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An electronic medical record-based intervention to improve hepatitis A vaccination rates in the emergency department during a regional outbreak

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ABSTRACT

Background In response to the severe hepatitis A outbreak that occurred in Michigan between August 2016 and September 2019, our multihospital health system implemented an electronic medical record (EMR)-based vaccination intervention across its nine emergency departments (EDs). The objectives were to explore the impact of this intervention on increasing vaccination rates among high-risk individuals and to assess the barriers to use of a computerised vaccine reminder system.

Methods All patients who were 18 years or older were screened using an electronic nursing questionnaire. If a patient was at high risk based on the questionnaire, an electronic best practice advisory (BPA) would trigger and give the physician or advanced practice provider the option to order the hepatitis A vaccine. We explored the vaccination rates in the 24-month preintervention and the 18-month intervention periods. We then administered a survey to physicians, advanced practice providers and nurses evaluating their perceptions and barriers to use of the EMR intervention.

Results During the preintervention period, 49 vaccines were ordered (5.5 per 100 000 patient visits) and 32 were administered (3.6 per 100 000 patient visits). During the intervention period, 574 865 patient visits (74.3%) were screened. 2494 vaccines (322 per 100 000 patient visits) were ordered, and 1205 vaccines (155 per 100 000 patients visits) were administered. Physicians and advanced practice providers were initially compliant with the BPA's use, but compliance declined over time. Surveys revealed that the major barrier to use was lack of time.

Conclusions EMR screening tools and BPAs can be used in the ED as an effective strategy to vaccinate high-risk individuals. This may be translatable to outbreaks of other vaccine-preventable illnesses like influenza, measles or SARS-CoV-2. Providing ongoing education about the public health initiative and giving feedback to physicians, advanced practice providers and nurses about tool compliance are needed to sustain the improvement over time.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Programmes in single emergency departments (EDs) across the country have demonstrated the viability of using EDs to bolster vaccination programmes for viral illnesses like influenza. However, it was previously unknown whether a best practice advisory (BPA) can sustainably improve vaccination rates across multiple EDs within a large healthcare system.

WHAT THIS STUDY ADDS

⇒ Adoption of an electronic medical record screening and BPA tool can remarkably increase vaccination rates across multihospital health system EDs. Providing ongoing education about the importance of public health initiatives and performing audits and feedback to physicians, advanced practice providers and nurses about tool compliance are needed to sustain the improvement over time.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Given the current urgency to expand vaccination efforts for SARS-CoV-2, results from our study may inform implementation of other ED-based vaccination programmes.

INTRODUCTION

Background

Hepatitis A is a contagious acute liver infection that is primarily transferred from person to person through faecal–oral route and via contaminated food and water. Individuals at high risk for acquiring hepatitis A include those who are homeless, incarcerated, men who have sex with men, injection and non-injection illicit drug users and individuals with chronic liver disease.[1] The Advisory Committee on Immunization Practices introduced a highly effective hepatitis A vaccine in 1996,[2] resulting in a steady decrease in the incidence of infection until 2011 and a stable yearly incidence (approximately 0.4 cases/100 000 population)[2] until 2016 in the USA.[3]

However, between 2016 and 2018, the Centers for Disease Control and Prevention reported greater than 15 000 hepatitis A cases, which was a 294% increase from

baseline,[4] with more than 50% of patients reporting illicit drug use.[3 5] The state of Michigan alone reported a total of 920 outbreak-related cases, of which 738 cases required hospitalisation and 30 cases resulted in death.[6] In comparison, Michigan's annual hepatitis A case incidence was 83, 45 and 51 cases in 2013, 2014 and 2015, respectively.[7–9] In response to this outbreak, the Michigan Department of Health and Human Services (MDHHS) coordinated educational outreach with county health departments and emergency departments (EDs) to increase hepatitis A vaccination rates among high-risk individuals.[10] By November 2018, the state administered over 250 000 doses of the hepatitis A vaccine,[11] after which the rate of new cases declined remarkably with the last outbreak-related case occurring in September 2019.[12]

To aid the MDHHS vaccination efforts, in August 2018, our multihospital health system implemented an electronic medical record (EMR)-based intervention to screen and vaccinate all ED patients at high risk for contracting the hepatitis A virus. We evaluated the performance of this electronic screening and vaccination alert in improving hepatitis A vaccination rates in the ED over time.

Importance

Pilot programmes across the country have demonstrated the viability of using the ED to bolster vaccinations programmes for other viral illnesses, specifically influenza.[13 14] A similar EMR-based hepatitis A vaccination initiative was performed with success in a single ED in California in 2017.[15] However, whether a best practice advisory (BPA) can sustainably improve vaccination rates across multiple EDs within a large healthcare system is unknown. Results from our study may inform implementation of other ED-based vaccination programmes.

Objectives of this investigation

The primary objective of this retrospective cohort analysis was to evaluate whether the electronic screening and vaccination alert system sustainably increased hepatitis A vaccination rates among high-risk patients during the hepatitis A outbreak in Michigan. The primary outcome measure was the number of hepatitis A vaccines ordered and administered in the ED before and after the implementation of the EMR-based intervention. Our secondary objective was to qualitatively assess the attitudes towards and barriers to use of the computerised vaccination alert systems.

METHODS

Study design and setting

Beaumont Health System, located in southeastern Michigan, records greater than 575 000 annual ED visits across nine EDs.[16] The various EDs are in and around the Macomb-Wayne-Oakland tri-county area, which experienced the highest concentration of outbreak-related hepatitis A cases in Michigan.[6] The nine EDs include one stand-alone ED and one level IV, two level III, four level II and one level I trauma centres. Emergency medicine residents work at five of these departments, and advanced practice providers work at all nine EDs.

Patient and public involvement statement

Patients or the public were not involved in the design, or conduct, or reporting, or dissemination plans of our research.

Selection of participants

For the retrospective cohort analysis, we included all patients ≥18 years old who presented to any of the nine EDs from August 2016 to January 2020. Patients who expired during the ED visit were excluded.

For the qualitative survey, we included all nurses (registered nurses and licensed practical nurses), physicians (attending and resident physicians) and advanced practice providers (physician assistants and nurse practitioners) who worked in any of the nine EDs. No specific exclusion criteria were outlined.

Interventions

Screening questionnaire and BPA

In mid-2018, a non-mandatory hepatitis A screening questionnaire was established within our EMR (Epic) to identify patients with risk factors for contracting hepatitis A: homelessness, history of incarceration, history of illicit drug use, history of liver disease and men who have sex with men[17] (figure 1). The risk factors inquired about in this screening tool are hepatitis A risk factors identified by the Centers for Disease Control and Prevention.[1] The screening tool was designed so that a minimum number of questions

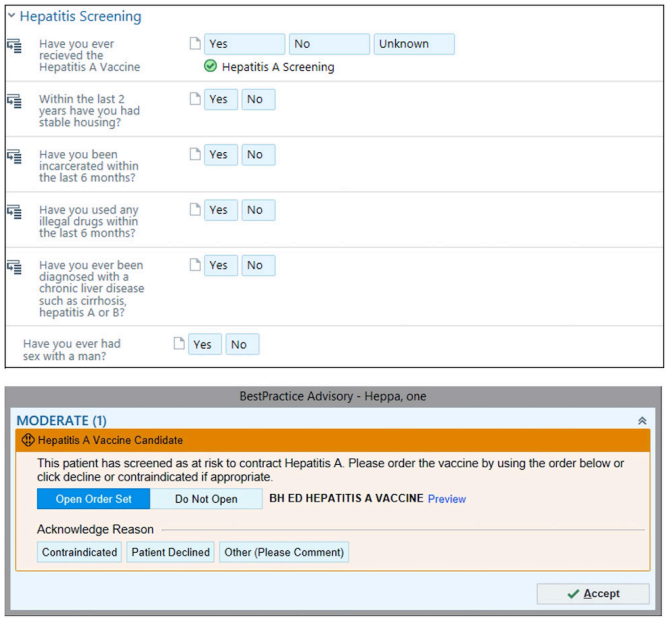

Figure 1 View of screening questionnaire from nurses' intake screens (above) and view of best practice advisory from physicians' and advanced practice providers' computer screens (below).

needed to be asked to determine vaccine eligibility. This was intended to improve efficiency and potentially avoid the asking of questions that nurses felt were sensitive. Thus, the questionnaire would end once a patient answered a question identifying them as being at high risk, and not every patient was asked the full set of questions.

Beginning in July 2018, nurses screened ED patients ≥18 years old using the hepatitis A screening questionnaire during their first encounter with the patient and at the same time as any other required screenings (suicide risk, domestic abuse risk, fall risk, etc). If a patient met eligibility criteria for the vaccine, a BPA would trigger on the physician or advanced practice provider's EMR with the option to either order the hepatitis A vaccine (figure 1) or select a reason for not ordering the vaccine. The reasons included 'Contraindicated', 'Patient Declined' or 'Other (Please Comment)'. If the patient agreed, they received a one-time dose of the HARVIX 1440 units/mL vaccine. Vaccines were stored in the ED pharmacy for ease of availability. Since the hepatitis A screening questionnaire was non-mandatory, a patient could complete an entire ED encounter without having ever been screened.

Education

ED leadership educated physicians and advanced practice providers about the BPA's importance and function via email and during staff meetings. No follow-up education or subsequent email reminders were provided after the initial rollout. Nurses received information on the screening questionnaire during nursing meetings. Additionally, new nurses were trained by nursing managers on proper completion of the screening questionnaire during their onboarding process. Patient education flyers encouraging vaccination were posted in various locations in the ED.

Survey to assess attitudes and barriers

A brief online survey using Qualtrics software was distributed via email to physicians, advanced practice providers and nurses to evaluate their perceptions and identify barriers to use of hepatitis A screening tool (online supplemental materials 1 and 2). No Internet Protocol (IP) addresses or other identifying information other than the role within the ED was collected, so the surveys remained anonymous. The surveys remained open between February 2020 and March 2020.

Measurements

The retrospective cohort portion of the study measured the rates of ED hepatitis A vaccination before and after the implementation of the BPA. The three important time periods for our study were August 2016 at the start of the Michigan outbreak, July 2018 at the implementation of screening questionnaire in the EDs and January 2020 during the month MDHHS stopped tracking outbreak-related cases.

We queried the EMR for the total number of adult ED encounters between August 2016 and January 2020. We then determined the subset of patient visits who screened positive for any of the risk factors and triggered the BPA, followed by visits for whom the vaccine had been ordered by the physician or advanced practice provider and finally the patient visits that received the vaccine. Demographics including age, gender and race were collected for analysis.

Analysis

Descriptive analyses were used to summarise demographic characteristics of subjects and survey responses to assess attitudes and barriers for physicians and advanced practice providers. Rates of vaccines ordered and vaccines administered were reported by month for the study period between August 2016 and January 2020. Monthly rates of BPA trigger were reported between July 2018 and January 2020. We defined the timeframe from August 2016 (start of outbreak) through June 2018 (pre-BPA) as the preintervention period and the timeframe between July 2018 (post-BPA) and January 2020 (end of Michigan outbreak monitoring) as the intervention period for the purposes of our study. Analyses were performed using SAS (V.9.4; SAS Institute).

RESULTS

Hepatitis A vaccinations in the preintervention and intervention periods

In the preintervention period between August 2016 and June 2018, 885 342 patient visits occurred in the ED. During this time, 49 vaccines were ordered (5.5 per 100 000 patient visits) and 32 vaccines were administered (3.6 per 100 000 patient visits) in the ED. In the intervention period between July 2018 and January 2020, 774 034 patient visits occurred in the ED with 2494 vaccines ordered (322 per 100 000 patient visits) and 1205 vaccines administered (155 per 100 000 patient visits) (figure 2).

Screening questionnaire and BPA outcomes

Of the 774 034 patient visits between July 2018 and January 2020, 74.3% of patient visits (574 865 patient visits) were screened using the hepatitis A screening tool. Of those patient visits who were screened, 1.9% (11 016 patient visits) were screened as being at high risk and were eligible for the vaccine, triggering a BPA on their physician's or advanced practice provider's computer. Of the patient visits who were eligible for the vaccine, 17.5% had vaccines ordered (1929 patient visits) and 8.0% (883 patient visits) had vaccines administered (figure 3). An additional 565 vaccines were ordered for and 322 vaccines were administered to patients who did not trigger the BPA.

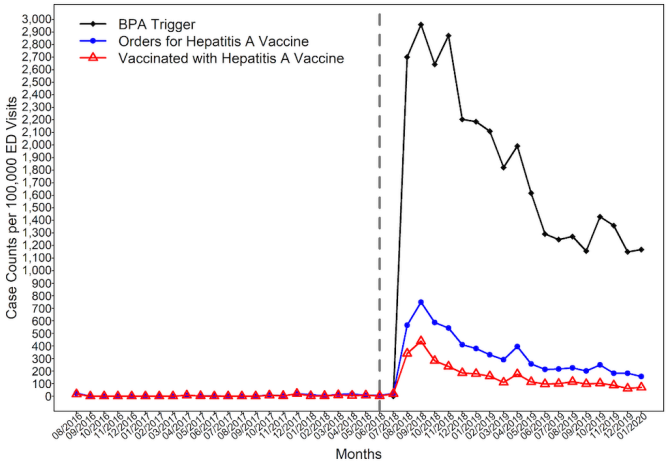

Figure 2 Hepatitis A vaccines ordered and administered before and after best practice advisory (BPA) implementation. The BPA implementation time point is indicated by the dashed vertical line.

Characteristics of patients who received the hepatitis A vaccine

Table 1 describes the demographic characteristics of patient visits who received vaccines in the preintervention and intervention periods. Females received 56% of vaccines preintervention, and they made up 45% of BPA triggers and received 39% of vaccines during the intervention. White patients received 59% of vaccines preintervention, and they made up 61% of BPA triggers and received 62% of vaccines during the intervention. Vaccine administration was evenly distributed among all age groups both pre intervention and during intervention.

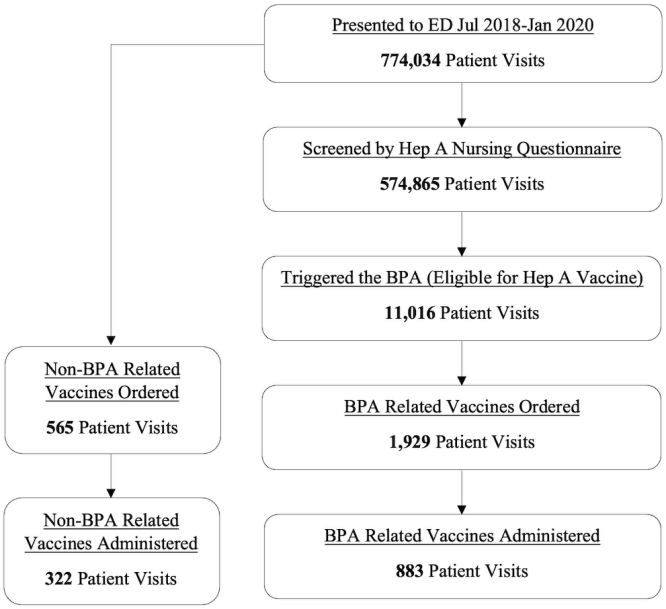

Figure 3 Flowchart of hepatitis A best practice advisory (BPA) initiative from July 2018 to January 2020. ED, emergency department.

Trends in compliance with the BPA

Figure 4 shows the trend of compliance with screening and response to the BPA during the study period. July 2018 and August 2018 had a lower-than-average percentage of screened patients, likely due to stepwise rollout occurring for the first few weeks across all EDs. Physicians' and advanced practice providers' compliance with responding to the BPA declined over time, with vaccines ordered for 24% of eligible encounters in September 2018 to 13% of encounters in January 2020. Consequently, vaccine administration declined from 162 vaccines in September 2018 (14% of eligible) to 29 vaccines in January 2020 (6% of eligible). Throughout the 18-month intervention, nurses were consistent with their rates of patient screening and screened 70%–80% of all ED patient visits during most months (online supplemental material 3).

Survey to assess attitudes and barriers

In total, 29 nurses completed the survey. We qualitatively summarise the written comments into three themes: (1) discomfort with asking sensitive questions, (2) lack of time and (3) the perception that the ED is an inappropriate place for screening (online supplemental material 4).

In total, 47 physicians and 14 advanced practice providers responded to the survey. Some questions allowed for multiple responses. Overall, 80.3% of the 61 respondents were aware that the hepatitis A outbreak existed in Michigan. Overall, 57% of respondents reported that the hepatitis A vaccination BPA 'sometimes' or 'usually' helped them vaccinate high-risk patients when triggered. In total, 54 out of 61 (89%) respondents reported ignoring or declining the BPA intermittently. The most common reasons given for ignoring the BPA was that they did not feel that hepatitis A vaccination in the ED is a priority (59%), a lack of time (57%) and patient refusal (30%).

DISCUSSION

The 2016–2019 hepatitis A outbreak in Michigan resulted in 920 cases and 738 hospitalisations. Our multihospital health system responded by creating an EMR BPA to identify and increase vaccination rates among vulnerable populations. This led to a remarkable increase in vaccination rate from 3.6 per 100 000 patient visits in the preintervention period to 155 per 100 000 patients visits in the intervention period. Lessons learnt from the implementation of this ED-based vaccination system can help us better identify patients at high risk for other vaccine-preventable diseases, including SARS-CoV-2.

Other countries have addressed hepatitis A outbreaks using an interagency model. In 2010, a hepatitis A outbreak among an Orthodox Jewish community in London led to an aggressive contract tracing and vaccination effort.[18] After a 2016 outbreak among men who had sex with men in England, epidemiology, laboratory and health protection teams comprehensively responded with

Table 1 Characteristics of patients who received the hepatitis A vaccine before and after implementation of the best practice advisory (BPA)

	Pre intervention (before BPA)		Intervention (after BPA)		
	Hepatitis A vaccine			Hepatitis A vaccine	
Characteristics	Orders	Vaccinated	BPA trigger	Orders	Vaccinated
n	49	32	13429	2494	1205
Age (years)					
18–30	10 (20.4%)	9 (28.1%)	3192 (23.8%)	572 (22.9%)	256 (21.2%)
31–40	11 (22.5%)	7 (21.9%)	2512 (18.7%)	476 (19.1%)	245 (20.3%)
41–50	6 (12.2%)	4 (12.5%)	2069 (15.4%)	417 (16.7%)	212 (17.6%)
51–60	11 (22.5%)	5 (15.6%)	2484 (18.5%)	489 (19.6%)	256 (21.2%)
61–70	7 (14.3%)	5 (15.6%)	1902 (14.2%)	338 (13.6%)	159 (13.2%)
>70	4 (8.2%)	2 (6.3%)	1270 (9.5%)	202 (8.1%)	77 (6.4%)
Sex					
Female	26 (53.1%)	18 (56.3%)	5993 (44.6%)	1031 (41.3%)	471 (39.1%)
Male	23 (46.9%)	14 (43.7%)	7436 (55.4%)	1463 (58.7%)	734 (60.9%)
Race					
White/Caucasian	32 (65.3%)	19 (59.4%)	8233 (61.3%)	1543 (61.9%)	751 (62.3%)
Black/African American	16 (32.7%)	12 (37.5%)	4775 (35.6%)	879 (35.2%)	418 (34.7%)
Other	1 (2.0%)	1 (3.1%)	421 (3.1%)	72 (2.9%)	36 (3.0%)

enhanced surveillance and a letter recommending vaccination of at-risk men in outbreak areas. This increased sexually transmitted infection testing, partner notification and the use of the National Health Service web portal to disseminate targeted hygiene advice and disease information to the public.[19]

Clinical nudging

Our study evaluated how 'nudging' health care provider behaviour using electronic prompts can lead to an increase in ED vaccination rates. Nudging—a psychological concept popularised in 2008—refers to the altering of people's choices through a minimal, cheap environmental intervention without forbidding options or changing economic incentives.[20] Nudging has been used in multiple clinical settings to better align health care provider decision-making with established guidelines.[21] A December 2021 narrative review found that nudging strategies targeting COVID-19 vaccination orders for patients, such as text message reminders, had a positive result.[22] A 2021 systematic review found that clinical nudging interventions that make information more salient are the most successful in improving vaccine uptake.[23] This concept also been tested successfully through randomised control trials.[24] The findings of these analyses are consistent with our study. When the hepatitis A BPA made a patient's qualifications for vaccination readily available and noticeable to the health care provider, then the health care provider was more likely to order the vaccine.

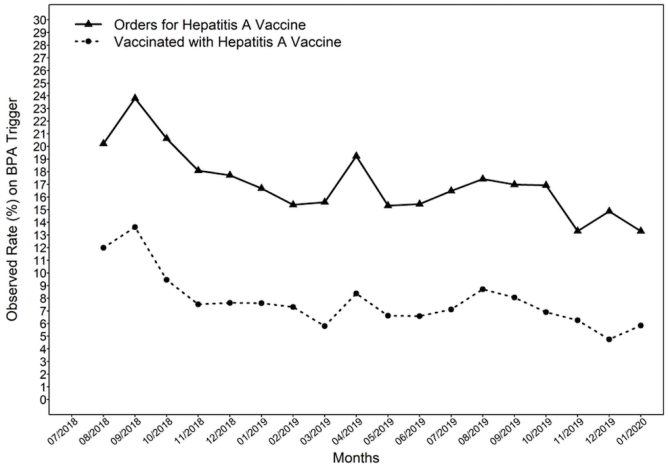

Figure 4 Per cent of best practice advisories with subsequent vaccine order and vaccine administration during the intervention period.

Increase in vaccine administration

A similar hepatitis A vaccination initiative was performed with success in a single ED in San Diego, California, in 2017.[15] In that electronic health-record-based study, patients were considered at high risk and eligible for vaccination if they were homeless, time at which a BPA would prompt physicians to order the hepatitis A vaccine. That study showed an increase in vaccination rates from 9 vaccines per 1000 visits among homeless patients (preintervention period) to 184 vaccines per 1000 visits among homeless patients (intervention period). Our study expands on this study and demonstrates that these initiatives can be scaled to a large hospital system with multiple EDs and can identify patients using multiple risk factors. During the first 24 months of the hepatitis A

outbreak prior to our BPA's implementation, we administered only 32 (3.6 per 100 000 patient visits) vaccines. During the next 19 months after the BPA was implemented, we administered a total of 1205 (155 per 100 000 patient visits) vaccines.

In a Philadelphia-based study analysing ED hepatitis A vaccination rates, the hepatitis A vaccine was offered to all adult patients (5024 patients) regardless of risk factors on arrival to the ED during a 6-week intervention period.[25] If the patient agreed to a vaccine during their clinical visit, an electronic BPA would prompt their physician to order one. During this study period, 669 vaccines were administered (approximately 13 000 per 100 000 patients). In the scenario where vaccines are plentiful and the number of patient visits is fewer, offering a vaccine to every ED patient is doable. However, in scenarios where vaccines are limited or the patient visits are greater—as they were in our hospital system (700 000+)—having the ability to identify those who are most at high risk can be important.

Gap between vaccines eligible and vaccines ordered

The intervention identified 11 016 vaccination-eligible patients visits, but a vaccine was ordered during only 1929 (17%) visits. We suspect that the remaining 83% of patient visits did not have a vaccine ordered because of provider non-compliance with the tool. Reasons for non-compliance include lack of familiarity with vaccination by ED physicians and advanced practice providers, time constraints, patient refusal, acute illness and alert fatigue leading to physicians and advanced practice providers ignoring the prompt.

Gap between vaccines ordered and vaccines administered

Overall, fewer than half of the ordered vaccines were administered to patients. Each month, the order-to-administration gap ranged between 36 vaccines and 125 vaccines. We suspect at least some of the gap was related to patient refusal. If the physician or advanced practice provider put in the order for the vaccine before having the opportunity to return to the patient's room to discuss the vaccine, the patient—not knowing what the purpose of this vaccine was—would have already refused. Another explanation could be that there were delays in obtaining the vaccine from the pharmacy, and the patient's ED visit ended before they could be given the vaccine. Within the Epic EMR system, nurses could comment on why a specific medication or vaccine was not given. So, to answer this question more definitely, we would need to return to the records of all patients for whom the vaccine was ordered but not administered and evaluate the nursing comments.

In total, 565 vaccines were ordered and 322 vaccines were administered independent of the BPA. It is plausible that physicians, advanced practice providers or patients who were familiar with the hepatitis A outbreak would proactively offer or ask for the hepatitis A vaccine regardless of risk factors and it would be ordered.

Barriers and suggestions for upholding compliance

Maintaining long-term successful use of this tool requires buy-in from both nurses and physicians. Compliance with completion of the screening questionnaire by nurses remained a consistent 70%–80% during any given month of the study period. Physicians and advanced practice providers were initially more compliant with ordering the vaccine through the BPA, but a few months after the rollout, compliance declined and never improved. In September 2018, 20.2% of eligible vaccines were ordered, but by January 2020, only 13.3% of eligible vaccines were ordered.

Our survey results showed that key barriers to sustaining compliance with the vaccine initiative included (a) lack of time and (b) the perception that the screening tool is too low yield for ED use. Some studies have shown that other major barriers for physicians in ED-based-vaccination initiatives include difficulty with changing workflow to accommodate the vaccination effort and uncertainty about indications for the vaccine.[26] One study evaluating nursing perceptions about the influenza vaccination in the ED revealed similar barriers to use including the concern that the extra screening was burdensome and the perception that the ED is not the appropriate place for vaccine administration.[27]

To address these perceived barriers, we must identify specific workflow obstacles. For example, once alerted by the BPA, physicians and advanced practice providers may not have time to thoroughly evaluate the patient's chart to confirm candidacy for the vaccine. Additionally, it is possible that over time physicians and advanced practice providers forget the importance of the vaccine, how to advise patients about the vaccine or the medical circumstances under which the patient should receive the vaccine. In teaching hospitals where the resident physician groups change every year, there may be a subset of individuals that were never educated about the BPA and would be far less compliant with its use. This emphasises the need for ED leadership to prioritise educational reminders about the importance of public health initiatives and eligibility criteria for vaccine administration. It is essential to frequently audit and provide feedback to physicians and advanced practice providers on their compliance, as well as address their concerns about barriers to use.

Another method for addressing these barriers is to educate nurses, advanced practice providers, and physicians about the public health importance behind the screening tool. Those individuals who are at high risk for an illness like hepatitis A also happen to be the same individuals who are less likely to have access to primary outpatient care. By identifying those patients in the ED, we may be providing them with the only chance they have to be protected against this illness. These types of interventions have the potential to provide a social good. Various studies have shown that ED-based initiatives aimed at increasing vaccination rates against other vaccine-preventable diseases including influenza and pneumococcus can be

successful.[28 29] Having a vaccination programme can not only be a good service for vulnerable members of our community but can also be cost-effective for the hospital system by averting the economic burden of the illness itself.[30]

A suggestion to increase buy-in from nurses would be to implement the screening tool for a prescribed period (eg, '5 months' or '1 year') so that it reasonably matches the incidence of the illness in that community. This may incentivise nurses to complete the screening because they know that they are doing it at a time when it matters most: around the time of the actual outbreak. Time-limited screening could also help to minimise 'pop-up fatigue' from the physicians' and advanced practice providers' side.

LIMITATIONS

Hepatitis A cases in Michigan related to this outbreak peaked during the second half of 2017,[12] but our BPA was not implemented until mid-2018 when cases in Michigan were already downward trending. Compliance with the tool may have been higher if the BPA was implemented earlier during the outbreak when was more at the forefront of health care providers' minds.

We did not screen individuals for high-risk criteria prior to the implementation of the BPA, so we are only able to compare vaccination rates among all ED visits before and after the BPA. We are unable to compare rates among high-risk individuals specifically.

The return rate of surveys was low compared with the number of emergency medicine physicians, advanced practice providers and nurses that work in this hospital system. Unfortunately, the timing of any subsequent reminders for survey completion would have taken place around March 2020, a time when the health system's EDs were overwhelmed with the SARS-CoV-2 pandemic. It was not deemed appropriate to resend the survey in hopes for a greater response at that time.

CONCLUSIONS

In summary, adoption of an EMR screening and BPA tool efficiently identified patients at high risk for hepatitis A during the outbreak in Michigan. The tool remarkably increased hepatitis A vaccination rates in the ED within our multihospital health system. However, providing ongoing education about the importance of public health initiatives and performing audits and feedback to physicians, advanced practice providers and nurses about tool compliance are needed to sustain the improvement over time. This method can be useful in promoting public health goals and creates a relationship between EDs and health departments that can be used to manage illness at the population level.

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Contributors RT and LS identified the public health opportunity and worked with Beaumont Health System to implement the best practice advisory in the emergency department electronic medical record (EMR). RT, LS, BT and MB designed all portions of the study. LS and BT supervised the conduct of the study and data collection. LS and MB managed the survey distribution and chart review data collection. LQ completed all data acquisition from the EMR. N-WC provided chart review data management and biostatistical support. N-WC and MB analysed the data. MB drafted the manuscript. All authors contributed substantially to its revision. LS takes responsibility for the paper as a whole as the guarantor.

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Patient consent for publication Not applicable.

Ethics approval This retrospective chart review and survey study was approved by the Beaumont Institutional Review Board.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as supplementary information.

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