

ORIGINAL RESEARCH

Effects of the Design and Practice of Points-of-Dispensing on Patient-Reported Satisfaction: Municipal H1N1 Clinics in Rhode Island

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ABSTRACT

Objectives: The primary objective of the study was to understand the public's perception of the effectiveness of Rhode Island's public health emergency response plans by using municipal H1N1 vaccination clinics conducted in Rhode Island in January and February 2010 as a basis for public reaction. The effect of previous exercises on public perception was also examined.

Method: A survey of 926 H1N1 vaccination clinic attendees was conducted via mail during the period between March 18 and May 1, 2010.

Results: A total of 579 surveys were returned, rendering a response rate of 62.5%. The majority of clinic attendees traveled ≤ 10 mi to the vaccination clinic (90.48%). The average self-reported wait time inside the clinic was 19.16 minutes, and 69.84% of respondents expected to have waited longer before attending the clinic. The self-reported wait time was negatively correlated with patient-reported overall clinic satisfaction. A total of 98.08% of respondents believed that the signage used at the clinics was easy to follow, 100% of respondents believed that the clinic staff was courteous and respectful, and 82.35% of respondents reported that they would rate the clinic they attended as excellent.

Conclusions: Rhode Islanders prefer local public health service sites. There was a minor difference in the overall satisfaction of respondents who attended municipal clinics that had exercised emergency plans before activation for H1N1 vaccinations and those municipalities that had not previously exercised. The lack of difference between the practicing and nonpracticing points-of-dispensing may be caused by the standardization of municipal emergency plans, uniformity in the guidance and support of each clinic provided by the Rhode Island Department of Health, and municipalities that had not previously exercised had the opportunity to observe those that had exercised. Having thorough mass dispensing plans in place in advance of a public health emergency is as important as having exercised a point-of-dispensing before a real-world activation.

(*Disaster Med Public Health Preparedness*. 2011;5:106-111)

Key Words: H1N1, points-of-dispensing, vaccinations

Public health preparedness for bioterrorism response began in 1999 when the United States created the National Pharmaceutical Stockpile, which became known as the Strategic National Stockpile (SNS) program in 2003.¹ The SNS is a complex system that relies on expertise at the federal and state levels, but the medical countermeasures contained within the SNS ultimately are distributed to the public at the local level.¹

Unlike most other states, Rhode Island has no local health departments. The day-to-day interface with citizens on public health issues rests solely with the Rhode Island Department of Health (HEALTH). At HEALTH, the Center for Emergency Preparedness and Response (CEPR) plans for various public health emergencies that could affect the state. When public health emergencies do occur, such as the *Mycoplasma pneumoniae* outbreak in 2006–2007 and a hepatitis A outbreak at several restaurants in 2007, CEPR manages the incident

or helps partner agencies effect the most positive outcome for the greatest number of people. Some public health emergencies require an even greater number of resources. Local emergency management agencies, municipal leadership, and first responders are these additional resources. They are responsible for protecting Rhode Islanders from public health threats through a program known as the Medical Emergency Distribution System (MEDS).

The MEDS program was created to prepare Rhode Island's municipalities to dispense medical countermeasures to the entire population in a short amount of time. In 2008, the MEDS program concentrated on the development of local MEDS plans that conformed to Centers for Disease Control and Prevention (CDC) guidance governing mass prophylaxis capabilities. Planning is an important component of mass dispensing plans because in an emergency, there is limited time to plan a response.² A well-written plan, even if it is not sce-

nario specific, will aid local authorities in providing medical countermeasures. The Cities Readiness Initiative (CRI) is the federal program under which the Rhode Island state, local, and municipal MEDS plans are governed. Typically, the mass dispensing plans of CRI project areas are evaluated by the Technical Assistance Review, which is a CDC-developed criterion; however, because Rhode Island's only CRI metropolitan statistical area is Providence and the 5 surrounding counties, the Technical Assistance Review is most applicable to the state MEDS plan. Municipal MEDS plans are evaluated using the local evaluation tool (LET), which enables the review of such plans to be much more streamlined and relevant to the concerns of municipal planners.

After a municipality has achieved a score of ≥ 90 on the LET, the next step is to exercise an approved MEDS plan. Eight municipal MEDS exercises occurred from 2008 to the beginning of 2009. Rhode Island took a giant step forward in public health preparedness by planning and conducting a statewide, full-scale exercise code named Operation Big Green. Numerous state, local, and private organizations, in cooperation with the Division of Strategic National Stockpile at the CDC, simulated a statewide anthrax exposure and the response that would have been necessary to prevent and reduce morbidity and mortality. In what would become a prelude to the H1N1 vaccination points-of-dispensing (PODs), 10 municipalities opened their designated POD sites to test their ability to communicate with coordinating agencies and receive and distribute medical countermeasures. Operation Big Green was critically important to advancing Rhode Island's collective understanding of the implications of major disaster preparedness issues relative to a large-scale public health emergency, such as communications, logistics, command and control, interagency coordination, and staffing. This full-scale exercise was the first time that MEDS plans were tested and POD exercises were conducted with many partner agencies collaborating in an integrated public health response. This was also the next consecutive step in the building-block approach to preparedness exercises by conducting statewide POD activations as opposed to individual, stand-alone activations.

Rhode Island's H1N1 response began on April 26, 2009, when the decision was made to stand up HEALTH's incident command system indefinitely to respond to the event. When vaccine became available that autumn, it would be in limited quantities at first. HEALTH decided to concentrate on vaccinating risk priority groups as defined by the CDC, which included pregnant women, children up to age 24 years, and health care workers.

In mid-December, the increasing vaccine supply permitted the CDC to recommend distributing H1N1 vaccine to everyone, regardless of risk status. This sea change allowed HEALTH to implement municipal H1N1 clinics using existing MEDS plans. The municipalities that had a completed MEDS plan were allowed, but not required, to participate. Thirty-three of 39 municipalities decided to hold clinics, which ran from January 16,

2010, to February 27, 2010, at locations that were either pre-approved MEDS plan POD sites or had received approval before the clinic was run. People 18 years or older could be vaccinated free of charge at any clinic they attended around the state.

Previous research has suggested the use of immunization clinics to exercise POD plans^{2,3} and has focused on how exercising POD protocols helps to prepare POD workers for their jobs during an emergency.³ There is a lack of research on the public's perception of and response to PODs. Using Rhode Island's municipal H1N1 vaccination clinics as a basis of public reaction, the public's perception of the effectiveness of public health emergency plans was examined to determine the satisfaction with the experience and whether previous exercise of a local MEDS plan translated into a difference in public perception.

METHODS

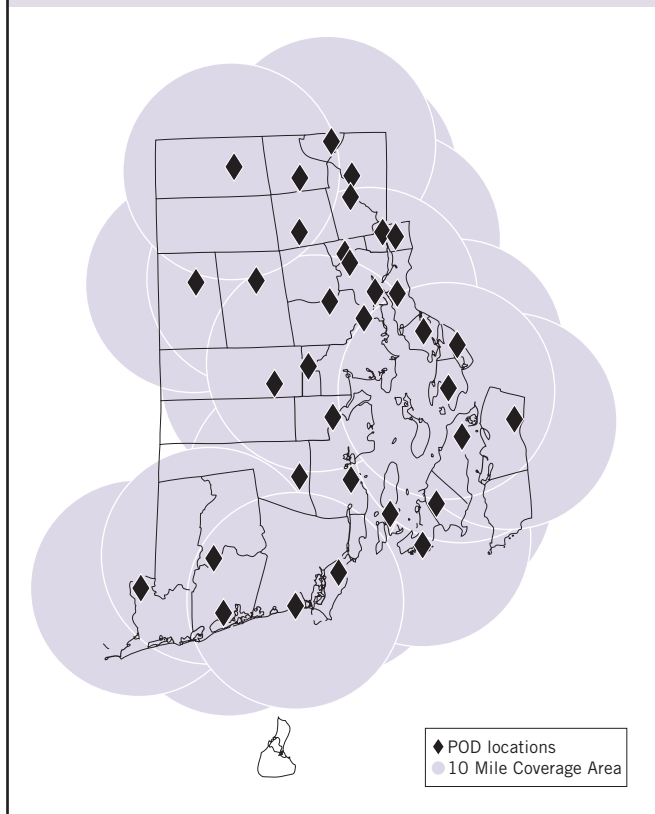
A survey was designed to capture relevant information about a patient's experience at a municipal clinic, including questions about clinic access and how the clinic was run. The survey was limited to 12 questions, which used simple language. There was also space on the form for respondents to provide additional comments. HEALTH's Chair of the Institutional Review Board was consulted during the development of the survey. Because the purpose of the survey was to evaluate a service that HEALTH provides to the public, it did not require Institutional Review Board review. It was an evaluation of planned and implemented public health services, and therefore no research was performed on human subjects. The survey and accompanying letter clearly explained the option to discontinue participation at any time. Surveys were not matched to any identifying personal information. Because all of the POD attendees were 18 years or older, all of the study participants also were older than the age of consent.

At the beginning of the survey, respondents were presented with a disclaimer explaining that they had been asked to participate in a confidential survey based on their attendance at a municipal POD during January and February 2010; participation was completely voluntary, there was no promised monetary gain or exchanges-in-kind for participation, and information gathered was for research purposes only and could be shared with other researchers in an academic setting.

A letter signed by the Director of the Department of Health was included with the survey, which explained the objective of the survey, the random selection of solicited individuals, and the confidential collection of information and responses. The survey, letter, and a prepaid envelope were mailed within 3 weeks of the last municipal POD. The participants were asked to return the survey by March 31, 2010. Because of flooding in Rhode Island during the last week of March (declared a federal disaster), the deadline for receiving surveys was extended to May 1, 2010.

FIGURE

Rhode Island H1N1 points-of-dispensing (PODs) locations with 10-mi coverage radii



Sampling of the participants was completed by using Rhode Island H1N1 Administration Record and Consent forms, previously completed by municipal POD attendees. From the 18 928 registration forms from clinics in 33 different municipalities, systematic random sampling of patients was used for each clinic by age group (18, 19-24, 25-49, 50-64, and ≥ 65) and presentation (injectable vaccine and intranasal vaccine). The sample size selected for each POD was proportional to the total number of POD attendees. Because of the wide range of attendees across clinics, sampling was modified depending on the number of attendees at each clinic. To have a proportional representation of potential respondents, every 25th form was selected for larger clinics and every 10th form was selected for smaller clinics. The number selected for participation represented 4.89% of the total amount of POD attendees. Samples were divided into practicing PODs, which were municipalities that had exercised their POD plans, and nonpracticing PODs, which were those that had not exercised plans. There were 17 practicing and 16 nonpracticing municipalities.

Each selected participant was assigned a number that corresponded with the person's respective sex, age, and POD clinic attended. Each survey was labeled with this number to identify information for data analysis. Data were entered into a Mi-

crosoft Excel 2003 spreadsheet (Microsoft, Redmond, WA). Surveys returned without the identifying number or that had combined multiple vaccination experiences for family members were disqualified.

Survey questions were related to 3 types of variables: clinic access, quality of clinic services, and overall satisfaction with the clinic. Clinic access variables included range of miles traveled to the clinic, convenience of clinic parking, clinic location, and the time that the clinic was held. The quality of clinic service variables included wait time for vaccination, the wait time expectation before clinic attendance, courteous and respectful treatment by staff, and clarity of signage used at the clinic. Overall clinic satisfaction was examined separately.

All of the data analyses were performed in Microsoft Excel 2003. The average wait time was calculated. Frequency of courteous treatment, clarity of signage, and miles traveled to the clinic (0-10, 11-20, 21-30, or >30) were determined. The frequencies of the Likert scale variables of convenience of clinic location, time, and parking, in which 1 indicated not convenient and 5 indicated extremely convenient, were determined. The frequency of the overall patient rating was determined, with 1 indicating poor and 5 indicating excellent clinic rating. To determine whether a relation existed between reported wait and overall satisfaction rating, a correlation was performed in Microsoft Excel using Pearson correlation coefficient. In addition, spatial mapping was performed using the ArcGIS Enterprise software (ESRI, Redlands, CA) application. Locations of H1N1 vaccination PODs were mapped and a 10-mi radius around each site was identified.

RESULTS

Of the 926 surveys mailed, 4 surveys were returned by the US Postal Service as undeliverable and 4 were returned but disqualified. Five hundred seventy-nine were returned to HEALTH and included in this study, resulting in a response rate of 62.96%. Among all of the POD attendees, 90.48% reported traveling ≤ 10 mi to attend the clinic (Table 1). For practicing PODs, 92.81% of respondents reported traveling ≤ 10 mi to attend their respective clinic, whereas 88.33% of respondents reported traveling ≤ 10 mi to a nonpracticing POD. Geographic information systems mapping of H1N1 POD locations and a 10-mi radius surrounding each POD showed that almost the entire state was within a 10-mi coverage area of a POD location and that multiple POD locations were within each 10-mi area (Figure).

Clinic location was rated as "very convenient" by 76.62% practicing and 84.67% nonpracticing POD attendees (Table 1). Overall, 80.80% of all of the respondents reported the POD location they attended as "very convenient." In regard to the time that the clinics were held, 82.5% of all of the survey respondents indicated that the clinic was held at a "very convenient time." Clinic time was also rated as "very convenient" by 78.7% of practicing and 86% of nonpracticing POD attendees. Parking was rated as "very convenient" by 58.12% of practicing,

85.95% of nonpracticing, and 72.57% of all of the POD attendees. Clinics were rated as "excellent overall" by 82.35% of all of the respondents, 74.55% of the respondents attending practicing PODs, and 89.63% of the respondents attending nonpracticing PODs (Table 1).

For practicing PODs the average wait time was 25.1 minutes and for nonpracticing PODs the average wait time was 13.56 minutes. The overall average wait time for vaccination was 19.16 minutes. The majority (69.84%) of respondents waited less time than they expected to receive the H1N1 vaccine (Table 2). Wait time had a moderately negative correlation with overall clinic rating. For each additional minute of wait time reported, the overall clinic rating decreased by 0.38 units. Every survey returned indicated that clinic staff was courteous and respectful. Of all of the respondents, 98.08% found that the signs through the clinic were easy to follow.

DISCUSSION

In reviewing the findings, the high response rate may be attributed to several factors. With a short and easy-to-understand survey that included a prepaid return envelope, completing and returning the survey did not inconvenience respondents. Also, the letter accompanying the survey stressed its importance in improving future public health service in Rhode Island by appealing to the civic responsibility of the selected participants. It was signed by the Director of the Rhode Island

Department of Health, a respected figure who was highly visible in the media during the H1N1 pandemic. In addition, the H1N1 pandemic was well-known by the public to be a declared national and international public health emergency. Those who were vaccinated at PODs likely perceived the H1N1 pandemic as a serious event; therefore, it was in their best interest to complete the survey to help plan for future public health emergencies.

Clinic Access Variables

Clinic locations were likely highly rated because of the pervasiveness of the POD sites throughout the state. The majority of clinic attendees reported traveling ≤ 10 mi to receive their H1N1 vaccination at a municipal clinic. Rhode Islanders, in general, have grown accustomed to their compact state and hesitate traveling great distances for services, preferring to remain in their own communities. Because there were at least 2 POD locations in every 10-mi radius, people had options to attend the location that was most convenient to them. All of these factors may contribute to the decidedly high convenience rating for POD locations.

There were a variety of clinic times offered in the schedule, which enabled people to attend a clinic at the most convenient time for them. With the pervasive sense of urgency about vaccination when PODs opened in Rhode Island, people may have attended a clinic that was held at a less convenient time rather

TABLE 1

Survey Results for Clinic Accessibility Variables for H1N1 PODs							
	Rating	Practicing PODs		Nonpracticing PODs		Overall	
		No. Responses	Responses, %	No. Responses	Responses, %	No. Responses	Responses, %
Convenience of clinic location	5 (very convenient)	213	76.62	254	84.67	467	80.80
	4	49	17.63	34	11.33	83	14.36
	3	13	4.68	10	3.33	23	3.98
	2	2	0.72	1	0.33	3	0.52
	1 (not convenient)	1	0.36	1	0.33	2	0.35
Convenience of clinic time	5 (very convenient)	218	78.70	258	86.00	476	82.50
	4	47	16.97	35	11.67	82	14.21
	3	8	2.89	7	2.33	15	2.60
	2	2	0.72	0	0	2	0.35
	1 (not convenient)	2	0.72	0	0	2	0.35
Convenience of parking at the clinic	5 (very convenient)	161	58.12	257	85.95	418	72.57
	4	64	23.10	31	10.37	95	16.49
	3	36	13.00	8	2.68	44	7.64
	2	12	4.33	3	1.00	15	2.60
	1 (not convenient)	4	1.44	0	0	4	0.69
Overall clinic rating	5 (excellent)	208	74.55	268	89.63	476	82.35
	4	67	24.01	28	9.36	95	16.44
	3	4	1.43	2	0.67	6	1.04
	2	0	0	1	0.33	1	0.17
	1 (poor)	0	0	0	0	0	0
Approximate distance traveled to clinic, mi	0-10	258	92.81	265	88.33	523	90.48
	11-20	16	5.76	30	10.00	46	7.996
	21-30	3	1.08	4	1.33	7	1.21
	>30	1	0.36	1	0.33	2	0.35

PODs, points of dispensing.

TABLE 2

Survey Results for Variables Relating to Quality of Clinic Services for PODs

	Response	Practicing PODs		Non-Practicing PODs		Overall	
		No. Responses	Responses, %	No. Responses	Responses, %	No. Responses	Responses, %
Is the amount of time you waited to receive vaccine more or less than you would have expected before attending the clinic?	More than expected	32	11.55	11	3.67	43	7.45
	Less than expected	169	61.01	234	78.00	403	69.84
	About what was expected	76	27.44	55	18.33	131	22.70
Was the clinic staff courteous and respectful to you?	Yes	279	100	300	100	579	100
	No	0	0	0	0	0	0
Were the signs directing you through the clinic easy to follow?	Yes	272	98.55	291	97.65	563	98.08
	No	4	1.45	7	2.35	11	1.92

PODs, points of dispensing.

than wait for a later clinic. For the most part, practicing PODs were held before the nonpracticing PODs, which may account for the differences in convenience rating of the clinic time.

Parking was rated lowest among clinic access variables and rated lower in practicing PODs than nonpracticing PODs. The reason for this difference may have been because of the higher numbers of attendees at practicing clinics, translating into less-available or less-convenient parking. When POD sites are chosen and MEDS plans are written, parking is a consideration, but it cannot be readily changed to accommodate the increased demand. Parking was the least controllable factor that was evaluated. The substantial difference between the limited supply of parking and the overwhelming demand may have contributed to these results.

Quality of Clinic Services Variables

Respondents indicated that the signage used at clinics was easy to follow when directing them through the clinics. Almost all of the municipalities used the POD signage that had been provided by HEALTH in 2008. These signs were developed with each community’s language needs in mind by selecting the 3 most prominent languages in each community. The signs also contained large print, which was easy to read, and met the national standards on Culturally and Linguistically Appropriate Services. Having clear and comprehensible signage to direct people through the clinics helps to ensure that users have a more positive experience. The H1N1 clinics provided further support for the use of the POD signage designed by HEALTH in future POD activations.

Without exception, respondents believed that clinic personnel were courteous and respectful during the vaccination process. Because most of the personnel were volunteers, they were motivated to perform a public health service for their community and possibly were more likely to be courteous and respectful to POD attendees. Although it was not necessary for receiving vaccine in an efficient manner, the perceived demeanor of clinic staff will likely influence future POD attendance.

Reported wait times varied between practicing and nonpracticing PODs, which may have been related to the attendance at each POD. Earlier PODs vaccinated about twice the amount of people vaccinated in later PODs. The higher numbers of attendees at the earlier practicing PODs increased the wait time in comparison to the later nonpracticing PODs. Although wait times were higher at practicing PODs, the wait was still shorter than most respondents had expected. Longer wait times were expected at vaccination clinics, perhaps because of the hype surrounding H1N1 in the national media, stories about long lines in other states, and the limited release of vaccine earlier in the pandemic. As the reported wait time increased, the overall satisfaction rate decreased among respondents. People were less satisfied with their clinic experience as the wait time for the vaccine increased. Attending an H1N1 POD helped to reframe the public’s perception of wait time at public vaccination clinics.

Overall Satisfaction Rating

The majority of people expressed that they were extremely satisfied with their POD experience. Although differences exist in the overall satisfaction rating between practicing and nonpracticing PODs, the differences are not large. There were similarities in the planning and operationalizing of the PODs that may have contributed to the high satisfaction ratings of both practicing and nonpracticing PODs. Planning was one of the commonalities between both types of PODs. In each community, years of planning through the MEDS program allowed for a review of the issues involved in POD activations. All of the municipalities’ MEDS plans must have passed the LET before operationalizing an H1N1 POD; therefore, the elements were well thought out in advance. POD sites that were used during this event had been evaluated previously by HEALTH staff or consultants to ensure that they would be suitable locations for a mass vaccination operation. Each municipality used its MEDS plan to implement the clinic, which meant that the process and flow through the clinic was the same for each site.

In addition to the planning that occurred in advance of the vaccination clinics, all of the municipalities received uniform support by HEALTH for the clinics. Before the start of the clinics, a POD commander guidebook was distributed to those in charge of each POD. It clearly outlined the responsibilities of the person in charge and the operating guidance from HEALTH. To standardize public messaging, all of the municipalities received a public information toolkit that included template press releases, letters to the editor, posters, and frequently asked questions about an H1N1 clinic. An H1N1 vaccination POD just-in-time training PowerPoint presentation was also given to POD leaders to allow for a uniform training of POD staff. During each clinic, a HEALTH CEPR staff member was onsite to troubleshoot POD issues as they arose. Municipalities received the same guidance and support from HEALTH in operationalizing their PODs.

Another action that may have minimized the difference in ratings between POD types was that the practicing PODs were conducted at the beginning of the schedule and nonpracticing PODs were conducted toward the end. This action allowed for H1N1 vaccination-specific best practices to be implemented at later PODs. These best practices included creating a staging area for people inside buildings and out of inclement weather, the pre-printing of vaccination record card labels, and the color coding of forms, which led to greater efficiency and speed of clinic operations. The ability to observe what worked well and what could be improved likely resulted in higher overall satisfaction rates at the later clinics that used successful processes.

CONCLUSIONS

The slight difference in the overall satisfaction rates of practicing POD and nonpracticing POD respondents indicates that there are factors other than previous experience with exercising a plan that may contribute to the success of mass dispensing clinics. The plan and its design, if well thought out, can be successfully executed without previous practice. In instances of a dire public health threat, previous POD experience is valuable; however, it is not necessarily essential to conducting what the public considers an effective mass dispensing operation.

One of the benefits of using the MEDS plans to vaccinate Rhode Islanders against H1N1 influenza is that the public became familiar with the mass dispensing protocols and the layout of POD sites. Also, this survey was not simply an evaluation of the public H1N1 vaccine experience. The satisfaction of POD attendees is extremely important to the success of future mass dispensing operations to prevent morbidity and mortality. These POD activations may even include public health interven-

tions for the most serious scenarios, such as an anthrax attack. The positive experience with PODs, combined with a familiarity with the sites and procedures, will be strong motivating factors to attend a POD if an emergency requires another mass dispensing operation in a short period of time.

Clinic access and quality of clinic services are important planning considerations in future mass dispensing operations. By using MEDS plans to run clinics, the public becomes familiar with the POD sites and processes, which is important during public health emergencies in which mass dispensing in a short time is critical to saving lives. Exercising mass dispensing plans is beneficial to everyone involved, but thorough planning can help overcome a lack of experience when conducting PODs.

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Received for publication June 7, 2010; accepted April 19, 2011.

This study was supported by the US Department of Health and Human Services, Centers for Disease Control and Prevention Public Health Emergency Preparedness Funding and Public Health Emergency Response H1N1 2009–2010 Funding. The opinions expressed in this article are those of the authors and do not necessarily reflect the policies of the Department of Health and Human Services or the Centers for Disease Control and Prevention.

Author Disclosures: The authors report no conflicts of interest.

Acknowledgments: The spatial mapping was produced by the Rhode Island Department of Health Center for Health Data & Analysis, Geographic Information Systems Program. The Environmental Systems Research Institutes' ArcGIS Enterprise Software application was used with data source from the Rhode Island Geographic Information System. The authors thank John Fulton, PhD, for guidance in the design and development of this study. We acknowledge the efforts and time of the following individuals for contributing to this study: David R. Gifford, MD, MPH; Adelita Orefice, MPM; Samara Viner-Brown, MS; Brittan K. Bates-Manni, MS, MEP; Alysia Mihalakos, MPH; Andrea Bagnall-Degos, MPH; Kate McCarthy-Barnett, EdD; and Manda Main, BS.

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