

Infection Control in Nursing Homes

Introduction

Nursing home residents, many of whom are living with chronic illness, are at a high risk of infections because they live in close quarters. The average U.S. nursing home has 108 beds and it's common for residents to have roommates and share bathrooms. Each year, as many as 3.8 million infections and up to 200,000 hospitalizations occur among the 1.3 million people living in nursing homes. The most common infections are respiratory infections (e.g., influenza and pneumonia), gastroenteritis, and skin infections. Difficult to treat and manage illnesses such as clostridium difficile and methicillin-resistant staphylococcus aureus are also common (CDC.gov, 2020). More recently, the respiratory illness, COVID-19 has severely affected the nursing home population with 1 in 5 residents having contracted and later died from the disease (CDC.gov, 2020; AARP, 2020). Infection control, therefore, is key to maintaining quality of care in nursing homes. This issue brief provides background information on infection control, explores infection control data made publicly available by the Centers for Medicare and Medicaid Services (CMS), and concludes with a policy recommendation and areas for future research.

Background

To combat infections, federal regulation (§ 483.80) requires nursing homes to develop infection control programs. These programs must include an infection preventionist, program oversight, evidenced-based procedures, surveillance, education, and procedures for the appropriate use of antibiotics.

A nursing home's infection control program is evaluated during their annual survey. During the survey, between 2 and 5 surveyors select an initial pool of residents for observation, a record review, and possibly, an interview to identify those with concerns. The initial pool is then narrowed down to somewhere between 8 and 35 residents (depending on the size of the facility, see Appendix A). To identify infection control deficiencies, surveyors, "...observe for breaks in infection control throughout the survey, as specified on the pathways and investigative protocols. The assigned surveyor(s) should coordinate a review of the infection prevention and control and antibiotic stewardship programs, and the influenza and pneumococcal vaccinations" (LTCSP Procedure Guide, 2019). Three "F-tags", as defined by § 483.80 (see Appendix B) are used by state inspectors to evaluate compliance with federal rules. F-880 refers to the nursing home's infection control program, F-881 refers to the appropriate use of antibiotics, and F-883 refers to the establishment of an influenza and pneumococcal immunization program. Deficiencies are categorized into four levels of severity, "immediate jeopardy," "actual harm," "potential for harm," and the least severe, "potential for minimum harm." The scope of the problem is also taken into consideration which includes the deficiency being isolated, a pattern, or widespread. The severity and scope of the deficiency are used to determine the appropriate remedy for non-compliance which can include a directed plan of correction, a termination of the provider

agreement, non-payment from Medicare, a moratorium on new admissions, and Civil Money Penalties.

Infection Control Data

The following analyzes infection data downloaded from CMS' Nursing Home Compare website (see <https://www.medicare.gov/nursinghomecompare/search.html>). Infection data are from the most recent two survey cycles for every Medicare and Medicaid certified nursing home in the U.S.

Figure 1 shows the percent of nursing homes with at least one infection deficiency. Out of 15,449 nursing homes, 63 percent (or 9,757) nursing homes have at least one infection control deficiency.

Figure 1.

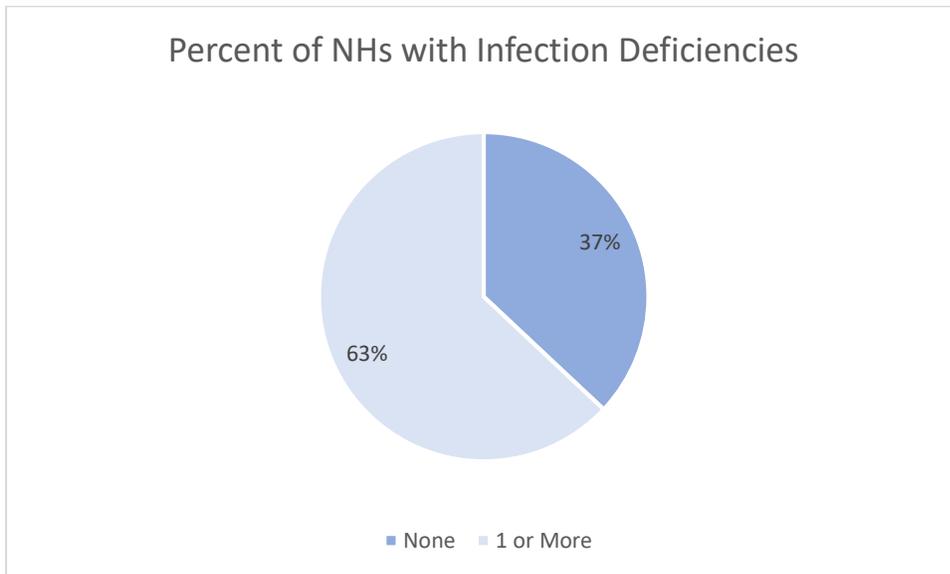


Figure 2 shows the percent of nursing homes by infection deficiency severity. There was very little variation in severity with 98 percent of nursing homes having “potential for harm” deficiencies.

Figure 2.

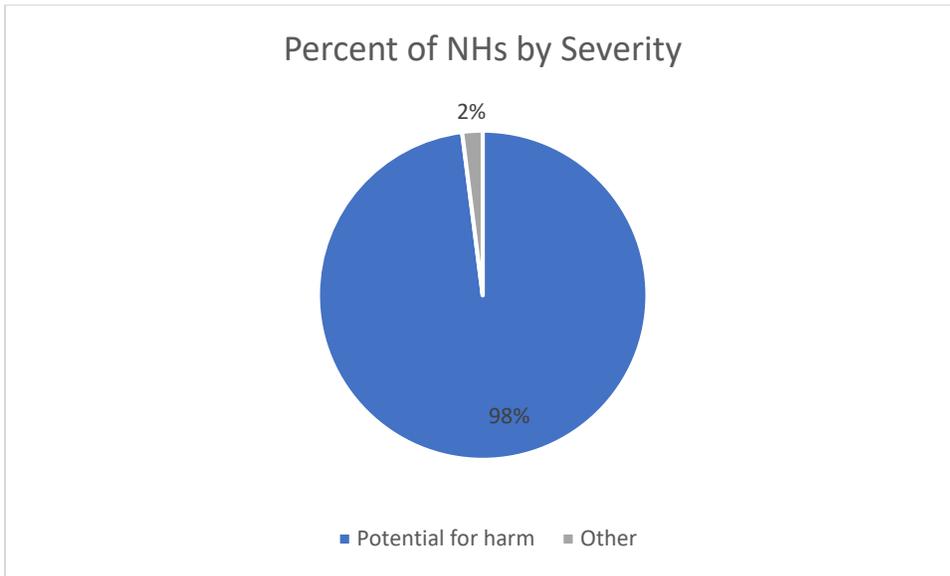


Figure 3 shows the percent of nursing homes with 2 or more infection deficiencies. Eighteen percent of nursing homes with infection control deficiencies had 2 or more.

Figure 3.

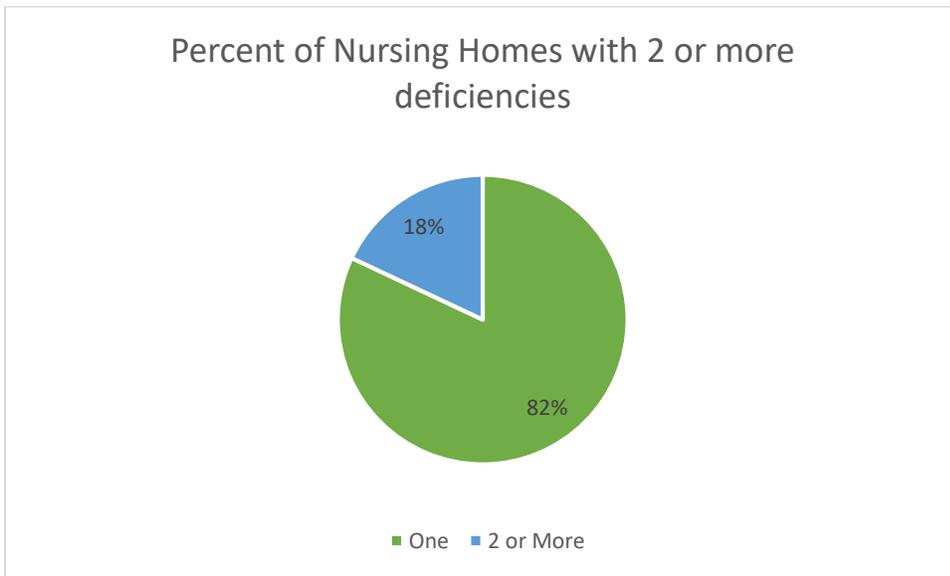


Figure 4 shows the percent of nursing homes with each type of infection deficiency. Most nursing homes with an infection deficiency (78 percent) were deficient in their infection control programs (F-880). About 2 percent were deficient in their antibiotic stewardship (F-881) and influenza and pneumococcal immunization programs (F-883). Over 2 percent were deficient in all three categories. The percent of nursing homes with both an infection control program and an

antibiotic stewardship deficiency is 9 percent. The percent of nursing homes with an infection control program and influenza and pneumococcal immunization program deficiency is 7 percent.

Figure 4.

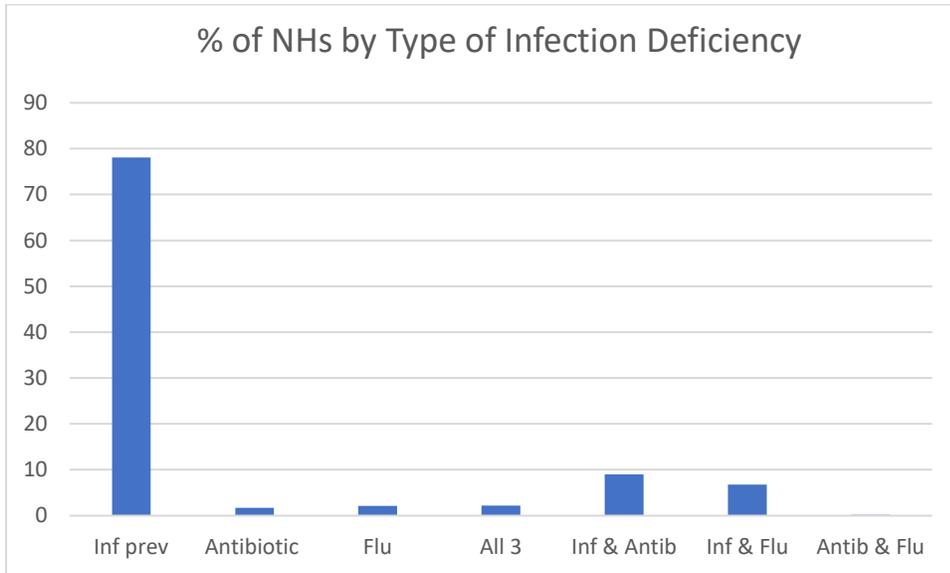
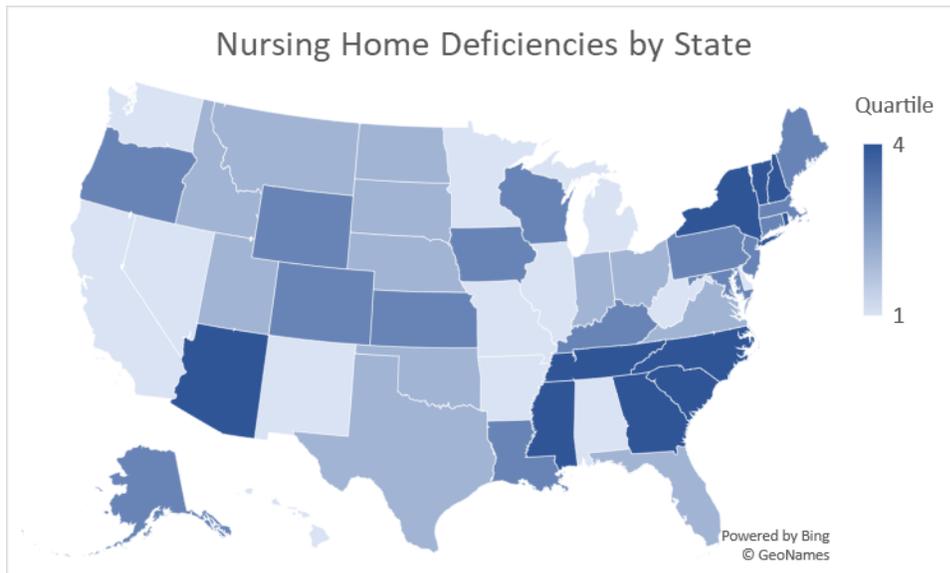


Figure 5 shows the percent of nursing homes in each state that have infection control deficiencies, presented in quartiles. States in the southeast and northeast are in the highest quartiles. Arizona stands out among the western U.S. states.

Figure 5.

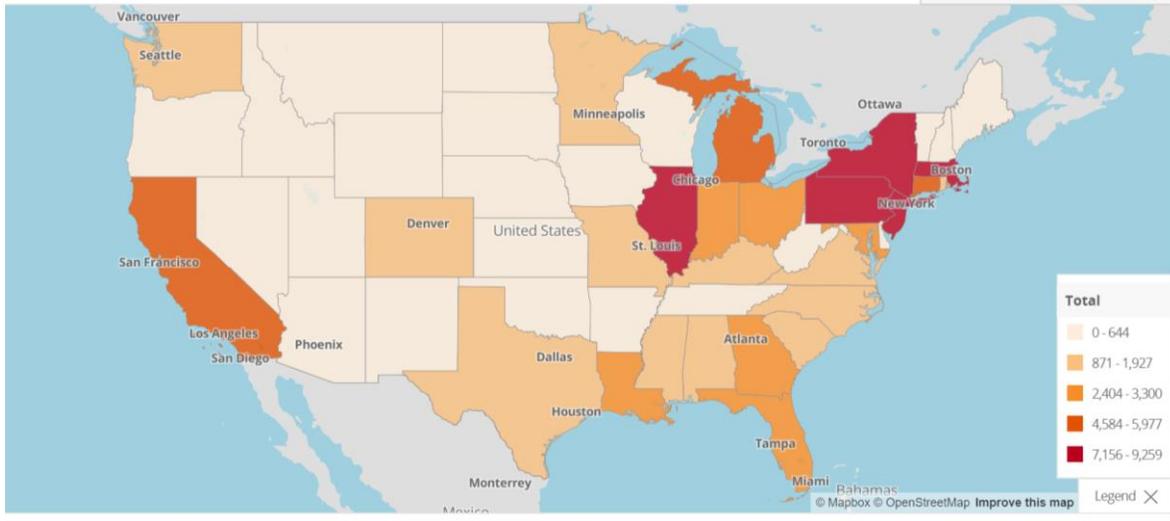


Q1 0-28%, Q2 29-39%, Q3 40-47%, Q4 48-75%

Figures 6 and 7 show the number of confirmed COVID-19 cases among nursing home residents by state and the number of confirmed COVID-19 deaths among nursing home residents by state.

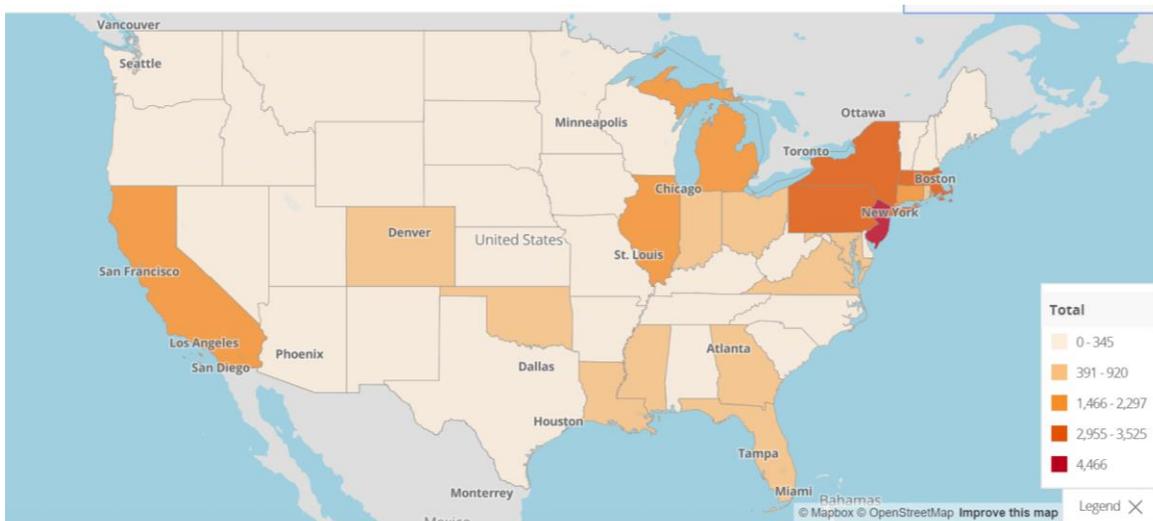
Figure 6 shows a high number of cases in the northeast, where the percent of nursing homes with infection deficiencies is also high. Figure 7 also shows a high number of deaths in the northeast. Interestingly, while California has a lower percent of nursing homes with infection deficiencies, they have a higher number of cases and deaths. These are preliminary data provided by CMS and are likely to change as more nursing homes report cases and deaths.

Figure 6.



Source: CMS, <https://data.cms.gov/stories/s/COVID-19-Nursing-Home-Data/bkwz-xpvg>

Figure 7.



Source: CMS, <https://data.cms.gov/stories/s/COVID-19-Nursing-Home-Data/bkwz-xpvg>

Figures 8 and 9 show the percent of nursing homes with infection deficiencies by profit status. Sixty-six percent of for-profit nursing homes have at least one infection control deficiency, compared to 57 percent of non-profit or government owned nursing homes.

Figure 8.

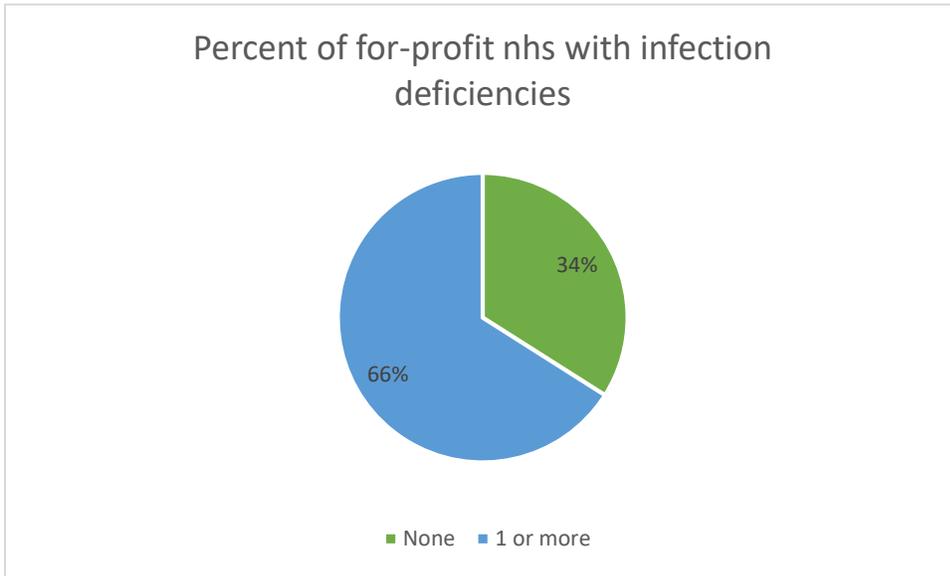


Figure 9.

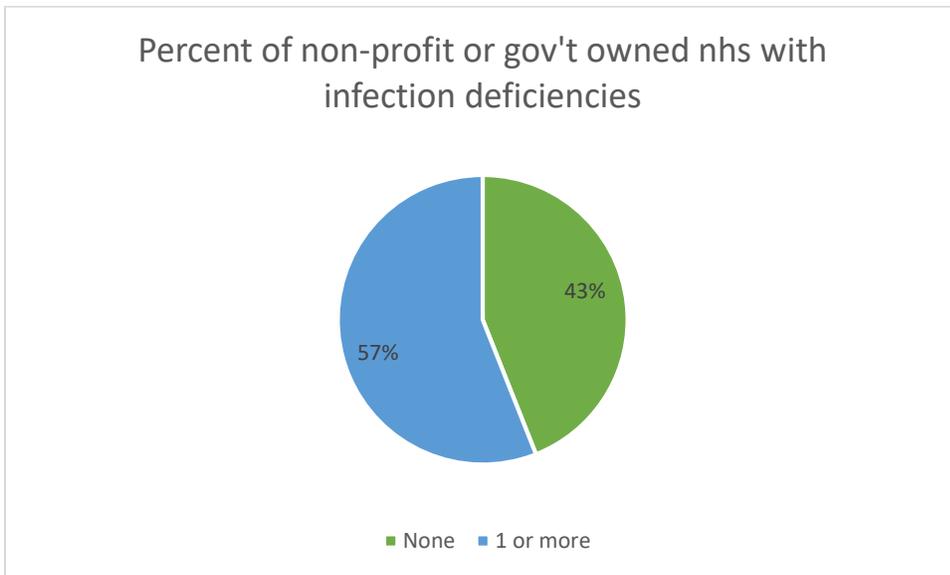
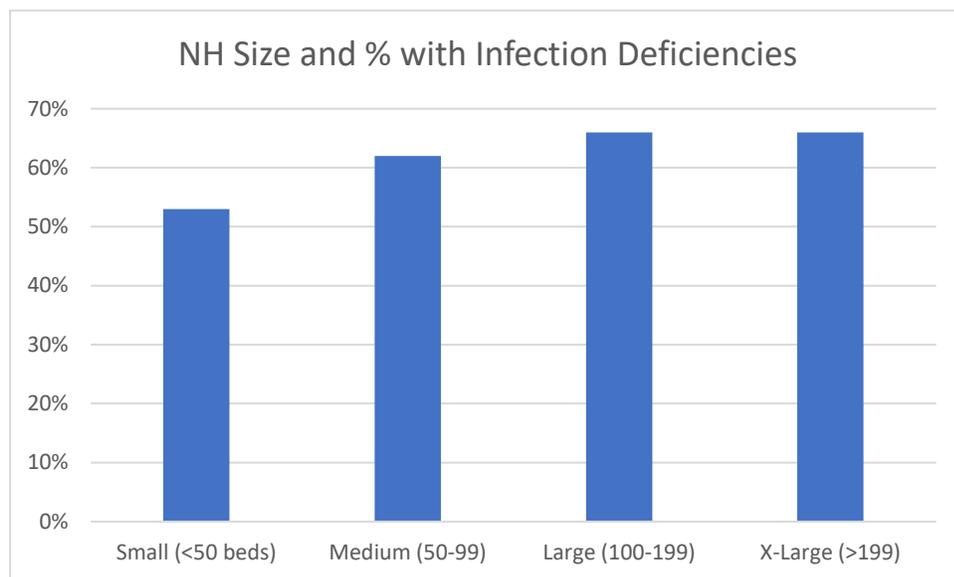


Figure 10 shows the percent of nursing homes with infection deficiencies by the number of beds. The percentage of nursing homes with infection deficiencies is lower among small and medium homes. Fifty-three percent of small nursing homes (those with less than 50 beds) have infection deficiencies, compared to 62 percent of medium nursing homes (those with 50 to 99 beds), 66 percent of large nursing homes (between 100 and 199 beds), and 66 percent of extra large nursing homes (those with over 199 beds).

Figure 10. Percent of nursing homes with infection deficiencies by number of beds



Conclusion

The high infection and death rates of nursing home residents due to the COVID-19 pandemic has raised questions about how prepared nursing homes are for the current outbreak and for future ones. Infections can easily spread among the nursing home population due to the close quartered living situation, a lack of personal protective equipment, shared staff between homes, and weak infection control education and protocols. Studies prior to the pandemic revealed that over 60 percent of nursing homes had at least one infection deficiency with over half cycling between compliance and non-compliance. This was true of even some of the CMS highest rated nursing homes (see GAO, 2020; KHN, 2020). This issue brief described the survey process and used data from CMS to explore infection control deficiencies. The data showed that over 60 percent of nursing homes have at least one infection deficiency during the last two survey cycles with almost 20 percent having 2 or more deficiencies. The most common deficiency was for lapses in the establishment of and adherence to infection control programs. Over 98 percent of the deficiencies cited were marked as “potential for harm,” one of the less severe categories. A GAO (2020) report noted a similar finding and raised questions about the accuracy of surveyors’ assessment of the deficiency severity, given their full description in the field notes. This issue brief also found differences by profit status and size with a greater percentage of for-profit and larger nursing homes having infection deficiencies. These findings are in line with research that suggests that quality of care and quality of life are often better in smaller and non-profit settings (Harrington et al., 2017; Shippee et al., 2013).

Although infection deficiencies are prevalent among a majority of nursing homes, in 2019 CMS proposed a rule, “Regulatory Provisions to Promote Efficiency and Transparency,” that would weaken infection control programs. The rule proposes several regulatory rollbacks, but most importantly--regarding infection control, the rule would remove the requirement that an infection control preventionist work at least part time at the facility. CMS listed the proposed rule among its top priorities for 2020 although no further action has taken place (see <https://www.cms.gov/files/document/admin-info-20-03-all>). Given this and future waves of

COVID-19 infections, CMS should revisit the proposed rule and strengthen (rather than weaken) infection control requirements.

In sum, the reports from nursing homes with a large percentage of COVID-19 deaths among patients and staff, indicate weak infection control programs and practices with widespread infections in those nursing homes, a lack of personal protective equipment, and a lack of COVID-19 testing for staff and residents. When the data become available, it would be important to examine rates of COVID-19 infections and deaths by profit status and facility size because, as this issue brief showed, these factors are associated with infection deficiencies. Another important area of research would be on infection control in nursing homes where residents have their own private bedrooms and bathrooms—which likely affects the ability to control infection rates. Finally, researchers should examine how staffing ratios, having staff that are dedicated to just a few residents, employer provided health insurance for staff, and comprehensive infection control education affects infections and their spread in nursing homes.

Lori Gonzalez, Ph.D.

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Long Term Care Survey Process (LTCSP) Procedure Guide

Effective November 25, 2019

Attachment A: Sample Size, Recommended Team Size, and Initial Pool Size

This table shows the required sample size, recommended number of surveyors, and expected initial pool size for each survey, based on facility census. Also, see notes below the table.

Facility Census	Recommended # of Surveyors	Initial Pool Size (approximate)	Sample Size #
1-8	2	All residents	All residents
9 – 19	2	9 to 16	8
20 – 48	2	16	12
49 – 52	3	24	13
53 - 56	3	24	14
57 – 61	3	24	15
62 – 65	3	24	16
66 – 69	3	24	17
70 – 90	3	24	18
91 – 95	3	24	19
96 – 100	4	32	20
101 – 105	4	32	21
106 – 110	4	32	22
111 – 115	4	32	23
116 – 123	4	32	24
124 – 128	4	32	25
129 – 133	4	32	26
134 – 138	4	32	27
139 – 143	4	32	28
144 – 148	4	32	29
149 – 153	4	32	30
154 – 158	4	32	31
159 – 164	4	32	32
165 – 169	4	33	33
170 – 174	4	34	34
≥175	5	40	35

APPENDIX B

§ 483.80 Infection control.

The facility must establish and maintain an infection prevention and control program designed to provide a safe, sanitary, and comfortable environment and to help prevent the development and transmission of communicable diseases and infections.

(a) *Infection prevention and control program.* The facility must establish an infection prevention and control program (IPCP) that must include, at a minimum, the following elements:

(1) A system for preventing, identifying, reporting, investigating, and controlling infections and communicable diseases for all residents, staff, volunteers, visitors, and other individuals providing [services](#) under a contractual arrangement based upon the facility assessment conducted according to [§ 483.70\(e\)](#) and following accepted national standards;

(2) Written standards, policies, and procedures for the program, which must include, but are not limited to:

(i) A system of surveillance designed to identify possible communicable diseases or infections before they can spread to other [persons](#) in the facility;

(ii) When and to whom possible incidents of communicable disease or infections should be reported;

(iii) Standard and transmission-based precautions to be followed to prevent spread of infections;

(iv) When and how isolation should be used for a resident; including but not limited to:

(A) The type and duration of the isolation, depending upon the infectious agent or organism involved, and

(B) A requirement that the isolation should be the least restrictive possible for the resident under the circumstances.

(v) The circumstances under which the facility must prohibit employees with a communicable disease or infected skin lesions from direct contact with residents or their food, if direct contact will transmit the disease; and

(vi) The hand hygiene procedures to be followed by staff involved in direct resident contact.

(3) An antibiotic stewardship program that includes antibiotic use protocols and a system to monitor antibiotic use.

(4) A system for recording incidents identified under the facility's IPCP and the corrective actions taken by the facility.

(b) *Infection preventionist.* The facility must designate one or more individual(s) as the infection preventionist(s) (IPs) who are responsible for the facility's IPCP. The IP must:

(1) Have primary professional training in nursing, medical technology, microbiology, epidemiology, or other related field;

(2) Be qualified by education, training, experience or certification;

(3) Work at least part-time at the facility; and

(4) Have completed specialized training in infection prevention and control.

(c) ***IP participation on quality assessment and assurance committee.*** The individual designated as the IP, or at least one of the individuals if there is more than one IP, must be a member of the facility's quality assessment and assurance committee and report to the committee on the IPCP on a regular basis.

(d) ***Influenza and pneumococcal immunizations -***

(1) ***Influenza.*** The facility must develop policies and procedures to ensure that -

(i) Before offering the influenza immunization, each resident or the resident's representative receives education regarding the benefits and potential side effects of the immunization;

(ii) Each resident is offered an influenza immunization October 1 through March 31 annually, unless the immunization is medically contraindicated or the resident has already been immunized during this time period;

(iii) The resident or the resident's representative has the opportunity to refuse immunization; and

(iv) The resident's medical record includes documentation that indicates, at a minimum, the following:

(A) That the resident or resident's representative was provided education regarding the benefits and potential side effects of influenza immunization; and

(B) That the resident either received the influenza immunization or did not receive the influenza immunization due to medical contraindications or refusal.

(2) ***Pneumococcal disease.*** The facility must develop policies and procedures to ensure that -

(i) Before offering the pneumococcal immunization, each resident or the resident's representative receives education regarding the benefits and potential side effects of the immunization;

(ii) Each resident is offered a pneumococcal immunization, unless the immunization is medically contraindicated or the resident has already been immunized;

(iii) The resident or the resident's representative has the opportunity to refuse immunization; and

(iv) The resident's medical record includes documentation that indicates, at a minimum, the following:

(A) That the resident or resident's representative was provided education regarding the benefits and potential side effects of pneumococcal immunization; and

(B) That the resident either received the pneumococcal immunization or did not receive the pneumococcal immunization due to medical contraindication or refusal.

(g) COVID-19 reporting. The facility must -

(1) Electronically report information about COVID-19 in a standardized format specified by the [Secretary](#). This report must include but is not limited to -

(i) Suspected and confirmed COVID-19 infections among residents and staff, including residents previously treated for COVID-19;

(ii) Total deaths and COVID-19 deaths among residents and staff;

(iii) Personal protective equipment and hand hygiene supplies in the facility;

(iv) Ventilator [capacity](#) and supplies in the facility;

(v) Resident beds and census;

(vi) Access to COVID-19 testing while the resident is in the facility;

(vii) Staffing shortages; and

(viii) Other information specified by the [Secretary](#).

(2) Provide the information specified in [paragraph \(g\)\(1\)](#) of this section at a frequency specified by the [Secretary](#), but no less than weekly to the Centers for Disease Control and Prevention's National Healthcare Safety Network. This information will be posted publicly by [CMS](#) to support protecting the health and safety of residents, personnel, and the general public.

(3) Inform residents, their representatives, and families of those residing in facilities by 5 p.m. the next calendar day following the occurrence of either a single confirmed infection of COVID-19, or three or more residents or staff with new-onset of respiratory symptoms occurring within 72 hours of each other. This information must -

(i) Not include personally identifiable information;

(ii) Include information on mitigating actions implemented to prevent or reduce the risk of transmission, including if normal operations of the facility will be altered; and

(iii) Include any cumulative updates for residents, their representatives, and families at least weekly or by 5 p.m. the next calendar day following the subsequent occurrence of either: Each time a confirmed infection of COVID-19 is identified, or whenever three or more residents or staff with new onset of respiratory symptoms occur within 72 hours of each other.