

Reducing Infectious Disease Health Disparities in Long-term Care Facilities

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From April to August 2020, 45% of the US COVID deaths were in long term care (LTC) facilities, despite those residents only representing .45% of the US population (Chidambaram 2020).

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Heidi Steinecker, as Deputy Director of CDPH, and the Director of the Center for Health Care Quality (CHCQ), testifying to state legislature in 2020.

The Deadliest Place in America During the COVID Pandemic

From April to August 2020, 45% of U.S. COVID deaths occurred in long-term care (LTC) facilities despite those residents representing only 0.45% of the national population (Chidambaram 2020). Additionally, the recorded number of COVID deaths in LTC facilities is undercounted since many occurred in March 2020. The Centers for Medicare and Medicaid Services (CMS), did not require all states to report COVID data from healthcare facilities until late April 2020.

We know now there were several hundred COVID fatalities not attributed to having occurred in a LTC facility because the resident died after transfer to a hospital. Those deaths were attributed to the hospital, where death occurred, instead of to the LTC facility, where the resident acquired the deadly disease.

Throughout the entire COVID pandemic, Skilled Nursing Facilities (SNFs), publicly often referred to as nursing homes, accounted for an average of 80% of the COVID deaths in LTC facilities, making nursing homes the deadliest place in America to live during the COVID pandemic (Alonzo- Zaldivar 2021). After vaccination rollouts in winter and spring 2021, the average COVID death percentage in LTC facilities fell to 23% of the US population COVID deaths. But the damage was already done. 11% of US citizens living in SNFs died from COVID in 2020–2021 (Alonzo- Zaldivar 2021). That means approximately one out of every ten SNF residents died in one singular year—a 32% increase in average annual deaths occurring in SNFs before the pandemic (Alonzo- Zaldivar 2021).

THROUGHOUT 2020 AND 2021, THE PUBLIC WAS OUTRAGED ABOUT HOW THE U.S. FAILED TO PROTECT THE GREATEST GENERATION OF RESIDENTS. AT THE SAME TIME, CMS CREATED NATIONAL POLICIES TO ELIMINATE ALL VISITORS, INCLUDING VITAL CARE TEAMS FOR PODIATRY AND DENTISTRY SERVICES, LEAVING THESE INDIVIDUALS TRAPPED AND ALONE WITH LIMITED CARE SERVICES.

Infection Control: A Longstanding Challenge

The mass death of residents in these congregate communities shouldn't have been a surprise. SNFs have historically lacked the infection control resources needed to contain pathogens, while state and federal quality and safety oversight systems lack the ability to improve outcomes. Years of data show repeated outbreaks of gastroenteritis, influenza, a variety of respiratory infections, skin infections that become necrotic, soft-tissue infections that often entail MRSA, and urinary tract infections that require hospitalization (Bayer 2018).

Even before the pandemic, nursing homes had difficulty with infection control, a fact proven by the statistic that influenza outbreaks therein accounted for 74% of the nation's influenza morbidity and mortality (Lansbury 2017). Therefore, in January 2020, when the Centers for Disease Control and Prevention (CDC) began briefing the state public health officials on the novel coronavirus, CMS and state public health survey agencies should have focused their infection control resources and strategies toward protecting the most vulnerable in our population—the long-term care residents, rather than focusing almost solely on hospital and acute care surge resources.

Throughout the last decades, LTC facilities have taken a back seat behind the focus on hospital care services and the quality and safety oversight system has been ineffective with limited success in reducing healthcare associated infections (HAIs). Despite the outcry from patient advocacy groups, geriatricians, state survey directors, and facility operators, very little attention or action in reform has happened to improve patient safety in these high-risk facilities.

However, in April 2022, as an after action from the mass death in SNFs from the pandemic, the National Academies of Science and Engineering Medicine (NASEM) issued the 600-page report "The National Imperative to Improve Nursing Home Quality" to provide the detailed framework of what must change in order to prevent such excess death in these facilities. Since that report, the Moving Forward Coalition formed, which includes patient advocacy groups, industry leaders, and federal/state surveyor specialists to finally address the CMS action plans to improve quality and safety survey systems for LTC facilities.



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California Case Study

In addition to the coalition movement for reform during the COVID-19 pandemic, some states like California deviated from the standard CMS Quality and Safety Survey System to pilot a new approach using real-time data and risk-based algorithms to pinpoint the nursing homes with the highest risk for an outbreak and send surveyors and infection control teams to the facilities. Thanks to this new targeted approach, California had the lowest COVID-19 fatality ratio in the continental U.S. despite having the greatest number of nursing homes in the entire nation. Since then, Maryland also added a bi-directional data approach to determine where and when to send public health teams and resources to LTC facilities. As a result, Maryland's COVID-19 fatality ratio dropped from 14% a week to 2% a week. These efforts of state public health quality and safety oversight survey systems and the growing reform movement of LTC facilities have shown it's time to create a nationwide movement to use real-time data and risk-based analytics to determine where to intervene early with public health experts in these high-risk facilities.

NOW IS THE TIME TO REFORM THE U.S. QUALITY AND SAFETY SURVEY SYSTEM

The world's population is increasingly aging, creating what some call the "silver tsunami." Currently, the 60-plus demographic represents 15–30% of the global population. That's expected to double by 2050 and will increase need for geriatric care in congregate settings (WHO 2022). Furthermore, by 2050, two-thirds of the world's population 60 years and older will live in low- and middle-income countries with even less access to quality and safe healthcare.

Currently, one in ten people die from a healthcare-associated infection (HAI) in these settings globally. Even in developed countries like the U.S., one in 31 patients get an HAI in their lifetime (WHO 2022). Although increased infection control and prevention protocols can reduce HAIs up to 70%, LTC facilities continue to struggle to implement these protocols well. With the increased globalized opportunities for new and former pathogens to emerge, the time is now for us to reform the quality and safety oversight system to reduce the size of outbreaks in these facilities and ultimately reduce the chances of mass, excess death.

In order to understand what needs to be reformed in the U.S. Quality and Safety Survey system, it is important to first understand how the current system works and where the gaps exist.

- For a LTC facility to receive Medicare reimbursement, they must be certified as meeting all the safety compliance criteria from CMS. The CMS regulatory process has largely not changed significantly in the methodology or kept up modern technology in more than thirty years. Some states use only the CMS regulations for federal certification and state licensure, whereas other states like California have additional state regulations for quality and safety standards.
- All fifty states serve as contractors for CMS to serve as public health regulatory surveyors, and most state survey agencies reside within the state public health infrastructure. On average, at least one-third of a state healthcare survey budget comes from CMS to perform the certification inspections of the CMS-certified facilities every year. However, over the last two decades, the funding from CMS has not increased at the same rate as the increase in survey workload.
- Over the last decades, the system has overseen more facilities and facility types, responded to more consumer complaints, and investigated more facility incident reports. Because the funding has not increased to meet the work demand, and the technology has not kept up to include mobile capabilities with ability to capture surveyor work where wifi is not available, many states have massive backlogs responding to safety complaints from residents and their family members (US Gov 2018).

LINGERING PROBLEMS THAT PRE-DATE THE PANDEMIC

The deficits in funding and the inability to keep up with work demand were not a product of the pandemic, but rather a longstanding issue in the U.S. Quality and Safety Survey system. Prior to the pandemic, all states struggled to keep a public health nurse surveyor workforce, with many states having high rates of vacancies as well as high turnover rates (Rantz 2006).

- In many states, facility surveyors currently must all be registered nurses and complete a certified training process through the CMS training program that can take up to nine months to finish.
- State/CMS surveyors can earn almost double as a direct-patient-care nurse in a facility, resulting in a historic difficulty recruiting and retaining survey nurses with state compensation. Additionally, surveyors can be viewed negatively as the “healthcare police” rather than being an important resource for safety protocols and understanding regulations.

GIVEN THE LACK OF FUNDING TO SUPPORT QUALITY AND SAFETY SURVEYS AND THE WORKFORCE TO DO THEM, IT’S NO WONDER MANY OF THESE FACILITIES WITH POOR PATIENT CARE HAVE FLOWN UNDER THE RADAR FOR SO LONG.

In addition to lack of funding and an inability to meet the growing facility oversight demands, the current U.S. Quality and Safety Survey system also lacks the structure and processes to improve the patient environment of care. Since the 1980s, CMS has mandated that all states use the CMS State Operation Manual (SOM) to inspect SNFs. The manual states that all SNFs must be inspected annually no less frequently than once every 15 months, with an average time between inspections statewide of 12 months (CMS SOM). Ten percent of the annual inspections must occur over a weekend or start at a non-standard time, and the day of the week the inspection begins should vary each year for the specific facility (Minnesota 2021). The goal of these instructions is to keep the survey unannounced as a surprise so a surveyor can see how a normal day may appear in the facility. However, because the state must stay below the 12-month average, every facility knows there’s at max a one-to-two-month survey window annually, making the inspections very predictable. Because facilities know



they most likely will only get visited during this eight-week period, the facility could have poor safety processes and lack of infection control without oversight throughout the rest of the year.

Due to the confined space of these congregate facilities, they are more likely to acquire a Healthcare Associated Infection (HAI) that can be life threatening and result in transfer to a hospital for acute care, so it’s imperative that infection prevention oversight systems are timely and effective to increase infection control. In fact, about 11% of long-term residents annually acquired an HAI prior to the pandemic (Baker 2021).

Facilities are also required to report outbreaks of infectious disease such as flu as well as other facility incidents like falls, abuse, medication errors, and deep-pressure ulcers, which surveyors will investigate—and cite facilities if there were violations of safety regulations (CMS SOM). **However, because the negative outcome for a resident already occurred, the investigating surveyor can merely react to the reportable incident.**

Due to the confined space of these congregate facilities, residents are more likely to acquire a life-threatening Healthcare Associated Infection (HAI) that will require transfer to a hospital for acute care. In fact, about 11% of long-term residents annually acquired an HAI prior to the pandemic (Baker 2021). Therefore, it’s imperative that infection prevention oversight systems are timely and effective.

BACKLOGGED COMPLAINTS AND BROKEN TECHNOLOGY

In addition to facility-reportable incidents like HAIs, residents or their family members can file a consumer complaint which requires a surveyor to investigate (Minnesota 2021). However, there are more complaints filed than the survey system and workforce have capacity to handle. In some cases, states have thousands of backlogged complaints that aren't investigated until years after the incident occurred. Even when a complaint such as elder abuse is triaged as an immediate jeopardy to life (IJ) and is investigated right away, there's often little evidence the surveyor can use to substantiate the complaint, and facility receives nothing but a warning.

Given the predictability of annual inspections, the reactivity of incident-reportable inspections, and the inability to respond meaningfully to consumer complaints, the entire U.S. Quality and Safety survey system for SNFs is not an effective way to improve the safety of residents or the quality of care for some of the most vulnerable in the U.S. population.

Additionally, the way in which the system operates must also be modernized with mobile technology in order to gain real-time visibility into these facilities. Currently CMS uses an electronic database system called ASPEN (Automated Survey Process Environment), which is a suite of software applications designed in the 1990s that state survey agencies are required to use to collect healthcare facility survey data (US Gov 2018). The system is so rudimentary it's not even accessible on the internet—much less the cloud. It's not bi-directional with state systems. And because the system is so outdated, it often breaks down only to be "upgraded" with temporary fixes.

To address these issues, CMS eventually built out the Internet Quality Improvement and Evaluation System (iQIES). Although it's an internet-based system, it still has not been rolled out in all states with full mobile app capabilities, and there are still issues when Wi-Fi is not available.

Even in 2020 when surveyors visited a facility, many either used paper or an electronic file on their laptop. These notes were then typed into a report in Microsoft Word, then cut and pasted into separate state and federal CMS systems. This manual process with reviews and approvals could take up to seven working days with multiple hand-offs and many opportunities for error.

If there is a fast-moving infectious disease in the community of the facility and a lack of infection control processes within the facility, this delay in having real-time visibility into the facility's problems could be devastating.

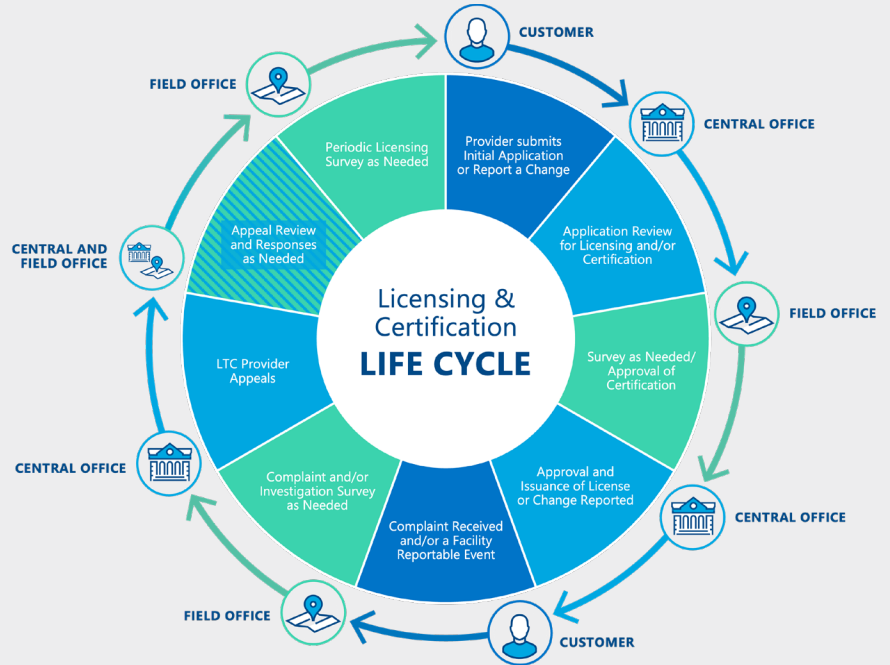


Beds in an NBA stadium as part of emergency response to the COVID-19 pandemic in 2020.

Current System Life-Cycle

Depending on the state internal process, on internal reviews, or manager editing, there can be up to nine different hand-offs in the current manual process. **With each hand-off comes a risk of lost or missed information and delays in response.**

The electronic, manual process presently in place also soaks up many hours of administrative work for a limited public health survey workforce and doesn't provide real-time data in order to leverage analytics for immediate preventative actions.



DISPARITIES IN REPORTING

Conversely, a facility operator who might not get a full report of their inspection for up to two weeks also doesn't have a quick way to respond with plans of correction or questions, other than paper in the mail, fax, secure email, or by calling the local surveyor office of the state. A facility operator must intermediately correct any IJ level deficiencies, yet many other important findings are not relayed in a constructive, timely, bi-directional approach.

During the pandemic, nursing home operators and the industry welcomed using new survey apps or makeshift mobile options provided by state public health departments, rather than using Smartsheets, Google Docs, or manual processes that took up precious staff time to report daily.

One survey in California found that 93% of SNF providers preferred mobile reporting with bi-directional communication than using email or portals (CDPH 2021).

THE LACK OF IMMEDIATE BI-DIRECTIONAL COMMUNICATION AND INFORMATION CAUSES CONFUSION AND PLACES RESIDENTS IN DANGER WHEN SAFETY SITUATIONS AREN'T ADDRESSED IMMEDIATELY AND DOCUMENTED IN AN AUTOMATED SYSTEM. FURTHERMORE, A LACK OF MODERNIZED TECHNOLOGY CAUSES LACK OF TRANSPARENCY AND TRUST FOR THE CONCERNED FAMILY MEMBERS WHO FIND IT DIFFICULT TO ACCESS INFORMATION ABOUT WHAT'S HAPPENING IN THEIR LOVED ONE'S FACILITY.

Although CMS has a star rating system and many states have public websites that detail the safety and quality record of a facility, the public and family members of residents have lacked real-time quality measures or safety outcomes of infectious diseases in these congregate settings. In addition, the CMS star rating system has lacked transparency as to how the algorithm is weighted, and many components of the star rating system are subjective rather than using concrete measures, or including resident outcomes and voices.

LEVERAGING DATA TO REDUCE FATALITIES

For many years prior to the pandemic, patient advocates, facility operators, and state public health survey agencies may not have agreed on how to solve the problems; however, they did agree on what many of the problems are.

The lack of bi-directional communication—which should include instant feedback on inspections, analytics of high-risk facilities, and technical assistance on how to understand confusing public health policy—have created distrust between facilities and surveyors, frustration between consumers and facilities, and exasperation between consumers and state survey agencies.

The lack of reform on these systems and structures has been debated hotly in congress and in state oversight hearings, yet very little has changed or improved (Davidson 2020). What happened was a failure to apply statistics and utilize better technology and data-intensive approaches that exist. The inputs for the federal government’s CMS ratings that SNFs rely upon, unannounced-but-predictable annual inspector visits, and the resulting rating of up to five stars may be irrelevant in a rapidly changing situation. Conversely, readily available data monitoring based on preexisting risk and point-in-time conditions can be highly predictive of precise locations and times where infectious disease outbreaks and other crises are likely to arise.

For an industry with thin margins, the simplicity of the CMS five-star quality-and-safety rating system, established in 2008, underpins receipt of Medicare and Medicaid payments. Most states receive about one-third of their healthcare quality oversight operating budget from CMS for surveyors who perform healthcare quality oversight, and most states solely rely on the CMS State Operating Manual (SOM) for their processes, which are schedule-driven. But the CMS star ratings may not adequately measure risk.

The unannounced-but-predictable annual surveyor inspections account for much of the rating, in addition to largely self-reported information on staffing quality (including hours staff spend with residents) and care quality (metrics including resident medication and wounds) (Holden 2021). Annual visits aren’t frequent enough for high-risk facilities even when there are additional consumer complaints or mandated facility-reported incidents. Therefore, the current system for SNFs is reactive instead of predictive and proactive.

THE CALIFORNIA CASE STUDY DEMONSTRATED THAT THERE ARE MORE PROACTIVE WAYS TO USE PAST AND REAL-TIME DATA ON LTC FACILITIES TO DETERMINE WHERE THE HIGHEST RISK FACILITIES ARE. DATA ON STATE INFECTIOUS DISEASE OUTBREAKS LIKE INFLUENZA AND COVID-19 IS COLLECTED THROUGH THE STATES AND THE CDC. ALL STATES SEND INFLUENZA AND COVID-19 LTC FACILITY OUTBREAK AND CASE FATALITY RATIO DATA TO CDC WHERE IT IS PUBLICLY AVAILABLE FOR USE.

States can use that data as well as the following datasets to determine the highest risk nursing homes each week to send surveyors for a targeted survey:

1. Daily nursing home staffing ratios;
2. Daily reporting of infectious disease of staff and residents;
3. Community case rates of infectious disease in the a nursing home location;
4. Vaccine data of the nursing home residents and staff;
5. Vaccine data on the surrounding community surrounding of the nursing home;
6. Prior last three years of infection control compliance data;
7. Prior last three years of nursing home outbreak data;
8. Personal protection equipment (PPE), sanitation supplies, and staffing request data;
9. The poverty index of the nursing home zip code; and
10. Outbreak data of any state licensed facility including child care facilities within a five-mile radius of the nursing home.

In the California case study, their data scientist team took several datasets to create an algorithm of risk which became over 80% accurate by the fall of 2020. Maryland also used a similar life-saving system later in the pandemic. The states who have used data and algorithms like these during the pandemic have used them daily to determine whether a LTC facility is at high, medium, or low risk. High-risk facilities are the first to receive visits from surveyors and infection control teams. Medium-risk facilities receive an immediate phone call or tele-visit to see if there are resources or technical assistance needed. And low-risk facilities are still surveyed once every 15 months as per CMS requirements, but they are prioritized last. With a diminishing public health workforce, using risk-based strategies like these with data can help use public health nurses and surveyors in more impactful ways. If states had more freedom to be innovative and use data more proactively, rather than relying on the current CMS annual schedule, we can save lives in these facilities that have had long-standing health disparities.

System Recommendations

The 170,000 deaths in SNFs and more than 200,000 deaths in LTC facilities between 2020-2021 created the inflection point where we stand today: a moment of opportunity to create real change for improvement for our growing aging population.

In addition, social determinants of health (SDoH) data that can be collected about a facility's surrounding community can help determine where to proactively send resources and interventions (Shen 2022). There are many long-standing issues highlighted in the 2022 NASEM report on these congregate facilities, including issues with change of ownership policies, workforce development, and financial transparency. CMS announced this past year a new targeted survey approach to healthcare oversight which is a step in the right direction to use more data and analytical insights. However, in order to regulate this critical industry more effectively, trust needs to be rebuilt by providing more educational tools on high frequency deficiency topics, and more bi-directional communication opportunities when policies are new or changing.

However, the greatest health disparity in facilities for this vulnerable population is the lack infection control protocols since infectious diseases are the greatest causes of death in these settings. By creating a new system that allows for automated, integrated data systems; analytics that surveyors can act on in real time with a bi-directional flow of information; and targeting the limited public health survey workforce to the highest risk facilities, we can reduce the size of infectious disease outbreaks and the number of excess fatalities in LTC facilities. And we can rest assured that never again will the loved ones who raised us be the ones we kill off first in the battlefield of a pandemic or slowly die off in every annual flu and RSV season.

WE HAVE THE TOOLS AND STRATEGIES NEEDED TO REDUCE THIS HEALTH DISPARITY IN OUR GROWING AGING POPULATION, AND THE TIME IS NOW TO USE THEM.



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