Public Health England

Protecting and improving the nation's health

The impact of direct-acting antivirals on HCV viremia among people who inject drugs in England: real world data 2011-2018

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Context in England

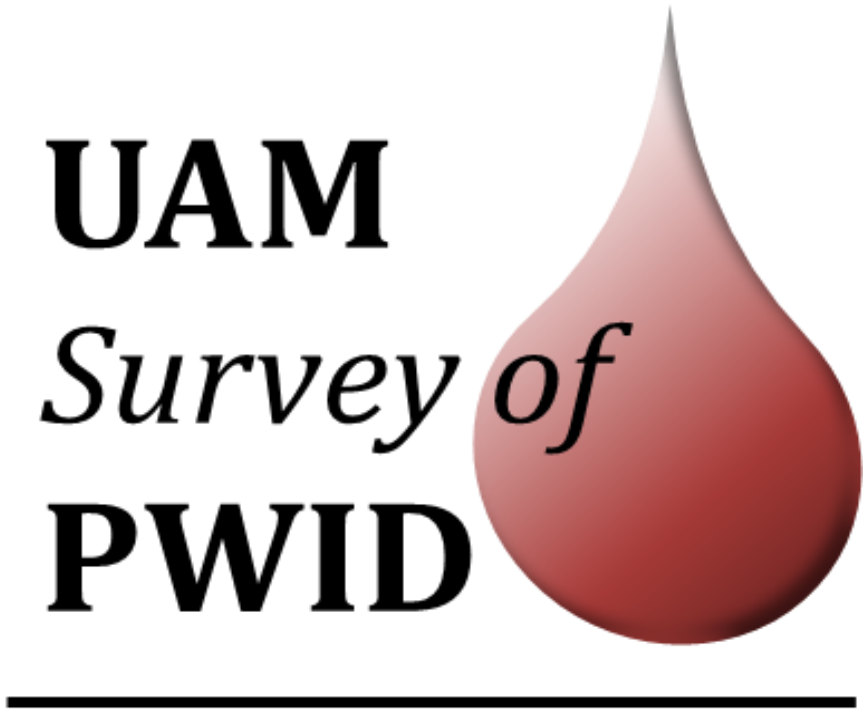
- Estimated ≈87,000 PWID in England (as of 2011)
- Approximately 90,000 people living with chronic HCV infection (as of 2019)
- Injecting drug use largest risk factor; cited in 90% of all HCV laboratory reports
- Direct-acting antiviral drugs are transforming the treatment landscape. Recently available on National Health Service (NHS)
  - In 2015, those with severe liver disease prioritised
  - Since 2017, restriction lifted; recommended for all with viraemic infection

Research question:

What has been the impact of DAA scale-up on HCV viraemia among PWID in England?

Data source

- The **Unlinked Anonymous Monitoring (UAM) Survey** of PWID
- Rich data source on infections and behaviours
- 30 years old!

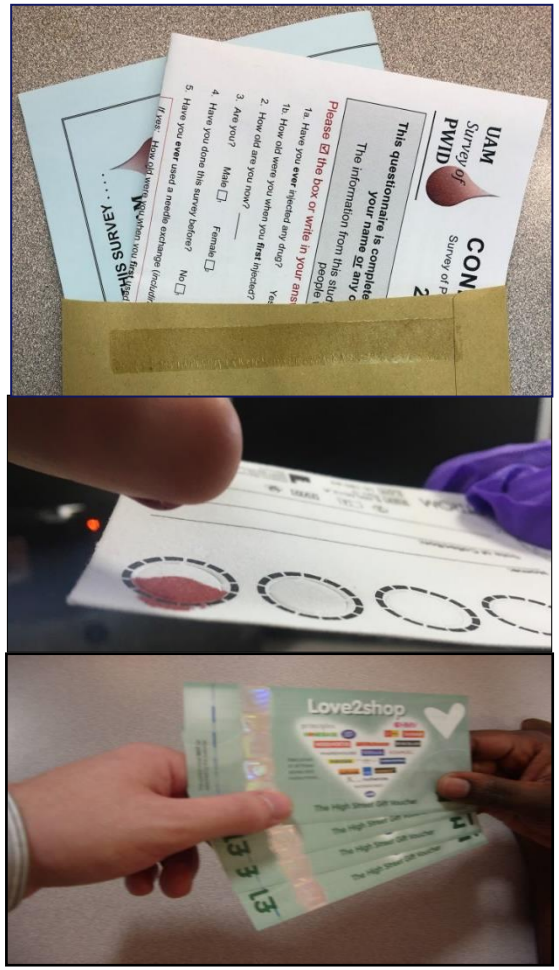


Survey methodology

- Annual, cross-sectional bio-behavioural survey
- England & Wales since 1990 and Northern Ireland since 2002
- Collaboration between PHE and 60+ specialist drug services across EW&NI
- Nationally reflective sample of PWID attending services (2,000-3,000/year)

Survey methodology

- Recruits current and former injectors
- Participants provide a biological sample and complete a short questionnaire.
- Incentive for participation (Love2Shop voucher)
- Methods have evolved over time



Survey methodology

- Survey provides:
  - Data on proportion of PWID with HCV, HBV, HIV and HTLV
  - Information on risk and protective behaviours
- Unlinked and anonymous - results are not dependent on people coming forward for named testing.

Survey methodology

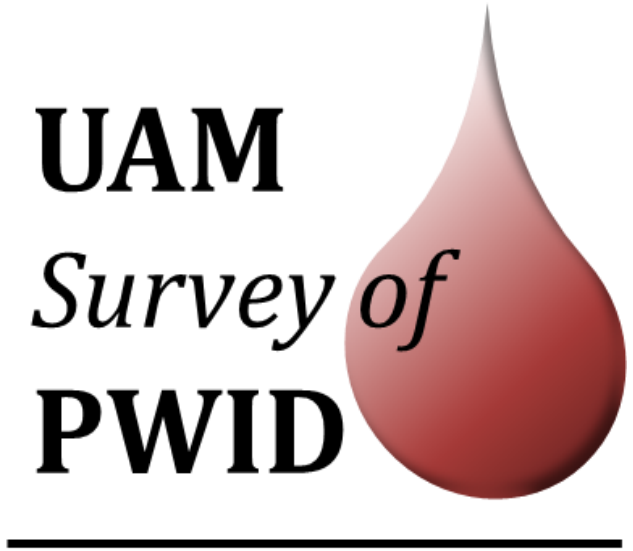
- **1990** Testing for HIV and hepatitis B (HBV) core antibodies
- **1998** Hepatitis C (HCV) antibody testing added
- **2010** Biological sample collected changed from oral fluids to dried blood spots (DBS)
- **2011** Testing for HBV Surface Antigen (HBsAg) added
- **2016** Questionnaire revised on a number of occasions
- **2017** HCV RNA testing added – current infection
- **2018** Automation of laboratory testing and introduction of testing for human T-lymphotropic virus (HTLV)

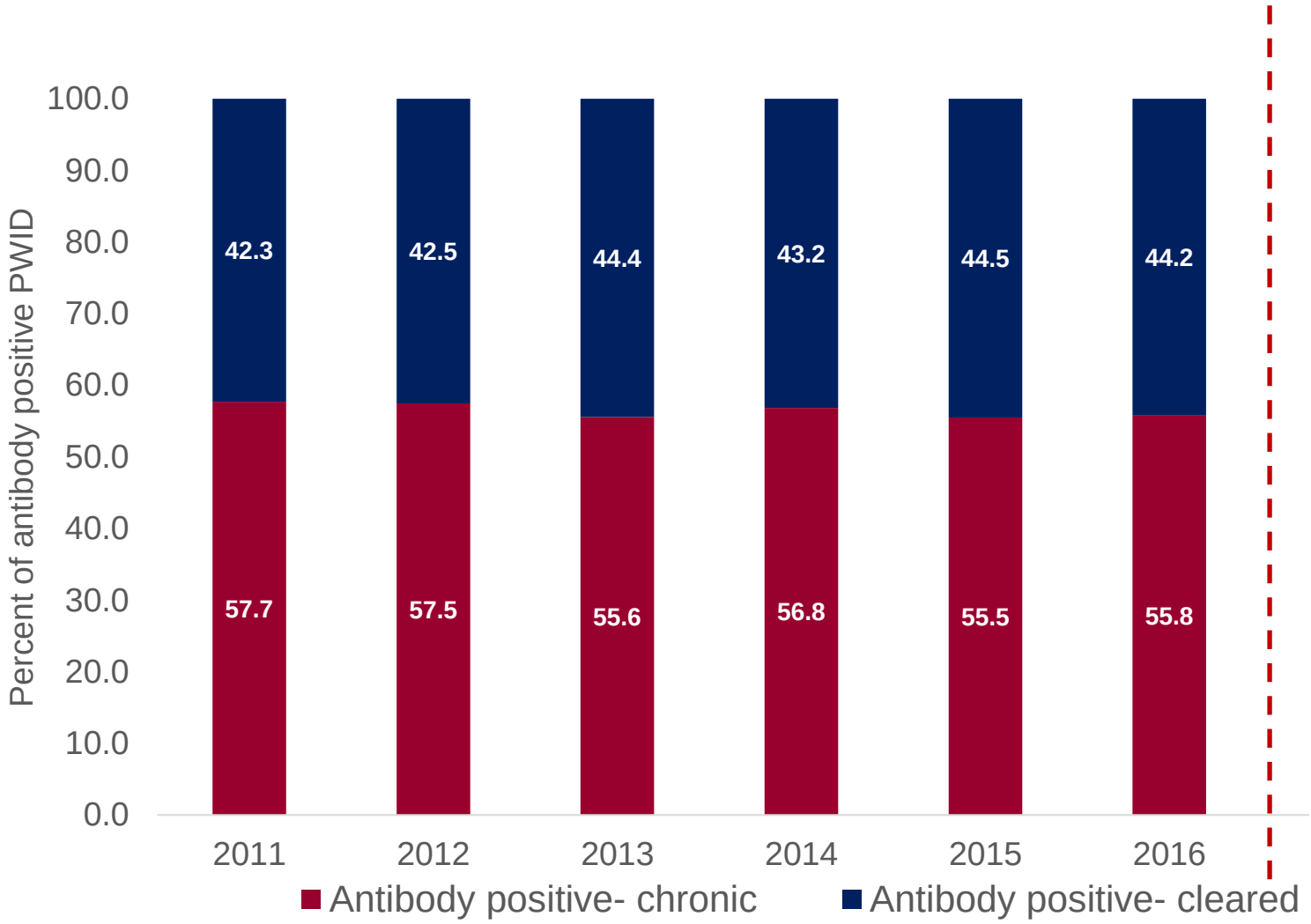
Study methodology

- Questionnaire data PLUS laboratory data from dried blood spot samples
- Examined how the proportion of antibody-positive PWID with chronic HCV infection (antibody positive **and** RNA positive) changed over the survey years

  - Can we see any evidence of an impact of direct-acting antivirals in the survey data?

- Multivariable logistic regression to examine change over time after adjusting for other risk factors




Percent of antibody positive PWID
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90.0
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70.0
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20.0
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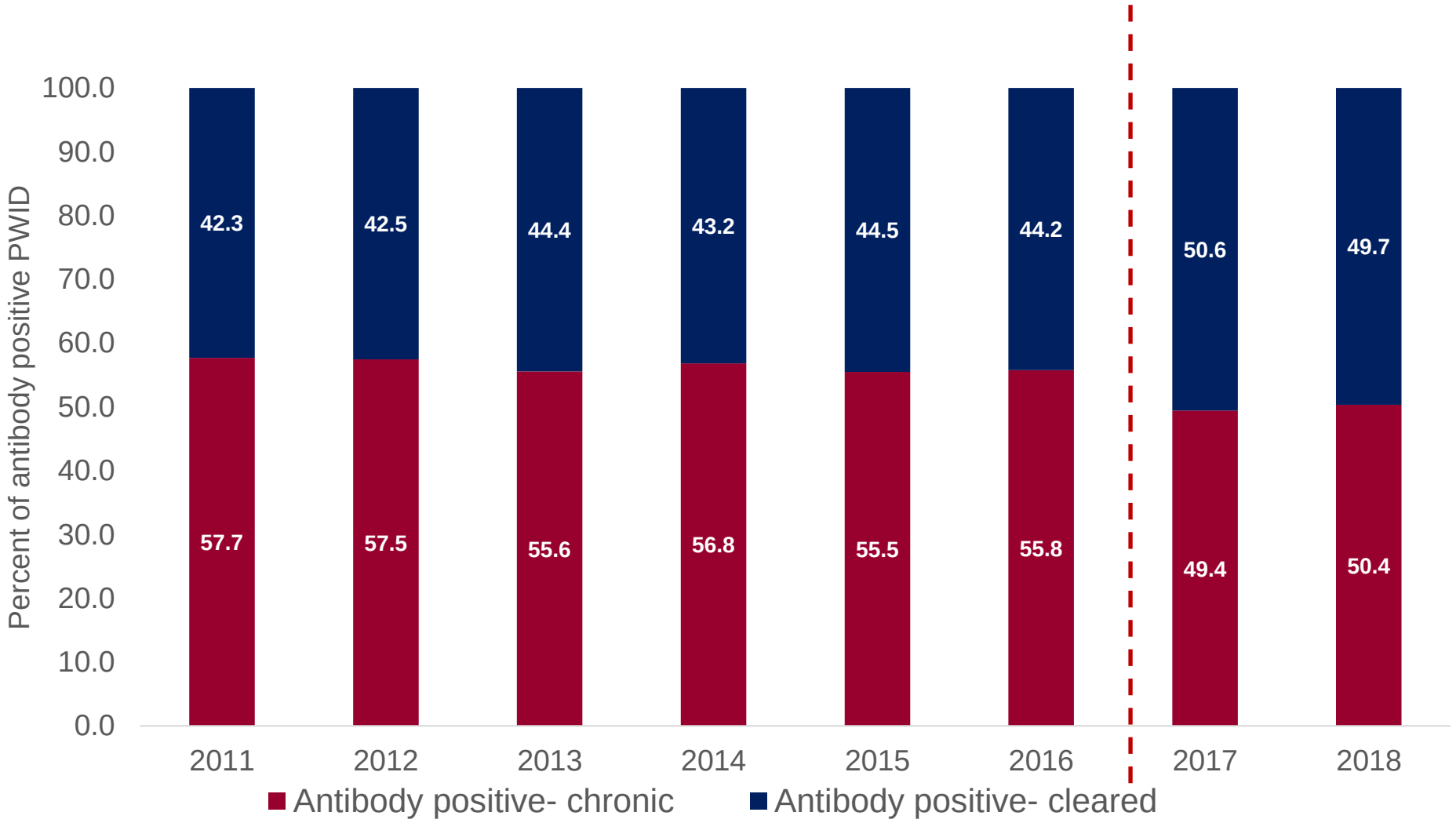
0.0
42.3
42.5
44.4
43.2
44.5
44.2
57.7
57.5
55.6
56.8
55.5
55.8
2011
2012
2013
2014
2015
2016
Antibody positive- chronic
Antibody positive- cleared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55.8
49.4
50.4
2011
2012
2013
2014
2015
2016
2017
2018
Antibody positive- chronic
Antibody positive- cleared

Table 2. Odds of chronic HCV infection among antibody-positive PWID in England; results from logistic regression with MICE. aOR= adjusted Odds Ratio; CI= Confidence Interval

Variable		Univariable			Multivariable		
		OR	95% CI	p-value	aOR	95% CI	p-value
Year	2011	1.08	0.90 - 1.30	0.39	**1.04**	0.87 - 1.25	0.80
	2012	1.07	0.90 - 1.27	0.42	**1.04**	0.87 - 1.24	0.66
	2013	0.99	0.84 - 1.17	0.92	**0.99**	0.84 - 1.16	0.87
	2014	1.04	0.88 - 1.24	0.62	**1.02**	0.86 - 1.22	0.79
	2015	0.99	0.83 - 1.17	0.91	**0.98**	0.83 - 1.17	0.83
	2016	-	-		-	-	-
	2017	0.78	0.65 - 0.93	0.01	**0.79**	0.65 - 0.94	0.01
	2018	0.80	0.68 - 0.95	0.01	**0.78**	0.66 - 0.93	0.01

Multivariable results are adjusted for gender, age, geographical region, injecting drug use in the past 12 months, ever imprisonment and ever homeless

HCV treatment access among those with cleared infection

Table 4: Estimates of treatment-induced viral clearance among individuals with cleared HCV infection who were not missing data on self-reported treatment history.

Year	Number with cleared HCV and data on treatment history	Proportion ever receiving HCV treatment	Odds of receiving HCV treatment	95% CI	P-value
2011	4,164	19.7	1.18	0.98 - 1.42	0.08
2012	5,455	23.1	1.24	1.04 - 1.47	0.02
2013	5,610	14.8	0.98	0.83 - 1.16	0.86
2014	4,971	10.5	1.05	0.88 - 1.25	0.60
2015	4,800	17.7	1.06	0.89 - 1.26	0.53
2016 (base)	4,804	14.5	1.00	-	-
2017	4,274	28.7	1.39	1.15 - 1.67	0.00
2018	5,026	38.9	1.59	1.32 - 1.91	0.00

- There is small reduction in HCV viraemia among antibody-positive PWID in England since 2016, alongside DAA scale-up
- The proportion of PWID with cleared HCV infection reporting ever receiving treatment for their HCV is at its highest level so far in 2018
- Population-level monitoring and focus on harm-reduction is critical for achieving and evaluating elimination.

Hot off the press!

Bardsley M et al., 2021. THE IMPACT OF DIRECT-ACTING ANTIVIRALS ON HEPATITIS C VIRAEMIA AMONG PEOPLE WHO INJECT DRUGS IN ENGLAND; REAL-WORLD DATA 2011-2018. **Journal of Viral Hepatitis**

Acknowledgements

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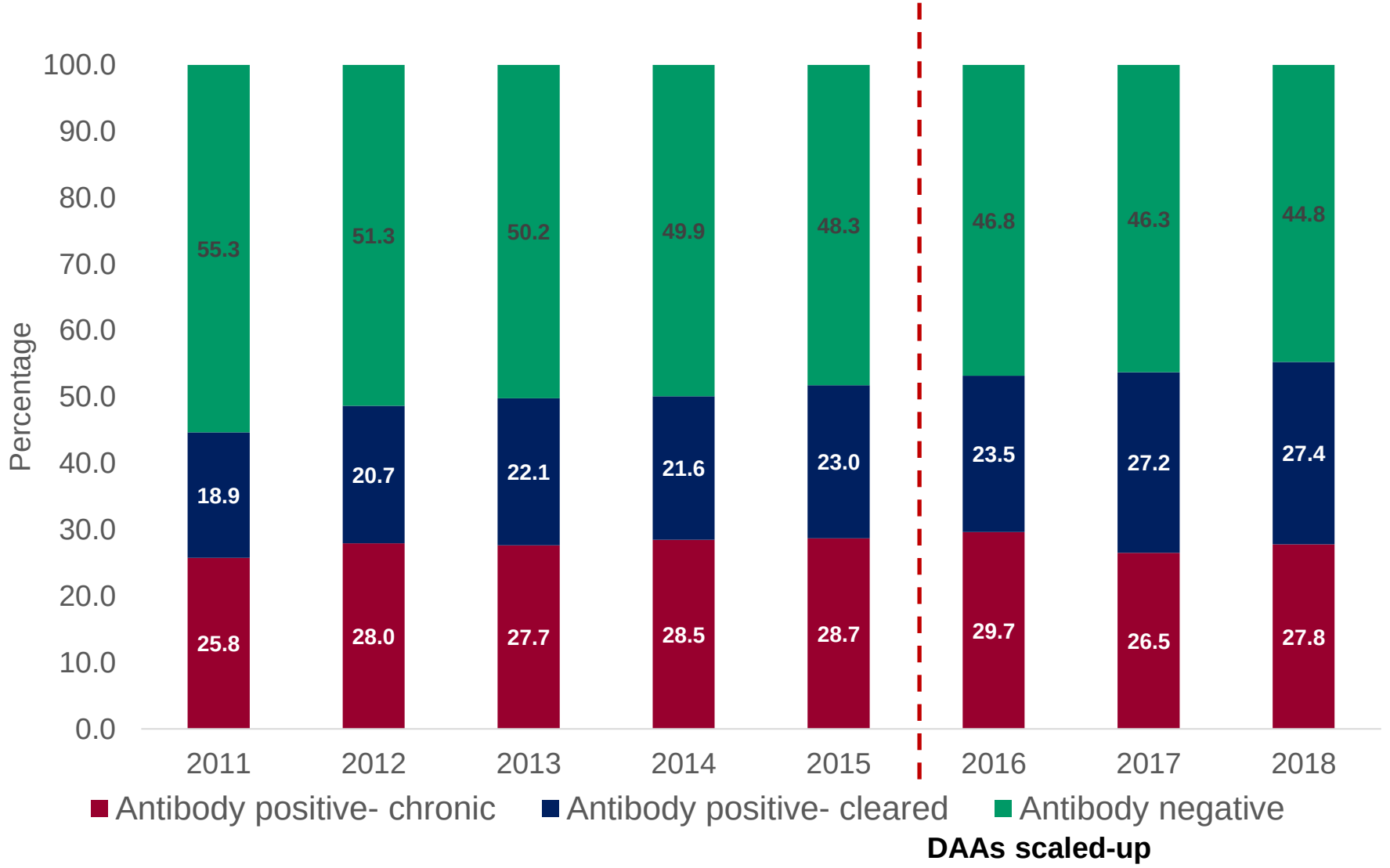
Contact: UAMPWIDSurvey@phe.gov.uk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Antibody positive- chronic
Antibody positive- cleared
Antibody negative
DAAs scaled-up