Risks

- Usual travel-related risks
- Getting COVID
- Spreading COVID
- Being stranded
- Quarantine

Travelling to resource-poor setting

- Crowding
- Poor hygiene
- Poor/overwhelmed healthcare
- Difficulty evacuating

Should they go?

Those at higher risk for severe illness (elderly, underlying medical conditions) should consider postponing travel:

- Obesity
- Medical complexity
- Severe genetic disorders
- Severe neurologic disorders
- Inherited metabolic disorders
- Sickle cell disease
- Congenital heart disease
- Diabetes
- Chronic kidney disease
- Asthma and other chronic lung disease
- Immunosuppression
Restrictions

Check travel restrictions, stay-at-home orders, quarantining and testing requirements in all places planning to visit.

Check websites of Ministries of Health, Ministries of Foreign Affairs and local health authorities.

Things to avoid

Air travel and cruises, where physical distancing may be difficult for prolonged periods.

Travel at peak times and congested routes.

Crowded spaces, poorly ventilated enclosed spaces, and any social or mass gatherings eg. concerts, events and parties.

Avoid eating out - carry food and drinks.

Reduce risk of infection

Hand hygiene (carry alcohol rub)

Physical distancing

Mask in public places where COVID-19 is widespread and physical distancing is not possible

Seek medical care early if any symptoms of COVID-19.

Vaccine considerations

Routine vaccines – flu, pneumococcal, etc

Travel vaccines

?? COVID vaccine

?? MMR, Hep A vaccine, BCG
Influenza vaccine – the most important travel vaccine of all!

Current estimates on VPD incidence: Western travelers to tropical/subtropical destinations, Steffen. JTM, 2018

Flu and pneumococcal vaccines

Protect against flu, partic those with co-morbidities
Reduce risk of secondary bacterial pneumonia due to any respiratory viruses during winter
Save healthcare services at time of high demand

<table>
<thead>
<tr>
<th>Table 13.4</th>
<th>Accelerating Routine Pediatric Vaccinations</th>
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<tbody>
<tr>
<td>Age</td>
<td>Minimum interval</td>
</tr>
<tr>
<td>DTaP</td>
<td>6 weeks</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>Birth</td>
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<tr>
<td>Hib</td>
<td>6 weeks</td>
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<tr>
<td>IPV</td>
<td>6 weeks</td>
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<tr>
<td>MMR</td>
<td>6–11 months, followed by MMR at 12 months old</td>
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<tr>
<td>OPV</td>
<td>Birth</td>
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<tr>
<td>PCV13</td>
<td>6 weeks</td>
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<tr>
<td>Rotavirus</td>
<td>6 weeks</td>
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</tbody>
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Mackell & Starr, in Keystone / (Ed) Travel Medicine 3rd Ed

Routine immunisations - boosters

One-off polio booster for endemic countries
Consider tetanus booster if >10 yrs since last one
Give dTPa-inactivated polio vaccine (Boostrix-IPV®, Adacel Polio®) if possible
Repeat doses of Tdap vaccine after 10 years well tolerated and immunogenic in adults

Vaccine 2012 20:30:974-82
**COVID immunity**

SARS-CoV-2 infection results in development of functional neutralising abs associated with protection from reinfection - ? durability

Both memory T cell and B cell responses specific to SARS-CoV-2 have been found up to 6 mths after infection

*BMC* 2020;371:m4838

**COVID vaccines**

Primary antigenic target is large surface spike protein which binds to the ACE2 receptor on host cells and induces membrane fusion

**mRNA vaccines**

BNT162b2 (Pfizer/BioNTech)

Approved for use from 16 yrs

2 IM doses 3 w apart

Efficacy > 90%

mRNA-1273 (Moderna)

Approved for use from 18 yrs

2 IM doses one mth apart

Efficacy > 90%


**DNA vaccine**

ChAdOx1 nCoV-19/AZD1222 (Oxford/ AstraZeneca)

Adenovirus vector expressing spike protein

Approved for use from 18 yrs

2 IM doses one mth apart

Efficacy ~70%

*Lancet* 2020; 396: 1979–93

**COVID vaccine Immunity**

In phase I and II trials, these 3 vaccines induced neutralising abs to the spike protein and cellular immune responses

Interim data from phase III trials suggest all 3 vaccines protect against symptomatic infection with SARS-CoV-2
Other vaccines in late-phase studies

- NVX-CoV2373 (Novavax)
  - Recombinant protein nanoparticle vaccine
  - 2 IM doses 3 w apart
- Ad26.COV2.S (Janssen)
  - Adenovirus vector expressing spike protein
  - 2 IM doses 3 w apart
- Ad5-based COVID-19 vaccine (CanSino Biologics)
- Sputnik V (Gamaleya Institute)
- BBIBP-CorV (Sinopharm)
- CoronaVac (Sinovac)

COVID vaccines in kids

- Pfizer and Moderna vaccines both currently in Phase 3 trials in kids 12-18 yrs
- Sinovac and SinoPharm (China) have opened COVID vaccine studies down to 3 yrs

Given hypothesis that PIMS-TS/MIS-C is associated with immune dysregulation precipitated by SARS-CoV-2, need to monitor closely for adverse effects

Outstanding efficacy uncertainties

- Duration of protection from disease
- Potential need for and timing of boosters
- Effectiveness in subpopulations not evaluated in clinical trials
- Impact on community transmission (ie herd immunity)

7 MMR may confer some immunity to COVID-19:

- Induction of interferons
- Induction of NK cells
- Cross-protective innate immunity

Analysis of Measles-Mumps-Rubella (MMR) Titers of Recovered COVID-19 Patients

Significant inverse correlation between mumps titres from MMR II and COVID-19 severity
Can Hepatitis A Vaccine Provide Protection Against COVID-19?

Falk Santélaugo, Fatma Buca Beke Abol, Mehmet Ubbat
Experimental and Clinical Transplantation (2021) 140:16

? Adaptive immune cross-reaction
? Helps keep COVID-19 infection at mucosal colonisation levels, preventing LRTI

Tuberculosis
Consider BCG for any child ≤5 yo going for >4 weeks to region of high prevalence
Consider BCG for any VFR child ≤5 yo going for any period

Travelling in the COVID context
Plan
Hand hygiene, physical distancing, masks
Routine vaccines – flu, pneumococcal, etc
Travel vaccines
?? COVID vaccine
?? MMR, Hep A vaccine, BCG

Considering BCG vaccination to reduce the impact of COVID-19

Beneficial non-specific effects on immune system protects against wide range of other infections reduces all-cause neonatal mortality used to treat bladder cancer
International trial to assess whether BCG reduces incidence and severity of COVID-19 in HCWs

Common childhood vaccines do not elicit a cross-reactive antibody response against SARS-CoV-2

BCG, Pneumo, Rota, DTP, Hep B, Hib, Mening, MMR vaccines did NOT provide cross-reactive neutralising abs against SARS-CoV-2 in mice, 7 weeks post-vaccination