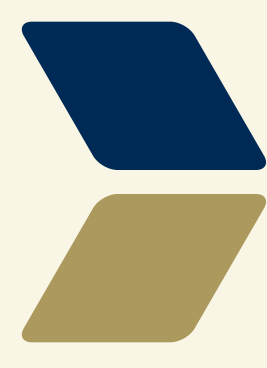


Hands On



Considering users with limited dexterity when designing POC diagnostics

The Challenge

Population: 6% of school-aged children, 7% of working-age adults, and ~50% of adults aged 70+ years have severe dexterity issues

Potential diagnoses: arthritis, cerebral palsy, MS, stroke, carpal tunnel, osteoporosis

What to consider: muscle control, discrete muscle movements, and steadiness

Low dexterity affects: picking things up, holding an item, writing, control

Small Components

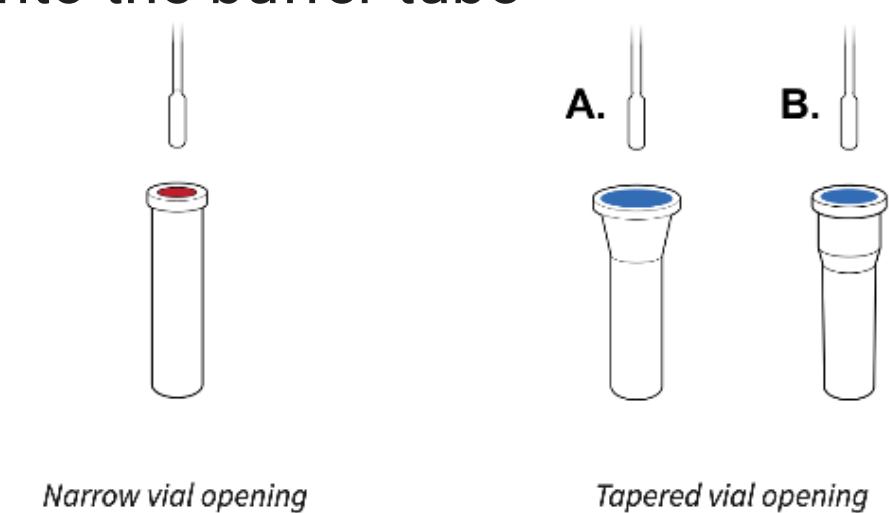
The size of components should be considered for users with low dexterity. Small components that require a pinch grip may be difficult for users to engage with. Additionally, it's important to consider how long users will be engaging with small components as this may lead to fatigue. Some commonly seen small components include:

- Test strips and cassettes
- Buffer tubes and caps
- Sample wells
- Overhanging tabs on components like foil buffer seals

Precision Tasks

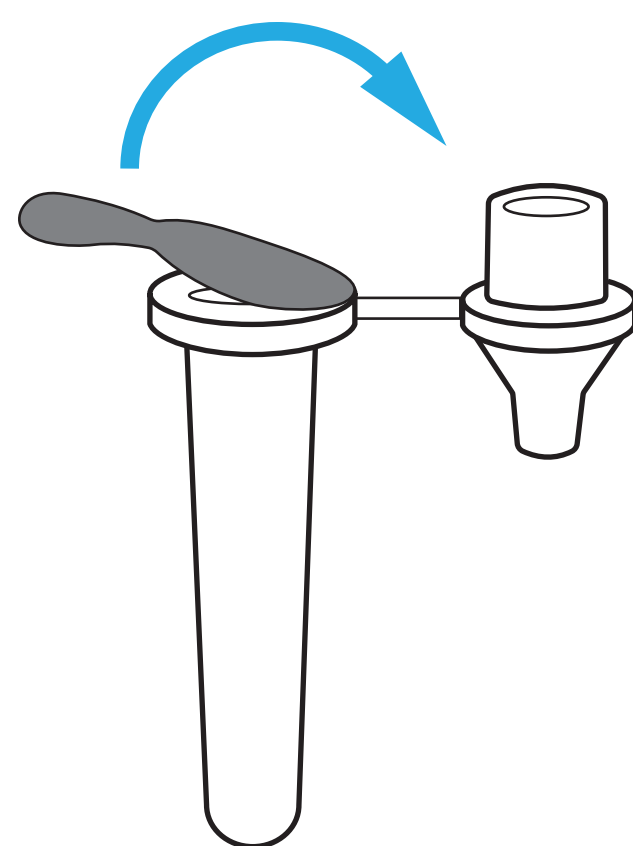
Some tasks may be difficult for users with low dexterity due to the precision required to complete them. Reducing precision tasks in a test protocol will make tests easier to use.

- Fluid transfer
- Inserting the dropper cap into the buffer tube
- Insert swab or test strip into the buffer tube



Best Practices for Low Dexterity Users

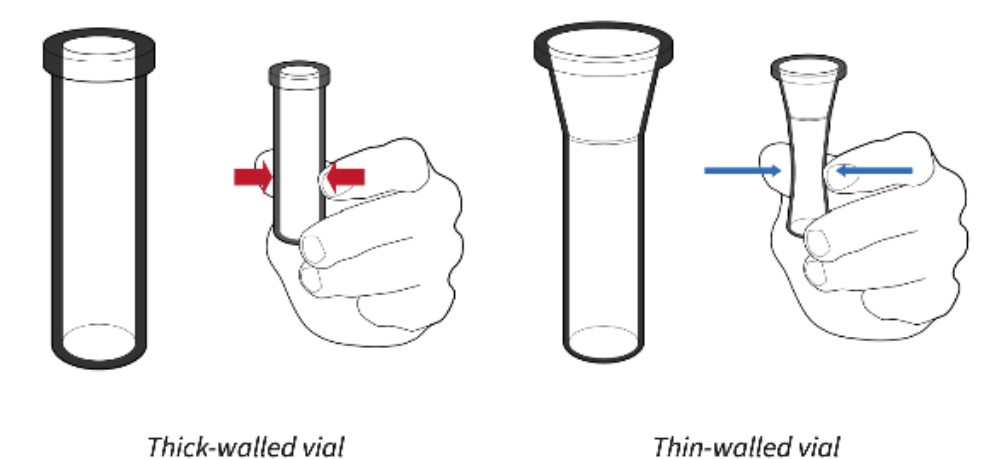
- Limit force required
- Ensure seals are easy to grasp and remove
- Tether caps to tube
- Limit precision steps- eliminate fluid transfer when possible
- Pre-filled buffer tubes
- Consider the size of components
- Limit repeat motions (fatigue)



Excess Force

Force over 5lbf is considered an excess of force for tasks that require one hand or a few fingers. Some tasks that commonly require excess force are:

- Removing seals on packaging
- Puncturing the tube holder hole in test boxes
- Opening foil packages containing individual components
- Squeezing the buffer tube to dispense drops



From opening a package to applying a sample solution, the successful use of a POC diagnostic test hinges on the user's physical ability to manipulate its components.