COVID-19 Vaccines and Low Dead Volume (LDV) Syringes
Change in doses per vial of Pfizer-BioNTech vaccine

• Health Canada has authorized a change in the number of doses per vial in the Pfizer-BioNTech product from 5 to 6

• The volume of vaccine in the vial is 0.45 mL to which 1.8 mL of normal saline diluent is added for a total of 2.25 mL

• Each dose of Pfizer-BioNTech vaccine is 0.3 mL so should be able to obtain 6 doses as long as:
  – Diluent is added at 1.8 mL and each dose is 0.3 mL
  – Little vaccine is left in the injection equipment
  – Little wastage in drawing up
Methods to support withdrawing 6 doses per vial

• Diluent is added at 1.8 mL and each dose is 0.3 mL
  • Use of a 1.0 mL syringe will help with drawing up 0.3 mL dose

• Little vaccine is left in the injection equipment
  • Use of low dead-volume syringes or needles will limit the volume of vaccine left in the syringe or needle
  • A sufficient supply of low dead space syringes has been secured

• Little wastage in drawing up
  • Keep needle in vial when adjusting dose or expelling air bubbles
  • Consistent health care provider dedicated to drawing up vaccine, if possible
Low Dead Volume Syringes

Low Dead Volume (also called low dead-space) is the amount of fluid remaining within the syringe and needle after injection is completed.

In the absence of the LDV syringes a regular 1ml syringe or a 3 ml syringe is still usable. Vaccine should not be withheld in the absence of the LDV syringes.

Figure from Zule et al Harm Reduction Journal (2018)
Process to Assess the Dead Volume of a Syringe:

1. Weigh Empty Syringe (A)
2. Fill up whole volume with water
3. Empty water
4. Reweigh syringe (B)

Dead Volume = Reweighed Syringe (B) – Empty Syringe (A)

Based on ISO 7886 Annex C