Evaluation of a program providing operator training, quality assurance, and quality control for point-of-care testing for hepatitis C infection

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Background: Robust training and compliance with standard operating procedures underpin point-of-care (POC) testing quality, thus minimising patient harm. To date, the National Australian HCV POC Testing Program has delivered standardised training to 31 health services (of 89 planned). As part of continual quality improvement, this study evaluated HCV POC testing operator competence and error rates during initial Program scale-up.

Methods: Standardised training for GeneXpert HCV Viral Load Fingerstick POC testing was developed and delivered to staff at enrolled services. Longitudinal POC operator competency was self-assessed with 5-part Likert scale surveys and categorised as below average (≤2) or average/above average (≥3), after each training activity. HCV test error rates were determined from extracted Program results, with individual supplementary training session provided as required.

Results: Ninety-seven operators (64% nurses, 11% peer workers and 25% other health professionals) completed HCV POC training, with 23% having previous GeneXpert experience. Pre- and post- training competency improved for specimen collection (64% vs. 92%, P<0.01), quality control (57% vs. 100%, P<0.01), RNA testing (43% vs. 97%, P<0.01) and result interpretation (48% vs. 100%, P<0.01). After each training activity the proportion of average/above average competence increased (P<0.001). Of 3,704 POC HCV RNA tests (January-October 2022), 3,593 (91%) were valid on first attempt. Unsuccessful tests (n=348), broadly related to poor quality sampling ("errors"; n=286), cartridge error ("invalid"; n=45) or device error ("no result"; n=17) and were proportionally lower in operators with prior GeneXpert experience (7.9% vs. 17.2%, P<0.001). Individual supplementary training was provided to one operator.

Conclusion: Staff performing HCV POC testing recognise the importance of robust training, standard operating procedure compliance and ongoing skill acquisition for GeneXpert competency. Supplementary training can further reduce test errors and cartridge wastage. Comprehensive training with competency assessment and embedded continual quality improvement are essential for scale-up and delivery of high-quality POC testing.

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