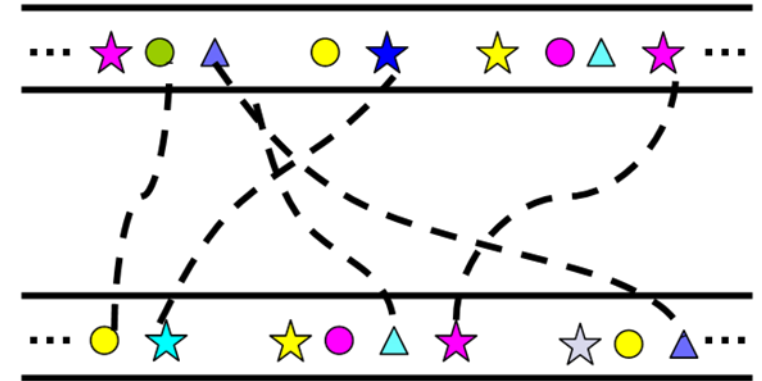


Linking longitudinal hospital and education data for children in England



Academic team

UCL: Ruth Gilbert, Katie Harron, Erin Walker
IFS: Christine Farquharson
LSHTM: Jan van der Meulen

Government data providers

NHS Digital: Garry Coleman
Dept for Education: Gary Connell

**Funded by UKRI – ADR UK
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MEDICINE

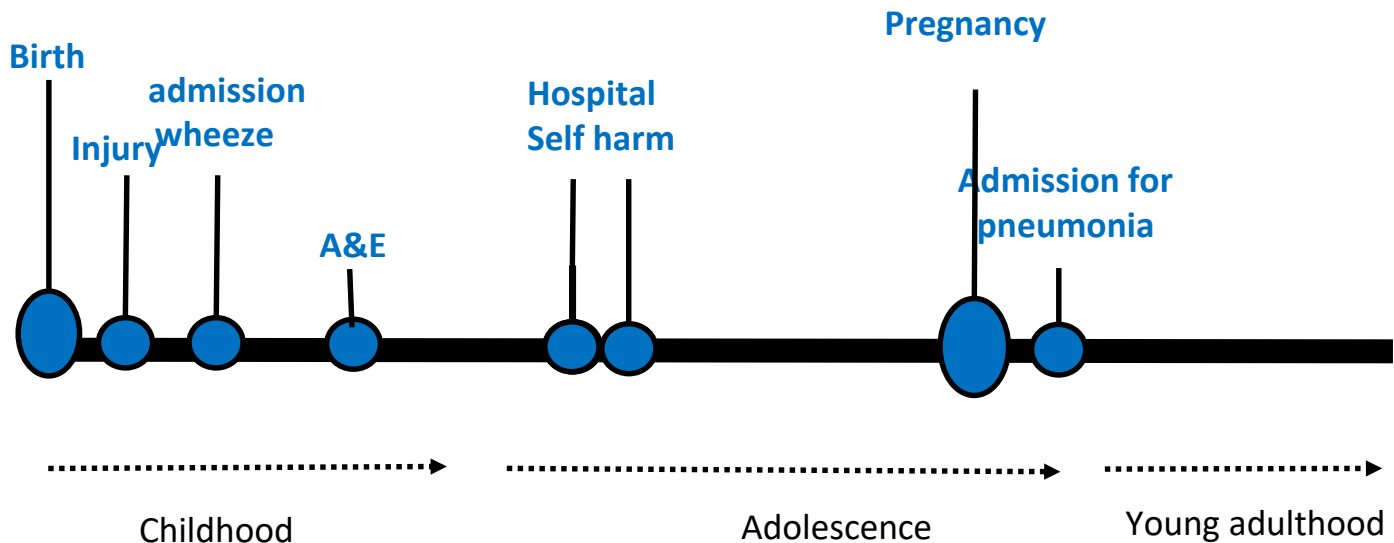


NHS
Digital

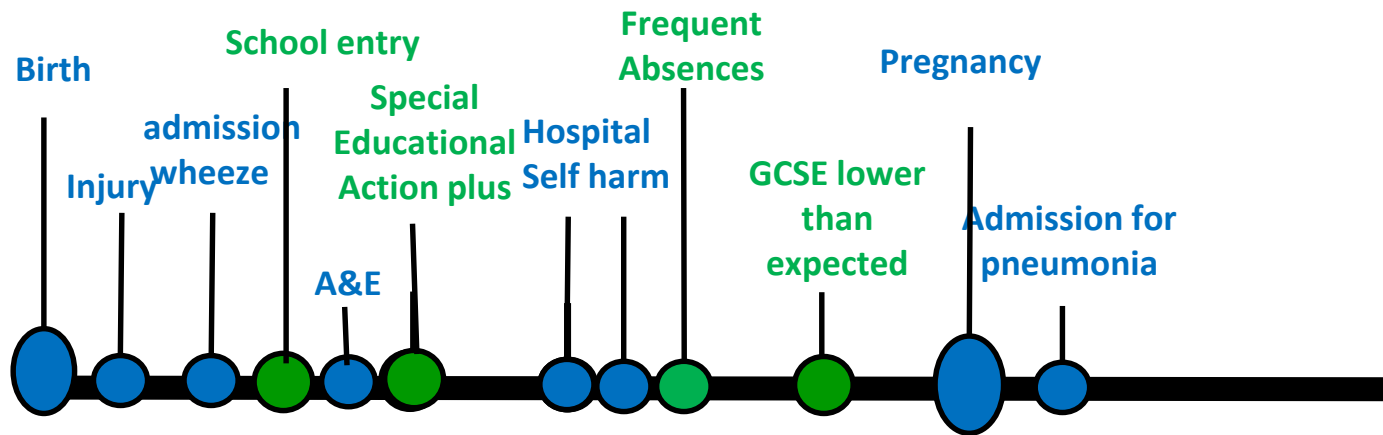


Department
for Education

HES data



+ NPD data



Hospital Episode Statistics



International Journal of Epidemiology, 2017, 1093–1093i
 doi: 10.1093/ije/dyx015
 Advance Access Publication Date: 15 March 2017
 Data Resource Profile

Understanding Hospital Episode Statistics (HES)

Andy Boyd^{1,2}, Rosie Cornish¹, Leigh Johnson¹, Shirley Simmonds³,
 Holly Syddall³, Leo Westbury³, Cyrus Cooper³, John Macleod¹

¹Population Health Sciences, Bristol Medical School, University of Bristol

²CLOSER, Institute of Education, University College London

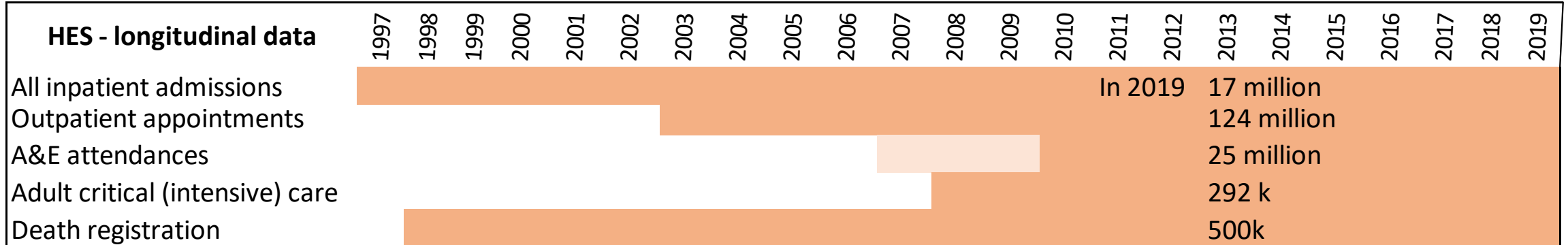
³MRC Lifecourse Epidemiology Unit, University of Southampton

April 2018

Data Resource Profile

Data Resource Profile: Hospital Episode Statistics Admitted Patient Care (HES APC)

Annie Herbert,^{1,2} Linda Wijlaars,¹ Ania Zylbersztejn,^{1,3}
 David Cromwell^{4,5} and Pia Hardelid^{1,6*}



HES - advantages

- Complete coverage across NHS
 - Unselected population
 - Rare disease research
- Complete longitudinal follow up:
 - Whole nation cohort studies
- Standardised coding
 - Cross-country comparisons
- Reflects real-world care - good for:
 - Procedures (eg operations)
 - Diagnostic codes
 - Hospital, dates, specialty

- disadvantages

- For administration, not research
- Coding variation x time/hospital
- linkage quality between longitudinal records not perfect
- NHS opt out ~ 2%
- Illness severity – difficult, no drug treatment
- Application process takes time

Linkage of all children in England born 1984/5 or after and recorded in HES or NPD

Linkage:

i) NPD identifiers to Personal Demographic Service

Demographic Service

- First name(s)
- Surname(s)
- Gender
- Date of birth
- Postcode history

ii) PDS to HES

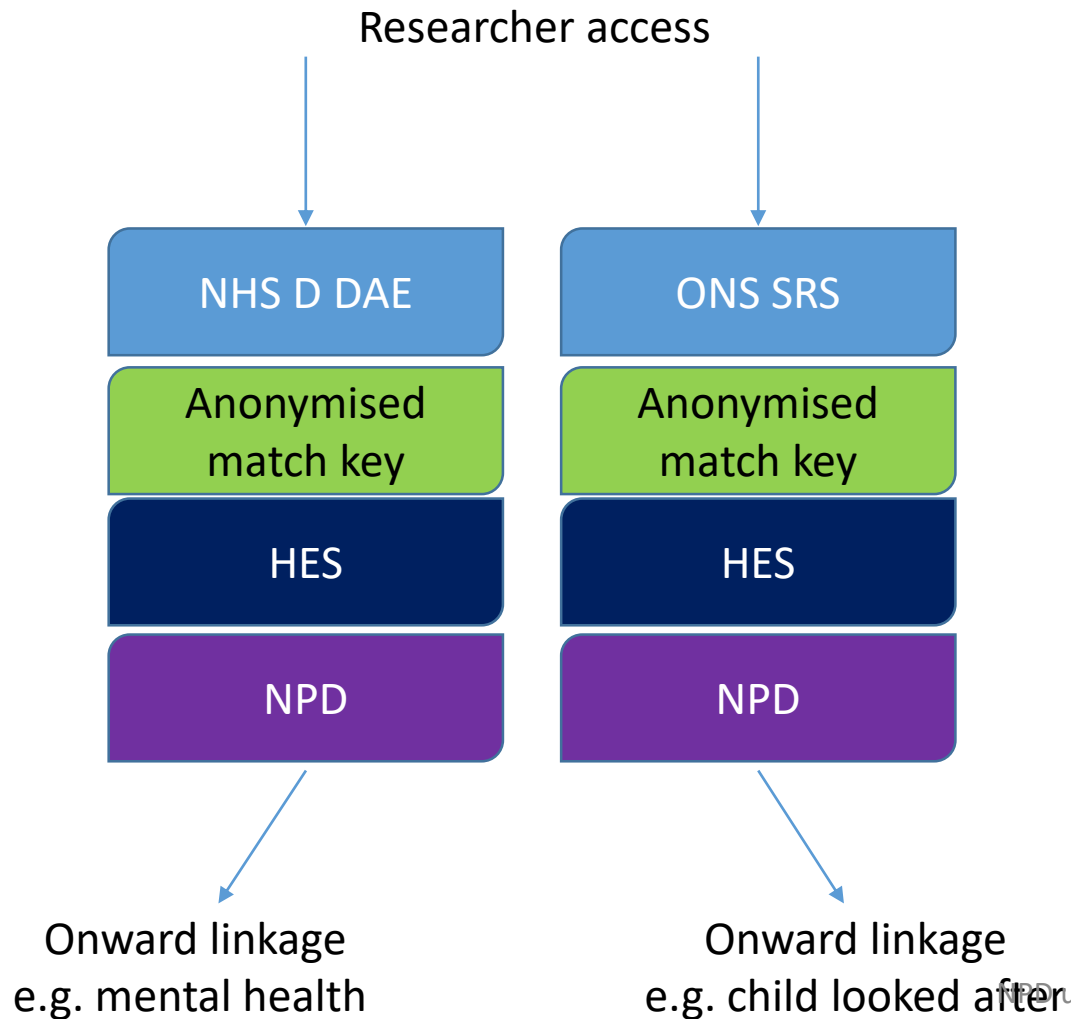
- NHS number
- Gender
- Date of birth
- Postcode history

Done by NHS Digital

- Multi-step deterministic algorithm
- Using all years in NPD and PDS

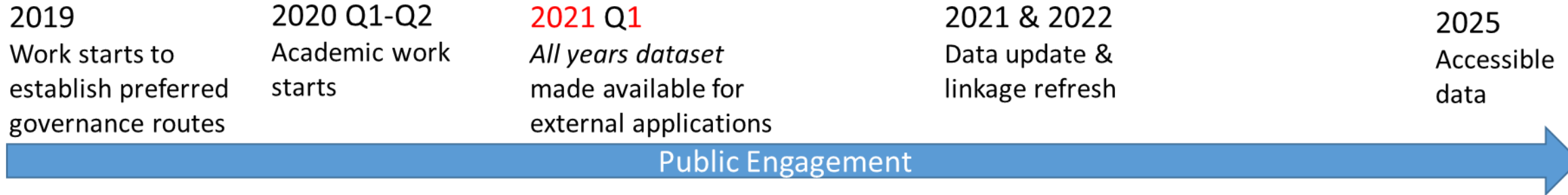
	Hospital Episode Statistics		National Pupil Database				
	Youngest (1997)	Oldest (2019)	Reception (age 5)	KS1 (age 7)	KS2 (age 11)	KS4 (age 16)	KS5 (age 18)
1985	12	34	1990	1992	1996	2001	2003
1986	11	33	1991	1993	1997	2002	2004
1987	10	32	1992	1994	1998	2003	2005
1988	9	31	1993	1995	1999	2004	2006
1989	8	30	1994	1996	2000	2005	2007
1990	7	29	1995	1997	2001	2006	2008
1991	6	28	1996	1998	2002	2007	2009
1992	5	27	1997	1999	2003	2008	2010
1993	4	26	1998	2000	2004	2009	2011
1994	3	25	1999	2001	2005	2010	2012
1995	2	24	2000	2002	2006	2011	2013
1996	1	23	2001	2003	2007	2012	2014
1997	Birth	22	2002	2004	2008	2013	2015
1998	Birth	21	2003	2005	2009	2014	2016
1999	Birth	20	2004	2006	2010	2015	2017
2000	Birth	19	2005	2007	2011	2016	2018
2001	Birth	18	2006	2008	2012	2017	2019
2002	Birth	17	2007	2009	2013	2018	
2003	Birth	16	2008	2010	2014	2019	
2004	Birth	15	2009	2011	2015		
2005	Birth	14	2010	2012	2016		
2006	Birth	13	2011	2013	2017		
2007	Birth	12	2012	2014	2018		
2008	Birth	11	2013	2015	2019		
2009	Birth	10	2014	2016			
2010	Birth	9	2015	2017			
2011	Birth	8	2016	2018			
2012	Birth	7	2017	2019			
2013	Birth	6	2018				
2014	Birth	5	2019				

Access for researchers to the All Years Dataset - NPD – HES



- Use of data compliant with legal basis:
 - NPD – for promotion of education or wellbeing
 - HES – for provision of healthcare
- Streamlined approvals: NHSD & DfE
- Free-of charge access for 30 applications
- Data update twice, and held until at least 2025
- Further linkages possible using anonymised match keys

Key milestones



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<https://www.adruk.org/our-research/children-young-people/>

