



April 15th, 2020

# COVID-19 TOWN HALL

KAM GANDHI

Executive Director  
AZ Board of Pharmacy

# BOARD OF PHARMACY UPDATE



- [FAQ'S](#)
- [Submit ?'s](#)
- COVID Task Force Update
  - Next meeting Thursday, April 16<sup>th</sup> @10am

KELLY FINE

Executive Director  
AzPA



# COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU)



Total Confirmed

1,999,628

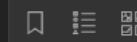
Confirmed Cases by  
Country/Region/Sovereignty

609,685 US  
177,633 Spain  
162,488 Italy  
132,210 Germany  
131,362 France  
94,847 United Kingdom  
83,355 China  
76,389 Iran  
65,111 Turkey  
33,573 Belgium  
28,314 Netherlands  
27,063 Canada

Admin0 Admin1 Admin2

Last Updated at (M/D/YYYY)

4/15/2020 5:24:27 AM



Esri, FAO, NOAA

Cumulative Confirmed Cases

Active Cases

Incidence Rate

Case-Fatality Ratio

Testing Rate

Hospitalization Rate

185

Lancet Inf Dis Article: [Here](#). Mobile Version: [Here](#).

Lead by JHU CSSE. Automation Support: [Esri Living Atlas team](#) and [JHU APL](#). [Contact US](#). [FAQ](#).

Total Deaths

128,011

21,067 deaths  
Italy

18,579 deaths  
Spain

15,729 deaths  
France

12,107 deaths  
United Kingdom

7,905 deaths  
New York City **New York US**

4,777 deaths  
Iran

Deaths

Recovered

Total Tested in the US

3,120,381

499,143 tested  
New York US

205,322 tested  
Florida US

202,208 tested  
California US

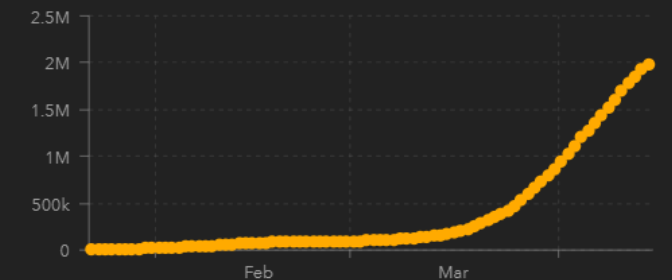
146,467 tested  
Texas US

139,774 tested  
New Jersey US

133,631 tested  
Pennsylvania US



US Tested



Confirmed

Logarithmic

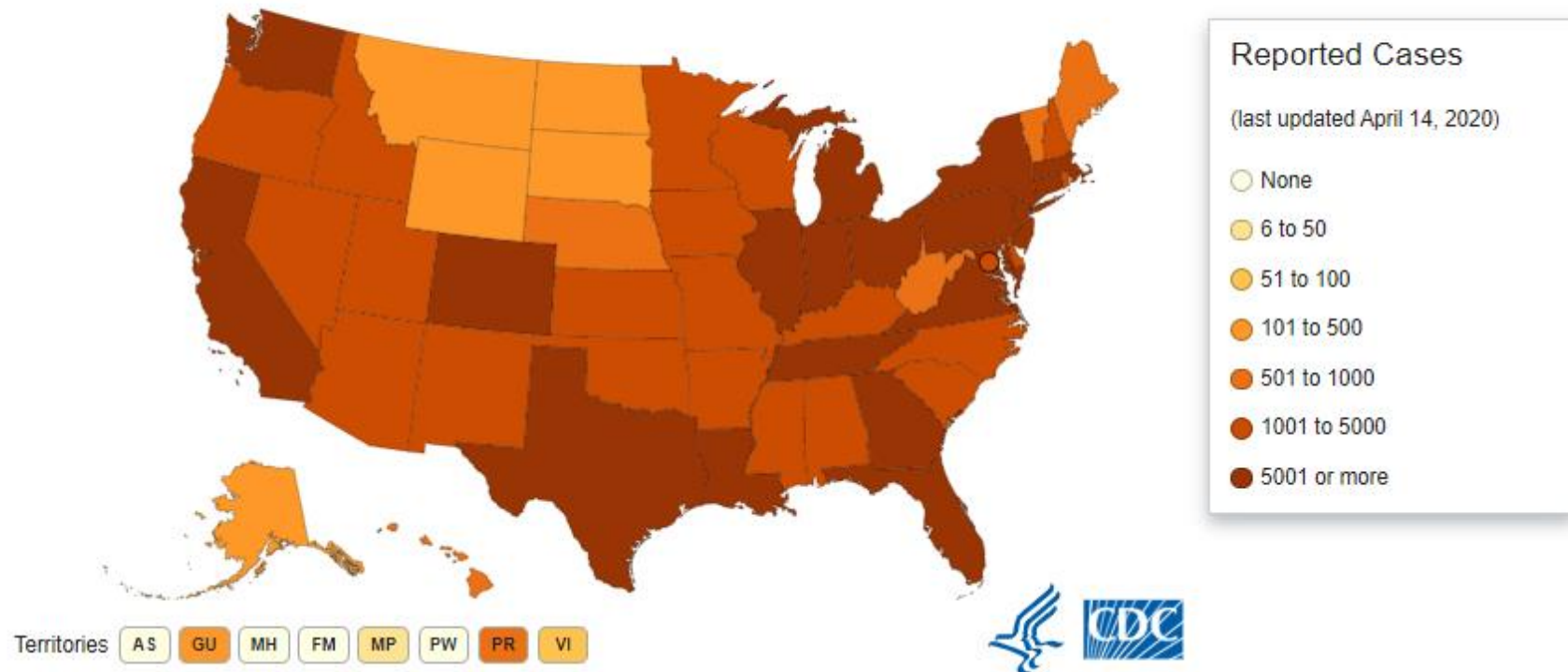
Daily Cases

<https://coronavirus.jhu.edu/map.html>

## COVID-19: U.S. at a Glance\*†

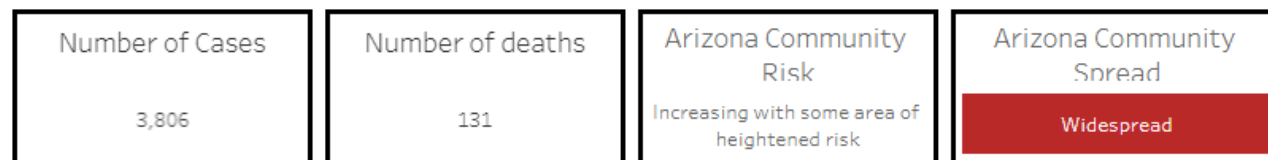
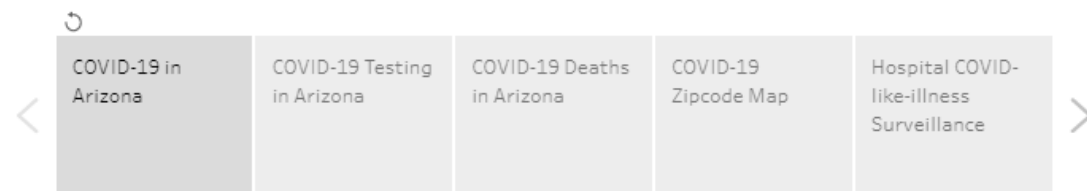
- Total cases: 579,005
- Total deaths: 22,252
- Jurisdictions reporting cases: 55 (50 states, District of Columbia, Guam, Puerto Rico, the Northern Mariana Islands, and the U.S. Virgin Islands)

### States Reporting Cases of COVID-19 to CDC\*

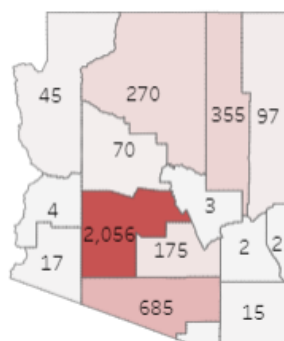


# COVID-19 in Arizona

Use the left and right arrows to view additional dashboards

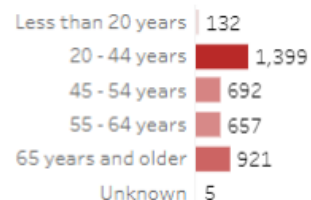


Select a county to filter the graphs below.



Counties with cases less than 10 will not have the graphs filtered.  
Counties with less than 3 deaths will not be displayed in the filtered death counts.

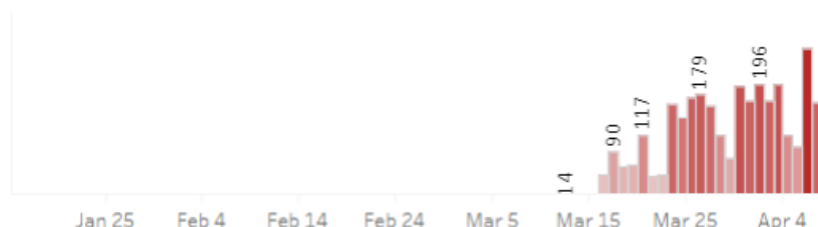
## COVID-19 Cases by Age Group



Date Updated: 4/14/2020

## COVID-19 Cases by Day

Date of specimen collection is used for day



For recent weeks, all data may not be complete due to reporting lags.

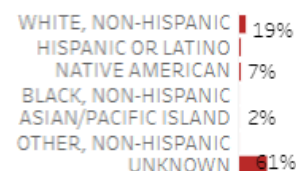
## COVID-19 Cases by Laboratory Type

ASPHL	Private Laboratory
175	3,631

## COVID-19 Cases by Gender



## COVID-19 Cases by Race/Ethnicity

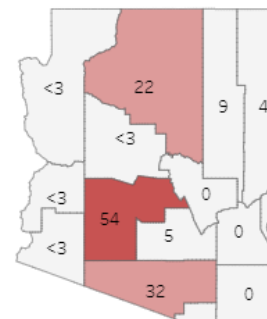


## COVID-19 Deaths in Arizona

COVID-19 Deaths

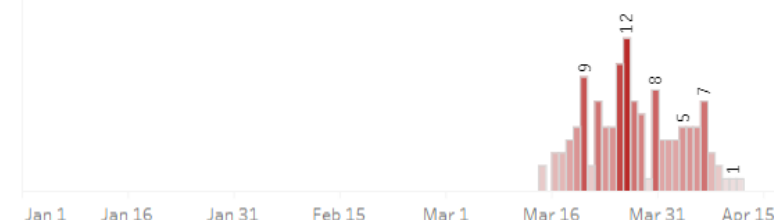
131

## COVID-19 Deaths by County



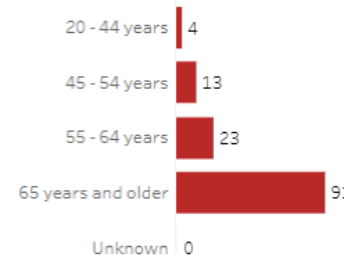
## COVID-19 Deaths by Week

Date of specimen collection is used for week

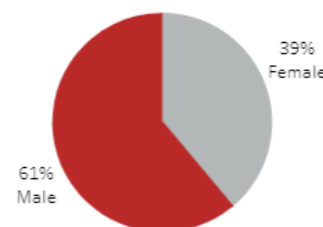


For recent weeks, all data may not be complete due to reporting lags.

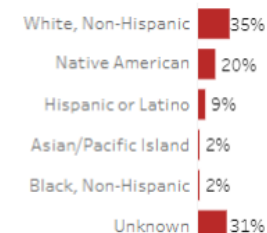
## COVID-19 Deaths by Age Group



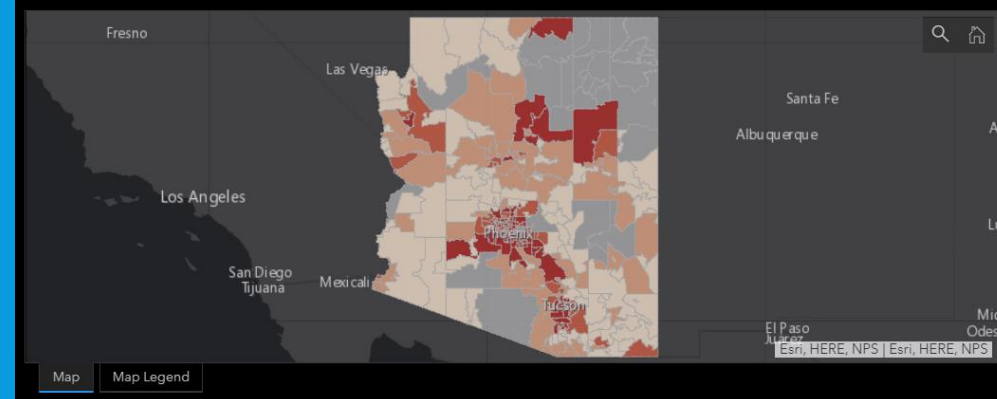
## COVID-19 Deaths by Gender



## COVID-19 Deaths by Race/Ethnicity



## Confirmed Covid-19 Cases by Zip Code



<https://www.azdhs.gov/>

# COVID-19 Testing by Pharmacists

**HHS Guidance for Pharmacists:** The Office of the Assistant Secretary for Health issued new guidance authorizing licensed pharmacists to order and administer COVID-19 tests that the U.S. FDA has authorized. This guidance qualifies pharmacists as “covered persons” under the PREP Act, which provides protections for pharmacists who choose to administer FDA-authorized COVID-19 tests. **This guidance does not specifically speak to reimbursement policy, state scope of practice (authority to order), and/or need for CLIA Waivers.**

**Clinical Laboratory Improvement Amendments (CLIA) Certificate of Waiver:** To offer testing for COVID-19, pharmacies may need to obtain a CLIA Certificate of Waiver.

**AzPA is working with our national and state partners to get guidance out to you ASAP.**

# Executive Order | The “Good Samaritan” Order Protecting Frontline Healthcare Workers Responding to the COVID-19 Outbreak

In support of the COVID-19 public health emergency, the Executive Order provides civil liability protections to the following:

- Licensed health care professionals licensed pursuant to ARS 32 Chapters (13, 15, 17, 18, 25 and 35) ;
- Volunteer health professionals who are registered and recruited through the Arizona Emergency System for the Advance Registration of Volunteer Health Professionals;
- Emergency Medical Care Technicians;
- Arizona health care institutions, treatment facilities and other sites designated by the Arizona Department of Health Services to aid in the state’s response to the COVID-19 public health emergency

Does not cover situations resulting from misconduct and willful negligence.

[CLICK HERE](#)

# Executive Order | Protection of Vulnerable Residents at Nursing Care Institutions, Residential Care Institutions, ICF-IIDs and DD Medical Group Homes from COVID-19

- Ensures compliance with all infection control guidance from CMS and CDC
- Requires facilities cohort COVID(+) COVID unknown residents from COVID(-) residents
  - Ensure separate, consistent staffing teams utilized for different cohorts
- Develop policies and procedures to facilitate the admission and readmission of residents who are ready for safe discharge from an acute care hospital without the requirements of a negative COVID-19 test result (COVID-19 + or unsure should be isolated for 14 days)
- Shall report through EMResource or alternative form to the Arizona Department of Health Services every week:
  - *Number of COVID-19 positive residents*
  - *Number of transfers to and from an acute hospital*
  - *Number and type of PPE and the estimates use of PPE/week*
- Must offer electronic visual form of communication, if visitation is restricted, in lieu of face to face visits for all residents

[CLICK HERE](#)

## Enhanced Surveillance Advisory

Executive Order: 2020-30

April 14, 2020

This is in addition to the Executive Order 2020-13  
Enhanced Surveillance issued on March 23<sup>rd</sup>

1. Pursuant to the Enhanced Surveillance Advisory and A.R.S. § 36-782(B)(4), the Arizona Department of Health Services and local health authorities may access confidential patient information, including medical records, wherever and by whomever held, whether or not patient identity is known, including health information held by Health Current in its capacity as the statewide health information exchange.
2. Pursuant to the Enhanced Surveillance Advisory and A.R.S. § 36-782(B)(1) and (4), 36-783(A), (D) and (F), and 36-787(A), a hospital, as defined in Arizona Administrative Code R9-10-101, shall report the following through EMResource or alternative form to the Arizona Department of Health Services every twenty-four hours:
  - Number of inpatient COVID-19 positive or patients with suspected COVID-19;
  - Number of ventilators in use by COVID-19 positive patients or patients with suspected COVID-19;
  - Number of ICU beds in use by COVID-19 positive patients or patients with suspected COVID-19;
  - Number of COVID-19 positive patients or patients with suspected COVID-19 discharged from the facility per day;
  - Number of COVID-19 positive patients or patients with suspected COVID-19 seen in the Emergency Department per day;
  - Number of intubations performed per day for respiratory distress;
  - Estimated number of N95 masks used per day;
  - Estimated number of surgical masks used per day;
  - Estimated number of face shields used per day; and
  - Estimated number of surgical gowns used per day.
4. Pursuant to the Enhanced Surveillance Advisory and A.R.S. § 36-782(B)(5) and (E) and 36-786, the Arizona Department of Health Services and local health authorities, to the extent possible, shall share personnel, equipment, materials, supplies and other resources to assist in the implementation of this Enhanced Surveillance Advisory.
5. This Enhanced Surveillance Advisory is in addition to the Enhanced Surveillance Advisory issued in Executive Order 2020-13 and in no way rescinds or terminates the data reporting requirements outlined in Executive Order 2020-13.

# MCPH: Updated Guidance For LTC Facilities

## Clarifies Guidance on Cohorting:

- Room sharing (“cohorting”) might be necessary if there are multiple residents with known or suspected COVID-19 in the facility.
- As roommates of symptomatic residents might already be exposed, it is generally not recommended to separate them in this scenario.
- Residents who are symptomatic and being tested for COVID-19 should not be roomed with those who are confirmed to have COVID-19 unless they are already a roommate of a positive resident.

**Patients should be discharged from higher acuity care based on their clinical needs, **NOT** based on the isolation period for COVID-19.**

[CLICK HERE](#)

# Transferring Patients to Lower Acuity Care

- **Do NOT keep patients in the hospital for isolation purposes**
  - Patients diagnosed with COVID-19 should remain in isolation for: 7 days after their COVID-19 test was collected AND until they have been free of fever and symptoms of acute infection\* for 72 hours
  - Symptoms of acute infection is defined as a single temperature of 100.4 ° F (38.0 ° C) and/or cough. This excludes a residual non-productive cough from reactive airways disease or a baseline cough that has not changed.
- **Long-term care facilities should be accepting their COVID-19 positive residents back following discharge from acute care (as long as they have appropriate staffing and PPE)**
- ADHS is aware that some facilities are refusing transfer and they are working with their licensing office to address this.

# Update: Arizona State Public Health Lab Testing Criteria

- Fever AND signs/symptoms of a lower respiratory illness has been **changed to “fever OR signs/symptoms of a lower respiratory illness**
- Children in foster care have been added to this testing group

[CLICK HERE](#)

Criteria to Guide Evaluation of Persons Under Investigation (PUI)		
Clinical Features	Plus	Epidemiologic Risk
Fever <sup>1</sup> <b>OR</b> signs/symptoms of lower respiratory illness (e.g., cough or shortness of breath) <b>NOT</b> requiring hospitalization	AND	Any person, including health care workers <sup>2</sup> , who has had <b>close contact<sup>3</sup> with a laboratory-confirmed<sup>4</sup> COVID-19 patient</b> within 14 days of symptom onset
Fever <sup>1</sup> <b>OR</b> signs/symptoms of a lower respiratory illness (e.g., cough or shortness of breath) <b>NOT</b> requiring hospitalization in a person with a critical/high-risk infrastructure occupation* <b>OR</b> who lives in a congregate setting <sup>4</sup> <b>OR</b> a child in foster care	AND	No source of exposure has been identified
Fever <sup>1</sup> <b>AND</b> severe acute lower respiratory illness (e.g., pneumonia, ARDS) <b>requiring hospitalization, radiographic confirmation of pneumonia of unknown etiology<sup>5</sup></b>	AND	No source of exposure has been identified

# MCPH: Healthcare Facility Guidance for COVID-19

## 1. Fever and Symptom Monitoring for Healthcare Personnel

- **Develop a system** to regularly monitor all healthcare personnel for fever and any respiratory symptoms. (For example, employees could be expected to monitor their temperature and any symptoms twice a day or before working a shift.)
- Reinforce that **employees should not report to work when ill.**

**If healthcare personnel develop any symptoms consistent with COVID-19 (fever or respiratory symptoms) they must:**

- **Cease contact** with patients.
- **Put on a facemask** immediately (if not already wearing).
- **Notify** their supervisor or occupational health services prior to leaving work.

**What to do if healthcare personnel have had a known exposure to COVID-19:**

- Allow **asymptomatic** employees to continue to work after consultation with their occupational health program. Use your monitoring system to **ensure exposed healthcare personnel are monitored daily** for the 14 days after the last exposure.
- If the healthcare facility has a sufficient supply, healthcare personnel **who were not wearing recommended PPE** during the COVID-19 exposure could be asked to wear a facemask while at work for the 14 days after the exposure.

## For Aerosol-generating Procedures

When in a room with a patient with, or suspected to have, COVID-19 and **aerosol-generating procedures\*** (e.g., endotracheal intubation, non-invasive ventilation [BIPAP, CPAP] tracheostomy, cardiopulmonary resuscitation, manual ventilation before intubation, bronchoscopy) are being performed, all healthcare personnel should wear:

- N95 respirator (or equivalent)
- Gown
- Gloves
- Eye protection (e.g., goggles or face shield)

**If available, use an AIIR for aerosol-generating procedures is recommended (otherwise use a private room with the door closed).**

\*According to the CDC it is uncertain whether aerosols generated from nebulizer administration and high flow O2 delivery are infectious. Aerosols generated by nebulizers are derived from the medication in the nebulizer. Collection of nasopharyngeal specimens is **not** aerosol-generating. Please see [CDC Q&A](#) for more information.

Also includes guidance on:

- [Infection Control and Personal Protective Equipment Guidance](#)
- [Actions for healthcare facilities to take NOW to prepare for COVID-19 surge](#)
- [Isolation and discharge recommendations for patients with COVID-19](#)

[CLICK HERE](#)



# State Disaster Medical Advisory Committee

On April 4, 2020, the State Disaster Medical Advisory Committee approved the implementation of the **Treat and Keep Home** and **Treat and Refer** guidelines. These strategies will reduce the number of patients seeking medical care at hospitals when hospitalization is not clinically necessary.

## ADHS recommends that healthcare providers and healthcare facilities do the following:

- Familiarize yourself with the guidelines available under **Treat & Refer Resources** on the [EMS and 9-1-1 Resources](#).
- Share this HAN with healthcare partners across the healthcare spectrum, including hospitals, urgent care facilities, doctors' offices, and all levels of long term care facilities.
- Partner with your local EMS agencies in implementing these guidelines, as they will help decrease the burden on the acute care settings, conserve PPE, and limit further risk of spread of COVID-19.

# PTCB Updates



## Online Proctored Test Delivery Coming Soon

PTCB will soon launch online proctored exam delivery of the Pharmacy Technician Certification Exam (PTCE) for candidates earning their Certified Pharmacy Technician (CPhT) credential. This option allows technicians to take the exam online remotely from their own computer under the virtual supervision of a live proctor. Online proctoring for other credentials will follow. [Read more.](#)



## In-Person Testing Now Available at Some Test Centers for Essential Services

Select Pearson VUE test centers will reopen on April 16 to deliver in-person testing for pharmacy technicians taking PTCB exams and other essential service providers across the US. The designated 150 testing locations administering exams are cleaned and disinfected frequently and limit the number of individuals in the test center at one time. [Read more.](#)



## Free Job Postings in the PTCB Career Center

PTCB is committed to supporting pharmacy employers who are hiring technicians in response to COVID-19. Employers can now post open positions for free on PTCB's Career Center, as well as review applications and search technician resumes. If you or your employer are hiring, post job openings now at no cost. Visit [careers.ptcb.org](https://careers.ptcb.org).

<https://www.ptcb.org/news/coronavirus-covid-19-update>

# FDA: Respirators Approved Under Standards Used in Other Countries

## FDA approved respirators from other countries for use in the US during the COVID-19 pandemic

- On March 24, 2020, the FDA issued an Emergency Use Authorization (EUA) for importing non-NIOSH-approved N95 respirators (KN95)
- Under this EUA, among other criteria, the FDA accepts marketing authorization from Australia, Brazil, Europe, Japan, Korea, and Mexico who have similar standards to NIOSH.
- On April 3, 2020, in response to continued respirator shortages, the FDA issued a new EUA for non-NIOSH-approved N95 respirators made in China, which makes KN95 respirators eligible for authorization if certain criteria are met, including evidence demonstrating that the respirator meets certain standards.

# DEA Allows Flexibility for Satellite Hospitals or Clinics

## DEA Announces Flexibilities for Satellite Hospitals or Clinics as a Result Of COVID-19

- Allowing a DEA-registered hospital or clinic to handle controlled substances at a satellite hospital or clinic location under their existing registration.
- Providing flexibility to allow distributors to ship controlled substances directly to these satellite hospitals or clinics.
- If in a case where hospital patients are cared for in a satellite hospital or clinic that is not a corporate affiliate of, or owned by, the entity that holds the DEA registration of the hospital or clinic, the DEA recommends entering into a written agreement to create an agency relationship with the hospital or clinic.

[CLICK HERE](#)

# USP Operational Considerations for Sterile Compounding During COVID-19 Pandemic

- Statement from USP supporting risk-based enforcement discretion related to compounding standards.
- Addresses the assignment of beyond-use-dates, considerations for certification and recertification of engineering controls, and recommendations for cleaning and disinfecting a facility when someone is sick
- [CLICK HERE](#) (see April 11, 2020 update)

## Assignment of Beyond-Use Dates

The global drug supply chain is impacted by the COVID-19 pandemic, leading to supply disruptions and shortages of drug products. In consideration of the current resource constraints and increased waste of drugs, compounders should apply Beyond-Use Dates (BUDs) conservatively based on both chemical and physical stability and microbiological considerations. The currently official General Chapter <797> does not prohibit longer BUDs after sterility testing and when justified according to the section titled *Storage and Beyond-Use Dating*. To help manage drug supply and patient access to essential medications, the CMP EC is providing as guidelines the following BUDs, which are based on stakeholder input received by the CMP EC during the COVID-19 pandemic, as well as stakeholder comments that were received during two previous public comment periods on proposed revisions to General Chapter <797>, all of which were thoroughly evaluated by the CMP EC during the revision process. The BUDs below may be assigned if compounding does not otherwise deviate from General Chapter <797> standards:

- For low- and medium-risk level compounded sterile preparations (CSPs) prepared in a segregated compounding area, apply BUDs conservatively, not to exceed:
  - 12 hours at controlled room temperature
  - 24 hours in a refrigerator
- For low- and medium-risk level CSPs prepared in a cleanroom suite, apply BUDs conservatively, not to exceed:
  - 4 days at controlled room temperature
  - 10 days in a refrigerator for medium-risk level CSPs
  - 14 days in refrigerator for low-risk level CSPs
  - 45 days in a solid frozen state at -25° to -10° or colder
- If a single-dose container is entered or punctured only in ISO Class 5 or cleaner air, it may be used up to:
  - 12 hours after initial entry or puncture, as long as the storage requirements during that 12-hour period are maintained.
  - Opened single-dose ampules must not be stored for any time period.
- When assigning these BUDs, considerations should be given to:
  - Ensuring personnel monitoring (e.g., gloved fingertip and thumb sampling) is successfully completed every 6 months.
  - Increasing frequency of surface sampling in the primary engineering control to determine effectiveness of cleaning procedures and work practices.

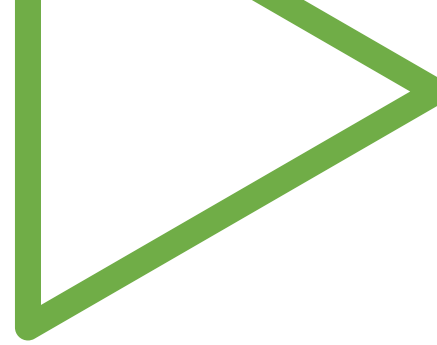
# Vitamin D: Importance of the Sunshine Hormone in Whole Body Health

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FAzPA**

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[www.martiefankhauser.com](http://www.martiefankhauser.com)

Tucson, Arizona



# Vitamin D and Whole Body Health

- Rickets
- Osteoporosis/osteomalacia
- Periodontal disease
- Cardiovascular disease: hypertension, diseased heart muscle, congestive heart failure, ischemic heart disease
- Malabsorption: cystic fibrosis, Crohn's disease, inflammatory bowel
- Cancer: colon, breast, lymphoma, ovarian, prostate, pancreatic, colorectal, melanoma, multiple myeloma
- Metabolic syndrome: diabetes
- Autoimmune disorders: allergies, asthma, rheumatoid arthritis, type-1 diabetes, systemic lupus erythematosus, autoimmune thyroiditis, multiple sclerosis, myasthenia gravis
- **Infectious diseases: influenza, HIV-1, tuberculosis, septicemia**
- Dermatologic: eczema, psoriasis, acne, urticaria
- Mood disorders
  - Seasonal affective disorder
  - Manic depression
  - Unipolar depression
  - Postpartum depression
  - Premenstrual syndrome
- Brain development
  - Autism Spectrum Disorder
  - Schizophrenia
- Cognitive disorders
  - Dementia
  - Strokes
- Parkinson's disease
- Muscle weakness and pain
  - Fibromyalgia
  - Chronic fatigue syndrome
  - Neuropathy
- Headaches/migraines
- Seizures
- Hearing loss
- Infertility
- Macular degeneration

# Risk of Vitamin D Deficiency

- Darker skin: African-American, Hispanic, Middle East, Asian
- Winter months/lack of sunlight (UVB radiation)
- Use of sunscreens/protective clothing
- Lack of fortified foods or supplements / not eating oily fish with vitamin D
- Vegetarians (restriction of dairy with fortified vitamin D), vegans
- Elderly/nontraumatic fractures/osteoporosis
- Infants and children / lack of vitamin D due to sun restriction or supplements
- Pregnant or lactating women
- Hospitalized/institutionalized patients
- Chronic renal and/or liver disease
- Gastrointestinal diseases, malabsorption, gastric bypass, IBS
- Obesity (BMI > 30 kg/m<sup>2</sup>)
- Low cholesterol levels for synthesis
- Drugs that affect vitamin D metabolism or absorption (e.g., anticonvulsants: carbamazepine, phenobarbital or phenytoin, glucocorticoids, antifungal drugs, HIV medications, cholestyramine)



# Vitamin D3 Supplements



- Daily dosing
  - Once vs. twice daily dosing
  - Adults: D3 5000 IU/day for optimal health
  - Higher doses: overweight and/or obese
  - Toxicity: hypercalcemia and hyperphosphatemia with high calcium intake
- Levels should be done after taking vitamin D3 after 2-3 months of constant daily dosing
- Target levels: 40-80 ng/ml 25(OH) D3
- Fall (or spring) levels recommended after stable 25(OH)D3 dosing
- Sun avoidance, seasonal changes, sun screen (SPF  $\geq 30$ ), skin color, and obesity affect 25(OH)D levels

# Evidence that Vitamin D Supplementation Could Reduce Risk of Influenza and COVID-19 Infections and Deaths

Nutrients 2020 doi:10.3390/nu12040988

- “To reduce the risk of infection, it is recommended that people at risk of influenza and/or COVID-19 consider taking 10,000 IU/d of vitamin D3 for a few weeks to rapidly raise 25(OH)D concentrations, followed by 5000 IU/d.”
- Goal: raise 25(OH) above 40-60 ng/ml
- Randomized controlled trials and large population studies should be conducted to evaluate these recommendations.



Review

## Evidence that Vitamin D Supplementation Could Reduce Risk of Influenza and COVID-19 Infections and Deaths

William B. Grant <sup>1,\*</sup>, Henry Lahore <sup>2</sup>, Sharon L. McDonnell <sup>3</sup>, Carole A. Baggerly <sup>3</sup>, Christine B. French <sup>3</sup>, Jennifer L. Aliano <sup>3</sup> and Harjit P. Bhattoa <sup>4</sup>

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<sup>3</sup> GrassrootsHealth, Encinitas, CA 92024, USA; Sharon@grassrootshealth.org (S.L.M.); carole@grassrootshealth.org (C.A.B.); Christine@grassrootshealth.org (C.B.F.); jen@grassrootshealth.org (J.L.A.)

<sup>4</sup> Department of Laboratory Medicine, Faculty of Medicine, University of Debrecen, Nagyerdei Blvd 98, H-4032 Debrecen, Hungary; harjit@med.unideb.hu

\* Correspondence: wbgrant@infonline.net; Tel.: +1-415-409-1980

Received: 12 March 2020; Accepted: 31 March 2020; Published: 2 April 2020



**Abstract:** The world is in the grip of the COVID-19 pandemic. Public health measures that can reduce the risk of infection and death in addition to quarantines are desperately needed. This article reviews the roles of vitamin D in reducing the risk of respiratory tract infections, knowledge about the epidemiology of influenza and COVID-19, and how vitamin D supplementation might be a useful measure to reduce risk. Through several mechanisms, vitamin D can reduce risk of infections. Those mechanisms include inducing cathelicidins and defensins that can lower viral replication rates and reducing concentrations of pro-inflammatory cytokines that produce the inflammation that injures the lining of the lungs, leading to pneumonia, as well as increasing concentrations of anti-inflammatory cytokines. Several observational studies and clinical trials reported that vitamin D supplementation reduced the risk of influenza, whereas others did not. Evidence supporting the role of vitamin D in reducing risk of COVID-19 includes that the outbreak occurred in winter, a time when 25-hydroxyvitamin D (25(OH)D) concentrations are lowest; that the number of cases in the Southern Hemisphere near the end of summer are low; that vitamin D deficiency has been found to contribute to acute respiratory distress syndrome; and that case-fatality rates increase with age and with chronic disease comorbidity, both of which are associated with lower 25(OH)D concentration. To reduce the risk of infection, it is recommended that people at risk of influenza and/or COVID-19 consider taking 10,000 IU/d of vitamin D<sub>3</sub> for a few weeks to rapidly raise 25(OH)D concentrations, followed by 5000 IU/d. The goal should be to raise 25(OH)D concentrations above 40–60 ng/mL (100–150 nmol/L). For treatment of people who become infected with COVID-19, higher vitamin D<sub>3</sub> doses might be useful. Randomized controlled trials and large population studies should be conducted to evaluate these recommendations.

**Keywords:** acute respiratory distress syndrome (ARDS); ascorbic acid; cathelicidin; coronavirus; COVID-19; cytokine storm; influenza; observational; pneumonia; prevention; respiratory tract infection; solar radiation; treatment; UVB; vitamin C; vitamin D

# COVID-19: Potential Implications for Individuals with Substance Use Disorders

- Smoking or vaping tobacco or marijuana
  - Aerosols from e-cigarettes may harm lung function
- Opioid use disorder (OUD)
  - Poorer respiratory/pulmonary health
  - Slower breathing and decreased oxygen in the blood (hypoxia)
- Methamphetamine use disorder
  - Constricts blood vessels and may cause pulmonary damage and hypertension
- Higher rates of homelessness or incarceration
- Polysubstance use: tobacco, alcohol, opioids, cannabis, stimulants
- Co-occurring conditions: COPD, CVD, respiratory diseases, sleep apnea

<https://www.drugabuse.gov/about-nida/noras-blog/2020/04/covid-19-potential-implications-individuals-substance-use-disorders>

# THANK YOU!

We want to thank all of you for being on the front lines of this pandemic.