

INTRODUCTION

- In April 2000 universal antenatal screening for hepatitis B was introduced for all pregnant women in the UK, with the objective of identifying at risk infants so that appropriate vaccination is offered¹.
- As well as the risk of vertical transmission from mother to child, close household contacts are also considered at risk of infection¹.
- Despite national guidance recommending that these household contacts (HHCs) are screened and vaccinated implementation is sub-optimal².
- The use of home collected capillary blood as dried blood spots (DBS) offers an alternative approach to conventional follow-up in primary care, and may be a more acceptable method than venepuncture.

OBJECTIVES

The objectives of this study were to investigate the provision of a home delivered nurse led DBS service, in comparison to conventional follow up in primary care for household contacts of HBV positive pregnant women. To assess the performance of this service the following would be considered;

- Proportion of newly screened household contacts
- Proportion of newly vaccinated household contacts
- Proportion of newly referred infected household contacts

METHODS

- Population of interest - HBsAg positive pregnant women identified through antenatal screening at the maternity units of North Middlesex University Hospital and Newham Hospital which were selected for their high antenatal prevalence.
- Data would be collected for two time periods;
 - Audit Period - 01/01/2009 - 31/12/2009 - Retrospective review of GP records to determine uptake of screening and vaccination of HHCs.
 - Study Period - 01/11/2010 - 31/12/2011 – Data collection and home delivered DBS testing for HHCs of HBV positive women in North Middlesex. Newham service provision is unchanged.
- The study nurse also offered vaccination to HHCs <16 years of age.
- The two trusts had different routine pathways for follow-up of partners of HBV positive women: Newham referred partners to GUM clinics for screening and vaccination. All other contacts were referred to the GP. North Middlesex referred all contacts to the GP.
- To assess the differences between groups in the type of contact (age, sex, child/adult) random effects models were fitted in Stata to account for the hierarchical data structure (contacts nested in cases). Where individual level analysis was possible this was also done.

Table 1 – Case Details

	North Middlesex Retrospective	North Middlesex Prospective DBS	Newham Retrospective	Newham Prospective	p value
No. of Women	57	58	124	122	NA
Median Age	27	26	27	28	0.34*
Age Range	16 - 40	14 - 40	16 - 47	19 - 42	NA
Prev Tested (%)	31 (54.4)	33 (56.9)	43 (34.7)	46 (37.7)	Not Calculated (due to unknowns)
High Risk (%)	4 (7.0)	7 (12.1)	7 (5.6)	17 (13.9)	0.16**

*Kruskal Wallis, **Fishers Exact

Figure 1 – Case ethnicity details

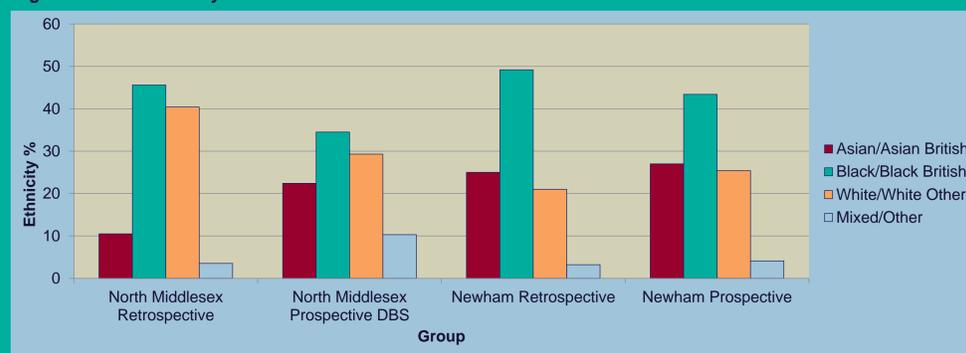


Figure 2 – No. of cases, total contacts and average no. of contacts per case

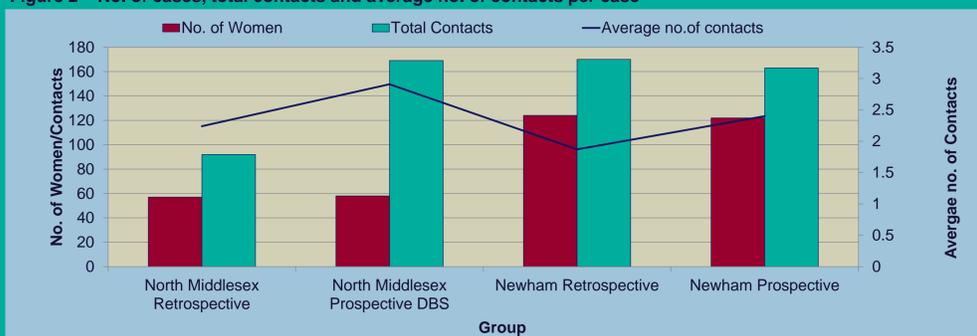


Figure 3 – Contacts identified by relationship.

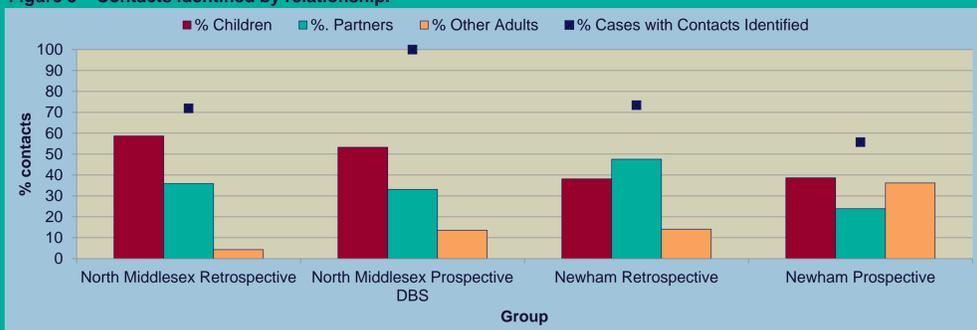


Figure 4 – Screening and vaccination by study group and relationship

North Middlesex		Newham	
Retrospective	Prospective DBS	Retrospective	Prospective
62.1%	96.6%	39.6%	39.4%
Households Screened	Households Screened	Households Screened	Households Screened
57.4%	100.0%	64.6%	31.7%
Children	Children	Children	Children
30.3%	96.4%	29.6%	23.1%
Partner	Partner	Partner	Partner
25.0%	100.0%	25.0%	30.5%
Other Adult	Other Adult	Other Adult	Other Adult
50.0%	74.1%	35.2%	36.4%
Households Vaccinated	Households Vaccinated	Households Vaccinated	Households Vaccinated

RESULTS

- Although the number of cases differed across the two trusts with more cases being identified in Newham, overall the demographics were very similar (Table 1, Figure 1)
- The number of cases where contacts were identified was statistically higher in the DBS group, which also saw the highest number of average contacts (2.91 per case), despite having the second smallest number of cases (Figure 2)
- Figure 3 shows that overall the type of contacts differ across trusts with more children in the North Middlesex groups. It further shows that all cases had contacts identified in the DBS group compared to <60% for the Newham prospective arm.
- The intervention led to 96.6% of households being screened and 74.1% being vaccinated (at least one person). This is compared to 62.1% and 50.0% for the North Middlesex retrospective arm and even lower proportions for the Newham groups (Figure 4).
- Tables 2-4 show that the provision of DBS raises the numbers screened for all relationship categories. The comparison groups have a high proportion of individuals not screened compared to just 3.57% of partners in the DBS group.
- The DBS group also identified a high number of positive individuals with over 20% of both partners and other adults identified as positive. In comparison the Newham prospective arm identified just 5% of partners and around 8.5% of other adults as positive.

DISCUSSION AND CONCLUSIONS

- Providing a home delivered DBS testing service greatly improves testing uptake for household contacts of HBV infected pregnant women.
- Taking the household as the unit of interest immunisation uptake also increased in the intervention group and at the individual level there was a clear increase in vaccination uptake for 'other adults'
- The findings suggest that the impact and improvement is greatest for adults as opposed to children, and is likely to do with the more detailed guidance available for children.
- The intervention did not have such a dramatic affect impact on vaccination rates when an individual tested negative. It is likely this is because these individuals were older and so did not receive the vaccination via the nurse and instead had to book via GPs, thus nullifying the convenience element of the service provision.
- Data was not presented for referrals due to high levels of missing information for positive individuals.
- Data flows between organisations appear severely flawed demonstrable by the need to interrogate multiple data sources for complete information.
- Service provision through GUM meant that for Newham there was high levels of missing information, this despite data sharing agreements being in place.
- The provision of DBS in the homes of HBV positive pregnant women greatly increases, screening and vaccination of household contacts and leads to the identification of more positive individuals suggesting that in the groups with poor screening uptake there could be large unidentified burden of disease.

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