Business Not As Usual: Implementation Strategies That Support Learning During the COVID-19 Pandemic

Dori A. Cross, PhD; Deborah L. Pestka, PharmD, PhD; Katie M. White, EdD, MBA; and Surbhi Shah, MBBS

The public health emergency of coronavirus disease 2019 (COVID-19) has led to unprecedented health-system pressures and changes in care delivery. The emergent nature of the disease continues to require rapid appraisal of—and continuous adaptation to—new information for operational decision making and direct patient care. The persistence of COVID-19 has necessitated revised structures and processes that support effective implementation of evolving knowledge as part of rapid organizational change. Assessing emergent practices during sustained COVID-19 response, during a time of “business not as usual,” reveals strategies that may offer a new and more sustainable approach to address organizational barriers to learning and improvement.

In this commentary, we analyze a specific clinical practice guideline (CPG) that was implemented in response to COVID-19 across a large delivery system nascent in its efforts to build out a learning health system (LHS) infrastructure. The LHS concept promotes continuous improvement from data to knowledge to practice; bringing an LHS to life requires strategic application of implementation frameworks to understand the key factors that link structures to processes in cultivating an environment for change. Using the US Department of Veterans Affairs Quality Enhancement Research Initiative (QUERI) Roadmap structure, we outline specific aspects of implementation that were facilitated or accelerated by the COVID-19-altered environment, and lessons learned. We identify key principles and structural investments that support sustained capacity for learning-oriented, responsive improvements as health systems re-normalize implementation practices following COVID-19 disruption.

THE INTERVENTION: ANTIКОAGULATION MANAGEMENT CLINICAL PRACTICE GUIDELINE FOR COVID-19

Proper anticoagulation is critical for patients hospitalized with COVID-19 because of increased risk of developing complications related to blood clots. Despite widely recognized clinical importance of anticoagulation during COVID-19, there is lack of consensus and continuously evolving evidence regarding appropriate dosing and management. As a result, our health system needed to develop and implement anticoagulation stewardship at the institution level.

The project lead (S.S.) established a representative anticoagulation workgroup—including providers, pharmacists, and administrators—to develop a CPG and ensure that treatment for patients with COVID-19 followed up-to-date standards of care. The workgroup partnered with a longstanding federally supported evidence-based practice center (EPC) housed at the health system’s partner university. The EPC used evidence-grading approaches to examine the emerging knowledge and inform development of the CPG. The CPG was then embedded into the electronic health record as an order set (a type of decision support tool) to promote rapid implementation and consistent provider adherence. Development of the CPG, from the start of evidence collection by the EPC to implementation of the order set, took 4 weeks. In non-COVID times, this type of project could easily take upward of a year, based on system priorities and resource availability. The CPG was iteratively refined 6 times over the subsequent 10 months in response to emerging workflow considerations and new evidence to support more tailored use of the CPG (Supplemental Figure, available online at http://www.mcpiqojournal.org).
IMPLEMENTATION TAKEAWAYS

Preimplementation Phase
COVID-19 created a system environment that became more attuned to—and supportive of—more rapidly facilitated clinical change in response to fairly preliminary emergent evidence. The urgency to address anticoagulation in patients with COVID-19 created a more active knowledge surveillance environment and an approach toward implementation that prioritized good over perfect.12 Key accelerators during implementation planning was the engagement and support of system leadership for innovation. A system COVID-19 Command Center was created that offered accelerated review and prioritization, as well as accountability structure, for initiatives related to COVID-19. The Command Center’s endorsement of the anticoagulation workgroup’s efforts facilitated access to high-demand but limited resources that could support implementation of the COVID-19 anticoagulation guideline (ie, informatics support for electronic health record [EHR] integration and implementation and evaluation resources from the quality improvement department).

Implementation Phase
Despite significant facilitation for the anticoagulation CPG, and high levels of overall support for this resource in provider feedback surveys, standard implementation challenges persisted. Data from the quality improvement support team revealed inconsistent adoption and use of the tool across care sites. These data reflected 2 inertia-related issues. First, this effort of standardized implementation had to transcend the strong effects of unique organizational and practice culture shaping site-specific care patterns across system hospitals. This meant that anticipating and accommodating local contextualization was necessary and difficult. Second, the CPG represented a “living guideline” that continued to update over time after initial rollout. Although substantial dissemination activity (ie, during service line meetings) accompanied the initial rollout of the initiative, the strategies and supports necessary to support clinicians through continued iterative changes was a continual and underappreciated challenge.

Sustainment Phase
A key measure of implementation success for the workgroup has been sustainability of anticoagulation stewardship efforts. Sustainability is always a challenge owing to shifting priorities and resources, but this has been especially so, given that the work was seeded during a distinct period of COVID-19 disruption. It has been challenging to take advantage of the acceleration that COVID-19 alignment offered (ie, prioritized resources and institutional support), while not overly associating the stewardship infrastructure with a temporary timeframe. The workgroup has also needed leadership support to extend their scope beyond COVID-19 treatment, which has been difficult, given traditional evaluation expectations. Specifically, stakeholders are primed to want to see highly visible outcomes changes (eg, costs and mortality) that are difficult to demonstrate with a short timeframe and relatively small patient population. In addition, granular process information—for example, contextual factors from user-level data that help explain when and why the order set was overridden—required time and novel skillsets to analyze and incorporate to refined implementation strategies (ie, tailored provider feedback) that could draw continued operational support.

INVESTMENTS NEEDED TO INTEGRATE IMPLEMENTATION PRACTICES WITH AN LHS ORIENTATION
For LHS, continued investment is needed to sustain the types of effective implementation practices that emerged with the urgency to rapidly translate and apply clinical knowledge during COVID-19 response. First, nimbleness and adaptability was in part due to the operating guidelines of the COVID Command Center. Responsive change can become more difficult as health systems become bigger, with more layered leadership and coordination structures. This emergent Command Center structure became an accelerator of change, offering a pathway for prioritization of ideas for improvement and supporting the delegation of decision-making authority and allocation of resources. Post—COVID-19 response, this enabling clearinghouse remains critical. Partnered with the robust resources and support
In one health system’s efforts to develop and implement a new care guideline during COVID-19, we identified key implementation facilitators when business was not as usual. Leadership support and resource allocation were accelerated, as was tolerance for rapid and iterative action in an uncertain environment of emergent information. However, we still struggled to overcome organizational inertia in progress toward key implementation outcomes of fidelity and sustainability, especially given the ever-evolving and prolonged nature of COVID-19 response. COVID-19 has strengthened our organizational commitment to a learning health system model to support and maintain responsiveness. This includes structures meaningfully linked to processes that accelerate organizational improvements that emerge from the front lines, promote “living guidelines” for care delivery that are supported by continuous review of emergent evidence, and enhance the analytic capacity to support organizational learning. As we work toward a new “business as usual,” we believe these investments will help to create a more conducive and sustainable implementation environment.

ACKNOWLEDGMENT
All authors contributed to the design, drafting, and critical review of this manuscript.

SUPPLEMENTAL ONLINE MATERIAL
Supplemental material can be found online at https://mcpiqojournal.org. Supplemental material attached to journal articles has not been edited, and the authors take responsibility for the accuracy of all data.

Grant Support: Drs Pestka and Shah are supported by the Agency for Healthcare Research and Quality (AHRQ) and Patient-Centered Outcomes Research Institute (PCORI), grant KL2TR002492. Additional support for MN-LHS scholars is offered by the University of Minnesota Office of Academic Clinical Affairs and the Division of Health Policy and Management, University of Minnesota School of Public Health. The content is solely the responsibility of the authors and does not necessarily represent the official views of AHRQ, PCORI, or Minnesota Learning Health System Mentored Career Development Program (MN-LHS).

Potential Competing Interests: The authors report no competing interests.

Correspondence: Address to Dori A. Cross, PhD, Division of Health Policy and Management, School of Public Health,
REFERENCES

1. Kilbourne AM, Goodrich DE, Make-Lye I, Braganza MZ, Bowersox NW. Quality enhancement research initiative implementation roadmap: toward sustainability of evidence-based practices in a learning health system. Med Care. 2019; 57(10 suppl 3):S286.

2. Harrison MI, Shortell SM. Multi-level analysis of the learning health system: integrating contributions from research on organizations and implementation. Learn Health Syst. 2021;5(2):e10226.

3. Paranjpe I, Fuster V, Lala A, et al. Association of treatment dose anticoagulation with in-hospital survival among hospitalized patients with COVID-19. J Am Coll Cardiol. 2020;76(1):122-124.

4. Tang N, Bai H, Chen X, Gong J, Li D, Sun Z. Anticoagulant treatment is associated with decreased mortality in severe coronavirus disease 2019 patients with coagulopathy. J Thromb Haemost. 2020;18(5):1094-1099.

5. Spyropoulos AC, Levy JH, Ageno W, et al. Scientific and Standardization Committee communication: clinical guidance on the diagnosis, prevention, and treatment of venous thromboembolism in hospitalized patients with COVID-19. J Thromb Haemost. 2020;18(8):1859-1865.

6. Barnes GD, Burnett A, Allen A, et al. Thromboembolism and anticoagulant therapy during the COVID-19 pandemic: interim clinical guidance from the anticoagulation forum. J Thromb Thrombolysis. 2020;50:72-81.

7. Culver A, Tseng EC, Nieuwlaat R, et al. American Society of Hematology 2021 guidelines on the use of anticoagulation for thromboprophylaxis in patients with COVID-19. Blood Adv. 2021;5(3):872-888.

8. Moore JS, Trister S, Branaheh S, et al. Prevention, diagnosis, and treatment of VTE in patients with coronavirus disease 2019. CHEST guideline and expert panel report. Chest. 2020;158(3):1143-1163.

9. AHRQ. Evidence-based practice center (EPC) program overview. Agency for Healthcare Research and Quality, Rockville, MD. https://www.ahrq.gov/research/findings/evidence-based-reports/overview/index.html. Accessed January 2021.

10. Shah S, Switzer S, Shipee ND, et al. Implementation of an anticoagulation practice guideline for COVID-19 via a clinical decision support system in a large academic health system and its RE-AIM evaluation. JMIR Med Inform. 2021. https://doi.org/10.2196/30743. Online ahead of print.

11. Lebach D, Sanders GD, Bright TJ, et al. Enabling health care decisionmaking through clinical decision support and knowledge management. Evid Rep Technol Assess (Full Rep). 2012; Apr(203):1-784.

12. Green LW, Ottoson JM, Garcia C, Hiatt RA. Diffusion theory and knowledge dissemination, utilization, and integration in public health. Annu Rev Public Health. 2009;30:151-174.

13. AHRQ. About Learning Health Systems.. Agency for Healthcare Research and Quality, Rockville, MD. https://www.ahrq.gov/learning-health-systems/about.html. Accessed May 2019.

14. Sinsky C. Advancing practice science with electronic health record use data. JAMA Intern Med. 2020;181(2):260-261.

15. Sinsky CA, Rule A, Cohen G, et al. Metrics for assessing physician activity using electronic health record log data. J Am Med Inform Assoc. 2020;27(4):339-643.