

The impact of pregnancy on engagement-in-care (EIC) of women living with HIV in the UK CHIC Study

Hajra Okhai¹, Shema Tariq¹, Fiona Burns^{1,2}, Yvonne Gilleece^{3,4}, Rageshri Dhairyawan⁵, Helen Peters⁶, Claire Thorne⁶, Caroline Sabin^{1,7}

¹Institute for Global Health, University College London ²Royal Free London NHS Foundation Trust ³Brighton & Sussex University Hospitals NHS Trust ⁴Brighton & Sussex Medical School ⁵Department of Infection and Immunity, Barts Health NHS Trust ⁶UCL Great Ormond Street Institute of Child Health ⁷National Institute for Health Research (NIHR) Health Protection Research Unit (HPRU) in Blood-borne and Sexually Transmitted Infections

BHIVA virtual conference November 2020



Background

- > Every year around 1,200 women living with HIV in the UK become pregnant¹
- > Evidence for reduced engagement-in-care and increased risk of viral rebound after pregnancy^{2,3}
- > Interventions to ensure engagement with HIV services after pregnancy have the potential to improve clinical outcomes⁴

Aim

To explore engagement-in-care (EIC) through HIV clinic attendance pre-, during and post-pregnancy among women in the UK Collaborative HIV Cohort (UK CHIC) and National Surveillance of HIV in Pregnancy and Childhood (NSHPC)

Methods - studies

UK CHIC

- > Individuals aged >16 years living with HIV
- > 25 HIV clinics in the UK
- > Data from January 1996 - December 2017

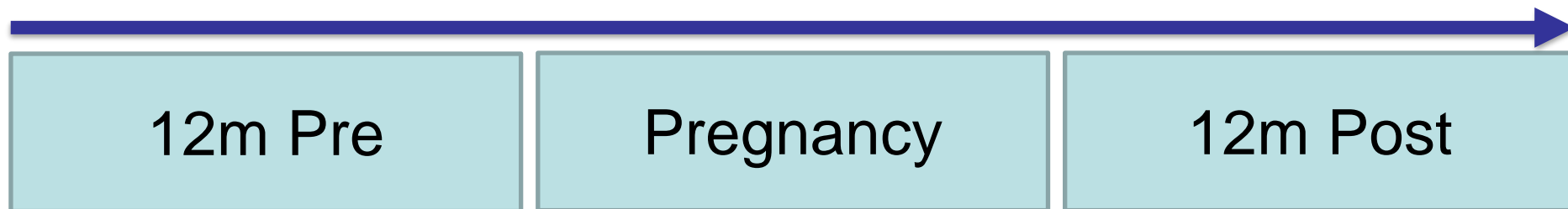
NSHPC

- > Active surveillance within the Integrated Screening Outcomes Surveillance Service (ISOSS)*
- > Women living with HIV attending antenatal care
- > Records linked to UK CHIC using demographic and clinical characteristics⁵



Methods - eligibility

- > First birth recorded in UK CHIC-NSHPC dataset
- > Pregnancies of ≥ 8 months duration
- > Delivery resulted in a live birth
- > Follow-up available 12m pre- and 12m post-pregnancy



Statistical methods

- > EIC defined using REACH algorithm⁶
- > Each person-month of follow-up classified as either 'in' or 'out' of HIV care
- > Generalised Estimating Equations (GEE) used to describe associations of EIC with pregnancy period, after adjustment for:
age, ethnicity, CD4+ T-cell count, viral load, cART use, previous AIDS, calendar year, HCV/HBV infection (time-updated where appropriate)

⁶Howarth et al., 2017.



Characteristics of women prior to pregnancy*

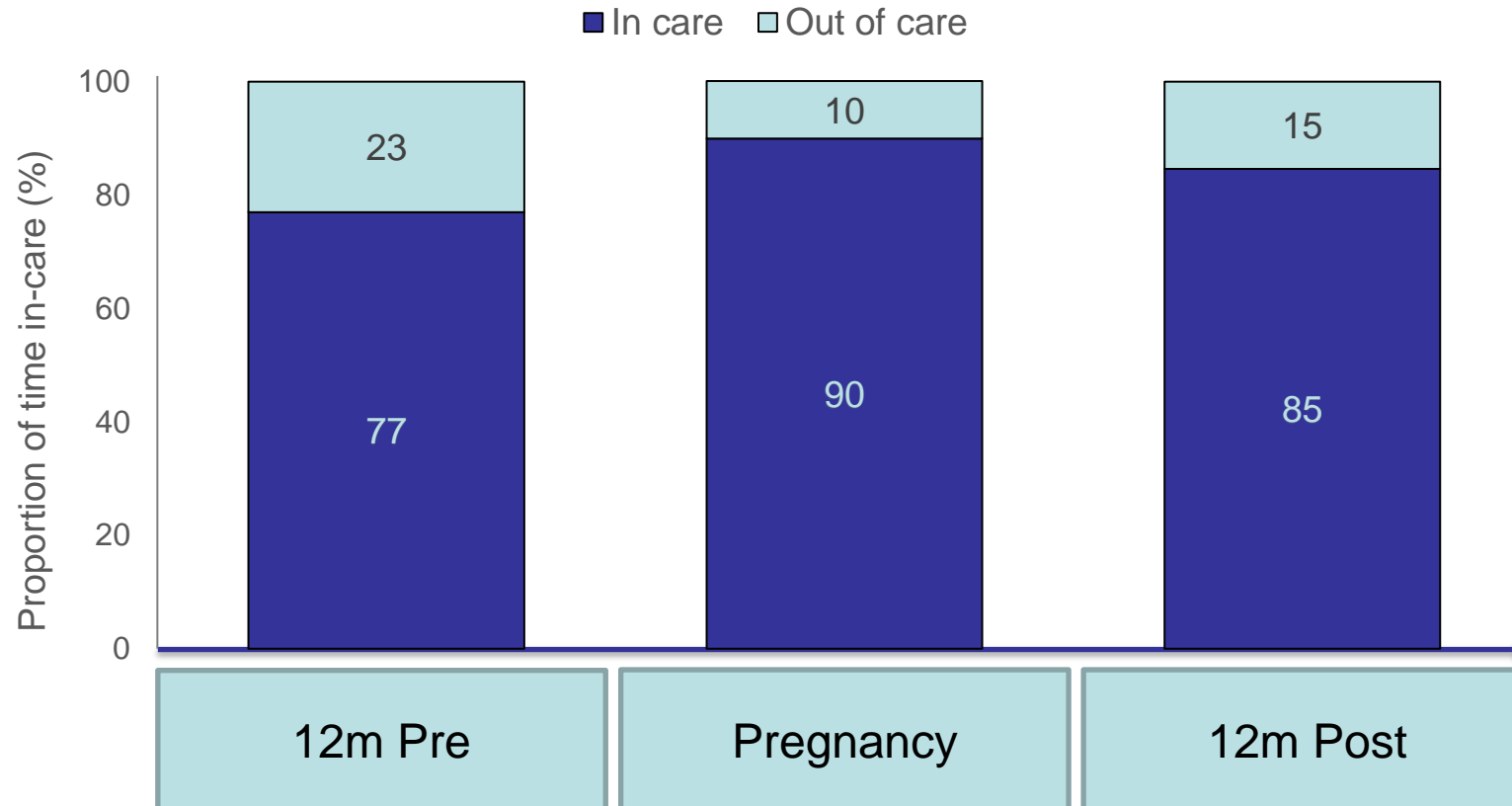
		Total (n=2009)
Median age (years)		32
Ethnicity (%)	White UK	12.1
	Black Caribbean	4.6
	Black African	73.3
	Black other	2.4
	South Asian/Other Asian	2.1
	Mixed/Other	3.6
	Unknown	1.0
Year (%)	2000-2005	21.9
	2006-2011	50.1
	2012-2017	28.0
Initiated cART (%)		72.0
Median T-cell CD4 count (cells/mm ³)		490
Suppressed VL (%)		57.1
Prior AIDS diagnosis (%)		17.6
Hepatitis B co-infection (%)		2.6
Hepatitis C co-infection (%)		1.1

*Based on estimated date of conception; VL = viral load; cART: combination antiretroviral therapy)

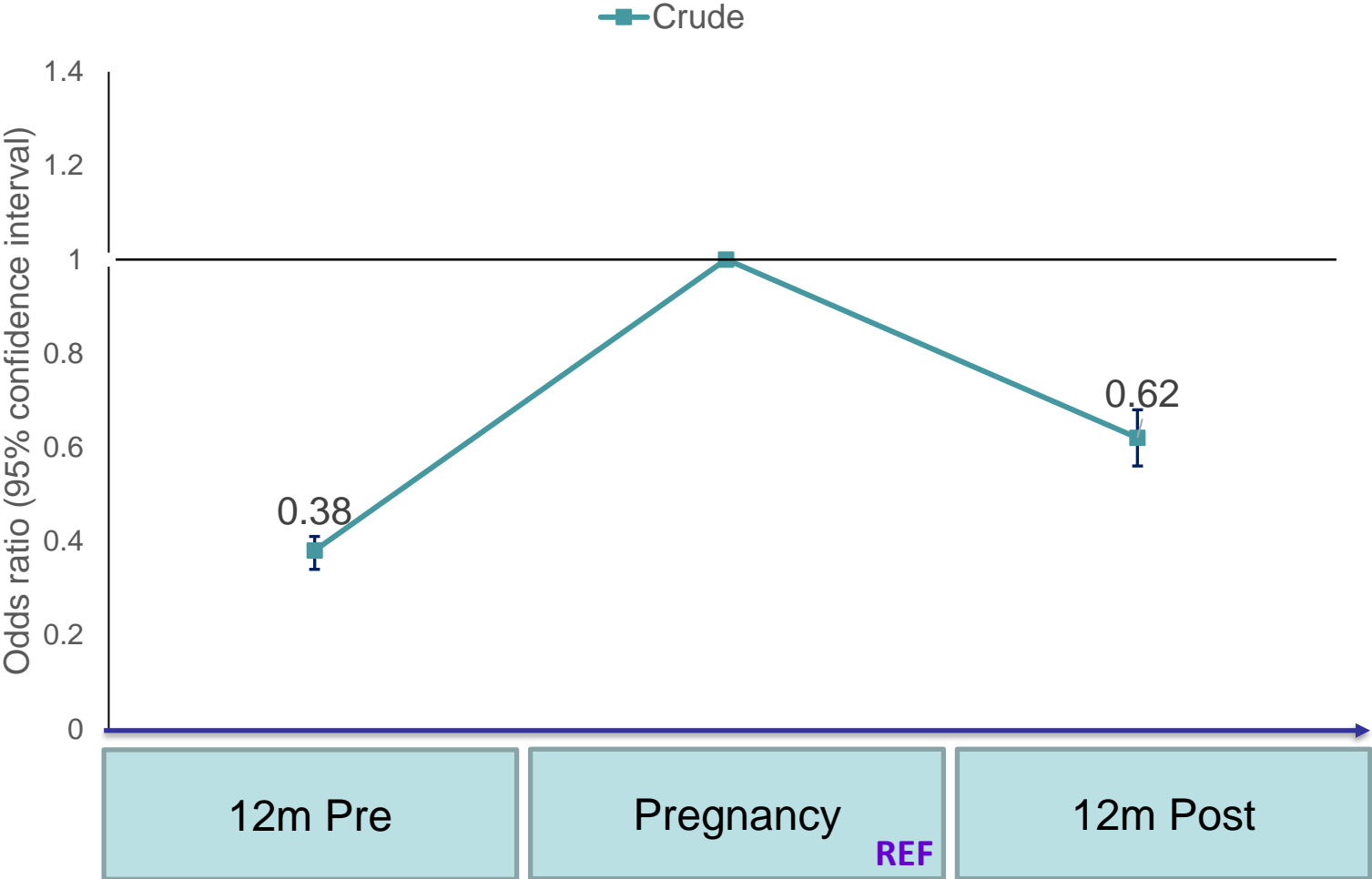


Proportion of time EIC

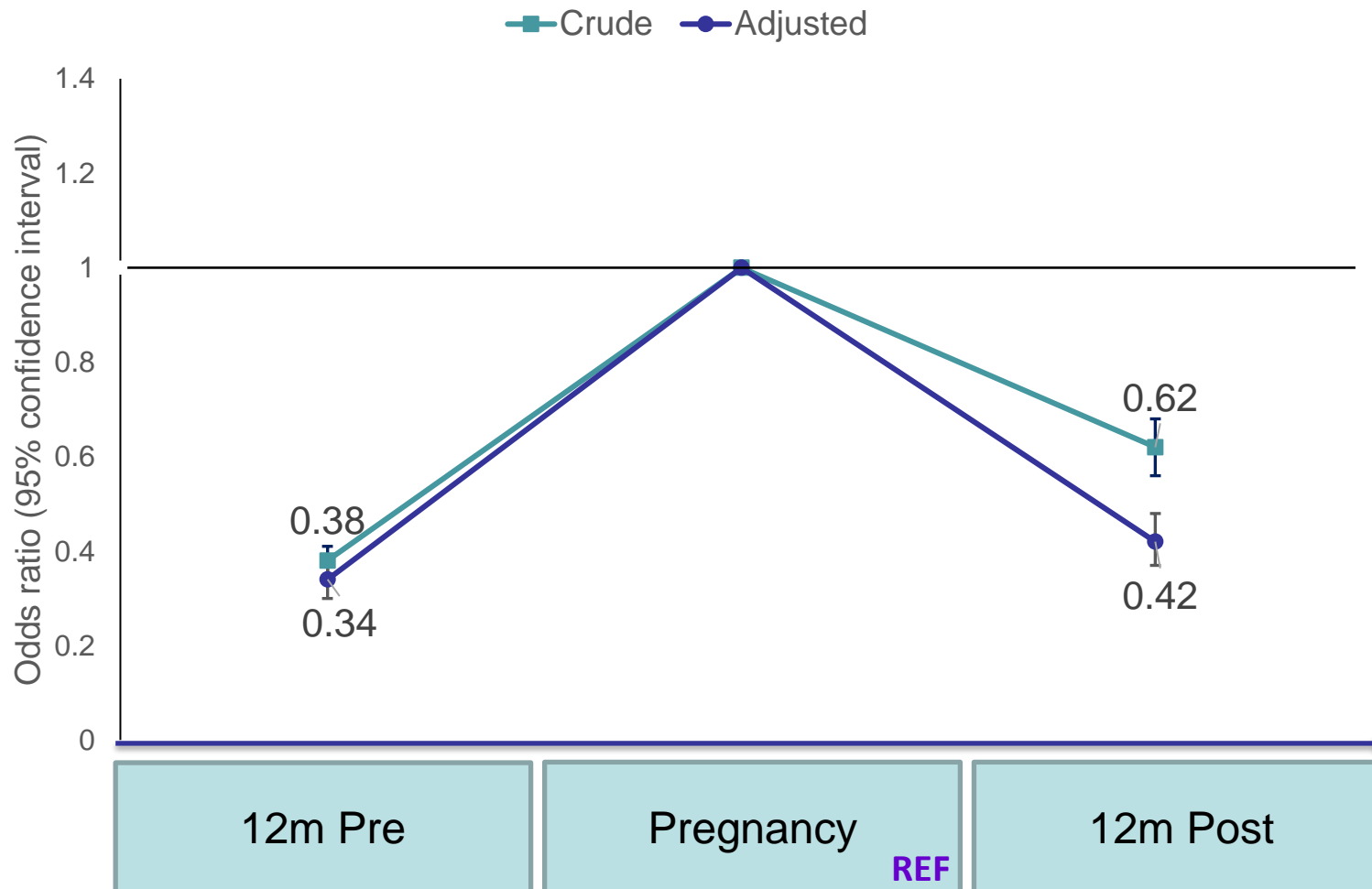
Total follow up: 61,702 person-months



Association of pregnancy period with EIC



Association of pregnancy period with EIC



GEE model. Adjusted for age, ethnicity, CD4+ T-cell count, suppressed VL, treatment initiation, previous AIDS, calendar year and hepatitis B/C co-infection.

Associations of other factors with EIC

		OR (95% CI)	P-value
Age	/10 years	1.04 (0.89, 1.23)	0.60
Ethnicity	White UK	1	0.06
	Black Caribbean	0.72 (0.46, 1.12)	
	Black African	1.06 (0.81, 1.39)	
	Black other	1.58 (0.86, 2.90)	
	South Asian/Other Asian	0.62 (0.34, 1.12)	
	Mixed/Other	0.74 (0.45, 1.23)	
	Unknown	2.39 (0.61, 9.32)	
Year of pregnancy*	2000-2005	1	0.0001
	2006-2011	0.71 (0.58, 0.86)	
	2012-2017	0.59 (0.46, 0.76)	
Prior AIDS event		1.56 (1.20, 2.02)	0.0003
Hepatitis B infection		1.38 (0.73, 2.60)	0.31
Hepatitis C infection		1.69 (0.60, 4.80)	0.25
Initiated cART		1.21 (0.98, 1.48)	0.08
CD4+ T-cell count	/100 cells/mm ³	1.00 (0.97, 1.04)	0.81
Virally suppressed		3.39 (2.92, 3.93)	<0.0001



*Based on estimated date of conception; OR: odds ratio; CI: confidence interval; cART: combination antiretroviral therapy)

Limitations

- > Probabilistic matching of women between studies – missing data may limit the number of women who could be matched
- > REACH algorithm uses only clinical data, but social factors or co-morbidities may also influence EIC
- > Only women with 12 months of follow-up both pre-and post-pregnancy were included – possible selection bias

Summary

- > Engagement-in-care is lower pre- and post-pregnancy compared to during pregnancy
- > Pregnancy is a key opportunity to engage women in long term HIV care
- > Findings emphasise the importance of continued assistance for engagement-in-care among ALL women living with HIV and support national strategies for addressing inequalities and barriers to care

Acknowledgements

UK CHIC Steering Committee: Jonathan Ainsworth, Sris Allan, Jane Anderson, Ade Apoola, David Chadwick, Duncan Churchill, Valerie Delpech, David Dunn, Ian Fairley, Ashini Fox, Richard Gilson, Mark Gompels, Phillip Hay, Rajesh Hembrom, Teresa Hill, Margaret Johnson, Sophie Jose, Stephen Kegg, Clifford Leen, Dushyant Mital, Mark Nelson, Hajra Okhai, Chloe Orkin, Adrian Palfreeman, Andrew Phillips, Deenan Pillay, Ashley Price, Frank Post, Jillian Pritchard, Caroline Sabin, Achim Schwenk, Anjum Tariq, Roy Trevelion, Andy Ustianowski, John Walsh.

UK CHIC Central Co-ordination: *University College London* (David Dunn, Teresa Hill, Hajra Okhai, Andrew Phillips, Caroline Sabin); *Medical Research Council Clinical Trials Unit at UCL (MRC CTU at UCL), London* (Nadine van Looy, Keith Fairbrother).

UK CHIC Participating Centres: *Barts Health NHS Trust, London* (Chloe Orkin, Janet Lynch, James Hand); *Brighton and Sussex University Hospitals NHS Trust* (Duncan Churchill, Stuart Tilbury, Elaney Youssef, Duncan Churchill); *Chelsea and Westminster Hospital NHS Foundation Trust, London* (Mark Nelson, Richard Daly, David Asboe, Sundhiya Mandalia); *Homerton University Hospital NHS Trust, London* (Jane Anderson, Sajid Munshi); *King's College Hospital NHS Foundation Trust, London* (Frank Post, Ade Adefisan, Chris Taylor, Zachary Gleisner, Fowzia Ibrahim, Lucy Campbell); *Middlesbrough, South Tees Hospitals NHS Foundation Trust*, (David Chadwick, Kirsty Baillie); *Mortimer Market Centre, University College London* (Richard Gilson, Ian Williams); *North Middlesex University Hospital NHS Trust, London* (Jonathan Ainsworth, Achim Schwenk, Sheila Miller, Chris Wood); *Royal Free NHS Foundation Trust/University College London* (Margaret Johnson, Mike Youle, Fiona Lampe, Colette Smith, Rob Tsintas, Clinton Chaloner, Caroline Sabin, Andrew Phillips, Teresa Hill, Hajra Okhai); *Imperial College Healthcare NHS Trust, London* (John Walsh, Nicky Mackie, Alan Winston, Jonathan Weber, Farhan Ramzan, Mark Carder); *The Lothian University Hospitals NHS Trust, Edinburgh* (Clifford Leen, Andrew Kerr, David Wilks, Sheila Morris); *North Bristol NHS Trust* (Mark Gompels, Sue Allan); *Leicester, University Hospitals of Leicester NHS Trust* (Adrian Palfreeman, Adam Lewszuk); *Woolwich, Lewisham and Greenwich NHS Trust* (Stephen Kegg, Victoria Ogunbiyi, Sue Mitchell), *St. George's Healthcare NHS Trust* (Phillip Hay, Christopher Hunt, Olanike Okolo, Benjamin Watts); *York Teaching Hospital NHS Foundation Trust* (Ian Fairley, Sarah Russell-Sharpe, Olatunde Fagbayimu); *Coventry, University Hospitals Coventry and Warwickshire NHS Trust* (Sris Allan, Debra Brain); *Wolverhampton, The Royal Wolverhampton Hospitals NHS Trust* (Anjum Tariq, Liz Radford, Sarah Milgate); *Chertsey, Ashford and St. Peter's Hospitals NHS Foundation Trust* (Jillian Pritchard, Shirley Cumming, Claire Atkinson); *Milton Keynes Hospital NHS Foundation Trust* (Dushyant Mital, Annie Rose, Jeanette Smith); *The Pennine Acute Hospitals NHS Trust* (Andy Ustianowski, Cynthia Murphy, Ilise Gunder); *Nottingham University Hospitals NHS Trust* (Ashini Fox, Howard Gees, Gemma Squires, Laura Anderson), *Kent Community Health NHS Foundation Trust* (Rajesh Hembrom, Serena Mansfield, Lee Tomlinson, Christine LeHegerat, Roberta Box, Tom Hatton, Doreen Herbert), *The Newcastle upon Tyne Hospitals NHS Foundation Trust* (Ashley Price, Ian McVittie, Victoria Murtha, Laura Shewan); *Derby Teaching Hospitals NHS Foundation Trust* (Ade Apoola, Zak Connan, Luke Gregory, Kathleen Holding, Victoria Chester, Trusha Mistry, Catherine Gatford); *Public Health England, London* (Valerie Delpech); *i-Base* (Roy Trevelion).

ISOSS team: Claire Thorne, Helen Peters, Kate Francis, Laurette Bukasa, Rebecca Sconza, Corinne Hill

Funding: UK CHIC is funded by the UK Medical Research Council and NSHPC/ISOSS by PHE IDPS Programme. The views expressed in this presentation are those of the researchers and not necessarily those of the Medical Research Council or Public Health England.

