



# A LEADER'S GUIDE TO SAFER FASTER AND MORE EQUITABLE COMMUNITY VACCINATION EVENTS

**Honeywell**



TEPPER SPORTS & ENTERTAINMENT



Dear Governor,

Over the coming weeks and months, every community in this country will look at all possible avenues available to vaccinate their citizens. Mass vaccination events – whether hosting 500 or 10,000 patients a day – will be a critical tool in the toolkit of community leaders everywhere.

Like any other successful endeavor, mass and community vaccination events require deep planning, strong leadership, committed partnerships and an army of support. Missing even one of these critical elements can severely limit the effectiveness of an event, ultimately slowing down a community's recovery.

In January 2021, North Carolina Governor Roy Cooper announced plans to stand up mass vaccination events in the state. In response, leaders from Atrium Health, Honeywell, Charlotte Motor Speedway and Tepper Sports & Entertainment met to discuss the challenges of the pandemic and its impact on people, communities and health systems. After a productive conversation with Governor Cooper, Charlotte Mayor Vi Lyles and leaders from Mecklenburg County, a partnership was born. The resulting public-private partnership combined the strength of government resources with the expert competencies of multiple industries and the software and hardware technology necessary to execute the most efficient and safe mass vaccination events possible.

Vaccination plans must also ensure equitable administration of vaccines. Atrium Health executed a comprehensive strategy that included outreach to faith-based organizations and deployed mobile teams, community clinics and drive up sites to reach more people in underserved communities.

While playbooks detail the step-by-step execution plan, this document instead provides the insights that can only be learned by doing. We hope these learnings will be helpful to government leaders who are building a strategy to get their community vaccinated.

The partnership highlights the advantage of joining forces. It brings out the best in American innovation and productivity and delivers successful mass and community vaccination events with a common goal to “get shots in arms.”

Sincerely,



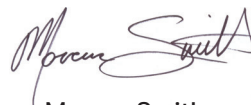
**Darius Adamczyk**  
Chairman & CEO, Honeywell



**Gene Woods**  
President & CEO, Atrium Health



**David Tepper**  
Owner  
Tepper Sports and Entertainment



**Marcus Smith**  
President and CEO  
Speedway Motorsports

# KEY ACTIONS THAT CONTRIBUTED TO THE SUCCESS OF THE CHARLOTTE MASS VACCINATION EVENTS



## AGREE ON PATIENT FIRST MENTALITY

Create a public-private partnership with a clear and unified mission driving towards the same goal – maximum shots in arms; do what’s right; waste no doses.



## LET EXPERTS LEAD

Build the right team and engage nursing, informatics, process flow, emergency management and logistics experts in the planning and orchestrating of events.



## LEVERAGE PROPER TECHNOLOGY TO ENABLE SMOOTH OPERATION OF THE EVENT

Use software and hardware technology to your advantage to streamline the patient journey and manage your resources efficiently.



## SET THE RIGHT MISSION GUIDANCE

Speed, scale, safety and equity.



## NEVER STOP IMPROVING PROCESS

Utilize data-driven intelligence guided by real time boots-on-ground feedback to immediately address process defects and dynamically adjust operations as needed.



## TEST AND REFINE

Implement rapid-cycle technology development, with small, timely pilots leading to continuous refinement of standard work.



## COMMUNICATE, COMMUNICATE, COMMUNICATE

Establish cohesive and comprehensive communications, complete with media outreach and coordination.



## LEAVE YOUR EGOS OUTSIDE THE STADIUM

Focus on the larger mission above self-interests while focusing on a bold, unified action of service to the community.

These highly efficient mass events safely vaccinated a diverse group of more than 36,000 people with scalability at a rate of nearly 1,500 vaccinations per hour.



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# EXECUTIVE SUMMARY

The pandemic has impacted the way of life of nearly every person, business and community in our nation and around the world. The National Institutes of Health suggest that approximately 70% of the population must be vaccinated to achieve “community immunity” and halt the pandemic. The emerging mutations of the SARS-CoV-2 virus add an increased level of urgency to the mission, as we race to achieve this goal before the virus evolves to a potentially resistant strain. This threat to our entire community requires a more global response that unites health systems, private organizations, local and state governments, and non-profit organizations to plan and execute vaccine distribution efforts at scale.

On Jan. 14, 2021, Honeywell, Atrium Health, Tepper Sports & Entertainment and Charlotte Motor Speedway announced a unique public-private initiative with a bold goal of administering 1 million doses of the vaccine by July 4, 2021. With support from North Carolina Governor Roy Cooper, the North Carolina Department of Health and Human Services and local governments, these organizations have collaborated to administer vaccinations, provide logistics and operations support, and offer venues for an efficient and safe initiative. These mass vaccination events have brought together each organization’s unique strengths in logistics, healthcare and technology to vaccinate as many eligible community members as quickly as possible.

Just 38 days after receipt of the initial doses of vaccine, the public-private initiative organized the first mass vaccination event at Charlotte Motor Speedway from January 21 to 24, with second doses February 11 to 14. After these successful events, the team developed a plan for future vaccination events that can accommodate an estimated 30,000 vehicles. With multiple people in each vehicle, the vaccination capacity could be significantly higher.

The second event was held at Bank of America Stadium from January 26 to 29, with second doses February 26 to 28. **These highly efficient mass events safely vaccinated a diverse group of more than 36,000 people with scalability at a rate of nearly 1,500 vaccinations per hour with average wait times of less than 30 minutes.** These successes offer several best practices for locations around the world working to get “shots in arms” quickly, efficiently and safely.

While all events and venues are unique and will require some adaptation, this guide is intended to lay out the high level elements of planning, preparing, and executing a mass vaccination event.

Multi-sector public-private partnerships that leverage each organization’s unique strengths in logistics, technology, event operations, and healthcare are essential for successful mass vaccination events.

Well-run events are catalysts for positive energy – in patients, among staff and within the community. Many considered the vaccine experiences to be an emotional and overwhelmingly positive inflection point in their lives.



# PLANNING

The following guiding principles/assumptions were used in planning the mass vaccination events:



Vaccines will be administered by appointment only, scheduling first and second doses concurrently.



Operating principles of Lean Management Manufacturing system to achieve continuous flow and to minimize delays.



Sufficient vaccine supply will be available for the event or schedule. No vaccine will be wasted. Adjust scale and timing to match vaccine availability.



Use of cross-sector technology integrations to improve process efficiency and operational monitoring.



Operations will have a specific emphasis on addressing equity of vaccine distribution by identifying focused solutions around messaging, education, mobility, and vaccine administration to underserved communities and individuals with high social vulnerability indices.



Special focus on teammate, volunteer, and patient experience to build resilience, while ensuring a happy and productive workforce throughout event.

Each of the first two mass vaccination events were planned in less than seven days, with a clear focus on the mission and common goals: Commit to an excellent worker and patient experience. Do what's right. Get shots in arms.



# LEADERSHIP STRUCTURE

The execution of a mass vaccination event requires building a coalition of partners with little previous personal or professional relationship. This network of leaders must come together quickly and operate with new leadership hierarchy and decision-making authorities.

We have found that using a “task force” model supported by cross functional teams is the most effective way to operate in complex, networked environments. Here is how we did it:



## STEP 1

**Establish the leaders of the task force.** For the Charlotte events, a single leader with both strategic and operational authority from each partner organization, led the task force. Each had direct access to their respective organization’s chief executive officer. The task force leaders then worked together to set the vision and coordinated the cross functional teams.



## STEP 3

**Create a management operating system to ensure alignment of cross functional teams.** The management operating system requires establishing a detailed communication cadence with standard report-out formats and a shared technology platform to simplify information sharing. We utilized Microsoft Teams to store and share documents, host business intelligence and analytic tools, and conduct video conference meetings across all teams.



## STEP 2

**Form the cross functional teams to address specific operational tasks.** The cross functional teams are comprised of subject matter experts from across the coalition. The cross functional teams have tactical and operational authorities and are expected to coordinate to influence broader strategy. The cross functional teams have local decision authority and are expected to maintain open lines of communication amongst the teams in order to ensure alignment of priorities and deliverables while also allowing for innovation. We established the following cross functional teams:

- Site operations (site selection and physical operations)
- Clinical operations (patient selection, registration, vaccine administration, observation)
- Finance and Legal
- Communications and media
- Information services and technology
- Workforce management
- Logistics and vaccine procurement



## STEP 4

**Set up decision-making authority.** The urgency of implementation required distributed decision-making authority to the cross functional team leaders. This allowed for dynamic decision making, rapid process improvement and a strong team buy-in. The management operating system and frequent communication touchpoints ensured task force leaders maintained visibility of all rapidly evolving operational decisions.



# SITE SELECTION

The partnership considered key characteristics, such as the type of experience offered (e.g., walk-thru versus drive-thru, or both), accessibility for patients, potential population served – including racial and socioeconomic diversity – capacity and large-event planning expertise.

In choosing a venue, it's vital to ensure there is sufficient space for social distancing of patients, whether on foot or in vehicles, and to have space available to accommodate a spike in patient arrivals in a short time interval. Consideration should also be given for real estate between various process steps. In the event an upstream process produces at a faster rate than the subsequent process, ensuring adequate space is crucial to ensure flow management does not become a burden, and negatively impacts teammate and patient satisfaction, nor becomes a 'super-spreader' situation.

Of course, venues designed to host thousands of people and have free and accessible parking capabilities are ideal to host community vaccination events. Consider stadiums, arenas, racetracks/speedways and convention centers.

Demographics are also a key consideration when selecting a mass vaccination site. As a general rule, venues with a convenient access to public transportation options, such as light rail or bus lines, will typically attract a higher percentage of people from underserved communities. Working with local governments, free public transportation days can be arranged and communicated to encourage those who might otherwise be inhibited by the cost of transportation or other travel issues.





# EQUITY IN VACCINE DISTRIBUTION

All comprehensive vaccination plans should ensure there is a specific focus on the equitable administration of vaccines across each community being served, including those that are marginalized or underserved. The strategy should have multiple operational plans, including mass vaccination events, mobile vaccination teams, community vaccination clinics, drive-thru vaccination sites and more, to ensure that equity is matched with speed, scale and safety.

Use of dynamic information analytics provides real time demographic data that helps drive operations toward established equity benchmarks.

In urban areas, access to public transportation, even with pandemic limitations, improves equitable access. Drive-thru events are effective, especially in accessing underserved rural areas.

Mass vaccination events should supplement, but not be the only way health systems, organizations and local governments address the disparities of vaccinating those in underserved communities and individuals with high social vulnerability indices. In order to ensure that mass vaccination events support the equitable distribution of vaccines, there are several key considerations and actions:

## OUTREACH

- Gain a full understanding of the local and regional underserved populations and the existing barriers to health that are not uniform across ethnic, socio-economic and age demographics.
- Engage early in intentional outreach to historically underserved populations and communities with high social vulnerability indices.
- Create impactful engagement by leveraging existing and new partnerships with diverse organizations from the faith, healthcare, business, educational, news and entertainment communities.

## ACCESS

- As a general rule, venues with convenient access to public transportation options, such as light rail or bus lines, will typically attract a higher percentage of people from underserved communities.
- Enable multiple modalities for access to vaccination sites. In urban areas, access to public transportation, even with pandemic limitations, can improve equitable access. Drive-thru events are effective, especially in accessing rural areas.
- Working with local governments, free public transportation days can be arranged and communicated to encourage those who might otherwise be inhibited by the cost of transportation or other travel issues.

## MESSAGING

- Relationships are critical to deliver the right message to each audience and must include trusted organizations and individuals who understand the unique challenges of their community.
- Use existing technology and survey tools to identify important information and refine messaging about vaccine hesitancy, knowledge of vaccine, education about the virus and prevention, mobility constraints and scheduling.
- Identify and utilize known social influencers and community members to reduce vaccine hesitancy as early in the process as possible.



## DATA AND TECHNOLOGY

- Employ informatics to existing eligibility and demographic data to create targeted appointment opportunities, ensuring that data insights provide operational guidance.
- Utilize modern data illustration techniques, such as data mapping, to address existing vaccine disparities.
- Use dynamic information analytics to provide real-time demographic data to drive operations toward established equity benchmarks.

## SIZE AND EVENT SCHEDULE

The mass vaccination events at **Charlotte Motor Speedway** occurred over three 12-hour days and one 3-hour day vaccinating

**16,000**

patients

**The Bank of America Stadium**

events were two 10-plus hour days (opened 30 minutes early each day), and one 5-hour day vaccinating

**20,000**

patients

Although both venues had capacity for larger patient volume, vaccine supply was a limiting factor. Once confirmation of vaccine supply was made for first and second doses, contractual arrangements were made for dates, timeframes, etc., based upon production capabilities of vaccination teams as well as the ability to staff the event. Because both facilities are major professional sports venues, the locations were well-known within the community and created excitement for patients and the media to be part of the event.

More than 16,000 people were vaccinated at the events hosted at Charlotte Motor Speedway over three and a half days. Patients drove roughly half of the racetrack surface before pulling two-deep into the pit garages, where vaccines were simultaneously administered in 12 bays, by 24 vaccination teams. After receiving their shots, patients drove to a waiting area on the infield for observation, in the event of an adverse reaction to the vaccine. It was unnecessary for patients to get out of their cars, which served to maintain social distancing and limit the number of people with whom patients came into contact.

More than 20,000 people were vaccinated at the events at the Bank of America Stadium over three days. This event provided vaccinations using both drive-thru (~25%) and walk-thru (~75%) methods. Pedestrians parked in a nearby parking garage, walked to the stadium and entered through its main gate.

After navigating through socially distanced check-in processes, patients were directed to one of 30 vaccination stations on the stadium's main concourse, then to a nearby waiting area for observation. If patients were unable to walk the distance from the parking garage to the stadium, staff with wheelchairs were available to provide concierge services, and safely take the patient from their car, through the vaccination experience, and then return them back to their car, staying with them the entire time. The roads adjacent to the stadium were closed to accommodate the drive-thru patients in one of four tents, with a post-vaccination parking area established at one end of the stadium for observation.

The first day of each event served as a soft launch to test processes, production throughput, technology and to allow time for adjustments.

Although there are many roles in the vaccination process, the most crucial one remains that of the clinical staff. As they are already in high demand due to the pandemic, staffing was accomplished, primarily, with clinical and non-clinical volunteers. For the Charlotte Motor Speedway events, 7-hour shifts were self-selected to improve both teammate and volunteer compatibility and enable operations of six hours for each shift. Additionally, a separate medication team was staffed prior to the start of the shift, in order to mix, draw up, and prepare vaccinations ahead of the patient schedule.

As indicated in the table at the end of this section, the initial Charlotte Motor Speedway event operated at a drive-thru rate of more than 420 patients per hour. The initial Bank of America Stadium event operated at a rate of 700 patients per hour for the walk-thru concourse and 180 patients per hour in the drive-thru, which operated on closed city streets outside the stadium. The ability to flex demand between the drive-thru and walk-thru options was a key component that allowed the event to operate as efficiently as possible.



It is worth noting that the previously mentioned events utilized the Pfizer and Moderna manufactured vaccines, each of which require two doses separated by three or four weeks, respectively.

## CHARLOTTE MOTOR SPEEDWAY

Thursday (soft launch)	
Max Vaccinations per Day	<b>600</b>
Operating Hours per Day	<b>3</b>
Vaccination Capacity per Team per Hour	<b>30</b>
Vaccinations Teams Required	<b>7</b>
Friday, Saturday, Sunday	
Max Vaccinations per Day	<b>5,133</b>
Operating Hours per Day	<b>12</b>
Vaccination Capacity per Team per Hour	<b>30</b>
Vaccinations Teams Required	<b>14</b>
<b>Total Vaccination Capacity</b> (Charlotte Motor Speedway)	<b>16,000</b>

## BANK OF AMERICA STADIUM

Friday (soft launch)	
Max Vaccinations per Day	<b>2,400</b>
Operating Hours per Day	<b>5</b>
Vaccination Capacity per Team per Hour	<b>30</b>
Vaccinations Teams Required	<b>16</b>
Saturday and Sunday	
Max Vaccinations per Day	<b>8,800</b>
Operating Hours per Day	<b>10</b>
Vaccination Capacity per Team per Hour	<b>30</b>
Vaccinations Teams Required	<b>29.3</b>
<b>Total Vaccination Capacity</b> (Bank of America Stadium Stadium)	<b>20,000</b>

\*Based on wait times and additional capacity to process more patients throughout the events, we estimate we could have accommodated approximately 20% more patients in each venue.

# PATIENT FLOW

It was a primary goal to ensure an excellent patient experience, with easy-to-use scheduling tools (regardless of if the patient was an established Atrium Health patient or not), clear communications and short wait times during any step in the vaccination process.

Ensure there is enough bandwidth for your scheduling web site and staff for supporting call center to meet the patient demand, especially at the beginning of the scheduling period.

Patients easily self-scheduled appointments by using a patient portal or by simply contacting a call center. When the patient was scheduled, they received appointments for both their first and second doses. Patients were scheduled in 20-minute increments, to ensure consistent volume of patients throughout each hour. At the Charlotte Motor Speedway, appointments were regularly running 7-10% ahead of schedule.

Once scheduled, patients received email and text messages prior to the event (see technology section for additional details). Upon arrival, signage was prominently featured in both English and Spanish, and additional language services were available by phone if needed.

Every second matters and upstream preparation of the patients to advise what to expect and how to prepare for the next station provides valuable capacity to the operation (i.e., signage that indicated for the patient to get out your vaccine card, roll up your sleeve). Periodic cycle times were recorded for how long it took a patient to go through each step in the process. This was monitored periodically throughout the event. As the scale and speed of vaccination increases, ensuring efficient patient flow with constant motion is equally important to minimize idle time for staff. The processes at Charlotte Motor Speedway and Bank of America Stadium were designed to ensure rapid patient turnover in each of the value-added stations. Some examples include centralized and multiple exits for queue lines to minimize walking or drive time into the vaccine or registration station and an equal effort to ensure patients could rapidly exit to enable the next patient's arrival.

In the event a patient needed extra attention to correct any issue, they were immediately moved to one of the "trouble shoot" lanes to prevent the standard patient lanes from backing up.

## MEDIAN CYCLE TIMES

Location	Walk-thru	Drive-thru
Charlotte Motor Speedway	N/A	26 minutes
Bank of America Stadium	24 minutes	45 minutes

At Bank of America Stadium, check-in and screening stations were combined into one, enabled by physical layout, and staffing for this station remained supported by two different roles.

Administering vaccinations by "appointment only" is the most efficient and effective strategy. All efforts should be made to limit or eliminate unscheduled walk-up appointments. Communications must be clear and consistent about the importance of appointments.

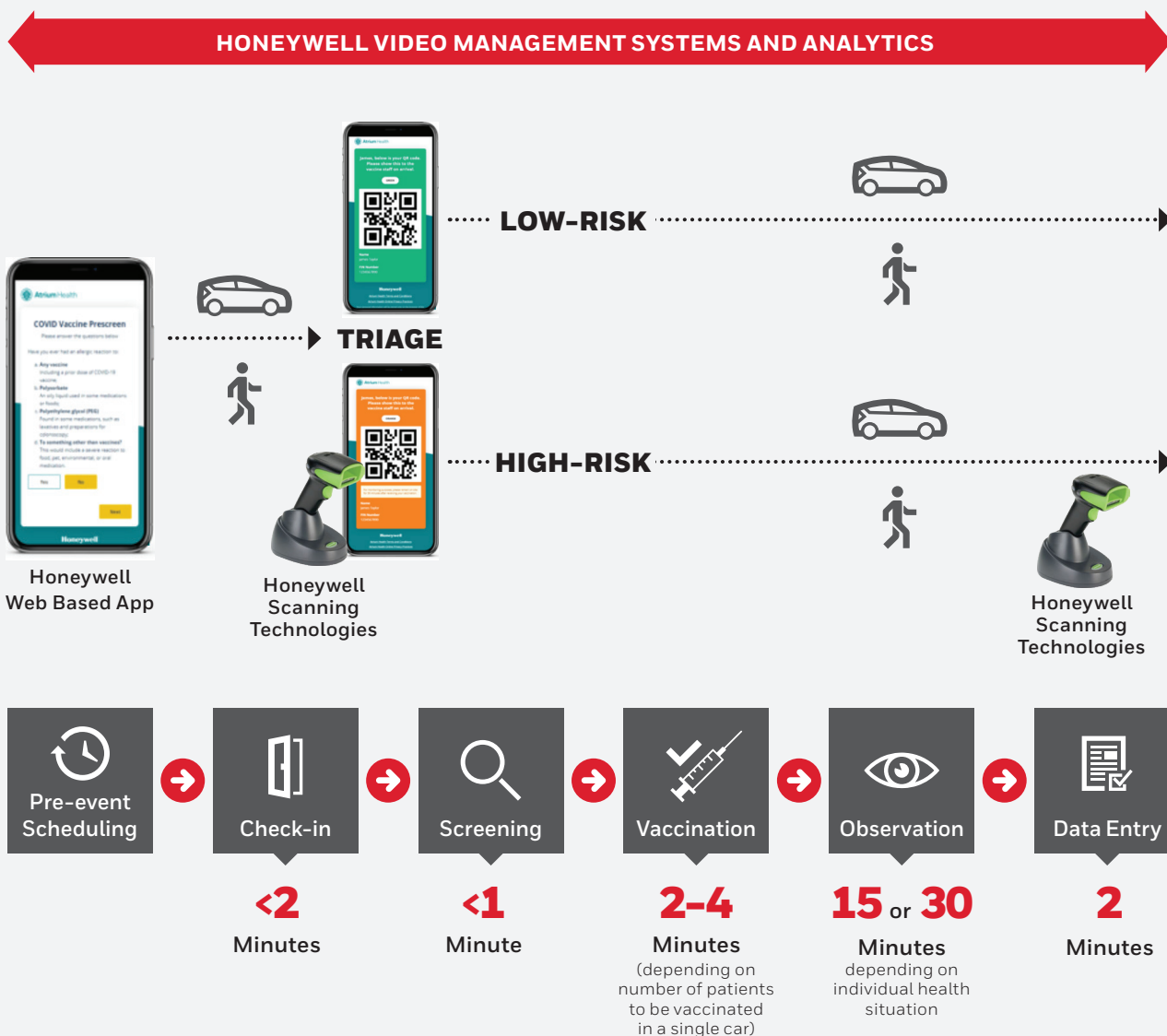
Despite communication asking patients to not arrive early for appointments, the first hour of each day consistently had a significantly larger number of patients waiting in the queue prior to registration. As a result, operations opened vaccination processes at least 30 minutes in advance of the official starting time. This was not announced to the public in order to advance patients to the vaccination stations. This also reduced the time the vaccination teams waited for the first patient of the day, due to the travel distance required from the registration stations to the point of vaccination administration. Moreover, the natural early arrival of the patients also enabled the ability to reduce the number of vaccination stations at the end of the day, enabling a precise control of vaccine quantities. This adjustment simplified the end-of-day cycle counting process for vaccine inventory, with fewer stations administering the vaccine.

To ensure full consumption of vaccine supply, the team monitored the hour-by-hour patient arrival patterns and no-show rates, made adjustments to schedules and communicated to patients via text messaging and/or website updates in near real time. Target benchmarks were provided via text to onsite operational leaders, hour-by-hour, every 15 to 30 minutes by the Information Systems team. This allowed operations to collapse or scale teams to achieve highly accurate vaccine production, administration and end-of-day processes, with no vaccine wasted.

As an example, when weather impacted the no-show rate at Bank of America Stadium, additional appointments were released throughout the day, ensuring that staff and vaccine supply would be available, should the outstanding patients arrive later in the day. The additional appointments were scheduled within seven minutes and the team was able to vaccinate an additional 150 appointments.

During the Bank of America Stadium event, vaccine administration was able to be maintained within a 1% margin, sustained throughout the duration of the day – a difficult benchmark for any endeavor. Most importantly, at all mass vaccination events, there were no doses wasted at the end of each day.

### ALL PATIENTS WERE PROCESSED THROUGH THE FOLLOWING WORKFLOW



# VACCINE MANAGEMENT

Vaccine management is a complex process, requiring adherence to manufacturer handling instructions, oversight of first and second dose supply management and understanding the impact of no-shows. In the instances of no-shows, when appointments are moved or added, using time management techniques will ensure the vaccine does not expire or spoil. Detailed processes are required to ensure the security of the vaccine, as well as precise end-of day vaccine volume management. We recommend sticking with one vaccine manufacturer, and not mixing different vaccine manufacturers at any one event.

Throughout each day of the events, tight collaboration must occur between operational leaders, pharmacy leaders, registration personnel and IT data intelligence resources to ensure the pulling and preparation of appropriate vaccine quantities and make sure no dose is wasted.

Detailed policies and procedures should be outlined beforehand to ensure compliance with vaccine management. This includes plans for over-pulling of vaccines from refrigeration, oversight of expiring times, as well as any potential equipment failures and what steps will occur if such a situation develops. This is a must.

Sound practices and policies must be in place to ensure no/low waste of vaccine inventory. The number of vials thawed each day matched the number of appointments, taking into account a 2% no-show rate. An active standby list was contacted via text with a specific appointment time as the day progressed.



## STAFFING

A process designed and led by nurses with clinical expertise and process flow experts with operational backgrounds proved pivotal in establishing a successful vaccination program.

Staffing was predominantly determined by the amount of available vaccine and, ultimately, the capacity of each vaccination team on an hourly rate, based on the planned number of vaccines to be administered over a given time interval. Each venue had capacity to vaccinate more people, however, state-allocated vaccine remained in limited supply.

At first, it was challenging to identify clinical staff to be scheduled, however, with a heavy focus on ensuring a good teammate experience, this became a non-issue, with hundreds of frontline clinical staff offering to give up their scheduled off days to take part. When the clinical staff saw elements of hope in providing vaccines after months of seeing first-hand the devastating effects COVID-19 can have on people, it was a major morale boost. Approximately 1,500 paid and volunteer staff supported the Charlotte Motor Speedway event. There were roughly 2,000 working at the Bank of America Stadium event, which included health system staff, volunteers, affiliated police, fire, medic, venue staff, city and county partners.

For the Bank of America Stadium event, in particular, because of the number of walk-thru patients scheduled who would be over the age of 65, it was also essential to utilize mobility assist volunteers, with people staged at the parking garage with wheelchairs to help those with difficulty standing or walking for extended periods of time.

It must also be recognized that ongoing clear, transparent communication is necessary with venue staff and local police and fire departments to discuss operational needs and anticipate challenges and appropriate back-up plans. It's also important to do outreach to nearby businesses which could be affected as a result of the large crowds and any diversions of normal, day-to-day traffic.

Without a doubt, staffing is one of the most challenging parts of the process. It will be even more complex for vaccination operations deployed on an ongoing period of time, rather than just weekend events.

## VACCINATION TEAM

Each vaccination team is composed of two clinicians, one vaccinator and one documenter. Depending on physical layout and proximity of one vaccination station to another, helpers may be assigned to each station or to a "neighborhood" of stations and assist with indirect support (e.g., handing cards to staff, opening band-aids).

It should be noted, in addition to the patient processes, an emergency management team, a virtual IT support team, a leadership team and a unified command team (who works with other local agencies) should be present to provide support and oversight for the event.

At the walk-thru event hosted at Bank of America stadium the time to vaccinate each patient was just under two minutes, and required three staff. Two clinicians prep and inject the vaccine, then apply the bandage to the patient, and a third non-clinician manages data entry.

At that rate, thirty patients could be vaccinated per hour per station. To reach the target of 1,000 vaccinations an hour, it required 33 stations, and 99 staff (66 clinicians and 33 non-clinician).



## STANDARD WORK AND RAPID PROBLEM SOLVING

Standard work created in other vaccination efforts served as a foundation and rapid-cycle design of technology contributed to quick, standard work evolution.

Using Honeywell's A.I.-based video analytics systems, the team was able to monitor cars and people flow at every stage from registration to exit, helping predict wait times, mitigate bottlenecks and make real-time queuing and staffing adjustments.

Preparedness should include downtime processes in the event of technology failures, inclement weather, intentional disruption of operations, and any other emergency event.

Standard work was developed by frontline staff, with focus on reducing non-value-added processes to achieve the lowest repeatable cycle time, incorporating agile processes with ability to adjust and scale, when required. Real-time monitoring of cycle time through Honeywell's A.I.-based video analytics systems were complemented by on the ground teams validating data, real-time problem solving, process leveling and re-balancing. Pivoting actions occurred hourly and every half hour at the beginning and end of each day.

Daily debriefs were used to highlight wins and opportunities in the spirit of continuous improvement. Technology improvements were developed in rapid-cycle and implemented with small pilots, prior to rapid, full-scale deployment and continue to improve each subsequent event. Visual signage was utilized to create an intuitive patient experience and additional graphics were added based on any opportunities and needs that surfaced.







One of the more significant challenges faced was inclement weather. At Bank of America Stadium in particular, unseasonably cold weather was an obstacle, especially with the primary demographic eligible for vaccination being those aged 65 and older. Dozens of propane heaters were brought into the stadium and stationed in proximity to the work areas, as well as the patient vaccination and observation areas. Hand warmer packets were also handed out to those waiting in line.

For the drive-thru at Bank of America Stadium, large tents were set-up to help preserve privacy for patients as they drove through them to receive their vaccine. This doubled as a shelter for the vaccination team during periods of rain.





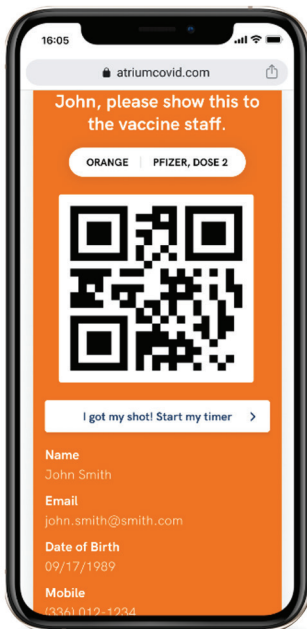
# EVENT AND RESOURCE OVERVIEW

TIME FRAME	AREA	PEOPLE	PROCESSES	TECHNOLOGY	OVERFLOW / DOWNTIME PROCESS	STAFFING RATIO BASED UPON PATIENTS / HOUR		
PRE-EVENT	 <b>SCHEDULING</b>	Patients	<ul style="list-style-type: none"> <li>Patients self-schedule or call into centralized call center to schedule outpatient encounter</li> <li>Scheduling system has robust decision support and alerting capabilities to ensure correct scheduling, no overscheduling, etc.</li> <li>Afternoon before event, patients were sent text message with link to web-enabled app to self-screen with CDC risk-assessment.</li> <li>Based upon answers, patients' information was linked to Honeywell-enabled app which converted the patient information into displayable QR codes easily colored-green (low risk) or orange (high risk) on screen-for use at check-in.</li> <li>Vaccine order is placed automatically on encounter, 24 hours prior to appointment</li> </ul>	<ul style="list-style-type: none"> <li>Health system patient portal with link to scheduling system</li> <li>Phone system with access to scheduling system</li> <li>Honeywell web-based pre-screen registration app linked to Atrium patient portal</li> </ul>	Phone system			
		DAY OF EVENT	 <b>CHECK-IN</b>	<ul style="list-style-type: none"> <li>Greeters</li> <li>Registration Personnel</li> </ul>	<ul style="list-style-type: none"> <li>Patients are greeted, given vaccination card, EUA, education information</li> <li>Patients then checked into the electronic scheduling system</li> <li>Drive-thru experience: Number of those to be vaccinated in each car is written on windshield with chalk marker or on paper and placed on dashboard of car</li> </ul>	<ul style="list-style-type: none"> <li>Electronic scheduling system</li> <li>Honeywell produced bar code used at event check-in</li> </ul>	Staff calls into IT support to manually check-in patient	1: 60 patients/hour
 <b>SCREENING</b>	Clinical staff			<ul style="list-style-type: none"> <li>Patients show green or orange screen to staff, proceed</li> <li>If patient does not use screening application, staff screen patient, and give patient green/orange paper based upon responses</li> </ul>	<ul style="list-style-type: none"> <li>Honeywell screening web-enabled application</li> </ul>	None	4 clinicians: 420 patients / hour	
	 <b>VACCINATION</b>			<ul style="list-style-type: none"> <li>2 clinical staff per vaccination team (must be able to vaccinate per state licensure)</li> <li>Optional helper, depending on venue spacing</li> <li>Volunteer greeters</li> </ul>	<ul style="list-style-type: none"> <li>Clinical vaccinator takes patient's vaccination card and hands to clinical documenter</li> <li>Vaccinator or helper uses wireless scanner to scan patient's QR code from phone that is used to identify patient in EMR</li> <li>Clinical documenter accesses medication administration record (MAR) and uses multi-field barcode to document medication administration prior to vaccination. If no conflicts/alerts, notifies vaccinator to vaccinate patient.</li> <li>Clinical vaccinator administers vaccine.</li> <li>Clinical documenter documents vaccine on vaccination card; applies vaccine sticker.</li> <li>Vaccinator hands card back to patient.</li> <li>Vaccinator/helper documents time of administration on green or orange card; instructs patient to proceed to next station.</li> <li>Volunteers were used at walk-thru mass vaccination, to tell patients which direction to go in the vaccination process.</li> </ul>	<ul style="list-style-type: none"> <li>EMR</li> <li>Honeywell barcode scanners</li> <li>Honeywell Artificial Intelligence Pro-Watch Software</li> <li>Real-time location systems (RTLS)</li> </ul>	Paper downtime form	2 clinicians, 1 helper: 30 patients / hour
				 <b>OBSERVATION</b>	<ul style="list-style-type: none"> <li>Clinical staff</li> <li>Volunteers</li> </ul>	<ul style="list-style-type: none"> <li>Patient is directed into 15 or 30 min wait areas and instructed to blow horn or ask for help if they are not feeling well.</li> <li>After timeframe is completed, patient is asked to depart location.</li> <li>On-site adverse reaction kits are available with standing protocols for clinical staff response to allergic reactions</li> </ul>	EMR, if adverse reactions	
POST EVENT	 <b>DATA ENTRY</b>	Data entry, HIM experts and/or interns	<ul style="list-style-type: none"> <li>All pertinent state information is pulled from scheduling and EMR, compiled in database. Barcode technology is used to assist in uploading details to speed state registration and documenting of first and second doses.</li> </ul>		<ul style="list-style-type: none"> <li>Scheduling system</li> <li>EMR</li> <li>Honeywell barcode scanners</li> <li>Website access of state registry</li> <li>Honeywell timer built into app</li> </ul>	Paper documentation	30 data entry staff: 420 patients / hour	

Ensure an ample supply of good coffee, snacks and meals are ready and accessible for all those who are working the event.

## EMPLOYEE WELLNESS

In addition to focusing on a positive patient experience, a similar emphasis was placed on ensuring a good experience for teammates. This included providing coffee/drinks, snacks, meals and planning for scheduled breaks. Additionally, efforts were extended to ensure branded “swag” items for teammates and patients – which included masks, hats, pens and “I Got My Shot” stickers. As with patient areas, heaters were available and hand warmers were handed out to those working the events.



## TECHNOLOGY

Several rapid-cycle technology developments occurred, which included small pilots at other vaccination efforts before utilizing at the mass vaccination events. As an example, administrators used bar code technology to check in patients and convert data from disparate IT systems to encoded bar codes, pre-formatted to expedite data entry into the North Carolina Vaccine Management System. This mitigated the amount of support staff needed, and reduced processing time from 5-10 minutes to 30 seconds, per patient.

For the Charlotte events, all technology used was vetted to ensure it complied with data privacy laws and that no HIPAA covered data was shared.

Technologies deployed:

- 1 Patient Screening** – text message sent to patient the day before vaccination schedule, asking them to answer CDC screening questions which identifies them as low/high risk for monitoring purposes. A Honeywell app connected to Atrium Web then generates a QR code to be used in event check-in process
- 2 Honeywell Artificial Intelligence Pro-Watch Software** – provided queue monitoring for drive-thru and walk-thru events
- 3 Real-time location systems (RTLS)** were utilized for motion studies of staffing to optimize pathways and workload balancing
- 4 QR code patient and risk identification on site**, converted from patient’s pre-screen registration on Honeywell’s web based app assisted in the automatic identification of the patient receiving the vaccine
- 5 Honeywell’s multi-field barcode scanning simplified entry administration**– allowed clinical staff to document all eight fields of required medication information with one scan
- 6 Automated Data Entry For NC State Database Registry** – Honeywell app enables data entry staff to register and document dose information into the state registry, required to be completed within 24 hours of administration
- 7 “I Got My Shot” timer** – from the QR code/screening field in the Honeywell app, patient has a button to activate, to start their respective 15 or 30-minute timer



# AVAILABLE TO SHARE OUR EXPERTISE WITH YOU



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TEPPER SPORTS & ENTERTAINMENT

