COVID-19 Preparedness in Michigan Nursing Homes

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The COVID-19 pandemic has disproportionately high mortality among older adults, particularly those with comorbidities.[1-3] Nursing homes (NHs) are particularly vulnerable to widespread transmission and poor outcomes.[4-6]

The objectives of this study were (1) to understand preparedness among Michigan NHs in the midst of an ongoing pandemic, and (2) to compare with a 2007 survey on pandemic influenza preparedness in Michigan NHs.[4]

Methods

State health department-registered NHs in Michigan were identified in 2007 and 2020. We adapted a 2007 pandemic preparedness survey to assess COVID-19 preparedness.[4] Michigan's first case of COVID-19 was reported on March 10, 2020. The COVID preparedness survey was prepared online using Qualtrics survey software and sent to NHs on March 11, 2020, with a reminder email on March 13. The main objective was to assess changes in pandemic preparedness in the state of Michigan early in the epidemic. Categorical data were compared between groups with Chi-squared test. A 2-sided P value of .05 was considered significant.

Results

One hundred thirty of the 426 (31%) MI NHs surveyed responded within one week of first contact. An additional 27 NHs opened the survey but did not provide any

responses. The distribution of reported bed capacity among facilities was unchanged, with 70% reporting 51-150 beds in 2020 versus 68% 2007.

An overwhelming majority of respondents in 2020 had a separate pandemic response plan, and only 3 (2%) NHs reported having no response plan in 2020 compared to 132 (56%) of 2007 respondents ($p<0.001$) (Table 1). Nearly all (94%) of 2020 respondents also reported having a staff person(s) responsible for preparedness, compared to 80% of 2007 respondents ($p<0.001$). Staff responsible for preparedness included infection control coordinators (69, 60%), administrators (45, 39%), directors of nursing (33, 28%), emergency preparedness (8, 7%), and others (26, 22%). The majority of 2020 respondents referred to public health entities for guidance, including the Centers for Disease Control and Prevention (CDC) (123, 98%); state and local health departments (106, 85%), and the World Health Organization (WHO) (47, 38%). More than half (68, 54%) received guidance from their parent corporations (Table 2).

A greater portion of NHs were willing to accept hospital overflow non-pandemic patients (82% vs 53% in 2007, $p<0.001$) or discharge patients to open up beds (18% vs 9% in 2007, $p=0.015$). NHs in 2020 were more likely to have communication lines established with nearby hospitals (62% vs 49% in 2007, $p=0.0232$) and public health officials (86% vs 56% in 2007, $p<0.001$) suggesting better integration within the healthcare system.

As Michigan reported its first case of COVID-19, facilities were most concerned about staffing and supplies. Asked to report their greatest concern regarding preparedness, 42% (35/84) of respondents mentioned lack of supplies (especially PPE), and 32% (27/84) were concerned they would not be able to adequately staff their facility. Facilities were proactive, with more NHs reporting having stockpiled supplies in 2020 (85%) than in 2007 (57%, $p<0.001$). Most facilities reported stockpiling of PPE (Table 2). Staff shortages were anticipated by 79% (67/85) of 2020 respondents with several facilities already making contingency plans (Table 2).

The majority of 2020 respondents had processes in place to restrict movement: by limiting family members and visitors (119, 98%); by limiting outside vendors, researchers and consultants (118, 98%); and by screening visitors for symptoms (113, 93%).

Discussion

Our results show that MI NHs may be better prepared for pandemics now than in 2007. In 2020, NHs were able to make policy and procedure changes within one week in response to urgent guidance from Centers for Medicare & Medicaid Services (CMS) and CDC,[5,6] which likely helped the facilities prepare for COVID-19 pandemic. Almost all NHs have a dedicated staff member responsible for preparedness and were willing

serve as surge capacity, particularly for non-COVID patients. NHs did express concerns about staffing shortages and PPE supply constraints as cases rise.

Limitations of this study include: self-report bias, limited geographic representation, and likely lower response rate as survey was performed in the early stages of a global pandemic. Assessment of pandemic preparedness at the beginning of an outbreak is a strength. These data will serve as a baseline for future surveys and studies of NHs' experiences during this pandemic. In summary, while NHs in 2020 show greater pandemic preparedness than 2007, they will face challenges due to limited PPE supplies and staffing shortages. NHs will need to refine their preparedness strategies as the COVID-19 pandemic evolves and is anticipated to have major consequences. In order for NHs to effectively prepare for a pandemic, real-time data and experiences should be readily available to help inform their response.

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Table 1. Planning Components for COVID-19 in MI Nursing Homes (2007 vs 2020)[a]

	No. (%) of Nursing Homes		
	2007 N=280	2020 N=130	*P* value[b]
Which category most accurately represents your facility's pandemic response plan for?			
Part of current preparedness plan	68/261 (26)	50/127 (39)	**<0.001**
Separate plan	61/261 (23)	74/127 (58)	
Does not yet have a plan	132/261 (51)	3/127 (2)	
Staff position responsible	223/279 (80)	120/128 (94)	**<0.001**
Nursing homes being counted on as alternative care sites for hospital overflow	137/272 (50)	46/94 (49)	0.811
Stockpiling supplies	150/264 (57)	107/126 (85)	**<0.001**
Plans to provide pandemic training	131/241 (54)	121/122 (99)	**<0.001**
Staff already given pandemic education	104/248 (42)	119/122 (98)	**<0.001**
Policy regarding ill employees returning to work?	--	119/120 (99)	--
Access to laboratory facilities	215/248 (87)	79/104 (76)	**0.013**
If surge capacity occurs due to COVID-19 pandemic, facility could:			
Accept hospital overflow pandemic patients	110/280 (39)	35/114 (31)	0.109
Accept hospital overflow non-pandemic patients	148/280 (53)	94/114 (82)	**<0.001**
Discharge residents to open up beds	25/280 (9)	20/114 (18)	**0.015**
Provide community care and services such as vaccination clinic	85/280	--	--
Communication lines established with nearby hospitals	112/227 (49)	67/107 (63)	**0.0232**
Communication lines with state and local public health officials	121/217 (56)	99/115 (86)	**<0.001**
Conducted pandemic outbreak exercises?	20/264 (8)	43/119 (36)	**<0.001**
Mental health and faith-based services available	185/239 (77)	92/114 (81)	0.481

[a] Blank responses were treated as missing data

[b] Comparison of 2007 vs 2020 responding nursing homes using Chi-squared test.

Table 2. Detailed Responses of 2020 Pandemic Preparedness Survey Participants

Response	No. (%) of Nursing Homes[a]
Question: For COVID-19, please indicate which guidance documents on outbreak response from your facility uses.	
CDC	123/125 (98)
State and/or local health department	106/125 (85)
Corporate	68/125 (54)
Local hospital/healthcare organization	53/125 (42)
WHO	47/125 (38)
AMDA	28/125 (22)
APIC	16/125 (13)
IDSA	15/125 (12)
SHEA	6/125 (5)
None	1/125 (1)
Other[b]	28/125 (22)
Question: What supplies has the facility begun to stockpile?[c]	
Masks (surgical)	85/101 (84)
Alcohol-based hand sanitizer	82/101 (81)
Gloves	82/101 (81)
Gowns	80/101 (80)
N-95 respirators	43/101 (43)
Other	20/101 (20)
Question: Who are you counting on to help with staff shortages?[d]	
Remaining staff **volunteering** to work extended hours	53/67 (79)
Non-clinical staff filling different roles	52/67 (78)
Remaining staff **mandated** to work extended hours	45/67 (67)
Agency/contracted staff	16/67 (24)
Volunteers from the community	11/67 (16)
Other[e]	7/67 (10)

[a] Blank responses were treated as missing data.

[b] Among "other" open text responses, CMS was mentioned by 13 respondents; AHCA was mentioned by 6 respondents; and HCAM was mentioned by 5 respondents.

[c] 104 NHs responded affirmatively to overarching question of stockpiling. Of these, 101 answered the follow-up question to provide further detail.

[d] 67 NHs responded affirmatively to the overarching question, "Does your facility expect significant staff shortages due to absences and illness in the event of a COVID-19 outbreak?" and were asked this follow-up question to provide further detail.

[e] Of 7 facilities reporting other plans, 4 facilities mentioned expecting staffing help from corporate/sister facilities in their open text responses