Anatomy of an Outbreak: Part 5
Nearing the peak of the outbreak, or just a deceleration?

April 16, 2020

Presented by
Health Care Advisory Board
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Coronavirus cases in the United States
Current as of April 15, 2020

- At least 606,800 cases
- 202,208 cases in New York
- At least 25,922 deaths

Original estimates of possible effects
- 96 million cases
- 4.8 million hospitalizations
- 480,000 deaths

Death tolls nearing a peak in U.S. and Western Europe?

Daily coronavirus deaths (rolling 3-day average), by number of days since 3 daily deaths first recorded

<table>
<thead>
<tr>
<th>Country</th>
<th>Total deaths per million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>385</td>
</tr>
<tr>
<td>Italy</td>
<td>349</td>
</tr>
<tr>
<td>France</td>
<td>235</td>
</tr>
<tr>
<td>U.K.</td>
<td>182</td>
</tr>
<tr>
<td>U.S.</td>
<td>80</td>
</tr>
<tr>
<td>Germany</td>
<td>39</td>
</tr>
<tr>
<td>South Korea</td>
<td>4</td>
</tr>
</tbody>
</table>


Daily deaths plateauing in New York City…

…But not yet peaking in other states

Daily coronavirus deaths (rolling 3-day average), by number of days since 10 total deaths first recorded

<table>
<thead>
<tr>
<th>City</th>
<th>Total deaths per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detroit</td>
<td>223</td>
</tr>
<tr>
<td>New Orleans</td>
<td>165</td>
</tr>
<tr>
<td>NYC</td>
<td>157</td>
</tr>
<tr>
<td>Boston</td>
<td>91</td>
</tr>
<tr>
<td>Miami</td>
<td>69</td>
</tr>
<tr>
<td>Seattle</td>
<td>54</td>
</tr>
<tr>
<td>Chicago</td>
<td>31</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>9</td>
</tr>
</tbody>
</table>


Prior projections painted a grim picture
Resources and capacity expectations two weeks earlier

Projected ICU bed shortage and dates of peak resource use by state
*Updated April 1, 2020*

**States with greatest predicted peak ventilator demand**
- New York: 9,055
- Tennessee: 2,318
- Texas: 1,975
- Michigan: 1,798
- Florida: 1,594

**States with least predicted peak ventilator demand**
- Vermont: 27
- Wyoming: 53
- North Dakota: 59
- Alaska: 60
- South Dakota: 72

An extraordinary mobilization of resources
Access to resources and capacity varied widely a week ago

Projected ICU bed shortage and dates of peak resource use by state


States with greatest predicted peak ventilator demand

- New York: 5,008
- New Jersey: 2,189
- Massachusetts: 1,592
- Florida: 1,323
- Connecticut: 1,153

States with least predicted peak ventilator demand

- Vermont: 13
- Delaware: 14
- Idaho: 20
- New Hampshire: 24
- Wyoming: 26

Today’s projections much more optimistic
Challenges ahead, but progress across the board

Projected ICU bed shortage and dates of peak resource use by state
*Updated April 13, 2020*

States with greatest predicted peak ventilator demand
- New York: 5,246
- Massachusetts: 1,671
- New Jersey: 1,665
- Connecticut: 1,290
- Florida: 968

States with least predicted peak ventilator demand
- Wyoming: 13
- Vermont: 12
- Alaska: 7
- Montana: 7
- North Dakota: 5

Ventilators not the panacea we once thought
Fewer patients intubated as we learn more about COVID-19

Net change in intubations and new hospitalizations in NY

<table>
<thead>
<tr>
<th>Date</th>
<th>Intubations</th>
<th>Hospitalizations</th>
<th>Ratio of new hospitalizations to new intubations</th>
</tr>
</thead>
<tbody>
<tr>
<td>17-Mar</td>
<td>342</td>
<td>43</td>
<td>20.5%</td>
</tr>
<tr>
<td>19-Mar</td>
<td>512</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>21-Mar</td>
<td>642</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>23-Mar</td>
<td>120</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>25-Mar</td>
<td>1214</td>
<td>237</td>
<td></td>
</tr>
<tr>
<td>27-Mar</td>
<td>973</td>
<td>223</td>
<td></td>
</tr>
<tr>
<td>29-Mar</td>
<td>1270</td>
<td>296</td>
<td></td>
</tr>
<tr>
<td>31-Mar</td>
<td>1290</td>
<td>283</td>
<td></td>
</tr>
<tr>
<td>2-Apr</td>
<td>1440</td>
<td>309</td>
<td></td>
</tr>
<tr>
<td>4-Apr</td>
<td>1633</td>
<td>1356</td>
<td></td>
</tr>
<tr>
<td>6-Apr</td>
<td>1612</td>
<td>172</td>
<td></td>
</tr>
<tr>
<td>8-Apr</td>
<td>84</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>10-Apr</td>
<td>1239</td>
<td>21</td>
<td></td>
</tr>
</tbody>
</table>

Initial lessons about COVID-19 from the front line

COVID-19 appears to decrease oxygen saturation to critically low levels, but patients do not demonstrate shortness of breath, confusion, or heart abnormalities.

COVID-19 can create acute respiratory distress syndrome and immune cells attack the lungs, filling them with yellow fluid and limiting oxygen transmission from the lungs to blood even if a ventilator pumps in oxygen.

Risks from intubation (cognitive and respiratory damage from heavy sedation) don’t outweigh the little data to support ventilation in COVID-19 patients.


1. Due to data reporting lags, the daily hospitalization rate is unknown.
Are we finally testing enough? (Probably not)
While test numbers are increasing, positivity rates indicate insufficiency

<table>
<thead>
<tr>
<th>COVID-19 tests performed in United States to date¹</th>
<th>Last week</th>
<th>This week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total tested</td>
<td>2,054,462</td>
<td>3,138,413</td>
</tr>
<tr>
<td>Total positive</td>
<td>392,594</td>
<td>605,243</td>
</tr>
<tr>
<td>Overall positivity rate</td>
<td>19.1%</td>
<td>19.3%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COVID-19 positivity rate by state (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>This week and percent change from last week¹</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State</th>
<th>Last week</th>
<th>This week</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>AK</td>
<td>5.0</td>
<td>72%</td>
<td></td>
</tr>
<tr>
<td>AL</td>
<td>9.7</td>
<td>-35%</td>
<td></td>
</tr>
<tr>
<td>AR</td>
<td>7.1</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>AZ</td>
<td>11.5</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>CA</td>
<td>10.5</td>
<td>28%</td>
<td></td>
</tr>
<tr>
<td>CO</td>
<td>21.2</td>
<td>-4%</td>
<td></td>
</tr>
<tr>
<td>CT</td>
<td>36.9</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>DC</td>
<td>22.9</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>DE</td>
<td>22.2</td>
<td>66%</td>
<td></td>
</tr>
<tr>
<td>FL</td>
<td>10.2</td>
<td>-6%</td>
<td></td>
</tr>
<tr>
<td>GA</td>
<td>19.2</td>
<td>-31%</td>
<td></td>
</tr>
<tr>
<td>HI</td>
<td>2.0</td>
<td>-47%</td>
<td></td>
</tr>
<tr>
<td>IA</td>
<td>13.8</td>
<td>34%</td>
<td></td>
</tr>
<tr>
<td>ID</td>
<td>7.3</td>
<td>-46%</td>
<td></td>
</tr>
<tr>
<td>IL</td>
<td>23.2</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>IN</td>
<td>17.5</td>
<td>-20%</td>
<td></td>
</tr>
<tr>
<td>KS</td>
<td>11.4</td>
<td>-1%</td>
<td></td>
</tr>
<tr>
<td>KY</td>
<td>15.5</td>
<td>288%</td>
<td></td>
</tr>
<tr>
<td>LA</td>
<td>12.0</td>
<td>-61%</td>
<td></td>
</tr>
<tr>
<td>MA</td>
<td>28.7</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>MD</td>
<td>23.1</td>
<td>28%</td>
<td></td>
</tr>
<tr>
<td>ME</td>
<td>3.7</td>
<td>NA</td>
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</tr>
<tr>
<td>MI</td>
<td>34.4</td>
<td>28%</td>
<td></td>
</tr>
<tr>
<td>MN</td>
<td>6.3</td>
<td>37%</td>
<td></td>
</tr>
<tr>
<td>MO</td>
<td>10.3</td>
<td>-4%</td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>6.8</td>
<td>11%</td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>3.6</td>
<td>-32%</td>
<td></td>
</tr>
<tr>
<td>NC</td>
<td>7.5</td>
<td>-22%</td>
<td></td>
</tr>
<tr>
<td>ND</td>
<td>3.2</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>NE</td>
<td>10.3</td>
<td>56%</td>
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</tr>
<tr>
<td>NH</td>
<td>10.6</td>
<td>-20%</td>
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<tr>
<td>NJ</td>
<td>54.5</td>
<td>4%</td>
<td></td>
</tr>
<tr>
<td>NM</td>
<td>6.5</td>
<td>48%</td>
<td></td>
</tr>
<tr>
<td>NV</td>
<td>12.5</td>
<td>-12%</td>
<td></td>
</tr>
<tr>
<td>NY</td>
<td>39.8</td>
<td>-15%</td>
<td></td>
</tr>
<tr>
<td>OH</td>
<td>13.9</td>
<td>17%</td>
<td></td>
</tr>
<tr>
<td>OK</td>
<td>4.8</td>
<td>-39%</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td>4.8</td>
<td>-9%</td>
<td></td>
</tr>
<tr>
<td>PA</td>
<td>25.5</td>
<td>28%</td>
<td></td>
</tr>
<tr>
<td>RI</td>
<td>16.0</td>
<td>37%</td>
<td></td>
</tr>
<tr>
<td>SC</td>
<td>11.1</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>22.1</td>
<td>166%</td>
<td></td>
</tr>
<tr>
<td>TN</td>
<td>6.5</td>
<td>-12%</td>
<td></td>
</tr>
<tr>
<td>UT</td>
<td>5.7</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>VA</td>
<td>20.1</td>
<td>47%</td>
<td></td>
</tr>
<tr>
<td>VT</td>
<td>5.1</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>WA</td>
<td>NA</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>WI</td>
<td>9.3</td>
<td>-6%</td>
<td></td>
</tr>
<tr>
<td>WV</td>
<td>4.6</td>
<td>44%</td>
<td></td>
</tr>
<tr>
<td>WY</td>
<td>3.0</td>
<td>-46%</td>
<td></td>
</tr>
</tbody>
</table>

NA = Not available

1. As of April 15; “last week” data includes April 1-7, “this week” data includes April 8-15.
2. Since beginning of outbreak. Figures based on most recently available data as of April 15. Data sources and methodology vary by country.

Serology testing slowly starting up
Progress yet to be made before promise of antibody tests can be realized

Challenges with antibody tests for COVID-19

1. Few FDA-approvals, fewer high-throughput tests

Serology tests measure antibodies (IgG and IgM) in a person’s blood and can reveal true community spread

High threat of false positive makes development of accurate tests challenging

2. Presence of antibodies doesn’t guarantee immunity

"We simply don't know yet what it takes to be effectively protected from this infection."

Dawn Bowdish, Professor Pathology and Molecular Medicine, McMaster University

Large-panel antibody studies underway

10,000
People across the U.S. the NIH is recruiting for study using antibody tests

38,000
Beaumont Health employees in study on health care worker susceptibility and antibody response
Our needs extend beyond diagnostics
Combination of technology and boots-on-the-ground required to mitigate spread

Who is contagious and how do we stop their spread?

Disease surveillance system

- Aggregate biometric data from internet-enabled thermometers and fitness wearables
- Screen for pre-symptomatic employees through employer-sponsored testing services

Widespread contact tracing

- Apple and Google devices to wirelessly exchange personal testing data, notify user of contact with infected for those who opt in
- Train idled workers from PeaceCorps volunteers to furloughed public employees, and phone bank staff as contact tracers

Technical feasibility and debate over health privacy laws to shape extent of surveillance and methods of contact tracing
Apple and Google undertake massive contact tracing project
However, new tool unlikely to be a ‘silver bullet’ for COVID-19

How their tool will work

Uses anonymized Bluetooth smartphone infrastructure to alert user if they have been within close proximity (~6 ft) of an infected person

Significant limitations may hinder success

1. Low adoption rates could limit efficacy
2. Unclear how well Bluetooth will work, especially in crowded spaces
3. Needs strong testing capacity to determine positives
4. System could amplify false positives or be prone to bad actors
5. It could come too late

Timeline

PHASE 1 (mid-May1)    PHASE 2
Users can download third-party apps from state-level health agencies to participate
Users can opt in directly on their phones, eliminating need for app download

Imperfect solutions to a critical problem
Health systems must balance tradeoffs in ensuring sufficient PPE to reopen

Spectrum of options for obtaining PPE needed to reopen non-essential services

**Timeliness**
- Use DIY products from local businesses and volunteers
- Sanitize and reuse disposables
- Procure steady stream of new disposables
- Shift to medical-grade reusable products

**Sustainable scale**

**Major safety and cost considerations**
- Are we compromising on **individual safety**?
  - Can we **scale** and sustain?
- Does sanitization **break down** protective materials?
  - How many times can we safely reuse?
- Do I have **stable**, **reliable** vendors?
  - What is the **price premium** for guaranteed delivery?
- How can we encourage design and manufacturing of **medical-grade, reusable masks**?
  - What are **added costs** for procurement and cleaning?
As surge subsides, staffing challenges will take center stage

Immediate post-COVID staffing challenges

- Frontline staffing shortage
- Furloughed staff (dis)engagement
- Senior leader burnout
- Environment ripe for unionization

Long-term staffing unknowns

- How will COVID impact organizational culture—positively or negatively?
- Will COVID impact health care’s desirability as a profession?

Source: Advisory Board interviews and analysis.
For most, new revenues won’t backfill loss of electives

Moderate COVID-19 scenario entails immediate cash crunch

**Moderate, concentrated COVID-19 scenario**
- 1,000-bed system treats 2,000 hospitalized COVID-19 cases over 3 months
- Peak of 440 cases in week 8 (i.e. system is surging significantly beyond normal capacity)
- Average revenue per COVID-19 case: $15,506

$31.0 M in COVID-19 revenue

**Wild cards**
- Actual DRG mix of IP cases
- Further changes to payment rates, including by commercial payers

The COVID-19 caseload needed to make up for lost revenue from elective procedures and other reduced demand is well beyond system capacity—implying need for large surge expenditures.

Weekly revenue impact, 3-month scenario

Note the revenue shortfall in the first weeks of the scenario—if elective shutdowns and reduced demand precede significant COVID-19 caseload, even by a few weeks, cash flow challenge will be immense and immediate.
Assess the financial impact of canceling elective procedures

COVID-19 Elective Surgery Cancelation Impact Estimator

Estimate financial impact from COVID-19
- Postponed surgeries
- Canceled surgeries

Incorporate customizable inputs
- Varying time frames
- Crisis acuity levels
- Capacity scenarios
- Past facility volumes and capacity

Plan accordingly for future operations
- Lost revenue
- Potential future gained revenue
- Future capacity levels

To access the top COVID-19 resources, visit advisory.com/covid-19
COVID-19 impacting non-elective utilization
Social distancing and fear of COVID keeping people away from health care

Growth rate of laboratory confirmed influenza hospitalizations in the U.S.

Number of cardiology interventions in Spain before and during COVID-19 epidemic

Conditions that could require higher intensity care if people delay medical attention

Acute myocardial infarction
Stroke and vascular pathologies
Cancer
Fractures and other orthopedic trauma

Initial federal distribution: speed vs. need
Grant amounts determined by Medicare share, not Covid or financial distress

CARES ACT allocates $100B to hospitals
First tranche: details announced April 10
- $30B being disbursed as grants to hospitals based on national share of 2019 Medicare FFS volumes
- Health systems have 30 days to electronically sign terms and conditions including no balance billing of patients
- Amount paid to hospitals does not take COVID-19 volumes or acuity of volumes into account
- Systems with low Medicare volumes, high uninsured/Medicaid population see limited benefit

Future tranches
- HHS says further tranches will focus on areas seeing significant volumes, the costs of treating uninsured patients, rural hospitals
- 20% bump to Medicare reimbursement rates for COVID-19 and related diagnoses

Accelerated and Advance Payment Program offers loans
Program designed to speed cash flow in time of public health emergency
- Hospitals able to request Medicare payment amount for 3-6 months
- CMS agreed to speed approval from 3-4 weeks to 4-6 days
- Has approved 21,000 applications¹ up from 100 applications total across past five years


¹ As of April 14.
Commercial payers also adjusting policies, offering grants

Advanced payment plan incentives tend to further value-based goals

**Families First Coronavirus Response Act**
- Requires insurers to waive patient cost-sharing for COVID-19 testing

**Health systems should confirm each payers’ policies as well as State regulations for the following:**
- Cost-sharing for COVID-19 treatment: *United, Cigna, Aetna, Humana, many of the Blues*
- Preauthorization waivers for COVID treatment: *policies vary greatly payer to payer*
- Out-of-network transfers: *policies vary greatly payer to payer*

**Advanced payment programs tend to:**
- Focus on physician practices
- Tie payment to cost and quality metrics
- Use funds previously tied to value-based programs

**CASE STUDIES**

**United Healthcare**
- Will accelerate and advance payments to medical and behavioral care providers
- Also providing $125M in small business loans to clinical operators with whom OptumHealth is partnered

**Blue Cross and Blue Shield of Michigan**
- Will accelerate payments to more than 40 physician organizations that are a part of the Physician Group Incentive Program (PGIP), including more than 20,000 primary care and specialist physicians in the state

**Blue Shield of California**
- Will provide up to $200M in direct financial support to providers including financial guarantees, advance payments, and contract restructures with favorable repayment terms
- Working with two financial institutions to assist providers with loans and payment advances on expected costs

Accurate payment hinges upon revenue cycle performance

Critical action items

- Update chargemaster with new COVID-19 CPT/HCPCS codes
- Create EMR flag to allow easy identification of COVID-19 charts

Documentation and coding

- Train coders, CDI on new CPT and HCPCS codes, ICD-10 for diagnosis¹
- Retain strongest CDI specialists for documentation rather than redeploying bedside to ensure full CC/MCC capture
- Create documentation templates specific to COVID-19
- Deploy clear processes and revisit expectations around performance metrics, such as:
  - Holding charts until positive test confirmed
  - Recalibrate query rates given MD workload
  - Adjust number of chart reviews per day expectations according to volumes

Claims Billing

- Ensure sufficient number of billers able to work from home with remote access
- Clarify policies with state, commercial payers
- Consider billing small batch of claims to see how COVID-19 adjudication works before more widespread billing
- Review claims to prevent balance billing and evaluate out-of-pocket costs being billed to patients

DATA SPOTLIGHT

$9.7K – $20.3K

Range in cost of treatment per COVID-19 patient depending on documented case severity

¹ See full list of Covid-10 codes in blog post. How to bill for Covid-19 testing and treatment

# Patient financial experience still critical to revenue capture

## Modifications to current policies increase likelihood of grateful patients

### Patients under immense financial pressure

<table>
<thead>
<tr>
<th>Description</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pandemic taking place earlier in calendar year means deductibles haven’t been met</td>
<td>Reassign/deploy surplus front office staff toward eligibility checks to check/recheck insurance status of all patients</td>
</tr>
<tr>
<td>Depending on payers’ policy, patients may have significant obligations from COVID-19 and other types of care</td>
<td>Extend length of payment plans</td>
</tr>
<tr>
<td>Skyrocketing unemployment means increased self-pay population</td>
<td>Offer 30-60 days payment deferment</td>
</tr>
<tr>
<td></td>
<td>Update payment guidelines and publicize widely¹</td>
</tr>
</tbody>
</table>

1. Suggestions: website, patient portal, recorded call center hold message, call center scripting, etc.

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¹ Advisory Board interviews and analysis.
What will “normal” look like?
Assessing potential admission bumps in a post-COVID world

- Surge of COVID-19 cases after social distancing is lifted
- Return of elective procedures that were postponed during COVID-19
- Complications from non-elective procedures that people delayed
- Admissions from viral infections if people’s immune systems are weakened from isolation

Advisory Board interviews and analysis.
Many providers will be constrained in ability to recapture, serve all backlogged cases

For any service, recapturing and serving deferred demand depends on a four-part analysis:

<table>
<thead>
<tr>
<th>When do we reopen this service?</th>
<th>How many patients leave the queue?</th>
<th>What is our post-COVID capacity for this service?</th>
<th>How is post-COVID demand for this service different?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>Self-resolving issues</td>
<td>OR capacity</td>
<td>Lingering fears of visiting health care facilities (-)</td>
</tr>
<tr>
<td>Legal restrictions</td>
<td>Care plan changes</td>
<td>Staff, especially specialized surgeons</td>
<td>Economic stress (-)</td>
</tr>
<tr>
<td>PR concerns</td>
<td>Defections to competitors that open earlier, especially asymmetric actors</td>
<td>PPE</td>
<td>Poorly managed conditions (+)</td>
</tr>
<tr>
<td>Financial pressure</td>
<td></td>
<td>Limiting factors will vary widely across services.</td>
<td>Durable shifts in modality (e.g. telemedicine) (+/-)</td>
</tr>
</tbody>
</table>

Implications

- Longer shutdowns mean a larger backlog of unserved demand
- Attrition in the backlog transforms revenue delays into actual losses, but opportunity to attract others’ “impatient” exists.
- Providers with excess capacity in normal times, or those that can extend hours or otherwise “surge,” will clear backlog faster, avoid dropoff, and potentially attract new share
- Lower new demand would make it easier to clear backlog, but difficult or impossible to sustain pre-COVID volume
When will utilization get back to “normal”?
Speed of recovery will vary based on multiple factors

<table>
<thead>
<tr>
<th>High impact</th>
<th>Medium impact</th>
<th>Low impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>State and federal orders continue to prohibit elective procedures</td>
<td>Loss of clinical workers who were furloughed, laid off, or quit limit capacity</td>
<td>Reduced travel leads to less accident-induced trauma</td>
</tr>
<tr>
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<td>Loss of clinical workers who were furloughed, laid off, or quit limit capacity</td>
<td>Mortalities in highly affected regions reduces demand</td>
</tr>
<tr>
<td>Manufacturers increase availability of PPE and tests, increasing comfort and readiness among patients and staff</td>
<td>Organizations proactively reach out to patients to reschedule appointments; effectively communicate re: safety</td>
<td>Mortalities in highly affected regions reduces demand</td>
</tr>
<tr>
<td>Backfilled cases lead to bed and operating room capacity constraints, shifts to “higher capacity” competitors</td>
<td>Delays in care lead to exacerbation of health issues</td>
<td>Mortalities in highly affected regions reduces demand</td>
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<td>Delays in care lead to exacerbation of health issues</td>
<td>Mortalities in highly affected regions reduces demand</td>
</tr>
<tr>
<td>Lingering consumer anxiety/fear of exposure to infection results in site of care shifts or absolute reductions in use</td>
<td>Closed ambulatory sites delay and/or reduce downstream referrals</td>
<td>Lasting negative stigma of SNF sites leads to longer LOS, less bed turnover, and greater home health use</td>
</tr>
<tr>
<td>Long-term</td>
<td>Loss of insurance and/or job results in delays or cancellations</td>
<td>Lasting negative stigma of SNF sites leads to longer LOS, less bed turnover, and greater home health use</td>
</tr>
<tr>
<td>Loss of insurance and/or job results in delays or cancellations</td>
<td>The availability of therapeutics and vaccines reduces the probability of a second Covid-19 wave—and need for additional postponements</td>
<td>Lasting negative stigma of SNF sites leads to longer LOS, less bed turnover, and greater home health use</td>
</tr>
<tr>
<td>The availability of therapeutics and vaccines reduces the probability of a second Covid-19 wave—and need for additional postponements</td>
<td>Employers/plans manage premium cost growth by increasing consumer cost exposure for next year’s benefit year</td>
<td>Lasting negative stigma of SNF sites leads to longer LOS, less bed turnover, and greater home health use</td>
</tr>
<tr>
<td><strong>Decreased utilization</strong></td>
<td><strong>Increased utilization</strong></td>
<td><strong>Increased utilization</strong></td>
</tr>
</tbody>
</table>

Advisory Board interviews and analysis.
Recovery will be a race to serve before others do
Clearing backlog depends on boosting supply, avoiding defection

Inpatient surgery scenario:
- 1,000-bed health system performing 40 inpatient surgeries per day, 6 days per week, at 80% of max capacity.
- 50% of IP surgeries considered elective
- All elective surgeries cancelled for 3 months; no cancellations of non-electives.

If supply remains at pre-crisis levels, and no patients leave the queue for competitors or otherwise...

<table>
<thead>
<tr>
<th>Time to clear queue¹:</th>
<th>Cases lost from queue:</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 weeks</td>
<td>0</td>
</tr>
</tbody>
</table>

If maximum capacity expands by 20% after restart until the queue is cleared, and 5% of patients leave queue weekly,

<table>
<thead>
<tr>
<th>Time to clear queue¹:</th>
<th>Cases lost from queue:</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 weeks</td>
<td>556</td>
</tr>
</tbody>
</table>

¹. After restart of elective surgeries (i.e. 3 months)

If supply remains at pre-crisis levels, but 5% of patients drop out of the queue each week...

<table>
<thead>
<tr>
<th>Time to clear queue¹:</th>
<th>Cases lost from queue:</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 weeks</td>
<td>677</td>
</tr>
</tbody>
</table>

If maximum capacity is 20% LOWER post-restart for 8 weeks, and 5% of patients leave the queue each week...

<table>
<thead>
<tr>
<th>Time to clear queue¹:</th>
<th>Cases lost from queue:</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 weeks</td>
<td>883</td>
</tr>
</tbody>
</table>
The top 16 open questions we’re looking at now

How will COVID-19 impact…

- …the demographic makeup of the US—and future demand?
- …the purchaser landscape and the nation’s payer mix?
- …the competitive landscape efforts to “disrupt” the industry?
- …expectations about U.S. health care capacity?
- …site-of-care shifts, including to virtual channels?
- …perception of government’s role in health care?
- …public perception of industry stakeholders?
- …the structure of the U.S. health care supply chain?
- …demand for behavioral health services?
- …employers’ health benefits strategies?
- …the future of the clinical workforce?
- …the U.S.’ approach to post-acute and long-term care?
- …the future of value-based care and risk-based payment?
- …future fundraising and philanthropy efforts?
- …perceptions of the value of systemness and scale?
- …the pharma, device, and tech innovation pipelines?
Today’s focus

How will COVID-19 impact…

…the demographic makeup of the US—and future demand?

…the purchaser landscape and the nation’s payer mix?

…the competitive landscape and efforts to “disrupt” the industry?

…expectations about U.S. health care capacity?

…site-of-care shifts, including to virtual channels?

…perception of government’s role in health care?

…public perception of industry stakeholders?

…the structure of the U.S. health care supply chain?

…demand for behavioral health services?

…employers’ health benefits strategies?

…future fundraising and philanthropy efforts?

…the future of the clinical workforce?

…the U.S.’ approach to post-acute and long-term care?

…the future of value-based care and risk-based payment?

…perceptions of the value of systemness and scale?

…the pharma, device, and tech innovation pipelines?
Employee cost sharing a favorite lever in the last recession
But unlikely to be the main strategy this time

Likely employer benefit changes post-recession (2009)
Percent indicating likely or very likely to make or keep changes after economy recovers
n=329 HR professionals from a random sample of SHRM member companies

<table>
<thead>
<tr>
<th>Change</th>
<th>Likely (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase employee share of health coverage costs</td>
<td>62%</td>
</tr>
<tr>
<td>Combine leave into PTO bank</td>
<td>35%</td>
</tr>
<tr>
<td>Reduce pension plans</td>
<td>33%</td>
</tr>
<tr>
<td>Reduce retirement contributions</td>
<td>31%</td>
</tr>
<tr>
<td>Reduce health coverage for dependents</td>
<td>30%</td>
</tr>
<tr>
<td>Eliminate paid relocation</td>
<td>26%</td>
</tr>
<tr>
<td>Reduce leave annual carryover</td>
<td>26%</td>
</tr>
<tr>
<td>Reduce leave accruals/balances</td>
<td>22%</td>
</tr>
</tbody>
</table>

How will COVID-19 impact employers’ health benefits strategies?

Shortfalls and challenges with cost sharing

**Blunt:** HDHPs lead to delays and reductions in all care below the deductible, including preventive care

**Limited:** HDHPs do not encourage price shopping for services above the deductible

**Unpopular:** HDHP enrollment has generally leveled off over the last four years

**Apathetic:** Less generous health benefits risk public backlash after a health-induced economic downturn


Two paths forward: public coverage or intense management

Employer actions will depend on financial health and public policy pressure

Public coverage off-ramp

- Rely on the Medicaid safety net:
  - 37 states (and DC) have adopted expansion
  - 4 states in current legislative battles

- Actively shift employees to Marketplaces:
  - Stabilizing premiums and increasing number of carriers per county
  - New options (e.g. ICHRAs\(^1\)) for employers to offset costs while providing benefits support

Lobby for public coverage expansion or replacement?

Employer Benefits Strategy

Creative micromanagement

High-touch navigation support

- Forced steerage
  - HMO gating
  - Virtual visit-based triage
  - Second opinion service

- Reference pricing
  - Value-based cost sharing
  - Advance price information

- Network alignment
  - Hyper-narrow networks
  - Dedicated (or owned) providers

---

1. Individual coverage health reimbursement account.
A presidential election in the midst of a pandemic
COVID-19 is likely to become the central focus of the race for the presidency

American’s split on Trump’s COVID response
Approval of President Trump’s response to the coronavirus pandemic

<table>
<thead>
<tr>
<th>Date</th>
<th>Approval</th>
<th>Disapproval</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/1</td>
<td>30%</td>
<td>70%</td>
</tr>
<tr>
<td>3/11</td>
<td>35%</td>
<td>65%</td>
</tr>
<tr>
<td>3/21</td>
<td>40%</td>
<td>60%</td>
</tr>
<tr>
<td>3/31</td>
<td>45%</td>
<td>55%</td>
</tr>
<tr>
<td>4/10</td>
<td>50%</td>
<td>50%</td>
</tr>
</tbody>
</table>


Majority support Biden’s public option proposal
American opinion of public option

- Strongly favor: 35%
- Somewhat favor: 34%
- No response: 10%
- Somewhat oppose: 15%
- Strongly oppose: 6%
- Disapproval: 48.6%
- Approval: 47.8%


Advisory Board interviews and analysis.
Cries for both more—and less—government intervention
Public wants gov’t to play larger role in coverage and emergency preparedness

Less government involvement  More government involvement

Hospitals’ financial and resource challenges laid bare by the crisis offer an argument against replacing private insurance with government plans that have lower reimbursement.

41% Percent of survey respondents who said that the pandemic has made them more likely to support universal health care, in which all insurance was provided by the government.

Regulations that have burdened providers for years are being loosened to accommodate COVID response—may be little enthusiasm to bring them back after the pandemic.

89% Percent of survey respondents that want the government to ensure that private companies are meeting the public demand for medical equipment to combat the COVID-19 crisis.

COVID brings renewed focus to the health care industry
Could perception of the industry change like it did after 9/11?

**Negative view of health system mostly holds steady**

*Is the U.S. health care system today in a state of crisis, has major problems, has minor problems, or it does not have any problems?*

n = 1,015 adults in all 50 states

[Graph showing the percentage of negative views over time.]

Source: “Fewer in U.S. See Health System as Having Major Problems,” Gallup, December 2, 2019; Business and Industry Sector Ratings, Gallup, August 14, 2019
Early polling indicates span of changing perceptions
Providers and provider organizations get early boost for COVID response

Clear early winners

**Hospitals and health systems**

65% have a more positive view of hospitals and health systems because of how they’ve reacted to the crisis, 88% approve of how they are responding to COVID

**Clinicians**

68% have a more positive view of providers because of how they’ve reacted to the crisis

Neutral (but trending positive)

**Health plans**

55% have not changed their perception based on the COVID crisis

**Pharmaceutical companies**

48% have not changed their perception based on the COVID crisis

However, those who did change their perception of health plans or pharma are two-times more likely to feel more positive

Negative change in perception

**Post-acute**

Just 54% say they at least somewhat confident that nursing homes in their area can handle the needs of seriously ill people during the outbreak

*The Guardian*

“‘We're living in fear’: why US nursing homes became incubators for the coronavirus”

*Wall Street Journal*

“One Nursing Home, 35 Coronavirus Deaths: Inside the Kirkland Disaster”

Source: “Resilience in the Face of Challenges;” APCO Worldwide, April 2020; Coronavirus Response: Hospitals Rated Best, News Media Worst, March 25, 2020; Most Americans are confident hospitals can handle the needs of the seriously ill during COVID-19 outbreak, Pew Research, March 26, 2020
Longer-term changes likely more nuanced
Actions taken by individual organizations will dictate perception in coming months

<table>
<thead>
<tr>
<th>Health systems</th>
<th>Clinicians</th>
<th>Health plans</th>
<th>Pharma</th>
<th>Post-acute</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Executive pay cuts</td>
<td>• Medical volunteers stepping up in hard-hit areas</td>
<td>• Waiving COVID cost-sharing, treatment costs</td>
<td>• Quickly developing a COVID treatment</td>
<td>• Following mandated infection control measures</td>
</tr>
<tr>
<td>• Lower-than-expected death rates</td>
<td>• Media highlighting clinician’s plights</td>
<td>• Facilitating advanced provider payments</td>
<td>• Forgoing patent exclusivity</td>
<td>• Home health serving as an alternate care site</td>
</tr>
<tr>
<td>• Stepping up amid gov. inaction</td>
<td>• Hero narrative</td>
<td>• Cutting telehealth copays</td>
<td>• Collaborating across organizations</td>
<td>• Getting PPE to staff</td>
</tr>
<tr>
<td>• Fighting to secure PPE</td>
<td></td>
<td>• Promoting Medicaid</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Help perception**

- Staff cuts/ furloughs
- Aggressive billing for COVID patients
- Vocal clinicians upset about response
- Care rationing/ restricting end-of-life visitation

**Hurt perception**

- Patients blaming clinicians for inability to get tested/ treated
- Possible decline in patient relationship over telehealth
- Being blamed for COVID deaths
- Self-funded employers choosing not to cover COVID treatment
- Slow prior-auth1 process for moving COVID patients
- High patient bills
- Future premium increases
- Bad side effects of a treatment/ vaccine rushed to market
- Price gouging/ attempts to patent vaccine
- Fumbling vaccine rollout
- Blamed for FDA delays
- Only accepting COVID-negative patients with multiple tests
- Failing to communicate with families
- Large losses in staff volume due to infection

Predicted impact

- Health systems: Low
- Clinicians: Moderate
- Health plans: High
- Pharma: Low
- Post-acute: High

Advisory Board interviews and analysis.
Erosion of Medicare cross-subsidization taxes nursing facility model
Post-acute and long-term care financials, staffing model inextricably tied

Reliance on Medicare cross-subsidization leaves SNFs underfunded...

Average SNF revenue per patient day
CY 2019

| Medicare   | $544 |
| Medicaid   | $216 |

Medicaid patient days are increasing in SNF

- **68%** Medicaid patient day mix in Q4 2019
- **9%** increase in Medicaid patient days between 2012 and 2019

…and discourages investment required for higher-level care

- **Two-thirds** of nursing hours are provided by aide-level staff
- **53.1% of staff** turn over annually, on average
- **Majority of facilities** lack adequate space for private rooms, patient cohorting
- **Traditionally less medically complex** patient population meant few facilities had invested in large stores of PPE

Covid-19 continues to spread rapidly in nursing homes
At least 3,466 long-term care facilities have reported cases of Covid-19

Number of nursing homes with Covid-19 cases, by state

- **128 cases** linked to nursing home in Washington.
- **92 cases** associated with post-acute center in Kansas.
- **83 cases** linked to Texas nursing home.
- **136 cases** linked to nursing home in Massachusetts.
- **98 cases** linked to Maryland nursing facility.
- **115 cases** associated with rehabilitation center in Tennessee.

Not reporting
0 nursing homes
1-50 nursing homes
51-100 nursing homes
>100 nursing homes

Source:
Shaping the future of the post-acute continuum
Will current crisis lead to more funding for SNFs, or accelerate the shift to home?

Advocates begin to rally for more funding in long-term care…

INNOVATION

Representatives Jennifer Wexton (D-VA) and Abigail Spanberger (D-VA) spearheaded a new effort this week to include more dedicated funding for post-acute and long-term care providers in the next stimulus bill.

…but an accelerated shift toward home-based care is more likely

The COVID-19 pandemic adds to trends supporting home-based care models

- Proliferation of value-based payment models supporting lower total cost-of-care
- Rapid development of at-home patient monitoring technology
- Increasing consumer preference to age in place

Growing stigma associated with long-term care due to frequent COVID-19 outbreaks; causes patients, families, and providers to opt for home care over facility-based


Post-acute providers are unlikely to get substantial increases given limited available funding
COVID-19 may give incumbents short respite from disruptors
Despite short-term slow-down, threat of disruption will persist

Impact of crisis on disruptors

Short-term impact
- Some start-ups face liquidity issues leading to lay-offs and closures; government-funded grants and private equity commitments may lessen impact
- Digital health companies will be partially immune to short-term negative impacts, while disruptors at large will experience stalled growth

Medium-term impact
- Venture capital firms will continue to invest funds they have already raised, but with greater scrutiny
- Consumers will exhibit more selective spending habits as economic downturn persists, dampening success of direct-to-consumer ventures

Long-term impact
- Well-capitalized and “too big to fail” companies remain, and in some cases, will acquire distressed assets
- Demand returns for solutions focused on long-standing issues, such as chronic disease management, expanded primary care access, and an aging population

How will COVID-19 impact the competitive landscape and efforts to “disrupt” the industry?

Health innovation funding and number of deals pre-COVID-19

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Outbreak will create new opportunities for disruption

New normal from stay-at-home economy and lifestyle

**New users of telehealth**
Virtual visits and remote monitoring may be here to stay if first-time users have a good experience and payment parity stays in place and/or reimbursement is secured through other arrangements

**Momentum for home-based care**
Consumers may attach to the convenience of home-based care; Hospital at Home companies will have case for receiving reimbursement

**Adoption of self-administered diagnostics**
Technologies enabling consumers to submit diagnostic data garner awareness during pandemic, while proving ease, safety, and convenience

Second-order effects from financial pressures and an economic recovery

**Growth of direct-pay models**
Consumers seek primary care membership models or low-cost self-pay options to compensate for loss of insurance

**Changes to benefit design**
Employers take a more activist approach to managing costs, and become receptive to COE programs, digital therapeutics programs, and stronger virtual care incentives

**Renewed focus on value-based payment**
Payers may refocus their attention on value-based programs to address cost pressures, opening the door for wellness and population health management companies

Advisory Board interviews and analysis.
COVID-19 to have unprecedented psychological impact

State of BH\(^1\) pre-COVID

- **56%**
  - Shortage of mental health care professionals\(^2,3\)

- **2X**
  - Denial rates of private insurance for BH compared to medical care

COVID drivers of BH need

**General population**
- **Collective grief, fear, and loneliness**: 80% of Americans report moderate or high levels of distress
- **Financial crises** are linked to increased depression, anxiety, substance misuse, and suicides\(^4\)

**People with BH conditions**
- **Limited access** to BH treatment
- Stress, isolation, uncertainty, etc. can trigger or exacerbate symptoms

Clinicians and first responders
- **Extreme stress and trauma** with frontline staff in China reporting high rates of depression (50%), anxiety (45%), insomnia (34%), and distress (72%)

COVID-19 patients and their families
- **Quarantining** can cause post-traumatic stress symptoms, confusion, and anger with possible long-lasting effects

While need skyrockets, most barriers to treatment remain

- Financial insecurity and job loss exacerbate unaffordability problem
- Stigma and discomfort seeking care for behavioral health
- Physician and nurses concerned about maintaining licensure

---

1. Behavioral health.
2. Mental health professionals include psychiatrists, clinical psychologists, clinical social workers, psychiatric nurse specialists, and marriage and family therapists.
4. There was a 13% increase in suicides attributable to unemployment during the Great Recession in 2008.

1. Telebehavioral health is the remote diagnosis and treatment of mental health and substance use disorders. Behavioral health providers include psychologists, psychiatrists, licensed clinical social workers and licensed practicing counselors, among others.

**Regulatory changes ease implementation**

- **Expanded field of providers**
  - Trump administration allows therapists and social workers to video chat with patients

- **Reimbursement parity**
  - Some insurers reimburse for virtual treatment at the same rate as in-person treatment

**Recent tele-BH surges indicate willingness**

- **130%**
  - Increase in tele-BH visits from telehealth company Doctor on Demand over this time last year

- **4X**
  - Increase in the VA’s phone-based mental health check-ins and consultations, from 40K in February to 154K in March

**High-priority populations for tele-BH during COVID-19**

- Patients diagnosed with COVID-19 and their families
- People at high risk of infection
  - Frontline clinicians working with COVID patients
  - First responders
- People already receiving BH treatment

### Investment required beyond tele-BH
Self-service and on-demand support required to meet surge in demand

<table>
<thead>
<tr>
<th><strong>Self-service resources</strong></th>
<th><strong>On-demand support</strong></th>
<th><strong>Ongoing treatment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Digital health apps</td>
<td>• Help lines for navigation or immediate care</td>
<td>• Virtual screening</td>
</tr>
<tr>
<td>• Educational materials</td>
<td>• Crisis support</td>
<td>• Individual or group therapy</td>
</tr>
<tr>
<td>• List of local resources, such as mental health centers</td>
<td></td>
<td>• Medication management</td>
</tr>
</tbody>
</table>

**UCSF’s** curated resource page for employees includes digital health apps made free to providers, wellness tips, and methods to seek treatment

**Intermountain’s** emotional health relief hotline navigates callers to self-care tools and treatment options

**Atrium Health’s** 24/7 help line is staffed by master’s level BH clinicians and RNs to offer immediate care and referrals to ongoing tele-BH support

<table>
<thead>
<tr>
<th>Investment</th>
<th>Reach</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
</tr>
</tbody>
</table>

Your top resources for COVID-19 readiness

**CDC and WHO Guidelines**
Compiles evidence-based information on hospital and personnel preparedness, COVID-19 infection control recommendations, clinical guidelines, and case trackers.

**Coronavirus scenario planning**
Explores twelve situations hospital leaders should prepare for and helps hospital leadership teams pressure test the comprehensiveness of their preparedness planning efforts and check for blind spots.

**Managing clinical capacity**
Examines best practices for creating flexible nursing capacity, maximizing hospital throughput in times of high demand, increasing access channels, deploying telehealth capabilities, and engaging clinicians as they deal with intense workloads.

**How COVID-19 is transforming telehealth—now and in the future**
Explores how telehealth is being deployed against COVID-19 and essential next steps for telehealth implementation.

To access the top COVID-19 resources, visit advisory.com/covid-19
Meet our experts

Christopher Kerns
Vice President, Executive Insights

Christopher oversees all senior executive research at Advisory Board, and is responsible for developing the research perspective, official point of view, and overall Advisory Board message to executives from across the health care sector.

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