



Commentary

Advocating for a “Community to bench model” in the 21st century

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Academic cancer centres have a longstanding tradition of conducting research contributing to discoveries and generalizable knowledge. The benefits of these discoveries have not always translated equitably to all communities. Dr. Harold Freeman suggested this “discovery-to-delivery” disconnect as a critical contributor to cancer health inequities, further exacerbated by overlapping factors (poverty, obesogenic environments, and social injustice) [1] collectively described by John Galtung in 1969 as “structural violence.” While cancer incidence and mortality has declined across all racial/ethnic groups, the enduring gaps between racial/ethnic groups stem largely from differences in the upstream determinants of health, including policies negatively impacting these groups.

The inconsistent integration of community input into existing research frameworks also perpetuates cancer inequities across the research continuum. While frameworks such as the community-based participatory research (CBPR) have integrated community stakeholders in population health research [2], such integration seldom occurs in the basic and clinical/translational sciences. Moreover, CBPR rarely impacts the design and/or development of interventional clinical trials and emerging fields such as big data sciences. Anecdotally, many basic scientists and clinical/translational leaders admit being stumped on how to bridge the gap between their research and the community. Communities face a similar dilemma, constantly unsure of effective ways to reach into academic research entities to engage in inclusive dialog. This “disconnect” may inadvertently contribute to inequities by misaligning scientific efforts with pressing community needs. Therefore, it is time that the field of scientific research goes beyond the familiar ideology of the “bench-to-bedside” model which is inherently unidirectional and limited to those fortunate enough to reach the bedside. Instead we propose the implementation of a community-to-

bench” cyclical model (CBC) to more effectively resolve the “disconnect” between our science and the community.

We suggest the CBC model as a value proposition to research, with communities as the bedrock from which high-quality, community-relevant data are derived, to inform both discovery science and clinical trials. The CBC augments the CBPR approach by deliberately bringing valuable information directly from the community to inform bench/translational research in three key ways: *promoting community in-reach*, *data democratization*, and *bringing a flipped-classroom approach to research*.

Community in-reach (CIR) recognizes, embraces, and invites community dialogue to co-inform and co-direct basic scientific inquiry. In-reaching entails having community members integrated into research units asking and answering questions regarding proposed or ongoing research. CIR extends beyond traditional community advisory boards in that community members are structurally and programmatically integrated, rather than episodically convened to address research issues.

The results of CIR may lead to community members developing and leading scientific inquiry working groups distinctive in that both researchers and community members contribute scientific ideas to be evaluated with equal weight and rigor for community relevance and impact. The community members also serve as informal science-community translators who may choose to receive formal scientific training and potentially become part of the training pipeline. Effective CIR may also advance basic and translational science pre-clinical and *in vivo* models by informing and encouraging designs that more closely mimic broader community contexts (e.g., indicators of structural violence) and the concomitant comorbidities affecting these communities.

An example of CIR informing and eliciting innovative basic/translational science research at the University of Illinois Cancer Center (UICC), is the University of Illinois Patient Brigade (UIPB) initiative. Funded by the Patient Center Outcomes Research Institute, the UIPB is a highly organized group of community/patient advocates that is organically self-selected versus intentionally recruited to inform the UICC senior leadership/researchers on community-centered outcomes, priorities, and to instigate relevant action. The UIPB encouraged the UICC leadership to explore issues upstream of the observed colon cancer disparities in their communities including “food swamps,” and high crimes/violence clusters. In response, the National Institute of Minority Health Disparities funded the “Center for Health Equity Research” in Chicago to study the intersection of structural

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violence and science. The UIPB in-reaching is one of many examples demonstrating how community intelligence can influence basic/translational researchers.

Data democratization is realized by training a new generation of diverse, technology-native, forward-thinking community tumor registrars. Although tumor registries are the foundation for advances in cancer staging, registry data are often of limited use to researchers, public health officials, and to communities, due to lack of representativeness, timeliness, quality, granularity, and responsiveness [3]. Growing demands to provide data from increasingly complex cancer diagnoses and care challenges the aging and dwindling tumor registrar workforce and compels a need to infuse strategic efficiency and innovation into this field. Tumor registrars adept in big data methodologies, health equity conscious, and community-native will extract, harmonize, and integrate population-specific clinical and molecular biomarkers with “sociomarkers”. A diverse tumor registrar workforce would reinvigorate registries, democratizing and activating community-responsive health data that informs discovery and encourages translational science.

Flipped research (FR), a flipped-classroom approach to research addresses the “discovery-to-delivery” disconnect by embedding research in community settings such as Federally Qualified Health Centers (FQHCs), community hospitals, barbershops, etc. rather than in traditional laboratories. As such, FR reflects the socio-cultural factors that can influence research outcomes in underserved communities. In this setting, research is inherently community-informed, designed and conducted by, with, for and in the community, and generating actual “real-world evidence.” For example, research in FQHCs reaches approximately 26 million predominantly underserved individuals disproportionately impacted by cancer inequities [4]. Flipping the research from the bench to occur with and in the community ensures diversity in clinical and translational research at cancer centres and fosters built-in mechanisms for dissemination of findings

back to the community, informed by both community stakeholders and the respective scientist.

The CBC approach expands the reach of CBPR from its traditional focus in population health to ensure that scientific investigation begins and ends with the community, from informing basic and pre-clinical research to disseminating late-breaking outcomes of the research back to the community. The CBC engenders community trust, and aligns with our collective move towards data transparency, open-source consciousness, and real-world evidence. Lastly, the CBC recognizes that “place matters” and intentionally implements research within settings reflective of the communities most impacted by cancer disparities and by design commits to disseminating those findings back to the community.

Declaration of Competing Interest

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