AVOIDING PHLEBOTOMY ENTIRELY: VALIDATION OF A POINT-OF-CARE MEASURE OF APRI & FIB4 FROM FINGER-PRICK BLOOD

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Background:
Hepatitis C elimination requires decentralizing access to care. People who inject drugs cite barriers to care including transport to health-care facilities, concerns with stigma at hospitals, and poor venous access.
Optimal pre-treatment work-up includes evaluating liver health. Both AST (aspartate aminotransferase)-platelet ratio index (APRI) and FIB-4 tests compare platelet to liver enzymes levels to predict cirrhosis. This usually requires phlebotomy, access to a laboratory, and healthy veins.
We evaluated a novel alternative, combining two portable Health Canada and FDA-approved machines, the OLO (complete blood count) and the Piccolo (AST, ALT), which use finger-prick blood.

Method:
Finger-prick (FP) blood and venipuncture blood (VB), from liver clinic patients undergoing transient elastography or with known cirrhosis, were used to calculate APRI and FIB-4 scores using the two machines or the core lab (VB). Cut-offs of >1.0 for APRI, and >3.25 for FIB-4 indicate liver cirrhosis.

Results:
60 participants (32 female, mean age 56).
FP and core lab results were very similar. Pearson correlation: 0.96 ALT, 0.93 AST, and 0.95 platelets; mean differences: 0 ALT ($p > 0.9$), +4 AST ($p<0.001$), and -27 platelets ($p<0.001$). Lower platelets in FP led to higher mean APRI (1.08 vs 0.94, $p<.001$), and FIB-4 (3.66 vs 2.94, $p<0.001$) scores. However, overall categorization into low, intermediate and high risk was very similar using FP or core lab.
FP provided results within ~20 minutes with some training required for OLO. There was high acceptability by participants and staff.

Conclusion:
The FP technique was as sensitive as the core lab at predicting cirrhosis. FP APRI results closely matched the core lab. FP FIB-4 results were more conservative than core results, ruling out cirrhosis in fewer cases due to lower platelet counts. Combining this tool with other PoC methods could entirely avoid phlebotomy and greatly enable same-day treatment starts.

Disclosure of interest statement:
Nothing to disclose, no funding was received for this work.