

# LAST MILE VACCINE LOGISTICS WITH DRONES

We are able to distribute lots of vaccines in Europe. To date (18.02.21) nearly [16 million people](#) have received their first dose in the UK. But what about the less developed countries or those in more remote areas?



Around  
**A QUARTER OF THE  
POPULATION**



Until **2022**

**MAY NOT GET THE VACCINE**

<https://doi.org/10.1136/bmj.m4750>

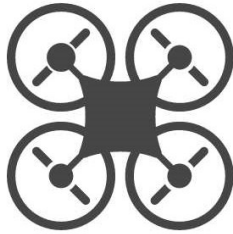
## THE VACCINE

is starting to be distributed. However, even in richer countries who have secured their supply, people who live in more remote areas ([Even in the UK, 10 million people live in rural areas](#)) may not all get the vaccine.

In more deprived countries, [access to healthcare in remote villages can be very difficult, even dangerous.](#)



I propose this solution to the problem.



We had the idea of using drones. In less developed countries the roads may be less reliable so delivery by refrigerated trucks might be impossible.



Specially adapted drones can be equipped with a modified Covid-19 spray vaccine, like the existing Fluenz® Tetra vaccine.



JAB

VS

SPRAY



The flu jab and the flu spray have the same levels of protection although there is some research to say that the spray does not work as well in older adults. The main downside of the spray is that it has a lot more restrictions. So a nasal spray for our covid drone would have to have a checklist of allergies and other things just like the flu.

<https://www.fluenztetra.co.uk/>

## FEATURES AND MATERIALS USED IN THE DRONE

1



The drone will have a camera to register people and to see where the drone is going.

2



The drone will have a laser pointer so people will know where to stand.

1

The box of vaccines will be made out of polystyrene because it is light and can insulate the vaccine.

2

The drone itself could be made out of carbon fibre, since it is light but strong.

3

The drone will be equipped with fine aerosol spray. [This technology is already used for chicken vaccination.](#)

3



The drone will have propeller guards so people won't hurt themselves if they stand too near.

4

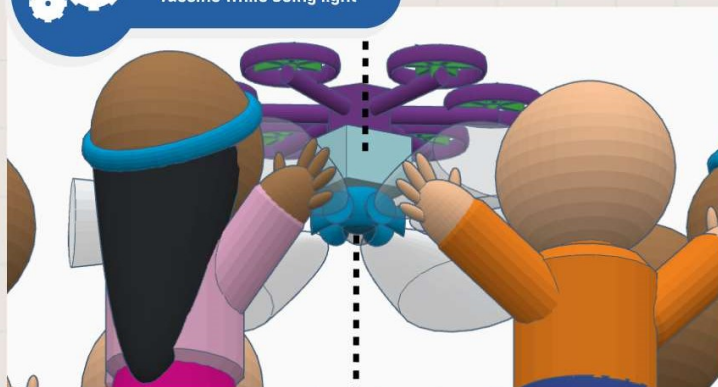


The drone will have a speaker to communicate with people and run them through the vaccine checklist

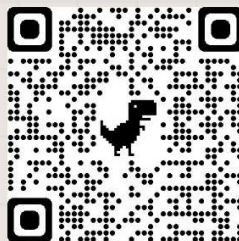
## DIAGRAMS



Polystyrene box to insulate vaccine while being light



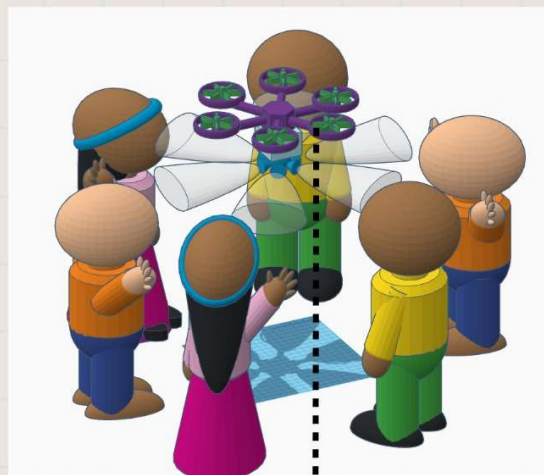
Camera to record Pt ID and laser beam to project where people should stand



To see the drone in 3D, scan the QR code



Propeller guards to prevent people from getting injured



## HOW IS THIS DRONE GOING TO WORK?

2



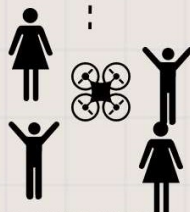
The target village should be informed in advance that the vaccine drone will arrive and they can be prepared.

3

The drones will be sent off to an area. They will be controlled remotely.

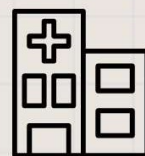


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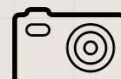
Everyone of the similar height should stand around the drone. The drone will also be equipped with a speaker to communicate with the residents. The drone will spray the vaccine.

6



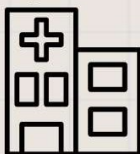
The drones will return to the hospital/medical facility to be refilled and charged.

5



Their picture will be taken and added to a server so they won't accidentally get vaccinated repeatedly.

1



The drones will be kept in a hospital or medical facility where they will be



filled with the vaccine.

## CONCLUSION

This drone may not exist yet but it touches on technologies that already exist. With some development this idea could become a reality and help nearly one quarter of the population. This in turn may ensure that the virus does not mutate and start another deadly pandemic.

## ABOUT ME



My name is Nikhil from Year 7 and this is my submission for the Felsted STEM Pandemic Solutions challenge

## References

- **Number of people vaccinated in the UK**  
<https://coronavirus.data.gov.uk/details/vaccinations>
- **Reserving coronavirus disease 2019 vaccines for global access: cross sectional analysis**  
<https://www.bmj.com/content/371/bmj.m4750>
- **Health and wellbeing in rural areas.**  
[http://www.local.gov.uk/sites/default/files/documents/1.39\\_Health%20in%20rural%20areas\\_WEB.pdf](http://www.local.gov.uk/sites/default/files/documents/1.39_Health%20in%20rural%20areas_WEB.pdf)
- **Navigating the complexities around a COVID vaccine in Africa**  
<https://www.brookings.edu/blog/africa-in-focus/2021/01/25/navigating-the-complexities-around-a-covid-vaccine-in-africa/>
- **Information on the nasal influenza vaccine**  
<https://www.fluenztetra.co.uk/>
- **Information on aerosol vaccination of chicken**  
<https://www.vettimes.co.uk/app/uploads/wp-post-to-pdf-enhanced-cache/1/commercial-chicken-vaccination-part-1-spray-and-aerosol-usage.pdf>

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