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ABSTRACT NO. PO2/09

Collect2Know: An Innovative Low-Cost Device to Facilitate Fingerprick Macro-Capillary Blood Self-Collection for HIV/STI Testing



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INTRODUCTION

• **Expanding Access:** Online home-based self-sampling for HIV/STI expands testing access, particularly for key populations reluctant to visit facility-based services.

• **The Capillary Bottleneck:** Standard capillary blood self-collection (conventional fingerprick) remains a major barrier due to discomfort, pain, user apprehension, and inadequate blood volume (<500 µL).

• **The C2K Solution:** The Collect2Know (C2K) device was specifically designed as an ergonomic, ultra low-cost device to facilitate fingerprick self-collection of macro-capillary blood (≥500 µL) for remote laboratory testing of different STIs (HIV, syphilis and Hepatitis C).

OBJECTIVES

1. User study to evaluate its technical performance to self-collect min 500 µL among lay adults.

2. Assess usability and acceptability of the device to self-collect min 500 µL during observed evaluation.

METHODS

• **Study Population:** 20 lay adults evaluated the latest C2K prototype under observation by a healthcare worker.

• **Protocol:** Participants could perform up to two fingerpricks if needed to obtain target volume.

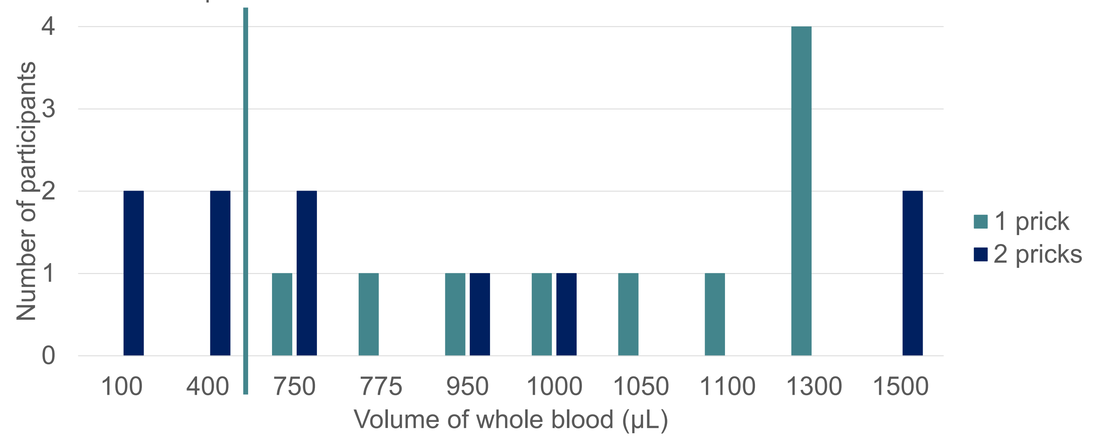
• **Endpoints:**

1. Performance Outcomes: Collection of ≥500 µL blood (required volume for STI testing), number of prick attempts, and complete device-use failure.

2. Usability & Acceptability: Assessed using the After-Scenario Questionnaire (ASQ) and a structured 5-point Likert acceptability questionnaire adapted from HIV self-testing research.

RESULTS

Blood sampling results



<u>16/20 (80%) collected over 500 µL</u>
→ 10 of those collected the volume with one attempt (62,5%)
→ 7 of those collected 1 mL with one attempt and within 3 minutes!
Four users did not collect 500 µL (20%) but there was no zero-failure

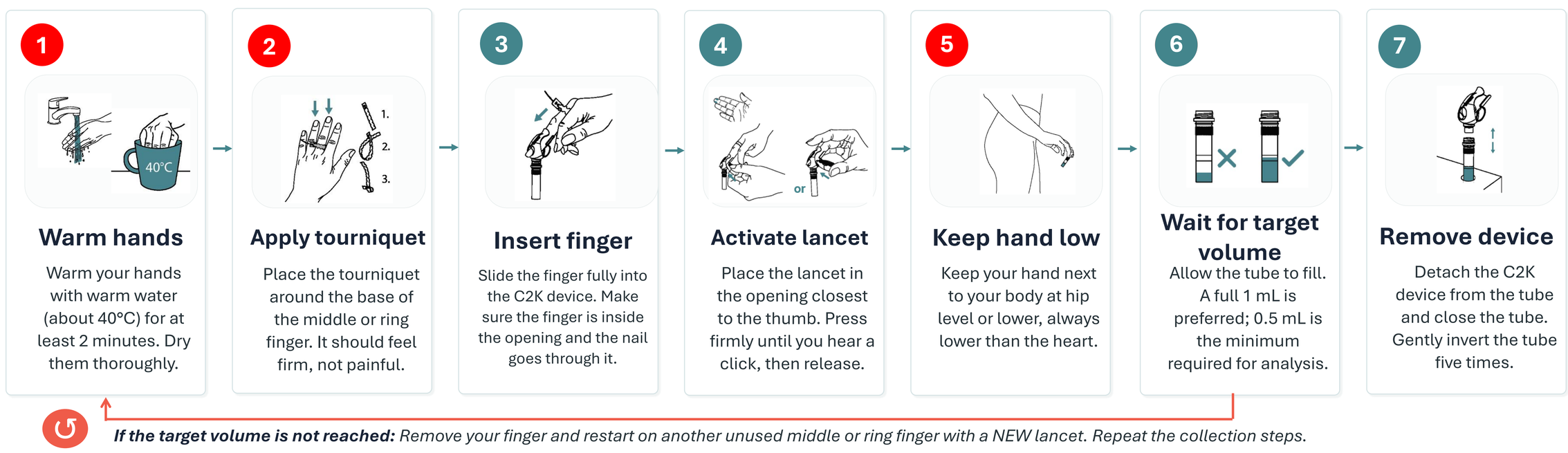
Usability & Participant Feedback Survey

Acceptability & Usability Outcome	Score (%)
Overall Usability Score (ASQ)	**90.1%**
Overall Acceptability Score (Likert)	**81.2%**
Reported device was easy to learn to use	**90.0%**
Felt possessed knowledge and ability to use	**92.0%**
Willing to use device in the future	**89.0%**
Felt confident using the device	**80.0%**
Would recommend to family or friends	**86.0%**
Preferred over blood collection by a healthcare professional	**73.0%**

C2K USER INSTRUCTIONS

Device Mechanism: The device clips onto the finger and positions a BD lancet and microtainer tube to guide puncture and standardized blood collection.

Crucial steps for blood collection



If the target volume is not reached: *Remove your finger and restart on another unused middle or ring finger with a NEW lancet. Repeat the collection steps.*

CONCLUSIONS

• **Meets STI Testing Threshold:** Four in five participants (80%) collected ≥500 µL (all ≥750 µL), fulfilling the required blood volume for comprehensive STI testing (HIV, Syphilis, HCV).

• **High Usability & Acceptability:** The C2K prototype demonstrated high usability (90.1%) and acceptability (81.2%), confirming that lay adults can successfully perform macro-capillary self-collection.

• **Alleviating Health System Burden:** By replacing selected routine venous blood draws with standardized capillary self-collection, C2K reduces facility visits, waiting times, and needle anxiety while easing clinical workload.

• **Highly Affordable (< €1):** Estimated production cost is <€1, supporting scalable deployment for decentralized testing beyond HIV/STI services.

• **Next Steps:** Future studies will evaluate unsupervised home use and conduct head-to-head comparisons against conventional fingerprick collection and venous blood sampling.

See the device in action!

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