TRAVEL MEDICINE IN THE PANDEMIC

DEC 13, 2021
SCOTT D. OLEWILER, MD
INFECTIOUS DISEASES
LEWES, DE
General Travel Medicine approach

- Travel vaccines / medication update

Additional risks of Travel in the C19 era

- Is the plane safe?
TRAVEL MEDICINE
THE OFFICE VISIT
CENTRAL SOURCE OF TRAVEL-RELATED INFO

- CDC Yellow Book
- CDC  https://wwwn.cdc.gov/travel
- Tropimed  https://www.tropimed.com/tropimed/
- Travel Health Assist  https://www.conseilsantevoyage.com/en/
- Sherpa  https://www.all-travel.com/travel-resources/sherpa-travel-restrictions/
GENERAL TRAVEL MEDICINE

- 3542 rule
3542 RULE.
TOPICS TO DISCUSS

- 3 bugs you get from mosquitoes
  - Yellow Fever (YF)
  - Japanese Encephalitis (JE)
  - Malaria

- 5 bugs you eat
  - Polio
  - Hepatitis A (HAV)
  - Typhoid Fever
  - Cholera
  - Dysentery

- 4 standard vaccines you’d get even in USA
  - Tetanus-Diphtheria-Acellular Pertussis (Tdap)
  - Influenza (Flu)
  - Pneumococcal (Pneumococcus)
  - Meningococcal

- 2 pills you need to prescribe.
  - Malaria
  - Dysentery
3 mosquito-borne:
- Yellow fever
- Japanese Encephalitis
- Malaria
YELLOW FEVER

- 200,000 cases / yr\(^2\)
- Hepatic failure, Renal failure, DIC, Shock, Cerebral edema
- Case-fatality 15% - 50\(^1\)
- LIVE VIRUS Vaccine 95% protective
  - Often required q 10 yrs
  - Immunity 35 yrs, likely for life\(^2\)
  - AE: 1% fever, aches → curtail activity few days\(^2\)
- vaccine encephalitis
  - 1 case in USA since 1965. Risk < 1 : 8 million doses\(^2\)

1. WHO. [https://www.who.int/csr/resources/publications/surveillance/Yellow_fever.pdf](https://www.who.int/csr/resources/publications/surveillance/Yellow_fever.pdf)
2. Cetron M. MMWR 2002;51(RR17):1-10
YELLOW FEVER

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1. WHO. https://www.who.int/csr/resources/publications/surveillance/Yellow_fever.pdf
2. Cetron M. MMWR 2002;51(RR17):1-10
MALARIA PREVENTION

- Vaccine
- Atov-Prog
- Doxycycline
- Chloroquine
- Mefloquine
- Tafenoquine
MALARIA VACCINE – GSK RTS,S/AS01 VACCINE IM

- recombinant protein-based vaccine.
- Protects only against *P. falciparum*
- 3 doses IM q month
- Children: reduced clinical malaria 55%, 14 months after 1st dose. (per protocol)
- For children 5 mos – 17 mos old
- WHO: rec widespread use in Africa 10/6/21
- AE: some concern for febrile Sz 1: 1000 doses
- Not approved in USA

NOT GOING TO REPLACE PILLS

- ~ not useful for travel outside Africa
- 3 doses over 3 months
- No current data in adults
- 55% protective
FALCIPARUM MALARIA, DISTRIBUTION 2017
VIVAX MALARIA, 2017

(B)
### Malaria Prophylactic Medication - I

- **Atovaquone-proguanil**: 2002. $1.70 / pill
  - Contraindicated: CLcr < 30
  - Proguanil: megaloblastic anemia, pancytopenia
  - Use TFQ, MFQ or Doxy instead
  - AE: none > placebo
  - Take with food or milk
  - 1d before travel until 7d after return.

- **Doxycycline**
  - 100 mg po qD with food
  - Lots of dietary precautions
  - Photosensitivity: DOSE RELATED
    - 6% of Lyme ECM pts 100 BID
    - 16% of Australian troops 100 qD for malaria px
  - Take 1d prior to travel until 1 month after return.

- **Chloroquine phosphate**
  - 300 mg base (500 mg salt) q wk
  - 2 wk before travel, until 4 wks home
  - Only where chloroquine resistance is absent: Central America
  - G6PD: probably safe, but wise to check.

- **Mefloquine 1989: 2013 black box**
  - 250 mg q wk
  - (Rx dose = 1250 mg / 24 hrs)
  - 2 wks before travel until 4 wks home
  - Concern for psychiatric disturbances: psychosis, toxic encephalopathy, convulsions,
  - Reported 1% - 10% of travelers: vertigo, visual difficulties. Idiosyncratic peripheral neuropathy, paresthesias, tremor.
  - Potentiate AV Block if taken with B-blocker – high degree AV block.

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1. Goetze S. Skin Pharmacol Physiol 2017;30:76-80
**Tafenoquine [Krintafel, Arakoda]**
- 7/20/18 approval: Prevention of all species malaria, cure of liver phase malaria.
- 200 mg po with food qD X 3d
- Then 200 mg po qwk maintenance dose
- After return: single 200 mg dose 1 wk after the last maintenance dose.
- Single dose anti-relapse Rx: 300 mg po X 1
- Approval is currently limited to 6 months use.
- MUST R/O G6PD Defic. Prior to use

**Pharmacology:** 8-aminoquinoline, analogue of primaquine, developed as alternative to primaquine.

**Advantage:** T1/2 = 16d : qWk dosing

**Other quinolines:**
- Mefloquine
- Chloroquine
- Primaquine
- Hydroxychloroquine

Thus potential for neuro-psych AEs

**CI:** Psychosis History. Caution if Psych disorder.
TAFENOQUINE SAFETY 6 MONTHS (OFF-LABEL 1 YEAR)

- 300 TFQ, 300 placebo healthy volunteers
  - Age 18-55 yo. **INCLUDING psych illness**, so long as judged stable. 42% + history in TFQ group, 50% placebo.
- Enrolled in Australia and USA
- 200mg qwk vs placebo X 52 weeks
- ~ 30% lost to f/u in each group

- Stopped Rx due to AE:
  - 3.7% TFQ group,
  - 1.7% Placebo group
- GI most common: 1.3% in TFQ group,
  - only nausea significantly > placebo
- 1 suicide attempt in each group
  - Relationship breakup, “considerable” baseline psych history.
  - Judged unlikely related to Rx
No apparent risk of neuropsychiatric events in 1 year
- Including administration to 42% of the group with h/o psych disorder
1 YEAR TFQ – CORNEA VERTICILLATA

- No retinal effects
- Cornea verticillata ++ association
  - Accumulation of phospholipids in cornea
  - can cause blurry/glare
    - Manage with artificial tears, carboxymethyl cellulose + saline
    - Does not require cessation of Rx
    - OPHTHO: no concern
- Did not cause cessation of Rx in any patient.
- First apparent on exam 12-24 wks of Rx
- Resolved 93% by 3 months after cessation

<table>
<thead>
<tr>
<th></th>
<th>TFQ</th>
<th>Placebo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retinal effects</td>
<td>18.2%</td>
<td>19%</td>
</tr>
<tr>
<td>C. vertic.</td>
<td>54.5%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>10.6%</td>
<td>8.1%</td>
</tr>
<tr>
<td>Nausea</td>
<td>13%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Dizziness</td>
<td>6.6%</td>
<td>10.7%</td>
</tr>
</tbody>
</table>
CORNEA VERTICILLATA

- Grey whorls or lines inferior cornea, b/l
- Most often asymptomatic
- Amiodarone most common cause
- CA ChemoRx
- HCQ high doses
- Phenothiazines, other drugs
- Fabry disease

https://webeye.ophth.uiowa.edu/eyeforum/cases/case29.htm
CORNEA VERTICILLATA

https://webeye.ophth.uiowa.edu/eyeforum/cases/case29.htm
SLIT LAMP

https://eyewiki.aao.org/Slit_Lamp_Examination
Culex mosquitoes, night feeders*

Clinical:
- Sudden onset Fever, HA, seizure, in 1/250 infections
- Flaccid paralysis
- Mortality rate with encephalitis 30%, often with permanent sequelae for survivors.

SE Asia, India

Vaccine indications:
- > 30 days exposure during transmission season
- For shorter trips if high risk activities (agricultural work, no air conditioning, uncertain itinerary).
- Not for short trip with urban travel only

JAPANESE ENCEPHALITIS VACCINATION

- Inactivated culture-derived vaccine.
- 0.5 mL IM X 2 doses 1 month apart, booster at 1 yr. If continued exposure
- (accelerated series now FDA approved on day 0 and 7)
- Complete series > 1 wk prior to travel (concern for allergic reactions)
- AE: HA, myalgia, fatigue > 10%**


** CDC Yellow book on travel vaccination accessed.12/5/21
5 Bugs You Eat

- Polio
- HAV
- Typhoid
- Cholera
- Dysentery
Red: WPV
Orange: cVDPV
If unvaccinated, give full series for any of these countries
Adults previously vaccinated: give single dose booster 0.5 ml SC X 1
3542: 5 BUGS YOU EAT

- **Polio**
- **HAV**
  - Routine childhood schedule since 2006
- **Typhoid**
  - PO vaccine no longer available (?late 2022?)
  - IM vaccine q 2 yrs
- **Cholera live oral ( $300 )**
  - Approved 2016 – after Dec 2020, not available in US.
  - Due to ↓ international travel and demand by C19
  - Live, oral single dose, at least 10d prior to travel
  - Protection 90% @ 10d, 80% at 3 months – after that?
  - Booster interval not known
  - **local risk due to raw oysters (Lewes)**
- **dysentery**

Cholera – endemic areas
TRAVELER’S DIARRHEA: DYSENTERY

Scott D. Olewiler, MD
Infectious Diseases, Travel Medicine

COOK IT, PEEL IT YOURSELF, OR DON’T EAT IT

Risks of Contaminated Food and Water

Highest-Risk Areas:
All developing countries in Latin America, Africa, Middle East, and Asia.
TRAVELER’S DIARRHEA

- Bacteria, viruses, parasites (giardia, Entamoeba, cryptosporidium, Cyclospora)
- Illness: lasts 4d commonly, 90% are resolved in 1 week without Rx.
TRAVELER’S DIARRHEA – MY OWN RECOMMENDATIONS

- Stress careful food / water precautions
  - Ice cubes
  - Salad
  - toothbrush
TRAVELER’S DIARRHEA – MY OWN RECOMMENDATIONS

- No prophylactic abx nor bismuth subsalicylate
- Mild: loperamide 4 mg, then 2 mg q stool (max 16 mg/d)
- Day # 3-4: no improvement
  - Fever, blood in stool, pus in stool
  - STOP loperamide during abx Rx
  - Azith 500 qD X 3d
  - CIP 500 BID X 3d
  - Rifaximin 200 mg po TID (only for NONinvasive E. coli)
  - STOP STATIN medication if CIPROFLOXACIN
    (But Azithro now thought to be safe)
3542: FOUR “STANDARD” VACCINES

- Tdap
- Flu
- Pneumococcus
  - Age > 65
  - Smoker
  - Med conditions: DM, EtOHism, CSF leak, cochlear implant, Heart Dz, COPD, Asthma, asplenia, sickle disease, HIV, CA, SOTx, Drug immunosuppression,
- Meningococcus→
3542: TWO PILLS

- Malaria pills
- Dysentery pills
THE HORROR OF C19 HOSPITALIZATION AND DEATH

- Days or weeks SOB on high flow O$_2$
- Spouse, family ill or dying at same time.
- Dying in isolation,
- convey this story to patients and really rethink this risk.

- “I’ll just take zinc, Vit D, and ivermectin”
- Space shuttle: it seems really easy and safe, until it’s not.
PATIENT: What shots do I need?
ME: should you be traveling?
DESTINATION – LEVEL OF C19 ACTIVITY

-4. very high – Avoid

-3. HIGH - Avoid nonessential

-2. MOD - Avoid noness. If ↑ risk factors

1. LOW -be vaccinated

- Avoid. Be vaccinated

MAJOR RISKS FOR SEVERE COVID-19
INC RISK FOR SEVERE C19 DISEASE

- Severe dz ≡ hospitalization, ICU, vent, or death
- Age: 50 → 0.3% mortality*
  - 65 → 1.5%
  - 80 → 11%
- CA
- CKD
- Liver Dz
- Chronic Lung Dz, including mod/severe Asthma
- DM
- CAD, CHF, HTN
- HIV
- Primary immune deficit
- Obesity (BMI ≥ 30, <40)
- Morbid obesity (BMI ≥ 40)
- Pregnancy
- Smoker
- SOTx, HSCTx

OBESITY RISK FOR DEATH, ~ 148,000 US ADULTS WITH ER DX C19 INFECTION MAR-DEC 2020

Data USA, March – Dec 2020
MMWR Weekly / March 12, 2021 / 70(10);355–361
NCHS data: Death by Age Group, Data through 8/18/21
COVID AGE TOOL

- First Published 5/20/20
- COVID-Age to quantify risk factors for death from C19 infection
- Race, BMI, variety of medical risk factors.

<table>
<thead>
<tr>
<th>Risk</th>
<th>Rel Risk</th>
<th>Add years</th>
<th>Quality of data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>0.6x</td>
<td>-5</td>
<td>Mod</td>
</tr>
<tr>
<td>HTN</td>
<td>~3.0x</td>
<td>12 if young</td>
<td>Provisional</td>
</tr>
<tr>
<td>CHF</td>
<td>2.2x</td>
<td>8</td>
<td>Provisional</td>
</tr>
<tr>
<td>COPD</td>
<td>1.9</td>
<td>6</td>
<td>Mod</td>
</tr>
<tr>
<td>DM2, A1C &gt; 7.5%</td>
<td>2.0</td>
<td>7</td>
<td>Mod</td>
</tr>
<tr>
<td>CKD: HD</td>
<td>3.7</td>
<td>13</td>
<td>Mod</td>
</tr>
<tr>
<td>Heme Malig</td>
<td>2.8</td>
<td>10</td>
<td>Provisional</td>
</tr>
<tr>
<td>SOTx</td>
<td>3.6</td>
<td>12</td>
<td>Provisional</td>
</tr>
</tbody>
</table>

COVID AGE CALCULATOR

**Current age**
60

**Sex**
- Female
- Male

**Ethnic background**
- White

**BMI Group**
- Calculate: 30 to 34.9

**Asthma**
- None

**Diabetes**
- Type 2 and other – HT

**Chronic kidney disease**
- Estimated GFR 30-60

**Cancer: blood related**
- None

**Cancer: non-blood related**
- None

**Other conditions**
- Hypertension

**Your Covid-age:**

\[60 + 31 = 85 \]

In the absence of vaccination or previous infection, the probability that infection would be fatal is estimated to be between 0.04 per 1000 and 0.1 per 1000.

For Covid-ages less than 20, the risk of fatality may be even lower than indicated.

- Cage < 50:
  - LOW
  - Fatal 0.04 – 2.9 / 1000
- Cage 50-69:
  - MOD
  - Fatal 0.8 to 23 / 1000
- Cage 70-84:
  - HIGH
  - 6.4-43 / 1000
- Cage ≥85:
  - VERY HIGH
  - 60 – 120 / 1000.

IS THE PLANE SAFE?

- Chance of infectious source passenger on plane
- Window of infectivity: 2d before sx to 5d after – then wanes
- Recirculated air in small container?
- Effects of passenger screening
4 reports in 2020,
very long flights
without mask policy

Few other reports, all Jan – Mar 2020 (Bielecki*), with single transmission

*Bielecki M. Travel Med Infect Dis Nov 2021;39.
REPORTS OF > 1 TRANSMISSION IN AIR

<table>
<thead>
<tr>
<th>Flight</th>
<th>Departure - Destination</th>
<th>Date</th>
<th>Aircraft</th>
<th>Duration</th>
<th>1° infect</th>
<th>2° infect</th>
</tr>
</thead>
<tbody>
<tr>
<td>CX811</td>
<td>Boston – Hong Kong</td>
<td>3/9/20</td>
<td>B777-ER, 396</td>
<td>15 hr</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>QF577</td>
<td>Sydney-Perth</td>
<td>3/19/20</td>
<td>A330-200, 240</td>
<td>5 hr</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>VN54</td>
<td>London-Hanoi,VN</td>
<td>3/2/20</td>
<td>B787</td>
<td>10 hr</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>EK448</td>
<td>Dubai-New Zealand</td>
<td>9/28/20</td>
<td>B777-300 ER</td>
<td>18 hr</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

- 15 likely transmissions, 12 in business class
- 11/12 business class cases within 2 rows
- Masks not commonly used. ? If index used.
- All passengers quarantined X 14d after flight
- Contact tracing study after flight, after arrival: 3 total passengers symptomatic
- All tested with PCR day #2 and #13 after flight
- **15 index cases** on board (14 had departed from Wuhan)

- **1 secondary case**—originally 29B, moved to 30F, as gold box shown X 1 hr, loose mask, uncovered nose. Sxs onset 2/2/20
- Mask use optional
- Index cases wore masks removed for eating, drinking, 2 were symptomatic.
Are not stat tests done at airport – ideal but not feasible yet.

- 12/6/21, now CDC requirement for NEG test done $\leq 1$ day prior to flight into USA.

- Testing at ANY time, will not pick up all who are infectious.
FALSE-NEG RATE OF RT-PCR SARS COV-2 BY TIME OF EXPOSURE.

- Over the 4d after infection, False negative rate of RT-PCR decreases
- Day 5 = sx onset
- Day 8 After exposure = best yield.

<table>
<thead>
<tr>
<th>Day after exposure</th>
<th>False neg %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>100%</td>
</tr>
<tr>
<td>3</td>
<td>92%</td>
</tr>
<tr>
<td>4</td>
<td>67%</td>
</tr>
<tr>
<td>5 – sx onset</td>
<td>38%</td>
</tr>
<tr>
<td>8 = 3d after sx onset</td>
<td>20%</td>
</tr>
</tbody>
</table>
FALSE NEGATIVES BY DAY AFTER EXPOSURE

https://www.acpjournals.org/doi/10.7326/M20-1495
TESTING ALONE IS NOT THE ANSWER

- Testing at any date lacks sensitivity
- Neg test ≠ Not transmissible
## SUMMARY OF REPORTED AIRLINE CLUSTERS

- Very low transmission even with those seated NEAR 1° case
- Almost all cases involved absent masking policy
- Modern craft + HEPA present in all
- All were long flights ≥ 5 hrs
- Great majority 2° cases within 2 rows from any index case
- 3 reports were March, 2020.
  - 1 report Jan 2020,
  - Most recent SEP 2020.
- No reports in 2021
AIRPLANE INTERNAL AIR FLOW: USA 2021
HEPA FILTER

- HEPA $\equiv 99.97\%$ efficient to capture particles $0.3 \text{ \mu m}$ size
  - $0.3 \text{ \mu m}$ is the WORST case efficiency.
  - Particles larger or smaller are removed with even greater efficiency.

- SARS-CoV-2 $0.1 \text{ micrometer}$
  - But travels in respiratory droplets (much larger than the virus alone)
  - Resp droplets $\equiv 5 – 10 \text{ \mu m}$
  - Bottom line: very unlikely to catch virus from someone NOT in your immediate vicinity
Particle capture efficiency

LOWEST efficiency is at 0.3 \( \mu m \)

At C19 range 0.1 \( \mu m \), > 99.99% effective.

Figure 3. Filter efficiency as a function of particle diameter.

https://ntrs.nasa.gov/citations/20170005166
## AIR CHANGES / HOUR

<table>
<thead>
<tr>
<th></th>
<th>AFB isolation, CDC AFB standard</th>
<th>Std Hosp Room</th>
<th>Airplane</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating Room</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air change / hr</td>
<td>16</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Time to clear aerosol</td>
<td>30 min</td>
<td>60 min</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12-15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
How air circulation works on a plane

Air conditioning unit with HEPA filters
Fresh air from outside
Air mixing unit

International Air Transport Association graphic
AIRFLOW

- HEPA aircraft since late 1990s.
  Seats act as flow barriers

- Airbus A320 and Boeing 737: 2 HEPA,
- Boeing 787, 3 HEPA
- Airbus A330: 4 HEPA
- Boeing 777: 8 HEPA

! open top vent
NUMERIC ESTIMATES OF SARS COV-2 TRANSMISSION ON AIRCRAFT
ESTIMATED RISK SARS COV-2 IN AIR TRAVEL 1: 1.7 MILLION

- Written by members of the Boeing Company
- Literature review, mathematical analysis
- Est: 1.4 billion passengers Jan – Sep 2020
- 2866 index pass detected.
- 44 documented 2° cases, in 13 published reports
  - 5 reports: no mask data
  - 3 reports: masks optional
  - 5 reports: mandated masks
- For this paper, all 2° cases assumed to be from aircraft
- 1.3x factor added for asymptomatic persons
- 10x factor added for underreporting

Conclusion: global risk transmission during flight = 1: 1.7 million.

Estimate 95% credible interval: 1: 712,000 – 1: 8 million

Pang J. Travel Med and Infect Dis Apr 9, 2021;43:1-6
TEMP SCREENING
### CDC DATA 1/22/20 – 5/30/20

**373,883 CASES: FEVER NOT RELIABLE**

<table>
<thead>
<tr>
<th>Fever PRESENT Total (%)</th>
<th>Age group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20 – 29</td>
</tr>
<tr>
<td>161,071 (43%)</td>
<td>40%</td>
</tr>
</tbody>
</table>

- Fever either **MEASURED OR SUBJECTIVE** reported
- F $\equiv \geq 38.0$ C OR subjective
- 373,883 cases where this data was known.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7302472/pdf/mm6924e2.pdf
TEMP SCREENING INEFFECTIVE, [YOUNG PERSONS 18-28]

- Swiss Army – Temp taken BID X 14d ASO
- N=84
- 83% never had fever 38°C

Bielecki M. Travel Med Infect Dis 37 (2020):101832
TEMP SCREENING INEFFECTIVE (MOSTLY HOSPITALIZED PTS)

- Australia hospital, most temporal thermometers
- All pts tested C19+ 3/9/20-5/13/20
- Temp at time of testing and within next 24°
- Fever ≥ 38°C
- 76 inpts, 10 ED pts (88% inpt cohort)
- Fever 19% + at time of testing, 24% total within 24 hrs.
MIDDLE SEAT EMPTY
- Single math modeling study suggested 1.6x lower risk of COVID-19.
- Lab study using bacteriophage in simulated passenger compartment: 57% exposure reduction. Not accounting for mask benefit. KSU.
- In published reports, proximity is main risk to 2° cases.
- By April 2021, no USA airline blocks seats.
WHAT CAN YOU DO?

✓ HEPA
✓ Laminar flow
✓ Masks
✓ Hand Hygiene
  – preflight testing
✗ Temp screening: not effective
👍 Middle seat empty: too $$$
BEFORE / DURING THE FLIGHT

- Mask req. entire duration on all public conveyances\(^1\) when traveling in or departing USA, [CDC order 2.2.21]\(^1\)
- Regardless of vaccine status, need neg test 1d prior to return to USA.
- Domestic: test recommended 1-3d before trip\(^3\)
- Remain seated – ↓ physical contact. Do not disturb ventilation pattern
- Keep top vents open during flight.
- Carry hand sanitizer: C19 survival on some surfaces up to 3d.\(^2\)

Yes – probably safer than a restaurant
WOULD I FLY?

- Nope
REQUIREMENTS AT FOREIGN LOCATION
CENTRAL SOURCE OF TRAVEL-RELATED INFO

- Tropimed  https://www.tropimed.com/tropimed/
- CDC  https://wwwnc.cdc.gov/travel
- Sherpa  https://www.all-travel.com/travel-resources/sherpa-travel-restrictions/
FOREIGN COUNTRY C19 REQUIREMENTS

- Sherpa – for restrictions.
  https://apply.joinsherpa.com/map
DESTINATION RESTRICTIONS

1. Open = test or quarantine not required
2. Test/travel: if you have neg C19 test
3. Test / quar: open with C19 neg test AND quarantine upon arrival.
   Quarantines may be –
   - until neg test on arrival result,
   - X 1 week with neg test, or
   - X 2 wk with neg test
4. Restricted: travel only for returning citizens, and others with strict requirements.
Mandatory quarantine and testing

Description

Travelers to New Zealand will need to register on the Managed Isolation Allocation System as the first step to securing their place in a managed isolation facility. Before booking flights, travelers need to register for a voucher for managed isolation. Travelers are required to quarantine for 7 days on arrival at a designated facility.

After that travelers are required to quarantine at home for around 3 days. Travelers must take a COVID-19 PCR test on day 9, and stay at home until having a negative result.
MANAGED ISOLATION
SIMULTANEOUS VACCINES

- No restrictions of C19 with any other vaccine on same day
- Give each vaccine at different site
- > 11 yo: deltoid can use several injections
- 5 – 10 yo: use vastus lateralis, for multiple injection
- Separate sites by 1 inch

THE RESULTS

- APR 2020: 98% ↓ from 2019 international travel globally.
- small rebound in 2021
- Still ~ 50% of prior levels.

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- Canceled flights
- Distancing
- ↓ demand


Flights performed by global (domestic + international) airline industry 2004 – 2022
Bad time to open a travel medicine business

Still knowledge gap: precautions

What is really necessary and helpful? [HEPA, laminar air, masking policy on board].
What is too much? [temp screening, N95 masks, gloves?]. Unclear: departure testing?

Planes are safe: mask necessary

Destinations probably ↑ danger: baggage claim, bus, taxi, hotel, events

Updates on Travel:

Malaria vaccine
Tafenoquine for malaria prevention
SUGGEST INSTEAD