Low dead space injecting equipment from exchangsupplies.org
Dead space in syringes

‘Dead space’ is the void space in a needle and syringe combination that still has liquid in it following an injection.

Injecting drug users ‘flush’ out this tiny amount of drug by drawing blood back into the syringe, and re-injecting.

This means that post-use, syringes have the dead space filled with blood that may be infected with HIV and/or Hepatitis C.

![Diagram showing dead space in different syringes and needles]

- **High dead space**
  - Standard syringe
  - Standard needle
  - Dead space typically 92 μL

- **Low dead space needle**
  - Standard syringe
  - Total Dose needle
  - Dead space as low as 22 μL

- **Low dead space syringe**
  - Insulin / Nevershare
  - Fixed needle
  - Dead space typically 3 μL
Dead space and infection risk

When injecting equipment is shared, infections can be transmitted if an infective dose of virus is present in the blood and injected by another person.

The main factors that determine if an infective dose of virus is present are the:

- viral load (how many viral particles per ml of blood)
- dose of blood
- time delay and ambient temperature between use and shared use

The ‘dead space’ in syringes is a risk factor that has only recently been highlighted as a significant factor in both the dose of blood left in used syringes, and the viral survival time.

Recommended

WHO guidance on prevention of HIV, viral hepatitis B and C among people who inject drugs\(^1,2\) recommends that needle and syringe programs should provide low dead space equipment for distribution to people who inject drugs.

The UK NICE guidance PH52 for needle and syringe programmes also recommends the distribution of low dead space injecting equipment to reduce blood-borne virus transmission.
Nevershare 1ml fixed

A 1ml low dead space fixed needle syringe with plungers in a range of colours to prevent accidental sharing.

The low dead space in insulin type syringes (such as the Nevershare fixed) of just 3 microlitres may sometimes be less than that which is required to transmit HIV infection.\(^3\)

There is strong observational evidence from around the world that points to low rates of HIV being associated with predominant use of insulin type syringes, and high rates being associated with use of syringes for detachable needles.

By comparison, a standard detachable needle fixed to a used 2ml syringe has around 90 microlitres of blood remaining in the dead space between the plunger and the top of the inside of the hub.

This meant that until 2013 the switch to detachable needles involved a significant step up in blood-borne virus transmission risk because of the increase in dead space.
Total Dose
Low dead space detachable needles

Working closely with Dr Zule, who first highlighted this issue, Exchange Supplies have developed the Total Dose low dead space needle range.

With a plastic spike that fits down inside the tip of the syringe filling this void and preventing the accumulation of blood, the Total Dose needle reduces the dead space by around 75%! Significantly reducing viral burden and survival times for both HIV and hepatitis C.

Now available in 30 mm 23G blue (22 μL), 40 mm 21G green (27 μL), and 16 mm and 25 mm 25G orange (54 μL), the Total Dose needle is an important step forward in reducing the risk of blood-borne virus transmission.

Total Dose needles significantly reduce:

■ the amount of virus that could be left in the used syringe
■ survival time of any virus left in the syringe
■ the need to ‘flush’ with blood post injection
   (a practice which causes significant vein damage)

For more information go to exchangesupplies.org/totaldose
1. WHO ‘Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations’ (July 2014)
Low dead space syringes are part of our comprehensive range of injecting equipment and paraphernalia designed to reduce injecting related harm that includes nevershare syringes with coloured plungers to reduce the risk of accidental sharing.

For more information go to exchangesupplies.org/totaldose
or call us on +44 (0) 1305 262244