

The Do's and Don'ts of COVID-19 and children: what every Pediatrician should know?

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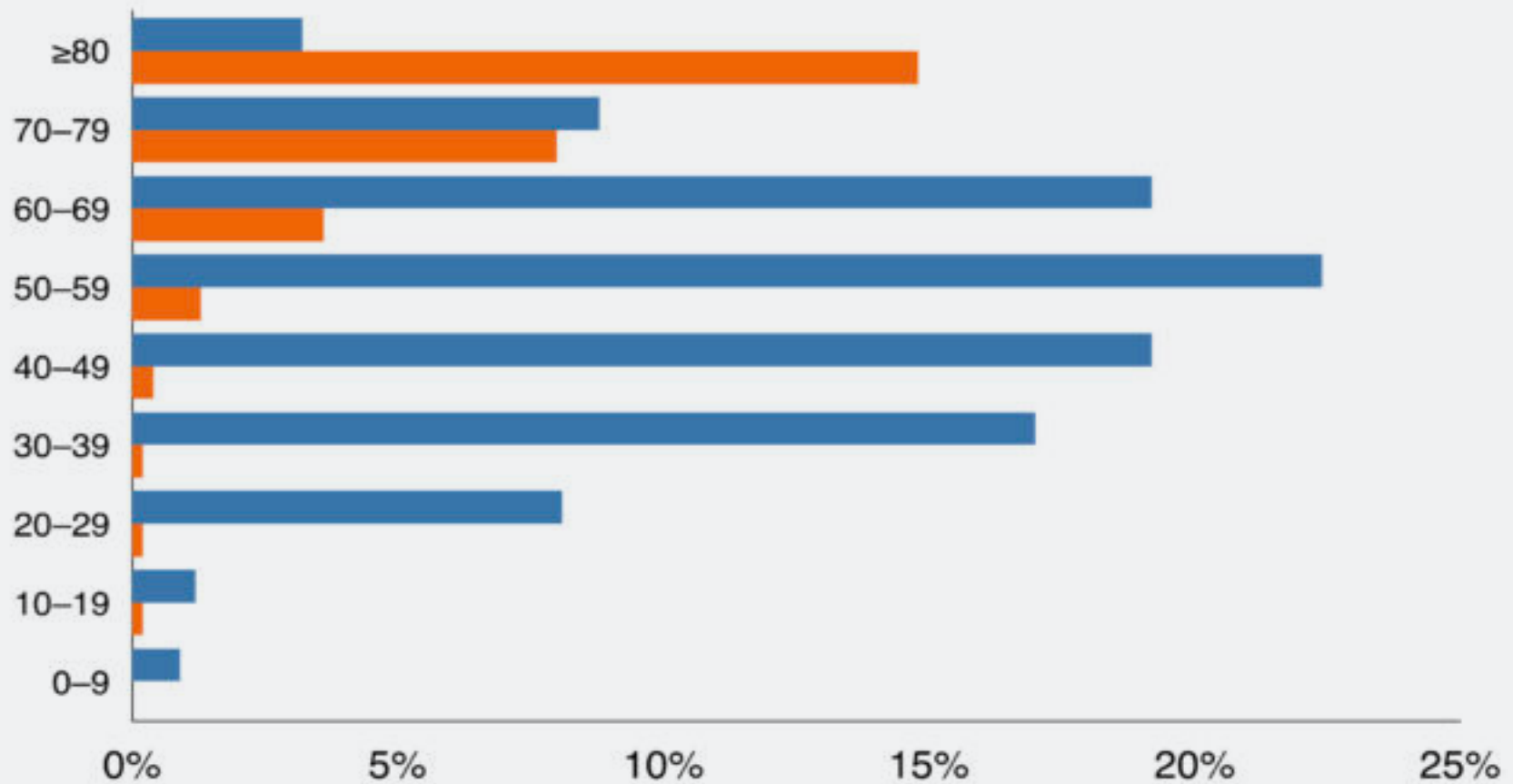
What will I cover?

- Experience with Pediatric COVID-19 infections to date
- Age distribution
- What do we know about infections and children?
 - Direct effects
 - Indirect effects
- Issues around perinatal transmission and breastfeeding
- Guidance for paediatricians & paediatric societies

COVID-19 CASES AND DEATHS BY AGE

Percentage of cases by age and fatality rate within each age group
Data from 44,672 cases in mainland China

■ Cases
■ Fatality rate



COVID-19 IN CHILDREN, CHINA DATA

7%



Attack rate in children under 9 years. Study of 391 cases from Shenzhen area.

Less than 1% attack rate in <14 age group. Study of 1,099 confirmed cases.



<1%

2.4%



WHO-China joint study says "relatively low attack rate" in <18yrs cohort.

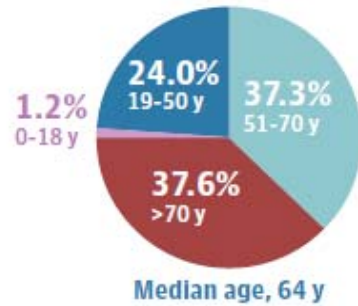
Study of 2143 patients. 125 developed serious illness. One 14-year-old boy died.



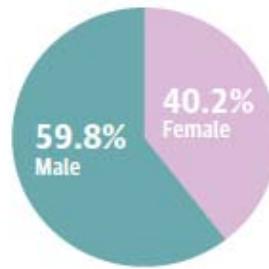
6%

Italy - as of March 15th

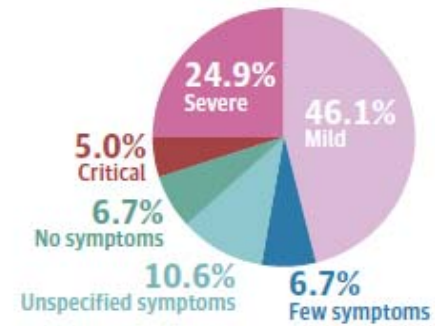
Cases by age range



Cases by sex

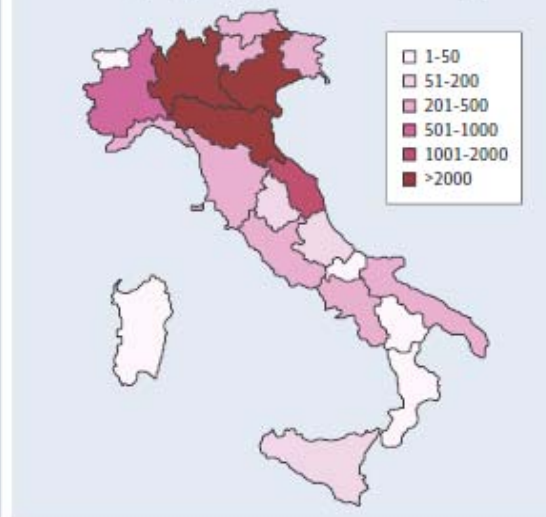


Cases by severity



Age, y	Deaths, No. (% of total)	Case-fatality rate, %
0-9	0	0
10-19	0	0
20-29	0	0
30-39	4 (0.25)	0.3
40-49	10 (0.62)	0.4
50-59	43 (2.65)	1.0
60-69	139 (8.55)	3.5
70-79	578 (35.57)	12.5
80-89	694 (42.71)	19.7
≥90	156 (9.6)	22.7
Not reported	1 (0.06)	0.6
Total	1625 (100)	7.2

Cases by region/province of diagnosis



COVID-19 IN CHILDREN, US DATA



1.7% CASES <18 YRS

Among nearly 150,000 cases where patient age was known.

11 YRS MEDIAN AGE

Among all 2572 COVID cases in children. Range 0-17 yrs.



UNDERLYING CONDITIONS

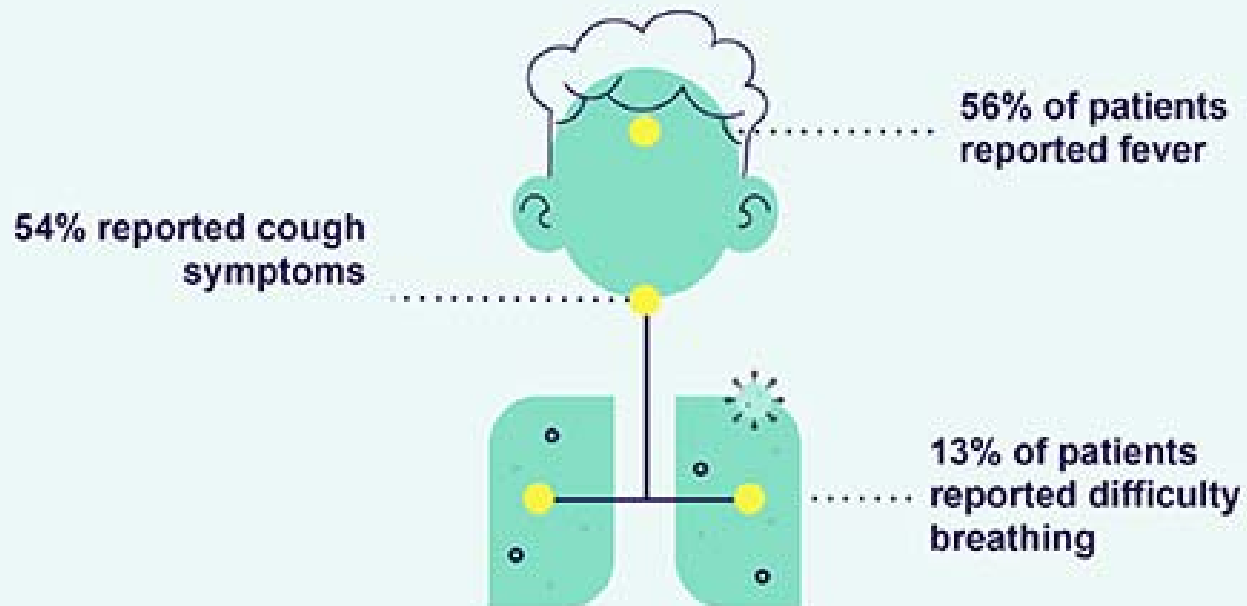
More than 2 in 10 pediatric patients had 1 of 3 conditions: Lung or heart disease or low immunity.

3 IN 10 CASES, NYC

33% or 850 out of 2572 cases came from the densely populated New York City area.



CHILDREN'S SYMPTOMS, US DATA





More than 9 in 10 US pediatric patients had exposure to COVID19 positive person in the house or community



More than 6 in 10 US pediatric patients < 1 year old were hospitalised.



Nearly one third of US pediatric cases Are in the 15-17 years age group

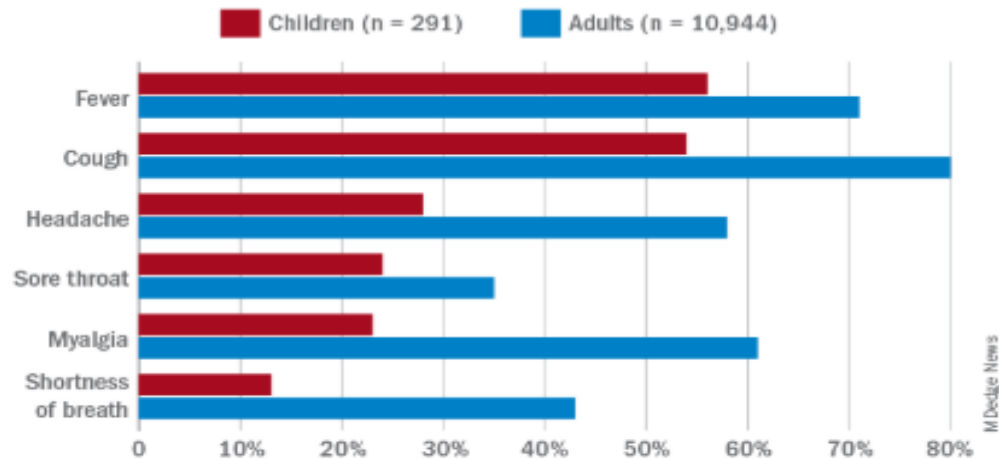


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Data from the United States

The characteristic COVID-19 symptoms of cough, fever, and shortness of breath are less common in children than adults, according to the Centers for Disease and Prevention Control.

Leading signs and symptoms of COVID-19: Children vs. adults



Note: Based on data for 11% of pediatric cases and 9.6% of adult cases reported as of April 2.

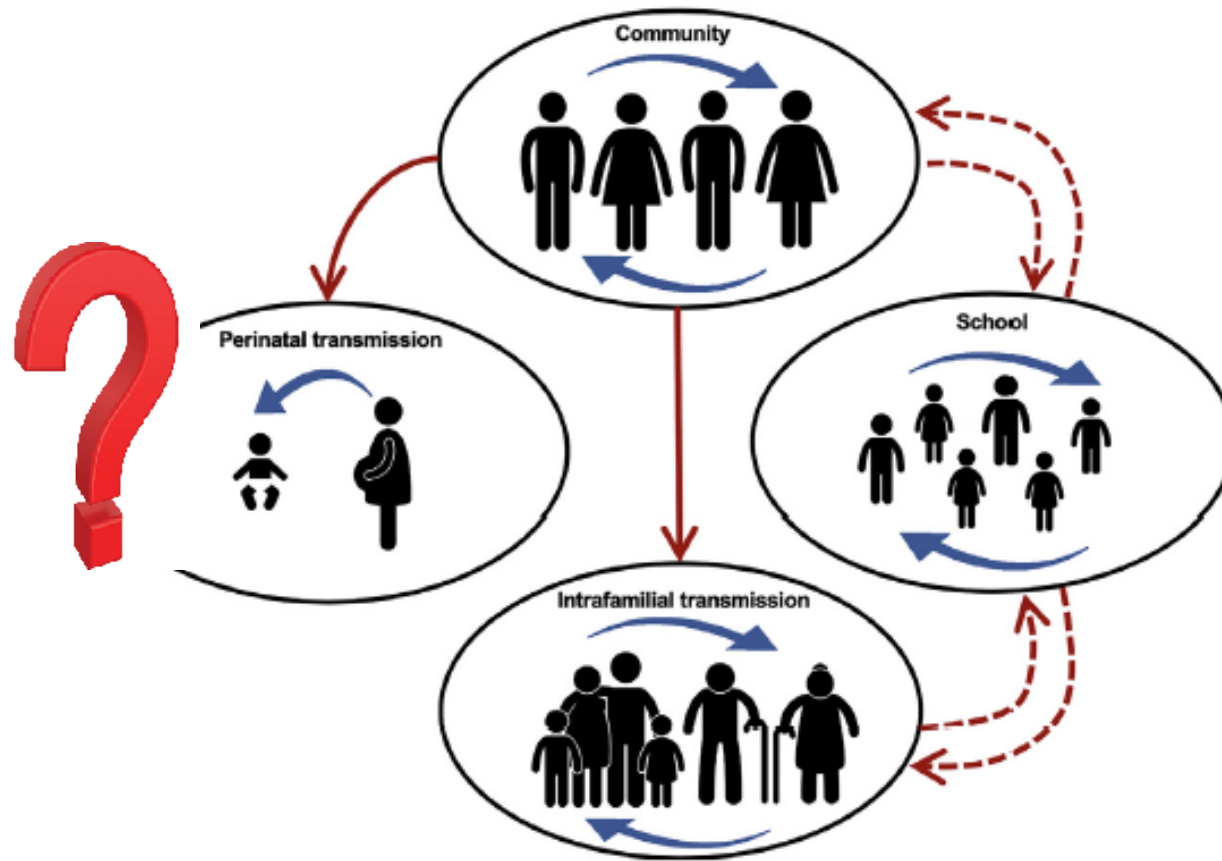
Source: MMWR. 2020 Apr 6;69(early release):1-5

73% of pediatric patients had symptoms of fever, cough, or shortness of breath compared with 93% of adults aged 18–64 years during the same period

COVID-19 in children (Summary)



- The majority of COVID-19 cases to date have been reported in adults. Available data suggest approximately 1-2% of cases are in children.
- Pediatric clinical manifestations are not typical, and relatively milder, compared with that of adult patients.
- An analysis from China has shown that children younger than 10 years account for only 1% of COVID-19 cases, similar to the proportion for SARS-CoV and MERS-CoV epidemics
- Cases have shown greater predilection towards the male gender



Transmission dynamics of SARSCoV-2 infection in children



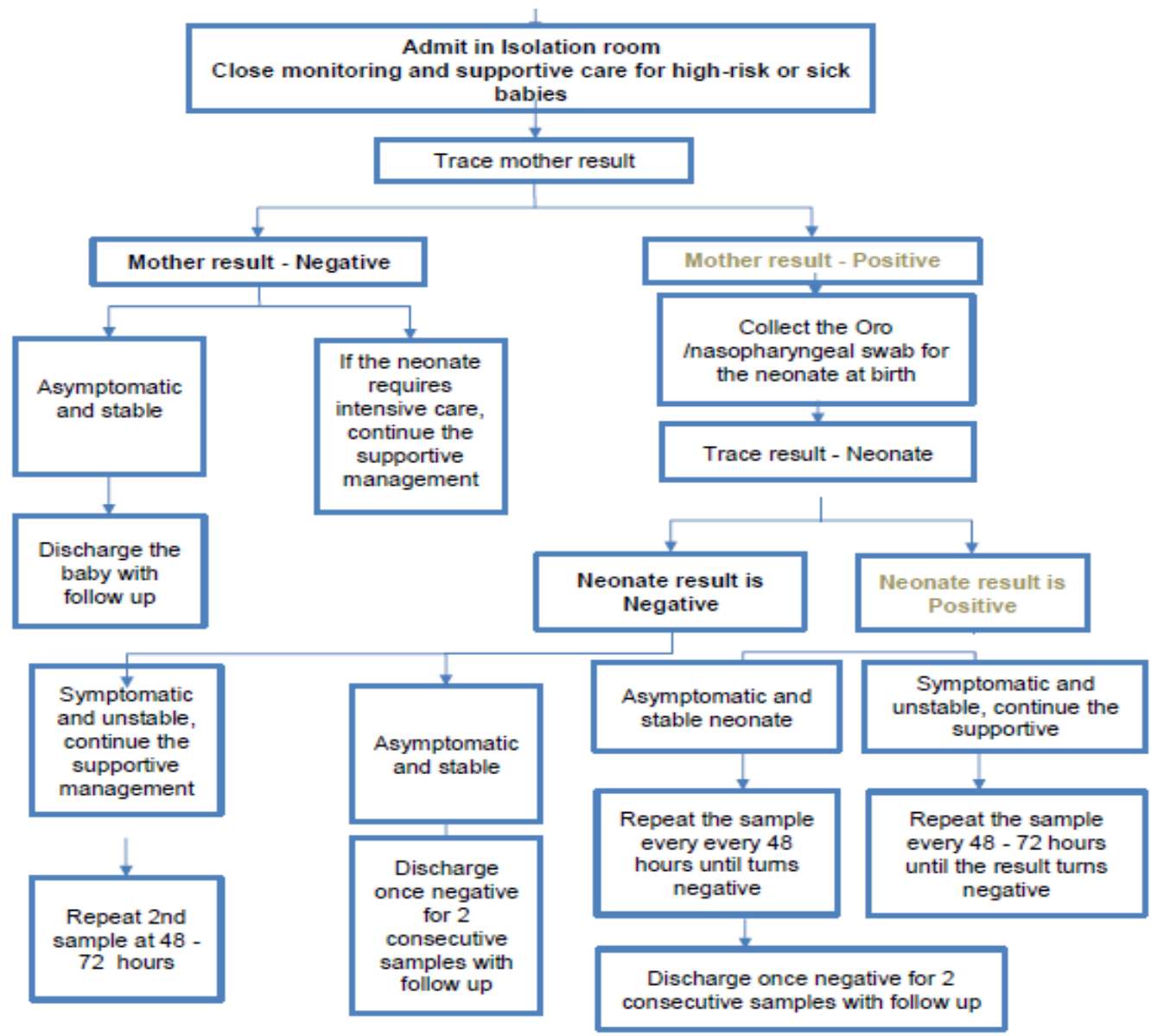
What About Intrapartum Transmission of SARS-CoV-2

- Intrapartum transmission during passage through the birth canal requires fetal exposure to infectious virus. Is SARS-CoV-2 found in vaginal fluids?
- Study of 10 *postmenopausal* women in the ICU with severe COVID-19 (+ PCR, + CT scan), testing for SARS-CoV-2 in vaginal fluid (as well as blood and urine) with RT-PCR assay 17-40 days after diagnosis (while still in ICU):
 - All samples were negative for the virus
- Data to date from *pregnant* women at delivery:
 - 6/6 samples negative for virus
- However, potential exposure to virus after birth in delivery room is possible (but is really postnatal not intrapartum infection)

PPE and care for COVID-19 positive births

- No clear guidelines at the moment
- Prudent to take full precautions
- What if status is unknown?





Admit in Isolation room
Close monitoring and supportive care for high-risk or sick babies

Trace mother result

Mother result - Negative

Mother result - Positive

Asymptomatic and stable

If the neonate requires intensive care, continue the supportive management

Collect the Oro /nasopharyngeal swab for the neonate at birth

Trace result - Neonate

Discharge the baby with follow up

Neonate result is Negative

Neonate result is Positive

Symptomatic and unstable, continue the supportive management

Asymptomatic and stable

Asymptomatic and stable neonate

Symptomatic and unstable, continue the supportive

Repeat 2nd sample at 48 - 72 hours

Discharge once negative for 2 consecutive samples with follow up

Repeat the sample every every 48 hours until turns negative

Repeat the sample every 48 - 72 hours until the result turns negative

Discharge once negative for 2 consecutive samples with follow up

Diagnosis of Covid19 in Neonates

The diagnosis of SARS-CoV-2 neonatal infection should meet all of the following criteria:

1. At least one clinical symptom, including unstable body temperature, low activity or poor feeding, or shortness of breath
2. Chest radiographs showing abnormalities, including unilateral or bilateral milled glass opacities
3. A SARS-CoV-2 infection diagnosis in the patient's family or caregivers
4. Close contact with people who may have or have confirmed SARS-CoV-2 infection, patients with unexplained pneumonia, or wild animals in the animal market or wild animals



What About Breast Milk Transmission of SARS-CoV-2

- SARS-CoV-2 rt PCR evaluated in 14 breast milk samples.
 - All tested negative for virus
- Postnatally, transmission more likely through close contact of infected mother with infant than through breast milk.

CARE OF NEONATES BORN TO PREGNANT WOMEN WITH SUSPECTED OR CONFIRMED SARS-CoV-2 INFECTION

UC DAVIS HEALTH

CHILDREN'S HOSPITAL



Presentation with "influenza-like illness"
Testing for SARS-CoV-2 infection

PAPR or N95 masks + eye shield gown and glove - all providers if risk of aerosol generation



No skin-to-skin contact
Delayed cord clamping by provider holding baby without maternal skin contact;

Mother - mask

Limit providers in DR/OR to minimize exposure

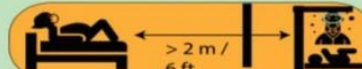
SHARED DECISION-MAKING WITH PARENTS

STRICT ISOLATION STRATEGY TO LIMIT RISK OF TRANSMISSION TO NEONATE

STRATEGIES TO PROMOTE INFANT BONDING



Neonatal resuscitation and further care in a separate room followed by bath (if stable) and placement in an isolette



Neonatal resuscitation in the same room > 6 ft from mother (consider a physical barrier - e.g., curtain) followed by a bath (if stable)

NUTRITION - shared decision-making with parents to discuss 3 choices



Formula or donor milk (if available)



Pump and discard EBM* (if Mother desires to breastfeed)

OR



Clean breasts express BM with precautions*



EBM fed by a healthy caretaker

OR



Mother-PPE clean breasts*-breastfeeding

* direct breastfeeding without PPE can be resumed after 2 negative maternal SARS-CoV-2 tests ≥ 24h apart+resolution of fever/symptoms or if infant is also positive for SARS-CoV-2

TESTING FOR SARS-CoV-2

Nasopharyngeal and oropharyngeal swab



24h and 48 h after birth



Tracheal aspirate - if intubated



24h after birth only

DISCHARGE PROCESS IN ASYMPTOMATIC INFANTS

Discharge to a healthy caretaker until mother has resolution of fever + improvement in signs/symptoms + two negative SARS-CoV-2 tests ≥ 24h apart

Mother +ve
Baby - ve



Retest infant in 2-3 weeks

Discharge to mother with contact & droplet precautions until mother has resolution of fever + improvement in signs/symptoms + 2 negative SARS-CoV-2 tests ≥ 24h apart

Mother +ve
Baby +ve (both asymptomatic)

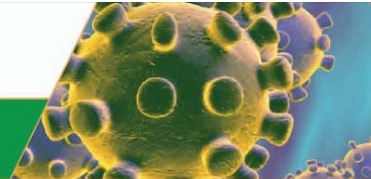


Discharge home with mother

Close follow-up of mother and infant through video visits and telephone calls

CORONA VIRUS

COVID - 19



Mother sick with corona virus and is in isolation:

Mothers can continue breastfeeding
their children up to 2 years by following these practices:



Practice 1

Regularly **wash hands** before and after **touching and feeding** the baby.



Practice 2

Breastfeed often while **wearing mask**.



Practice 3

Routinely **clean and disinfect** all surfaces around the baby.



Practice 4

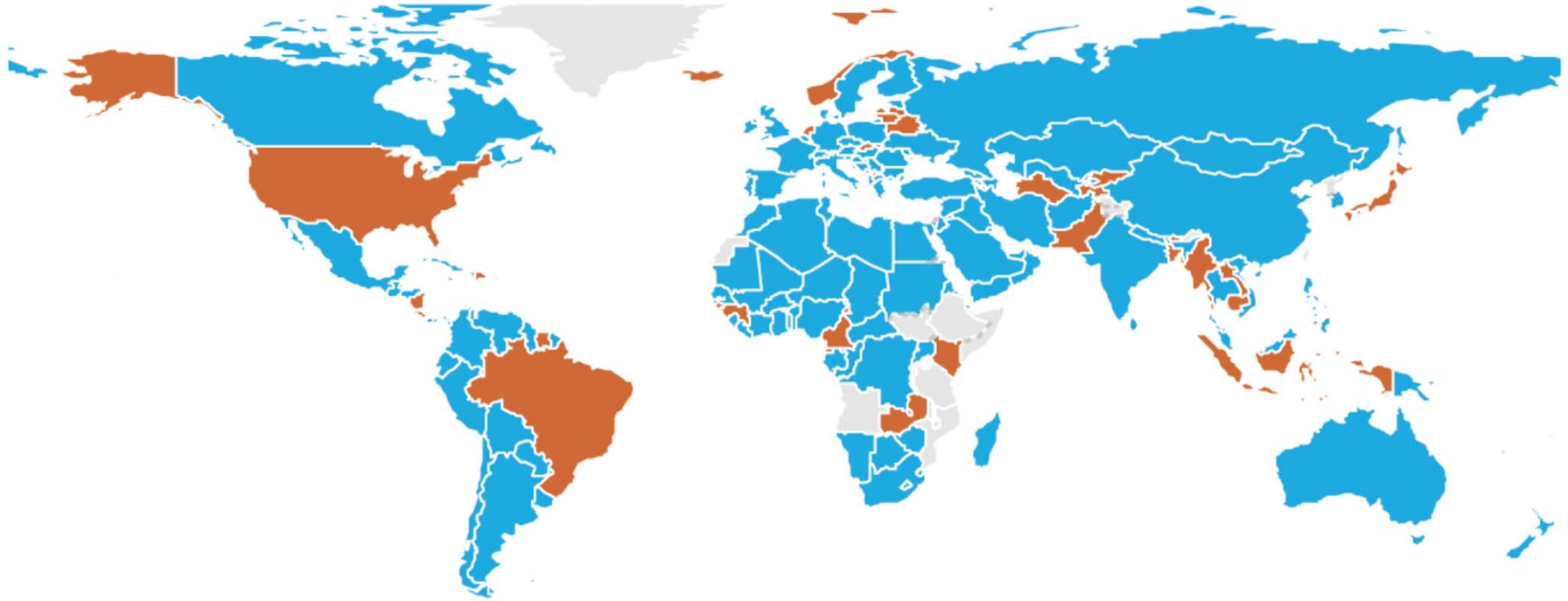
Mother's also need to **eat the best food available** during her illness.

Other indirect effects in children

Summary observations

- **Children are not the face of this pandemic. But they risk being among its biggest victims.** While they have thankfully been largely spared from the direct health effects of COVID-19 - at least to date – the crisis is having a profound effect on their wellbeing.
- All children, of all ages, and in all countries, are being affected, in particular by the socio-economic impacts and, in some cases, by mitigation measures that may inadvertently do more harm than good. This is a universal crisis and, for some children, the impact will be lifelong.
- Moreover, the harmful effects of this pandemic will not be distributed equally. They are expected to be most damaging for children in the poorest countries, and in the poorest neighborhoods, and for those in already disadvantaged or vulnerable situations.

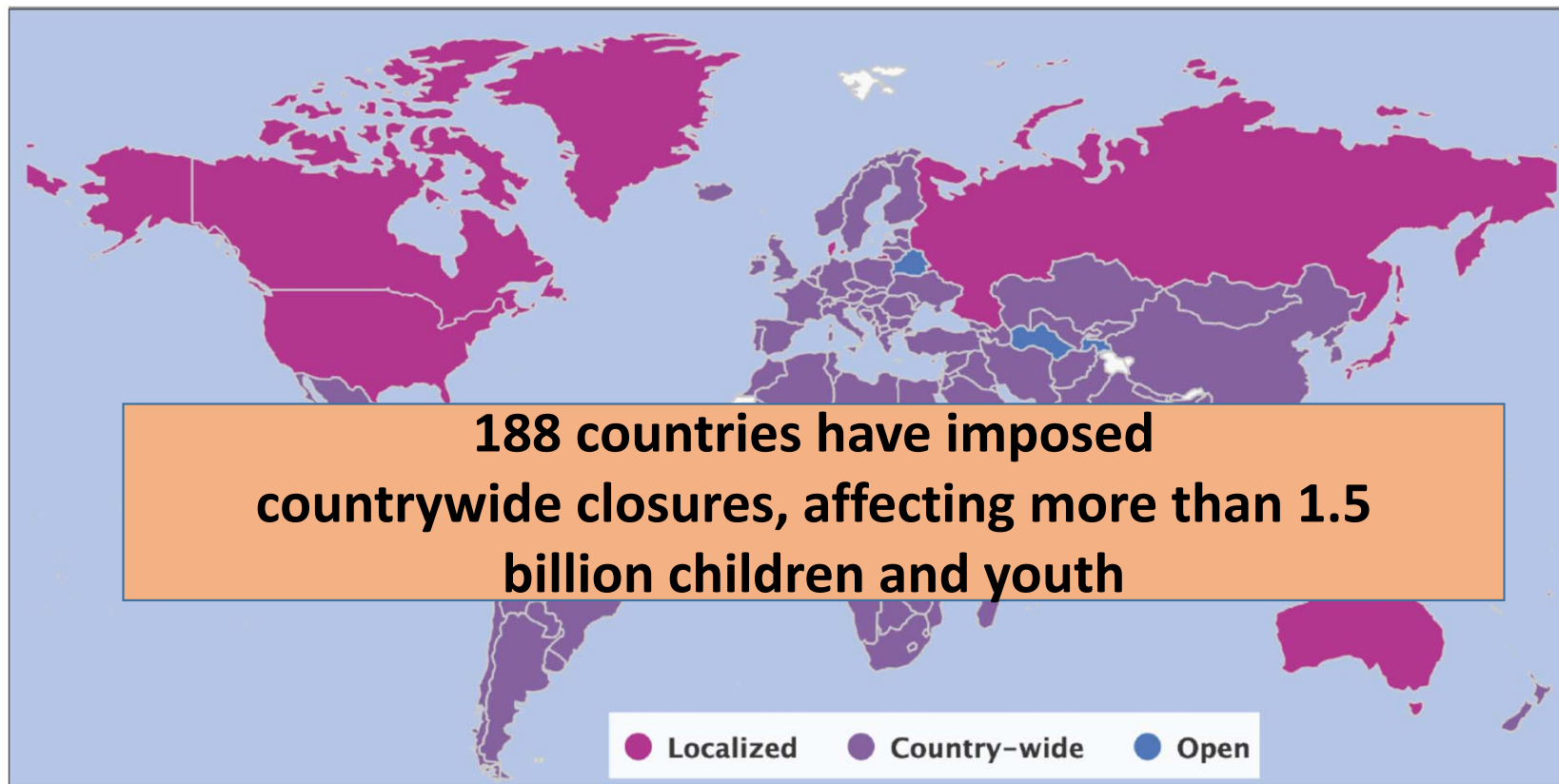
National Lockdown Measures Implemented due to COVID-19, Global Overview



● Yes ● Unknown ● No

 [Download data](#)

School closures and COVID-19



Summary consequences of COVID-19 (1)

- **Falling into poverty:** An estimated 42-66 million children could fall into extreme poverty as a result of the crisis this year, adding to the estimated 386 million children already in extreme poverty in 2019.
- **Exacerbating the learning crisis:** 188 countries have imposed countrywide school closures, affecting more than 1.5 billion children and youth. The potential losses that may accrue in learning for today's young generation, and for the development of their human capital, are hard to fathom. More than two-thirds of countries have introduced a national distance learning platform, but among low-income countries the share is only 30 percent. Before this crisis, almost one third of the world's young people were already digitally excluded.
- **Threats to child survival and health:** Economic hardship experienced by families as a result of the global economic downturn could result in hundreds of thousands of additional child deaths in 2020, reversing the last 2 to 3 years of progress in reducing infant mortality within a single year. And this alarming figure does not even take into account services disrupted due to the crisis – it only reflects the current relationship between economies and mortality, so is likely an under-estimate of the impact.

Summary consequences of COVID-19 (2)

- **Rising malnutrition is expected** as 368.5 million children across 143 countries who normally rely on school meals for a reliable source of daily nutrition must now look to other sources. The risks to child mental health and well being are also considerable. Refugee and internally displaced children as well as those living in detention and situations of active conflict are especially vulnerable.
- **Risks for child safety:** Lockdowns and shelter in place measures come with heightened risk of children witnessing or suffering **violence and abuse**. Children in conflict settings, as well as those living in unsanitary and crowded conditions such as refugee and IDP settlements, are also at considerable risk. Children's reliance on online platforms for distance learning has also increased their risk of exposure to inappropriate content and online predators

What can be done?

Preventive measures for children (IPA) # 1

- Pediatricians should encourage families with children to stay at home, enhance personal hygiene, cover coughing with an elbow, and to avoid touching their faces.
- WHO recommendations for droplet and contact precautions should be followed in clinical settings (initial risk screening, separation of children at low and high risk, health care worker use of PPE, handwashing with soap/sanitizer).
- Community mitigation interventions, such as school closures, cancellation of mass gatherings, and closure of public places are appropriate

Preventive measures for children (IPA) # 2

- **Rebalance the combination of interventions** to minimize the impact of standard physical distancing and lockdown strategies on children in low-income countries and communities and expand social protection programmes to reach the most vulnerable children
- Prioritize the continuity of child-centred services, with a particular focus on equity of **access** – particularly in relation to schooling, nutrition programmes, immunization and other maternal and newborn care, and community-based child protection programmes.
- Provide practical support to parents and caregivers, including how to talk about the pandemic with children, how to manage their own **mental health** and the mental health of their children, and tools to help support their children's learning.

Preventive measures for children (IPA) # 3

- Finding ways to maintain nutrition for those who depend on school lunches and provide online mental health services for stress management for families whose routines might be severely interrupted for an extended period of time.
- **Routine vaccination should not be discontinued for children; some delay during lockdowns is inevitable, but should not be excessive**
- Most children with mild disease may be isolated at home. Children with severe disease should be treated in facilities skilled at providing care for children
- Those who have no fever for at least 3 days and improved respiratory symptoms; resolution of previously abnormal chest radiography findings; and a series of two nasopharyngeal and nasal swabs negative for 2019-nCoV at least 48 h apart could be discharged home.

Guidance for Pediatric Societies /Associations

- Pediatric societies should in tandem with public health authorities to provide **accurate information** to physicians and the general public about prevention and treatment strategies, about family, and parenting by providing links to WHO and other reputable resources to avoid any false reports and misconceptions.
- Pediatric Societies should work with WHO, UNICEF, National Immunization Technical Advisory Groups (NITAGs), and Governments in monitoring delayed and interrupted vaccination during COVID-19 and suggest plans for achieving targets depending on their local and national situation.
- Pediatric societies should advocate for policies to encourage and facilitate telemedicine service delivery, as appropriate.