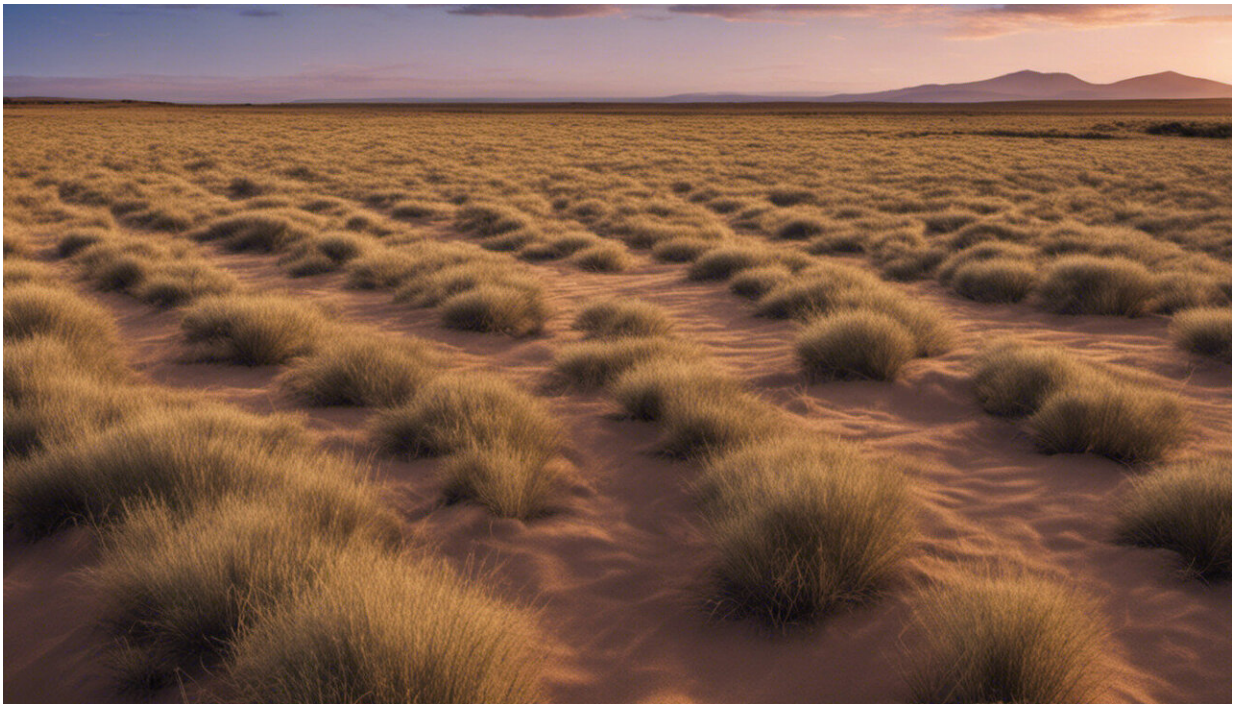


How to get cold vaccines to hot, remote Australia

August 16 2021, by Tobias Speare, Suzanne Belton



Credit: AI-generated image ([disclaimer](#))

There's a [rush to vaccinate](#) vulnerable remote Aboriginal communities in New South Wales after spread of the coronavirus out of metropolitan areas has led to a state-wide lockdown.

So focus is turning to how quickly we can get COVID-19 vaccines over

vast distances, far from vaccine warehouses in the cities, into remote Australians' arms.

Anger as slow vaccine rollout leaves western NSW Aboriginal communities exposed to COVID [#auspol](#)
<https://t.co/FExyibLyDJ>

— Katharine Murphy (@murpharoo) [August 12, 2021](#)

But transporting vaccines to remote Australia isn't new. Nor are the challenges that must be overcome to keep vaccines at the right temperature on the long and bumpy journey to remote clinics.

Here are some of the practical issues nurses, Aboriginal and Torres Strait Islander health practitioners, community health workers, pharmacists and others face when vaccines are transported vast distances by road, air or on water.

It's a long way

The vast distances and isolated communities of remote Australia pose significant challenges to transporting vaccines. Then there are the environmental extremes, with freezing winter nights and scorching summer days, plus monsoonal rains and cyclones often interrupting [transport services](#) and making regions inaccessible for weeks.

Keeping vaccines at the right temperature over large distances, over days and weeks, can be challenging. But vaccines are temperature-sensitive products, and their effectiveness is dependent on correct storage. If a vaccine is too hot or too cold it may be damaged and not work as well.

So it's critical to keep vaccines at the right temperature to ensure their safety and efficacy.

For non-COVID vaccines and the [AstraZeneca COVID vaccine](#), the recommended cold chain—between 2°C and 8°C—must be maintained from the place of manufacture to administration in the community.

However, transport and storage requirements for the Pfizer COVID vaccine are different. Unopened vials of the vaccine [need to be stored](#) and transported at domestic freezer temperatures, between -25°C and -15°C, for up to two weeks.

Unopened vials may also be stored at domestic refrigerator temperatures, between 2°C to 8°C, for up to five days. Once a Pfizer vaccine has thawed it should not be re-frozen.

Keeping vaccines [in the recommended temperature range](#) over long distances often means styrofoam boxes and regular eskies are inadequate, particularly when the transit time is likely to be three to four days. Transporting vaccines to remote Australia requires special infrastructure, including dedicated [vaccine fridges and insulated containers](#).

If there's a cold-chain breach, when vaccines are exposed to temperatures outside the recommended range, the vaccines may become damaged and might need to be thrown away and replaced.

Such breaches are estimated to have cost the Australian health system [at least A\\$25.9 million](#) in replacement vaccines over a five-year period. This estimate is pre-COVID, so the figure is likely higher if we take into account any cold-chain breaches with COVID vaccines.

There is a significant risk [of this happening](#) in remote Australia.

All staff need to be aware

All staff involved in the vaccination process, from manufacture to transport to administration, must understand the need to [maintain the cold chain](#) and the risks associated with cold chain breaches.

This includes knowing the correct way to pack the vaccines in an insulated container (such as a vaccine cold box, esky or styrofoam box), using temperature monitors, and what to do when there's a cold-chain breach.

However, there are few training materials dealing with vaccine cold chain in remote Australia. And with high staff turnover, it's difficult to know everyone in the chain has the right training.

We made a video

A team at Flinders University collaborated with Irene Nangala—a Pintupi elder and director of Western Desert Nganampa Walytja Palyantjaku Tjutaku Aboriginal Corporation ([Purple House](#)), an Aboriginal community controlled organization in Alice Springs—to make a short educational video called Vaccine Story.

The video depicts the journey a vaccine takes from a supply center to a remote Australian community in a culturally appropriate manner.

This freely available video is especially useful for non-clinical staff, who may not otherwise receive professional training or updates.

Transport is important

The video also looks at the importance of transport in maintaining the cold chain, especially in the "last mile" of [vaccine logistics](#).

For remote Australia, variable and unreliable transport add extra

logistical challenges. Freight to remote communities is often limited with infrequent or non-existent services.

So local clinics and supply centers need to be adaptable and resourceful to ensure vaccine supply. The right transport option for one day might not be the best for another. Staff need to ask:

- is there a bus traveling to the community today?
- can the visiting specialist team take the esky with them on the plane?
- can the patient-transport driver pick up the vaccine from the pharmacy?
- how are the roads today?

Each of these options presents new challenges. Non-clinical staff may have to be trained in how to handle vaccines and the importance of maintaining the cold chain.

For example, the esky needs to be safely secured in the car. If it bounces around, the ice bricks may come into direct contact with the vaccines, which can cause them to freeze (the vaccines are generally separated from the ice with packing materials).

Staff will have to consider the temperature in a car, bus, the hull of a plane or on a barge. Vaccines will have to be handed over to the right person, not left on the runway or on the clinic doorstep in the sun.

There must be good lines of communication so everyone knows where the vaccines are.

The electricity's out

Vaccines need to be stored in dedicated vaccine fridges when they reach

the clinic in remote Australia.

However, challenges in maintaining the cold chain don't stop there. It's common in remote communities for [electricity outages](#) that mean vaccine fridges go off. Clinic staff [need to be trained](#) in [how to manage](#) these situations.

It's a long road

Despite these significant logistical challenges, vaccines have been successfully shipped to remote Australia for years before COVID vaccines became urgently needed.

But with the latest COVID cases in remote NSW, we're reminded just how different the [vaccine](#) cold chain is in the bush compared with the city.

So all eyes are on looking after this precious cargo, including maintaining the cold chain.

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