

Concise Communication

Successful multimodal measures preventing coronavirus disease 2019 (COVID-19) outbreaks without universal frequent testing within long-term care units in the Midwestern Veterans' Health Care Network

Michihiko Goto MD, MSCI^{1,2,3} , Nicole Ueckert RN, MSN², Robert K. Meiches MD, MBA² and Eli N. Perencevich MD, MS^{1,3}

¹Iowa City VA Health Care System, Iowa City, Iowa, ²Veterans' Affairs Midwest Health Care Network (VISN-23), Eagan, Minnesota and ³Department of Internal Medicine, University of Iowa Carver College of Medicine, Iowa City, Iowa

Abstract

Coronavirus disease 2019 (COVID-19) remains a serious threat for long-term care facilities, and frequent screening of employees and residents places a substantial burden on those facilities. We report our successful multimodal prevention measures without frequent testing, which resulted in no cases within 20 nursing home units over the first 6 months of the pandemic.

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During the current coronavirus disease 2019 (COVID-19) pandemic, long-term care facilities (LTCFs) in the United States have had significant outbreaks associated with high rates of morbidity and mortality. Even though ~8% of COVID-19 cases have occurred in LTCFs, these cases account for ~40% of all reported deaths.¹

Center for Diseases Control and Prevention (CDC) and Center for Medicare and Medicaid Services (CMS) have issued multimodal COVID-19 prevention guidance at LTCFs^{2,3}, but unfortunately, many regions in the United States continue to experience outbreaks at these facilities. One of the key recommendations from CMS was frequent testing of all employees (universal employee testing).⁴ Some facilities have also implemented frequent testing of residents (universal resident testing). These test-dependent strategies are resource intensive without clear evidence that they effectively prevent outbreaks.

The Veterans' Health Administration (VHA) operates 134 community living centers (CLCs) nationwide, which provide services equivalent to private LTCFs, within regional operational structures known as Veterans' Integrated Service Networks (VISNs). The VA Midwest Health Care Network (VISN-23), 1 of 18 VISNs, has implemented multimodal measures without routine universal testing, which successfully resulted in no cases of COVID-19 among residents in CLCs over the first 6 months of pandemic. Herein, we describe our comprehensive prevention strategies without indiscriminate testing and reported outcomes.

Author for correspondence: Michihiko Goto, E-mail: Michihiko.Goto@va.gov

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Methods

The VISN-23 serves >440,000 veterans residing in the states of Iowa, Minnesota, Nebraska, North Dakota, and South Dakota.⁵ Moreover, 20 CLC units are located at 8 campuses in 5 states. All facilities with CLC units have full-time infection preventionists on site, and 4 of these facilities also have full-time infectious diseases specialists. A full-time VISN medical director, a nurse coordinator, and 2 hospital epidemiologists host frequent conference calls to maintain close communications among facilities.

The first case of COVID-19 in the region was reported on March 6, 2020. On the same day, VISN-23 implemented multimodal strategies, including prioritizing new admissions from patients being discharged from inpatient wards with no COVID-19 patients or from patients living at home in a community without recognized COVID-19. All new admissions were quarantined for 14 days in single-patient rooms with close monitoring. Anyone who entered CLC units was screened for symptoms and by temperature measurements. Visitor access was greatly limited, and only visitors who were critical to care giving were allowed. The number of staff members was minimized, and the use of dedicated staff was encouraged. Outpatient visits were reduced through conversion to telehealth. All residents were screened daily for fever and symptoms, and employee education covering hand hygiene and respiratory etiquette was implemented.

The first case of community transmission in the region was reported on March 15, and VISN-23 prohibited direct admission to CLC units from the community on March 17. Transfers to CLC units within the VHA system were allowed after 14 days of observation in non-CLC units. Additionally, because of earlier reports of possible asymptomatic transmission,^{6,7} the need for universal respiratory protection was recognized. It was initially difficult to

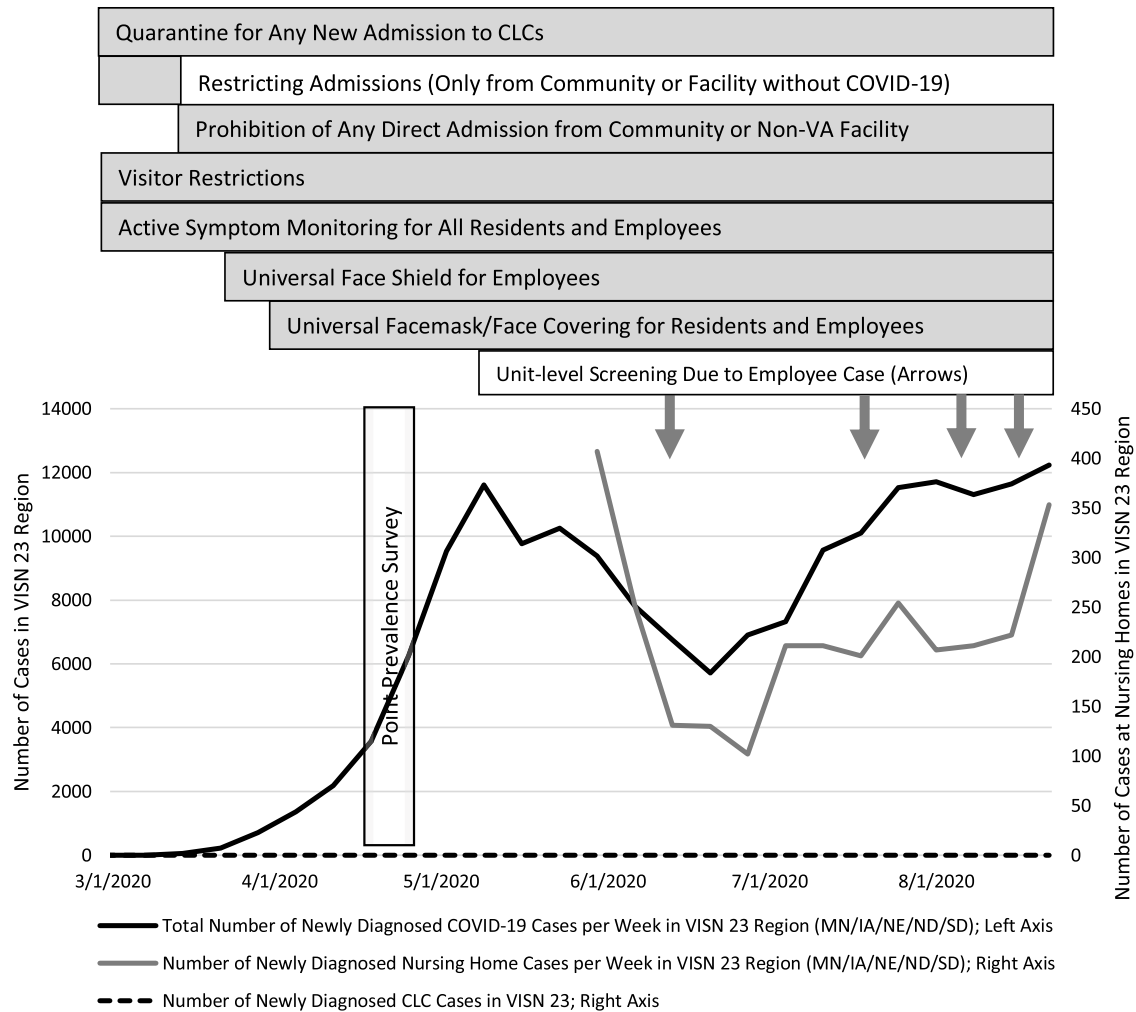


Figure 1. Timeline of COVID-19 Epidemic in VISN 23 Region and Implementations of Prevention Strategies at CLC Units

implement a universal mask policy due to widespread shortages, and the decision was made to implement universal face shields on March 30. The constant use of face shields was required in all clinical areas in medical centers.

VISN-23 implemented a universal face-mask policy on April 6, which provided a face mask to all CLC-unit employees per day and required them to wear it throughout the day. All residents were also required to wear cloth masks unless they were alone in their private rooms. The use of N95 respirator was restricted to aerosol-generating procedures. The universal face-shield policy was maintained. Timelines of implementation are summarized in Figure 1.

Results

From March 1 until August 31, the overall average daily census across VISN-23 CLC units was 472.1 residents. All residents who presented fever or symptoms compatible with COVID-19 were tested by reverse-transcriptase polymerase chain reaction (RT-PCR) for severe acute respiratory coronavirus virus 2 (SARS-CoV-2) and were negative. Because of high levels of COVID-19 in the community and frequent reports of outbreaks in LTCFs, we conducted one-time universal testing by RT-PCR for all residents and employees (1,944 tests) over 10 days in late April. In total, 4 SARS-CoV-2-positive employees were identified

(all asymptomatic and removed from workforce until cleared by infection prevention), but all residents were negative. Subsequently, the decision was made to conduct universal testing at a unit only when any confirmed case was identified in either employees or residents (weekly tests for 2 weeks). Four facilities encountered employees with confirmed COVID-19 and conducted ad hoc universal testing, but no positive result for RT-PCR was identified among residents. Detailed contact investigations for staff cases revealed no evidence of staff-to-staff transmission and they were attributed to community acquisitions.

As of September 1, 2020, we have not identified any resident with confirmed COVID-19. The epidemic curves for the total number of cases in the region, community nursing homes (data were only available after May 23 from CMS), and VISN-23 CLCs are summarized in Figure 1.

Discussion

At a large, multi-institutional, long-term care system in the Midwest region of the United States, we implemented proactive and comprehensive infection prevention strategies without recurrent universal testing. Despite higher incidence per capita in our region than the national average through most portions of the study period and a number of parallel outbreaks in non-VHA

LTCF, we did not detect a case among >450 residents over the first 6 months of the pandemic. This finding was confirmed following 5 universal testing initiatives (1 for the entire network and 4 for individual units), which makes silent asymptomatic outbreak among residents unlikely.

We attribute this initial success to several factors: First, we were able to implement most strategies before reported community transmission in the region. Second, our initiatives were strongly supported by executive leadership teams, infection control professionals, hospital epidemiologists, and acute-care units for all sites. Third, we implemented universal face-mask and face-shield policies before seeing widespread community transmission. We initially implemented the universal face-shield policy because it provides effective protection to the respiratory tract and eyes, prevents face touching, and is reusable.^{8,9} At the time, this was a unique element of our bundle compared to common practices in the private sector and may have contributed to our success. Lastly, we could implement the strict quarantine policy for any new admission. The prohibition of new admission was only applied to non-VHA facilities, and we continued to accept new residents from acute-care units within the VHA.

Our approach also saved a large quantity of testing materials. If we had implemented universal testing for both residents and employees weekly, we estimated that 7,500 monthly tests would have been needed. The CMS issued guidance to test all employees weekly on May 18,⁴ which was later revised to incorporate a risk-strategized approach based on the community test-positivity rate on August 26.¹⁰ However, this rate was practically unchanged at our facilities because we recommended at least weekly testing given the positivity rates in our region. We estimated that our approach saved ~20,000 tests by September 1. Although we may have missed asymptomatic infection among employees, our strict infection control and PPE practices prevented any significant outbreak among residents.

In conclusion, we have demonstrated that proactive and comprehensive strategies, including universal face shield and face mask, can effectively prevent COVID-19 outbreaks in LTCFs in regions with high-levels of community transmission even without universal testing.

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