As the world has changed drastically since the beginning of 2020, so have the scope and tone of the commentary, research, and clinical guidance related to COVID-19 and microbial co-infections, not to mention the wider global landscape and pressing questions about the future of antimicrobial resistance (AMR). As an infectious diseases researcher who doesn’t, as many assume, work in a laboratory or healthcare setting, I’ve often struggled with my approach to research and how I interpret and communicate findings. It’s a good struggle to have—to reckon with purpose and the ethical dilemmas that come with advocating for change when I’m not the one necessarily making the hard decisions about antimicrobial use, medical treatment, or policy shifts. I work with information from disparate sources, not laboratory data, and in many ways, my role is one of witness and observer, not practitioner.

In April 2020, the Antimicrobial Stewardship Project at the University of Minnesota Center for Infectious Disease Research and Policy launched a resource hub to bring together burgeoning research, opinion, and tools on associations between COVID-19 and microbial co-infections, antimicrobial use and stewardship, antibiotic development policy, and the possibility of rising AMR. Drug-resistant and difficult-to-treat infections were a growing problem and a threat to modern medical treatment before the pandemic. Whether or not the health, social, and economic upheaval of the past 2 years has increased global rates of AMR remains difficult to predict, yet the causes and effects of potentially rising drug resistance are imperative to prevent. As the resource hub has grown, I’ve grappled with a problem so common to anyone working in the research sphere during the pandemic: how to meet the demand for evidence and information while reconciling myself with the vast and complex uncertainty underlying the growing base of knowledge in this area.

One thing has become clear: Findings are likely to change quickly. The latest understanding of infection risk or drug resistance could be soon supplanted with new data, improved analysis, or, simply, the effects of time’s passing that render nearly all scientific research part of a trajectory toward truth and not an unshakeable fact in and of itself. The urgent research conducted over the past year and a half has served in large part to illuminate how badly we need to consider the
role we want research to play in building knowledge and in bringing about meaningful improvements in health.

Research Innovation from Chaos

The heart of the COVID-19 and Co-infections hub has been the documentation of antimicrobial stewardship strategies that respond with innovation to a changed health environment where much about accepted practice has come into question. And though I haven’t been excessively focused on silver linings—I have much to learn about potentially devastating effects of the pandemic on the diversion of healthcare and public health staff from antimicrobial stewardship responsibilities and the overall environment of provider and researcher burnout that requires deep structural recovery—I’ve been surprised by the wealth of activities that craft a creative, yet scientifically grounded, approach to research from the chaos of challenging circumstances.

Given the renewed realization that systems and standards for collecting and analyzing AMR and infection data are globally fragmented, many global programs turned their attention to building research processes with available resources. From the adaptation of AMR surveillance and One Health partnerships to COVID-19 information-sharing in Bhutan to SARS-CoV-2 tracking in wastewater using phage-hunting processes in the US and the rapid setup of living systematic reviews of secondary infections in COVID-19 patients in Canada, clinicians and researchers were able to form a bricolage of strategies that furthered understanding, communication, and direct action in a world in which certainty had become a scarce resource.

These activities have also enabled strategies and communication mechanisms that help to build a knowledge base and behavior change from clinical experience and data. The accumulation of observational and experiential research—addressed with integrity, humility, respect for uncertainty, and a willingness to change course when assumptions are disproven—has moved forward individual and population health in the absence of opportunities to conduct gold-standard studies.

Collecting and Communicating Research

Throughout the pandemic, researchers working in policy, clinical, and public health environments have affirmed the need for an improved global research infrastructure, one in
which research is prioritized as a key contributor to health and not simply as an afterthought to policy or clinical practice. When preparing to speak about antimicrobial stewardship and COVID-19 to a class of epidemiology graduate students earlier this year, I tried to communicate what I’ve learned during the past 2 years, not only about the importance of research to direct public health interventions and clinical care during the pandemic, but about the urgent need for research conducted with integrity. This need is inextricably tied to the imperative to share knowledge truthfully and equitably while clearly communicating limitations and implications. As research is not an afterthought to practice or policy, neither is communication an afterthought to research.

While much has been written about the need for more data collection on COVID-19 and co-infections, as well as governance that attends to research as a public health necessity, I wish to highlight as well the importance of resource hubs like the one I’ve been tending for almost 2 years. These living archives advance research by forming connections between ideas and projects, valuing research that arises from necessity and considers itself part of a conversation or puzzle (ie, not an ideal or an answer), and generally helping to make sense of things.

As I reflect on 2 years of thinking about the implications arising from this collection of information on COVID-19 and the microbial world, I ask myself what’s next. How do I define and accept the responsibilities that accompany my stated role as witness to research? How do we as a research community interpret the responsibility to share and interpret information and the conversations around it in an understandable and empowering way? How do we create access and space for underrepresented and under-published voices in the research sphere, when unheard voices and unpublished data could have the potential to save lives?

As I consider these questions, one thing is clear. An improved research infrastructure is built and maintained not only with data and investments, but with space to witness, understand, and communicate research as it affects the life and health of everyone on this planet. Walking the path of informed uncertainty that characterized much of the last year has clarified the need to advocate for the importance of research not only conducted, but communicated, with integrity and humility in the direct service of individual and population well-being.

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