FEMA/ASPR - Arizona Briefing

COVID-19 Planning Considerations

May 7, 2020
• There are multiple planning tools and models that states, tribes, and territories can use to make important COVID-19 decisions

• FEMA and HHS are working with the Johns Hopkins University (JHU) Applied Physics Laboratory to develop planning tools that states and territories can use in concert with other available resources to assist with decision making

• The models provided by JHU alongside other commonly used models can be considered in an attempt to capture a more holistic view of the public health picture

• The planning tools federal agencies have shared with states, tribes, and territories have changed several times over the course of the incident as more data was gathered and adjustments to parameters were made based on observed, real-world conditions in the state, tribe, or territory and across the country

• This public health analysis includes overlaying real public health data within the model and better describing any potential variations using traditional public health methods

• Any models presented in this briefing are preliminary results and are not forecasts or predictions
PREDECISIONAL AND DELIBERATIVE
Outbreak Scenarios & Timelines (30 Day Outlook)

Current outbreak scenarios show hospitalizations, critical care, and ventilator usage will remain below capacity in period of assessment.

**JHU Hospitalizations Model: May 1 v. May 7**

This model shows the current "best guess" scenario for COVID-19 impacts per the CDC. It does not account for potential easing of mitigative measures going forward.

**JHU Critical Care Model: May 1 v. May 7**

This model shows the current "best guess" scenario for COVID-19 impacts per the CDC. It does not account for potential easing of mitigative measures going forward.

**JHU Ventilator Model: May 1 v. May 7**

This model shows the current "best guess" scenario for COVID-19 impacts per the CDC. It does not account for potential easing of mitigative measures going forward.

---

**May 7 Model Predicted Values**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitals</td>
<td>734</td>
<td>752</td>
<td>804</td>
<td>863</td>
<td>918</td>
<td>962</td>
<td>1004</td>
<td>1037</td>
<td>1068</td>
<td>1091</td>
<td>1109</td>
<td>1122</td>
<td>1129</td>
<td>1137</td>
<td>1141</td>
<td>1144</td>
<td>1146</td>
<td>1147</td>
<td>1147</td>
<td>1148</td>
<td>1149</td>
<td>1150</td>
<td>1152</td>
<td>1154</td>
<td>1156</td>
<td>1158</td>
<td>1161</td>
<td>1165</td>
<td>1168</td>
<td>1174</td>
<td>1179</td>
<td>1185</td>
<td>1192</td>
</tr>
<tr>
<td>Ventilator Usage</td>
<td>123</td>
<td>126</td>
<td>135</td>
<td>145</td>
<td>154</td>
<td>161</td>
<td>166</td>
<td>170</td>
<td>173</td>
<td>174</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
<td>175</td>
</tr>
</tbody>
</table>
**Overall Analysis**

- Hospitalizations, Critical Care, and Ventilator use has seen an uptick over the last three days.
- Hospitalizations, Critical Care, and Ventilator use has slowed its increase substantially the last 14 days compared to the 14 days before that.

**Critical Care and Ventilator Usage**

- Critical Care and Ventilator usage as percentage of total hospitalizations was 54% (ICU) and 38% (Ventilator) respectively on April 12—this is much higher than the 20% (ICU) and 14% (Ventilator) observed globally.
- These numbers are starting to normalize towards national statistics at 38% (ICU) and 26% (Ventilator) on May 7, but remains well above the expected rates.

**Current Cases**

<table>
<thead>
<tr>
<th>Country</th>
<th>JHU, 05/06/2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases</td>
<td>9,305</td>
</tr>
<tr>
<td>Casualties</td>
<td>395</td>
</tr>
</tbody>
</table>

**Current Hospital Utilization**

<table>
<thead>
<tr>
<th>RESOURCE</th>
<th>TOTAL</th>
<th>IN USE</th>
<th>% AVILABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LICENSED BEDS</td>
<td>14,719</td>
<td>7,157</td>
<td>51%</td>
</tr>
<tr>
<td>ICU BEDS</td>
<td>2,241</td>
<td>1,719</td>
<td>23%</td>
</tr>
<tr>
<td>VENTILATORS</td>
<td>1,733</td>
<td>561</td>
<td>68%</td>
</tr>
</tbody>
</table>

**Actual Hospital Utilization Over Time**

The metrics for reopening America include a 14 day downward trajectory of COVID-like syndromic cases and treatment of all patients without crisis care. While Arizona is see a slowing in hospital utilization, it has yet to see a prolonged period of decrease.
PREDECISIONAL AND DELIBERATIVE

Johns Hopkins Applied Physics Lab Model: Active Cases and Hospitalizations

**SEIR Model Assumptions**

- CDC “Best Guess” Assumptions
  - Mitigation is interpreted using mobility data
  - Assumes only a testing factor of 10
  - Doubling Time=5.5 days
  - Initial R0=2.5
  - Overall Unmitigated Serologic Attack Rate: 60%
  - Symptomatic Case Fatality Ratio: 0-49: 0.06; 50-64: 0.3; 65+: 1.7; Overall: 0.5
  - Symptomatic Case Hospitalization Ratio (%): 0-4: 4.0; 5-17: 1.0; 18-49: 4.0; 50-64: 8.5; 65+: 19.5; Overall: 8.0
  - Proportion of infections that are asymptomatic: 35%
  - Relative infectiousness of asymptomatic individuals: 100%
  - Proportion of transmission occurring prior to symptom onset: 35%
  - Pre-existing immunity: none
  - Time to Symptom Onset: 5 days
  - Average time between primary and secondary infection: 7 days
  - Time to seek care: <=2 days: 35%; 3-7 days: 50%; >=8 days: 25%
  - Mean time from onset to hospitalization: 0-49: 6.0; 50-64: 6.3; >=5.2
  - Mean duration of hospitalization: 0-49: 3.1; 50-64: 7.8; >=65: 6.5
  - ICU% among those hospitalized: 0-49: 10; 50-64: 20; 65+: 30
  - %ventilated among those in ICU: 0-49: 60; 50-64: 75; 65+: 75
  - Mean time from symptom onset to death: 10 days

All magnitudes are highly unreliable based on the range uncertainty in the data with the time horizon

This model shows the current “best guess” scenario for COVID-19 impacts per the CDC. It does not account for potential easing of mitigative measures going forward.
### SEIR Model Assumptions

**CDC “Best Guess” Assumptions**

- Mitigation is interpreted using mobility data
- Assumes only a testing factor of 10
- Doubling Time=5.5 days
- Initial R0=2.5
- Overall Unmitigated Serologic Attack Rate: 60%
- Symptomatic Case Fatality Ratio: 0-49: 0.06; 50-64: 0.3; 65+: 1.7; Overall: 0.5
- Symptomatic Case Hospitalization Ratio (%): 0-4: 4.0; 5-17: 1.0; 18-49: 4.0; 50-64: 8.5; 65+: 19.5; Overall: 8.0
- Proportion of infections that are asymptomatic: 35%
- Relative infectiousness of asymptomatic individuals: 100%
- Proportion of transmission occurring prior to symptom onset: 35%
- Pre-existing immunity: none
- Time to Symptom Onset: 5 days
- Average time between primary and secondary infection: 7 days
- Time to seek care: <2 days: 35%; 2-7 days: 50%; 7+/=8 days: 25%
- Mean time from onset to hospitalization: 0-49: 6.0; 50-64: 6.3; 7+/=8 days: 5.2
- Mean duration of hospitalization: 0-49: 3.1; 50-64: 7.8; 7+/=8 days: 6.5
- ICU% among those hospitalized: 0-49: 10; 50-64: 20; 65+: 30
- %ventilated among those in ICU: 0-49: 60; 50-64: 75; 65+: 75
- Mean time from symptom onset to death: 10 days

This model shows the current “best guess” scenario for COVID-19 impacts per the CDC. It does not account for potential easing of mitigative measures going forward.

All magnitudes are highly unreliable based on the range uncertainty in the data with the time horizon.
COVID ACT NOW: All Hospitalizations

Future projections: all hospitalizations

ARIZONA

Assuming current trends and interventions continue, Arizona hospitals are unlikely to become overloaded in the next 3 months. However, any reopening should happen in a slow and phased fashion. If all restrictions were completely lifted today, hospitals would overload on May 31, 2020.

IHME Information available here: https://www.medrxiv.org/content/10.1101/2020.04.21.20074732v1