

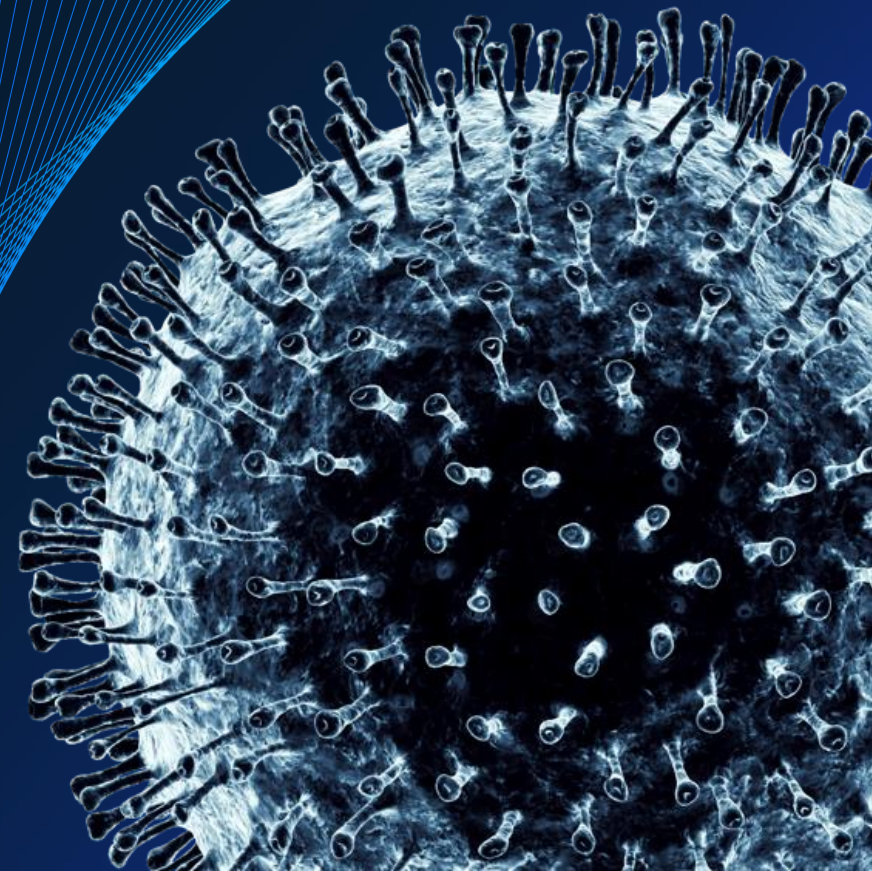
# Overview of COVID-19 vaccine and diagnostics value chains

Current as of January 8, 2021

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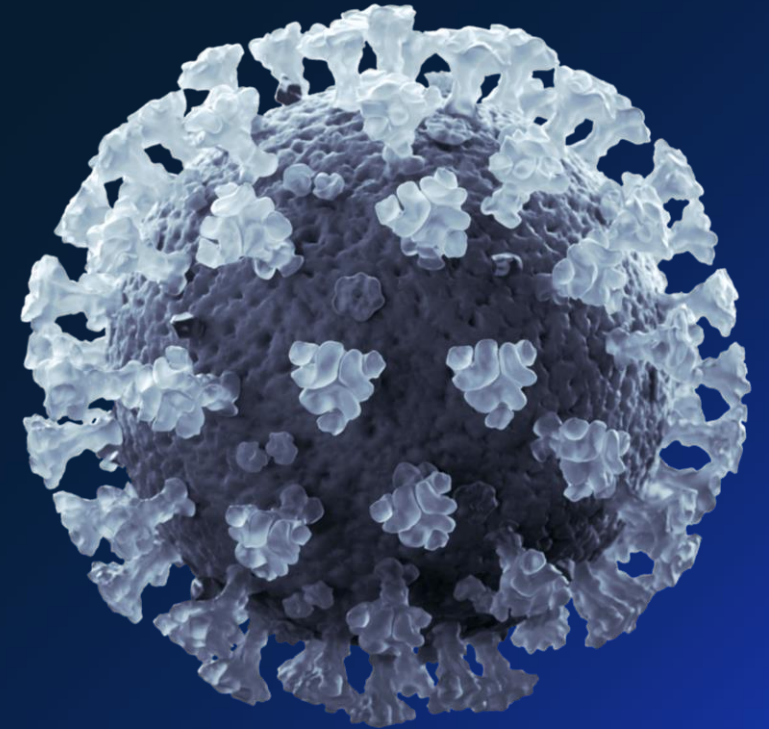


## **COVID-19 is, first and foremost, a global humanitarian challenge.**

Thousands of health professionals are heroically battling the virus, putting their own lives at risk. Governments and industry are working together to understand and address the challenge, support victims and their families and communities, and search for treatments and a vaccine.

This document is meant to help senior leaders understand the value chains for COVID-19 vaccines and diagnostics, and where challenges may arise.

**Read more on McKinsey.com →**



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## **Context and how to use this document**

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This document reflects market research on the structure of the value chains for COVID-19 vaccines and diagnostics.

This document is meant to give a visual representation of the elements of the value chains and show where potential challenges could exist.

This document does not represent vetted McKinsey recommendations or guidance on best practices.

Because of the speed of development of the COVID-19 response, the information included is subject to change.

Organizations should consider all local regulations and country-specific circumstances before implementing specific interventions.

# Vaccines



## A. Control tower

A coordinated effort can inform how to best direct and resource agencies of the federal government. This structure can illuminate how end-to-end vaccination capacity is created and utilized.

The control tower's north star could be a clear vaccine strategy—the right vaccine of the right types in the right location in the right quantities at the right times.

The control tower can also serve as a central hub or clearinghouse for communication and education plans for diverse sets of stakeholders.



## B. Develop

*Manufacturing vaccines at scale*

### Selected potential issues

1. Raw materials (e.g., glass vials, stoppers)
2. Capacity (e.g., fill-finish)

### Selected potential actions

1. Partner with manufacturers, regulatory agencies, and others to maintain latest view of supply that is coming online
2. Consider levers to increase capacity of selected supplies and/or bottlenecks (e.g., Drug Policy Alliance for vials)
3. Consider industry-wide pooling of resources
4. Order sufficient amounts



## C. Distribute

*Efficiently getting vaccines to where they are needed*

### Selected potential issues

1. Predictability for downstream partners
2. Clarity of allocation when moving past phases 1a and 1b
3. Resilience of distribution channels when more supply comes online (e.g., cold chain: dry ice, freezers)

### Selected potential actions

1. Increase real-time transparency of where supply is needed most
2. Build resilience in distribution channels, defending against attacks (e.g., cyber, theft) and attempted fraud



## D. Deliver

*“Getting vaccines into arms”*

### Selected potential issues

1. Sites (e.g., shortage, mass vaccination)
2. Health-systems incentives (e.g., payment)
3. Workforce shortages
4. Spoilage at point of care

### Selected potential actions

1. Consider direct payments to sites (e.g., via Medicare)
2. Direct delivery/support of select sites (e.g., those requiring 1b retail pharmacy)
3. Pay for or provide temp staffing
4. Leverage digital to increase throughput (e.g., scheduling software)



## E. Demand

*Matching capacity generated to needs, to achieve efficient and effective utilization*

### Selected potential issues

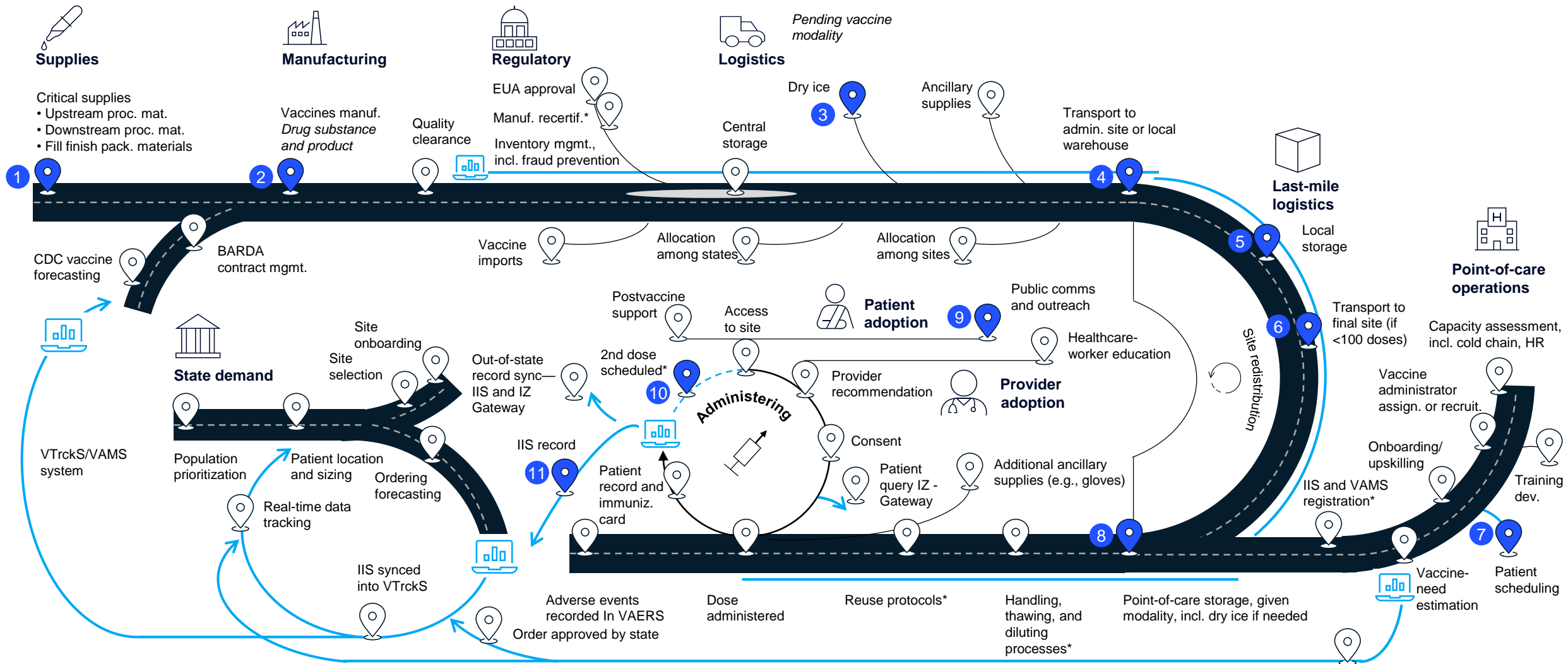
1. Conviction—skepticism among all segments of population, including healthcare professionals
2. Convenience as a barrier, including (a) intrusiveness of questions and (b) time to get vaccinated
3. Cost as a potential barrier

### Selected potential actions

1. Launch wide-ranging communications effort
2. Simplify and streamline steps for administering vaccine
3. Remove cost barriers at all levels

# Vaccines: The common operating picture

- High emergent-threat level
- Potential timing variability
- IT implication



\*If needed.

Note: There are a number of additional steps that need to occur but are already addressed and/or less critical; these include, but are not limited to, reimbursement/coverage and stockpiling.

# Diagnostics



## A. Control tower

A coordinated effort can inform how to best direct and resource agencies of the US federal government (e.g., HHS, FEMA, DOD, SCAG, CDC, FDA, NIH). This structure can illuminate how end-to-vaccination capacity is created and utilized.

The control tower's north star could be a diagnostics strategy that identifies infected asymptomatic and symptomatic individuals using a combination of surveillance testing, individual screening, and individual testing and applying the right diagnostics options in the right use cases at the right frequency.

The control tower can also serve as a central hub or clearinghouse for communication and education plans for diverse sets of stakeholders, on topics such as how testing should be applied and what a test result means.



## B. Develop

*Manufacturing diagnostics machines and supplies at scale*

### Selected potential issues:

1. Debate over federal role in the response
2. Continued persistent shortages of consumables and test kits

### Selected potential actions:

1. Consider levers to increase capacity of select supplies and/or bottlenecks (e.g., DPA swabs, reagents, manufacturing equipment).
2. Rapidly ramp up (20–50x) FDA-approved novel point-of-care or in-home technologies.



## C. Distribute

*Efficiently getting platforms and supplies to where they need to be*

### Selected potential issues:

1. Debate over formal federal role in the response
2. Absence of a common data platform to understand where supply exists

### Selected potential actions:

1. Establish allocation methodologies and build broad understanding.
2. Increase real-time transparency of where supply is needed most.
3. Build resilience in distribution channels against cyber, fraud, etc.



## D. Deliver

*Conducting the tests at scale and reporting results efficiently*

### Selected potential issues:

1. Debate over formal federal role in the response

### Selected potential actions:

1. Increase convenience of sites via number or proximity to workplace (e.g., sufficient coverage of population).
2. Provide guidance on ops excellence (e.g., optimizing lab capacity, providing prompt notification of results).
3. Fund initiatives to address training/workforce shortages.



## E. Demand

*Matching capacity generated to needs, to achieve efficient and effective utilization*

### Selected potential issues:

1. Debate over formal federal role in the response

### Selected potential actions:

1. Articulate and promote benefits of frequent testing.
2. Provide clear guidance on the testing regimens required to resume certain societal activities.

# Illustrative representation of diagnostic-testing supply chain

Degree of supply-chain constraint  
(e.g., capacity limitations, small number of suppliers)

Less constrained     More constrained

Level of vertical integration varies based on OEM, technology, and platform

