Viral hepatitis in pregnant women in England: results from two surveillance studies

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Heather Bailey, University College London

heather.bailey@ucl.ac.uk

Antenatal screening

- Around 650,000 women enter the antenatal screening pathway each year in England
- 1 in 4 live births are to women born outside of the UK

Five most common non-UK maternal countries of birth in England and Wales, 2015		
	Number	**Percentage**
1 Poland	22,928	3.3
2 Pakistan	17,342	2.5
3 India	13,780	2.0
4 Romania	8,734	1.3
5 Bangladesh	7,752	1.1
Total outside the UK	**192,227**	**27.5**

ONS figures: ww.ons.gov.uk

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Hepatitis C virus seroprevalence in pregnant women delivering live-born infants in North Thames, England in 2012

M. CORTINA-BORJA*, D. WILLIAMS, C. S. PECKHAM, H. BAILEY AND C. THORNE

Population, Policy and Practice Programme, UCL Institute of Child Health, London, UK

Background and objectives

- Around 40% of HCV infections in London estimated to be undiagnosed[1]
- Population-based analysis of antenatal HCV seroprevalence in North Thames region in 1997-1998 indicated HCV seroprevalence of 0.191%[2]
- Since then, substantial demographic change
- Aim to establish contemporary antenatal HCV seroprevalence in relation to key demographics

1. Harris RJ, et al. European Journal of Public Health 2012; 22: 187–192. 2. Ades AE, et al. Epidemiology and Infection 2000; 125: 399–405

Methods

- Dried blood spots (DBS) collected routinely for metabolic newborn screening
- This was an unlinked anonymous survey for HCV antibodies in residual DBS from liveborn infants delivered during one quarter (1 April – 30 June 2012) in North Thames
- Samples linked with birth registration records at Office for National Statistics (hospital of birth, maternal borough of residence, parental countries of birth, maternal age)
- Pangenotypic assay used

Methods

- UN classification of countries used to categorize parental country of birth, but Baltic states (Estonia, Latvia, Lithuania) included in Eastern (not Northern) Europe
- Fisher's exact tests were used for 2 × 2 comparisons.
- Logistic regression model with spline terms on age interacting with maternal region of birth

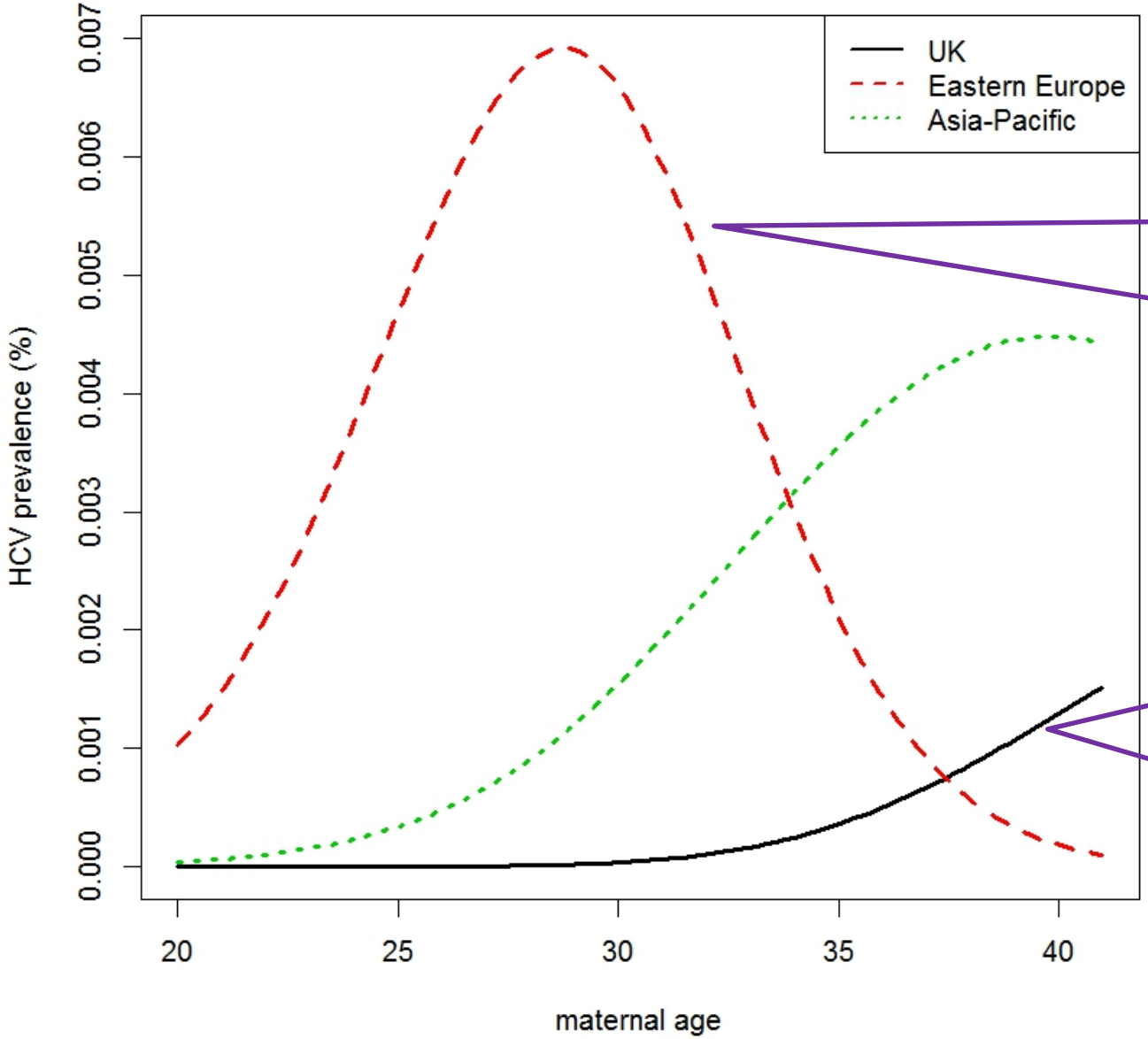
Results

- 31467 DBS specimens analysed
- Data linkage successful for 31316 (99.5%)
- 30 samples were HCV Ab+ giving seroprevalence 0.095% (95% CI 0.067-0.136)
- 1 case of HIV/HCV co-infection giving prevalence 0.0032% (95% CI 0.0002-0.018)
- HCV seroprevalence varied by maternal country of birth

Table 1. *Neonatal anti-HCV prevalence by maternal region of birth, North Thames, England, 2012*

Maternal region of birth	HepC−	HepC+	% total samples	Prevalence (%)
Africa	3188	1	10·14	0·031
Northern Africa	304	0	0·97	0·000
Western Africa	1154	0	3·67	0·000
Central Africa	252	1	0·80	0·395
Eastern Africa	1258	0	4·00	0·000
Southern Africa	220	0	0·70	0·000
UK	15 563	3	49·51	0·019
Rest of Europe	4480	12	14·29	0·267
Northern Europe	332	0	1·06	0·000
Western Europe	526	0	1·67	0·000
Eastern Europe	2997	11	9·57	0·366
Southern Europe	625	1	1·99	0·160
Americas	835	0	2·66	0·000
North America	286	0	0·91	0·000
Central America & Caribbean	275	0	0·87	0·000
South America	274	0	0·87	0·000
Asia-Pacific	5843	10	18·62	0·171
Western Asia	747	0	2·38	0·000
Central Asia	457	1	1·46	0·218
Southern Asia	3691	6	11·76	0·162
South Eastern Asia	388	1	1·24	0·257
Eastern Asia	327	1	1·04	0·305
Oceania	233	1	0·74	0·427
Not known	1528	4	4·87	0·261
Total	31 437	30	100·00	0·095

HCV seroprevalence by maternal age and region of birth: birth cohort effects



Peak seroprevalence in EE-born women estimated at 27 years

No UK-born women <31 years with HCV antibodies

Paternal region of birth

- Paternal region of birth known for 22 of 30 infants with seropositive samples; 9 of these fathers were UK-born.
- For only two perinatally HCV-exposed infants were both parents UK-born, giving HCV seroprevalence among UK-born women with UK-born father of infant of 0.016% (2/12,511)

Changes over calendar time

Country /region of maternal birth	HCV seroprevalence in 1997-1998 [1]	HCV seroprevalence in this study [2], 2012
Overall	0.191%	0.095% ↓
UK	0.13%	0.02% ↓
Southern Europe	1.58%	0.16% ↓
Eastern Europe	0.40%	0.366%
Asia-Pacific	0.22%	0.17%

Proportion of deliveries in 2012 to women born in EE was 19.2% (vs 0.5% in 97-98)

1. Ades AE, et al. Epidemiology and Infection 2000; 125: 399–40
2. Cortina-Borja et al. Epidemiology and Infection 2016; 144: 627-634

Injecting drug use

- Particularly difficult to ascertain in pregnant populations due to real /perceived stigma
- History of IDU more common among migrants from EE than among women born in UK [3]
- However, the HCV seroprevalence in EE-born women in North Thames was ten-fold lower than reported in general AN populations in Ukraine and Russia (around 2-3%) – possibility of ‘healthy migrant effect’

3. Burns FM, et al. Sexually Transmitted Infections 2011; 87: 318–324.

Strengths and limitations

- UA survey gives unbiased estimates (very few infants not covered by metabolic screening)
- Measuring HCV Ab, not chronic infection (can't take into account spontaneous clearance, treatment)
- Approach limited to liveborn babies, no information on HCV genotypes, whether woman aware of infection..

Summary

- Around 120 infants born to women with HCV antibodies in North Thames each year
- Maternal HCV seroprevalence 0.095% overall, but important differences existed between maternal country of birth and age sub-groups
- North Thames has different demographic profile to rest of UK, so further work is needed to generalise from these figures

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