBI, professor of radiology at New York University. She gave an informative and engaging talk and discussed that although AI models for breast imaging have focused mainly on the interpretation of various breast imaging studies, AI applications for workflow optimization can help improve clinical efficiency and patient throughput. Potential applications exist throughout the imaging value chain, especially with the upstream tasks of image acquisition and postprocessing.

Overall, this meeting was invigorating, pedagogical, and delightful. The virtual 2021 SBI/ACR Breast Imaging Symposium left attendees craving more. Thanks to the SBI staff and planning committee for bringing together this brilliant program with great national and international attendance.

Looking Forward: Breast Imaging Fellowship Applications for the 2023-2024 Academic Year

By Sophia O'Brien, MD

Congratulations to the newly matched class of breast imaging fellows for the 2022-2023 academic year! We are so excited to welcome you to the breast imaging community.

As we celebrate our new fellows, we are also looking ahead to the next application cycle. Here are some tips for current third-year residents interested in applying to a breast imaging fellowship for the 2023-2024 academic year.

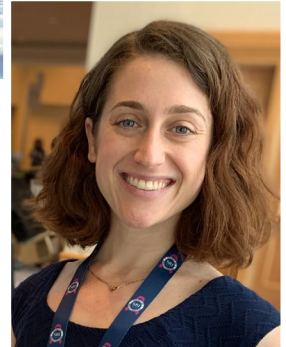
Overview of the application process:

- Review the [general timeline](#) created by the Resident and Fellow Section.
- Keep tabs on the official timeline for this fellowship application season on the [SBI Fellowship Match web page](#).
- Programs typically begin accepting applications in early August, with interviews in the late fall and winter of 2021-2022.
- Registration for the [National Resident Matching Program](#) typically opens in March, with rank lists opening in April and closing in June.
- Match Day will likely be mid-June 2022 for a fellowship starting July 1, 2023.

What should I be doing now?

- Review the resources available on the SBI Fellowship Match web page:
 - [Applicant guide to the Fellowship Match](#) is a fantastic step-by-step document created by the SBI Fellowship Match Committee and Resident and Fellow Section.
 - The Universal Application can be downloaded from the SBI Fellowship Match web page. Some programs use this application, some have additional application requirements, and some have an institution-specific application form.
- Begin your fellowship search. Consider the location, program size, type of practice (ie, academic or community-based), and research and teaching opportunities of each fellowship. A list of programs available through the Match can be found on the SBI Fellowship Match web page. A [fellowship directory](#) search is also available to help you identify and explore programs. Narrow your fellowship list and create an organized document with individual application requirements for the programs you are interested in.

- Gather necessary documents for your application. Most applications require the following:
 - United States Medical Licensing Examination, Comprehensive Osteopathic Medical Licensing Examination, or Educational Commission for Foreign Medical Graduates transcript
 - Medical school transcript
 - Updated curriculum vitae
- Write your personal statement.
- Approach 3 faculty members for letters of recommendation. It is often helpful to provide your letter writers with your personal statement (even if it's a draft) and curriculum vitae. Make sure to provide them with program-specific letter submission requirements at least 2 weeks in advance.



Sophia O'Brien, MD

Last year, applications were accepted beginning August 1. Pace yourself to have your application prepared and ready for submission in early August 2021.

What will this interview season look like?

As we begin to emerge from the pandemic and a fully virtual interview season this past year, the logistics for our upcoming interview season are still being sorted out. There will likely be institutional variations regarding interview operations. Some institutions may continue to conduct virtual-only interviews, some may return to in-person interviews, and others may offer both options. If faced with the choice of a virtual or in-person interview, see the sidebar for some pros of each to consider.

The SBI Summer Series recently held a panel reflecting on this past year's all-virtual interview season, highlighting the benefits and pitfalls of virtual interviews and brainstorming plans for the upcoming interview season. Check out the recording on [YouTube](#).

If you're not already a member, join the SBI members-in-training community on [SBI Connect](#). You can post questions about the match process and share, connect with, and learn from other trainees in the breast imaging community!

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DOCTOR **Technologist Engagement, Part 1: Creating Positive Patient Interactions With Effective Communication**

By *Robyn Hadley, RT(R)(M); Sarah Jacobs, RT(R)(M)(CT)*

Mammography technologists are charged with acquiring high-quality images and calming patient anxiety while creating a compassionate interaction based on trust and effective communication. The past year has brought challenging and unforeseen circumstances for breast imaging practices and patients. Along with these challenges, many facilities have been experiencing staff shortages while trying to manage overloaded schedules. Now, more than ever, it is especially important for technologists to remain motivated in their work and focused on creating positive experiences for their patients. The unique opportunity of enhancing a patient's experience begins with mammography technologists. An enriched patient experience can play a key role in determining whether the patient returns for annual screening and/or follow-up examinations. This goal can be accomplished through effective communication.

Two essential aspects of effective communication in which technologists play a key role are the patient-technologist relationship and the technologist-radiologist relationship. In the first of this 2-part series, we discuss the patient-technologist relationship.

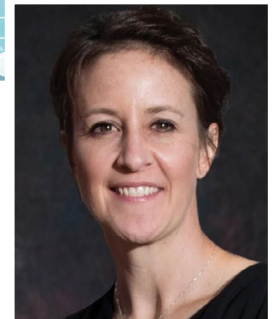
Optimizing a patient's experience begins with effective communication between the technologist and patient. Because of the pandemic, some patients may now be fearful of entering a facility where they once felt safe and comfortable. To achieve optimal image quality and increase patient confidence, it is essential for the technologist to create a positive and welcoming environment.

- *Recognize the patient and introduce yourself:* A patient's first clinical interaction is usually with the technologist. Studies show that individuals have a mere 7 seconds to make a first impression.¹ The technologist's introduction can set the tone for the patient's perception of the upcoming experience. Introduce yourself by name and tell your patients you will be taking care of them today. Along with an initial introduction, recognize and acknowledge your patients. Simply walking next to patients and encouraging conversation while accompanying them into the examination room can make them feel respected.
- *Smile:* Smile when greeting your patients. Even under your mask, a smile can be visible in your eyes. Smiles release chemicals in your brain that fight off stress, relax your body, and lower heart rate. Smiles can lift your mood, change the tone of your voice, and increase positive thoughts. Each time you smile at someone, it encourages a similar response.^{2,3}

- *Create a calming space:* Create a space that is inviting and clean. Produce an examination room free from clutter, play soft music in the background, or provide visual stimulation with wall art.
- *Be kind and genuine:* Try to see the situation from the patient's perspective.

Creating a positive and welcoming environment must be accompanied by effective communication. Effective communication requires active listening, using appropriate body language, and responding reflectively with mindful word choices and carefully developed, scripted responses.

- *Active listening:* Active listening requires the technologist to remain attentive when a patient is speaking. It allows technologists to maintain focus and suspend judgements while viewing the circumstance from the patient's perspective with an empathetic eye. Pausing before entering the examination room will help technologists achieve optimal active listening by gaining a mindset free of current stressors occupying their thoughts.
- *Body language:* Technologists are conditioned to work quickly and efficiently, but patients shouldn't feel as though their examination is rushed. Technologists can create a positive patient interaction by maintaining attentive eye contact, using open body language, slowing down, and focusing on quality imaging. Using hand gestures and physically showing the patient what is needed will assist in compliance. This is particularly helpful when interacting with patients who speak a different language, are hearing impaired, or have difficulty understanding instruction.
- *Reflectively responding:* Reflectively responding will keep the technologist's focus on listening to the patient and ensuring the patient feels understood. This means that the technologist's perspective on a situation is not shared with the patient. When a patient has finished their narrative, paraphrasing what the technologist has heard will demonstrate understanding.



Robyn Hadley, RT(R)(M)



Sarah Jacobs, RT(R)(M)(CT)

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During the spring 2021 application period, the Fellows Committee approved the applications for a record of 9 new SBI fellows. This distinction is among the highest honors bestowed onto SBI members. The following 9 new outstanding fellows were officially inducted into fellowship at the virtual SBI fellows business meeting on April 26, 2021.

Sona A. Chikarmane, MD, FSBI, completed her diagnostic radiology residency and breast imaging fellowship at Brigham and Women's Hospital, earned her medical degree from Harvard Medical School, and earned her undergraduate degree from Duke University. She is currently division chief of breast imaging at Brigham Health, which includes 2 inpatient hospitals, an academic oncology center, and multiple outpatient centers. Prior to her role as division chief, she was associate program director of the Brigham and Women's Hospital radiology residency program and chair of the Clinical Competency Committee. She lives in Newton, Massachusetts, with her husband, a hematopathologist at Brigham and Women's Hospital, and 2 young sons, Ashwin (6 years) and Siddharth (3 years). In her free time, Dr Chikarmane enjoys hiking, gardening, and doing puzzles.

Melissa A. Durand, MD, MS, FSBI, is an associate professor in the Department of Radiology and Biomedical Imaging at Yale School of Medicine. As an attending physician, she teaches residents and fellows and interprets a broad spectrum of breast imaging modalities. Her primary research role is in breast cancer screening and diagnosis with digital breast tomosynthesis (DBT). She serves as the Yale principal investigator of a multisite collaborative DBT research group that has coauthored several landmark papers on DBT and has been awarded several grants for this work. Dr Durand has presented her work at international, national, and regional conferences and collaborated on several scientific manuscripts, review articles, and book chapters. Presently expanding her global outreach involvement with RAD-AID, in her spare time she is an avid skier and aspiring mountaineer.

Amy M. Fowler, MD, PhD, FSBI, is an assistant professor of radiology at the University of Wisconsin School of Medicine and Public Health in Madison, Wisconsin. Dr Fowler received her MD and PhD degrees from the University of Wisconsin School of Medicine and Public Health. She completed a diagnostic radiology residency and a breast imaging fellowship at the Mallinckrodt Institute of Radiology at Washington University in St. Louis, Missouri. Dr Fowler's research is focused on molecular imaging of breast cancer and imaging to predict and monitor therapy response. She has received grant funding to investigate the performance of targeted radiopharmaceuticals for estrogen receptor and progesterone receptor imaging using

simultaneous breast positron emission tomography (PET)/magnetic resonance imaging. Dr Fowler enjoys teaching breast imaging to trainees and is grateful for the opportunity to provide diagnostic and interventional breast care for patients in the clinic. Dr Fowler has been a member of the SBI since 2012 and has served on the SBI Scientific Advisory Committee.

Jessica H. Hayward, MD, FSBI, is an associate professor of clinical radiology in the breast imaging section in the Department of Radiology and Biomedical Imaging at the University of California, San Francisco (UCSF). She grew up in Brunswick, Maine, and earned an undergraduate degree in chemistry from Colby College. She received her medical degree from Dartmouth Medical School in 2008, followed by a diagnostic radiology residency at New York-Presbyterian/Weill Cornell Medical Center and a women's imaging fellowship at UCSF. Outside of work she enjoys spending time with her husband, 1-year-old daughter, and dog.

Diana L. Lam, MD, FSBI, is an assistant professor in the Department of Radiology at the University of Washington. She grew up in northern California and earned her bachelor's degree from the Massachusetts Institute of Technology. She received her MD from the UC Davis School of Medicine and completed her radiology residency and breast imaging fellowship at the University of Washington. Her professional goal is to provide high-quality, compassionate, and efficient evidence-based care for patients through a combination of her clinical and administrative responsibilities, outreach, and patient and trainee education. She is the clinical director of the Breast Imaging Clinic at the University of Washington Medical Center-Northwest and has improved care delivery by addressing practice variations across the University of Washington enterprise, increasing breast imaging access, and fostering subspecialty relationships to build the breast program at the University of Washington Medical Center-Northwest. Dr Lam's breast-specific scholarly work includes imaging surveillance and risk factors for women with a personal history of breast cancer and multidisciplinary collaborations on how radiologists can prepare for tumor board and manage difficult and uncertain cases. She is currently an associate program director of the diagnostic radiology residency program at the University of Washington and was previously the breast imaging fellowship program director.

Amie Y. Lee, MD, FSBI, is an associate professor of clinical radiology in the Department of Radiology and Biomedical Imaging at UCSF. She was born in Seoul, South Korea, and grew up in southern California. She attended UC Berkeley and then received her medical degree from UCSF in 2009. She completed her residency in diagnostic radiology at the University of Washington in Seattle

in 2014, followed by a fellowship in breast imaging at UCSF. After completion of her fellowship, Dr Lee joined the UCSF breast imaging faculty in July 2015. She currently serves as the director of clinical operations in breast imaging at San Francisco General Hospital and is a faculty member of the UCSF Global Cancer Program. Her interests include addressing local and global disparities in breast cancer care and applying emerging technologies to improve breast cancer outcomes.

Andrew D. A. Maidment, PhD, FSBI, has been active in breast imaging clinically and academically for nearly 35 years. He built the first clinical digital mammography system, one of the first DBT systems, and the first contrast-enhanced DBT system; helped develop the field of virtual clinical trials; and has conducted early research in breast radiomics, breast dose tracking, 4-dimensional breast imaging, and nanoparticle contrast agents for breast imaging. Starting in 1987, he designed the world's first clinical digital mammography system, commercialized as the Fischer Senoscan. Dr Maidment moved to Thomas Jefferson University when the system went into clinical trials in 1993. In 2003, Dr Maidment accepted the position of chief of physics at the University of Pennsylvania. He helped cofound the University of Pennsylvania graduate program in medical imaging in 2007, for which he was awarded the Dean's Special Education award. He has been very active in the International Workshops on Digital Mammography, including hosting the 2012 conference in Philadelphia. He is currently assembling an advanced DBT prototype, complete with 2 PET cameras to create the world's first PET-DBT system. He has also been very active in the ACR, chaired the American Association of Physicists in Medicine subcommittees on breast imaging and tomosynthesis, and is currently chair of the Breast X-Ray Imaging Subcommittee.

Haydee Ojeda-Fournier, MD, FSBI, is a professor of radiology and medical director of breast imaging at UC San Diego Health in La Jolla, California. She completed her medical education, diagnostic radiology residency, and woman's imaging fellowship at the University of Cincinnati School of Medicine in Cincinnati, Ohio. She was on the faculty at the University of Cincinnati until 2007 and has been

at UC San Diego ever since. In addition to being division chief of breast imaging, Dr Ojeda-Fournier is program director of the breast imaging fellowship and codirector of the women's imaging fellowship. She is also involved in medical student education. For the SBI, Dr Ojeda-Fournier is a member of the Inclusion Diversity Equity Alliance and reviews articles for the *Journal of Breast Imaging*. Outside of work, Dr Ojeda-Fournier is a loving wife and mother to 2 college boys, a middle school girl, 2 dogs, and a tortoise.

Shadi A. Shakeri, MD, FSBI, is a professor of radiology at UC Davis, where she is the chief of the breast imaging division, director of the breast imaging fellowship, and chair of the School of Medicine admissions committee. Dr Shakeri started her medical career as a board-certified general internist. She completed her internal medicine residency at the University of Texas Southwestern Parkland Hospital in Dallas, Texas, and worked as a hospitalist physician in San Francisco before retraining in radiology. After completing her radiology residency followed by fellowship training in breast imaging at UC Davis in Sacramento, Dr Shakeri joined the UC Davis Department of Radiology as a full-time faculty member. Dr Shakeri's research interests have focused on imaging of suspicious breast lesions by dedicated breast computed tomography, a 3-dimensional imaging modality developed at UC Davis. She leads the clinical effort on the National Institutes of Health-funded comparative study of clinical and research imaging modalities in collaboration with research colleagues in biomedical engineering. Dr Shakeri is committed to the delivery of culturally relevant care and clinical excellence in breast imaging. In addition, Dr Shakeri is passionate about teaching medical students, radiology residents, and fellows. She is a strong advocate for increasing diversity and embracing inclusion of women and underrepresented minorities in medicine. In her role as the past American Medical Women's Association faculty advisor at UC Davis, she has mentored medical students and has developed workshops focusing on mentorship and leadership. Dr Shakeri is an alumna of the Executive Education for California Physician Leadership Program at the University of Southern California Marshall School of Business, as well as the Society of Chairs of Academic Radiology Departments, and General Electric LEAD Program.



The newly inducted SBI Fellows. Top row (L-R): Sona A. Chikarmane, MD, FSBI; Melissa A. Durand, MD, MS, FSBI; Amy M. Fowler, MD, PhD, FSBI; Jessica H. Hayward, MD, FSBI; Diana L. Lam, MD, FSBI. Bottom row (L-R): Amie Y. Lee, MD, FSBI; Andrew D.A. Maidment, PhD, FSBI; Haydee Ojeda-Fournier, MD, FSBI; Shadi A. Shakeri, MD, FSBI.



Liza Miller, Dr Matthew Miller

By Hannah Perry, MD

HP: Please tell me about yourself and your background.

LM: At the time of my diagnosis, I was a fifth-grade teacher. I have a dual master's degree in elementary education and early childhood education. I am currently a stay-at-home mom.

MM: I am a breast radiologist at Allegheny Health Network in Pittsburgh, Pennsylvania. I have been out of training for 2 years. At the time of my wife's diagnosis, I was a first-year radiology resident.

How were you diagnosed with breast cancer?

LM: When I was 27 years old, I felt a lump in my right breast. I was evaluated by my gynecologist, who sent me to a general surgeon. The general surgeon performed an ultrasound and scheduled me for an excisional biopsy. I was never offered a core-needle biopsy. I agreed to the excisional biopsy because I didn't know any better, and the pathology results came back benign.

Following surgery, I felt like the lump was still there. I was reassured by the surgeon that it was normal. A year passed and I decided to seek a second opinion at a breast center. I first saw a breast surgeon, who ordered a diagnostic work-up with a breast radiologist (a colleague of my husband's). There were no suspicious findings on ultrasound but a diagnostic mammogram showed a few calcifications near the site of my surgical scar. The radiologist felt that the calcifications likely represented fat necrosis from the excisional biopsy. I was subsequently given a BI-RADS 3 designation, and a 6-month follow up mammogram was recommended. Additionally, I had breast MRI [magnetic resonance imaging], which did not show anything.

The follow-up mammogram, however, showed that the calcifications had increased in number and a stereotactic core-needle biopsy was recommended. Given my history of a benign biopsy in this region, the radiologist still felt the suspicion was low (BI-RADS 4A). I felt like a biopsy was overkill at the time and I delayed scheduling it for a couple of months. Finally, at the urging of my radiologist-in-training husband, I scheduled the biopsy and was diagnosed with breast cancer at the age of 29.

MM: After Liza's stereotactic biopsy, she told the radiologist (my colleague) that she wished for me to be told the results while I'm at work. A few days later, I was paged and told to come from the hospital to the breast center. That felt like the longest walk of my life. When I walked into the breast center reading room, the

radiologist and nurse navigator were waiting for me and immediately broke the news that Liza had breast cancer. They had surgical and oncologic appointments already scheduled for that day. The next step was breaking the news to Liza. I drove 40 minutes to her elementary school to tell her in person. I called the school en route so that they could have a substitute teacher set up. Once I got to school, I pulled Liza out of class and broke the news. From the look on her face, she knew something was wrong the moment she saw me. We drove back to the hospital and began her treatment journey together.



Hannah Perry, MD

How did you feel when you heard the news?

LM: I was in complete and total shock, which was quickly followed by fear of the uncertainty. I was lucky that Matt and the people at the breast center took care of scheduling and physically taking me to my appointments because the shock and numbness would have made it difficult for me to do these things myself at the start. Once I met with my treatment team and everything began to sink in, that's when a feeling of courage started to overwhelm the negative feelings.

MM: I was surprised at the diagnosis for multiple reasons. The fact that Liza had surgery in the same area 2 years previously and [the result] was benign gave me the greatest reassurance. The calcifications were initially called probably benign (BI-RADS 3). As a radiologist in training, I knew that meant there was less than a 2% chance of malignancy. Liza has no known family history of breast cancer and was 29 years old. Given these facts, I thought the chances were very good that the biopsy would be benign.

What was your treatment process? Did you face any treatment obstacles? How did you overcome them?

LM: I am a worrier. My breast surgeon discussed the pros and cons associated with mastectomy versus lumpectomy but my mind was made up pretty quickly to proceed with mastectomy. At my young age, I didn't want to worry about the tissue that would be left following lumpectomy. I went back and forth on whether to get a prophylactic mastectomy of my left breast, but I ultimately chose to proceed with this for the same reasons stated before. It turned



out that my decision to get a bilateral mastectomy was the correct one because I found out after surgery that I have a *BRCA2* gene mutation. I would have possibly had to go back for a mastectomy at some point had I initially opted for lumpectomy.

My postsurgical course went smoothly with minimal complications. I was lucky enough to go straight to implant reconstruction without having to deal with tissue expanders. I am extremely happy with the cosmetic result.

MM: After the diagnosis, Liza was told by multiple people that the survival rate between mastectomy and lumpectomy is the same. Still, her quick and unrelenting resolve to have a mastectomy astonished me. Given her young age, she did not want to worry about recurrence in the remaining breast tissue if she were to elect to undergo lumpectomy. For the same reason, she also chose to have prophylactic mastectomy of the unaffected breast. The surgeon tried to talk her out of this to preserve the ability to breastfeed in the future, but Liza still chose bilateral mastectomy. Following her surgery, it was discovered that Liza had a *BRCA2* gene mutation, with no known family history of breast cancer, so the decision for a bilateral mastectomy proved to be the right one for her in hindsight.

What motivated you during your diagnosis and treatment process?

LM: A few months prior to my diagnosis, Matt and I decided that we were ready to start a family. Once the diagnosis came, those plans needed to be put on hold. The disappointment with this delay turned into a strong motivator for me to get through my treatment and continue forward to finally start our family. We now have a 2-year-old and another baby on the way.

What did you learn from your experience?

LM: I learned the importance of a support system. I am inherently an independent person, and I tend to internalize my feelings. My experience in dealing with breast cancer showed me that sometimes you need to lean on people during your darkest days. I'm so lucky to have a husband who not only knows how to translate medicine but also knows how to look at the bright side. Matt's positive attitude and his ability to make me laugh helped pull me out of some dark places mentally.

I also learned to trust my body and how important early detection truly is. Had I not been persistent in following up my initial benign excisional biopsy, my cancer might still be growing in my breast today. Things could have been a lot worse without early detection.

MM: As a radiologist, I learned many things that continue to influence me on a daily basis. First and foremost, I saw that breast cancer is unpredictable. Patients often present to the breast center with vague complaints, and our personal experience shows that breast cancer can show up in these patients.

I also learned that *BRCA* gene mutations are sporadic 10% of the time. Just because someone has no family history of breast

cancer does not translate into breast cancer immunity. A patient may have a gene mutation that puts them at elevated risk for developing breast cancer and not even know it.

Finally, I learned that breast imaging was truly my calling. Prior to Liza's diagnosis, I was already considering a career in breast imaging. However, this experience propelled me into the subspecialty and gave me a greater appreciation for the immense responsibility that comes with being a breast imager.

How has this diagnosis impacted your life?

LM: In general, it made me really see things differently. It completely changed my perspective on what is truly important to my future and myself and what is not. I have found that I changed many things in my life to better suit this new perspective.

MM: As I alluded to above, watching my young wife unexpectedly go through breast cancer diagnosis and treatment has had a profound impact on my personal and professional life.

From a personal standpoint, it affected me like any other husband. I thank God every day for giving Liza the strength to persevere with a positive attitude. The experience strengthened our already strong bond and afforded me a greater appreciation for otherwise mundane things.

From a professional standpoint, the experience gave me a crash course in patient empathy, and it taught me how to deliver the appropriate amount of information at the appropriate time. When discussing a suspicious finding or a cancer diagnosis with a patient, I always think back to our experience and I am instantly transplanted into the patient's shoes. This unique perspective is something that not many breast cancer doctors have—the ultimate case of turning a negative into a positive!

Are there any lessons that you think the breast imaging community can learn from your experience?

LM: My story is not a typical case; there were a few twists and turns that led to my diagnosis. Any one of those twists could have resulted in a delayed diagnosis. I guess the biggest takeaway for the breast imaging community is the realization that cancer can happen at any age and that follow-up methods were developed for a reason. Persistently adhering to these follow-up recommendations (returning for a follow-up mammogram and ultimately getting a biopsy) saved my life.

MM: I always tell patients that it is never wrong to see someone about a new breast complaint, no matter how vague. It's better for a doctor to examine and image you and find nothing than for you to ignore a change and for it turn out to be something serious down the line. If Liza would not have been persistent in following up her vague lump, the radiologist would have never found her cancer so quickly and her story may have been a lot sadder.

Continued on page 20 >

What advice would you give to other patients who are going through the diagnosis and treatment process for breast cancer?

LM: Listen to your doctors. I dragged my feet with scheduling the biopsy because everything kept coming back benign. I, like most people, thought it couldn't happen to me and was confident the biopsy would be benign. Therefore, I was hesitant to get a biopsy and delayed it for a couple of months.

Also, listen to your body. I second-guessed myself when I still felt a lump following surgery. While it was calcifications and not the lump that led to my diagnosis, the radiologist would not have found the calcifications had it not been for my persistence in getting the lump reevaluated. I'm very fortunate that I followed through on both fronts because my outcome may have turned out differently had there been a greater delay in diagnosis.

Finally, trust your gut. Things tend to happen fast. You have to make a lot of decisions quickly that may affect the rest of your

life. Maybe some sacrifices need to be made. Ultimately, if given the option, choosing between lumpectomy and mastectomy is a very personal decision. Take the time to do your homework and talk to people who have also been in your situation. There are great resources and communities that you can reach out to as well. Once you have as much information with which you feel comfortable, my advice is to trust your gut and don't look back.

MM: I tell my patients that being diagnosed with breast cancer in 2021 is very different than it was in 2001. We have gotten very good at treating this form of cancer and a lot of it stems from an emphasis on early detection.

Liza was not yet of screening age, but she did not rest on a new symptom. She was persistent in her follow-up, and because of that her cancer was diagnosed early enough for her to be healthy today, almost 6 years later.

Member-in-Training Column: Looking Forward: Breast Imaging Fellowship Applications for the 2023-2024 Academic Year (continued from page 14)

VIRTUAL INTERVIEW	IN-PERSON INTERVIEW
Less expensive (no travel or lodging)	Absorb the program's culture and location
Less time commitment (no travel time); can allow for better balance of family and work responsibilities (service coverage, call, Core studying)	Opportunities to interact with the program's radiologists, staff, and trainees in formal and informal activities
Comfort during the interview in one's own home environment	Become familiar with the physical space you would work in
Ability to apply and interview more broadly (less time commitment for each interview)	Explore the program's city and neighborhood

Technologists' Column: Technologist Engagement, Part 1: Creating Positive Patient Interactions With Effective Communication (continued from page 15)

- **Key words:** Identifying and using key words or phrases during patient interactions will also promote a higher level of patient understanding and responsiveness. Rather than using the word *pain*, technologists should use words or phrases such as *discomfort*, *pressure*, or *somewhat uncomfortable*. These key words should be accompanied by phrases that acknowledge the patient's feelings. If a patient mentions negative previous experiences, the technologist should acknowledge those experiences and explain how this examination will be different. For example, the technologist could say, "I'm sorry you had that experience previously. Let me tell you how this is going to be different. This time, we are going to work together to get the best images possible." The technologist's response should be simple, concise, and genuine.
- **Scripted responses:** Imaging departments can create scripted responses to commonly asked patient questions. Scripts should be developed and supported by the breast imaging leadership team and used consistently by the staff. Scripts for introductions, what patients can expect during the examination, how and when patients will receive results, and the difference between digital

mammography and digital breast tomosynthesis are a few examples. Scripted responses for diagnostic callbacks, appointment reminders, and postbiopsy check-in calls can also be extremely useful. Additionally, scripts for screening guidelines and answers to patient questions about guidelines are essential. Effective scripts should contain simple and concise terminology that patients can understand.

Imaging technologists play a very important role in establishing a positive relationship with the patient. This relationship begins with effective communication centered around compassion and empathy.

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Suspicious Minds: Interactive Computer-Aided Detection in the Laboratory

By Ethan Du-Crow; Sue Astley, PhD; Johan Hulleman, PhD

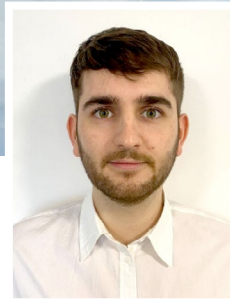
Computer-aided detection (CAD) for mammographic screening has proliferated over the last 20 years. The success of a CAD system relies on how the information is presented to the reader. The complex relationship between reader and computer is built on trust. Even when CAD prompts are correct, they may be dismissed in as many as 71% of cases if there is a lack of trust.¹

Methods of improving human-CAD interaction have been investigated.² These methods include providing a local rationale to explain why regions have been marked and accompanying CAD prompts with a lesion likelihood score denoting the probability that the region contains an abnormality. In addition to likelihood values, the system may provide an overall image score,³ which informs the reader of the probability that there is an abnormality somewhere in the image but does not reveal its location.

Readers have the option of using traditional CAD or interactive CAD. With traditional CAD, the reader first searches the mammogram unaided and then searches again with the aid of computer prompts. An alternative approach is interactive CAD, in which the computer prompts are withheld until the reader queries a region with an available prompt. This approach has the potential to increase sensitivity without increasing the recall rate because the reader is not necessarily exposed to a high number of false prompts. Interactive CAD has been shown to have improved performance compared with traditional CAD.⁴

To gain a deeper understanding of how readers use interactive CAD prompts, we conducted experiments with naïve observers in a laboratory setting.⁵ Participants searched for malignant microcalcification clusters in synthetic mammogram-like backgrounds. Naïve observers can accomplish this task with 66% sensitivity without computer aids.⁶ We conducted 2 separate experiments: one with a no-CAD condition and a CAD condition, and another with a CAD condition and a CAD plus image score condition. Each prompt had a likelihood score ranging from 1 to 100. Image scores ranged from 1 (low probability) to 10 (high probability).

The experiment demonstrated a benefit of interactive CAD. The addition of interactive CAD did not affect the participants' false-positive rates. This result contrasts with previous experiments that used a traditional CAD approach and found a substantial increase in the false-positive rate.⁶ This suppression of false positives is a key benefit of interactive CAD. Even though each image had an average of 2 false-positive prompts, our participants queried and saw only a small fraction of these.



Ethan Du-Crow



Sue Astley, PhD



Johan Hulleman, PhD

The higher the likelihood score associated with a prompt, the more likely a participant was to act on it (ie, mark it as a target). This effect was stronger for prompts on calcifications than on background regions. Participants prioritized images with an image score above 4, spending more time on these and less time on those with a lower score. However, the images they spent longer on also resulted in more false positives.

We wanted to know how, if at all, the prompt likelihood score and the image score interacted. We found that the prompt likelihood score and the image score had independent effects on reader behavior. The prompt likelihood score drove our participants' decision-making. In most cases, participants would mark a prompt with a high likelihood value as a target even if the image score was low. Conversely, a prompt with a low likelihood value on an image with a high image score was rarely marked as a target.

Overall, we found that interactive CAD improves the dynamic between the reader and the computer output. Readers only receive the information from the system when they are asking for it, rather than being overloaded by false positives. An image score can be a helpful tool indicating that readers should pay more attention to certain cases. It may also be useful for image triaging before cases go to readers. However, in our study the image score did not affect readers' responses to individual prompts.

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The Canadian Society of Breast Imaging

By Jean Seely, MD, FRCPC, FSBI, FCAR

As the peak of the pandemic is hopefully behind us, I am pleased to share important information from the Canadian breast imaging community. Because of a recent stunning revelation, I thought it important to devote this update to the news about the Canadian National Breast Screening Studies (CNBSS). The results from these 2 trials (CNBSS-1 for women aged 40-49 years and CNBSS-2 for women aged 50-59 years) have been used to deny women access to screening in their forties because there was no reduction in deaths from screening women aged 40 to 49 years.

After 30 years, there is now conclusive confirmation that randomization was subverted for the CNBSS randomized controlled trials (RCTs). CNBSS-1 and CNBSS-2 were conducted at 15 centers across Canada between 1981 and 1985 and first reported after 7 years of follow-up in 1992.^{1,2} CNBSS-1 recruited 50,430 women aged 40 to 49 years, who were allocated to 5 annual clinical breast examinations and screening mammography versus usual care in the community. Of key concern is that participants were allocated to usual care or screening mammography only after first undergoing a physical examination by a well-trained nurse. After 7 years, CNBSS-1 and CNBSS-2 were the only 2 of 8 RCTs not demonstrating reduced mortality from breast cancer with screening mammography. CNBSS-1, in which more deaths occurred in the mammography arm, continues to heavily influence breast cancer screening guidelines for women 40 to 49 years old worldwide.

The Toronto Breast Imaging Conference was held in March 2021. In addition to numerous excellent discussions of major topics in our field, the meeting led to a remarkable and critical revelation. Guest speaker Dan Kopans, MD, FACR, FSBI, gave a talk titled “What Canadians Need to Know About the Canadian National Breast Screening Studies (CNBSS),” detailing the flaws of CNBSS summarized in his recent article.³ Soon after, a technologist from the audience wrote to him to confirm that during her work in the CNBSS, she observed that women in whom study nurse examiners had detected palpable lumps were often assigned to the mammography groups, preferentially and out of random order. Subversion of randomization, long suggested by the data, was now confirmed by eyewitness testimony. This subversion was later reiterated by another CNBSS staff member at a separate site. Although women were supposed to have been randomly allocated to either arm of the trial, there is now indisputable evidence that at certain centers allocation was not random.

Faulty randomization had long been suspected by Boyd et al,⁴ Kopans et al,⁵ and others.⁶ Yaffe⁷ demonstrated that moving as few as 7 women with advanced breast cancer to the mammography arm would convert the outcome from mortality reduction to mortality excess. At 7-year follow-up, CNBSS-1 found more breast cancer deaths (38) in the mammography arm than in the usual-care group (28).² Furthermore, 19 women with advanced breast cancer, defined as 4 or more positive lymph nodes, were allocated to the mammography arm, and only 5 were allocated to the usual-care arm. The probability of this occurring randomly was estimated to be less than 0.003.⁴ Random allocation is fundamental to validate RCT results.

In December 2020, I was invited by the *Journal of Breast Imaging* to write a critical review of the science of CNBSS. Dr Paula Gordon, Dr Shiela Appavoo, and I located and interviewed staff members who had worked on the CNBSS trials 40 years ago. Although many were no longer alive or available, we interviewed 28 CNBSS staff members, including radiologists, technologists, research coordinators, surgeons, and nurses.

A summary of the problems with the CNBSS trials according to the compiled witness testimonies is provided here.

1. Many women who volunteered for the study were already symptomatic with palpable lumps, so this was not a “screening” study. Unlike the other RCTs, which were population based, the CNBSS recruited by advertising for volunteers.
2. The assignment of more women with breast cancer to the mammography arm contributed to an excess calculation of a 48% rate of overdiagnosis from breast cancer screening.⁸ This rate is markedly higher than the best evidence for overdiagnosis of breast cancer of 1% to 10% in screening mammography trials after proper adjustment for lead-time bias and length of study follow-up.⁹
3. The mammography in the CNBSS was of poor quality.⁸ Dr Ed Sickles agreed to act as an outside adviser after Drs Wende Logan and Steve Feig sequentially resigned because the trialists ignored their suggestions to improve the quality of the mammography. Dr László Tabár was brought in, and he refused to continue after



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reviewing a handful of representative images that he found totally unacceptable.¹⁰ The poor quality of the mammography had been verified by the CNBSS' own reference physicist, Martin Yaffe, PhD.¹¹ Old equipment was used (several units were secondhand, one even found in a garage) and, to reduce dose, grids were not employed for much of the trials, with scatter almost certainly obscuring small cancers.

4. Recent testimonies emphasize that many of the radiologists were coerced into reading mammography with inadequate training, some stating that training was “less than a couple of hours,” at best, the “level of a second-year radiology resident.” The technologists also emphasized the lack of training. Many who were new graduates at the time of the study stated that they “learned how to perform adequate mammography only after the trials were completed.” Mammography positioning for the first 5 years of the study used craniocaudal and 90° mediolateral views, not the standard mediolateral oblique view,¹² thereby potentially missing many cancers in the upper outer quadrant, where the greatest percentage of breast cancers occur. It is not surprising that the sensitivity of the mammography for detecting breast cancers was only 55%, missing 53 of 117 cancers in the first year of CNBSS-1 and missing 54%, 38%, 32%, and 54% in years 2 through 5, respectively.² By comparison, modern screening mammography programs in Canada have 84.3% sensitivity.¹³
5. There was a lack of trust by surgeons who were unaccustomed to operating on nonpalpable breast cancers and, with no access to image-guided localizations, could not treat patients surgically until cancers were palpable, losing the opportunity for early intervention of treatment.
6. Likely because women with palpable masses were disproportionately assigned to the mammography arm of the study, clinically evident cancers were larger in the screening arms than in the control groups despite the screened women having intensive clinical breast examinations each year by highly trained nurses.³
7. In contrast to all the other trials, there were more women with axillary adenopathy in the screened group than in the control group.²
8. The 5-year survival rate among the women in the control group in CNBSS-1 was over 90%, when in Canada at the time the 5-year survival rate was 75%, suggesting that women destined to die had been moved from the control arm to the screening arm.

These revelations should now be seriously considered by those responsible for framing screening mammography guidelines worldwide. The Canadian Society of Breast Imaging is maintaining an archive of this eyewitness testimony because it will likely be needed for subsequent investigations. This work attests to the critical importance of evaluating these old trials to avoid perpetuating errors and leading to further loss of lives from breast cancer. The Edinburgh trial¹⁴ is no longer cited by guideline panels because of an imbalance in the socioeconomic demography of the 2 groups. The compromises in the CNBSS are far more egregious. Panels on screening should no longer use the results from the CNBSS when advising women. More details can be found in the forthcoming *Journal of Breast Imaging* article.

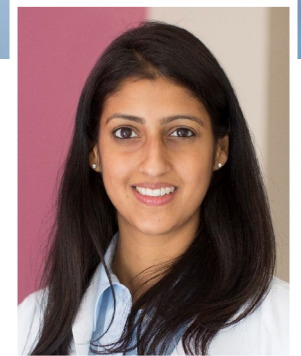
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Emerging Experience and Management of Axillary Adenopathy in the Era of COVID-19 Vaccinations

By Anita Mehta, MD

CONNECTION
DATA
SEARCHING
VIRTUALIZATION
CODING
SENDING



Anita Mehta, MD

Hospitals and health care facilities were forced to reassess their normal patient workflow and protocols when COVID-19 first emerged as a public health threat to the United States in early 2020. During this period, the Centers for Disease Control and Prevention and the Centers for Medicare & Medicaid Services called for a delay of all nonurgent medical services to mitigate the spread of COVID-19 within medical facilities and to conserve resources.^{1,2} Routine mammography screening came to an abrupt halt as breast imaging centers were faced with the challenge of balancing patient and staff safety with the need to avoid delays in breast cancer diagnoses. While routine screening has resumed at most programs over the past year, the true impact of decreased patient volumes during the beginning of the COVID-19 era has not been fully elucidated.

The US Food and Drug Administration authorized emergency use of the Moderna and Pfizer-BioNTech vaccines in December 2020, contributing to a substantial decrease in community spread of COVID-19. By May 20, 2021, approximately 159,000,000 people had received at least 1 dose and 125,000,000 (approximately 38% of the US population) were fully vaccinated.³ Local and systemic reactions associated with the vaccine include unilateral axillary swelling or tenderness, which was reported in 10.2% of people following the first dose and 14.2% of people following the second dose in phase 3 clinical trials of the Moderna vaccine.⁴ Unsolicited cases of axillary and cervical adenopathy were also reported in the Pfizer vaccine clinical trials.⁵ With an increase in vaccination distribution, radiologists began to observe and report a significant increase in unilateral axillary adenopathy on screening and diagnostic breast imaging and an increase in symptomatic patients presenting with palpable abnormalities of the axilla. A new challenge emerged: how

do we manage axillary adenopathy in the wake of widespread vaccination? The diagnostic dilemma became a hot topic of discussion on online radiology forums such as SBI Connect and on other social media platforms where radiologists shared their experiences and thoughts on recommendations and management.

The SBI was quick to provide some guidance. Early this year, the SBI issued a statement about the management of axillary adenopathy in screening patients. Since then, many other reports and recommendations have been published in the medical literature. The Table describes current guidelines set out by the SBI, as well as recommendations and experiences from a few leading academic institutions.

As we gain more experience and collect long-term data, guidelines will continue to evolve. Management differs slightly across institutions. The most notable differences are (1) delaying versus proceeding with routine screening in patients with a recent vaccination and (2) designating incidental adenopathy as BI-RADS 2 with return to routine screening or BI-RADS 3 with short-term follow-up. Facilities should follow guidelines that are compatible with their workflow and resources. In addition, recommendations should be consistent among radiologists within the same practice to mitigate confusion among health care providers and patients. What is certain is that clear documentation of a patient's vaccine status before imaging, including date and laterality of vaccine administration, is critical to safely treat patients, minimize patient anxiety, and avoid unnecessary examinations and biopsies.

Table. Recommendations for managing axillary adenopathy after COVID-19 vaccination

ORGANIZATION	RECOMMENDATIONS
Society of Breast Imaging⁶	The SBI has taken a conservative approach to the management of axillary adenopathy. Recommendations include the following: <ul style="list-style-type: none"> • Documentation of vaccination status with detailed information on patient intake forms including date and side (right vs left arm). To inform patients and minimize patient anxiety they also recommend using this statement on patient intake forms: "Vaccines of all types can result in temporary swelling of the lymph nodes, which may be a sign that the body is making antibodies in response as intended." • SBI also recommends, when possible (if it does not delay care), considering screening before the first vaccine dose or waiting 4-6 weeks after the second dose. • Screening examinations: If unilateral axillary adenopathy is found, the examination should be assigned a BI-RADS category 0 to further assess the ipsilateral breast. • After appropriate workup for unilateral axillary adenopathy in women who received a vaccine in the ipsilateral arm within the preceding 4 weeks, short-term follow-up 4-12 weeks after the second dose should be considered (BI-RADS 3). • If enlarged lymph nodes persist on short-term follow-up, consider tissue sampling.



Massachusetts General Hospital⁷

Lehman et al describe a management approach based on the patient's clinical presentation: (1) asymptomatic patient for screening, (2) symptomatic breast and/or axilla for diagnostic imaging, or (3) recent breast cancer diagnosis.⁷ They also emphasize the importance of documenting COVID-19 vaccination status, including date received, side, and location (arm or thigh), before all breast imaging examinations.

- Asymptomatic patient for screening (mammogram or MRI): In a patient who received a COVID-19 vaccine within 6 weeks, isolated axillary ipsilateral adenopathy is a benign finding and assigned a BI-RADS category 2. If there is clinical concern past 6 weeks, axillary US is recommended.⁷
- Symptomatic breast or axilla: If a patient presents with ipsilateral palpable axillary adenopathy and no breast symptoms within 6 weeks of the vaccine, clinical follow-up is recommended, and imaging is assigned a BI-RADS 2. If clinical concerns persist past 6 weeks, axillary US is recommended with management according to the ACR BI-RADS recommendation for unilateral adenopathy in the absence of known infectious or inflammatory cause.⁷
 - Incidental adenopathy seen on diagnostic imaging for other breast symptoms is BI-RADS 2.
 - For adenopathy with suspicious ipsilateral breast findings (BI-RADS 4 or 5), management of the ipsilateral adenopathy is at the discretion of the radiologist according to suspicion of the breast lesion and appearance of the lymph nodes.
- Patient with recent diagnosis of cancer: The institution recommends prompt imaging regardless of vaccination status and encourages that vaccines be given in the contralateral arm or thigh. If adenopathy is present on the side of breast cancer, core biopsy instead of imaging follow-up is recommended at the discretion of the clinical team in consultation with the radiologist.
- The institution encourages continuing screening and diagnostic examinations despite recent vaccines to avoid delayed vaccination and delayed breast cancer diagnoses.

Hospital of the University of Pennsylvania⁸

Edmonds et al published recommendations specifically targeting management of adenopathy found on MRI.⁸ New axillary adenopathy was detected on MRI more frequently than on mammography, likely because of more complete visualization of the axillary nodal basin.⁸ Given the overall higher lifetime risk in patients undergoing MRI, the recommendations follow a cautious approach:

- Documentation of COVID-19 vaccination date and laterality is required for all breast imaging examinations.
- MRI-detected isolated adenopathy ipsilateral to vaccine site within 4 weeks of vaccination is considered vaccine related but is given a BI-RADS 3 assessment, with a follow-up ultrasound 6-8 weeks after the second dose.
- When clinically appropriate, screening MRI should be scheduled 6-8 weeks after the second dose to minimize the detection of reactive adenopathy.

Radiology scientific expert panel⁹

A panel of experts from 3 leading academic institutions (Harvard University, Memorial Sloan Kettering Cancer Center, and MD Anderson Cancer Center) came together to offer guidance for vaccine-associated adenopathy. Their recommendations include the following:

- Vaccine information (date and side of dose) should be included in all preimaging questionnaires.
- COVID-19 vaccination should not be delayed because of scheduled imaging examinations, and imaging for urgent indications should not be delayed after vaccination.
- Vaccines in cancer patients should be administered on the side contralateral to cancer.
- For screening, consider postponing imaging for at least 6 weeks after the second dose.
- For patients with clinically evident adenopathy and recent ipsilateral vaccination, consider observing clinically for at least 6 weeks before referring for diagnostic imaging.
- For adenopathy found on imaging, management should be based on risk.
 - Patients at low risk of axillary nodal metastases: If adenopathy is more likely due to the vaccine than due to underlying neoplasm, an expectant management strategy without default follow-up is appropriate.
 - Patients with higher risk: Short-term follow-up in 6 or more weeks may be obtained.
 - Patients with high risk of nodal metastases: Tissue biopsy should be considered.

Abbreviations: MRI, magnetic resonance imaging; US, ultrasound.

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MARK YOUR CALENDAR

Upcoming Events

Some events may be tentative, depending on the status of the COVID-19 pandemic. Please check event websites for updates.

SBI Webinar Series: Breast Imaging Business and Operations

How to Support and Grow Your Practice from the Ground Up

August 17, 2021
7:00-8:00 PM (EDT)

Optimizing Practice Operations: Examples from the Virginia Mason Production System

August 24, 2021
7:00-8:00 PM (EDT)

Marketing and Customer Loyalty

Please visit the SBI Calendar of Events at www.sbi-online.org for a complete listing of events.