ORIGINAL ARTICLE

Acceptability of perinatal rapid point-of-care HIV testing in an area of low HIV prevalence in the UK

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Objective: To determine the uptake of current antenatal HIV testing, the prevalence of risk factors for HIV in pregnant women and the acceptability of the rapid point-of-care HIV test (RPOCT) among pregnant women and their midwives.

Design: A retrospective review of 717 notes to determine current HIV screening practices and a cross-sectional survey using a self-completed questionnaire for pregnant women and midwives.

Setting: The antenatal clinic (ANC) and postnatal wards (PNW) at a university teaching hospital in the West Midlands.

Participants: 486 women attending the ANC or admitted to the PNW during a fortnight in May–June 2006. 72 midwives on the delivery ward completed a second questionnaire.

Results: The questionnaire showed that 90.4% of those offered the standard HIV test accepted it, with 7.2% having at least one risk factor for HIV. Over half of the decliners perceived themselves as not at risk. 85.2% would accept the rapid test, including 35.6% of the decliners. 92.8% of midwives agreed/strongly agreed the RPOCT has a role on the delivery ward and 97.2% would be happy to offer the test with appropriate training and guidance.

Conclusions: Midwives deem the RPOCT to be appropriate for a variety of perinatal settings. It is also acceptable to a clinically significant proportion of those who decline the standard test (21 of 59) and therefore has the potential to increase screening and detection rates. Hence, by allowing early diagnosis and the initiation of antenatal interventions, it could reduce the rate of mother-to-child transmission (MTCT) in the UK.

Between 1985 and 2004, there were over 1650 HIV positive children in the UK, of whom 1277 had been vertically infected.¹ Incidence is steadily increasing and since 1999 heterosexual transmission has become the most common mode of HIV transmission.⁷

In the absence of interventions, mother-to-child transmission (MTCT) occurs in approximately 16% of HIV infected pregnancies.⁸ Transmission can occur at any time throughout pregnancy, during labour (up to 65%) and postpartum through breast feeding.^{9–10} Around 95% of HIV infected women giving birth in the UK were diagnosed before delivery,¹¹ allowing for interventions that reduce transmission to <2%.¹²

The presence of some risk factors increases the likelihood of vertical transmission, including a low CD4⁺ count,¹³ a high viral load,¹⁴ pre-term delivery and chorioamnionitis.¹⁵ Certain intrapartum events such as artificial rupture of membranes, instrumental delivery, fetal scalp monitoring, and scalp pH testing increase transmission via exposure to maternal blood.^{16–17}

Despite high uptake of antenatal screening, a small proportion of mothers still decline the standard HIV test. Alternative methods must be sought in order to encourage universal uptake. One solution may be the rapid point-of-care test (RPOCT) which has changed the face of HIV screening in the United States. Its success has prompted a call for its use in labour where HIV status is unknown,¹⁸ or for high-risk women who are at risk of seroconversion in pregnancy.

The sensitivity and specificity of the RPOCT are high (99.3%–100% and 98.6%–100%, respectively).¹⁹ Results are available within minutes and are interpreted visually. Antibodies present in the specimen bind to HIV antigens fixed to the test strip. The colourimetric reagent then binds to this complex creating a visual indicator. Of all the HIV tests, the rapid test has the lowest complexity use rating²⁰ and costs as little as £7.50.

Despite the worldwide success of RPOCT, we are not aware of any published literature on their acceptability or use in the UK.

The aim of this study was to establish the current acceptance of the standard antenatal HIV test, to explore the acceptability of the RPOCT among pregnant women and their midwives, with particular interest in those women who have declined the standard test, and to assess the level of risk factors among the studied population.

METHODS

Retrospective notes review

A retrospective case note review of 717 patient notes was carried out to determine the current level of uptake of the standard antenatal HIV test. The notes selected were all those available in the antenatal clinic and post-natal wards during the study period. Other information collected included provision of information about HIV and screening, the gestational age when the test was first offered, whether the test was accepted or declined, and the serological result if the test was performed.

Questionnaire for women

Prior to commencing the study the questionnaire for pregnant women was piloted on 20 women. It was then distributed to all patients attending the ANC over a 2 week period in May–June 2006. It was voluntary, anonymous and self completed. Questions included the woman's age, gestational age, ethnic origin, country of birth, whether they accepted or declined the standard test and whether they would accept the RPOCT. On the reverse side were questions taken from the National Blood Service Donor Health Check Form. These included any history

Abbreviations: ANC, antenatal clinic; MTCT, mother-to-child transmission; PNW, postnatal wards; RPOCT, rapid point-of-care test

of sexual partners from Sub-Saharan Africa or South East Asia, intravenous drug use, blood transfusions or prostitution. Some women chose to omit these questions. A record was kept of the reasons a questionnaire was not completed. The questionnaire was also offered to women on the postnatal ward, except for those who had already participated antenatally. One of the authors (SS) was available on demand to answer any questions or concerns.

Statistical methods

The statistical program SPSS was used with Fisher's exact test. Tests for correlation were carried out and statistical significance calculated for analysis of notes review and questionnaires.

Questionnaire for midwives

A second anonymous questionnaire was distributed to any midwife who had experience on a delivery ward. On one side was information regarding the RPOCT and on the reverse side were questions concerning the midwife's opinions on the use of such a test in various clinical scenarios where women presented in labour with no antenatal HIV test.

One of the authors (SS) was available on demand to answer any questions or concerns and 2 weeks were allowed for completion. The data were analysed to determine the relationship between the number of years practicing midwifery, the level of self-professed understanding of HIV and MTCT and the extent to which the midwives feel it would be appropriate to use the rapid test on the labour ward. The frequency of responses to the proposed scenarios was recorded to determine in which situations midwives feel it would be appropriate to offer the RPOCT.

RESULTS

Retrospective notes review

Collected data were complete for 597 of the 717 reviewed notes (83.3%); the remaining notes had been written before booking bloods had been taken or else results were pending. The standard test was not done in 42 (7%) of the patients, HIV was detected in three of the 555 tested (0.5%) and 552 (99.5%) were HIV negative. This is in keeping with internal audit and microbiology laboratory statistics (personal communication). In addition, there were five inter-hospital transfers in late gestation/labour, none of which had any HIV testing records. The mean gestational age when the HIV test was first offered was 81 days (11+4 weeks, SD 31.7 days). Where there was clear documentation recorded as "Consent", 93% accepted testing; the remaining were recorded as either "Declined" or "Unsure".

Questionnaire for women

There were 486 questionnaire responders, 449 (92.4%) of whom were from the ANC. Fifteen attendees did not complete the questionnaire: nine could not read English, three refused, and three gave no reason. The changing denominator in reported figures below represents the number of women who completed the question being discussed.

The mean age of responders was 28 years (SD 6.5, range 14–45) and there was no significant difference between the ages of those who accepted compared to those who declined testing. The median number of weeks pregnant was 31 (IQR 20–36, range 7–41). Of 371 women, 323 (87.1%) were born in England and 351 of 409 (85.8%) described themselves as white British. However, the country of birth could not be used for statistical analysis due to the low numbers in the remaining 22 countries.

Of 479 women, 428 (89.4%) recalled being offered the HIV test at a median gestation of 12 weeks (IQR 12–16). There was no correlation between maternal age or gestational age when offered, with acceptance of the standard test ($p = 0.41$, $p = 0.28$, respectively).

The questions about being offered the test, receiving literature and accepting the test were answered by 416 women. Of these, 376 (90.4%) who recalled being offered also accepted. Only 240 (57.7%) remember receiving written literature at the time of offering, despite this being agreed local practice. There was no significant difference in the number of decliners if they recalled receiving written information when the test was first discussed (19/176 (10.8%) vs 21/240 (8.75%), $p = 0.296$).

The most common reason for declining was that women did not perceive themselves to be at risk (25 (46%)), although some did not specify a reason. Other reasons were "other unresolved concerns" (12 (22%)), "recently had test" (10 (19%)), "multiple reasons" (6 (11%)) and "known positive already" (1 (2%)). Of the 10 women who declined because they had 'recently' had the test, five reported having had it in a previous pregnancy, and two indicated they had had it within the last 5 years.

In an attempt to maximise uptake of screening, decliners are reoffered the test at 16 and 28 weeks. Of the 62 decliners, only three reported being offered the test again and all subsequently declined. Of the 351 responders (16.0%) who referred to themselves as "white British", 56 declined the test while six of the 23 (26.0%) Asian or Asian British (Indian, Pakistani, Bangladeshi) women also declined. All other ethnic groups had very small numbers.

A total of 97% of women answered the questions regarding risk factors for HIV, the frequencies of which are presented in table 1. One of the non-responders found the questions distressing, and one questionnaire completed by a partner has not been included.

Table 1 Responses to the questions regarding risk factors for HIV

Question	Yes (%)	No (%)	Don't know (%)	Total (from 486)
Have you ever had sex with someone from SSA or SEA?	15 (3.2)	459 (96.8)	0 (0)	474 (97.5)
Have you ever had a partner that has had sex with someone from SSA or SEA?	11 (2.3)	412 (86.7)	52 (10.9)	475 (97.7)
Have you ever received a blood transfusion in SSA or SEA?	2 (0.4)	471 (99.4)	1 (0.2)	474 (97.5)
Have you ever had a partner who has received a blood transfusion in SSA or SEA?	1 (0.2)	446 (94.5)	25 (5.3)	472 (97.1)
Have you ever injected illicit or non-prescribed drugs?	5 (1)	471 (98.9)	0 (0)	476 (97.9)
Have you ever had a partner that has injected illicit or non-prescribed drugs?	13 (2.7)	453 (95.1)	10 (2.1)	476 (97.9)
Have you ever had a partner who has had sex with another man?	4 (0.8)	460 (96.6)	12 (2.5)	476 (97.9)
Have you ever had a partner who is HIV positive?	1 (0.2)	465 (97.9)	9 (1.9)	475 (97.7)
Have you ever been paid for sex?	4 (0.8)	471 (99.2)	0 (0)	475 (97.7)

SEA, South East Asia; SSA, Sub-Saharan Africa.

Thirty five individuals were responsible for the 56 reported risk factors, with 13 having more than one and one having four risk factors. Two of the 13 with more than one risk factor declined the test, and five of the 22 with one factor declined.

A total of 374 of 439 women (85.2%) stated that they would accept the RPOCT. Of those who had accepted the standard test, 353 of 380 (92.9%) found the rapid test acceptable. Interestingly, 21 of 59 individuals (35.6%) who had not accepted the standard test found the PROCT acceptable. There was no common reason for declining the standard test among this group.

Reasons given by 58 of the 65 responders who did not find the RPOCT acceptable included 24 whose reasons for not having it had not changed, 11 who would want more time to think about it, 11 who would not want to be told on the spot and 12 who had other reasons.

Questionnaire for midwives

Seventy two midwives completed the second questionnaire, 25% of whom were students. The median number of years practicing midwifery was 10 years (IQR 2–30). Thirty one of 70 (44.3%) either disagreed or strongly disagreed that their training had adequately prepared them for understanding the challenges of HIV in pregnancy and delivery. However, 51 of 72 (70.8%) agreed or strongly agreed that they were aware of what measures are available to prevent MTCT. All responders agreed that antenatal HIV testing is important.

It was agreed by 80% of the midwives that it would be appropriate to offer the RPOCT for five of the six scenarios proposed where a woman presents with no antenatal HIV test result (fig 1). Finally, the midwives were asked about their opinions on the possible role of RPOCT on the delivery wards. Sixty four of 69 (92.8%) either agreed or strongly agreed that there is a role for the RPOCT and 55 of 69 (79.7%) said they would feel comfortable raising the topic of HIV testing with their patients. Sixty nine of 71 (97.2%) would be happy to offer the test if they had appropriate training and guidance and no one strongly disagreed.

DISCUSSION

Guidelines recommend that all women be offered screening for HIV as an integral part of their antenatal care, and that uptake is over 90%.²¹ Uptake rates were 92.6% according to documentation and 90.4% according to the questionnaire, indicating that this unit meets national targets. The large number of notes reviewed and mothers completing the questionnaire should minimise bias, however it is possible that mothers with obstetric problems may either be over-represented by being

more likely to have a clinic appointment or their case notes may be missing.

None of the independent variables, for example, age, gestational age or receiving written literature, was significantly correlated with acceptance or refusal of the test. Although 7.2% had at least one risk factor, the selection of the "don't know" option could indicate a potentially high-risk subgroup. It was not possible to establish a relationship between the presence of risk factors and refusal of the test. These findings support the results of previous studies.^{22–25} One patient wrote:

"My only concern about having the test was the stigma attached to it by insurance companies in the past. Once I realised this was no longer the case, I was happy to have it believing that if I was positive then knowing this would be better for me, the baby and the health care professionals involved." Patient 259

Other factors, such as being unmarried or from ethnic minority groups, have been associated with lower uptake.^{26–27} The large proportion of white British women born in England meant that the influence of these two factors could not be meaningfully interpreted.

In other studies, common reasons for opting in to the test included the perceived benefits to women and their babies, and that it is a "routine" test.²⁸ Pre-test focused education positively increases uptake²³ and is influenced by the individual midwife.^{26–29} An adequate length of time for counselling is important as is having English as a first language.²² This study only looked at mothers' attitude to the idea of RPOCT rather than actual uptake and the two might be different.

The anonymity of the questionnaire helped reduce embarrassment and the potential bias of respondents otherwise giving socially acceptable answers. It took only a few minutes to answer, and the majority answered even the most sensitive questions. However, it was completed in the setting of the busy ANC, where women are frequently accompanied by their partners and have multiple appointments to attend.

The second questionnaire showed that a large proportion of midwives do not think they have enough training regarding HIV in pregnancy, although many are aware of interventions to prevent MTCT. There was no correlation between number of years qualified and professed understanding.

Midwives agreed most strongly with RPOCT for an asylum seeker, with a few suggesting compulsory testing on admission to the UK. Two midwives commented that they would make efforts to retrieve results before offering the test to a woman who had moved into the area. However, in the five cases of inter-hospital transfers in this study, none had evidence of trying to ascertain status. Many contested the scenario of the women who had declined the test, suggesting it was inappropriate to re-offer the test if the woman had made her wishes clear. However, the results of this study indicate there are a proportion of women (35.6%) who would accept the RPOCT having declined the initial test.

There was strong agreement with the importance of HIV testing in pregnancy, the future of the test and being happy to offer it, which are all vital for its successful introduction. In places with a less open attitude to discussing HIV or higher disease prevalence than this unit, midwives may see more barriers to its implementation.

CONCLUSION

RPOCT is well accepted and may have a future in perinatal HIV testing. In this hospital it was acceptable to over 85% of women and to a clinically significant proportion (21 of 59) of those who had declined conventional testing. This may help further

Figure 1 The responses to the six scenarios proposed on the Midwife Questionnaire.

What is already known about this topic?

- In the UK, 77% of children with HIV were vertically infected.
- Antenatal HIV screening is a cost-effective and efficient way of preventing MTCT and optimising care for those with the disease through early detection.
- Rapid point of care testing (PROCT) has been assessed in large multi-centre studies and proved feasible in labour with a high satisfaction and acceptance rate (from 74–84% in the US to 97% in Thailand).

What this study adds

- RPOCT is an acceptable form of HIV testing for antenatal women and their midwives in a region of low prevalence in the UK.
- RPOCT may help increase uptake of HIV screening by being acceptable to some of the women who decline the routine test.
- The common reason for declining the standard test is a woman not perceiving herself to be at risk, indicating a potential role for improved education about HIV.

increase the proportion of women being screened for HIV. Most midwives agree it would be appropriate to use RPOCT on the delivery wards and would be happy to offer it with appropriate training and guidance. An educational program for midwives focusing on the potential introduction of RPOCT piloting could complement the current education program. As a result, MTCT and its concomitant morbidity and mortality could be reduced with the initiation of appropriate interventions.

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