An evaluation of frontline staff training needs from the simulation center, nurse educators, kangaroo transport team, vascular access team, and intensive care units identified several consistent themes. We discovered a significant educational gap for low-cost, realistic, durable, and wearable peripheral intravenous (PIV) and port task trainers that enable more versatile training options. Easily accessible training videos addressing unique challenges in the clinical environment were also identified as a need.

**PROJECT GOALS**

Our goals were to develop and implement novel skills technique videos partnered with PIV and Port Task Trainers designed by frontline innovators that are wearable, cost-effective, durable, realistic, and allow all procedural steps trainers would perform. Our secondary goal was to document and vet our innovation process.

**INNOVATION METHODS**

** Prototype Development Process (5 phases)

- **Phase 1: Discover and Validate the 'need''**
  - Identified need for versatile, durable and realistic PIV and port task trainers
  - Validated need with Simulation center, education, and staff representing emergency center, hematology-oncology, kangaroo transportation crew, vascular access team and pediatric intensive care units
  - Quality indicators potentially impacted by development and dissemination of task trainers and skills technique videos
  - Increase staff competency/confidence on vascular access
  - Increase staff, patient and family satisfaction.
  - Decrease PIV infiltrates, vascular access nurse call volume

- **Phase 2: Investigate Current Products**
  - Product search for existing trainers and fabrication materials
  - Internal institution (TCH): Simulation center, business/innovation, biomedical engineering, and frontline innovators
  - External institution: Google, Youtube, literature search and manufacturers
  - Documented results: (Microsoft, OneNote, very useful tool)
  - Notes on products: hyperlink, screen shots, price, indications for use, population intended and innovators notes on how the product or material may contribute to the solution

- **Phase 3: New product development - Prototype design and fabrication with user feedback**
  - 7 prototypes fabricated testing needle-proof backing, tissue options and wearable design concept
  - Modifications based on focus group feedback

- **Phase 4: New product pilot and survey**
  - Present refined prototypes to key stakeholders for funding
  - Collaboration with Sawbones Medical Simulation Manufacturers
  - 2 prototypes to achieve final product
  - PDSA cycles

- **Phase 5: Implement and Share**
  - Prototypes approved for widespread implementation
  - Video tutorials developed

**OUTCOMES**

- **PIV Trainer Pilot Outcomes:**
  - 14 clinical areas surveyed within Texas Children’s Hospital 100% (67 surveyed) recommended to their colleagues for training
  - Quick setup for just-in-time Training and simulation scenarios
  - Utilized Simulation/end user feedback to evaluate each prototype
  - Test, document findings adjust, design, and repeat

- **Wearable Port Trainer Pilot Outcomes:**
  - Five clinical areas surveyed within Texas Children’s Hospital 100% (67 surveyed) recommended to their colleagues for training
  - Simulation options for superficial, normal, deep, angled, and float port positioning depths
  - Quick setup for just-in-time Training and simulation scenarios
  - Worn on a person/mannequin increased staff engagement

**LESSONS LEARNED**

- **Preparation and practice script before filming.**
- **Smart phone mounted on tripod, gimbal, or body mount.**
- **Film and take pictures horizontal (helps with video editing).**
- **Film different angles simultaneously while talking through skill.**
- **Be aware of back drop, wear gloves and turn phones on silence.**
- **Share videos via YouTube (unlisted) or Gmail**

**NEXT STEPS**

- **Continue to develop PIV, Port and CVC Tips and Techniques video playlist**
- **CVC Care Trainer Kit development.**
- **Texas Children’s Global HOPE video series**
- **Continue to collect PIV insertion outcomes**