

Connecting Dots to Bridge the Health Disparities Gap: Implementation of a Scalable Electronic Medical Record–Integrated Community Referral Intervention at the Clinic Visit

Health inequities are intractable, and they are well documented in the medical and public health literature. In the quest for health equity, health care stakeholders—providers, researchers, and policymakers—are increasingly recognizing that solutions to health and well-being must address the social determinants of health.¹ The drivers of health and well-being are part of a socioecological system in which both downstream factors (e.g., testing, treatment, risk reduction) and upstream factors (e.g., social and built environment, neighborhood resources, local policies) directly affect health and quality of life.² Interventions focused solely on downstream drivers of disparities have not successfully or significantly advanced health equity. Understanding the

mechanisms by which social, economic, political, and environmental factors get “under the skin” has become increasingly important as we recognize the risks of unmet health-related social needs in medically and socially complex patients.³

In light of the increased attention to social determinants as levers for advancing health equity, new research and practice trends at the interface of clinical practice and public health include the following:

- *Social determinants of health and clinical science.* Accountable care community models integrate upstream factors such as impeded self-management behaviors, increased chronic disease risk, and unmet health-related social needs.⁴ These models operate from

a community-centered, assets-based perspective by linking local community resources to patients with health-related social needs.

Connecting patients to community assets reinforces the notion that advancing health equity requires intentionally creating a bridge between clinical and community settings.

- *Informatics and data science.* We have yet to use the full potential of informatics, data science, and technology to facilitate efficient work flows

for health care providers and to provide patients with actionable information. Currently, the primary function of most electronic medical records is to facilitate documentation and billing for services. Great potential exists to advance health equity by harnessing technology and data in electronic medical records.

- *Dissemination and implementation science.* Effectiveness studies often lack implementation objectives, and implementation research may neglect effectiveness outcomes.⁵ This disconnect is especially problematic in disparity populations because understanding the context-specific factors that influence implementation is critical to sustainability, dissemination, and scaling. Interventions used to address the social determinants of health must be coupled with evidence-based implementation, such as

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effectiveness–implementation hybrid designs for diverse settings.⁵

WHAT CAN A PRAGMATIC TRIAL TEACH US?

In this issue of the *AJPH*, Lindau et al. (p. 546) report on a pragmatic trial that identifies critical opportunities for promoting health equity at the interface between clinical care and public health. Lindau’s team tests CommunityRx, an electronic medical record–integrated intervention that uses algorithms to systematically and automatically match people with nearby community resources to meet their health-related social needs. This innovative, scalable, and resource-efficient intervention is intended to counteract the negative impact of social determinants of health. CommunityRx applies informatics to the electronic medical record system and provides the best available information on appropriate community resources for a particular patient. CommunityRx demonstrates the potential to reduce referral barriers and address health-related social needs, especially in medically and socially complex patients.

Approximately half (48%) of intervention participants shared HealthRx (i.e., automated referrals to community resources) information with others. This finding highlights that as a clinic-wide platform, CommunityRx does not restrict information flow (e.g., a single case manager providing referrals to an individual patient). Rather, the sharing behavior that participants demonstrated indicates that

interventions such as CommunityRx may be valuable for spreading health-promoting information beyond an individual patient, the equivalent of information “going viral.”

Lindau’s team builds evidence for proximal determinants of chronic disease self-management behaviors that are critical to well-being. Chronic disease self-management and health promotion theories posit self-efficacy as an important antecedent to health-promoting behavior.⁶ The CommunityRx trial found significant differences between active and control participants’ self-efficacy in accessing community resources. The outcomes of increased self-efficacy and sharing HealthRx information with others may hold the key to informing and measuring public health change.

CommunityRx is promising for catalyzing access to community health resources through a low-intensity intervention that permits patients to be champions for their own health, the health of individuals in their social networks, and overall community health. The work of Lindau et al. also demonstrates the important role of clinic–community connection in accountable care communities. Their study shows the feasibility of providing a clinic-based solution to deliver referral information and to improve patients’ self-efficacy in accessing community resources. However, the findings also raise questions about how to build, expand, and sustain clinic–community connections. Which factors catalyze the formation of a sustainable accountable care community with rich networks and safety nets that improve health both upstream and downstream?

FUTURE RESEARCH AREAS

As clinical practices and health care policies begin to include and prioritize social determinants of health, proposed solutions and innovations must encompass both upstream and downstream factors. To mitigate health inequities, this holistic approach will be necessary so that there will be broad applicability across settings and drivers of health and well-being. Novel interventions such as CommunityRx link social determinants of health, community-based services, and health outcomes. The study of Lindau et al. lays the foundation for future research areas at the intersection of clinical and public health that include the following:

- *Real-world trials.* Future research should continue to test low-intensity interventions with heterogeneous clinical populations in real-world settings. Research demonstrates the transdiagnostic nature of social determinants of health. Upstream factors drive health across many diagnoses, and interventions and their testing need to be designed with this in mind. Research that examines a range of clinical and behavioral individual outcomes (e.g., quality of life, stress) will be essential in understanding how social determinants of health get “under the skin.”
- *Public health impact.* Which interventions help reduce the chronic disease burden in disparity populations? Future studies should modify intervention and implementation strategies (e.g., patient–provider interaction protocols) to learn about intervention effect differences and maximize their impacts. Novel designs that

use machine learning and sequential, multiple assignment, randomized trials can expand intervention testing.⁷

- *Sustainability in the clinic.* Implementation aims are essential to the sustainability of interventions in health care systems. Research can answer questions about work flow integration, cost effectiveness, and system-wide change and innovation.
- *Accountable care community impact.* To build accountable care communities and provide coordinated care, we need to know which factors contribute to successful partnerships between clinic, community, and patient. Centralizing the experience of community resource providers and patients will be key to maximizing the spread of innovative interventions such as CommunityRx.
- *Policy decisions.* To catapult change, decision-makers beyond the clinic need to use this body of evidence. We recommend systems science approaches to support stakeholder engagement in the translation of novel, evidence-based interventions to sustainable policies.

Lindau et al. help set the stage for the next era of health equity research by demonstrating how low-intensity technology can increase the awareness and availability of health-related community assets. With social determinants of health and clinical science at the forefront, continued research can drive change with advances in informatics, data science, and dissemination and implementation science. We are encouraged by the accomplishments of Lindau’s team and look forward to expanding the reach of novel, strength-based,

low-resource interventions to achieve health equity.

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CONFLICTS OF INTEREST

Giselle Corbie-Smith is principal investigator of “Mentoring in community-engaged approaches to address CVD

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REFERENCES

1. Center for Disease Control and Prevention. Social determinants of health: know what affects health. 2018. Available at: <https://www.cdc.gov/socialdeterminants>. Accessed January 2, 2019.
2. Glass TA, McAtee MJ. Behavioral science at the crossroads in public health: extending horizons, envisioning the future. *Soc Sci Med*. 2006;62(7):1650–1671.
3. Barber S, Hickson DA, Wang X, Sims M, Nelson C, Diez-Roux AV. Neighborhood disadvantage, poor social conditions, and cardiovascular disease incidence among African American adults in the Jackson Heart Study. *Am J Public Health*. 2016;106(12):2219–2226.
4. Gottlieb L, Colvin JD, Flegler E, Hessler D, Garg A, Adler N. Evaluating the Accountable Health Communities Demonstration Project. *J Gen Intern Med*. 2017;32(3):345–349.
5. Curran GM, Bauer M, Mittman B, Pyne JM, Stetler C. Effectiveness-implementation hybrid designs: combining elements of clinical effectiveness and

implementation research to enhance public health impact. *Med Care*. 2012;50(3):217–226.

6. Prochaska JO, Wright JA, Velicer WF. Evaluating theories of health behavior change: a hierarchy of criteria applied to the transtheoretical model. *Appl Psychol*. 2008;57(4):561–588.
7. Almirall D, Nahum-Shani I, Sherwood NE, Murphy SA. Introduction to SMART designs for the development of adaptive interventions: with application to weight loss research. *Transl Behav Med*. 2014;4(3):260–274.