



Minnesota's Medical PreCheck & Locator App: Preparing for Emergencies

State of Minnesota – Minnesota IT Services

CATEGORY:

Digital Government to Business

CONTACT:

Emily Shimkus
Director of Communications
emily.shimkus@state.mn.us
(O) 651-201-1011
(C) 651-485-1354

INITIATION DATE:

December 2016

END DATE:

August 2017



Executive Summary

The Point of Dispensing (POD) PreCheck and Locator application suite prepares Minnesota for rapid response to biological or pandemic emergencies. In such a public health emergency, rapid distribution of medications to an exposed population, potentially a very large population, can prevent illness and loss of life.

Minnesota IT Services (MNIT) and our partners at the Minnesota Department of Health (MDH) collaborated to develop a suite of applications that bring this service to our stakeholders and all Minnesotans. It also meets requirements from the Federal government to provide countermeasures to 100% of our identified population within 48 hours of the Federal decision to declare an emergency.

The POD PreCheck and POD Locator automated, self-service tools meet the needs of individual Minnesotans, and have transformed the delivery of this essential emergency preparedness service into an organized process that is clear, understandable, and maintainable.

These tools are available online and on mobile devices, on resilient cloud-based systems. They use HTML5 to provide access when no internet or WIFI is available to ensure that every Minnesotan will have access. Future plans are underway to develop public kiosks to make the apps even more available.

Using a computer or mobile device, individuals complete online pre-screening forms to be sure they receive a safe medication given their existing medical conditions and history. Next, they can use the POD Locator tool to find the nearest point of distribution site, and valuable additional site information (bus route, parking instructions, etc.) to improve access and traffic flow. They can also find information on a dynamic web page that lists all open Point of Dispensing (POD) medication distribution locations. People arrive at dispensing sites pre-screened and ready to receive their medications.

The Centers for Disease Control has identified a lack of screening staffing as a critical gap in POD planning nationwide. The self-service nature of the POD PreCheck tool addresses this by reducing the total screening staff needed at point of distribution (POD) sites. It also increases accuracy because people are entering their own information in a non-stress environment where they have access to the information they need.

After the launch of these two applications, Minnesota is better positioned to save lives in a catastrophic situation. We are confident in the technology that will support our emergency response.

Long term impact is that these products are available if needed for emergencies, and are available for exercises to help Minnesota's emergency preparedness. These products will be used/tested during our June 2020 statewide full-scale exercise. Some local and tribal health departments have already used the tools in exercises and given them good reviews, and provided suggestions for enhancements. The products were featured on a national CDC Webinar.

Exemplar

POD PreCheck uses **modern digital technology** to address emergency preparedness for Minnesota's 5.5 million residents. During a public health emergency, such as an anthrax bioterrorism attack, when public service systems are being overrun, time is critical to prevent illness or death. State, tribal, and local public health must direct the public to point of dispensing (POD) sites to receive medication to prevent illness. Many tribes and counties in statewide Minnesota would not have the resources to create a similar product for their citizens to use, nor the public information mechanisms to communicate any tools to their population as broadly.

Depending on the size of the event, POD sites may need to distribute medicine to tens of thousands of people in a matter of hours, medicine that is safe for them given their medical history. Simply put, those services could not be efficiently delivered manually. **Without modern technology and these applications**, dispensing rates for medicines and medical countermeasures would slow to a crawl and Minnesotans would have a difficult time finding active dispensaries.

By developing an automated, self-service approach to meet the needs of the individual, MNIT and our partners at the Minnesota Department of Health have **transformed the digital delivery of services** into an organized process that is **clear, understandable and maintainable**. For those people without access to a computer or mobile device, we envision future development of public "kiosk" stations to assist those affected.

As far as we are aware, no other state has implemented similar POD locator functionality, which, in conjunction with PreCheck completes medication delivery by directing the user to the most conveniently-located dispensary. Though a handful of other states have versions of electronic screening, **Minnesota's POD PreCheck has some unique features:**

- HTML 5 allows POD PreCheck to operate in an online/offline manner, which is essential in a geographically dispersed state like Minnesota. This means that POD sites without internet connections can still use the POD PreCheck tool, including areas where internet connections are spotty or nonexistent.
- POD PreCheck is unique because it screens for one additional medication, amoxicillin, and calculates the appropriate pediatric dose, reducing the injury rate amongst child patients.
- Having POD PreCheck and the POD Locator hosted on Amazon Web Services (AWS) means that during an emergency, when user demand may suddenly peak into the tens of thousands, it is more likely the applications will demonstrate greater resiliency and will be more accessible to the public.

Concept

Beyond a best practice, the Federal government dictates that MDH must be able to demonstrate its capability to receive, stage, store, distribute, and dispense material during a public health emergency. The requirement benchmark states: "As part of their response to public health emergencies, public health departments must be able to provide countermeasures to 100% of their identified population within 48 hours of the Federal decision to do so." Tribal and local jurisdictions also recognized the need for a response system and that such incidents

are inherently cross-jurisdictional. Some had already started their own projects, but had encountered significant issues that halted or delayed them. It was clear that a statewide response was in order.

The **key success factors** for an emergency response of this kind were built into the requirements:

- Maximizing distribution rates at dispensaries.
- Tailoring treatment and dosage to individual needs.
- Minimizing time required to locate a dispensary.

MNIT's project manager, developers, and Office of Geospatial Information Services collaborated with MDH staff throughout the project. **Requirements were gathered** by MDH through meetings with **stakeholders**, including local and tribal public health representatives, and the statewide Medical Countermeasures Workgroup. They identified the functionality that would be needed for both the point of distribution staff, and the general public using the applications. Among other things, specific requirements included:

- **POD PreCheck:** Create a tool that allowed for accurate and rapid screening, while protecting the public's private information. Add a QR code so public health can rapidly input data to improve efficient data management.
- **POD Locator:** We wanted to use the CDC's [IMATS](#) (inventory management and tracking system) database export as the data source for the POD Locator to eliminate the need for data entry during an emergency response (and associated data entry errors).
- **POD Locator:** Local and tribal public health agencies will identify their POD sites and get them ready to receive the public, then communicate the information to MDH. MDH staff will populate the POD Locator application, and make any "in the moment" changes needed as they arise.

While MDH had built similar applications in the past, availability of **new technical development** approaches, and the **high system resiliency** offered through cloud-based hosting created the basis for a **next-generation** solution.

The total cost of development for both applications was \$88,000. While other solutions existed for the PreCheck portion of this initiative, the technology was outdated. However, by gaining some information from existing systems and the sharing of medication algorithms, the MNIT project team was able to create a robust and supportable solution in-house for reasonable costs.

This solution is not part of a larger technology project. The applications are designed to operate independently, even when the state computing infrastructure has been disabled. However, the project was completed alongside an **agency-wide migration of all applications to hosting in AWS**. The AWS platform provides the exact kind of **automatic scaling** needed for an application of this nature, which will be almost dormant at most times and in extremely high demand at a moment's notice.

Agile methodologies were used through the life of the project. MDH business partners were able to work with the developers to understand the direction the developers were taking, and correct course quickly. It also allowed the technical staff to share new ideas with the business team to create new possibilities and a better product. The MDH business team credits this approach for the excellent quality of the application delivered.

Ideally, we will never use this product! It would only ever be used during the response to a bioterrorism event, or during emergency preparedness exercises. We will have a **statewide full-scale exercise** in June of 2020. Local and tribal public health agencies across the state will test the application and provide feedback about their experience. That feedback will be incorporated into future enhancements.

As with all agency projects, a thorough review of **accessibility** was conducted to ensure 508 Compliance. For security considerations, no data on individuals is actually stored in the system or in the database, further protecting individual data. Because it is likely that public computers would be used in this type of response, a conscious decision was made not to include certain data.

This project was entirely state-run. MNIT staff provide ongoing maintenance and technical support.

Communications about these programs is provided on [MDH Emergency Preparedness](#) website, via agency newsletters and to local and tribal public health via webinars during an annual update (attendance was required by grant duty). The tools were featured on a Centers for Disease Control webinar (attended by public health agency staff from around the country, including territories) as a best practice innovation.

MDH conducted a public information exercise with **Twin Cities Public Television/ECHO** and their new **emergency information channel (2.5)** in the fall of 2018. They were able to develop **multilingual messaging** in Spanish, Hmong, and Somali about POD PreCheck and the POD Locator. This information could be pushed to the community during this type of emergency.

Significance

Emergency response support to ensure maximum positive outcomes for the dispensing of medicines and countermeasures in the event of widespread population impacts from biomedical agents.

Beneficiaries of this project include all Minnesotans within all jurisdictions (including tribes) and residents of states within travel distance of Minnesota dispensaries.

This project has **innovative and distinct** characteristics:

- Higher levels of automation and the ability of the public to access emergency information.
- Prescreening results are accurate – human screeners make mistakes.
- The use of AWS ensures higher resiliency and improves potential for widespread adoption.
- This Minnesota application contains automated dosing calculations, which results in significantly less human error in dosages. This translates directly to a reduction in harm as a result of a medication error, especially for children.
- The Minnesota application allows for the off-line option which can be used in more remote areas or when internet service is disrupted.
- Our application supports an especially broad list of medical countermeasure medications available for dispensing during an emergency.

Successful implementation includes:

- The public can access these PreCheck processes from anywhere via the internet or from specified locations when no internet access is available.
- Users are effectively pre-screened and correct dosages calculated.
- The public can quickly identify the closest dispensing site to receive the necessary medication.
- The PreCheck process is available for anything that would require a POD, including pandemic incidents as well as bioterrorist attack.
- It is built on a modern technological base, deployed on the AWS cloud consistent with other applications. This ensures high availability and the ability to scale up from zero users to thousands within minutes.

The POD Locator program **supports the Minnesota Department of Health responsibilities** as outlined in the Governor’s Executive Order (19-22, section 6.b) and the Minnesota Emergency Operations Plan. It helps our partners at MDH meet their business mission to protect the health of all Minnesotans. This application allows the local public health organizations to accomplish *more* with declining resources. These applications also align with the Federal Centers for Disease Control [Public Health Emergency Preparedness grant](#) requirements to be able to dispense to citizens in response to bioterrorism. Specifically, Capability 8 of the PHEP grant. This project aligns with **MNIT’s priorities** to modernize government services, and to partner with agencies to achieve their missions. It also aligns with **NASCIO’s State CIO Top Ten Priorities** of Cloud Services and Digital Government.

Impact

After the launch of these two applications, we are better positioned to save lives in a catastrophic situation. We are confident in the technology that will support our emergency response.

The benefits and impacts of the effort have been stated several times in the preceding responses to questions. A benefit that has not been explicitly mentioned is **increased level of confidence** in public health staff and constituents in government services, and reduced anxiety around emergency response. Other benefits include:

- Reduced staff training cost in public health organizations statewide.
- Reduced harm by minimizing human error in screening.
- Improved communication to all Minnesotans citizens during an emergency.
- Improved likelihood of getting medications to all people impacted by bioterrorism, reducing injuries and deaths.
- Increased access statewide where internet access may be limited.
- Meeting public expectation by not just relying on paper screening forms.
- Improving public information about the emergency.

Long term impact is that **Minnesota is ready** for emergencies, and these tools are available for exercises to help Minnesota’s emergency preparedness. These applications will be used/tested during our June 2020 statewide full-scale exercise. Some local and tribal health departments have already used the tools in exercises and given them good reviews, and they have provided suggestions for enhancements.

The **qualitative benefits** are in lives saved, reduced injuries. In the event of an emergency, these tools will reduce confusion and improve outcomes. We may never use them, but if we do they will be critical. This project is an investment in human life.

In an ideal world, such an event will not occur. In the worst-case scenario, this initiative could save thousands of lives and prevent injury to many more by improving the accuracy of the medicine dispensed.