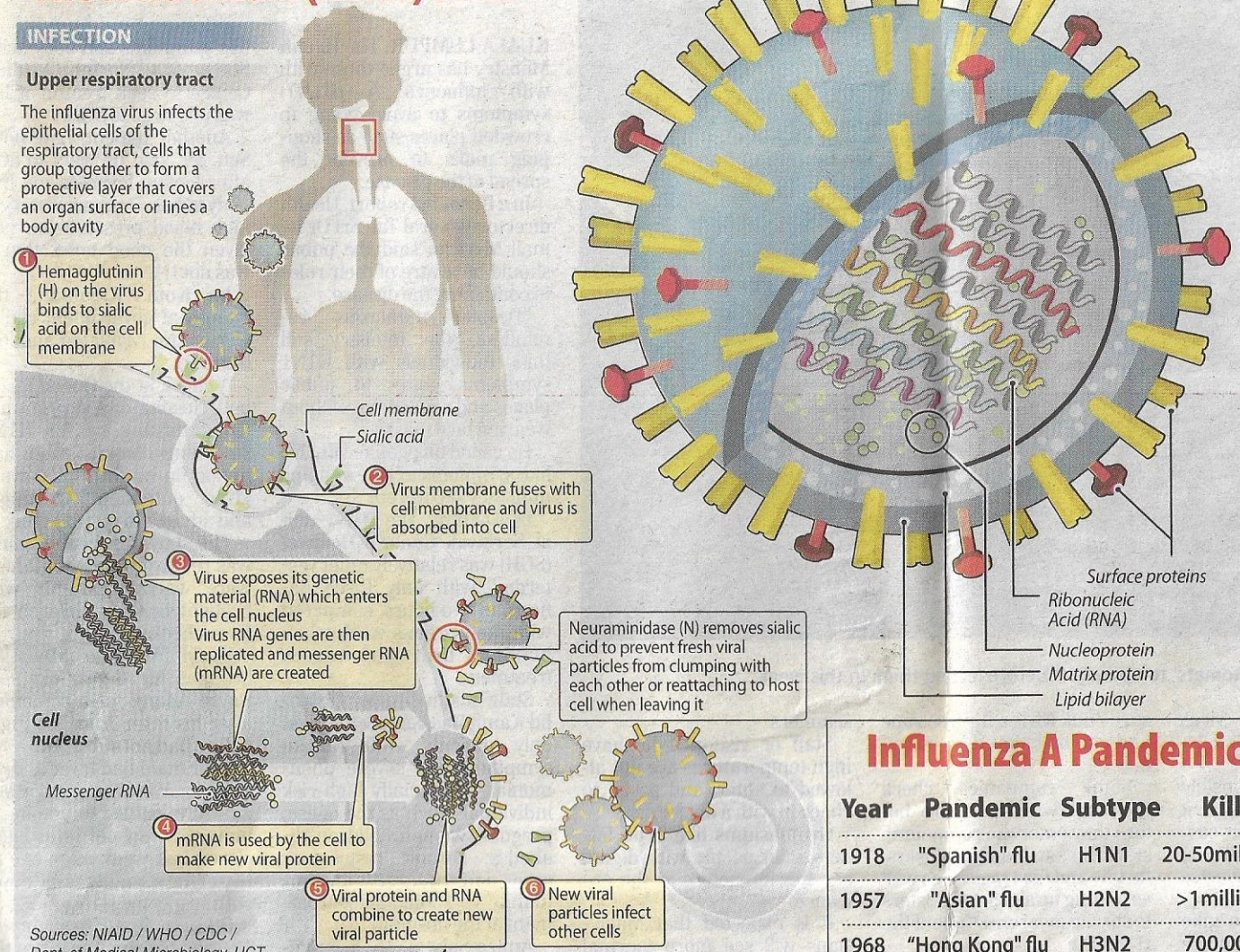
Anatomy of a deadly virus

N.S.T 16/8/09 M/S 13

The influenza A (H1N1) virus



Sources: NIAID / WHO / CDC / Dept. of Medical Microbiology, UCT

Influenza A Pandemics

Year	Pandemic	Subtype	Killed
1918	"Spanish" flu	H1N1	20-50million
1957	"Asian" flu	H2N2	>1million
1968	"Hong Kong" flu	H3N2	700,000

Flu precautions

Symptoms include fever, aching body, runny nose, sore throat, nausea, vomiting and / or diarrhoea

- **Cover your nose and mouth when you cough or sneeze. Use clean tissue – throw in trash or toilet after use**

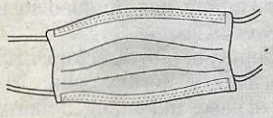
- If you get sick, stay home from work or school and limit contact with others to protect them from infection. Avoid crowded places like public meetings, schools and cinemas.
- Wash your hands often with soap and water, especially after you cough or sneeze. Alcohol-based hand cleaners are also effective.

- **Air rooms regularly.**
- Avoid close contact with sick people, those who appear unwell or have a fever or cough.
- **Avoid touching your eyes, nose or mouth as virus can spread that way**
- Avoid close contact, including shaking hands, avoid subways and other crowded areas, avoid hospitals and clinics except in emergency.
- **See doctor if your temperature is above 38°C or you have flu symptoms including a dry cough, sore throat, breathing difficulties, mascular pains, headaches.**

Flu masks

Facemasks and respirators offer a physical barrier to contact with airborne contaminants. When used correctly, masks reduce the risk of contracting influenza, though they should be used along with other preventative measures, such as handwashing and avoiding crowds

SURGICAL MASK



- Loose-fitting, disposable cloth masks that cover the nose and mouth
- Made for single use
- **Designed to stop droplets from being spread by the wearer — NOT to protect wearer from breathing in small particles**

RESPIRATOR (N95 or higher)

- Tight-fitting, disposable mask that must be specially fitted for individual wearer
- Made for single use
- **Designed to protect wearer from breathing in small particles**
- Harder to breathe through for longer periods

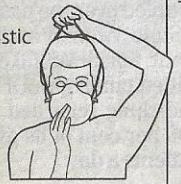
WEARING MASK

Application

- Place filter over nose, mouth and chin
- Fit flexible nose piece over nose bridge
- Secure on head with elastic and adjust to fit

Removal

- Lift bottom elastic over head first
- Lift off top elastic
- Discard



** Micron: One millionth of a metre*

FILTRATION

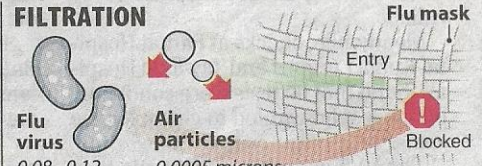


Diagram not to scale

Tightly woven, multi-layered threads create barrier, or filter, against larger-sized particles, while allowing air to pass

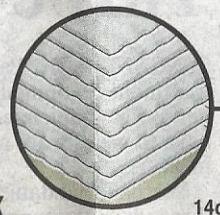
FACTS

- Mask should be changed when it becomes wet from spit or mucus, as it may be damaged
- Never wash or disinfect masks
- Never share masks with others
- Replace when damaged, soiled or breathing becomes difficult

How to make a T-shirt mask

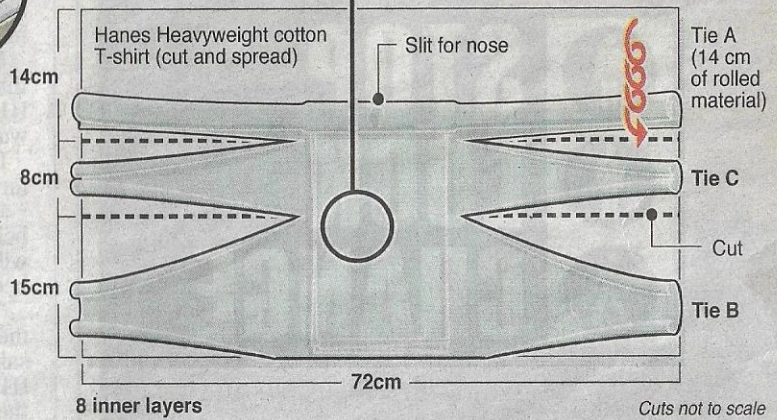
Air-purifying respirators are recommended as part of a comprehensive respiratory protection programme. In the event of a shortage of medical equipment, a respiratory mask can be made from a cotton T-shirt.

US researchers designed in 2006, a simple mask made from a Hanes Heavyweight cotton T-shirt which they hope can replicate some factors of an N95 respirator. T-shirt masks should not be used as substitutes for N95 masks



MAKING THE MASK

- Cotton T-shirt is boiled for 10 minutes and air-dried to maximise shrinkage and sterilise the material.
- Material is cut into nine pieces – one is fashioned into a mask while the rest are used as filters.
- Inner layer consists of eight pieces of cloth, stacked two straight-grained, two cross-grained, two straight-grained and two cross-grained again.



Cuts not to scale

PUTTING ON THE MASK

Nose slit is placed over bridge of the nose and **Tie A** tied below the back of the neck

After adjustments to eliminate leakage are made, **Tie B** is then tied over the head

Finally, **Tie C** is tied behind the head

Source: Centers for Disease Control and Prevention and Centre for Disease Control, Engineering Tool Box.com, news reports

Source: CDC