

Activities to Accompany the Story Robin Miller, 'Sugar Bird Lady'



PLANNING A VACCINATION PROGRAM



In the 1960s, Robin Miller, registered nurse, flew her own plane across vast distances to administer Oral Sabin Poliomyelitis Vaccine to people living in remote areas in north Western Australia.

Important Things to Note

- Distances between townships and settlements were vast and many of the inhabitants would need to travel some distance to homesteads, schools and town centres to participate in the vaccination program.
- Three doses of the vaccine were required at two monthly intervals.
- This needed a lot of planning and publicity so that the maximum number of people possible would show up at each scheduled vaccination.
- Making the most of communal gatherings e.g. known events, stock sales, racing events etc. was a sensible strategy.
- There were no computers, internet, mobile phones. Communication was by mail, telephone and radio.

Your Task

Flying Nurse for a Day, WA 1967 – Polio Vaccination Program

Note: You may need to do a little research and use your imagination to fill in some of the unknown details e.g. names, addresses, place names

1. Collect as much information as possible about the Sabin Oral Poliomyelitis Vaccine so that you are able to educate your patients. Summarize in point form.
Optional -Make an informative slide presentation to show at vaccination centres. Robin would have used a slide projector with hand-made slides, but PowerPoint or similar software will do just fine. Be sure that the presentation is viewable without Internet access however.
2. There is a Picnic Race Meeting in Carnovan on May 30th, 1967. You have just telephoned to book the local Town Hall for use as the vaccination centre. Write a letter to confirm the booking – make sure that you include scheduled dates, times and contact information and anticipated dates for the two later vaccination sessions.
3. Draft a letter to be sent to the local authorities, medical practitioners, school teachers, newspapers, cattle stations managers etc. informing them of the details. You need to persuade them that their support is vital. Request that they distribute the information as widely as possible.
4. Design an A4 poster advertising the vaccination program. The purpose of the poster is to convince people to attend the sessions and to provide them with the relevant details. The flyer will be displayed at various community centres and in public places.

POLIO PREVENTION - Background and Activity:

Polio has largely been eradicated in the developed world due to the success of vaccination programs.

However, polio has not been completely eliminated. This will only be achieved if immunisation programs are maintained globally.

Polio, short for poliomyelitis, can be a devastating and terrifying disease.

In its most terrifying form, polio can trigger paralysis, muscle weakness and death.

Surprisingly, symptoms may be mild however, and the disease may evade detection in some individuals.

The poster at right was used in the US in the 1960s to promote the oral (Sabin) vaccination program.

Your Task:

1. Find out what you can about the cause and spread of polio.
2. Create a poster to encourage behaviour that would: encourage participation in polio vaccination programs and / or reduce the possibility of infection where the vaccine is not available.

Optional Challenges:

Use images in your poster wherever possible so that the meaning conveyed by the poster is clear to everyone regardless of language.

Can you find out about one disease that has been completely eradicated by immunization programs?

Use the information that you discover to write a compelling argument for global immunization against an emerging new disease for which a new vaccine has been developed.



http://upload.wikimedia.org/wikipedia/commons/b/b8/Polio_vaccine_poster.jpg

THE COLD CHAIN

Vaccines that have been exposed to temperatures that are too high or too low cannot be used. This is costly and a waste of time and effort.

The 'cold chain' is a system of transporting and storing vaccines. It aims to make sure that vaccines remain within the safe temperature range of +2°C to + 8°C throughout every 'link' in the 'chain'.

The cold chain begins when the vaccine is manufactured, continues through transportation to the vaccine distribution centres and ends when the vaccine is administered.

A 'cold chain breach' has occurred if storage temperatures have been outside the recommended range of +2°C to + 8°C.

Maintaining correct temperatures can be quite a challenge, especially where refrigeration is unavailable.



In remote inland areas of Australia, daytime temperatures can soar to 40 °C and higher. At night time, temperatures can plunge to freezing.



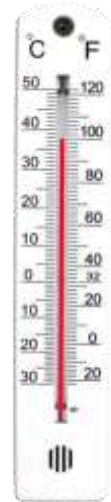
Activity – Cool Vaccines. This activity is best done on a warm to hot day.

Your Task:

- To try to keep the temperature inside an insulated cooler stable, preferably between 2° and 8° C.
- To measure the changes in temperature inside the cooler over 30 minute intervals.

You will need:

- Access to a refrigerator with freezer.
- 2 (identical) insulated coolers. Coolers like the one shown would be great. Insulated shopping bags may have to do however.
- 2 identical plastic drink bottles. These will be filled with water (the vaccine).
- Ice bricks, identical – 4 - 8 if available
- 3 thermometers
- Watch or timer
- Recording materials e.g. book, pen, tablet, or computer



ice brick

STEPS

On the day before the experiment:

1. Fill both drink bottles with tap water, an equal amount in each bottle (this will be the mock 'vaccine')
2. Place the two drink bottles in the *non-freezer* section of the refrigerator.
3. Place all of the ice bricks in the *freezer* section of the refrigerator.



cooler

On the day of your experiment:

4. Place the coolers in the shade next to each other. Place one thermometer inside each cooler and the third thermometer on top of one of the coolers. Make sure all items will remain in the shade.

Wait ten minutes, then:

5. Record the outside temperature
 - Record the temperature inside each of the insulated coolers.

Next,

6. Remove two ice bricks from the freezer and place both of them inside one of the coolers.

- 8. Remove both drink bottles ('vaccines') from the fridge and place one in each cooler.
- 9. Close the lids of the coolers. Record the time.
- 10. After thirty minutes, measure the temperature inside each cooler. Record. Record the outside temperature.
- 11. Repeat every thirty minutes for three hours. Record each temperature reading including the outside temperature.
- 12. After three hours, add two more ice bricks (or more if you have them) to the cooler that already contains the ice bricks.
- 13. Continue to monitor the temperature in both coolers every thirty minutes for another hour (four hours altogether or longer if you can manage it.)
- 14. Record each reading.
- 15. Record the outside temperature when you do your final reading.

Your Findings

What did you observe?

Did the temperatures inside the coolers remain stable?

Did the ice bricks make a difference? _____

Create a graph to show the temperature that you recorded for both coolers over the time period. Show the outside temperature as well.

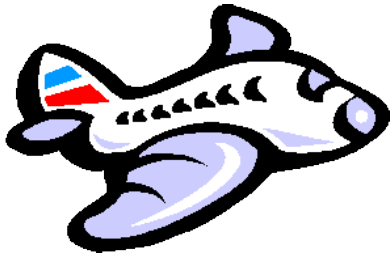
Was the temperature in either cooler within the desired range for storing vaccines?

If not, do you think you may be able to achieve this? _____

How? _____

Feel the 'vaccine' (water) temperature in each of the drink bottle. Does the water feel cold still? Is there a noticeable difference between the two bottles?





FLYING NURSE - DESIGN A BOARD GAME



Your Challenge – design a board game for two or more players.

The theme of the game is ‘Flying Nurse- Outback Medicine’

- This activity is suitable for a team of two or more designers.
- Several teams could work on their own board game design.
- Finally, the games could be swapped and tested by other teams



1. Examine popular existing board games e.g. Snakes and Ladders, Monopoly.

What do they have in common? What features would you like to include in your own game? What features would you prefer to leave out (if any)?

2. Write down your ideas for your own game. Will it follow a Snakes and Ladders style layout, or something different?

How many players? What size will it need to be? What items will you need to create it? Will you need player cards, dice, counters?

3. What are some events that could make the game interesting or exciting? E.g. thunderstorm, flooded landing strip, snake on-board, challenge questions to answer.

4. Make a draft version of the game.

5. Try out and test the draft version phase. Team members should jot down feedback and ideas for further development and constructive suggestions.

6. Complete the final version of your board game.

7. Write up some instructions to accompany the game





PLANNING THE FIRST VACCINATION TRIP

Packing the Plane



An aircraft that is overloaded or loaded badly and unbalanced can spell disaster.

(Try Googling “overweight plane disaster”. Yes, ☹ oh dear..)

An overloaded airplane may not be able to reach the necessary speed to take off from a short runway, or may not be able to clear obstacles, such as trees at the end of the runway. An out-of-balance airplane may become uncontrollable in flight or during take-off.

Planning the First Vaccination Trip¹

Useful Information

Note: Although decimal currency was introduced into Australia in 1966, in the late 1960's, weights and measures were still imperial, e.g. ounces, gallons, miles, yards.

The Plane

- Maximum take-off and landing weight for the Cessna - 2950 lb.
- Fuel capacity is 65 gallons. 1 gallon of fuel weighs 6.8 lb.
- Fuel Range is 550 nautical miles.

The Cargo

On Robin's initial vaccination flight from Perth to Carnovan, a distance of 816 km, the little Cessna was heavily loaded with vaccines and supplies.

She (the plane) was carrying a full tank of fuel.

The weight of the plane, pilot, fuel and all of the cargo would need to be calculated prior to take-off.

⇒ Weights and measures - things to find out

- How many kilometres in a nautical mile?
- What is the difference between a mile and a nautical mile?
- How many ounces in a pound?

IMPERIAL MEASUREMENT ABBREVIATIONS

| | |
|---------------------|-----|
| Pound | lb |
| Ounce | oz |
| Mile..... | ml |
| Nautical Mile | nm |
| Gallon | gal |

Use a search engine to find the following -

CONVERSIONS

___ oz = 1 lb

___ miles = .. 1 nautical mile

___ km = 1 nautical mile

¹Please note that plane statistics and weights of items listed here are approximate only. Never rely on this information for planning a real life situation.



PLANNING THE FIRST VACCINATION TRIP



WEIGHTS – PLANE, FUEL, PILOT

| Item | Weight (lb) |
|------------|----------------|
| Airplane | 1800 |
| Pilot | 120 |
| Passengers | Not this trip. |
| Fuel | 450 |

WEIGHTS - CARGO

⇒ Examine the list of supplies below. Work out the total weight for each item and jot them down. Next, add the items to the table above. The cargo would be evenly between the two baggage areas.

- Vaccine - two 20 lb ice boxes containing 5,000 doses of vaccine each . _____ lb
- Concentrated disinfectant 1 gallon 8 lb
- kidney dishes 2 lb
- 4 x 52 lb boxes sugar cubes = 1lb 208 lb
- Eight boxes plastic spoons – 1000 spoons. 25 spoons = 28 ounces. _____ lb
- 50 plastic dishes – 1 pkt 10 =8 oz _____ lb
- 10 Small towels - 2.5lb total..... 2.5 lb
- 10 lb boiled lollies 10 lb
- Patient record cards 10,000 - 12 lb per thousand _____ lb
- Pamphets 100 2 lb
- Slides for educational picture shows 120 slides 1lb 1 lb
- Personal Items – pack a bag with essential clothing and toiletries.
Don't forgot warm clothes, it can be freezing in the outback at night.
How much does your bag weigh? _____ lb

⇒ SAFETY FIRST - can you find the answers to the following?

1. What is the total weight of the plane including pilot and cargo? _____ lb
2. Is this less than the maximum take-off weight? _____
3. Could the plane carry another passenger? _____
4. How many nautical miles from Perth to Carnovan? _____
5. Is this distance within the normal fuel range of the plane? _____
6. If the plane used 1 gallon of fuel for every 11 nautical miles, how much fuel would Robin expect the plane to use for the Perth to Carnovan flight? _____
7. How much would the plane then weigh on landing? _____



PLANNING THE FIRST VACCINATION TRIP

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Note: Although decimal currency was introduced into Australia in 1966, in the late 1960's, weights and measures were still imperial, e.g. ounces, gallons, miles, yards.

The Plane

- Maximum take-off and landing weight for the Cessna - 2950 lb.
- Fuel capacity is 65 gallons. 1 gallon of fuel weighs 6.8 lb.
- Fuel Range is 550 nautical miles.

⇒ Weights and measures - things to find out

- How many kilometres in a nautical mile?
- What is the difference between a mile and a nautical mile?
- How many grams in an ounce?
- How many ounces in a pound?

What to Pack

On Robin's initial vaccination flight from Perth to Carnovan, a distance of 816 km, the little Cessna was heavily loaded with vaccines and supplies.

The weight of the plane, pilot, fuel and all of the cargo would have been calculated prior to take-off.

IMPERIAL MEASUREMENT ABBREVIATIONS

| | |
|--------------------|-----|
| Pound..... | lb |
| Ounce..... | oz |
| Mile..... | mi |
| Nautical Mile..... | nm |
| Gallon..... | gal |

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SOLUTION



PLANNING THE FIRST VACCINATION TRIP



WEIGHTS – PLANE, FUEL, PILOT

| Item | Weight (lb) |
|------------|-------------|
| Airplane | 1800 |
| Pilot | 130 |
| Passengers | |
| Fuel | 450 |

WEIGHTS - CARGO

⇒ **Examine the list of supplies below. Work out the total weight for each item and jot them down. Next, add the items to the table above .**

- Concentrated disinfectant 1 gallon 8 lb
- kidney dishes 2 lb
- 4 x 52 lb boxes sugar cubes = 1lb 208 lb
- Eight boxes plastic spoons – 1000 spoons. 25 spoons = 28 ounces 70 lb
- 50 plastic dishes – 1 pkt 10 =8 oz 2.5 lb
- 10 Small towels - 2.5lb total..... 2.5 lb
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- Pamphets 100 2 lb
- Slides for educational picture shows 120 slides 1lb 1 lb
- Two 20 lb ice boxes containing 10,000 doses of vaccine. 40 lb
- Personal Items – pack a bag with essential clothing and toiletries.
Don't forget warm clothes, it can be freezing in the outback at night.
How much does the bag weigh? ____ lb

⇒ **SAFETY FIRST - can you find the answers to the following?**

1. What is the total weight of the plane including pilot and cargo? 2853 lb +clothing ____ lb
2. Is this less than the maximum take-off weight? yes
3. Could the plane carry another passenger?. Yes, as long as weight was less than approx. 100kg
4. How many nautical miles from Perth to Carnovan? 440
5. Is this distance within the normal fuel range of the plane? yes
6. If the plane averaged 11 nautical miles per gallon, how much fuel would Robin expect the plane to use for the Perth to Carnovan flight? 40 gallons
7. How much would the plane then weigh on landing? 2578 lb