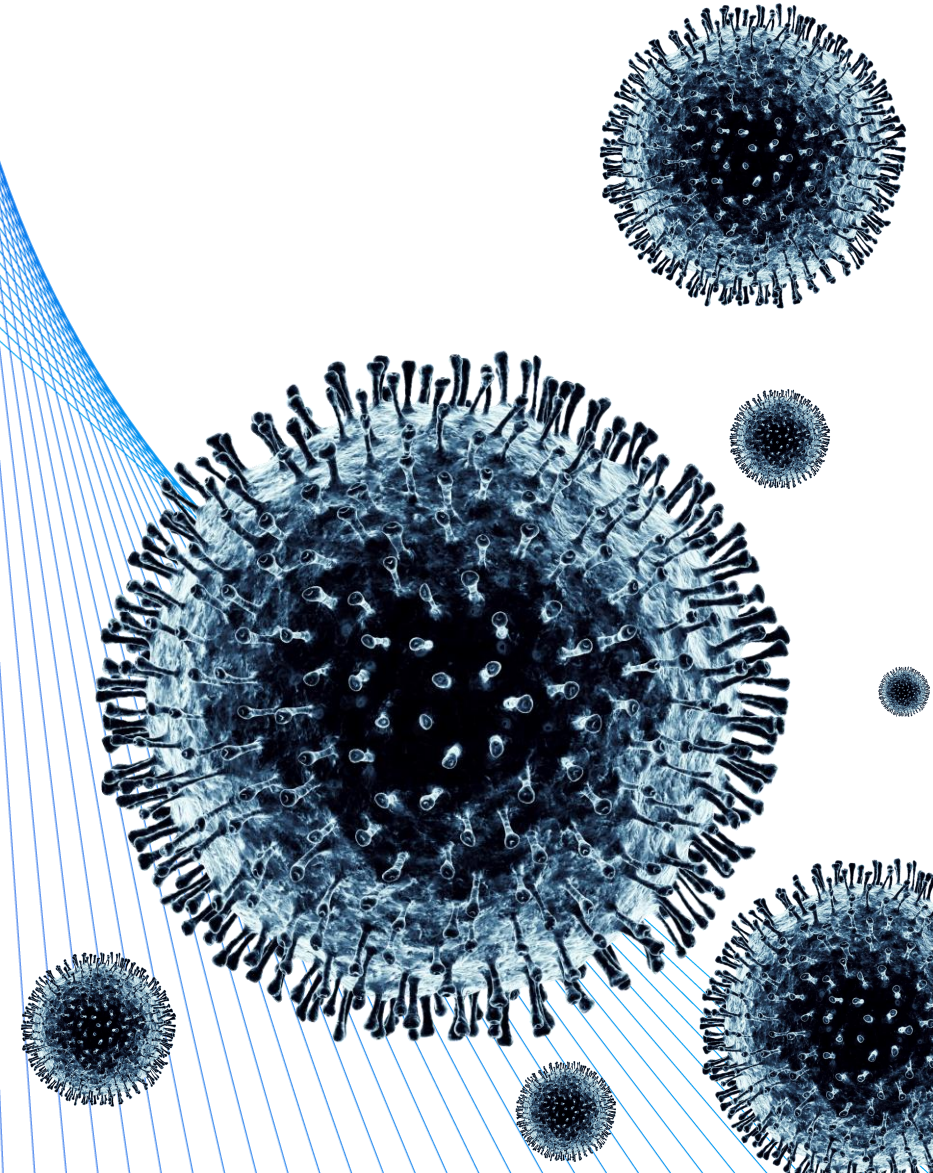# McKinsey & Company

COVID-19 Crisis: US Healthcare Provider and Payer Preparedness

DOCUMENT INTENDED TO PROVIDE INSIGHT AND BEST PRACTICES RATHER THAN SPECIFIC CLIENT ADVICE

Updated: March 10th, 2020

- **COVID-19 is, first and foremost, a humanitarian challenge.** COVID-19 has affected communities on multiple continents, with over 3,500 deaths out of over 105,000 reported cases.

- **Solving the humanitarian challenge is the top priority.** Much remains to be done globally to prepare, respond, and recover, from protecting populations at risk, to supporting affected patients/ families/ communities, to developing a vaccine. To address this crisis, countries including the US will need to respond in an evidence-informed manner, leveraging public health infrastructure and proactive leadership.

- **This document is meant to help with a narrower goal: provide a summarized fact base on the disease to date, insights on potential scenarios, and potential actions US healthcare providers and payers may consider**.

- **In addition, we have developed a broader perspective on implications for businesses across sectors that can be found here:** https://www.mckinsey.com/business-functions/risk/our-insights/covid-19-implications-for-business**.** This supplemental material discusses implications for the wider economy, businesses, and employment; and sets out some of those challenges and how organizations can respond in order to protect their people and navigate through an uncertain situation.

- **For all formal guidance**, you can find **up-to-date information at CDC's COVID-19 website**, with a section specific to healthcare professionals: https://www.cdc.gov/coronavirus/2019-ncov/healthcare-facilities/index.html

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COVID-19 – Epidemiological information
Latest as of March 9, 2020

Impact to date[1]

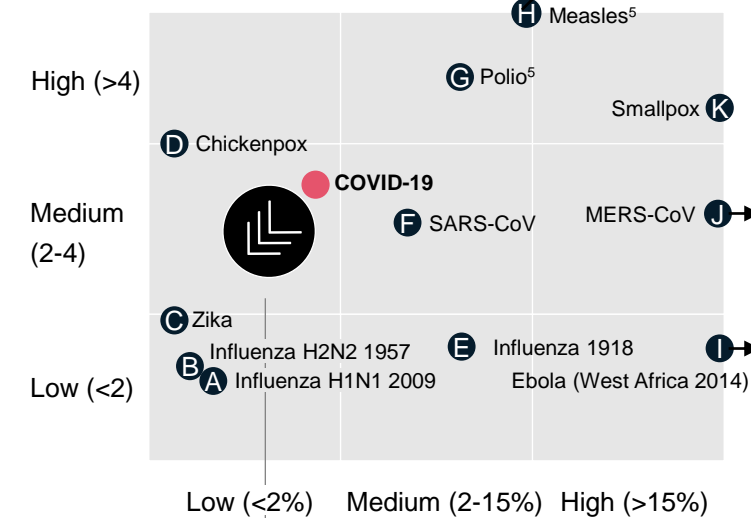|	
>105,000	Reported confirmed cases
>3,500	Deaths
102	Countries/territories affected[2]
43	Number of new affected countries/territories in the last 7 days
53	Countries/territories with evidence of local transmission[3]
17	Countries/territories with at least 100 reported cases[4]
~5%	New reported cases are in China in the last 7 days
~74%	New reported cases are in South Korea, Italy and Iran in the last 24 hours

Features of disease to date[5]

1.5-2x	Higher transmission compared to the flu
Up to 20%	Patients have severe disease
<1/40	Patients die; fatality rates are significantly lower outside Hubei[6]

Comparison to other diseases

Reproduction number[7]
The average number of individuals infected from each infected individual

- H Measles[5]
- G Polio[5]
- K Smallpox
- D Chickenpox
- COVID-19
- F SARS-CoV
- J MERS-CoV
- C Zika
- B Influenza H2N2 1957
- A Influenza H1N1 2009
- E Influenza 1918
- I
- Ebola (West Africa 2014)

High (>4)
Medium (2-4)
Low (<2)

Low (<2%)   Medium (2-15%)   High (>15%)

Case fatality ratio[6]
Proportion of deaths among confirmed cases

Early identification of the disease, **intensification of viral control methods**, and **deployment of treatments** (when available) will drive down the reproduction number and reduce case fatality

Global considerations

- Numbers of affected countries has risen significantly, with 43 new countries/territories with cases in the last 7 days (102 countries/territories affected in total)

- Number of countries/territories with signs of local transmission[3] is rising every day (~5 more countries/day in the last 7 days)

- Reported cases in Italy in Iran passed 5000 total cases in the last 24 hours

- Ability to contain disease in the Italy-, Iran- and US-centered complexes, and countries within transmission complexes, will be critical in the next week to limit propagation

China (outside Hubei)

- Daily incremental case count remains low for the last 7 days; fewer than 1 reported cases per million residents

- Overall downward trends in the number of confirmed cases reported

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1. Latest numbers are available from a number of sources, including daily situation reports from the World Health Organization
2. Previously only counted countries; now aligned with new WHO reports;; excluding cruiseship | 3.   Previously noted as community transmission in McKinsey documents; now aligned with WHO definition.
4. >=100 reported cases in China, South Korea, Japan, Singapore, Italy, Germany, France, Spain, Switzerland, UK, Netherlands, Belgium, Sweden, Norway, Austria, Iran and US
5. Evidence on exact numbers are emerging, however expected to decrease as viral containment measures intensify and treatments are developed
6. Case fatality numbers are reflective of the outbreak setting and depend on a number of factors, including patient's age, community immunity, health system capabilities, etc.
7. In outbreak setting or at the beginning of the introduction of a new disease
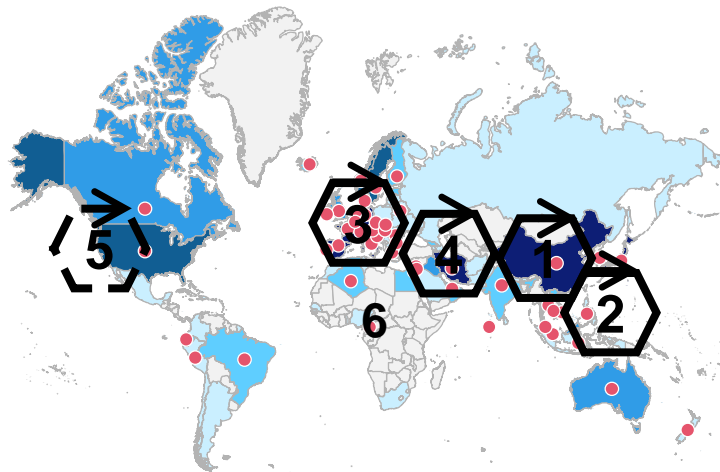
Four major transmission complexes exist, with a fifth emerging

A complex combines confirmed local transmission, >100 confirmed cases, tough-to-prevent people movement

⬡ Complex with mature/on-going propagation   ⬡ Complex with early propagation

5 complexes with COVID-19 propagation

Deep economic integration and regular human and material movements mean that it will be tough to limit virus propagation within these complexes

■ >250 reported cases   ■ 10-49 reported cases
■ 100-249 reported cases   ■ <10 reported cases
■ 50-99 reported cases   ● Suspected local transmission

Transmission complexes	Trend[1]	Total cases[5]	Total deaths[5]
1 **China complex:** Mature propagation	➘ (green)	**80,859**	**3,100**
2 **Asia (excl. China) – South Korea centered complex:** Ongoing propagation	➚ (red)	**8,021**	**61**
3 **Europe – Italy centered complex:** Ongoing propagation	➚ (red)	**9,456**	**255**
4 **Middle East[3] – Iran centered complex:** Ongoing propagation	➚ (red)	**6,180**	**149**
5 **Americas – USA centered complex:** Early propagation	➚ (red)	**900+[6]**	**30[6]**
6 **Africa:** Limited to no propagation[4]	➙ (grey)	**27**	**0**

1. Indicating the trend in incremental reported cases per day | 2.   Includes Western Pacific (excl China) and South-East Asia WHO regions | 3.   Eastern-Mediterranean WHO region
2. 4.   <20 cases in Algeria and <5 cases in Senegal, Cameroon, South Africa, Nigeria and Togo | 5.   Excludes Cruise Ship | 6.   Does not reflect official WHO data; data per NYT

To date, there are potentially over 900 reported cases in the US

Growth in cases as of March 10, 2020

Trend of confirmed COVID-19 cases in US[1]

Approximate
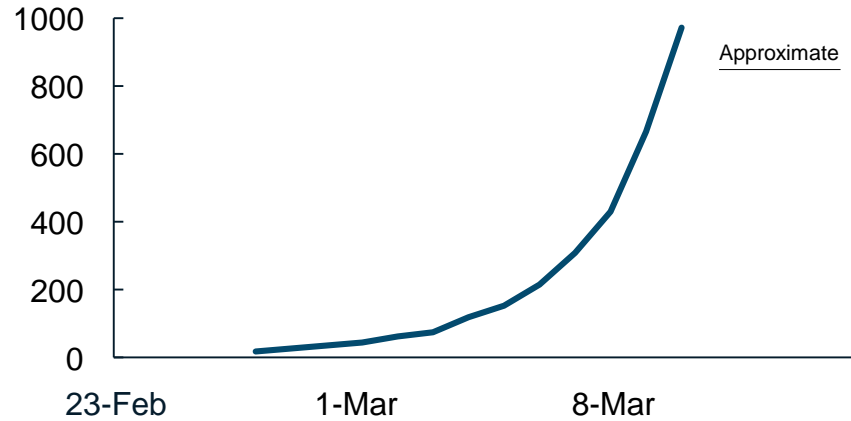
973 total cases reported by NY Times with significant growth in the last week

States with cases in the US[1]

- 100+ reported cases
- 21-50 reported cases
- 10-20 reported cases
- 1-9 reported cases
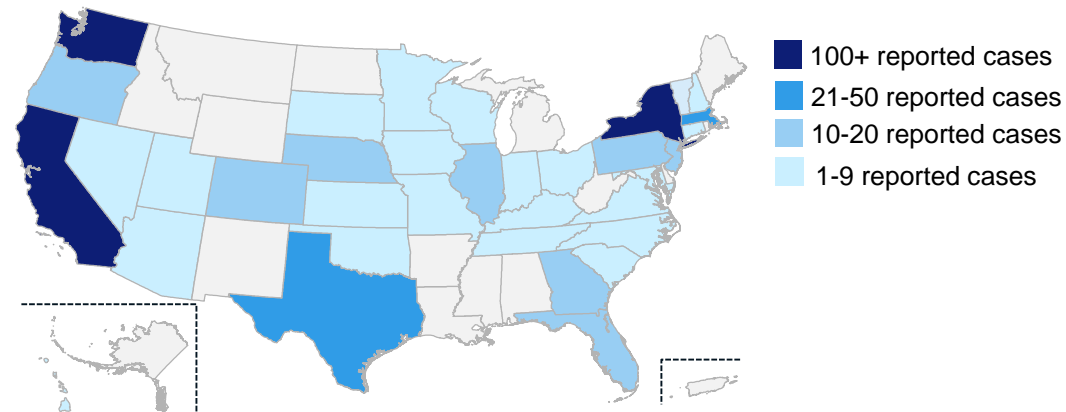
900+
Total cases[1]

37
States with cases of COVID-19[1]

30
Deaths due to COVID-19[1]

US media sources are sometimes ahead of official WHO / CDC case counts; we are showing the highest widely reported figure

1. As of March 10, NYT reports 973 confirmed cases, state and local health agencies, hospitals; Approximate daily cases only as exact case reports are from snapshots

Source: New York Times, Johns Hopkins CSSE, CDC

US: Three scenarios for COVID-19 spread

US situation could evolve one of three ways, which can inform contingency planning

	Mild: Limited national spread, quick recovery	**Moderate: Largest metro areas impacted**	**Severe: Generalized spread**
Degree and rate of spread[1]	**Case growth limited to a few limited clusters** (including the emerging ones in Washington, Northern California, and NY) and isolated cases in other areas. **Total cases < 10K**	**Several major clusters of disease (metro areas / regions) with less impact in other parts of the country.** Seasonality of the virus **leads to a plateau in new cases by end of Q2. Total cases 10K – 500K**	Case transmission is not contained, **accelerates in the near term, continues over a longer duration (>3months)** and becomes widespread - **ultimately reaches 500K – 10M+ cases** before plateauing towards end of 2020
Severity of disease	**Most cases are identified early**, limiting severity of disease. **Optimal clinical care** , especially of very sick patients, **limits mortality to ~0.5%**	Despite significant acceleration in cases, **well-prepared/resourced hospitals address higher volume and maintain mortality rate at ~0.5%**	**Health systems challenged** by exponential case growth; while **average mortality remains at 0.5%,** higher disruption in areas with lower care access and lesser prep-ared/equipped health systems drives **pock-ets of higher mortality** upwards of 1.5%
Affected regions	Cases are **concentrated in 3-5 limited clusters;** major metro areas with extensive international flight connectivity are at greatest risk	**3-5 metro clusters see cases in the thousands -** low **hundreds of thousands**. More limited cases in other areas	Widespread throughout country, with **all major US cities experiencing a min 4 week quarantine in March/April**, with some areas extending quarantine dependent on spread

As US data is reported, scenarios will be updated in real time

1.   Rates and cases reported here represent confirmed cases, not symptomatic patients

How could this play out in a major metropolitan area?
Several factors to consider in major metropolitan cities for COVID-19 burden

1

Coastal cities and urban centers which have **high inbound and outbound travel** will likely host the largest growth in new cases

2

Local transmission (i.e., patients with no ties to international sources) becomes primary mode of spread in large urban centers where population density increases proximity to asymptomatic and mildly symptomatic patients. Local transmission is also possible in secondary town / rural areas

3

Public health measures such as social distancing and work from home recommendations are **likely to vary by city** based on local disease severity and population tolerance for restrictions

4

Access to healthcare will also vary with major metropolitan areas having the greatest access

Representative major metropolitan area: Scenario of COVID-19 disease burden

Scenario US disease spread based on China experience

Approximate forecast of patients infected with COVID-19 over 66 days[1] *(K)*

	Total COVID-19 patients	% population infected
	375K	2.5%
	62K	0.4%
	2K	0.02%

Illustrative Approximate
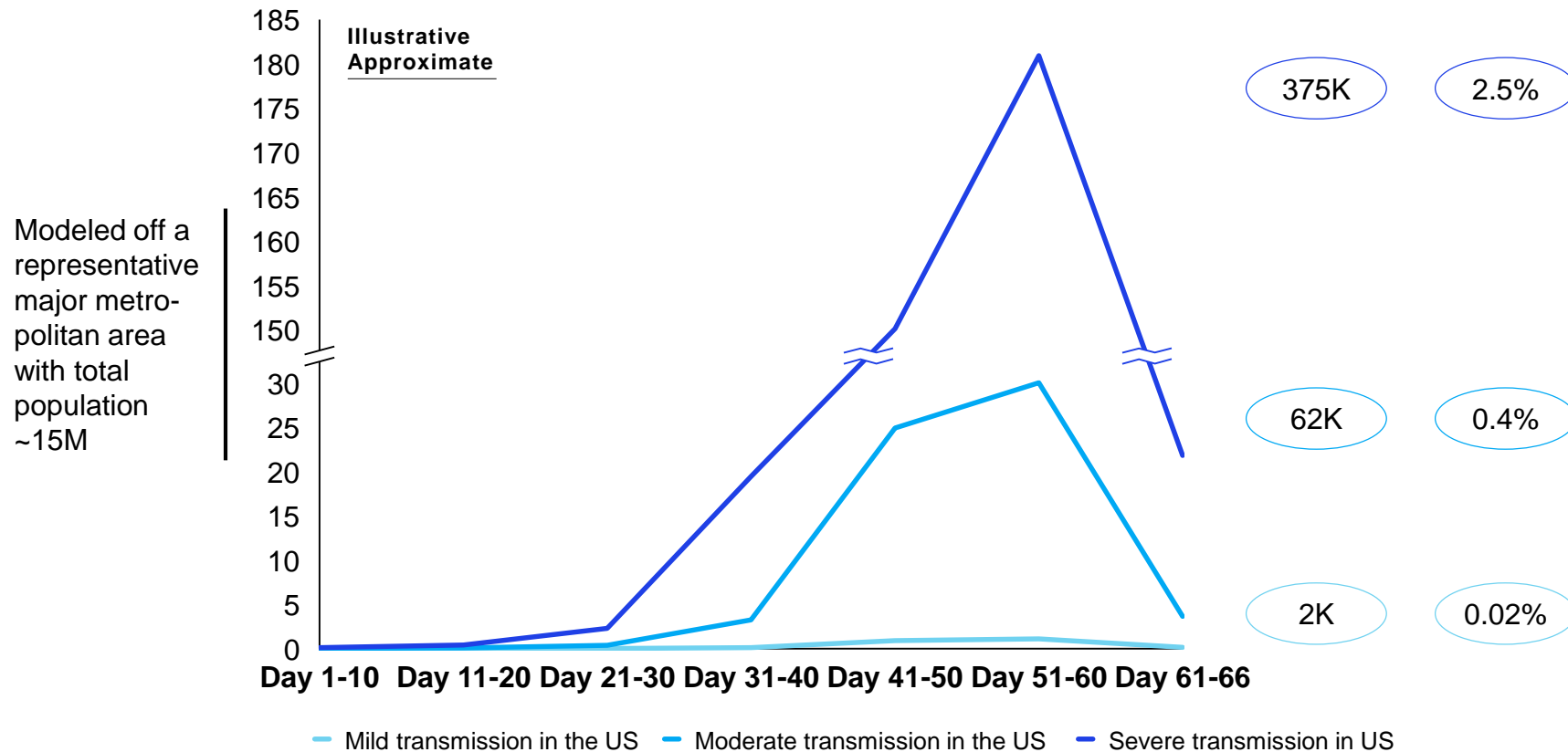
Modeled off a representative major metropolitan area with total population ~15M

185
180
175
170
165
160
155
150
30
25
20
15
10
5
0

Day 1-10 Day 11-20 Day 21-30 Day 31-40 Day 41-50 Day 51-60 Day 61-66

— Mild transmission in the US   — Moderate transmission in the US   — Severe transmission in US

Key assumption:

Time course and percentage of infections over time mapped according to China experience as reported in JAMA

Multiple factors likely will make the US curve different:

1. Number of entry points
2. Public health containment procedures
3. Access to healthcare (including diagnostics)
4. Patient characteristics
5. No zoonotic event in the US

1. Cumulative - line indicates the number of new COVID-19 cases predicted at each time step
2. Calculated as adult ICU beds + general medical/surgical adult beds + burn care beds + other special care beds + intermediate nursing care beds

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and potential US scenarios

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- Care (bed) capacity

- Clinical workforce

- Clinical operations

- Supply chain

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There are 10 major considerations for the US delivery system in response to the COVID-19 outbreak

Detail in appendix

Workforce readiness

1. Establish a multi-level, workforce-wide communication strategy utilizing CDC healthcare guidelines, including identifying who is eligible to treat COVID-19 patients and targeted communication for those at different levels of probable patient contact
2. Develop action / contingency plan for increased staffing demand (e.g., uptraining / cross-training personnel, recruiting, contract labor)
3. Establish protocol to monitor workforce health in the context of COVID-19 (e.g., burnout, PPE-related pressure ulcers, staff infection) and establish systems to address needs

Supply availability

4. Secure supplies for the setup of Airborne Infection Isolation Rooms (AIIR), e.g., HEPA filters
5. Plan for the procurement of critical supplies, if not yet begun

Surge capacity

6. Assess AIIR bed availability for infected and at-risk patients
7. Identify alternate sites for diagnosis/ triage (e.g., tents, parking lots/ vehicles, non-clinical space) and alternative diagnostic processes (e.g., diagnosis prior to waiting room entry, remote communication with patients requesting diagnostics/ exhibiting early symptoms)
8. Similarly, identify alternative treatment areas in case of surge (e.g., locations that can be converted into treatment wards (e.g., unstaffed floors, physical therapy space), options for patient transfer to regional referral centers
9. Establish systems/protocols to shift care of non-critical patients (e.g., patients primarily in need of social support) and establish proactive communication strategy for patients and staff about alternative options for treatment in non-acute scenarios (e.g., telehealth, home care)

Governance

Critical enabler

10. Prepare for a "medium-term" COVID-19 management strategy - establish a Emergency Operations Center
    — People: Designated COVID-19/ emergency response program lead (with back ups identified in case of burnout/clinical need)
    — Performance: Dashboard for continuous monitoring of key operational (e.g., AIIR isolation, volumes), financial (e.g., supply cost variability/ advance purchasing, elective volume declines) indicators
    — Top management: clarify key new responsibilities for top teams in context of potential epidemic

Key questions to ask leaders in your organization
Detailed checklist of actions in appendix

Chief Operations Officer (or equivalent)

Do we have an up-to-date understanding of **facility and workforce capacity,** and daily ability to monitor/ adjust?

Do we have **relevant supplies in stock** and an approach to rapidly sourcing **and distributing** in the case of shortages?

Do we have effective **plans for managing patient volume (e.g., delaying elective volume) if required**?

Have we established inpatient / ED clinical **operational workflows** to handle the specialized needs of COVID19 patients?

Chief Administrative Officer (or equivalent)

Do we have the right **safeguards and policies for employees**, including right frequency and rigor of updates?

Have we established a best in class **communication cadence** with our employees, both caregivers and non-caregivers?

Do we have a strategy for **hiring or temporarily contracting** staff to support expanded telemedicine, telephonic and other capabilities?

Chief Financial Officer (or equivalent)

Have we **pressured tested our financials** (including P&L and working capital) given potential scenarios, identified **strategies if required to mitigate risk (e.g., credit)**, and prepared appropriate **investor messaging** on biggest areas of exposure (e.g., softening elective volume)?

Have we evaluated the potential **financial implications** of increased patient utilization of telemedicine?

Have we thought about the potential financial implications associated with **reduced elective volume**, and strategies to mitigate that?

Chief Information Officer (or equivalent)

Have we established systems for the real-time **collection and analysis of data** to rapidly capture and integrate learnings?

Have we established **data sharing agreements** with local, state and / or national public health agencies?

Chief Nursing Officer (or equivalent)

Do we have a clear plan to address **to address workforce shortages and increased care demand**, including sourcing from other network providers, contracting and cross-training?

Chief Medical Officer (or equivalent)

Have we considered **dedicated clinical workforce teams** for COVID-19 patients as a potential strategy to handle increased demands?

Are all providers aware of the **latest CDC guidelines** for treatment of potential COVID-19 patients?

Have we developed **protocol and processes for reducing elective volume to help address and mitigate capacity concerns** (e.g., elective PCI, orthopedic surgeries, gastroenterological procedures)?

Are we actively planning for **remote/virtual care** protocols?

Chief Patient Safety Officer (or equivalent)

Do we have clear **protocol and systems to assess adherence to clinical safety** and quality guidelines (e.g., appropriateness of COVID-19 diagnostic testing)?

Chief Executive Officer (or equivalent)

Do we have the right **communication strategies with patients and providers** and, as necessary, external constituents (e.g., public health authorities, employers)?

Do we have the **right systems and dashboard setup** to continuously monitor key operational, administrative and epidemiological indicators?

Given **potential reductions in outpatient elective volume** as well as selective inpatient service line volume increases, have you developed **strategic initiatives to mitigate these forces in real-time or downstream** when COVID-19 burden drops?

Have we developed **partnerships with payers, vendors and local businesses** to effectively execute on latest clinical and operational recommendations?
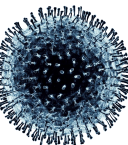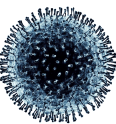
Agenda

Recent relevant epidemiology
and potential US scenarios

Provider implications

- **Care (bed) capacity**

- Clinical workforce

- Clinical operations

- Supply chain

Payer implications

Federal actions

Appendix: Detailed checklists

Representative major metropolitan area: Given disease burden and CDC recommendations, providers could experience capacity constraints

CDC currently recommends negative pressure beds for infected patients

US representative major metropolitan area bed availability and requirement given each COVID-19 potential scenario[1]

Negative pressure adult beds

Negative pressure adult beds (20% of existing capacity)[2] — 250-350

ICU adult beds[3]

Acute care adult beds[3]

Adult beds (20% existing capacity)[2] — 350-550 — 2-3.5K

Beds required in Mild scenario — 150-300

Beds required in Moderate scenario — 5-8K

Beds required in Severe scenario — 32-44K

Given this, implications on workforce, supply chain, and facility (bed) capacity should be considered and proactively planned for

Key assumptions:

1. Evaluates peak infection period only where the most patients will need to be cared for at the same time

2. 20% of bed capacity in each category of beds can be freed up to care for COVID patients

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1. Calculated based on approximate peak time/number of hospitalized patients across 66 day period of COVID-19 outbreak in a representative major area in the US, this approximation provides a slight underestimate because it takes an average patient volume over 10 days and does not factor for patient overlap between 10 day periods (i.e., patients that stay in the hospital for more than 10 days)
2. In representative major area in the US - Assumes hospitals can free up 20% capacity of all bed types
3. Calculated as per AHA 2018 reported bed counts: ICU beds = medical/surgical intensive care beds + cardiac intensive care beds + other intensive care beds | acute care beds = general medical/surgical adult beds + burn care beds + other special care beds

Increased COVID-19 cases may require several interventions to manage facility capacity
Checklist

Non-exhaustive

❑ Estimate the maximum capacity for admissions based on availability of beds, clinical workforce, and adaptability of facility space

❑ Confirm the number and location of Airborne Infection Isolation Rooms (AIIRs) available in the facility; consider converting spaces to become AIIRs where appropriate

   ❑ Document each AIIR has been tested, is effective (e.g., sufficient air exchanges, negative pressure exhaust) and meets CDC criteria

❑ Identify potential care areas for patient overflow for diagnostic holding or potential COVID-19 ward (e.g., auditorium, gym, PT treatment space, lobby, space for outdoor tents, parking lot)

❑ Establish protocols for utilizing alternative sites for patient evaluation / treatment:

   ❑ Activation triggers for establishing alternate sites

   ❑ Outsourcing care of non-critical patients to appropriate alternative treatment sites (e.g., adapt outpatient departments for inpatient use, home care for low-severity illness, connecting patients with social needs to community-based services organizations, hoteling)

   ❑ Establishing a contingency plan for inter-facility patient transfer; verify availability and resources required for patient transportation

❑ Coordinate with other area hospitals on referral protocols and clarify your facility's position within broader geographic network

❑ In coordination with public health authorities and other area health systems, identify additional sites that can be converted to patient care units (e.g., hotels, schools, community centers, gyms); develop operational plans (staffing, equipment, supplies, etc.)

❑ Coordinate with health authorities, neighboring hospitals and private practitioners to define roles and responsibilities for each member of the local healthcare network to ensure continuous provision of essential medical services throughout the community

❑ Activation trigger and plan for initiating facility lock-down and / or limited access and entry

Agenda

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and potential US scenarios

Provider implications

- Care (bed) capacity

- **Clinical workforce**

- Clinical operations
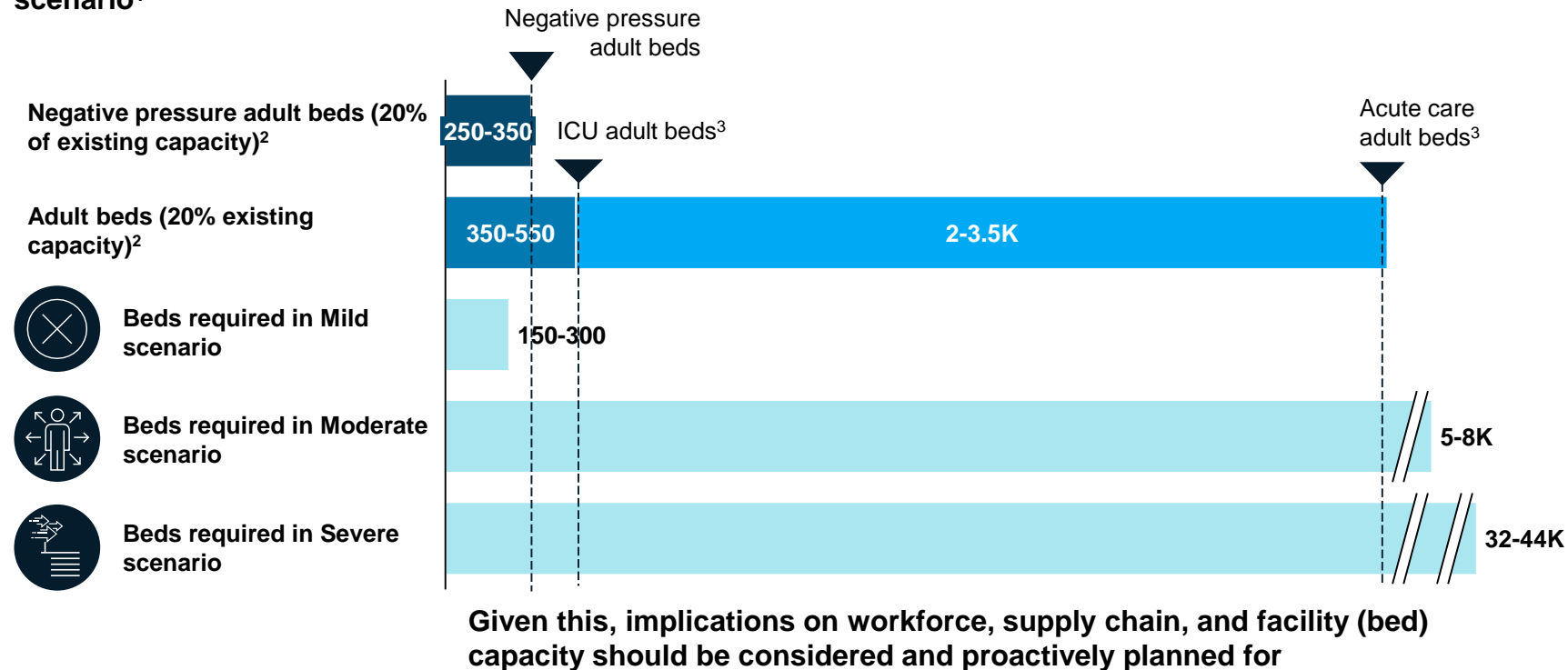
- Supply chain

Payer implications

Federal actions

Appendix: Detailed checklists

Hospitals will likely need to plan for increased staff based on reduced nursing workforce and increased patient burden

Scenario of representative medium sized hospital (300-500 beds) during peak period of COVID-19 epidemic

Nurse FTE reduction due to factors related to the COVID-19 epidemic *(per 100 productive[4] FTE nurses)*

Workforce needed to care for patients during the peak of the epidemic[5] *(per 100 productive[4] FTE nurses)*

100

4-8

10-12

80-86

14-20

22-28

| Base / typical nurse workforce staffed[1] | Loss in nursing workforce due to COVID-19 infection[2] | Loss in nursing workforce due to calling-out[3] | Remaining nursing workforce available | Incremental workforce needed to make up for loss | Workforce needed in mild scenario | Workforce needed in moderate scenario | Workforce needed in severe scenario |

Moderate and severe scenarios will likely not be limited by workforce availability but rather bed availability – for example, possible solutions would first need to address transferring patients, building new temporary hospital wards, etc.

Potential methods for increasing workforce to meet new demand include (non-exhaustive):

- Request overtime shifts
- Hire additional agency workforce
- Collaborate with surrounding hospitals to share workforce in high/lower effected geographies areas and/or transfer patients
- Reschedule elective procedures / admissions

Additional mitigating factors detailed on next page

1. Assuming a hospitals full workforce is staffed at 80% bed capacity, all workforce measured in full time equivalents (even if the workforce includes some part time employees)
2. Assuming a 3.8% health care personnel infection rate - same rate as China as of 2/24/2020; Assuming an additional ~4% health care personnel quarantine rate due to unprotected exposure
3. Assuming a call-out rate of 10-12% (give that a normal call-out rate is ~5%) due to inability to care for COVID-19 patients due to caregiver or childcare needs, immunocompromised status, etc
4. Productive workforce (e.g., not including training, sick days, etc.)
5. Does not assume an even distribution of COVID-19 patients across all hospitals

Mitigation strategies to consider given increased nursing workforce demands

Not exhaustive

Detailed checklists follow

1. Assess potential for **flexing up *existing nursing workforce:***

   - Begin to **collect data and availability on overtime** – have staff indicate which days / times they might be willing to pick up additional shifts
   - Assess ability for **per diem and part time staff** to take on more shifts
   - **Take stock of cross trained RNs** across the hospital (e.g., those who can be in ED and med-surg)
   - **Centralize staffing coordination** (including intake for call offs) and create central oversight and coordinate resources to balance with highest demand
   - **Map and eliminate all non-productive activities**

2. Assess potential for **utilizing *new nursing workforce:***

   - **Assess ability to increased access to temporary agency** / contingency staffing
   - **Evaluate workforce pipeline** and consider accelerating hiring
   - **Collaborate across regions** for workforce staffing

Agenda

Recent relevant epidemiology
and potential US scenarios

Provider implications

- Care (bed) capacity

- Clinical workforce

- **Clinical operations**
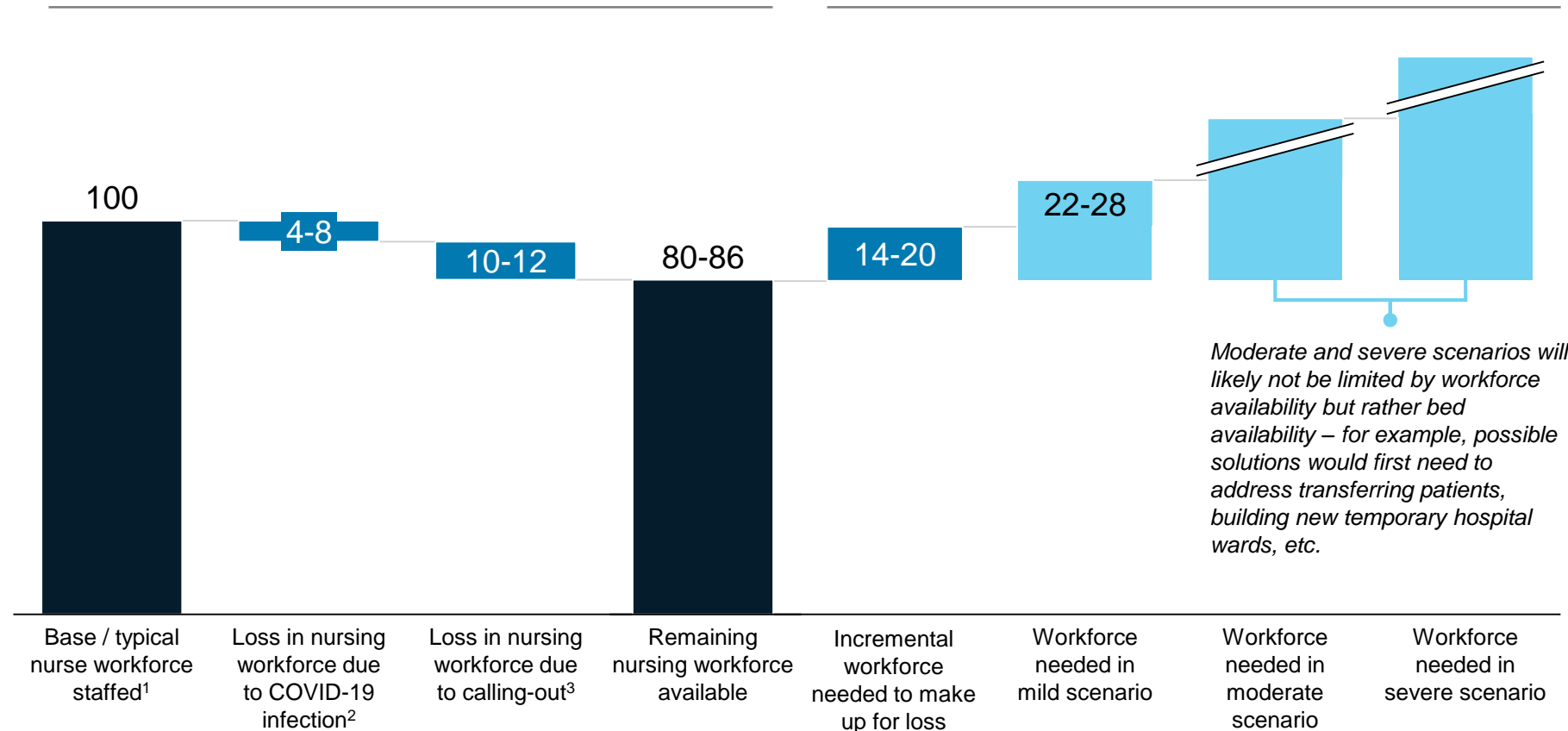
- Supply chain

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Appendix: Detailed checklists

There are implications for clinical operations along 3 phases of the patient journey

Pre-diagnosis (prior to seeking care)

Patient population

Patient population that providers should be **proactively engaging remotely** to educate, assess risk if relevant, and provide guidance / precautions on visiting sites of care

Diagnosis

Patients initially screened (remotely or in person) and **identified for need to undergo COVID-19 diagnostic testing**

Includes patients undergoing diagnostic testing in ED and outpatient setting (e.g., primary and urgent care)

Confirmed positive

Patients with confirmed positive test results via local and/ or CDC lab testing

Includes patients whose **symptoms are sufficiently severe to warrant hospitalization and concerning history to warrant isolation** (excludes home quarantine patients)

Across each phase, providers should also consider developing standardized protocols for proactively engaging patients' families, caretakers and employers throughout their care journey

For patients not diagnosed, providers can establish a number of offerings to minimize unnecessary exposure to sites of care

Five elements to establishing a strategy to prevent overcrowding sites of care

Pre-diagnosis ❯ Diagnosis ❯ Confirmed

Establish COVID-19 telephonic support / care navigation

Designate a dedicated **COVID-19 patient advice line**

Establish proactive **multi-channel communication options** for patients to express concerning symptoms

Via phone and text communications, push **patient portal registration** to access updates and tools

Develop protocol to **screen** scheduled patients before they arrive to a care site for a visit

Develop COVID-19 web- and app-based resources/ care navigation

Develop a library of CDC-aligned COVID-19 **educational resources**

Design a COVID-19 patient **self-assessment tool**[1] based on the latest local and CDC public health guidelines

Establish a process to alert providers if patients have positive self assessment results; engage in **proactive outreach**

Strengthen telemedicine services where appropriate

Offer **telemedicine options** to patients who do not need to be seen at sites of care

Leverage existing **remote patient monitoring capabilities** for patients suspected positive, quarantined at home and not needing hospitalization

Prepare and leverage home health services

Uptrain home health vendors on CDC guidelines and how best to engage with patients

Establish protocol with home health vendors / services to **proactively screen patients for COVID-19 prior to visits**

Consider ability to **develop program to provide supportive care** to suspected and confirmed COVID-19 patients in-home

Partner to enable **in-home specimen collection**, when it becomes available

Engage local agencies and payers

Establish relationships with local employers, businesses, community agencies, and primary care provider networks (e.g., retail clinics) to enable scaled access your services

Work with payers to **cover telehealth services** at parity in the short term, where currently not covered

Given urgency, providers should prioritize strengthening existing offerings and deploying them as quickly as possible and limit investments in new capabilities

1. Continuously monitor whether the CDC or other third party vendors have developed app- or web-based screening assessment tools

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For suspected COVID-19 patients, providers can establish a series of operational systems and controls

Ambulatory and emergency service operations can be enhanced to control spread of suspected COVID-19

Outpatient / ambulatory services

Consider designation of separate COVID-19 **ambulatory testing sites**
- To the extent possible, equip all or select sites with **isolation / negative pressure capabilities**

Develop protocol based on pre-diagnostic criteria to **route patients** to designated diagnostic testing sites

Consider establishing **dedicated staff** to operate testing sites; train staff on appropriate collection and handling of specimen, per CDC / public health guidelines
- Establish a combination of **engineering and administrative controls** to minimize patient and workforce exposure to suspected cases

Establish protocol to route patients to the nearest available **emergency room or other designated clinical sites** based on clinical guidelines as set by the CDC

Develop protocol and partnerships with **out-of-network providers** (e.g., retail clinics, urgent care) to address the needs of patients who have concerning symptoms and require hospitalization

Reschedule non-urgent OP visits as necessary

Emergency room / pre-triage services

Consider establishing a separate **diagnostic area outside core facilities** (e.g., tent outside ED) to perform screening and clinical assessments; also consider ways to rapidly triage and discharge patients that do not require emergency care but remain practicing within EMTALA guidelines

Consider **redesigning the ED to establish a separate section for COVID-19 triage / assessment,** including designated entrance, triage area, staff, lavatory, supplies and color-coded bedding/linen/scrubs – all to be separate from rest of patients

Establish protocol with **emergency medical services** (EMS) to ensure drivers contact receiving EDs or facilities to flag at-risk incoming patients

Develop and train staff on protocol for **appropriate handling** of suspected COVID-19 patients; consider assigning **dedicated staff** to support at-risk patients

Isolate suspected COVID-19 cases in an AIIR, if available

Transfer or redirect suspected COVID-19 patients requiring hospitalization if AIIR is not available to a **local hospital where AIIR is available**, where possible

Discharge suspected COVID-19 patients not requiring hospitalization **home** (in consultation with state / local public health authorities) as appropriate

Providers should aggressively monitor the availability of the latest COVID-19 diagnostic tools to help improve diagnostic cycling

These perspectives are intended to build from CDC and other guidance based on operations and management experience. Please continue to consult CDC, state health department, and medical societies for the most up-to-date guidance. These perspectives are not intended as a substitute for professional medical advice, diagnosis or treatment. Any actions impacting clinical decisioning should be vetted by the appropriate quality committees within your organization.

For confirmed COVID-19 patients, providers should adhere to a series of medical society recommendations

Pre-diagnosis ⟩ Diagnosis ⟩ **Confirmed**

General inpatient medical care

Per CDC / society recommendations:

Maintain **patient isolation** in AIIR with strict adherence to CDC / public health guidelines for infection prevention and control; consider **color-coded bedding and linen for patients**

Given current guidelines that suggest maximizing in-room / portable testing, plan for likely **operational bandwidth constraints** across likely impacted departments / supplies (e.g., radiology technicians, x-ray machines etc.)

Establish protocol for **discharging patients** according to the latest CDC guidelines

Reschedule non-urgent IP procedures as necessary

Surgical / procedural / anesthesia inpatient care

Per CDC / society recommendations:

Develop a **contingency plan** in anticipation of **likely reductions in block utilization** due to need for COVID-19 patients to recover in operating rooms (ORs)

Develop a plan to address likely need for **increased post-anesthesia care unit** (PACU) **nurse coverage** to support COVID-19 patient recovery in ORs

Establish processes for **transport of COVID-19 patients** from the OR to floors/ICUs

Consider establishing **designated ORs / procedure rooms** to treat patients; train staff / procedural / OR teams accordingly

Workforce and environmental considerations

Consider identifying **dedicated staff (e.g., hospitalist team)** to care for COVID-19 patients; ensure dedicated staff are easily identifiable by other workforce (e.g., color-coded attire)

Deliver **education / training** to clinical and nursing workforce to prevent transmission of COVID-19, including refresher training on latest CDC / public health guidelines

Regularly **clean and disinfect environmental surfaces**, as well as non-dedicated, non-disposable medical equipment, with EPA-registered hospital-grade disinfectant, per CDC recommendations

Establish a **contingency plan for low-supply specialties** (e.g., pediatric neurosurgery) in the case of reduced capacity

These perspectives are intended to build from CDC and other guidance based on operations and management experience. Please continue to consult CDC, state health department, and medical societies for the most up-to-date guidance. These perspectives are not intended as a substitute for professional medical advice, diagnosis or treatment. Any actions impacting clinical decisioning should be vetted by the appropriate quality committees within your organization.

Health officials are urging providers to use digital and telehealth to triage, and some providers/ payers are responding

The use of virtual channels will be a particularly valuable lever to help prevent overcrowding

Not exhaustive

The Center for Disease Control and World Health Organization are urging hospitals and clinics to look at **expanding uses of virtual health services to help triage the sick and keep the worried out** of already crowded medical facilities

Blue Cross of North Carolina started to **cover telehealth services** the same as in-person provider visit (at parity) starting March 6

UnitedHealthcare **covers 24/7 telemedicine services** delivered through Teladoc, American Well and Doctor on Demand across the United States

UCSF Health's Existing flu **digital health tools** are being used to triage for coronavirus

Hospital is proactively reaching out to patients with scheduled visits for flu and cold symptoms to do **video calls** instead

One Medical established its **virtual health program** in response the Swine Flu / H1N1 in 2009, enabling 24/7 care over video chat
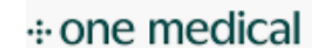
Vendors are **using CDC guidelines to screen users** for coronavirus

China is **moving many services online** that were once done physically, to ensure continuity of care (e.g., prescription refills)

Seeing a **spike in the use of virtual services** – vast majority are healthy people trying to stay out of the hospital

Agenda

Recent relevant epidemiology
and potential US scenarios

Provider implications

- Care (bed) capacity

- Clinical workforce

- Clinical operations

- **Supply chain**

Payer implications

Federal actions

Appendix: Detailed checklists

Healthcare provider supply chain preparedness

Solutions to consider as COVID-19 impacts medical and pharmaceutical supply lines

Overview

As COVID-19 cases increase, **providers will face pressure** in supplying key protective and treatment items

Protocols, visibility and collaboration are key to mitigating supply chain risk

Centralized Buying, Inventory Balancing and Distribution

Control buying at system level and ensure supplies reach greatest point of need

Prioritize at-risk supplies and pharmaceuticals for increased tracking; pursue alternative buying and maintain continual line of sight for key products and expected inflow of supply

Develop a system for proactive rebalancing and internal distribution system involving one (or more) of the following components:

- Current patient inventory days on hand against current burn rate
- Expected inflow of MedSurg and Rx supplies
- Expected epidemiological outlook, site maximum capacity and critical access hospital status

Continued open dialogue with suppliers, distributors and public agencies critical for contingency planning[2]

Clinical Conservation and Supplies Security

Promote conservation and establish clinical scenario plans

Establish clinical protocols around the use of at-risk supplies by situation:

- Develop tiers of clinical scenario planning against supply levels
- Communicate plans to clinical site leaders and ensure all care providers are aware and adopt

Ensure distribution of at-risk items is controlled (i.e. by supply chain group) and limited to clinicians and patients only

Explore alternative product use and sourcing when possible
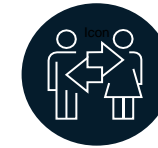
Home Health and Alternative Points of Care

Prepare distribution plans as care delivery methods evolve

Create distribution strategy to emerging care delivery response models – these include shift to home health and new clinical sites (i.e. gyms, parking lots, community centers)

- Collaborate with clinical leaders to understand expected care delivery and alternative site plans
- Engage local supply chain operators to discuss receiving and stocking (i.e. linked to local hospital, new PARs)
- Proactively engage key distributors to ensure they adjust delivery accordingly
- With physician input, create standard supply packages for home health

Increased and constant stakeholder collaboration between providers, suppliers and public agencies will promote the success of the above

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1. Recommended to begin with critical PPE supplies and subsequently scale to larger list of items listed on Supply Chain Job Aid (PXX)
2. E.g. coordinating on emergency supplies and public response

Tactical steps to consider on supply chain with COVID-19 response

1. Appoint a single lead to oversee all COVID-19 response and represent supply chain organization at enterprise meetings (leaving head of organization to organize business continuity)

2. Establish supply chain organization critical response team integrating stakeholders from sourcing, distribution, supply chain operations, communications and project management

3. Integrate supply chain and logistics critical response team to overall enterprise emergency response (i.e. ensure single lead above speaks as single representative for organization)

4. Ensure resiliency of procure-to-pay system in reduced productivity scenarios (e.g. work from home) to ensure critical supply orders received and dispatched through crisis response

5. Engage critical vendors to promote collaboration and visibility early and throughout situation

6. Connect with local, state and federal stakeholders and promote open line of communication

7. Prepare remote (i.e. work from home) contingency plans and inform to ensure all leaders prepared

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There are nine tactical actions for payers to consider in anticipation of COVID-19 transmission (details follow)

Employee engagement and operations

Care delivery

Customer engagement

State/ local leadership

Engage your employees to reassure and prepare them, updating work-from-home and sick leave policies as needed

Develop contingency plans and set up an Emergency Operations Center to prepare for operational disruption (e.g., workplace closures)

Ensure appropriate access to care by lowering financial barriers (e.g., co-pays) and exploring set up of rapid testing

Engage your network of providers to disseminate updates and coordinate response early
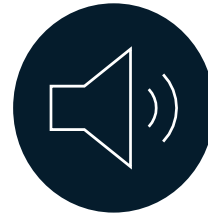
Reach out to employers proactively, sharing evidence-based guidelines to prevent community-based transmission

Engage members by leveraging digital tools and analytics (e.g., online information hub, tele-consultation)

Maintain open channels with state/ local public health authorities

Convene state/ local leaders including other healthcare CEOs, business leaders, and state officials

Prepare for widespread transmission scenarios, including financial preparedness (e.g., modeling impact on plan reserves, other stakeholders)

Deep dive: Tactical actions for payers to consider in anticipation of epidemic – Employee engagement and operations

Engage employees

Reassure workforce on preparedness response, communicating frequently and with the right specificity

Pilot care management efforts with own member base

Update work-from-home and sick leave policies to clarify expectations and create exceptions to avoid wider transmission

Prepare workforce for potentially changing customer needs in the near future

Support any impacted employees and their families per health guidance

Develop contingency plans and set up an Emergency Operations Center (EOC)

Develop contingency workplace policies, especially around working remotely, and what services will continue vs. what services may be stopped in the event of closures

Identify any modifications to medical management policies (e.g., which elements may be relaxed)

Set up an EOC to coordinate and manage all tactical actions, including:

- **Situation analysis**: Source and maintain a fact base to generate curated, relevant information to decision-makers

- **Action planning and operations**: Develop detailed playbook of action plans along with triggers, including resource planning, training, and response monitoring

- **Communications**: Set up a "control tower" to monitor the situation and communicate with key stakeholders

- **Scenario planning and stress-testing**: Define relevant scenarios and potential implications for key stakeholders, including financial / reserves impact

Deep dive: Tactical actions for payers to consider in anticipation of epidemic – Care delivery

Ensure appropriate access to care

Lower financial barriers (e.g., potentially eliminating co-pays and/ or deductibles, mitigating member charges for federally-mandated quarantine of individuals)

Consider set up of rapid testing for members

Develop specific guidance to clarify coverage and ensure appropriate access to key care components such as:
- Ambulatory / urgent care / emergency evaluations
- Use of diagnostic testing, including COVID-19 testing, and other associated diagnostics (e.g., rapid flu, rapid strep)
- Necessity of medical treatments and admissions
- Care requiring co-pay

Proactively engage your network of providers

Disseminate updates on approach to response and any changes to medical policies to provider networks broadly and regularly

Coordinate response early if probability of widespread transmission scenarios increases (e.g., signs of sustained transmission in US) — actions to align on could include management of constraints given existing and surge capacity, virtual triage of cases, documentation requirements, etc.

Deep dive: Tactical actions for payers to consider in anticipation of epidemic – Customer engagement[1]

Proactively reach out to employers

Send out regular updates on COVID-19 and efforts being launched by the health plan

Share evidence-informed guidelines with employers to prevent community-based transmission (e.g., World Health Organization recommendations with respect to workplace readiness[1])

Proactively problem-solve with a target set of employers on how to jointly improve response (e.g., offer workplace protection measures, set up testing sites if situation escalates, educate on telemedicine services)

Communicate payers' own work-from-home and sick leave policies to their employer customers and include evidence base behind decisions, enabling customers to make their own decisions

Engage members by leveraging digital tools and analytics

Create an online information hub, for members and non-members, with links to latest information (e.g., CDC page)

Promote use of digital tools for online medical consultations

Proactively reach out to members, especially high risk segments, to provide information, encourage behaviors that prevent transmission of respiratory viruses (e.g., FAQs about masks), remind them of the importance of influenza / pneumococcal pneumonia vaccination

Assess internal capabilities given potential surge scenarios to ensure sufficient capacity and education on the reactive side (e.g., call centers)

Prepare call centers and nurse hotlines

1. World Health Organization, "Getting your workplace ready for COVID-19", February 2020

Deep dive: Tactical actions for payers to consider in anticipation of epidemic – State/ local leadership

Maintain open channels with state

Understand state preparedness plans, including triggers, locations, and capacity of isolation facilities in the event that widespread transmission occurs; create links for communication and resource mobilization

Align on anticipatory guidance that would be shared between state, providers, and members

Convene state/ local leaders

Assume a leadership role in the state by convening other CEOs and healthcare leaders from the state to identify and communicate how your organizations may work more urgently together in an urgent high transmission scenario (e.g., better flows of information, better marshalling or coordination of resources, shared contacts of executives on point)

Prepare for widespread transmission scenarios

Model impact on plan as well as in-network providers, including impact on care-seeking behavior, rates of admissions and acute care services (e.g., ICU beds, alternate care facilities), effect that potential extended disruptions to elective cases might have on their near-term financial viability

Model impact on reserves across different COVID-19 scenarios

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Updated 6 Mar 2020

Context

On Jan 31, Health and Human Services (HHS) Secretary Alex Azar declared the 2019 novel coronavirus a public health emergency

Vice President Mike Pence leads the Coronavirus Task Force, with Ambassador Debbie Birx serving as the White House Coronavirus Response Coordinator, and Secretary Azar as its chairman

HHS have separate collaborations with Regeneron, Sanofi and Janssen (part of J&J) to develop therapeutics and vaccines

The Trump administration has asked for at least $2.5B funding for the coronavirus on Feb 26. The House approved $8.3B in emergency aid 415-2 on Mar 4, the Senate passed this bill 96-1 on Mar 5, and President Trump signed it the day after

Resources

Communities, schools and businesses: https://www.cdc.gov/coronavirus/2019-ncov/preparing-individuals-communities.html

Healthcare providers: https://www.cdc.gov/coronavirus/2019-ncov/hcp/index.html

Health departments: https://www.cdc.gov/coronavirus/2019-ncov/php/index.html

Source: H.R. 6074 and Congressional Budget Office estimate for H.R. 6074; Wall Street Journal ('U.S. Weighs Paying Hospitals for Treating Uninsured Coronavirus Patients', 3 March 2020), CNBC ('Trump signs $8.3 billion emergency coronavirus spending package')

Funding level for bill, $B

	$B	Uses
Public Health and Social Services Emergency Fund	3.10	Develop vaccines and countermeasures, give grants to HRSA health centers ($100M)
Center for Disease Control	2.20	Give states, localities, tribes etc. grants for surveillance, epidemiology, lab capacity, infection control etc.; use for global disease detection and emergency response
Department of State, U.S. Agency for International Development, Bilateral Economic Assistance	1.25	Maintain consular operations, reimburse evacuations, and fund global health programs, international disaster assistance, and support for economic, security, and stabilization requirements
National Institutes of Health	0.84	Fund research, provide worker-based training to reduce exposure
Purchase of vaccines and therapeutics (under Public Health and Social Services Emergency Fund)	0.30	Purchase vaccines and therapeutics
Food and Drug Administration	0.06	Develop vaccines and medical countermeasures, manufacture advanced medical products, monitor supply chains
Small Business Administration	0.02	Administer disaster loan program

Treatment for uninsured coronavirus patients

Trump administration is considering the National Disaster Medical System, which provides care to eligible natural-disaster patients if care isn't available in their local area, to pay for care of uninsured coronavirus patients

Currently 7.9% of the population is uninsured

Contents

Detailed checklist: Clinical workforce (1/2)
COVID-19 risks exacerbating the current national shortage of healthcare (nursing) workers

Shifts in staffing supply

❑ Develop clear action plan for staffing to ensure full coverage in case of demand surge (e.g., reduced workforce supply, increase demand from disease), including plans for:

  ❑ Recruiting and training additional labor

  ❑ Uptraining or cross-training personnel for appropriate specialty skill set

  ❑ Ensuring adherence to union/labor contracts (e.g., liability insurance, temporary licensing)

  ❑ Delivering just-in-time training where appropriate

  ❑ Identifying local support measures (e.g., travel, childcare, care for family members) to enable staff flexibility for shift reassignment and longer working hours

Monitoring and protecting workforce health

❑ Consider extra safe-guards/isolation for staff who are pregnant, immunocompromised, cannot wear PPE for extended periods or are the sole caregiver of dependents from treating high risk/COVID-19 individuals

❑ Establish protocols and processes for employees around:

  ❑ Monitoring (e.g., self-monitoring with delegated supervision, active monitoring for fatigue and ulcers from extended PPE wear) and reporting protocol

  ❑ Rapid detection and evaluation (e.g., when symptomatic)

  ❑ Quarantining enforcement protocol (inpatient and at-home)

❑ Deploy latest CDC/public health recommendations on means, need and duration for continuously monitoring employee symptoms

❑ Ensure effective systems of behavioral health support and self-care to mitigate / address healthcare workforce fears, distress, anxiety and fatigue

These perspectives are intended to build from CDC and other guidance based on operations and management experience. Please continue to consult CDC, state health department, and medical societies for the most up-to-date guidance. These perspectives are not intended as a substitute for professional medical advice, diagnosis or treatment. Any actions impacting clinical decisioning should be vetted by the appropriate quality committees within your organization.   McKinsey and Company   37

Detailed checklist: Healthcare workforce (2/2)
COVID-19 risks exacerbating the current national shortage of healthcare workers

Training and education

- ❑ Using CDC guidelines, source / develop and deliver accurate training to all care personnel on COVID-19 response protocol in multiple formats, including:
  - ❑ Clinical guidelines (e.g., screening, treatment, isolation, transport)
  - ❑ Patient communication scripting around diagnosis, evaluation, treatment, quarantine etc.
  - ❑ Infection control (e.g., donning/doffing PPE, N95 fittings, waste management, airborne infection isolation rooms)
  - ❑ Laboratory specimen collection and handling/waste
  - ❑ Hospital Incident Command System
  - ❑ Internal and external communication
- ❑ Regularly test and strengthen staff knowledge on critical areas
  - ❑ Periodic relevant drills / exercises for pathogen outbreak
  - ❑ Individual knowledge assessments
  - ❑ Surveillance testing (e.g., "mystery patient")

General human resource management

- ❑ Update hospital staff contact list
- ❑ Establish system to monitor staff absenteeism, including contingencies for ill or injured
- ❑ Ensure staff are up-to-date on appropriate immunizations

Detailed checklist: Clinical operations (1/7)

Pre-diagnosis ⟩ Diagnosis ⟩ Confirmed

Establish COVID-19 telephonic support

- ❑ Assess existing telephonic support capabilities against potential COVID-19 surge scenarios and strengthen offering accordingly (e.g., establish a call center, increase number of nursing staff providing telephone support, extend hours of operation or setup a 24/7 advice line); outsource support as needed

- ❑ Establish talking points / scripts and update clinical workflow to support accurate identification of COVID-19 patients that need to stay home, be evaluated via telehealth or visit a hospital (e.g., algorithm, standardized screening questionnaire)

- ❑ Use text-based communication to encourage patients to use available advice lines if they become ill with symptoms of respiratory infection

- ❑ Text patients to encourage registration to access resources (e.g., patient portal, email) that regularly release updated CDC / public health guidelines on COVID-19

- ❑ Develop protocol for proactively contacting and screening patients via phone prior to their scheduled visits

Develop COVID-19 web- and app-based resources / services

- ❑ Evaluate existing web- and app-based capabilities and create a library of resources specific to COVID-19; consider partnering with a vendor to address capability gaps

- ❑ Develop a system for regularly creating and updating web- and app-based content according to the latest CDC / public health COVID-19 guidelines

- ❑ Create a web- and app-based patient self-assessment tool based on CDC guidelines; if possible, enable automatic provider and care manager notification of potential COVID-19 cases and connect patients to appropriate resources (e.g., scheduling for telehealth, in-home or facility care according to symptom severity)

- ❑ Encourage patient registration to access digital resources and communication channels (e.g., email, chat, patient portal) through which they regularly receive communication regarding COVID-risk factors and when to seek care

- ❑ Develop questionnaire or other web- / app-based tool to proactively screen patients prior to scheduled appointments

Source: CDC, expert interviews *These perspectives are intended to build from CDC and other guidance based on operations and management experience. Please continue to consult CDC, state health department, and medical societies for the most up-to-date guidance. These perspectives are not intended as a substitute for professional medical advice, diagnosis or treatment. Any actions impacting clinical decisioning should be vetted by the appropriate quality committees within your organization.* McKinsey & Company 39

Detailed checklist: Clinical operations (2/7)

Pre-diagnosis ▸ Diagnosis ▸ Confirmed

Connect patients to telemedicine services[1]

- ❑ Estimate increased telehealth demand based on potential COVID-19 surge scenarios and strengthen services according to anticipated need and telehealth best practice (e.g., increase staffing of skilled providers); consider outsourcing support where appropriate
- ❑ Train telehealth staff on latest CDC / public health guidelines as well as best practice on delivery of quality, equitable care
- ❑ Develop protocol to support streamlined e-triage, booking, diagnosis, consultation and patient monitoring for suspected COVID-19 patients
- ❑ Refer telehealth patients to phone, web and home health resources, as well as relevant social services, to support on-going monitoring and support

Partner with home health providers[1]

- ❑ Ramp up in home health services, where home health treatment operations already exist, according to anticipated demand based on potential COVID-19 surge scenarios
- ❑ Train home health service providers on latest CDC / public health infection prevention and control guidelines, including appropriate engineering (e.g., proper use of PPE) and administrative (e.g., sick leave policy) controls to leverage
- ❑ Provide home health service providers a set of protocol / tools to support patient screening / evaluation (e.g., questionnaire, triage algorithm) and proactively address concerns that may put patients at risk for hospital admission
- ❑ Establish system to accurately identify and connect patients to home health support based on care needs, location and other quality factors
- ❑ Work with home health service providers to deliver diagnostic testing, when it becomes available

1. Does not incorporate potential reimbursement implications

Source: CDC, expert interviews *These perspectives are intended to build from CDC and other guidance based on operations and management experience. Please continue to consult CDC, state health department, and medical societies for the most up-to-date guidance. These perspectives are not intended as a substitute for professional medical advice, diagnosis or treatment. Any actions impacting clinical decisioning should be vetted by the appropriate quality committees within your organization.* McKinsey & Company 40

Detailed checklist: Clinical operations (3/7)

Pre-diagnosis ❯ Diagnosis ❯ Confirmed

Engage local agencies

❑ Collaborate with local, state and federal public health agencies to develop / enhance existing COVID-19 health education campaigns, ensuring consistency of messaging

❑ Work with local businesses and community organizations to develop accurate, tailored health education material on COVID-19 for local distribution / circulation via multiple channels (e.g., agency announcements, social media)

❑ Partner with local employers to strengthen employee access to and utilization of your remote services and resources

❑ Utilize local agency communication channels to help direct patients to COVID-19 provider resources and support (e.g., adviceline, web portal, telehealth)

Detailed checklist: Clinical operations (4/7)

Pre-diagnosis ❯ **Diagnosis** ❯ Confirmed

Outpatient / ambulatory services

❑ Consider designating separate COVID-19 ambulatory testing sites; to the existent possible, equip all sites or select sites with AIIR / negative pressure bed capabilities

❑ Consider establishing a dedicated cadre of staff to operate testing sites; train staff on appropriate collection and handling of specimen, per CDC / public health guidelines

❑ Develop protocol based on pre-diagnostic criteria to route patients to designated diagnostic testing sites (e.g., identify patients exhibiting respiratory symptoms before or immediately upon arrival to a facility and direct to a nearby diagnostic site)

❑ Develop a combination of engineering and administrative controls to minimize patient and workforce exposure to suspected cases, e.g.,

    ❑ Isolate suspected COVID-19 cases in an AIIR, if available

    ❑ Ensure only essential personnel enter AIIRs and use PPE per CDC guidelines

❑ Collect all diagnostic respiratory specimen from patients with suspected COVID-19 in an AIIR or exam room with the door closed

❑ Establish protocol to route patients to the nearest available emergency room or an inpatient facility based on clinical guidelines as set by the CDC

❑ Regularly clean and disinfect environmental surfaces and clinical equipment with EPA-registered hospital-grade disinfectant; ensure all personnel with cleaning responsibilities understand the contact time for selected products and are appropriately fit-tested per CDC guidelines

❑ Reschedule non-urgent outpatient visits as necessary

These perspectives are intended to build from CDC and other guidance based on operations and management experience. Please continue to consult CDC, state health department, and medical societies for the most up-to-date guidance. These perspectives are not intended as a substitute for professional medical advice, diagnosis or treatment. Any actions impacting clinical decisioning should be vetted by the appropriate quality committees within your organization.

McKinsey & Company

Detailed checklist: Clinical operations (5/7)

Pre-diagnosis ❯ **Diagnosis** ❯ Confirmed

Emergency room / pre-triage services

- Establish protocol with emergency medical services to ensure drivers contact receiving EDs or facilities of incoming patients
- Design and install engineering controls to reduce or eliminate exposures to suspected cases pre-triage, e.g:
  - Designated patient entrance and lavatories
  - Separate diagnostic area outside the ED (e.g., tent) to perform all screening and clinical assessments
  - Physical barriers / partitions to guide patients through triage areas
  - Dedicated rooms for evaluation and triage (e.g., outdoor tents)
  - Dedicated patient-care equipment
- Consider implementing systems to rapidly triage and discharge patients that do to require emergency care, within EMTALA guidelines
- Collect all diagnostic respiratory specimen from patients with suspected COVID-19 in an AIIR room per CDC guidelines
- If an AIIR is not available:
  - Transfer suspected COVID-19 patients requiring hospitalization to a local hospital where AIIR is available
- Discharge suspected COVID-19 patients cases not requiring hospitalization home (in consultation with state / local public health authorities) as appropriate
- Establish protocol with operations team to proactively signal when the hospital is nearing and should stop receiving patients
- Regularly clean and disinfect environmental surfaces and equipment in patient rooms with EPA-registered hospital-grade disinfectant; ensure all personnel with cleaning responsibilities are trained and appropriately fit-tested

These perspectives are intended to build from CDC and other guidance based on operations and management experience. Please continue to consult CDC, state health department, and medical societies for the most up-to-date guidance. These perspectives are not intended as a substitute for professional medical advice, diagnosis or treatment. Any actions impacting clinical decisioning should be vetted by the appropriate quality committees within your organization.

Detailed checklist: Clinical operations (6/7)

Medical society recommendations:

General inpatient care
- Maintain patient isolation
- Collect information and specimens in the isolated location
- Perform procedures in an AIIR, whenever possible
- Discharge patients when clinically indicated

☐ Establish protocol for patient visitation and develop systems for training, managing and monitoring visitors (e.g., visitor log book, limits to patient movement around the facility)

☐ Evaluate the extent to which operational bandwidth will be reduced under COVID-19 surge scenarios in response to anticipated increases in in-room/portable testing for COVID-19 patients; arrange for additional capacity accordingly (e.g., radiology technicians, portable radiology machines)

☐ Consider establishing safety protocol to support rapid identification of confirmed COVID-19 patients among healthcare staff (e.g., color-coded bedding and linen)

☐ Develop protocol for discharging patients according to CDC / public health guidelines in consultation with local or state public health departments, particularly under circumstances where Transmission-Based precautions should be continued

☐ Educate patients and members of their household on the latest CDC / public health guidelines on post-discharge transmission-based isolation precautions until the risk of secondary transmission is thought to be low – per CDC guidelines

☐ Reschedule elective admissions / services as necessary

Surgical / procedural / anesthesia inpatient care
- Designate an OR / procedure room for COVID patients
- Ensure infected cases do not recover in the PACU, only in OR / procedure room / ICU

☐ Prepare for the likely reduction of block utilization based on COVID-19 surge scenarios due to a need for patients to recover in OR / procedure room

☐ Plan for increased PACU nurse coverage to support recovery in OR / procedure room

☐ Assess ability to perform procedures in isolation rooms, if clinically indicated

☐ Develop and train designated staff on COVID-19 protocol for patient transport from the OR floor / ICU AIIR room

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Detailed checklist: Clinical operations (7/7)

Pre-diagnosis ⟩ Diagnosis ⟩ **Confirmed**

Medical society recommendations:

Workforce and environment

- ❑ Deliver education / training to clinical and nursing workforce to prevent transmission of COVID-19, including refresher training on latest CDC / public health guidelines
- ❑ Pilot and establish dedicated hospitalist team to supporting COVID-19 admissions and workflow improvement
- ❑ Consider establishing color coded linens and designated areas for COVID-19 supplies
- ❑ Clean and disinfect environmental surfaces and equipment in patient rooms with EPA-registered hospital-grade disinfectant regularly; ensure all personnel with cleaning responsibilities are trained and appropriately fit-tested
- ❑ Consider establishing safety protocol to support easy identification of staff dedicated to supporting COVID-19 patients (e.g., color-coded uniforms)
- ❑ Establish a contingency plan for low-supply specialties (e.g., pediatric neurosurgery) in the case of reduced capacity

These perspectives are intended to build from CDC and other guidance based on operations and management experience. Please continue to consult CDC, state health department, and medical societies for the most up-to-date guidance. These perspectives are not intended as a substitute for professional medical advice, diagnosis or treatment. Any actions impacting clinical decisioning should be vetted by the appropriate quality committees within your organization.

McKinsey & Company   45

Detailed checklist: Supply chain

Protective, treatment, infrastructural and environmental supplies at-risk off supply shortages

Commodity list

Diagnostics	❑ ELISA and RT PCR Laboratory equipment and reagents

Health facilities infrastructure and equipment	❑ Ambulance with air isolation system for transport of contagious patients ❑ Mobile, basic diagnostic X-ray system ❑ Portable ultrasound ❑ Resuscitator ❑ Medical triage/treatment/isolation facilities ❑ Packaging transport substance for viral sample transport ❑ N95 respirators ❑ Surgical masks ❑ Ventilators with portable and back-up power supply
Personal protective equipment	❑ Gloves ❑ Goggles ❑ Gown, disposable, with elastic wrists ❑ Medical mask ❑ Eye/face shield ❑ Safety box/sharps container (must be labelled "Biohazard") ❑ Scrubs
Drugs and medical consumables	❑ Paracetamol ❑ Oxygen ❑ Infusion compound (Ringer's lactate) ❑ Antibiotics (for secondary infections)

Medical equipment	❑ Infrared thermometer ❑ Laryngoscope, adult, child set ❑ Endotracheal tubes ❑ Oxygen concentrator ❑ Oxygen face mask with reservoir bag, disposable ❑ Pulse oximeter, portable ❑ Sample collection tubes ❑ Swabs for buccal sample collection ❑ Swabs for nasal sample collection ❑ Syringes: 0.5 ml autodestruct (AD) and 5 ml reuse prevention (RUP) ❑ Infusion setup including pump
Advanced	❑ Home Care Kits for home isolation of asymptomatic cases or mildly symptomatic ❑ Antivirals/vaccines (in development)
Disinfection consumables/ biohazardous waste management	❑ Alcohol based hand-rub ❑ Bag, disposable for biohazardous waste PPE and clinical waste without sharps ❑ Body bags (suitable for burial or cremation) ❑ Disinfectant ❑ Soap, surgical ❑ Set: mask, gel and soap for targeted population ❑ Chlorine

COVID-19 Response Nerve Center organization

- **Multiple semi-autonomous, cross-functional** teams working in parallel (helps speed)

- **Agile principles**, enabled by clearly articulated values

- **Simple meeting cadence and radical transparency** across groups (e.g., all working materials available to all)

Example nerve center organization – key roles

Protect & Give Purpose
- Head of HR
- HR full time leader
- Employee comms
- Ombuds-man
- Security
- Legal

Integrate via nerve center
- Scenario planning analyst
- Epidemi-ological expert
- Project co-ordinator
- Sr. C-suite leader

Engage customers
- Head, Sales & Mktg.
- Financial analyst
- Incentives manager
- SKU manager
- Customer comms

Stabilize Supply Chain
- Head of Procure-ment
- Procure-ment manager
- Supply Chain analyst
- Logistics manager
- Regional SC mgrs (multiple)

Stress-test financials
- CFO
- Financial analyst
- Legal
- Treasury
- Strategy or BD manager