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Q&A

Women in Laboratory Medicine: A Q&A on Diversity and Inclusion

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Women leaders and scientists have made significant contributions to laboratory medicine. Notably, 2 women, Mary H. McKenna and Miriam Reiner, were among the 9 founders of AACC in 1948; however, women in clinical chemistry still encounter biases and microaggressions. A concern is how these obstacles impact women's progression through their career. Representation of women in leadership positions is low, and many women experience gender bias. Thus, there is still work to be done to address the challenges women face in their careers in medicine.

Listening to stories and learning from the insights of our colleagues is a powerful medium to motivate change. The experts and moderator in this Q&A presented a panel titled "Diversity and Inclusion: Women in Laboratory Medicine" at the 2021 AACC Annual Meeting. The conversation with the panelists was focused on the challenges they have faced as women and as racial and ethnic minorities in laboratory medicine. The panel opened up the conversation about these topics that are often not discussed even though many of us share these experiences. In this Q&A, 4 incredible and accomplished women in clinical chemistry discuss how biases impact the careers of women, the care of patients, and how we can mobilize to ensure an inclusive and equitable future.

Please share how the lack of diversity and inclusion affects healthcare and medicine. Has this led to the lack of information on specific disease conditions in women and racial and ethnic minorities?

Octavia Peck Palmer: The lack of diversity and inclusion in healthcare and medicine forms barriers to healthcare access and delivery and breeds inequitable practices of medicine. It underlies racial and gender-specific health disparities. Overt dismissal of the need for diversity and inclusion initiatives in healthcare and medicine has also led to (*a*) the persistence of systematic racism and horrible myths that Black/African American persons are biologically different from other humans (i.e., thicker skin, higher pain tolerance, and different organ functions), (*b*) an imbalance in establishing federal, state, and local level medical and research priorities, (*c*) disproportional research funding awarded/allocated to scientists and physicians deemed underrepresented in medicine and biomedical sciences fields, (*d*) a limited multi-ethnic and gender non-conforming candidate pool, workforce, and leadership pipeline, and (*e*) patient mistrust and poor patient outcomes. For example, the US Department of Health and Human Services Office of Minority Health statistics demonstrate that the mortality rate for Black infants is 2.3 times higher than White infants. Furthermore, a 2020 Proceedings of the National Academy of Sciences of the United States of America study reported that "the Black–White newborn mortality gap is smaller when Black doctors provide care for Black newborns than when White

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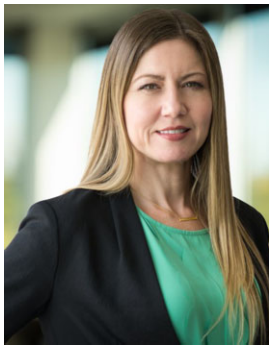
doctors do—lending support to research that examines the importance of racial concordance in addressing health care disparities."



M. Laura Parnas: The lack of diversity and inclusion in Alzheimer's disease drug trial populations is one example of how this issue affects healthcare and medicine. The clinical trials for the current Alzheimer's disease treatment candidates and for the recently Food and Drug Administration (FDA)-approved therapy have been largely conducted in individuals of Caucasian descent. This can have significant implications when it comes to trial endpoints, and treatment safety and efficacy, as well as diagnostics cutoffs. In the last couple of years, there has been an increased recognition for the need for diversity in clinical trials populations and new trials are now starting to be designed to include more ethnically and racially diverse individuals. In the case of Alzheimer's disease, there are other factors that may have played a role in the lack of diversity in past trials, including knowledge of and access to clinical trial sites in underrepresented populations, and willingness to participate in biomedical research.

Lakshmi V. Ramanathan: The recent discussions on the race-based estimated glomerular filtration rate equation to assess kidney disease has shed light on the overall problem of race corrections in clinical medicine. Currently more than 10 race-based corrections are used in cardiology, nephrology, obstetrics, and urology. Though these corrections have been part of routine clinical practice, their utility has not been questioned until very recently. The equity concern is that these corrections may have led to significant delays in Black and other minority patients receiving appropriate medical care. This could be delays in referral for kidney transplantation, not offering new drugs for cancer patients due to low survival, enrollment in clinical trials and many other issues.

Apart from race-based corrections, a constant reminder in laboratory medicine is the lack of appropriate reference intervals for different segments of the population. This affects tremendously interpretation of results with a subsequent effect on treatment and care. Though several studies are currently in progress to address this issue, it will take time to analyze the data and make the appropriate recommendations.

Zahra Shajani-Yi: Diversity in all fields helps ensure that multiple viewpoints are represented and shared, so that well-informed decisions can be made. In healthcare and medicine this is particularly important, as decisions on how to utilize resources have far-reaching consequences for healthcare delivery, research funding and initiatives, including impacting which disease states and issues get prioritized for research funding, test development, and outreach. One example that comes to mind is the historically large disparity in federal and foundational funding for sickle cell disease research compared to cystic fibrosis. A lack of funding or prioritization also contributes to a reduction in research (and publications), subsequently influencing guidelines for testing and management.

What impact does the lack of diverse representation in leadership have on individuals entering the field? How is this affecting the career success of women and racial and ethnic minorities in medicine?

Octavia Peck Palmer: The lack of diverse representation in leadership directly influences the ecosystem, defines priorities, recruitment, salary, retention, and promotion practices/policies. The candidate pool is skewed, and future candidates may not see the institution as welcoming or an environment to achieve their professional goals—so the cycle of no diversity in leadership continues. However, diverse representation in leadership can help to reduce widely held stereotypes, biases, and discriminatory acts. It can cultivate positive self-identify and build confidence. Additionally, individuals are more likely to experience feelings of belongingness and empowerment. Individuals become culturally competent as they are exposed to a myriad of cultures, traditions, and physical differences (e.g., physical traits, abilities, languages, beliefs, and learning styles). Studies show that patients have better health outcomes when care is delivered by diverse healthcare teams that are responsive to the patient's linguistic, cultural, social, and physical needs.

M. Laura Parnas: Representation in leadership is an extremely important issue when it comes to the cultural

fabric of healthcare organizations, especially for individuals who are looking into the field as a career path. This is true for ethnicity/race, gender, sex, and disability representation across leadership, but it should also be noted that other non-visible diversity factors influence how leaders shape their style and philosophy. These non-visible factors include sexual orientation, generational influences, and cultural background, as well as leadership styles and non-traditional roles. As the field shifts to a more diverse and inclusive leadership, the career success of women and minorities in medicine will also shift. What is important is that as more representation for all groups becomes more common, we will definitely see a shift in our field. In my case, I have had female leaders as role models since I can remember, so it has been a "normal" occurrence. From having a working mother who always made it feel effortless, to many female college professors who inspired me as an undergraduate student, to a female PhD advisor and a female fellowship mentor, and a mostly female clinical laboratory leadership team, I have felt empowered and inspired by successful females from diverse backgrounds throughout my career and feel privileged and fortunate.

Lakshmi V. Ramanathan: We all are looking for role models to improve ourselves and, in this search, the natural tendency is to think of somebody who may be a bit like us. For women and minorities, it is important to have someone in leadership who understands the cultural values many of us come from. The possibility of having a successful career and family for a woman is important and is encouraging when working mothers are in leadership positions.

Careers in nursing and teaching have been accessible to women raising children since successful working mothers are visible in those fields. There have been many pioneers who have set examples over the years and nursing leadership is usually heavily women centric. On the other hand, science, mathematics, engineering, and medicine have not been attractive to women partly since they are unknown entities. There was very little representation in these fields in the sixties, seventies, and eighties, particularly in the United States. In fact, it originates in school where society assumes that girls cannot apply themselves to mathematics and science. These preconceptions led to a small number of women in medicine in previous decades with the eighties and nineties witnessing increases in women entering medical school and graduate school in mathematics and the sciences.

Zahra Shajani-Yi: My personal experience has been that a lack of representation sets limits on what you think you can attain and how you think you need to present yourself. I can share how seeing representation in a leadership position impacted me and subsequently my career. When I started my clinical chemistry fellowship, I was the only female trainee with young children in our department. I was conscious that unlike most of the other trainees, I had very set working hours and was worried about not appearing to be dedicated enough. I felt the need to compensate by always being extra poised and prepared. One morning, a few months into my fellowship, I noticed that my blouse had food on it from hugging my daughters as I dropped them off to daycare. I went to the restroom and in a little bit of a panic, tried to remove it. The chair of our department entered at that moment. Apologetically, I explained what I was doing. She smiled and shared with me how when her children were that age, they were always putting "goobers and stuff" all over her and we proceeded to discuss our families. That interaction influenced me in 3 major ways: First, in the moment it put me at ease and removed any worry I had about being viewed as a working mother. Secondly, it changed my perception of what was attainable for me, career wise. Finally, it impacted my future behavior towards others by motivating me to reduce stereotypes of working parents or anyone with family commitments. I now purposefully speak about my family to trainees and colleagues, in order to create a more inclusive work environment.

Why do you think there is still a lack of diverse representation in healthcare leadership positions? How do you think this is changing?

Octavia Peck Palmer: How institutions define leadership and who should hold leadership positions are the major reasons for the lack of diversity in leadership positions in healthcare. Additionally, there are minimal leadership pipeline opportunities, a limited candidate pool, and a lack of senior level professionals sponsoring a diverse cohort of individuals for the positions.

A national diversity, equity and inclusion (DEI) campaign continues to gain momentum across hospitals and medical schools to develop diverse leadership pipelines, recruit internally, and to identify inequitable practices in distributing resources among employees. While these efforts are vast, minimal success will be achieved if the ecosystem is biased and discriminatory to diverse individuals leading. A recent *New England Journal of Medicine Catalyst* commentary to healthcare leaders and their associated boards recommends they: "1) recognize that diversity is necessary but will not, alone, create a just and inclusive culture; 2) be aware that every leader is at risk for blind spots; and 3) appreciate that concepts of leadership and stereotypical traits of leaders among existing leaders may limit efforts for cultural inclusiveness and operational success".

M. Laura Parnas: I think that the speed of this change is slower than the speed at which our society and demographics are changing. We continue to see a move toward more representation in healthcare leadership

positions but this at times feels slow. The reality is that there is still a significant amount of bias that is likely the result of generations of biased behavior, which takes time to overcome. In particular, academia continues to be an extremely "traditional" environment that has not evolved as quickly as other healthcare areas. From my standpoint in industry, there's now a huge focus on DEI across all aspects of the company and we have seen this especially in the last few years with significant changes in the leadership teams, including women in non-traditional leadership roles (i.e., women in leadership roles other than in Human Resources).

Lakshmi V. Ramanathan: There is no doubt that representation by women and minorities in healthcare has increased over the years as is evidenced by available data on women entering medical school, graduate science, and engineering programs. However, women in leadership positions in healthcare are underrepresented. This could be as department chairs, academic appointments, and in healthcare administration. Several studies have demonstrated that there are fewer women chairs in pathology compared to male counterparts Nevertheless, there is reason to be hopeful that this will improve given the number of women and minorities pursuing higher education in healthcare. In my case in the eighties, I had to reach out to my husband's vice president and boss in industry, who was a woman, for guidance and inspiration as I could not approach anyone in my institution. It was still, in my opinion, worthwhile to speak with her though we were unable to discuss specifics related to laboratory medicine.

Zahra Shajani-Yi: Although there has been an increase in diverse representation in medical schools, PhD programs, residencies, junior faculty, laboratory, and medical directors, multiple studies have shown that women and minorities are still underrepresented in leadership positions, in particular senior leadership positions, such as department chairs or executive leadership. This suggests to me a general need to re-examine the current methods used to identify potential future leaders. We can also improve knowledge of leadership roles and access to leadership development opportunities. For example, is the pool of potential leaders biased by holding networking opportunities and/or informational sessions at times or locations that are not accessible to everyone? I have been able to take part in leadership development programs because it was supported by my leadership and offered during working hours.

What biases do you think women and racial and ethnic minorities in our field face?

Octavia Peck Palmer: Women and racial and ethnic minorities in our field experience both implicit bias and microaggressions (I fully acknowledge not everyone has the same experiences). Women may automatically be seen as the "mother" or "care-taker" in a team and not inherently as a leader. Biases include women and racial and ethnic minorities labeled as difficult to work with (i.e., emotional, take things too seriously, overthinkers), requiring a vast amount of professional resources, not earning a position (it was given to them), always looking for discrimination or racism in action, less dedicated to their careers and all have child care or parental care responsibilities that will prevent them from being successful, needing direction or mentoring on how to professionally respond in situations, and their hairstyles and clothing are given unwarranted attention.

These and other biases are harmful to women and racial and ethnic minorities and honestly to individuals that do not identify with any of the aforementioned groups. Biases can be eliminated when we reflect on how and why we make decisions when we interact with people who are different than us. We must ensure resources are available to women and racial and ethnic minorities and provide them with the opportunity to be successful in achieving their professional and personal goals.

M. Laura Parnas: Women in particular experience a variety of misperceptions and misconceptions throughout their careers. The reality is that we do not know much about someone that we haven't met, and we all carry these unconscious biases. For women, there are misconceptions and misperceptions about their physical appearance, about having or not having children, how hard it is to raise them, lifestyle choices, and whether women have "time" for a productive work life. We also experience biases in our behavior and are seen as "emotional," "bossy," or "reactive," when in identical situations but with men at the center, very different words are used. I have also seen women holding other women to higher standards than men. I could truly dedicate pages to this topic, but I will close my thoughts here by saying that as women in healthcare, we need to embrace each other and role model this to the entire organization. Our behaviors are "under the microscope," so we should take advantage of this and start with embracing it and making sure that we embrace fair and equitable behaviors.

Lakshmi V. Ramanathan: I think almost everyone will agree that there are unspoken preconceptions about the commitment of women to work compared to men. This usually is around how a woman can handle work commitments given their family responsibilities. I feel that the experience with the COVID pandemic has proven all skeptics wrong regarding the ability of women to handle responsibilities given the pressures we faced with work, home, and children's education.

There are also preconceived ideas about whether a woman or a minority can handle a leadership role.

While women may receive rave reviews about their competence, the ability to lead is only given to a few and this is not limited to science and medicine but across all fields.

What strategies do you employ to overcome biases?

Octavia Peck Palmer: I employ several strategies to overcome implicit bias and microaggressions that are directed at me. One strategy is to celebrate myself and acknowledge my strengths, and personal and professional achievements—I define who I am. Secondly, I am constantly learning, and it is important to be culturally competent and to acknowledge any biases I may have. Thirdly, I survey the culture of the environments to identify areas for change and how I can be impactful. Lastly, I use my voice. In difficult settings and conversations, I ask questions with the goal of understanding why this bias comment or microaggression has occurred and identify ways to prevent this from occurring to others in the future. I do not want a negative experience to derail me or my colleagues.

M. Laura Parnas: I work on intentionally preventing the influence of biases in my personal and professional environments. Over the years I have received training on how to identify, recognize, and manage bias, and I often use the tools provided in these trainings to evaluate and adjust my behavior and the behavior of others. However, I feel I am still a "work in progress" and continue to learn from every situation where biases are displayed. I think a combination of awareness, education, empathy, and ability to learn from every situation go a long way in the journey to unlearn the biases that we all carry throughout our lives.

Lakshmi V. Ramanathan: As many of us have noticed, biases are the product of lack of awareness and a fundamental lack of knowledge of history. Though institutional buy-in is essential, all of us can employ strategies to overcome these preconceived notions in small ways that are effective. Being inclusive, respectful and considerate towards all staff can start with our lab staff meetings. Encourage staff to speak up and share information about different cultures, which can include special holidays and celebrations. A little empathy towards colleagues can go a long way in this journey. Several institutions are providing courses and lectures on diversity and inclusion that are very helpful in dispelling ignorance and embracing simple truths. I would encourage all staff to attend these seminars.

Zahra Shajani-Yi: Throughout my life I have heard various versions of "my father/aunt/cousin did not like/trust all people who were … until they met you" or "you are not like other … I have met." Due to these experiences, I developed strategies to mitigate the biases that people may have towards me based on my name, gender, or ethnicity. The end result was that I began moderating my behavior, to avoid falling into these stereotypes, and in some cases minimized my background and experiences. In the last few years, I have become more aware of how I was altering my behaviour. I now make a conscious effort to not moderate or change my behaviour because it exacerbates the problem at hand by propagating the notion that there is only one path or experience that leads to success and it minimizes the value of diverse experiences. In addition, it is exhausting. I do not always succeed, but I am learning from the situations where I still feel the need to alter how I portray myself.

I make a conscious effort to not let bias influence my behaviour toward, and treatment of, other people. I examine my initial reactions to everyone I meet, the origins of these reactions, and refrain from making quick judgements.

Do you have mentors, colleagues, or role models who help you navigate challenging situations? Could you share past and/or current examples of their support?

Octavia Peck Palmer: I've had a diverse cohort of mentors during my career that is supportive in both my professional and personal journeys. My mentors candidly share with me their own experiences and strategies for career growth, serve as my sponsor for opportunities, and are supportive of me being successful. Importantly, they provide a safe space needed to discuss negative experiences I've encountered. My mentors provide feedback, guidance, and on occasions have directly addressed the issue on my behalf. An example of the support my mentors have provided is how to strategically handle the one-sided exchange offered by others in the form of a "why" question. There are times when individuals question my decision to participate or lead an initiative without sharing with me in a constructive manner why the initiative may not be appropriate. When sharing these experiences with my male counterparts, I've found they have not really experienced this type of questioning. In many instances they are praised for thinking outside the box, for working hard, and are asked what resources they need to be successful. The individual asking the "why" may have good intentions and thus further conversation should occur—will the individual not support me, serve as a sponsor, or cast doubt among others, are they not aware of current and past evidence that demonstrates my ability to be successful?

M. Laura Parnas: I have to say that for me particularly I feel I have a "board of mentors." They are mentors, colleagues, and role models who have truly helped me

navigate many different situations throughout my career. From just being a sounding board, to helping with specific career advice, career transitions, and also just provided time to just chat about life in general. As I mentioned before, I have had significant influence from women throughout my personal and professional life and they have been a key influential factor in my success and confidence to not only go for the challenge, but also to be OK with the downturns, and most of all to be patient, which is definitely a work in progress.

Lakshmi V. Ramanathan: When I started in the field in the late seventies, there were very few women in leadership positions. This was both at my graduate school and subsequently the institution where I did my fellowship. I was fortunate that in graduate school one, of my mentors was a woman who struggled to get respect in the department. I reached out to women outside my institution, like my husband's vice president, for advice. That was helpful. Additionally, I reached out to my mother for guidance as she had been a psychologist by training who went back to school after raising a family.

Presently, there are a few support programs available to women and minorities that offer advice and counseling on how to navigate this complex maze. One notable example is the social media community #LatinasinMedicine founded to empower and connect other physicians and trainees by the #DumaLab. This is very encouraging, as mentors and role models play an important part in one's professional development.

Zahra Shajani-Yi: I did not have any role models or mentors until I began my clinical chemistry fellowship. My first role models were the incredible female faculty, including the chair I mentioned earlier, whom I worked with while I was a trainee. My first experience with mentorship was also during my fellowship, through the Society for Young Clinical Laboratorians mentoring program. My current organization has a formal mentorship program, which has been a really positive experience for me and I have several informal mentors to whom I turn for support and professional growth. I cannot stress how important my colleagues are to my professional development and career satisfaction. I have an amazing group whom I turn to for ideas, for navigating challenging situations, and who provide support.

What actions can individuals, institutions, and organizations take to help reduce the effects of conscious and unconscious bias and promote diversity, equity, and inclusion?

Octavia Peck Palmer: Individuals, institutions, and organizations must formally acknowledge and assess how conscious and unconscious bias influences their decision making, hiring, salary, promotion/tenure practices, vision and mission development, selection of committee members/project leads, and cultivation of personal and professional relationships. Does everyone have an equal opportunity to contribute to and influence the workplace culture? They must be intentional and provide funding specific to DEI efforts, including formal and informal DEI training, assessment of current business practices, implementation of DEI initiatives within the company ecosystem, and regular follow-up training on the DEI principles. It is critical to eliminate practices that marginalize individuals and replace them with a business culture that celebrates and values the individual, where one is not judged due to their gender/sexual orientation, disability, racial/ethnic self-identity, or historical stereotypes. Individuals, institutions, and organizations that value DEI principles ensure the continuance of safe and culturally competent working environments that foster growth and innovation. It is important to me that the institutions that I work within, and the professional societies that I serve, will continue to actively translate the DEI principles within the fabric of their culture to build healthy communities for all.

M. Laura Parnas: From an individual standpoint, education, awareness, and willingness are a good place to start. There is a learning curve when it comes to conscious and unconscious bias, as well as how to effectively promote diversity, equity, and inclusion. Institutions and organizations have to make it part of their mission, and vision. It needs to be embedded in the cultural values of the organization. And most of all, education and awareness take time and persistence. Personally, I work to intentionally model the behaviors I want to see in others, and that includes intentionally promoting diversity, equity, and inclusion, both personally and professionally. It all starts with each individual, by educating ourselves, by being aware, by being an ally, by being an advocate, and by embracing change.

Lakshmi Ramanathan: I believe that there must be a commitment by the entire organization to promote diversity, equity, and inclusion. Several organizations have taken the lead and others can follow by example. For these programs to be successful, an integrated approach seems to be very effective. In many cases, ignorance and lack of understanding is the root cause of perceived biases and misconceptions. We are not in a sprint but a marathon to reduce bias and ignorance in organizations.

Zahra Shajani-Yi: On an individual level, the first steps to minimizing the impact of preconceived notions and biases are acknowledging that we all harbor them and understanding how these biases power our behavior. Institutions and organizations can support this by offering training in

unconscious bias. Leaders can be extraordinarily influential in promoting a culture that supports and values diversity by establishing inclusive practices, modelling behaviour, being clear about the values of the organization, and holding people accountable when these standards are not met. I believe that everyone can support inclusive practices by becoming an ally and advocating on behalf of others.

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