Clinical Need / Existing Solution
NICU patients swipe at nasal cannulae, which dislodge them from the nares and potentially causes symptoms of respiratory distress (e.g. tachypnoea and tachycardia), and hence calls for device innovation.

Receding securement from swipes and gap in securement lead to device failure.

Solution / Prototype
Clip that feeds cannula through a canal, secures cannula within cylindrical cavity, and adheres to skin patch (all units are in mm).

Approach / Requirements

Forces:
- Temporary Failure - 4.59N horizontal, 2.06N vertical
- Permanent Failure - 3.53N vertical

Surface Area: Adhesive portion is less than 9.68 cm²

Fatigue: Withstand more than 300 minutes of simulated fatigue to reach 1 mm displacement in vertical direction

Flow: Maintain flow within 1L/min at 54,115, and 158 cmH₂O

Results / Impact

Force to Failure
- May give nurses more time to attend to other patient issues
- Could be modified to secure other types of cannulae
- Applied to other populations such as geriatric, disabled, and discharged patients