

EDITORIAL

Advancing the Science of Implementation in Primary Health Care

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Implementation Science is commonly described as the study of methods and approaches that promote the uptake and use of evidence-based interventions into routine practice and policymaking. In this issue of *JABFM*, investigators share a wealth of new insights from the frontlines of Implementation Science in primary care: what it is, how we are doing it, and how it is advancing the evidence base of primary care. The breadth of implementation science in primary care is affirmed by the range of topics covered, from thought leader recommendations on future directions for the field, to reports on how best practices in policy and practice are shaping primary care implementation in the United States and Canada. There are also important updates on agents of primary care implementation themselves, such as practice facilitators, geriatric care teams, and family physicians interested in providing obstetric care. Other articles report on novel practice transformation efforts that advance health promotion and disease prevention, and innovative approaches to identifying and addressing social determinants of health in primary care practices and the communities they serve. The articles seem to generate as many new questions as they answer, and highlight the need for continued emphasis on advancing the science of implementation in primary health care. (J Am Board Fam Med 2018;31:307–311.)

It is commonly estimated that evidence-based interventions require an average of 17 years to be incorporated into routine practice.^{1,2} Increasing payer and delivery system interest in narrowing that time gap has rapidly elevated the field of Implementation Science; the study of how evidence-based practice and policy can be effectively communicated, deployed, and brought to scale. Effective and efficient implementation is of particular importance in primary care, which is both the largest delivery platform and niche in the US health care ecology and an area largely neglected in the landscape of health care spending and biomedical research.^{3,4} This theme issue of *JABFM* highlights lessons from, and efforts to advance implementation science in primary care.

Recommendations from Thought Leaders on Advancing Implementation Science in Primary Care

Its relative youth and breadth of challenges make primary care implementation science ripe for infor-

mative commentary and visioning from thought leaders in the field. Summers Holtrop et al⁵ lead off the theme issue with an overview of dissemination and implementation science by defining this nascent field of research in context for both the researcher and primary care provider. The authors go on to provide 2 case studies that “uncover the factors important to making the adoption, implementation, and maintained use of evidence-based approaches successful,” important insights as we attempt to shorten the time between evidence creation and routine practice. Gottlieb et al⁶ highlight 3 areas of needed implementation research for social prescribing: 1) screening tools used to capture information needs; 2) workforce models to implement social prescribing; 3) and payment models for offering services (Federally Qualified Health Centers), including reporting on how to reinvest funds back into a program. Gelmon et al⁷ described strategies to overcome challenges for implementing patient-centered primary care homes (PCPCH). Twenty exemplary PCPCH programs in Oregon were identified, and interviews with 85 key informants identified 10 recommended strategies for

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PCPCH implementation. Despite differences in size, ownership, geography, and populations, all clinic leaders were proponents of building a Primary Care Learning Organization (see the articles for more information on what a learning organization means).

Sharing Best Practices in Policy and Primary Health Care Implementation across International Borders

Implementation science also concerns itself with identifying barriers to and enablers of policymaking that supports effective primary care.⁸ Two articles in this issue report on the 2017 summit of thought leaders in the United States and Canada titled, “Advancing the Science of Transformation in Integrated Primary Care: Informing Policy Options for Scaling-up Innovation.”⁹ Supported by Canadian and US research agencies, this conference attracted 150 leaders to share lessons in addressing multi-morbidity and equity through payment, and equity in primary health care. Haggerty et al¹⁰ summarized principal insights and proposed solutions from symposium discussions addressing health inequities, and best evidence on their mitigation through policy and delivery innovations. Their recommendations include proactive efforts, shifting emphasis from equality to equity, building on strength-based approaches, and taking the public health population focus. A second report from the symposium¹¹ summarized stakeholder discussions of rapidly evolving alternative payment models (APMs) from both countries that influence primary care delivery and innovation. Attendees noted that APMs should include flexible and upfront payments to foster primary care innovations, and reward measuring and achieving global rather than intermediate outcomes. Thought leaders also noted that efforts to alter payment models would fail to expedite primary care implementation or correct health system inefficiencies, absent increased proportional spending on primary care overall, and additional incentives for innovation and continuous learning. Experts cautioned against the risk of “pilotitis,” or developing, implementing, and evaluating new payment models without the ability to scale up and sustain them. They lauded efforts to “learn at scale” launched by the US Centers for Medicare and Medicaid Innovations and called for a similar national center to drive innovation across provincial health systems in Canada.^{12,13}

Dissemination and Implementation of Best Evidence in Primary Care

An additional verb morpheme often precedes “Implementation” in descriptions of this growing field—“Dissemination.” This alternative label, Dissemination & Implementation science, or “D&I,”^{14,15} emphasizes the importance of communication in propagating new evidence in primary care practice and to creating continuous learning systems in primary care. Many existing guidelines and journal formats seem ill-suited to the task of capturing and communicating lessons from primary care implementation, and even a barrier to innovators hoping to share their best practices. Grandes et al¹⁶ review and promote the use of what they describe as a more suitable framework, the Standards for Reporting Implementation Studies (StaRI). StaRI offers authors and publishers with guidelines for reporting context, adoption and adaptation strategies, and evaluation methods for both the intervention and the implementation strategy. The authors posit that the use of StaRI guidelines might reduce the diffusion gap between evidence creation and common practice, raise the volume of publications, and improve the clarity and utility of implementation research narratives.

Social Determinants of Health and Health Promotion

Renewed attention to the importance of social determinants of health is considerable, and identifying effective strategies to address them in practice is a source of considerable attention and discussion in primary care.^{17–20} This critical challenge for primary care implementation scientists is addressed by several authors herein. Liaw et al²¹ report on a novel approach to geocoded practice and population data to help primary care physicians identify and understand the effects of living in “cold spots”—areas with lower education, lower income, and greater composite scores of deprivation—on their patients. They used these methods to help 12 practices recognize that their patients living in cold spots had lower rates of receiving certain, but not all, preventive services and screening tests, a potential first step in targeting at-risk patients and developing mitigating interventions. A related study by this group, and led by Tong²² reports on how providers are responding and reacting to the results of a social needs assessment surveys completed by their patients. The findings reveal

both the potential power of using such a social needs screening on the patient-provider interaction, and the challenges of implementing increasingly pervasive social screening tools in practices struggling with provider burnout and high levels of administrative burden.

Preventing and Addressing Chronic Disease in Primary Care Practice

Implementation science regularly reminds us that, when translating evidence from randomized trials and other rigorous forms of evidence into practice, one size does not fit all.^{23,24} Rosas et al²⁵ provide an in-depth example, reporting on a successful community engagement approach to diabetes prevention in a Latino community. The process demonstrated the feasibility of using a well-known patient engagement rubric with culturally tailored, patient-centered strategies for achieving their project's health promotion goals. Similarly, despite excellent evidence and guidelines, actual hypertension diagnosis and management is often complicated by "white-coat" blood pressure elevation during office visits. Doane et al²⁶ describe a pragmatic approach, which trained patients in home blood pressure measurement that resulted in adequate blood pressure control in half of nearly 200 patients with clinic-identified white-coat hypertension. The approach is inexpensive and acceptable to both providers and patients. And sometimes, national surveys can remind us of the gaps in our implementation of well-established and evidence-based screening. The Medical Expenditure Panel Survey (MEPS) is a nationally representative, population-based survey that offers unique insight into costs, delivery, health status, and access to care in the United States. Kato et al²⁷ used MEPS data to evaluate the extent to which our adult population (age 35+ years) has been screened for depression, as recommended by the US Preventive Services Task Force. Population subgroups less likely to be screened include men, the elderly, minorities, and the uninsured. Much work in primary care is still needed to reduce these disparities.

Speeding Implementation and Practice Transformation down "Blue Highways" with Facilitators

Other paths exist to speed the transit of evidence into daily practice, for example, "Blue Highways"

well known to the primary care research community, if often ignored on the larger US biomedical research "Roadmap."²⁸ Practice-based research networks remain critical to the success of Implementation Science in primary care, and several articles highlight these efforts. Hemler et al²⁹ remind us of the power of practice facilitators as an effective strategy to support quality improvement and practice transformation efforts. Supported by the national EvidenceNOW initiative, which enrolled approximately 1500 small-to-medium-sized primary care practices and 136 facilitators, the authors describe the strategies facilitators employed to assist practices to improve cardiovascular preventive services. Facilitators worked with practices on electronic health record data challenges to obtain and use data for this quality improvement initiative. This article offers ideas on how a facilitator might be a useful team member in your practice. Another project with practice facilitators reported a successful outcome with fewer resources than previously described in the literature. Huguet et al³⁰ describe a trial to assess novel health insurance enrollment and health information technology (HIT) support tools. Practices with a facilitator/coach had higher rates of using the HIT tools. They also noted that clinic early engagement in tool development was critical to successful implementation of the intervention.

Applying New Theories and Implementation Science to Transform Practice

Human factors engineering, which explores interactions between people and the workplace, has successfully improved antibiotic stewardship in hospital settings. Keller et al³¹ conducted a systematic literature review to explore the extent to which principles from the Systems Engineering Initiative for Patient Safety are applied in studies of ambulatory antibiotic stewardship. This review describes how a work system (ambulatory clinic) contributes to a process (antibiotic prescribing) that leads to outcomes. Effective antibiotic stewardship interventions focused on 5 components of the work system: tools and technology (eg, clinical decision support; point-of-care testing); the person (eg, clinician education); organization (eg, audit and feedback; academic detailing); tasks (delayed antibiotic prescribing); and the environment (eg, commitment posters; media campaigns).

Luig et al³² evaluated the implementation process of a randomized trial of an intervention to improve obesity prevention and management knowledge. The implementation evaluation used the Interactive Systems Framework theory, which conceptualizes interactions between organization/team capacity and intervention implementation. Key findings emerged from exploring interactions of context with implementation activities, such as knowledge exchange, capacity building, and practice integration.

Health technology solutions are often implemented without a deep understanding of the system-level problems they seek to address. Liddy et al³³ applied the Quadruple Aim Framework to evaluate the impact of a health technology innovation (eConsult). This case study demonstrates the eConsult's impact on patient experience, provider satisfaction, and reducing costs. However, the impact on key population health metrics could not be determined.

Agents of Primary Care Implementation

The implementation and scope of primary care and family medicine continues to rapidly evolve, as do its delivery teams. Sullivan et al³⁴ describe the implementation of a patient-centered medical home model for older individuals called Geriatric Patient Aligned Care Teams (GeriPACT) in the Veterans' Health Administration. GeriPACT is hypothesized to improve care quality through enhanced care coordination, improved personalized care, and a positive culture of service. The authors describe barriers to implementation, variation between centers, and other lessons learned during the process. These are important insights as models such as GeriPACT will become increasingly needed as the primary care population ages.

Maternal and infant mortality in the United States is increasing, with contributing factors including poor access to maternity care due to obstetric/gynecologist shortages, especially in rural communities. In addition, the proportion of family physicians practicing obstetrics is rapidly declining, despite findings that their outcomes are similar to those of obstetricians. Barreto et al³⁵ analyzed data from the 2016 Family Medicine National Graduate Survey (n = 2018) to determine the extent and barriers to obstetric practice. Two barriers to providing obstetrics care were given by over half of the

865 new family physicians interested in delivering babies: 1) obstetrics was not available in their practice; and 2) lifestyle considerations.

Conclusion

This theme issue is a clear reminder of the diverse and innovative ways that primary care implementation and the science that supports it are advancing. In equal measure, perusal of these articles reminds us of the challenges inherent in primary care implementation and the need for further experimentation, evaluation, ongoing infrastructure, and funding support. The articles reveal the power of a decade-long investment in primary care data and practice infrastructure, in team building and community extension. Yet, much of the funding that drove rapid primary care transformation and evaluation is waning (ie, from the Affordable Care Act, aka "Obamacare"; and from the American Recovery and Reinvestment Act). In addition, federal agencies vital to implementation science such as the Agency for Health care Research & Quality, or the more recently created Patient-Centered Outcomes Research Institute face uncertain futures in Congress. In short, whether primary care implementation science continues its ascendancy or is witnessing its peak is not clear, but the abiding return on its investment should be obvious.

To see this article online, please go to: <http://jabfm.org/content/31/3/307.full>.

References

1. Morris ZS, Wooding S, Grant J. The answer is 17 years, what is the question: Understanding time lags in translational research. *J Roy Soc Med* 2011;104: 510–20.
2. Balas EA, Boren SA. Managing clinical knowledge for health care improvement. *Yearbook of Medical Informatics*. Stuttgart (Germany): Schattauer; 2000. p. 65–70.
3. Koller CF, Khullar D. Primary care spending rate—A lever for encouraging investment in primary care. *N Engl J Med* 2017;377:1709–11.
4. Lucan SC, Phillips RL Jr, Bazemore AW. Off the ROADMAP? Family medicine's grant funding and committee representation at NIH. *Ann Fam Med* 2008;6:534–42.
5. Holtrop JS, Rabin BA, Glasgow RE. Dissemination and implementation science in primary care research and practice: Contributions and opportunities. *J Am Board Fam Med* 2018;31:466–478.
6. Gottlieb L, Cottrell EK, Park B, Clark KD, Gold R, Fichtenberg C. Advancing social prescribing with

- implementation science. *J Am Board Fam Med* 2018;31:315–321.
7. Gelmon S, Bouranis N, Sandberg B, Petchel S. Strategies for addressing the challenges of patient-centered medical home implementation: Lessons from Oregon. *J Am Board Fam Med* 2018;31:417–430.
 8. van Weel C, Turnbull D, Whitehead E, et al. International collaboration in innovating health systems. *Ann Fam Med* 2015;13:86–7.
 9. Tamblyn R, Bazemore A. Cross-border learning: Advancing the science of transformation in integrated primary care. *CMAJ Blogs*. Available from: <https://cmajblogs.com/cross-border-primary-care/>. Accessed March 20, 2018.
 10. Haggerty J, Chin MH, Katz A, et al. Proactive strategies to address health equity and disparities: Recommendations from a bi-national symposium. *J Am Board Fam Med* 2018;31:479–483.
 11. Bazemore A, Phillips RL Jr, Glazier R, Tepper J. Advancing primary care through alternative payment models: Lessons from the United States and Canada. *J Am Board Fam Med* 2018;31:322–327.
 12. Baron RJ, Davis K. Accelerating the adoption of high-value primary care—A new provider type under medicare? *N Engl J Med* 2014;370:99–101.
 13. Dale SB, Ghosh A, Peikes DN, et al. Two-year costs and quality in the comprehensive primary care initiative. *N Engl J Med* 2016;374:2345–56.
 14. Norton WE. Advancing the science and practice of dissemination and implementation in health: A novel course for public health students and academic researchers. *Public Health Rep* 2014;129:536–42.
 15. Rabin BA, Brownson RC, Haire-Joshu D, Kreuter MW, Weaver NL. A glossary for dissemination and implementation research in health. *J Public Health Manag Pract* 2008;14:117–23.
 16. Grandes G, Pinnock H, Bazemore A, Meissner P, The StaRI Group. Improving the quality of primary care by optimizing implementation research reporting. *J Am Board Fam Med* 2018;31:484–487.
 17. Bazemore AW, Cottrell EK, Gold R, et al. “Community vital signs”: Incorporating geocoded social determinants into electronic records to promote patient and population health. *J Am Med Inform Assoc* 2016;23:407–12.
 18. Hughes LS, Phillips RL Jr, DeVoe JE, Bazemore AW. Community vital signs: Taking the pulse of the community while caring for patients. *J Am Board Fam Med* 2016;29:419–22.
 19. DeVoe JE, Bazemore AW, Cottrell EK, et al. Perspectives in primary care: A Conceptual framework and path for integrating social determinants of health into primary care practice. *Ann Fam Med* 2016;14:104–8.
 20. Pinto AD, Bloch G. Framework for building primary care capacity to address the social determinants of health. *Can Fam Physician* 2017;63:e476–e482.
 21. Liaw W, Krist AH, Tong ST, et al. Living in “cold spot” communities is associated with poor health and health quality. *J Am Board Fam Med* 2018;31:342–350.
 22. Tong ST, Liaw WR, Lail Kashiri P, et al. Clinician experiences with screening for social needs in primary care. *J Am Board Fam Med* 2018;31:351–363.
 23. Atkins L, Kelly MP, Littleford C, Leng G, Michie S. Reversing the pipeline? Implementing public health evidence-based guidance in English local government. *Implementation Science* 2017;12:63.
 24. Neta G, Brownson RC, Chambers DA. Opportunities for epidemiologists in implementation science: A Primer. *Am J Epidemiol* 2017 [Epub ahead of print].
 25. Rosas LG, Lv N, Lewis MA, et al. A Latino patient-centered, evidence-based approach to diabetes prevention. *J Am Board Fam Med* 2018;31:364–373.
 26. Doane J, Buu J, Penrod MJ, Bischoff M, Conroy MB, Stults B. Measuring and managing blood pressure in a primary care setting: A pragmatic implementation study. *J Am Board Fam Med* 2018;31:375–388.
 27. Kato E, Borsky AE, Zuvekas SH, Soni A, Ngo-Metzger Q. Missed opportunities for depression screening and treatment in the United States. *J Am Board Fam Med* 2018;31:389–397.
 28. Westfall JM, Mold J, Fagnan L. Practice-based research—“Blue Highways” on the NIH roadmap. *JAMA* 2007;297:403–6.
 29. Hemler JR, Hall JD, Cholan RA, et al. Practice facilitator strategies for addressing electronic health record data challenges for quality improvement: EvidenceNOW. *J Am Board Fam Med* 2018;31:398–409.
 30. Huguet N, Hatch B, Sumic A, et al. Implementation of health insurance support tools in community health centers. *J Am Board Fam Med* 2018;31:410–416.
 31. Keller SC, Tamma PD, Cosgrove SE, et al. Ambulatory antibiotic stewardship through a human factors engineering approach: A systematic review. *J Am Board Fam Med* 2018;31:417–430.
 32. Luig T, Asselin J, Sharma AM, Campbell-Scherer DL, et al. Understanding implementation of complex interventions in primary care teams. *J Am Board Fam Med* 2018;31:431–444.
 33. Liddy C, Keely E. Using the quadruple aim framework to measure impact of health technology implementation: A case study of eConsult. *J Am Board Fam Med* 2018;31:445–455.
 34. Sullivan JL, Eisenstein R, Price T, Solimeo S, Shay K. Implementation of the geriatric patient-aligned care team model in the Veterans Health Administration (VHA). *J Am Board Fam Med* 2018;31:456–465.
 35. Barreto TW, Eden AR, Rose Hansen E, Peterson LE. Barriers faced by family medicine graduates interested in performing obstetric deliveries. *J Am Board Fam Med* 2018;31:332–333.