

COVID-19 Newborn Experience

April 9, 2020

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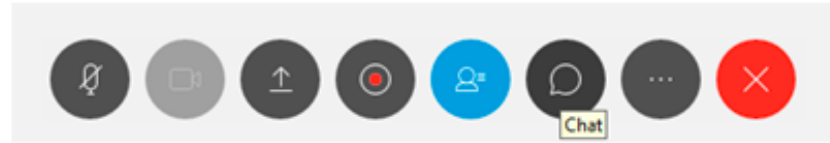
Senior Medical Director, Obstetric and Neonatal Operations



Best Practices for a Virtual Meeting

- MUTE your phone unless you are speaking
- DO NOT put the call on hold
- Indicate you are done speaking by verbally sending the lead back to the next speaker
- If you connect only through a phone and wish to speak, use *6 to mute and unmute
- Speak loudly and clearly when you talk
- If you have questions, use WebEx Chat
- Test your technology before the meeting and resolve any technical issues
- Find quiet space to participate
- Do not multi-task during the meeting

- . Click on the chat icon at the bottom of the screen. The chat panel will appear in the bottom right corner of the WebEx.



Agenda

- COVID-19 Newborn
 - Epidemiology
 - Symptomatology
 - Work Up
 - Treatment
 - Utah Experience
- Questions

COVID-19 Epidemiology & Symptomatology Newborn



COVID-19 Newborn/Pediatric Population

Limited published data

China:

- Pediatric and newborn patients less severely affected
 - Severe outcomes have been reported, increased $< 1\text{y/o}$
- Pediatric Patients may have different symptoms

US:

- Pediatric and newborn patients less severely affected
- 73% with fever, cough, shortness of breath compared with 93% adults
- Infants $< 1\text{ y/o}$ more affected and children with chronic conditions

COVID-19: Newborn

No published cases in US

China:

- Case reports and small studies
 - Case Report¹ (1/20/2020-2/6/2020):
 - 3 neonates & 230 children COVID-19 +
 - 30 hours old, 5 days, 17 days
 - Symptoms: Fever, cough, vomiting, shortness of breath –not severe

¹ Qi Lu, Yuan Shi, J Med Virol. 2020:1-4

COVID-19: Newborn- China Experience

Cohort Study Wuhan, China²

- Recruited neonates born to COVID-19 + mothers
- 33 neonates
 - 3 neonates COVID-19 confirmed
 - 40 week, c/s mec, DOL 2 Fever, lethargy, pneumonia, COVID-19+ DOL 2, 4, COVID-19 Neg DOL 6
 - 40 4/7, c/s, Lethargy, vomiting, fever, Pneumonia, COVID-19+ DOL 2,4 with leukocytosis and lymphopenia, COVID-19 neg DOL 6
 - 31 2/7 c/s fetal distress, APGARS 3,4,5, RDS-surf, pneumonia, Enterobacter sepsis, feeding intolerance, COVID-19+ DOL 2,4 COVID-19 neg DOL 7
 - 3 of 33 (9%) presented with symptoms

² Zeng, L et.al., Jama Pediatrics, March 26, 2020

COVID-19: Newborn- China Experience

- Case Report-Wuhan China³
 - N= 1 mother/1 infant
 - 34 y/o mother with Fever 1 day PTD
 - C/S due to maternal indication
 - Mother wore N95
 - APGARS 8,9
 - No maternal/infant contact, infant separated by 10 min
 - Newborn with lymphopenia, elevated LFT's, infant asymptomatic
 - Maternal COVID-19 test + post op day 1
 - Neonatal COVID-19 test (NP swab) + 36 hours
 - Cord blood, placenta and breastmilk tested- all COVID-19 Negative

³ Wang S. et.al., Clin Infect Dis. 2020

COVID-19: Newborn- China Experience

- Case Report-Wuhan China Preterm Delivery⁴
 - 28 y/o women with COVID-19 pneumonia Dx 30 weeks
 - Mother required respiratory support/ICU care
 - Infant delivered by emergency c-section due to fetal distress despite maximum maternal ventilatory support
 - Cord blood, newborn gastric aspirate, throat swab neg at time of delivery
 - Amniotic fluid and placenta negative
 - Infant COVID-19 negative Day 3, 7,9
 - Mother and baby recovered and did well

⁴ Wang X. et.al., Clin Infect Dis. 2020

COVID-19 Newborn Symptoms

- Fever
- Lethargy
- Mild respiratory symptoms
- Feeding difficulties
- Vomiting
- Asymptomatic

COVID-19: Newborn- Transmission

Multiple small case reports and studies of maternal COVID-19 with:

- limited number of confirmed neonatal cases, earliest 30 hours
- Negative COVID-19 PCR testing from amniotic fluid, vaginal swabs, placenta, cord blood, and breastmilk
- 2 studies SARS-CoV-2 specific IgM and IgG in total 3 newborns
- No direct evidence for vertical transmission
- Data of inadequate statistical power to determine what contributes to perinatal transmission

Concern for horizontal transmission from maternal droplet

No evidence of transmission through breastmilk

COVID-19

Workup & Treatment



COVID 19: Obstetric and Newborn Treatment Plan

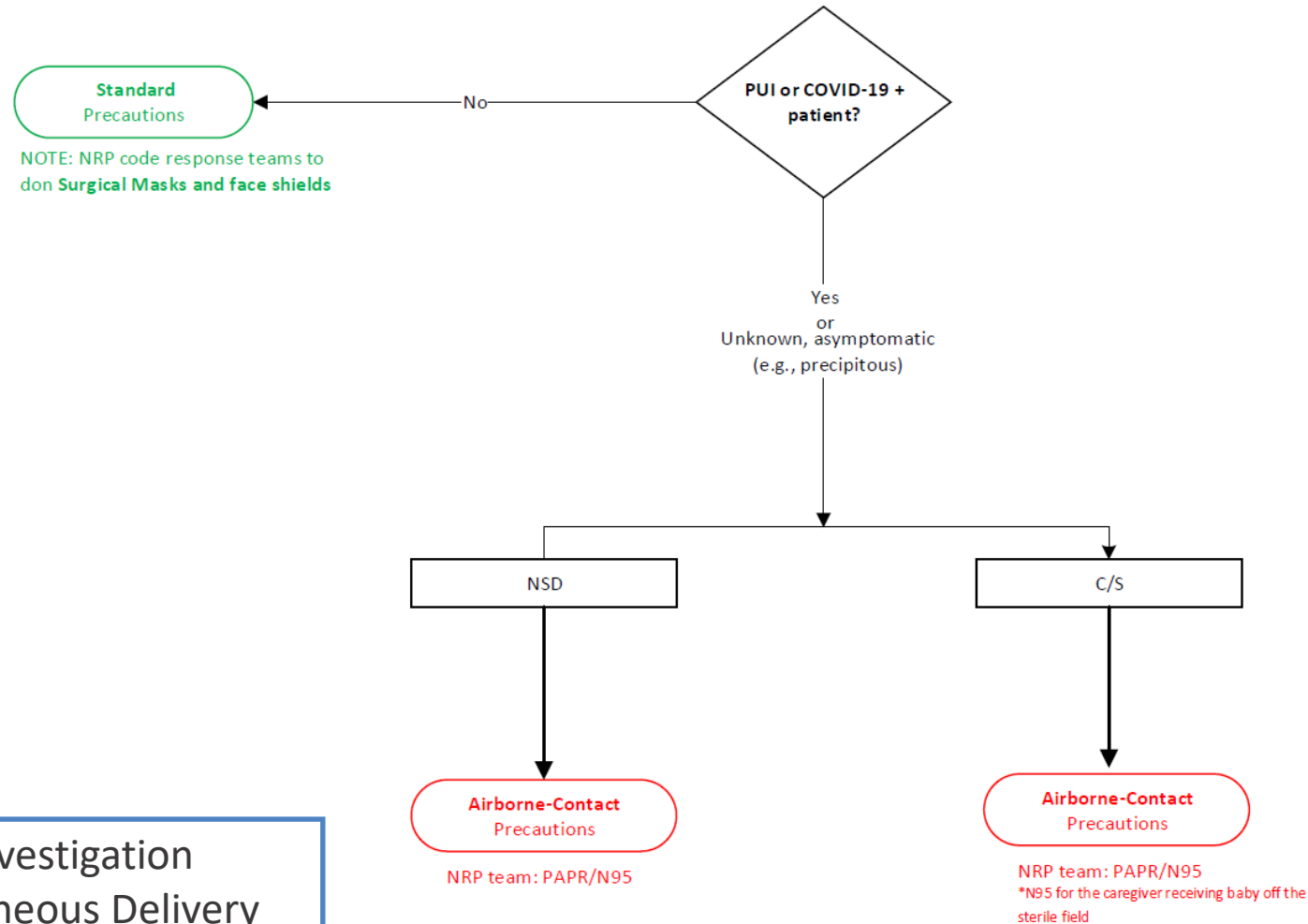
Person Under Investigation (PUI): At risk, symptomatic patients with pending SARS-CoV-19 testing

Confirmed COVID-19 case: Patients with a syndrome consistent with COVID-19 who should be cared for using recommended isolation precautions as noted below

ALL Newborns delivered to PUI or COVID-19 Positive mother are considered a PUI

NRP & COVID-19

NRP and PPE Requirements



PUI: Person Under Investigation
NSD: Normal Spontaneous Delivery
C/S: Cesarean Section

NOTE: NBN resuscitation should be conducted in another room as able.

Treatment plan – Neonate plan

-
- Infants ≥ 37.0 weeks gestation who are well-appearing at birth will be admitted to the Mom Baby nursery and placed in a private room/cohorting nursery in isolation.
 - Infant isolettes should be the first bed choice supporting another layer of physical separation
 - Crib/isolette separation ≥ 6 feet
 - Cohort of PUI and COVID positive patients to specific areas has been planned by each hospital
- Infants < 37.0 weeks gestation or otherwise require higher levels of care will be admitted to the Special Care Nursery (SCN) or Neonatal Intensive Care Unit (NICU)

Treatment plan – Neonate plan

Mother and infant(s) will be separated immediately at birth, isolated in a separate room with a designated caregiver using Droplet - Contact Isolation precautions

PUI infants with respiratory symptoms requiring respiratory support (e.g., CPAP, Mechanical Ventilation) will be considered high risk for aerosolization and mandates **Airborne – Contact isolation, Negative Pressure room if available**

Infants of asymptomatic PUI mothers will be separated but may be rejoined status post negative COVID-19 testing (Testing for mothers will be expedited)

Treatment plan – Neonate plan

Mothers who refuse separation - arrangements will be made after educating mother on appropriate PPE use while in contact with the infant.
RN/LIP to document education as to risks

Consider using engineering controls like physical barriers (e.g., a curtain between the mother and newborn) and keeping the newborn ≥ 6 feet away from the ill mother

Mom to wear appropriate PPE (gown, gloves, mask) and practice hand hygiene before each feeding or other close contact with her newborn

Facemask should remain in place during contact with the newborn throughout the stay

Treatment plan – Neonate Lab Testing Plan

Infants of a COVID positive* mother or symptomatic infant will be tested for perinatal viral acquisition following CDC guidance:

- Molecular assay testing will be done on **2** consecutive nasopharyngeal swabs collected at least 24h apart (AAP: Consider swab throat and NP, use 1 swab throat first then NP)
 - Extra caution should be given to make sure of a tight seal upon capping
- Testing should begin at approximately 24h of age, to avoid detection of transient viral colonization and to facilitate detections of viral replication
- The infant will be designated as uninfected if at least two consecutive nasopharyngeal swabs collected ≥ 24 hours apart are negative resulting in discontinued isolation precautions and the ability to integrate back into the SCN/NICU population
- If a neonate is **COVID-19 confirmed** and requires prolonged hospitalization due to clinical status (e.g., prematurity, RSV...), IP/Neonatology consult to determine course for repeat testing and potential suspension of COVID precautions.

*Asymptomatic infant testing should be suspended until mother's testing is resulted and COVID-19 confirmed.

Infant specimens will be considered priority #1 for testing. Validate in iCentra and/or provide narrative for escalation.

Treatment plan – Breastfeeding

Mothers who desire to breastfeed should be encouraged to express breast milk to establish and maintain supply:

- Hand and breast hygiene will be performed prior to pumping or hand expression.
- A dedicated breast pump should be provided if possible
- After pumping, all parts that come into contact with breast milk should be thoroughly washed and the entire pump should be appropriately disinfected per the manufacturer's instructions

Infants temporarily separated from their mother will be bottle fed mother's expressed milk via a caregiver

Pasteurized Human Milk (PHM)/Medolac will be fed to infants for those moms with inadequate supply

Breastfeeding PUI or COVID-19 confirmed mother rooming in with her baby d/t maternal refusal of separation/isolation,

- Mother will wear appropriate PPE (gown, gloves, & mask) and practice hand hygiene before and after each feeding at the breast

Treatment plan: Discontinuation Couplet Separation

The decision to discontinue temporary separation of the dyad should be made on a case-by-case basis in consultation with IP, LIP/ Neonatology

PUI mothers: Discontinue separation after negative initial screen

Confirmed COVID mothers: CDC Recommendation for suspending precautions (Maternal screening)

- Resolution of fever, without use of antipyretics AND
- Improvement in illness signs and symptoms AND
- Negative results of molecular assay for COVID-19 from at least two consecutive nasopharyngeal swabs, specimens collected ≥ 24 h apart

Treatment plan – Newborn Discharge plan

The PUI infant is eligible for discharge once hospital stability criteria have been met. SARS-CoV-2 infection status may or may not be established before discharge with the following special considerations:

- Asymptomatic infants, COVID-19 confirmed OR testing pending, may go home with a healthy caregiver under appropriate precautions and planned outpatient follow up.
Family education re: disease course, infant precautions and isolation precautions for the immediate postpartum period (e.g., strict hand hygiene, home visitors, quarantine, etc...)
- COVID-19 negative infants should be discharged home to a designated healthy adult caregiver (asymptomatic and/or confirmed negative testing).

At time of Discharge:

- Must have provider to provider hand off
- Educate family how to take steps to reduce the risk of transmission to the infant
- Family will be instructed to call PCP prior to going to clinic
- Family will be instructed to not have COVID-19 positive parent* bring infant to clinic
 - ***An asymptomatic parent may take infant to clinic 7 days after symptom onset AND at least 3 days without fever. If mother does not meet these criteria then she will be treated as a PUI**

Transition to Outpatient COVID-19 Guideline

4. Transition to outpatient care for COVID/PUI newborns

- a. **Direct inpatient provider to outpatient provider dialogue is required when discharging a newborn or if the mother has not been cleared.**
- b. All infants exposed to COVID-19 positive mothers need to be watched for symptoms for 14 days after last exposure to mom, or 14 days after mom has been cleared for COVID-19 disease. Newly symptomatic infants should be tested or retested or presumed positive until 7 days after symptom onset and 3 days without fever whichever is longer. Newly symptomatic infants with fever need to be evaluated for serious bacterial infection. Please see early onset sepsis and febrile infant Care Process Models.
- c. Families with a mom or newborn COVID/PUI are instructed to call the outpatient clinic to inform clinic of COVID/PUI status. Newborn is brought to clinic by asymptomatic caregiver when possible. Newborn Caregivers in high risk groups* should not be the designated caregiver to bring the child to the appointment. Siblings should not accompany the newborn to the visit.

COVID-19

Utah & OB/Neo Experience



1846

Total COVID-19 Cases



36116*

Total Reported People Tested



158

Total COVID-19 Hospitalizations



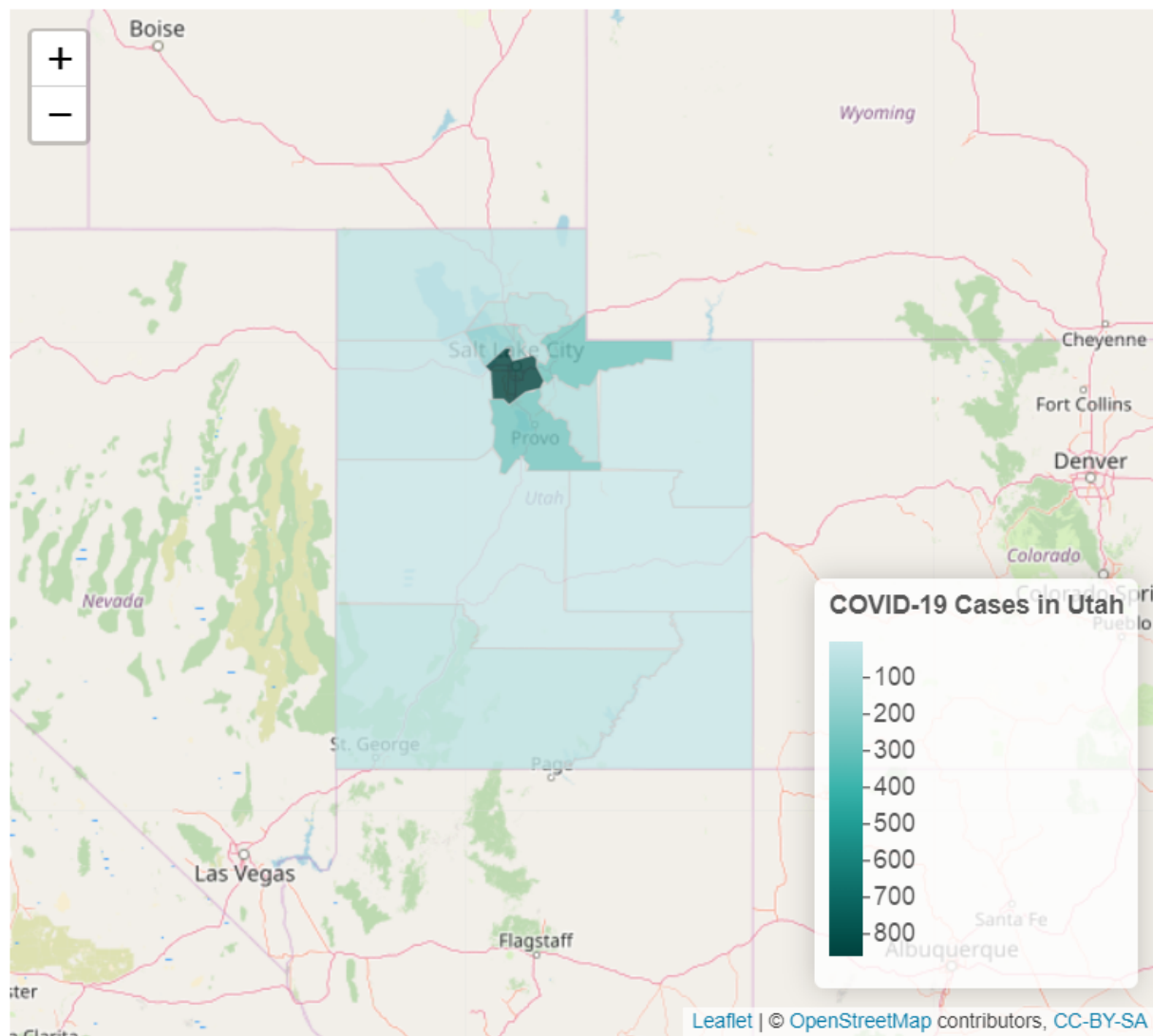
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Total COVID-19 Deaths

Total Number of Lab-Confirmed COVID-19 Cases in Utah

Jurisdiction	Cases	Hospitalizations
Bear River	39	6
Central Utah	5	1
Davis County	163	14
Salt Lake County	858	78
San Juan	6	2
Southeast Utah	4	0
Southwest Utah	43	7
Summit County	273	21
Tooele County	23	2
TriCounty	6	0
Utah County	267	17
Wasatch County	82	4
Weber-Morgan	77	6
State Total	1846	158

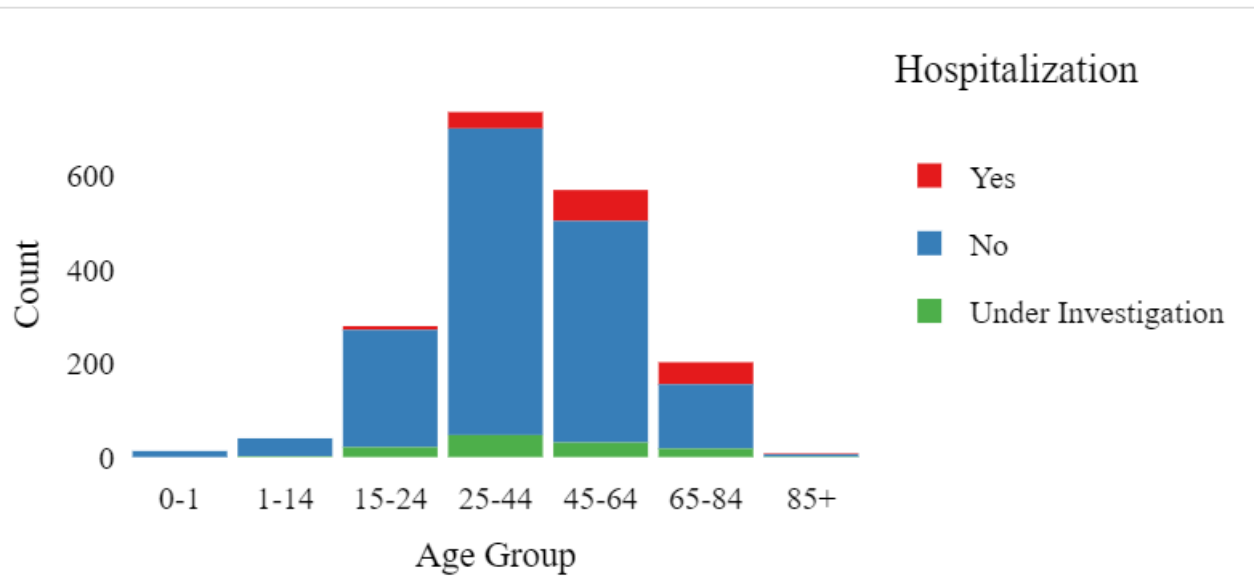
Location Where People Tested Positive for COVID-19 in Utah



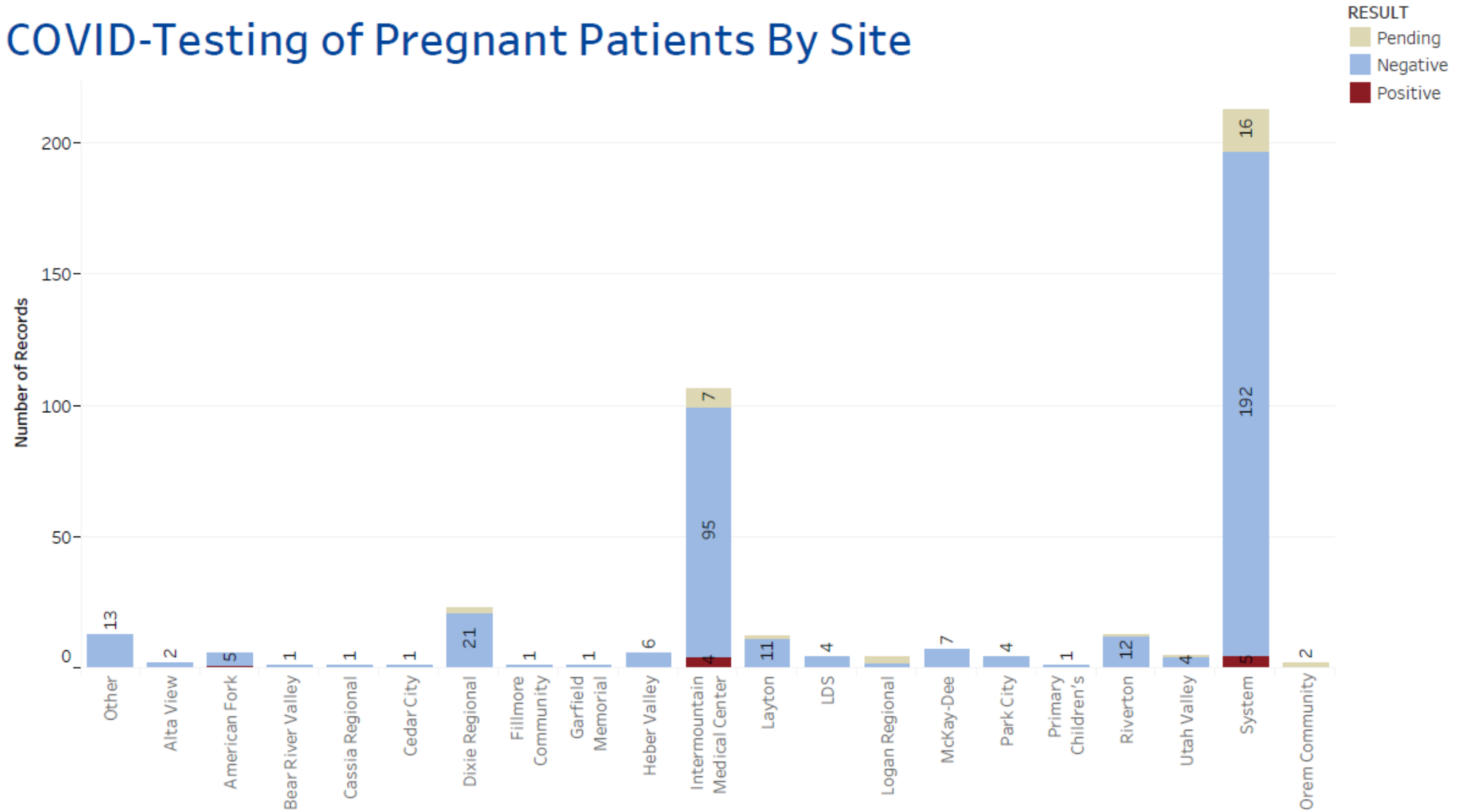
Total Utah Residents with COVID-19 Demographics Table

Age Group	Case Count	Percent of Cases	Rate per 100k Population
Less than 1 year	13	1%	25.9
1-14 years	40	2%	5.5
15-24 years	279	15%	54.7
25-44 years	735	40%	81.7
45-64 years	569	31%	91.4
65-84 years	202	11%	64.6
85+ years	8	0%	21.2

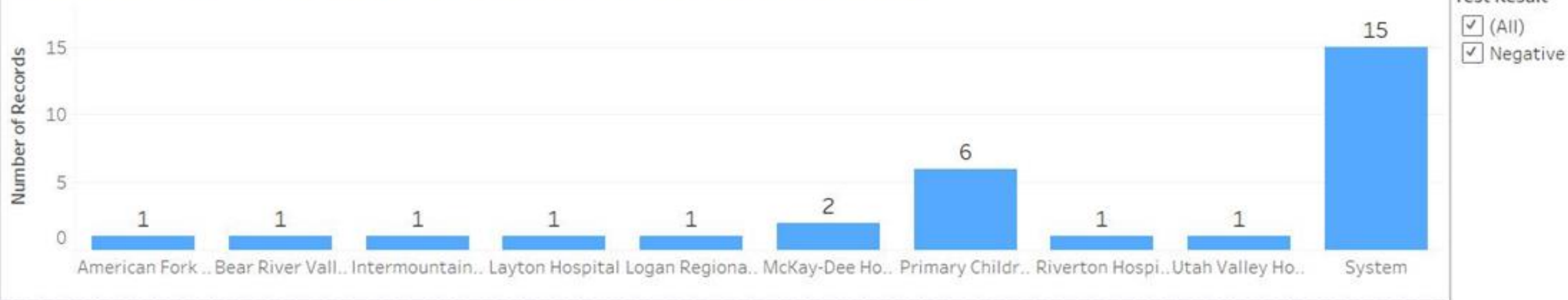
Total Utah Residents Who Have Been Hospitalized with COVID-19 by Age



COVID-Testing of Pregnant Patients By Site



COVID-19 Testing in Newborns By Facility



Hospital	EMPI	FIN_NBR	Unit	Collected Time	Birth Date	Days Old	Positive	Negative	Test Result
Utah Valley			NICU	3/28/2020 20:13		1	0	1	NDE
IMED			HLPE	4/5/2020 10:19		19	0	1	NDE
Primary CH			ER	4/5/2020 5:45		11	0	1	NDE
Bear River			MS	4/1/2020 10:30		15	0	1	NDE
American Fork			ER	3/26/2020 20:27		22	0	1	NDE
Layton			ER	3/28/2020 14:23		9	0	1	NDE
Logan			ER	4/1/2020 18:17		18	0	1	NDE
Riverton			ER	4/2/2020 14:51		25	0	1	NDE
McKay-Dee			ER	3/31/2020 14:43		17	0	1	NDE
Primary CH			ER	3/23/2020 19:13		17	0	1	NDE
Primary CH			ER	4/4/2020 16:00		16	0	1	NDE
IMED			NICU	4/7/2020 12:59		0	0	1	NDE
Primary CH			ER	4/5/2020 5:37		7	0	1	NDE
McKay-Dee			PEDS	4/2/2020 17:06		30	0	1	NDE
Primary CH			ER	4/2/2020 14:42		14	0	1	NDE

SARS-CoV-2 Testing in Mothers and Newborns around Delivery Date

Mom ID	Delivery Date	Mother SARS-CoV-2 Testing Results				Newborn SARS-CoV-2 Testing Results			
		Collect to Delivery (days)	Positive	Negative	PUI	Collect after Delivery (days)	Positive	Negative	PUI
1	3/8/2020	18	0	1	0	15	0	1	0
2	3/19/2020	9	0	1	0	18	0	0	1
3	3/25/2020	-3	0	1	0	14	0	1	0
4	3/10/2020	25	0	0	1	30	0	1	0
5	3/12/2020	16	0	1	0	16	0	1	0
6	3/21/2020	0	0	1	0	21	0	1	0
7	3/8/2020	14	0	1	0				
8	3/13/2020	14	0	1	0				
9	3/10/2020	26	0	0	1				
10	3/13/2020	16	0	1	0				
11	3/23/2020	7	0	1	0				
12	3/4/2020	32	0	0	1				
13	3/16/2020	-1	0	1	0				
14	3/23/2020	-6	0	1	0				
15	3/19/2020	15	0	1	0				
16	3/16/2020	20	0	0	1				
17	3/17/2020	15	0	1	0				

Questions





EMAIL



A TO Z INDEX



SAFETYNET



MY INFOEXPRESS



TEAM SPACE



DOCUMENT CENTER



LEADER DESKTOP



MY LEARNING



KRONOS



ASK HR



LIVE WELL



CLINICAL LIBRARY



Click to visit the Disaster Alert site for the latest updates on the March 18 earthquakes

CORONAVIRUS UPDATES



The latest news and resources to stay prepared.

[Go to the site >](#)

Everyday Heroes

Wendy Barker, RN, from the McKay-Dee ICU



Wendy was caring for a patient who'd been in a car accident and was intubated

My Newsfeed

Intermountain is using a new tool called Yammer for the... You'll need to activate your Yammer account in order to... only have to do this once. Here's how:

Office of Patient Experience

COVID-19 (novel coronavirus) ^

COVID-19 Clinician and Caregiver Guidance v

COVID-19 (novel coronavirus) FAQs v

PPE/Masking Toolkit

COVID-19 Updates for Leaders

COVID-19 Updates for Caregivers v

Posters and Signage

Resources for Patients

Antimicrobial Stewardship

Clinical Documentation v

Experience of Care v

Infection Prevention v

Patient Advocacy v

Quality v

Clinical Regulatory Affairs v

Safety and Clinical Risk v

Intermountain.net > Office of Patient Experience > COVID-19 (novel coronavirus)

COVID-19 (novel coronavirus)



COVID-19 (Novel Coronavirus) Notice

HELP STOP
THE SPREAD

6 Steps to Stop the Spread of Germs



PHYSICAL CONTACT

Avoid close contact with people who are sick.



KEEP HANDS CLEAN

Wash hands often with soap and warm water for 20 seconds.



AVOID TOUCHING FACE

Try to avoid touching your eyes, nose, and mouth with unwashed hands.



HAVE A COUGH OR COLD?

Cough or sneeze into your elbow, not your hand.



CLEAN SURFACES

Clean and disinfect frequently touched objects and surfaces.



FEELING SICK?

Stay home when you're sick. (Keep children home from school)

Check this site often for the latest updates on COVID-19 (novel coronavirus).

Check this site often for the latest updates on COVID-19 (novel coronavirus).



Clinician and Caregiver Guidance



Infection Prevention Contacts



PPE/Masking Toolkit



Posters and Signage



COVID-19 FAQs



Resources for Patients



Caregiver Updates



Leader Updates

Office of Patient Experience

COVID-19 (novel coronavirus) ^

COVID-19 Clinician and Caregiver Guidance ^

Homecare Guidance

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Intermountain.net > Office of Patient Experience > COVID-19 (novel coronavirus) > COVID-19 Clinician and Caregiver Guidance

COVID-19 Care Process Guidance

For Physicians and APPs

- COVID-19 Clinical Assessment Guidance
- Care Process in Hospital Settings
- Care Process in ED/Clinic Settings
- PPE and Masking Guidance
- COVID Test Decision Algorithm
- Diagnostic Testing Procedure
- Medical Group COVID-19 Testing Sites

For Surgical Operations

- Should a Caregiver be at Work – Decision Pathway
- Should a Patient Have Surgery – PAT Decision Pathway
- Elective Surgery Cancellation Guidelines
- Protocol for Bringing a COVID-19 Patient to Surgery

For Frontline PSRs and Receptionists

- Guidance for Registration
- Call Script for Clinics
- Call Script for Community Members



What should I do if a patient arrives with COVID-19 (novel coronavirus)?

If you encounter a patient who's been to an area where community spread is occurring (according to the CDC) and who's developed a fever, cough, or is having difficulty breathing, please ask the individual to put on a mask — and mention the situation to the person's provider if you aren't the immediate caregiver. From that point forward, follow appropriate care process guidelines for your job area, located on this site.

- Hospital Screening Script

For Hospital and Clinic Caregivers

- Care Process in Hospital Settings
- Guidance for Registration
- Guidance for Room Cleaning Updated
- Guidance for Transporting Patients
- Guidance for Room Cleaning
- Guidance for Room Cleaning - CLINIC
- 7 STEP Room Cleaning Procedure
- Cleaning workflow Following Nebulizer Treatment
- Guidance for Waste Disposal
- Stericycle Packaging Guidelines
- PAPR Cleaning Guidance
- Information about COVID-19 testing at the Central Lab
- COVID-19 Lab Patient History form
- COVID Imaging Guidance
- PPE and Masking Guidance
- Visitor Restrictions Talking Points
- Clinic and InstaCare Screening Script
- Hospital Screening Script
- Intensive Care Management
- Video Visit Scripting
- MedSurg
- COVID 19 Testing Scripting
- Caring for COVID Positive Family Member
- COVID-19 E. Safety Attendants FAQ
- Temperature Screening Script- Clinic
- Temperature Screening Script-Hospital
- OB/NBN COVID-19 Operational Guidelines

COLLECT_DT	MOM_TEST_CNT	MOM_POS	MOM_NEG	MOM_PUI
3/13/2020 0:00	1	0	1	0
3/14/2020 0:00	3	0	3	0
3/15/2020 0:00	6	0	6	0
3/16/2020 0:00	20	0	20	0
3/17/2020 0:00	42	0	42	0
3/18/2020 0:00	20	0	20	0
3/19/2020 0:00	22	2	20	0
3/20/2020 0:00	30	1	29	0
3/21/2020 0:00	23	0	23	0
3/22/2020 0:00	27	0	27	0
3/23/2020 0:00	26	4	22	0
3/24/2020 0:00	66	1	65	0
3/25/2020 0:00	102	7	95	0
3/26/2020 0:00	133	5	128	0
3/27/2020 0:00	117	5	112	0
3/28/2020 0:00	78	0	78	0
3/29/2020 0:00	70	0	70	0
3/30/2020 0:00	145	3	142	0
3/31/2020 0:00	144	4	140	0
4/1/2020 0:00	118	3	115	0
4/2/2020 0:00	142	1	141	0
4/3/2020 0:00	103	4	99	0
4/4/2020 0:00	66	3	63	0
4/5/2020 0:00	67	1	58	8
4/6/2020 0:00	118	3	38	77
4/7/2020 0:00	69	0	5	64

COVID-19 US Pediatric Epidemiology

CDC MMWR published 4/6/2020- Feb 12-April 2, 2020:

- Worldwide: > 890,000 cases, > 45,000 deaths
- US: 239,279 cases, 5,443 deaths
 - 22% US population < 18 y/o (Infants, children, adolescents)
 - 149,760 laboratory confirmed COVID-19 cases analyzed
 - 149,082 (99.6%) age known
 - 2,572 (1.2%) < 18 y/o
 - Median 11y/o, 15-17 (32%), 10-14 (27%), 5-9 (15%), 1-4y/o (11%), < 1y/o (15%)

COVID-19 CDC MMWR Children

Limited information Available

- symptoms (11%)
- underlying condition (13%)
- hospitalization (29%)

TABLE. Signs and symptoms among 291 pediatric (age <18 years) and 10,944 adult (age 18–64 years) patients* with laboratory-confirmed COVID-19 — United States, February 12–April 2, 2020

Sign/Symptom	No. (%) with sign/symptom	
	Pediatric	Adult
Fever, cough, or shortness of breath [†]	213 (73)	10,167 (93)
Fever [§]	163 (56)	7,794 (71)
Cough	158 (54)	8,775 (80)
Shortness of breath	39 (13)	4,674 (43)
Myalgia	66 (23)	6,713 (61)
Runny nose [¶]	21 (7.2)	757 (6.9)
Sore throat	71 (24)	3,795 (35)
Headache	81 (28)	6,335 (58)
Nausea/Vomiting	31 (11)	1,746 (16)
Abdominal pain [¶]	17 (5.8)	1,329 (12)
Diarrhea	37 (13)	3,353 (31)

* Cases were included in the denominator if they had a known symptom status for fever, cough, shortness of breath, nausea/vomiting, and diarrhea. Total number of patients by age group: <18 years (N = 2,572), 18–64 years (N = 113,985).

[†] Includes all cases with one or more of these symptoms.

[§] Patients were included if they had information for either measured or subjective fever variables and were considered to have a fever if “yes” was indicated for either variable.

[¶] Runny nose and abdominal pain were less frequently completed than other symptoms; therefore, percentages with these symptoms are likely underestimates.

COVID-19 CDC MMWR Children

Limited information

- symptoms
- underlying condition
- hospitalization

Underlying conditions

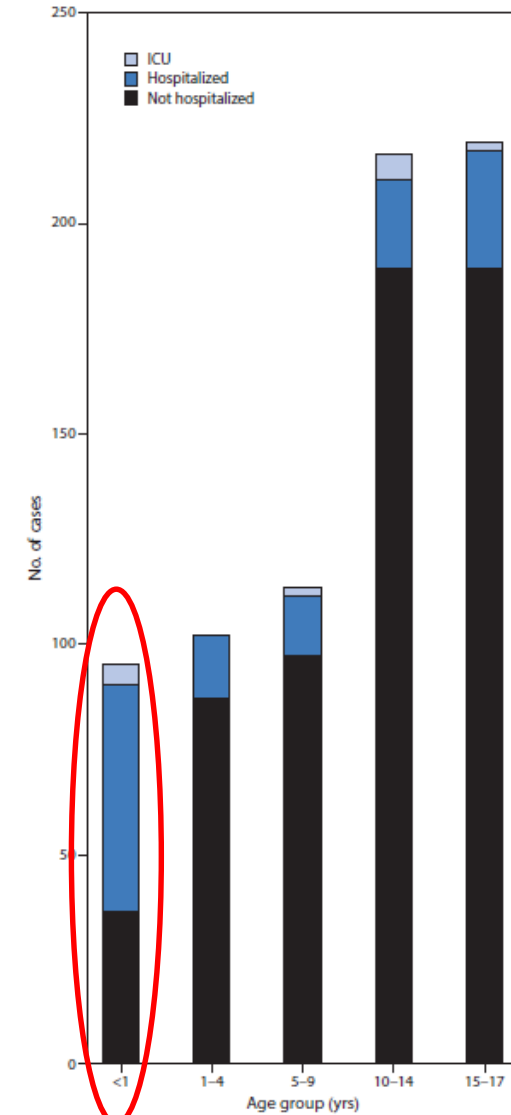
- Chronic lung disease (asthma)
- Cardiovascular disease
- Immunosuppression
- 77% hospitalized had underlying condition
- 12% not hospitalized had underlying condition

COVID-19 CDC MMWR Children

Limited information

- symptoms
- underlying condition
- hospitalization
 - 5.7-20% pediatric patients
 - 0.58-2.0% ICU admission
 - <1y/o highest % (62%)
 - 5 ICU
- Deaths-3 unknown if COVID-19

FIGURE 2. COVID-19 cases among children* aged <18 years, among those with known hospitalization status (N = 745),† by age group and hospitalization status — United States, February 12–April 2, 2020



Abbreviation: ICU = intensive care unit.
* Includes infants, children, and adolescents.
† Number of children missing hospitalization status by age group: <1 year (303 of 398; 76%); 1-4 years (189 of 291; 65%); 5-9 years (275 of 388; 71%); 10-14 years (466 of 682; 68%); 15-17 years (594 of 813; 73%).

NICU/SCN and PPE Requirements

