

EDITORIAL

The Massachusetts COVID-19 initiative provides evidence for a practical, multi-faceted, participatory implementation process

Over the last few years with COVID19, the healthcare community in the U.S. has learned a great deal about how to manage a pandemic. Unfortunately, factors such as climate change¹ and the flourishing growth of our older population suggest that this knowledge will be severely put to the test during future pandemics. For this reason we draw attention to this very well designed and executed study of an intervention to prevent the transmission of COVID-19 in nursing homes (NHs) in Massachusetts.

Nowhere have the effects of COVID-19 upon mortality and morbidity been more dramatic than in the NH setting, with over 1.1 million COVID-19 confirmed cases and over 154,000 deaths in residents, and over 1.2 million cases and over 2400 deaths in staff.² The increased propensity to infection and spread in nursing homes has been attributed in part to residents' vulnerabilities, including their advanced age, co-morbidity, functional loss, and residence in communal living.³ Low preparedness also challenged nursing homes and included shortages of personal protective equipment (PPE), lack of infection control policies, and limited staff skilled in infection control.³⁻⁹ Compounding the problem was reduced staffing levels as the pandemic aggravated common, baseline situations of high staff turnover, low staffing numbers, and low registered nurse levels.^{3,8-11} In the current issue of JAGS, Lipsitz and colleagues report on a state-wide initiative to address these challenges and improve COVID-19 infection control in nursing homes (NHs) in Massachusetts (MA), a state designated as a hot spot in spring 2020.¹² The key hallmarks of this project can be framed within the Evidence Integration Triangle implementation framework developed by Glasgow et al.,¹³ which emphasizes the interaction among practical, evidence-based interventions, participatory implementation processes, and pragmatic, longitudinal measures of progress (See Figure 1). This framework guides our comments on this work.

Hebrew SeniorLife (HSL), the largest nonprofit provider of senior health care and living communities in New England, and the Massachusetts Senior Care Association (MSCA), partnered to implement a multicomponent

infection control intervention in nursing homes across MA.^{12,14} The intervention was grounded in evidence-based practices, based upon key elements identified by the Centers for Disease Control and Prevention (CDC)¹⁵ and the Centers for Medicare and Medicaid Services (CMS).¹⁶ A core component of this initiative was a 28-item checklist of infection control practices, staffing plans, use of PPE, clinical care, and communication practices (staff, residents, families).

Several strong implementation strategies were employed to support the uptake of best practices for infection control. The weekly monitoring of infections served as a feedback loop. A payment incentive (50% for two months) was offered that utilized performance in state surveys as audit feedback. In addition to positive survey performance, the payment was contingent upon the upload of key data, follow-through on SARS-CoV-2 testing, the provision of technology for virtual visits; and the use of payments for additional staff supplies and reconfiguration of living spaces to enable cohorting of residents.^{12,14} Another implementation strength was the approach to increasing staff knowledge and competence. The project utilized a multi-faceted, multi-level approach aimed at staff, clinicians, and leadership that engaged stakeholders as active participants in the implementation of the intervention. The training bundle included on-site and virtual consultations, weekly webinars, a running question & answer document, and critical information on resources.

The research team took a rigorous approach to sampling, measurement, and statistical evaluation. The study took place in NHs that were all part of the same long-term care system, thereby mitigating the risk of confounders associated with divergent management approaches.¹² To promote balance between resident samples, new admissions were not included, because some NHs were not admitting new residents, and there was also the possibility that new admissions would be recovering from previous SARS-CoV-2 infections, which would influence their response to the intervention. The investigators examined a pragmatic measure of effectiveness, weekly infection by SARS-CoV-2, extracted from the NH tracking logs, to

This editorial comments on the article by [Lipsitz et al.](#)

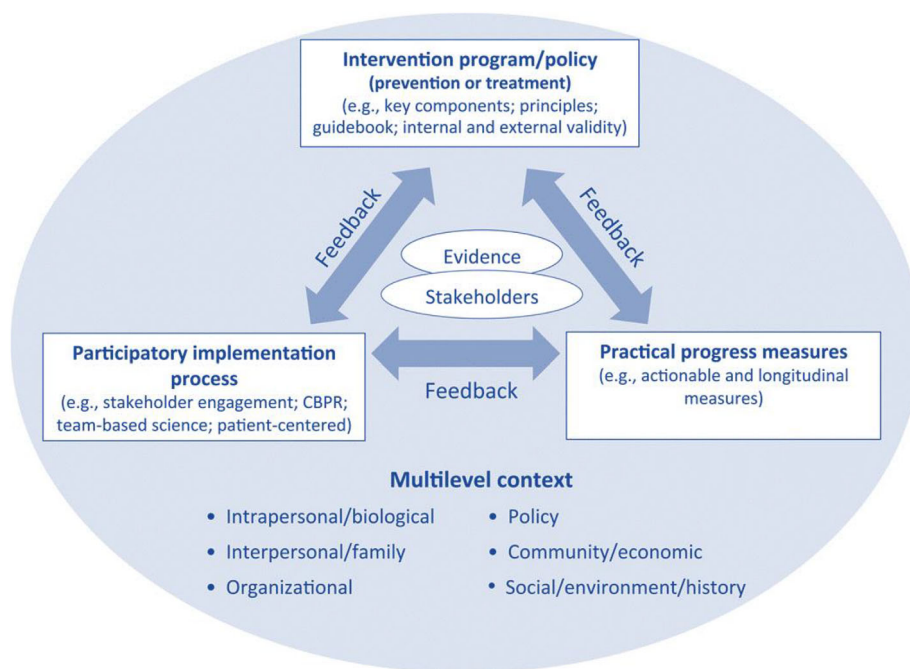


FIGURE 1 Evidence Integration triangle model for multi-component infection control Initiative (adapted from Glasgow et al., 2012)

evaluate the impact of the intervention. They compared weekly rates of infection, confirmed with polymerase chain reaction (PCR) testing, among 2085 residents in 20 MA NHs to 4493 residents in 45 facilities in neighboring New England states (Rhode Island, New Hampshire, and Connecticut), the comparison group.¹² Careful attention was paid to the selection of co-variables that are known to increase SARS-CoV-2 infection risk. These included bed size, staffing, SARS-CoV-2 prevalence in the nursing homes' surrounding community, and whether the resident was planned to have a short-stay or long-term stay.⁹ The study's rigor in sampling and measurement was also reflected in its statistical analysis. The authors' use of a discrete time survival model of weekly infection allowed for weekly updating of its eligible population and the rapidly changing covariates. While statisticians and epidemiologists can point to a plethora of unmeasured confounders and alternative explanations for the associations observed, the authors are to be commended for taking on such a challenging study and for comprehensively adjusting for all the factors that were within reach.

The investigators found that the intervention in MA NHs was associated with a more rapid reduction in the rate of SARS-CoV-2 infections compared to similarly managed NHs in neighboring states. Lipschitz and colleagues have offered a model for successful state and provider partnerships to mitigate infection risk by providing education, supplies, staffing, and financial support.¹² They also offer a prototype for future implementation and evaluation of initiatives to prevent and control infectious disease outbreaks and the value of supporting staff and leadership participation in the process.

The positive outcomes of this work challenge us to imagine other possibilities to not only mitigate infection risk, but also optimize physical and psychological wellbeing in extreme situations. For example, Grabowski and Mor¹⁷ have called for advance care planning and palliative care to be a priority for frail, long-term care residents who are especially vulnerable to COVID-19 and other catastrophic infections. They also emphasize the need for value-based payment models that integrate medical care with the social needs of patients recovering from COVID-19.

Infection rate is certainly a salient outcome to be prioritized when evaluating the effectiveness of an initiative targeting COVID-19 prevention. However, more and more evidence is emerging that substantiates the need to target and examine additional metrics in future interventions and attend to the risk of unintended consequences. Infection prevention strategies during the pandemic have appeared to pose a double-edged sword in that the social distancing and restrictions on socialization, communal meals, and activities have led to social isolation and less engagement in physical activity and preferred routines. The unfortunate consequences have been depression, functional decline, unintended weight loss, and nutritional problems.^{18–20} A scoping review conducted by Bethell and colleagues¹⁹ offers preliminary guidance on strategies that may help build and maintain social connection and wellbeing in LTC residents during COVID-19. They include exercise, pain management, opportunities for creative engagement (e.g., art, music), sleep hygiene, and religious and cultural practices. The strategies employed by Lipschitz et al.^{12,14} may provide a blueprint to expand the goals of a COVID-19 focused

intervention to include the prevention of disability, psychological morbidity, and suffering.

Since future pandemics are a near certainty, it behooves the healthcare community in the U.S. to leverage the knowledge gained during the management of COVID-19. Residents of NH are among the most vulnerable and experienced the highest levels of mortality and serious illness during COVID. For this reason, the attractive design, implementation, and evaluation features of this study can serve as a guide for a more rapid and effective response to the pandemics of the future.

AUTHOR CONTRIBUTIONS

Drs. Boltz and Murphy worked on the development of the manuscript.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

SPONSOR'S ROLE

None.

Marie Boltz PhD¹ 

Terrence Murphy PhD, MS²

¹Ross and Carol Nese College of Nursing, Pennsylvania State University, State College, Pennsylvania, USA

²Department of Public Health Sciences, Pennsylvania State University, State College, Pennsylvania, USA

Correspondence

Marie Boltz, Ross and Carol Nese College of Nursing,
Pennsylvania State University, 306 Nursing Sciences
Building, State College, PA 16802, USA.
Email: mpb40@psu.edu

TWITTER

Marie Boltz  [@MarieBoltz1](https://twitter.com/MarieBoltz1)

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