2019 Novel Coronavirus COVID-19

Healthcare Partners Webinar

March 31, 2020

IOWA DEPARTMENT OF PUBLIC HEALTH

Protecting and Improving the Health of Iowans

IDPH
IOWA Department of PUBLIC HEALTH

Webinar Information

All participants will be muted during the presentation.

- Questions can be submitted directly to the facilitator via the question feature located on your control panel
- All questions submitted will be answered at the end of the presentation

This session will be recorded and made available for reviewing

- When available, you will receive a follow-up-email with instructions on how to access the recording

Objectives

- Review COVID-19 epidemiology (global, national, state and local)
- Outline current COVID-19 response activities in Iowa
- Review testing guidance
- Review clinical management guidance
- Discuss use of personal protective equipment
- Discuss Crisis Standards of Care Concept
- Q&A

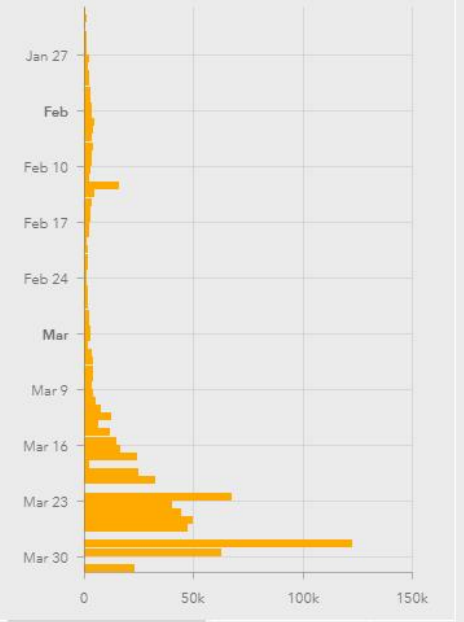
Coronavirus disease (COVID-19) Situation Dashboard

中文

719,700
confirmed cases

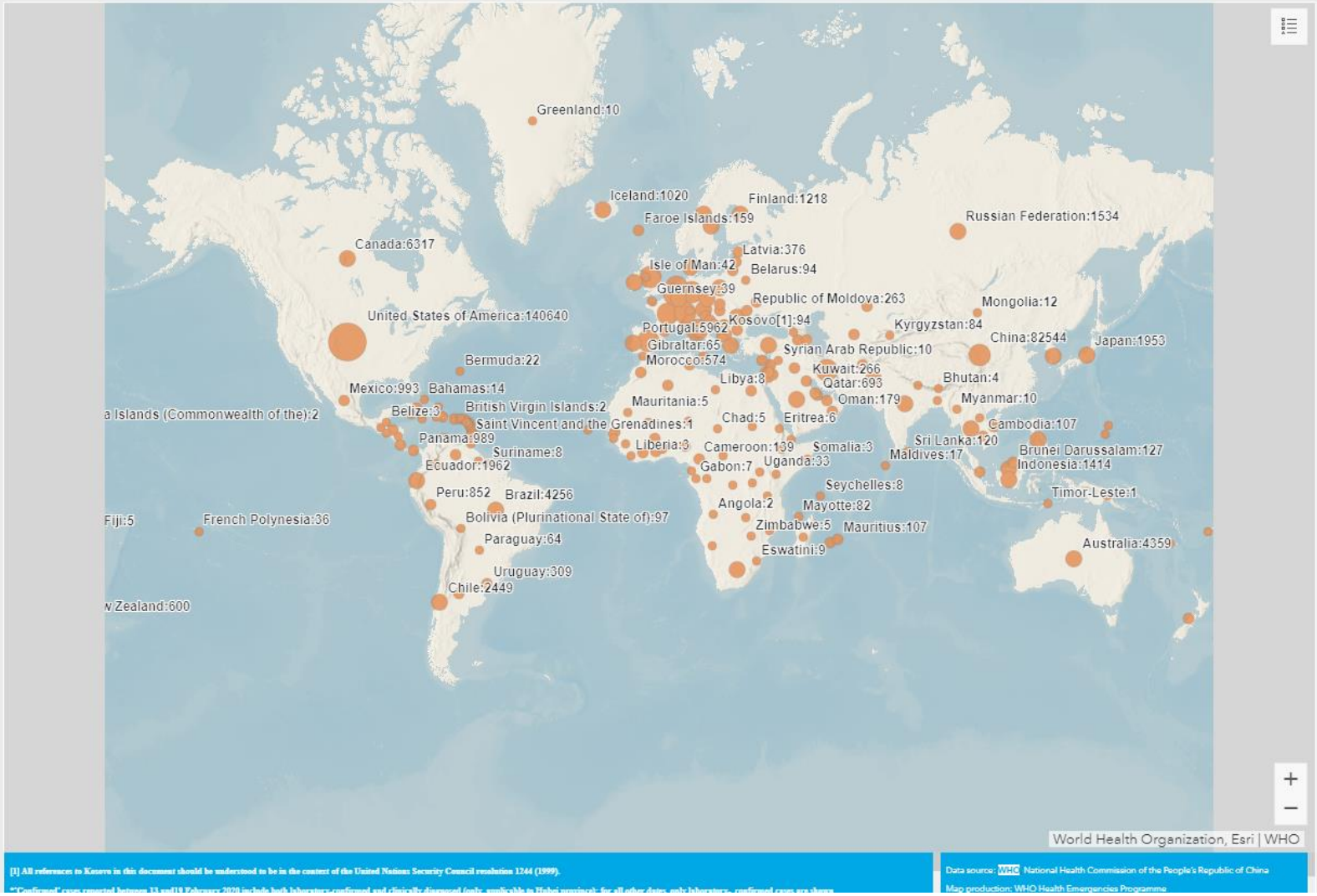
33,673
deaths

202
countries, areas or territories with cases



Cases by date of report | Cumulative cases

Last updated:31/03/2020 10:00 CET



[1] All references to Kosovo in this document should be understood to be in the context of the United Nations Security Council resolution 1244 (1999).

Data source: WHO, National Health Commission of the People's Republic of China
Map production: WHO Health Emergencies Programme

Countries, areas or territories with cases

- United States of America :**140640** cases
- Italy :**97689** cases
- China :**82544** cases
- Spain :**78797** cases
- Germany :**57298** cases
- Iran (Islamic Republic of) :**41495** cases
- France :**39642** cases
- The United Kingdom :**19526** cases
- Switzerland :**14274** cases
- Netherlands :**10866** cases
- Belgium :**10836** cases
- Republic of Korea :**9786** cases
- Turkey :**9271** cases
- Austria :**8813** cases
- Canada :**6317** cases
- Portugal :**5962** cases
- Australia :**4359** cases
- Brazil :**4256** cases
- Israel :**4247** cases
- Norway :**4102** cases
- Sweden :**3700** cases
- Czechia :**2829** cases
- Malaysia :**2626** cases
- Ireland :**2615** cases
- Chile :**2449** cases
- Denmark :**2395** cases

Countries, territories

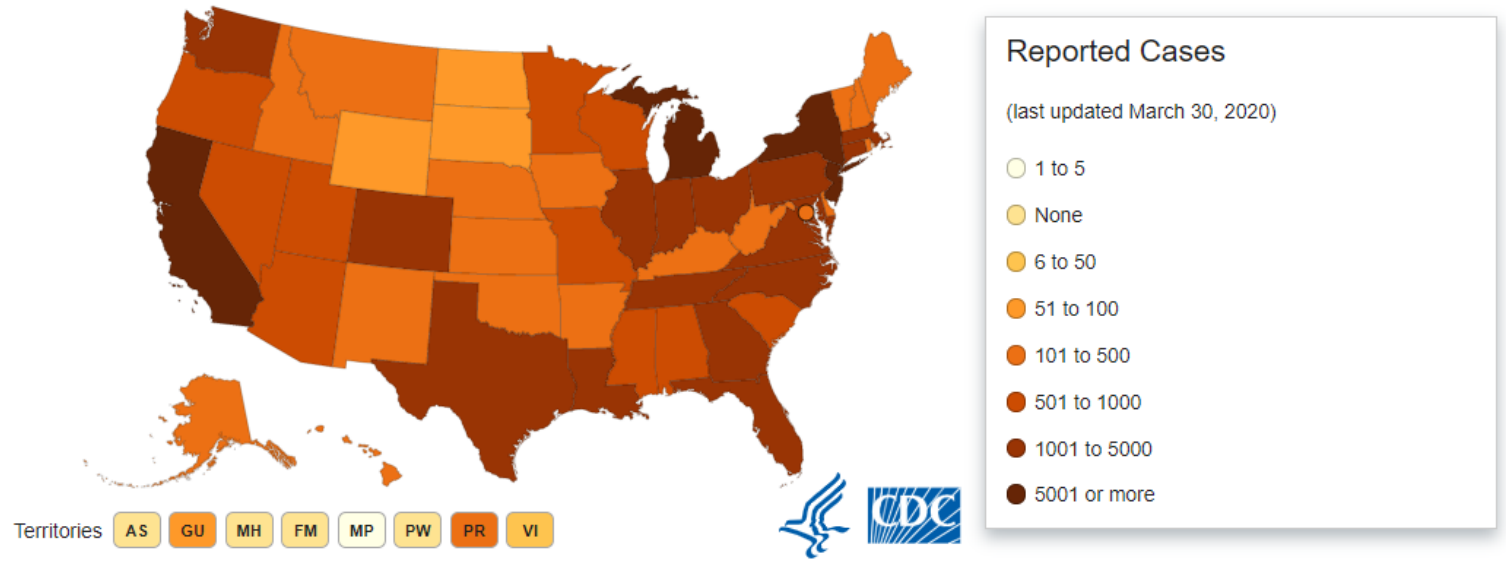
COVID-19: U.S. at a Glance*†

- Total cases: 140,904
- Total deaths: 2,405
- Jurisdictions reporting cases: 55 (50 states, District of Columbia, Puerto Rico, Guam, Northern Marianas, and US Virgin Islands)

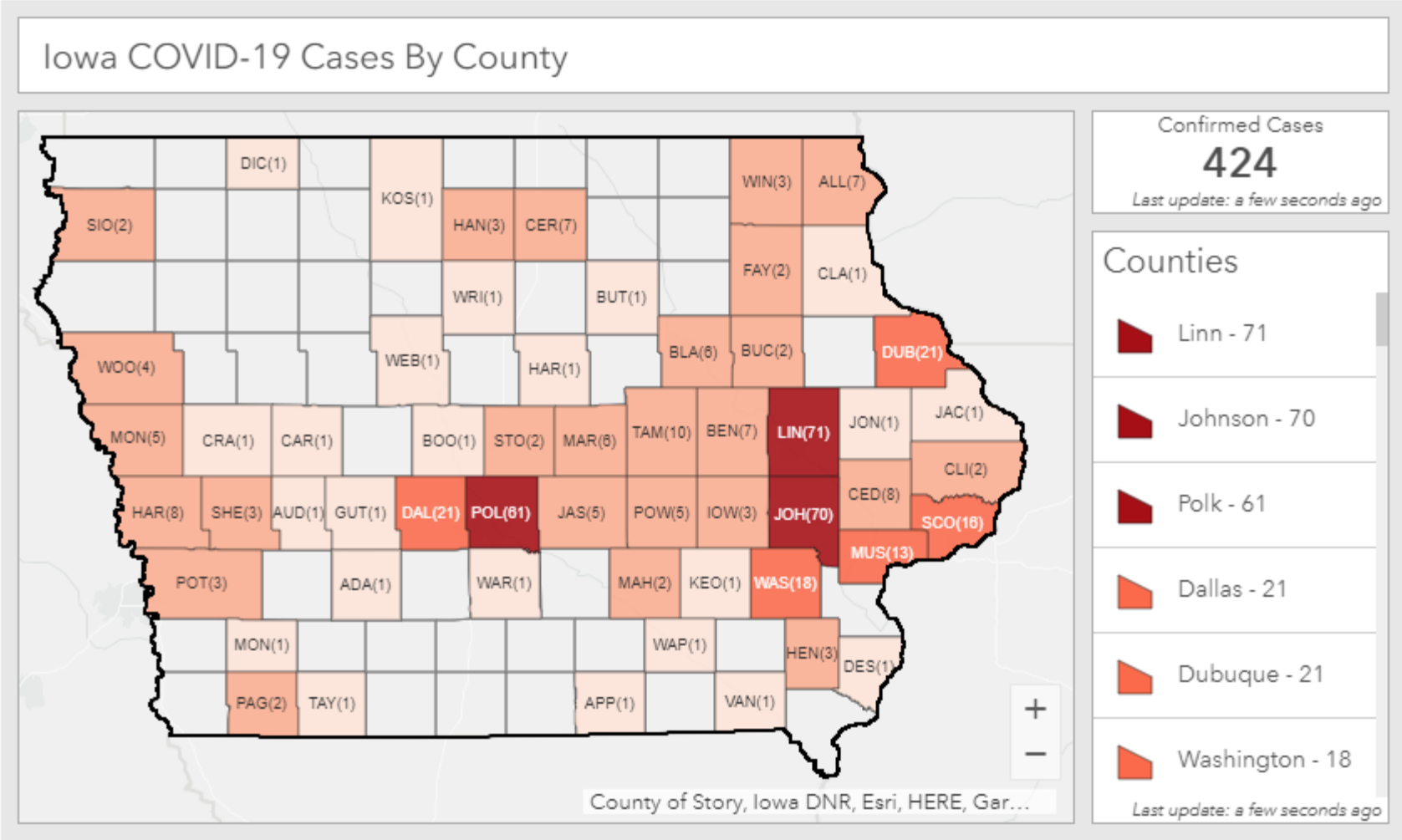
* Data include both confirmed and presumptive positive cases of COVID-19 reported to CDC or tested at CDC since January 21, 2020, with the exception of testing results for persons repatriated to the United States from Wuhan, China and Japan. State and local public health departments are now testing and publicly reporting their cases. In the event of a discrepancy between CDC cases and cases reported by state and local public health officials, data reported by states should be considered the most up to date.

† Numbers updated Saturday and Sunday are not confirmed by state and territorial health departments. These numbers will be modified when numbers are updated on Monday.

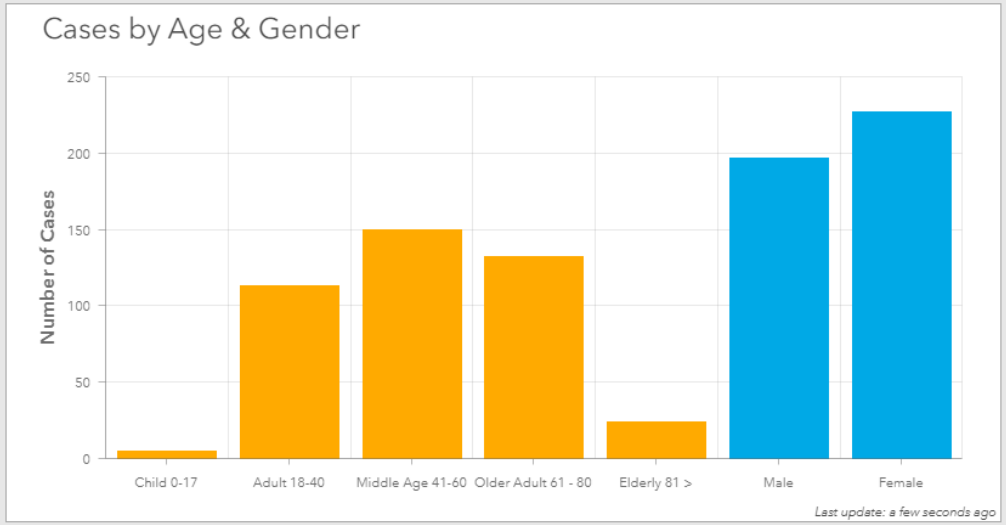
States Reporting Cases of COVID-19 to CDC*



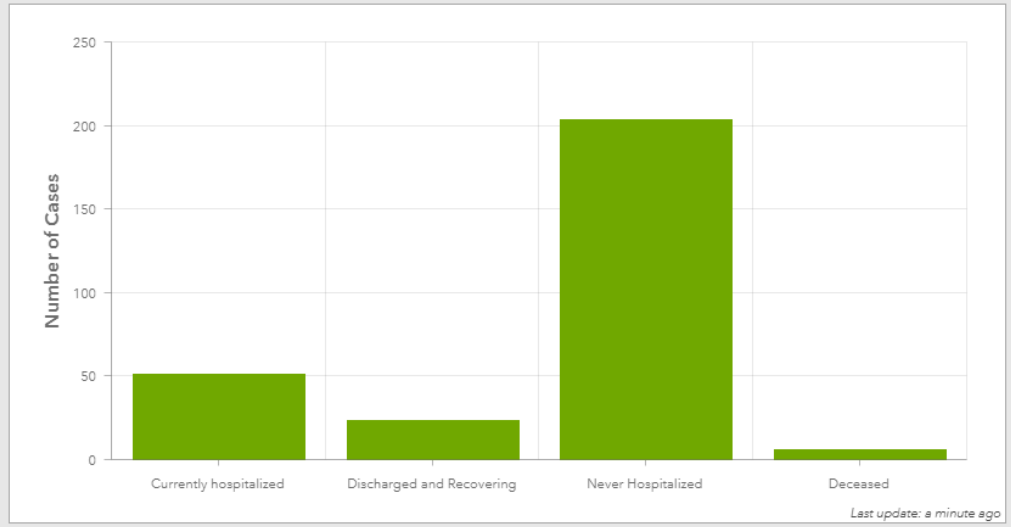
States +


Iowa COVID-19 Cases By County
DIC(1)
KOS(1)
WIN(3)
ALL(7)
SIO(2)
HAN(3)
CER(7)
FAY(2)
CLA(1)
WRI(1)
BUT(1)
WOO(4)
WEB(1)
HAR(1)
BLA(8)
BUC(2)
DUB(21)
MON(5)
CRA(1)
CAR(1)
BOO(1)
STO(2)
MAR(6)
TAM(10)
BEN(7)
LIN(71)
JON(1)
JAC(1)
CLI(2)
HAR(8)
SHE(3)
AUD(1)
GUT(1)
DAL(21)
POL(61)
JAS(5)
POW(5)
IOW(3)
JOH(70)
CED(8)
SCO(16)
MUS(13)
POT(3)
ADA(1)
WAR(1)
MAH(2)
KEO(1)
WAS(18)
MON(1)
WAP(1)
HEN(3)
DES(1)
PAG(2)
TAY(1)
APP(1)
VAN(1)
County of Story, Iowa DNR, Esri, HERE, Gar…
Confirmed Cases
424
Last update: a few seconds ago
Counties
Linn - 71
Johnson - 70
Polk - 61
Dallas - 21
Dubuque - 21
Washington - 18
Last update: a few seconds ago

Iowa COVID-19 Case Demographics



Iowa COVID-19 Case Hospitalization Data



COVID-19 Response in Iowa

- All of government response – SEOC activated with daily staffing
- IDPH leading epidemiologic and public health case investigation approach – with 24/7 support
  - Focus on household and healthcare worker contacts
  - Regular surveillance and enhanced outbreak response in long term care settings
- Partner with the State Hygienic Laboratory for testing (order form online)
- Regular points of contact with healthcare partners at state and local levels to assess workforce and resource (PPE, beds, vents, etc.) needs
- Ongoing multi-disciplinary approach to purchasing, manufacturing, and distributing PPE
- Multi-agency approach to providing support for essential services personnel
- Regular evaluation of disease activity and resource availability to inform use of public health mitigation measures

Review of Diagnostic Testing

Testing Framework for Iowa

The State Hygienic Laboratory will perform COVID-19 testing in accordance with one of the following criteria (these criteria may broaden as the pandemic expands and additional testing resources become available).

- All hospitalized patients (of any age) with fever and respiratory illness
- Older adults (>60 years of age) with fever and respiratory symptoms (cough, difficulty breathing) and chronic medical conditions (e.g., diabetes, heart disease, immunosuppressive medications, chronic lung disease, or chronic kidney disease).
- Persons of any age with fever or respiratory illness who live in congregate setting (i.e., long term care facilities, dormitories, residential facilities, correctional facilities, treatment facilities)
- Healthcare workers, essential services personnel, first responders and critical infrastructure workers with fever or respiratory illness (ex. healthcare workers, fire and EMS, law enforcement, residential facility staff)

Additional Testing Considerations

- Specimen sources (NP>OP>mid-turbinate>anterior nares)
- Commercial laboratories or in-hospital/network testing
- Development of serologic assays
- Future use of rapid point-of-care testing

COVID-19 Clinical Management Guidance

Signs and Symptoms

- Fever (83–99%)
- Cough (59–82%)
- Fatigue (44–70%)
- Anorexia (40–84%)
- Shortness of breath (31–40%)
- Sputum production (28–33%)
- Myalgias (11–35%)

Incubation

- The incubation period for COVID-19 is thought to extend to 14 days, with a median time of 4-5 days from exposure to symptoms onset

- One study reported that 97.5% of persons with COVID-19 who develop symptoms will do so within 11.5 days of SARS-CoV-2 infection

Asymptomatic & Presymptomatic Considerations

- Several studies have documented SARS-CoV-2 infection in patients who never develop symptoms (asymptomatic) and in patients not yet symptomatic (pre-symptomatic)
- One study found that as many as 13% of RT-PCR-confirmed cases of SARS-CoV-2 infection in children were asymptomatic
- Another study of skilled nursing facility residents infected with SARS-CoV-2 from a healthcare worker demonstrated that half were asymptomatic or pre-symptomatic at the time of contact tracing evaluation and testing
- Patients may have abnormalities on chest imaging before the onset of symptoms.19,20 Some data suggest that pre-symptomatic infection tended to be detected in younger individuals and was less likely to be associated with viral pneumonia

Asymptomatic & Presymptomatic Considerations

- Although transmission of SARS-CoV-2 from asymptomatic or pre-symptomatic persons has been reported, risk of transmission is thought to be greatest when patients are symptomatic

- Viral RNA shedding, measured indirectly by RT-PCR cycle threshold values, is greatest at the time of symptom onset and declines over the course of several days to weeks

- The exact degree of SARS-CoV-2 viral RNA shedding that confers risk of transmission is not yet clear

Illness Severity

- The largest cohort of >44,000 persons with COVID-19 from China showed that illness severity can range from mild to critical
  - Mild to moderate (mild symptoms up to mild pneumonia): 81%
  - Severe (dyspnea, hypoxia, or >50% lung involvement on imaging): 14%
  - Critical (respiratory failure, shock, or multiorgan system dysfunction): 5%

- Overall case fatality rate was 2.3% , among patients with critical disease case fatality rate was 49%

Illness Severity

- Among children in China, illness severity was lower with 94% having asymptomatic, mild or moderate disease, 5% having severe disease, and <1% having critical disease
- Only one (<0.1%) death was reported in a person <18 years old
- Among U.S. COVID-19 cases with known disposition, the proportion of persons who were hospitalized was 19%
- The proportion of persons with COVID-19 admitted to the intensive care unit (ICU) was 6%

Clinical Progression

- Among patients who developed severe disease
  - Median time to dyspnea ranged from 5 to 8 days
  - Median time to acute respiratory distress syndrome (ARDS) ranged from 8 to 12 days
  - Median time to ICU admission ranged from 10 to 12 days

- Clinicians should be aware of the potential for some patients to rapidly deteriorate one week after illness onset

- Among all hospitalized patients, a range of 26% to 32% of patients were admitted to the ICU

- Among all patients, a range of 3% to 17% developed ARDS compared to a range of 20% to 42% for hospitalized patients and 67% to 85% for patients admitted to the ICU

- Mortality among patients admitted to the ICU ranges from 39% to 72% depending on the study

- The median length of hospitalization among survivors was 10 to 13 days

Risk Factors for Severe Illness

- Age is a strong risk factor for severe illness, complications, and death

- Among more than 44,000 confirmed cases of COVID-19 in China, the case fatality rate was highest among older persons:
  - ≥80 years: 14.8%
  - 70–79 years: 8.0%
  - 60–69 years: 3.6%
  - 50–59 years: 1.3%
  - 40–49 years: 0.4%
  - <40 years: 0.2%

- Early U.S. epidemiologic data suggests that the case fatality was highest in persons aged ≥85 years (range 10%–27%), followed by 3%–11% for ages 65–84 years, 1%–3% for ages 55–64 years, and <1% for ages 0–54 years

Risk Factors for Severe Illness

- Patients with no reported underlying medical conditions had an overall case fatality of 0.9%, but case fatality was higher for patients with comorbidities:
  - 10.5% for those with cardiovascular disease
  - 7.3% for diabetes
  - 6% each for chronic respiratory disease, hypertension, and cancer

- Heart disease, hypertension, prior stroke, diabetes, chronic lung disease, and chronic kidney disease have all been associated with increased illness severity and adverse outcomes

Reinfection Question

- No data concerning the possibility of reinfection with SARS-CoV-2 after recovery from COVID-19
- Viral RNA shedding declines with resolution of symptoms, and may continue for days to weeks
- However, the detection of RNA during convalescence does not necessarily indicate the presence of viable infectious virus
- Clinical recovery has been correlated with the detection of IgM and IgG antibodies which signal the development of immunity

Clinical Course

- The most common laboratory abnormalities reported among hospitalized patients with pneumonia on admission included leukopenia (9–25%), leukocytosis (24–30%), lymphopenia (63%), and elevated alanine aminotransferase and aspartate aminotransferase levels (37%).

- Multiple areas of consolidation and ground glass opacities are typical findings reported to date. However, one study that evaluated the time from symptom onset to initial CT scan found that 56% of patients who presented within 2 days had a normal CT.

Clinical Course

- Patients with a mild clinical presentation may not initially require hospitalization. However, clinical signs and symptoms may worsen with progression to lower respiratory tract disease in the second week of illness; all patients should be monitored closely. Possible risk factors for progressing to severe illness may include, but are not limited to, older age, and underlying chronic medical conditions such as lung disease, cancer, heart failure, cerebrovascular disease, renal disease, liver disease, diabetes, immunocompromising conditions, and pregnancy.

- The decision to monitor a patient in the inpatient or outpatient setting should be made on a case-by-case basis.

Medication and Treatment

- ACEs and ARBs (potentially reduce ability of virus to enter cell)
- Recent concern over role of NSAIDs in worsening, no data to support
- No specific treatment for COVID-19 is currently available. Clinical management includes prompt implementation of recommended infection prevention and control measures and supportive management of complications, including advanced organ support if indicated.
- Corticosteroids should be avoided, because of the potential for prolonging viral replication as observed in MERS-CoV patients, unless indicated for other reasons.

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Sioux City, IA
51101

24-Hour Poison Information and Emergency
1-800-222-1222

Administration
712-293-7757

Fax
712-234-8775

Education
712-279-3717

Website
iowapoison.org

Accredited by the American Association of Poison Control Centers

For: IMMEDIATE RELEASE
March 25, 2020

Contact: Dr. Ed Bottei
Medical Director
Iowa Poison Control Center
1-800-222-1222

POISON ALERT:
Serious Toxicity from Chloroquine and Hydroxychloroquine

Chloroquine (CQ) and hydroxychloroquine (HCQ) have historically been used to treat malaria, lupus and rheumatoid arthritis. A recent publication [1] has shown activity of HCQ and CQ against the SARS-CoV-2 (CoVID-19) virus in cell cultures. This laboratory finding has led to hoarding and stockpiling of CQ and HCQ by the general public.

CQ and HCQ can cause severe toxicity and death in an overdose. One or two tablets of CQ or HCQ can be fatal for a small child [2]. Two to three times the usual therapeutic dose can be fatal in a child. Ingestion of >5 grams in an adult is almost universally fatal [3]. Toxicity and death occur rapidly, usually within 30 minutes to 3 hours after ingestion of CQ or HCQ. Additionally, both drugs have a very narrow therapeutic window.

Clinical Effects: CQ and HCQ cause severe cardiac toxicity because of their similarity to quinidine, the class Ia anti-arrhythmic medication. Severe hypotension is the result of impaired cardiac contractility and impaired cardiac conduction and excitability. EKG manifestations include prolongation of the QRS and QTc intervals. Other signs of CQ and HCQ toxicity include apnea, seizures and ventricular arrhythmias. Hypokalemia occurs because of potassium shifting into cells and can contribute to the cardiotoxicity.

Management: CQ and HCQ toxicity requires prompt recognition, close monitoring and aggressive treatment, including early intubation. The use of activated charcoal must be decided on a case-by-case basis, realizing that (a) these patients rapidly develop serious cardiac and CNS toxicity and (b) activated charcoal has never been proven to improve outcomes. Hypotension from poor contractility seems to respond better to epinephrine rather than norepinephrine. Additionally, high dose IV diazepam (2 mg/kg) is thought to act on peripheral benzodiazepine receptors in the heart to help increase cardiac contractility. Cautious potassium replacement should be used to prevent the serum potassium from falling below 2 mEq/L. Sodium channel blockade, evidenced by widening of the QRS, should be treated with sodium bicarbonate. Note: alkalization with bicarbonate can worsen hypokalemia. Seizures should be treated with high dose benzodiazepines. Use of barbiturates is questionable as the use of thiopental has immediately preceded cardiac arrest in numerous chloroquine overdose patients.

As CQ and HCQ are being revitalized for the treatment of CoVID-19, it is important to remember the severe toxicity associated with its use. Ensure that patients are locking up these medications and not stockpiling, as even one tablet can be very toxic or fatal to a child. **Contact the Iowa Poison Control Center at 1-800-222-1222 as soon as a CQ or HCQ exposure is suspected.**

Edward Bottei, MD, FCCP, FACMT
Medical Director, Iowa Poison Control Center

(1) Clin Infect Dis. 2020 Mar 9. pii: ciaa237. doi: 10.1093/cid/ciaa237
(2) J Emerg Med, 2005, May; 28(4):437-43
(3) NEJM, 1988, Jan 7; 318(1):1-6.

POISON Help
1-800-222-1222

Discontinuing Isolation

- Clinical or test-based pathway

- Test
  - Resolution of fever AND improvement in respiratory symptoms AND
  - Two negative NP samples at least 24 hours apart

- Clinical
  - 7 days since symptoms started AND
  - At least 3 days with no fever (no medication use) AND improvement in respiratory symptoms

Personal Protective Equipment

What Healthcare Providers Should Know

- Spread most easily from person-to-person via respiratory droplets among close contacts
  - within 6 feet for a prolonged period of time
  - direct contact with infectious secretions

- Protect yourself by assessing and triaging patients with respiratory symptoms
  - Place mask on patient (source control) and put in a room
  - Perform hand hygiene
  - Review donning and doffing
  - Perform aerosol-generating procedures with fit-tested N95 in AIIR

PPE

- Patients with confirmed or possible COVID-19 infections should wear a facemask when being evaluated medically

- Healthcare personnel should ad hear to Standard and Transmission-based precautions when caring for patients with COVID-19 infection (contact, droplet with eye protection and N95 during aerosol-generating procedures)

Updated PPE Guidance

- Guidance for extended use and re-use
- https://idph.iowa.gov/Portals/1/userfiles/7/Mask%20Re-use%20Guidance%203_28_20%20.pdf

- Homemade mask guidance
- https://idph.iowa.gov/Portals/1/userfiles/7/Homemade%20Mask%20Guidance%20for%20health%20care%20workers.pdf

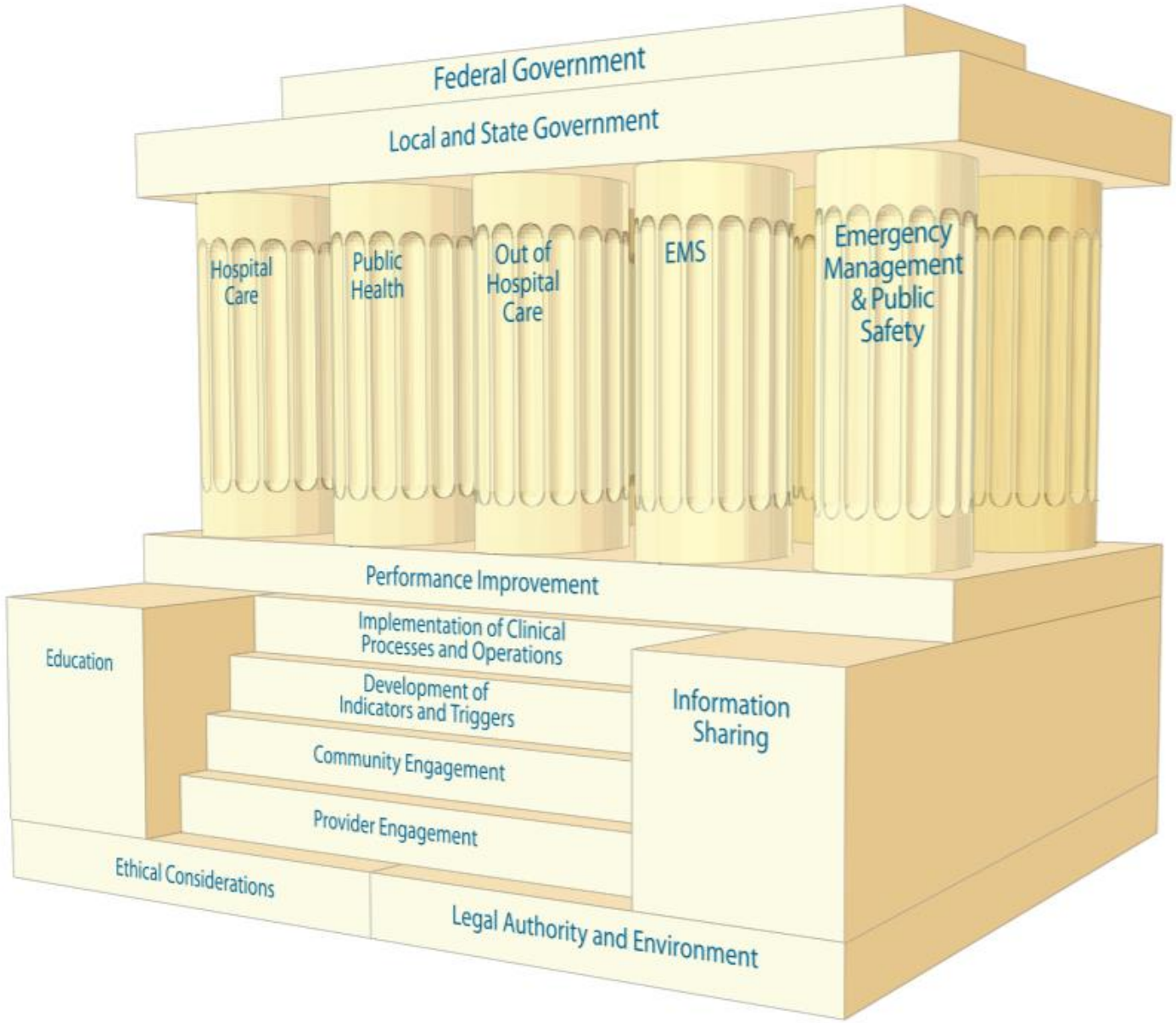
Crisis Standards of Care

IOM: Committee on Guidance for Establishing Standards of Care for Use in Disaster Situations

- In 2009, at the height of the influenza A (H1N1) pandemic, The Assistant Secretary for Preparedness and Response (ASPR) requested the Institute of Medicine (IOM) to convene a committee of experts to develop national guidance for establishing and implementing standards of care which should apply in disaster situations – both naturally occurring and manmade – under conditions of scarce resources.
- IOM formed the Committee on Guidance for Establishing Standards of Care for Use in Disaster Situations bringing together a broad spectrum of expertise, including state and local public health, emergency medicine and response, primary care, nursing, palliative care, ethics, the law, behavioral health, and risk communication.
- The committee focused efforts on establishing a framework for the development and implementation of standards of care and associated triggers during disaster events. This framework is the basis for Crisis Standards of Care planning at the state and local level.

5 Key Elements of CSC Planning

- A strong ethical grounding that enables a process deemed equitable based on its transparency, consistency, proportionality, and accountability;
- Integrated and ongoing community and provider engagement, education, and communication;
- The necessary legal authority and legal environment in which CSC can be ethically and optimally implemented;
- Clear indicators, triggers, and lines of responsibility; and
- Evidence-based clinical processes and operations.



IOM. Figure 2-1.
(Pg. 1-32)

Crisis Standards of Care

- Rare deviation from normal, day-to-day standards for delivering health care is most effectively and ethically accomplished when meticulous pre-planning is done by the health care system, with cooperation from state, tribal, and local government officials
- Just one aspect of broader disaster planning and response efforts; they are a mechanism for responding to situations in which the demand on needed resources far exceeds the resources' availability
- Systems approach to disaster planning and response is therefore required to integrate all of the values and response capabilities necessary to achieve the best outcomes for the community as a whole
- The decision to provide medical care that focuses more intently on the needs of the entire affected community, rather than only the individual, should be guided by protocols that clearly delineate the indicators and trigger(s) for implementing such a shift in the provision of health care

Definitions of Standards of Care

- Conventional Standard of Care - usual resources and level of care provided. The maximal use of the facilities' usual beds, staff, and resources is ensured.

- Contingency Standard of Care - Provision of functionally equivalent care – care provided is adapted from usual practices; for example, boarding critical care patients in post-anesthesia care areas.

Definitions of Standards of Care

- Crisis Standard of Care - A substantial change in usual healthcare operations and the level of care it is possible to deliver, which is made necessary by a pervasive or catastrophic disaster. This change in the level of care delivered is justified by specific circumstances and is formally declared by a state government, in recognition that disaster operations will be in effect for a sustained period. The formal declaration that crisis standards of care are in operation enables specific legal/regulatory powers and protections for healthcare providers in the necessary tasks of allocating and using scarce medical resources and implementing alternate care facility operations.

Care Capacity Continuum

Conventional	Contingency	Crisis
Usual patient care space fully utilized	Patient care areas re-purposed (PACU, monitored units for ICU-level care)	Facility damaged/unsafe or non-patient care areas (classrooms, etc.) used for patient care
Usual staff called in and utilized	Staff extension (brief deferrals of non-emergent service, supervision of broader group of patients, change in responsibilities, documentation, etc.)	Trained staff unavailable or unable to adequately care for volume of patients even with extension techniques
Cached and usual supplies used	Conservation, adaptation, and substitution of supplies with occasional re-use of select supplies	Critical supplies lacking, possible re-allocation of life-sustaining resources

Care Capacity Continuum with Indicators and Triggers

Conventional	Contingency	Crisis
Usual patient care space fully utilize	Patient care areas re-purposed (PACU, monitored units for ICU-level care	Facility damaged/unsafe and non-patient care areas (classrooms, etc.) used for patient care
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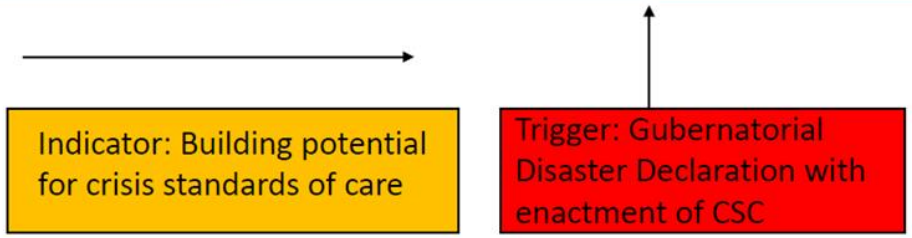

Crisis Standards of Care (CSC) Planning in Iowa

- December 2017, the Preparedness Advisory Council in Iowa, convened a sub-committee for establishing the Crisis Standards of Care (CSC) Framework for Iowa
- Multidisciplinary group of subject matter experts (SME) across the state of Iowa have worked for the past two years on development of Iowa's Crisis Standards of Care Framework
- Guidance in process of being finalized but will review important points of CSC as it relates to current outbreak efforts

Iowa's Framework Development Assumptions

- Gubernatorial disaster declaration for impacted area (required)
  - And some or all of the following:
    - Federal (e.g., Stafford Act, Public Health Services Act) disaster declaration;
    - Resources are unavailable or undeliverable to healthcare entities from elsewhere regionally, statewide, and/or federal regions;
    - Patient transfer to other facilities is not possible or feasible, at least in the short term;
    - Access to medical countermeasures (e.g., vaccines, medications, antidotes, blood products) is limited;
    - Trained healthcare staff is unavailable or unable to adequately care for increased volume of patients;
    - Available local, regional, state, and federal resource caches (of equipment, supplies, and pharmaceuticals) have already been distributed, and no short-term resupply is foreseeable; and
    - There are disruptions to the healthcare supply chain.

Ethical Guidance for CSC

IOM maintains that an ethical framework for CSC must include these key features:

- Fairness
- Duty to Care
- Duty to Steward Resources
- Transparency
- Consistency
- Proportionality
- Accountability

Ethical Guidance for CSC

- Establishing crisis standards of care requires addressing complex ethical issues.
- Guidance emphasizes the importance of equity and the protection of those who are most vulnerable during disasters, including those groups experiencing health disparities and those with access or functional needs.
- Local communities/organizations are encouraged to convene local CSC ethics advisory groups to provide ethically sound guidance on controversial cases.
- Public and private systems have a duty to plan for CSC, to minimize the risk for moral distress and ad-hoc decision-making during a crisis.

Core Strategies for a scarce resource situation

- Core Strategies to be employed (generally in order of preference) during, or in anticipation of a scarce resource situation are:
  - Prepare – pre-event actions taken to minimize resource scarcity (e.g., stockpiling of medications).
  - Substitute – use an essentially equivalent device, drug, or personnel for one that would usually be available (e.g., morphine for fentanyl).
  - Adapt – use of a device, drug, or personnel that are not equivalent but that will provide sufficient care (e.g. anesthesia machine for mechanical ventilation).
  - Conserve – use less of a resource by lowering dosage or changing utilization practices (e.g., minimizing use of oxygen driven nebulizers to conserve oxygen).
  - Re-use – re-use (after appropriate disinfection/sterilization) items that would normally be single-use items.
  - Re-allocate – restrict or prioritize use of resources to those patients with a better prognosis or greater need

Supplies Utilization Strategies

- Implement conservation strategies (e.g., restrict oxygen use to those that have hypoxia).
- Recommend substitute medication classes where possible.
- Adapt medications or supplies to the incident (e.g., use of BiPAP or selected anesthesia machines as ventilators).
- Reuse otherwise disposable products that can easily be cleaned or disinfected (e.g., cervical collars, tourniquets).
- Reuse products that require high-level disinfection or sterilization (e.g., central lines, ventilator circuits).
- Reallocate medications or supplies to those who will benefit and/or make the least demand on resources (duration or use of amount used for outcome).

Space Utilization Strategies

- Patient care areas re-purposed (PACU, monitored units for ICU-level care).
- Non-patient care areas (classrooms, etc.) used for patient care.
- On-campus or off-campus alternate care sites.
- Alternate care sites for palliative care.
- Reverse tertiary transport.
- Expand hours and use procedural spaces for out-of-hospital care.
- Cot-based care in flat-space areas.
- Major changes to admission criteria.

Staffing Strategies

- Staff and Supply Planning
- Focus Staff Time on Core Clinical Duties
- Use Supplemental Staff
- Focus Staff Expertise of Core Clinical Needs
- Use Alternative Personnel to Minimize Changes to Standard of Care

Key Points about Crisis Standards of Care:

- Crisis standards of care is not a separate triage plan; these strategies are extensions of surge capacity plans.
- Crisis standards of care may occur during long-term events such as pandemics where resources could be exhausted or during short-term, no-notice events where help will arrive, but too late to solve an acute resource shortfall.
- If strategies are not planned for ahead of time, they likely will not be considered and/or will be difficult to implement.
- Strategies should be proportional to the resources available; as more resources arrive, facilities should move back toward lower risk strategies (and therefore, back toward contingency and eventually conventional status).

Looking toward the future

- Each response brings a new opportunity for learning.
- Planning ahead is vitally important to decrease morbidity and mortality.
- Get involved. Stay involved. Make a Plan.

References

- Iowa Department of Public Health
  - https://idph.iowa.gov/Emerging-Health-Issues/Novel-Coronavirus
- CDC
  - https://www.cdc.gov/coronavirus/2019-ncov/index.html
- World Health Organization
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Questions