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EDITORIAL

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Women trailblazers shaping the global future of antimicrobial stewardship and antimicrobial resistance

Debra A. Goff [a], Afreenish Amir [b], Diane Ashiru-Oredope [c], Ella Balasa [d], Vanessa Carter [e], Angela Dramowski [f], Diane Flayhart [g], Souha Kanj [h], Flavia Rossi [i], Natalie Schellack [j], Diane Shader Smith [k], Karin Thursky [l], Dena van den Bergh [m] and María Virginia Villegas [n]

[a]Department of Pharmacy, The Ohio State University Wexner Medical Center, The Ohio State University College of Pharmacy, Columbus, OH, USA; [b]National Institutes of Health, Islamabad, Pakistan; [c]Antimicrobial Resistance (AMR) and Healthcare-Associated Infection (HCAI) Division, United Kingdom Health Security Agency (UKHSA), London, UK; [d]Balasa Consulting, Richmond, VA, USA; [e]Patient Advocate and Founder of The AMR Narrative, Altrincham, UK; [f]Department of Paediatrics and Child Health, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa; [g]Becton, Dickinson and Company, Franklin Lakes, NJ, USA; [h]American University of Beirut Medical Center, Beirut, Lebanon; [i]Pathology Department, Faculdade de Medicina da Universidade de São Paulo (FMUSP), São Paulo,Brazil; [j]Department of Pharmacology, Faculty of Health Sciences, University of Pretoria, Pretoria, South Africa; [k]The Global AMR Diary, Beverly Hills, CA, USA; [l]Department of Infectious Diseases, Melbourne Medical School, University of Melbourne, Melbourne, Australia; [m]Division of Infectious Diseases & HIV, Department of Medicine, University of Cape Town, Cape Town, South Africa; [n]Grupo de Resistencia Antimicrobiana y Epidemiología Hospitalaria, Universidad El Bosque, Bogotá, Colombia

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1. Introduction

Antimicrobial resistance (AMR) is one of the top 10 global threats to public health. In 2015, the World Health Assembly adopted a global action plan for AMR and the implementation of antimicrobial stewardship (AMS) programs. This plan encouraged member states to develop national action plans. Several countries supported the cause; however, many took little to no action. Many pioneering women took it upon themselves to take action. They blazed the trail for AMR-AMS in the face of cultural, gender, financial, and resource-limited barriers in their countries.

Women play pivotal roles in mitigating the harms of AMR by advancing global AMS efforts through their leadership, research, patient care, education, mentoring, advocacy, and outreach. The contributions of women dedicated to leading with an unwavering commitment to AMS are undeniable. Many women working around the world are inspiring not only for their contributions to AMR-AMS but also for the barriers they broke as women in infectious diseases (ID) and for their pursuit of fulfillment in both their personal lives and workplace, which is not only possible but essential for leading a balanced and meaningful life.

This paper highlights selected examples of 11 frontline women healthcare providers whose paths have crossed during their global work, whose influence on AMR-AMS extends beyond their country, and who have transformed challenges into opportunities, making them trailblazers in AMS. Importantly, three patient and family member advocates whose lives are forever impacted by AMR provide insights into their unwavering commitment to inform the public about AMR through their global advocacy. The interviews from 14 women sharing their personal stories allow the reader to learn from the insightful experiences of women trailblazers shaping the future of AMR-AMS.

1.1. Healthcare providers in high-income countries

United States: Debra Goff, Infectious Diseases Pharmacist

After completing a Bachelor of Pharmacy, Doctor of Pharmacy and residency at the University of Illinois in Chicago, Debbie was the first pharmacist in Ohio with a PharmD degree to work as a clinical pharmacist in a private teaching hospital. After working full-time for 6 years she joined The Ohio State University Medical Center in 1988 as the first infectious diseases (ID) clinical pharmacist. Although the new position was full-time, she negotiated to work part-time (50%) to provide a better work–life balance as a new mother. Debbie had to overcome the perceived barrier that women who work part-time reflect reduced commitment. Considered one of the first ID pharmacists to implement a multi-disciplinary AMS program at a large academic medical center, Debbie is best known globally for her *Train the Trainer AMS mentoring program* in South Africa, Lebanon, and seven Latin American countries. Based on her pioneering research, the American Society of Health Systems Pharmacists Society selected her to mentor hospital AMS teams beginning in 2010. She recognized the essential role of pharmacists in AMS and passionately trained and mentored the next generation of pharmacists. In 2010, Debbie and the President of the Infectious Diseases Society of America made a passionate presentation to investors on Wall Street to fund AMR clinical trials. She had the vision to see the impact of rapid diagnostic tests

CONTACT Debra Goff Debbie.goff@osumc.edu Department of Pharmacy, The Ohio State University Wexner Medical Center, 410 W 10th Ave, 368 Doan Hall, Columbus, OH 43210, USA

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(RDT) on patient care and led the first RDT study with pharmacist's interventions. In 2015, Debbie was the first ID expert on X (formerly Twitter) to study the impact of social media to engage surgeons in AMR-AMS. As a social media influencer, she engaged with other AMR-AMS champions who shared her passion and strived to pay it forward.

Debbie believed 'If I published my research, I could teach the world.' Her publications led to invitations from 36 countries to help implement AMS. She secured funding to fuel the implementation of adult, neonatal, and most recently dental AMS in South Africa. She was the first pharmacist to receive the prestigious International Outreach and Engagement Award from The Ohio State University for her global work. Her collaboration with South Africa, now in its 15th year, generated the first adult and neonatal AMS intervention studies from a low-middle-income country (LMIC). She contributed to the 2017 World Health Organization (WHO) *Global Priority Pathogens List*, the 2018 Centers of Disease Control and Prevention (CDC) *Core Elements of Human Antibiotic Stewardship Programs in Resource-Limited Settings* and the 2019 WHO *Practical Toolkit for AMS Programs in Health-care Facilities in LMICs*. The WHO selected her as one of 25 global health experts to implement AMS programs in LMICs. She was invited by the American Society for Microbiology (ASM) to lobby members of the U.S. government for AMR funding and laboratory capacity building in LMICs. Her TEDx talk, 'Antibiotics: just-in-case,' has over 35,000 views on YouTube. Debbie has been a powerful role model for female clinical pharmacists worldwide. Working part-time, Debbie broke the barrier of outdated norms that equate success with full-time presence. She redefined professional achievement on her terms. Her work has been particularly impactful in settings and countries where female pharmacists have historically faced cultural or systemic barriers to raising their voices. She is a global change-maker, who created transformational change in AMR-AMS, which is what makes her a trailblazer.

United Kingdom (U.K.): Diane Ashiru-Oredope, Pharmacist

Diane received her MPharm, Clinical Pharmacy, PhD, and Master of Research in Public Health in the U.K. She is the Lead Pharmacist for AMR at the U.K. Health Security Agency. She has led groundbreaking projects that shaped national and international AMR policy. In 2013, Diane co-led the establishment of the English Surveillance Program for Antimicrobial Utilization and Resistance. She leads the annual national AMR surveillance report, antimicrobial consumption, and AMS, now in its 12th year. She conceptualized and developed the global Antibiotic Guardian campaign in 2014, securing over 210,000 pledges across 120 countries. This campaign is now cited in the U.K. AMR strategy. Through collaborations with Africa CDC and WHO Europe, it has been adapted for African countries and translated into multiple languages. Diane accomplished most of this working part-time (80%). Her flexible schedule allows her time for personal development outside of work and letting go of perfectionism.

Diane was part of the WHO core leadership team that developed the WHO *Policy Guidance on Integrated Antimicrobial Stewardship Activities*. As the global AMR lead for the Commonwealth Pharmacists Association from 2018 to 2022 she led AMS program implementation through health partnerships approach across eight African countries and jointly developed the *Surveillance and Prescribing Support for AMS Resource Capacity Building* program that has been implemented across 22 African and Asian countries. She has led the development of a smartphone app, a board game, AMS modules, animated videos, and implementation of *Start Smart Then Focus AMS Toolkit* for secondary care, which has been recognized at both national and international policy levels in the U.K. and beyond. Diane is passionate about Pharmaceutical Public Health, research, and developing future health professionals. She was recently awarded a 4-year National Institute for Health and Care Research (NIHR) award to identify risk factors and interventions to reduce disparities in the incidence of AMR blood stream infections. Recently, she became the first non-physician Chair of the *European Society of Clinical Microbiology and Infectious Diseases* (ESCMID) Study Group for Antimicrobial Stewardship (ESGAP), further highlighting her as AMR-AMS trailblazer.

Australia: Karin Thursky Infectious Diseases Physician, Digital Health Expert

Karin's passion for AMS began in 1997 during her ID fellowship. Her out-of-the-box thinking in AMS inspired her to team up with a software engineer and human factors expert to develop the first computerized clinical decision support system for antimicrobial prescribing at the Royal Melbourne Hospital. The program reduced antimicrobial use and led to a reduction in AMR. Its success led to a 2001 national business innovation grant that was used to develop a digital platform to support the first novel systems approach to AMS. The award-winning program, *Guidance*, has been scaled to over 70 Australian public and private hospitals. Importantly, it generated the first national high-quality evidence for antimicrobial approvals with decision support and post-prescription audit and feedback. Karin served as an expert advisor to the national committees overseeing the accreditation framework for AMS and the national AMR strategy. She established the National Centre for Antimicrobial Stewardship (NCAS) in 2015 that spans across human and animal health. Her team developed the web-based National Antimicrobial Prescribing Survey, which is now used by over 500 hospitals and over 1000 aged care homes across Australia to monitor, report, and benchmark the appropriateness of antimicrobial use. This innovative platform has been scaled and adopted in 15 countries including LMICs. New funding will support expansion to dental, primary care, veterinary, and livestock sectors.

As a leading AMS researcher in Australia, she has supported international AMS initiatives from the WHO and the U.K. Fleming Fund. NCAS is a partner in the WHO *Collaborating Centre for AMR* in the Doherty Institute. One of her great joys has been mentoring and sponsoring the AMS pharmacist workforce. As someone who never backs down from a challenge, she continues to innovate. She recently developed Australia's first accredited nurse practitioner role in AMS and sepsis. Her digital health work continues at a country, regional, and international level, making her a trailblazer.

1.2. Healthcare providers in low-middle-income countries (LMIC)

Lebanon: Souha Kanj, Infectious Diseases Physician

Souha's career in AMR-AMS spans patient care, research, education, and policy development at the national, regional, and international level. After training in the U.S. at Duke University and the Howard Hughes Medical Institute, she returned to Lebanon in 1998 to lead AMS and infection prevention and control (IPC) at the American University of Beirut Medical Center (AUBMC). She developed Lebanon's first state-of-the-art IPC program, making AUBMC a national model. She coauthored five national guidelines on ID management and spearheaded AMS initiatives including the development of the first electronic system for approval of restricted antibiotics among other strategies that optimized antibiotic use, reduced AMR, and improved patient outcomes. Her work extends regionally, providing AMS training to healthcare professionals across the Middle East.

Internationally, she served as Co-Chair of the International Society of Antimicrobial Chemotherapy (ISAC) AMS Working Group, contributing to position papers, distance learning modules, and global AMS strategies. She has also collaborated with the WHO on the Priority Pathogens List, Global Infection Prevention and Control Network, and Research & Development Blueprint for Priority Diseases. Her research has focused on AMR infections, leading to over 320 peer-reviewed publications. She played a key role in global AMR policy, serving on advisory boards such as the Joint Programming Initiative on AMR and the Surveillance and Epidemiology of Drug-Resistant Infections Consortium. More recently, she was invited to join the WHO AWaRe technical advisory group and was elected as President of the ISAC. Recognized for her leadership and trailblazing research, she received the Lebanese Council for Scientific Research Award and the Valkhof Chair from Radboud University. Through research, advocacy, and mentorship, she remains committed to advancing AMS and ensuring that global efforts against AMR are sustainable and impactful, which is what makes her a trailblazer.

South Africa: Dena van den Bergh, Pharmacist, Health Systems Change Leader

Dena received her Bachelor of Pharmacy and Master of Science followed by a Doctorate in Engineering. This gave her a love for systems thinking which she integrated with her clinical expertise to create a unique approach to healthcare change leadership. Tackling AMR-AMS through her healthcare leadership experience and systems engineering skills has been the cornerstone of Dena's trailblazing work in South Africa. Early in her career, being one of two women at the table as a healthcare leader was a barrier, often requiring her to work harder to earn respect and have her voice heard in a space historically held be men. She was turned down for a Chief Executive Officer (CEO) position in healthcare three times. She achieved the CEO position on the fourth try. Dena found that 'leadership is a skill, not a position.' In her role as a healthcare executive leader within two of the largest healthcare organizations in South Africa, she spearheaded, and published groundbreaking multihospital collaborative AMS and IPC studies, using existing resources. In 2009, Dena was a co-founder of a national quality improvement campaign 'Best Care Always!' that implemented IPC interventions across 200 hospitals and trained frontline providers in quality improvement (QI) methods for IPC and AMS. In 2015, she was awarded the inaugural Lifetime Achievement Award for Outstanding Leadership in Quality Improvement in South Africa by Discovery Health. Faced with the challenge of limited resources, she recognized the potential of collaborative large-scale AMS program implementation and the power of learning through action. She subsequently became a founding member of the South Africa Antibiotic Stewardship Program (SAASP), a national initiative to raise awareness of AMR, and support AMS programs. Through SAASP, she led the first large-scale public-private sector AMS studies with adult and neonatal patients leveraging QI methodology that improved antibiotic use and patient care outcomes. In 2013, she led the implementation of the first electronic AMS and IPC system across 56 private hospitals.

Dena contributed to the 2019 WHO *Practical Toolkit for AMS Programs in Health-Care Facilities in LMICs*. By working collaboratively with local and international AMS leaders, her research has made important contributions to understanding context-specific requirements for successfully implementing AMS in LMICs. She passionately provides her game-changing methods and approach to change leadership through her online Master Mentoring Program [1]. Her mentoring program strives to strengthen and expand AMS leadership capability to enable the spread and sustainability of AMS programs globally and inspire the next-generation AMS leaders, which is what makes her a trailblazer.

South Africa: Natalie Schellack, Pharmacist

Natalie's career began as a nurse. She transitioned to pharmacy as an academic intern at Sefako Makgatho Health Sciences University in 2003 and then completed a BPharm and PhD. Navigating cultural, gender, and language barriers, she believes these challenges fueled her determination to innovate and lead. She is a pioneering leader in AMR-AMS, who has spearheaded national strategies in South Africa and developed innovative programs for resource-limited settings. As one of South Africa's pioneering female Professors of Pharmacy, she has been instrumental in training and mentoring clinical pharmacists, recognizing their critical role in improving patient safety, optimizing medication use, and contributing as vital members of AMS teams. She received the Vice Chancellor's Distinguished Teaching and Learning Excellence Award. In 2011, she co-founded the South African Society of Clinical Pharmacists, which has driven significant advancements in AMS across South Africa. In 2012, she became the editor of the South African Pharmaceutical Journal. She served on the South African Pharmacy Council and on the Ministerial Advisory Committee, developing national AMR-ASP strategies. She co-developed a web-based application in 2017 to measure antimicrobial use – a first of its kind in South Africa. In 2019, she was selected by the U.S. CDC as a national expert on a Gates Foundation grant to train pharmacists and implement neonatal AMS in a hospital experiencing an outbreak of AMR infections.

Her global collaborations include partnerships with the U.K. Fleming Fund and Newton Grant initiatives with many African countries. She was South Africa's national expert selected to serve on the 2023 Global Ministerial Summit on Patient Safety focusing on the challenges of implementing AMS worldwide.

She is a coauthor on the Lancet Microbe's 2024 *Global Research Priorities for AMR* and the 2024 WHO *Global Research Priorities for AMR in Human Health*. With over 200 publications, Natalie is a trailblazer who continues to shape policy and blaze new paths for the global advancement of pharmacy practice and healthcare delivery in South Africa.

South Africa: Angela Dramowski, Pediatric Infectious Diseases Physician

Pediatric Infectious Diseases (PID) has been her interest and passion from the start of her medical career. Following a pediatric residency in South Africa, she was awarded a Fogarty-Nation Institutes of Health International Clinical Research Fellowship and in 2011, and became the first South African female PID fellow trained at Tygerberg Hospital, South Africa. She developed a special interest in IPC and completed a PhD on healthcare-associated infection in children. This established her as one of the first African women with expertise in both PID and IPC, positioning her as a national opinion leader. The U.S. Society for Healthcare Epidemiology of America (SHEA) appointed her as an international ambassador role in 2013 where she built a global network of colleagues with similar interests. In 2017, she received an NIH Emerging Global Leader award to develop a care bundle for the prevention of neonatal infections in resource-limited settings.

She has collaborated on international studies, including the largest observational study of neonatal sepsis in 15 countries. She was the physician lead for the 2022 NeoAMS program, the first South African neonatal national study using pharmacists' audit and feedback interventions in 14 hospitals. The NeoAMS program was awarded the 2023 Global AMR Industry Alliance Stewardship Prize. In 2024, the NeoAMS program was continued at two large neonatal units in South Africa, with neonatal nurse involvement and incorporation of IPC practitioners. Her experience co-leading the growing NeoAMS teams has been transformative, highlighting the potential to empower all staff to improve AMS and IPC and ensure high-quality healthcare for neonates. Her global work continues with the launch of NeoNET AFRICA, a multi-disciplinary network to reduce neonatal sepsis deaths in sub-Saharan Africa. She is a trailblazer who is passionate about patient safety and the use of data to inform quality improvement in the care of hospitalized neonates and children.

Brazil: Flávia Rossi, Physician and Microbiologist

Her passion for Clinical Microbiology was ignited in 1985 during a transformative period in Brazil. The death of the Brazilian President due to complications from a post-surgery infection underscored the urgent need for better monitoring and management of hospital infections. She graduated as a medical doctor and specialized in General Practice, Clinical Pathology, and Clinical Microbiology. Early in her career, she introduced automation into the microbiology lab, streamlining various tests and pioneering efforts to reduce turnaround times. Her contributions led to an invitation to represent Brazil as an ASM ambassador for a decade. In this role, she facilitated educational exchanges and built a global network of colleagues. In 1999, she became the only Brazilian woman to have participated in the Alexander Project, an international study on pneumococcal disease.

She has collaborated with organizations including the Pan American Health Organization (PAHO) and the WHO. She served as an educational collaborator in Brazilian societies, contributing to national microbiology guidelines. In 2000, she coordinated the first web-based microbiology course at the Faculdade de Medicina da Universidade de São Paulo, training professionals from Brazil through telemedicine, resulting in national certification. This initiative received distinguished recognition at the Telemedicine Congress in London. She was the only woman from Latin America invited to join the WHO Advisory Group on Integrated Surveillance of AMR fostering professional exchanges on the rational use of antibiotics in humans, animals, and agriculture. She authored a book on antimicrobial susceptibility testing, gaining visibility in Latin America and publishing numerous papers on these topics. Through her leadership, she has inspired a generation of microbiologists who now have pivotal roles on IPC committees and AMS initiatives. Today, her legacy as a trailblazer continues to influence patient care and improve outcomes across various medical specialties.

Colombia: Maria Virginia Villegas, Infectious Diseases Physician, Microbiologist

Virginia did her Internal Medicine training and Master's degree in Microbiology at the University del Valle in Colombia, an ID fellowship at the University of Miami. She was the first woman trained in ID and clinical microbiology in Colombia in 1991. Her goal was to integrate microbiologists in clinical and therapeutic decisions for better patient care. She established the first Colombian and Latin American network to conduct AMR surveillance and study emerging mechanisms of resistance. The growing network currently comprises 47 public and private hospitals in 14 cities. She translates the AMR data into therapeutic decisions, which is now recognized as AMS. Her publications have become the focus of attention in Colombia, Latin America, and the rest of the world. Her passion and dedication to teaching and leading others in Colombia and Latin America have given her several distinctions. The High Presidential Advisory Office for Women's Equality awarded her the Medal Recognition Award as one of the most remarkable women in the State of Valle del Cauca Colombia. For achieving professional excellence and being a role model for future generations, she received the Eduardo Gotuzzo Medal Recognition Award from the Pan-American Society of Infectious Diseases. The Colombian ID Association awarded her the Medal Recognition Award for a life of dedication, commitment, and contribution to AMR research.

In 2017, she was invited to Washington DC to speak at the WHO-PAHO *Regional Expert Consultation on Monitoring and Evaluation of AMR Interventions* meeting, which led to her coauthoring a book *'Recommendations for Implementing AMS in Latin America and the Caribbean.'* Because of her leadership and AMR contributions, she was an invited panelist at the United Nations (UN) General Assembly High-level Meeting on AMR in 2024. Her trailblazing work continues on as the program mentor for seven AMS hospital centers of excellence in Colombia and Latin America.

Pakistan: Afreenish Amir, Microbiologist

Afreenish completed a Bachelor of Medicine, Bachelor of Surgery, PhD, and Master in Public Health in Pakistan. Her career has been dedicated to AMR-AMS. In Pakistan, women face barriers to top leadership positions and inclusion in decision-making. She overcame numerous challenges to emerge as one of the first women trailblazers in AMR-AMS, demonstrating immense courage and resilience in driving change. She joined the NIH Pakistan in 2017 and was actively involved in the National Action Plan on AMR. She worked on the Global Antimicrobial Resistance Surveillance System (GLASS) and Pakistan AMR Surveillance System in the country. She remained engaged in World Antibiotic Awareness Week initiatives and COVID-19 pandemic support for Pakistan. Currently, she is the project director for the first ever National Fungal Disease Surveillance System, promoting fungal diagnostics at 14 hospitals. As a co-PI on a Wastewater and Environmental Surveillance (WES) Project, she is aiming to develop WES strategies for Pakistan. Afreenish contributes to the ASM workshops in Pakistan and developed the first AMR Learning Portal [2]. She worked on the National Cholera Control Strategy with WHO Pakistan. She launched an AMS certificate course to support AMS capacity building in collaboration with Pakistan's leading public health institute.

Her efforts have been recognized globally. She represented Pakistan as Chair and Co-Chair of the Global Health Security Agenda facilitating regional and global collaboration for AMR action. She was selected by ASM to support dialogs with the U.S. government for AMR funding and laboratory capacity building in LMICs. She served as Technical Advisory Group member for Fleming Fund, a member of WHO Advisory Group on Bacterial Priority Pathogen List, and WHO Global AMR Research Agenda in Human Health Sector, AMRnet Policy Advisory Group. As a forward-thinking champion and trailblazer, she brings unrelenting enthusiasm and commitment to designing and delivering groundbreaking AMS initiatives, driving meaningful impact and progress.

1.3. Healthcare expert in industry

UnitedStates: Diane Flayhart, Microbiologist

Diane's passion for diagnostics and AMS started in the clinical microbiology lab at The Johns Hopkins Hospital where she learned that taking time to connect clinicians with microbiologists resulted in the best patient outcomes. After 17 years, she joined BD (Becton, Dickinson and Co.) as the Director of Global Public Health working in many LMICs to improve awareness and action on reducing the burden of AMR infections, globally. She co-developed a *Train the Trainer Microbiologist Mentoring Program* for Kenya, Rwanda, and Uganda. As a member of the medical technology industry, she developed partnerships, collaborations, and programs at a global and regional level. The Antimicrobial Resistance Fighter Coalition, led by Diane, has created podcasts, webinars, awareness toolkits, a documentary, and a social media presence focused on elevating the voices of patients, clinicians, and researchers who are working every day to reduce the burden of AMR. To mobilize action, Diane presented on several panels reviewing new trailblazing opportunities to enhance diagnostic testing and AMS. Most recently, she completed a large-scale, real-world data research with the Cancer & AMR Consortium to understand the profound impact of AMR infections on cancer patients. The Cancer & AMR Consortium is a partnership focused on highlighting the impact of AMR on cancer patients. It brings together the AMR Action Fund, BD (Becton, Dickinson and Company), and UICC (Union for International Cancer Control). The consortium aims to raise awareness about the threat AMR poses to cancer care and to accelerate advocacy, policy changes, and innovation in this area. Diane sits on the board of the AMR Industry Alliance where she partners with other industry members, government, and non-government organizations to provide sustainable solutions to curb AMR. She presented at the 4th Ministerial Meeting on AMR in Saudi Arabia and was invited to the UN General Assembly High-level Meeting on AMR in 2024 where she advocated for funding of AMR national action plans. Her unwavering commitment to AMR advocacy and diagnostic stewardship makes her a trailblazer.

1.4. Patient and family member advocates

United States: Ella Balasa

Ella is an AMR patient advocate who has been living with cystic fibrosis (CF) for 31 years. Having a background in biology, Ella has experienced both sides of the research spectrum – as a patient and a scientist examining AMR bacteria in the environment. As the symptoms of her disease began to worsen in her 20s, she started posting articles to her blog titled 'This Lung Life' [3] in order to express her feelings of living with a chronic and progressive disease. This exposure led to building connections with the CF community and collaborations with AMR stakeholders.

As her health declined, she researched phage therapy and found a phage research company. She received phage therapy in 2019 and shared her experience on social media. The Associated Press interviewed Ella and the publicity led to speaking invitations from the FDA, the Milken Institute's Future of Health Summit, and participation in the documentary 'The Silent Pandemic.' She is deeply involved in the CF community through being a past director of the U.S. Adult CF Association, serving as a member of research committees for the CF Foundation, and through her passion for writing. She was a co-chair for the inaugural CF research conference, ResearchCon, and was named the 2019 CF Ambassador for the Virginia Chapter. In 2023, the WHO formed the *Task Force of AMR Survivors* and selected Ella as one of 12 patient advocates for AMR. The 2024 UN General Assembly High-Level Meeting on AMR opening remarks were given by Ella. Ella believes that collaborating with stakeholders to highlight patient experiences is vital to advancing the awareness of and innovation for treating AMR infections. Ella's passion for improving her health and the health of patients worldwide makes her an AMR trailblazer.

South Africa: Vanessa Carter

Vanessa became an AMR patient advocate in 2013 after surviving a severe car accident in Johannesburg, South Africa, in 2004 which led to a decade-long facial reconstruction and a three-year battle with a methicillin resistant *S. aureus* (MRSA) infection. It bothered her that the term 'antibiotic resistance' was not common knowledge. In 2012, after nearly losing her

life for the second time due to further complications, she thought, 'My life should have more meaning. If I survive, I am going to do something to help others with AMR.' She contributed as a patient to AMR awareness in South Africa, by collaborating with SAASP to help implement the Antibiotic Guardian Pledge Campaign, which was later adopted by the National Department of Health. In 2017, she was awarded an e-Patient Scholarship at Stanford University's Medicine X.

After moving to the U.K. in 2020, she established The AMR Narrative, a charity focused on developing advocacy capacity among patients and the public, raising awareness, and building a global community of patient voices. She was the first patient member of the WHO Strategic Technical Advisory Group on AMR (STAG-AMR) from 2020 to 2023. She has also served as inaugural Chair of the WHO Task Force of AMR Survivors since 2023. She is a lay member of the U.K. *Advisory Committee on Antimicrobial Prescribing, Resistance and Healthcare-Associated Infection* (APRHAI) and has previously served as a civil society champion at the Africa CDC where she was able to contribute toward the Strategic Framework for AMR in Africa. She also coordinated and moderated a series of online community dialogs on X (formerly Twitter) for 3 years during World AMR Awareness Week (#AfricaWAAW) resulting in close to 22 million impressions in 2019. Her advocacy has earned her several awards, including the Woman of Stature: Woman of the Year Award in South Africa, the FINDdx Voices for Diagnostics Award presented at the World Health Assembly, and the Antibiotic Guardian Award for Community Communications in 2020, organized by the U.K. Health Security Agency. In 2024, she shared her life-changing story as an opening speaker at the UN General Assembly High-Level Meeting on AMR. Her ongoing work as a fierce patient advocate for AMR makes her a trailblazer.

United States: Diane Shader Smith

Diane emerged from a deeply personal tragedy – the loss of her daughter Mallory, at the age of 25 to AMR- and became a trailblazer in the AMR space. Mallory, who had cystic fibrosis (CF), battled an AMR infection for many years. In the end, the infection rendered antibiotics, a lung transplant, and phage therapy ineffective. Diane has since worked to redefine the public's understanding of AMR and is reshaping how we talk about and respond to it. She introduced innovative strategies to make AMR visible – leveraging narrative medicine, personal storytelling, and the cultural reach of film and television to elevate this invisible threat. Early on, Diane was advocating for Hollywood to play a role in shaping AMR awareness, arguing that popular media has a unique power to shift behavior and influence policy. She coined accessible frameworks, like the 'alphabet soup of acronyms,' to explain why the public struggles to engage with the issue. She has delivered talks at the White House, Capitol Hill, North Atlantic Treaty Organization (NATO), the European Commission, and other global venues, urging leaders to recognize that AMR is not just a medical crisis – but also a crisis of communication. As Diane puts it, 'We learn more from the voices and experiences of people living and dying from AMR than we do from the bacteria themselves.' Through her extensive diaries and video recordings, Mallory gave voice to the lived experience of fighting both CF and AMR – offering rare and profound insight into what it means to live with resistant bacteria. Just as people around the world know what cancer is, Diane believes AMR must become equally understood.

Diane's global platform grew from the success of Mallory's posthumously published bestselling memoir *Salt in My Soul*, the documentary of the same name, her second book *Diary of a Dying Girl*, and *The Global AMR Diary* [4] a storytelling

Figure 1. Characteristics of women trailblazers for antimicrobial resistance and stewardship.

initiative Diane created to aggregate the stories global health leaders have been collecting and to influence public policy. By turning personal grief into systemic advocacy, Diane is a trailblazer who has raised millions of dollars for AMR research, pioneered bold and creative awareness strategies, and positioned AMR as a profoundly human story-one that demands urgent global action.

2. Conclusion

The common characteristics of these trailblazing women who represent a wide age range, diverse backgrounds, different cultures, and eight countries are shown in Figure 1. They responded to the global call for AMR-AMS action by asking themselves, 'What does my community, my country, and the world need from me right now'? These women accomplished the unthinkable because they refused to be limited by boundaries and barriers. They could skillfully think outside the box. Their confidence and commitment to AMR-AMS is contagious. They encourage women to embrace the 'sisterhood of stewardship' for AMR-AMS advocacy and to celebrate the successes of women worldwide. Trailblazers boldly venture out on a limb to advocate for AMS-AMR. They know that is where the fruit grows and progress begins.

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ORCID

Debra A. Goff http://orcid.org/0000-0001-7686-0670
Angela Dramowski http://orcid.org/0000-0002-0161-9791

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