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Staphylococcal Infections in Children, California, 1985–2009

Technical Appendix

Technical Appendix Table 1. Staphylococcal infection–related ICD-9-CM and DRG codes used*

ICD-9-CM and DRG code(s)	Diagnosis
ICD-9-CM	
041.1	Staphylococcal infection
041.11without V09.0	MSSA other
041.11 plus V09.0 or 041.12	MRSA other
038.1	Staphylococcal septicemia
038.11 without V09.0	MSSA septicemia
038.11 plus V09.0 or 038.12	MRSA septicemia
482.4	Staphylococcal pneumonia
482.41without V09.0	MSSA pneumonia
482.41 plus V09.0 or 482.42	MRSA pneumonia
DRG	
DRG 279 (through 2007); MS-DRG 602–603 (2008 forward)	Cellulitis
DRG 385–390 (through 2007); MS-DRG 789–390 (2008 forward)	Neonatal hospitalizations, except for normal newborn
Coding chronology	**Change**
Year	
1985–1992	No differentiation between *S. aureus* and other staphylococci, 4-digit codes only
1992, fourth quarter	041.1, a fifth digit was added to specify type of infection: 0, unspecified; 1, *S. aureus*; 9, other
1993	V09.0: Penicillin resistance
1996	A "present on admission code" was added
1997, fourth quarter	038.1, a fifth digit was added to specify type of infection: 0, unspecified; 1, *S. aureus*; 9, other
1998, fourth quarter	482.4, a fifth digit was added to specify type of infection: 0, unspecified; 1, *S. aureus*; 9, other
2003	V09.9 also used to code for MRSA
2008	DRG was replaced by MS-DRG
2008, fourth quarter	MRSA 038.1, 041.1, and 482.4, a fifth digit (2) was added to indicate MRSA

*ICD-9-CM, International Classification of Diseases, Ninth Revision Clinical Modification; DRG, Diagnosis Related Group; MS-DRG, Medicare-Severity Diagnosis Related Group (replaced DRG for discharges starting on January 1, 2008); MSSA, methicillin-susceptible *S. aureus*; MRSA, methicillin-resistant *S. aureus*.

Technical Appendix Table 2. Definitions used to determine the source of infection*

Code	Used if
CO	The code for staphylococcal infection was POA
CO-HCA	The code for staphylococcal infection was POA, plus at least one of the following: 1) evidence of previous treatment, such as the presence of a central venous catheter, dialysis, or surgery; 2) evidence of complications of previous medical treatments; 3) history of a transplanted organ; 4) diagnosis of immune deficiency, cancer, or severe chronic illness; or 5) transfer from acute-care or medium- or low-care facilities
HO	The code for staphylococcal infection was not POA; this is the best estimate of hospital-onset of infection because the dataset did not indicate at what point during hospitalization infection was identified

*Definitions were based on the present-on-admission code; records missing this code were excluded from source of infection analyses. CO, community onset; POA, present on admission; CO-HCA, community onset health–care associated; HO, hospital onset.

Extrapolation Scheme: Estimating the 'True' Values of Number of Admissions (NOA) and Length of Stays in the Hospital (LOS) for the year 2009

The records for admissions with a particular condition during 1985–2008 were used to assess 1) the number and 2) the mean LOS of admissions with that condition during 2009. The following variables are used throughout this appendix:

NOA—yearly number of admissions.

YEC-NOA—end of year censored NOA: number admitted and discharged in the same year.

Est-NOA—estimated value of NOA predicted by the design scheme.

Mean-LOS—mean LOS for all NOA admissions for the year.

YEC-LOS—mean LOS of the records counted in YEC-NOA.

Est-LOS—estimated mean-LOS predicted by the design scheme.

For 1985–2008, all admissions are known. NOA (mean-LOS) for these years were regressed against the year of admission (YOA), YEC-NOA and YEC-LOS, to obtain the parameters later used in calculating Est-NOA (Est-LOS) for each of 1985–2009 in which the codes for the conditions of interest were already introduced. We used the backwards elimination scheme, with stay criterion $p<0.05$. If the p-value for the intercept was <0.05 then the regression model was rerun without intercept.

In order that the covariates in the models be of the similar order of magnitude, the following transformations were used:

NOA (YEC-NOA)—scaled so that it is between 1 and 10.

Mean-LOS (YEC-LOS)—centered around the middle of the interquartile interval of LOS

for all of the 1985–2008 admissions.

YOA—presented as number of years from 1985.

To assess the fitness of the model, we calculated Est-NOA (Est-LOS), using the model chosen by the regression scheme, for each of the years 1985–2008, and the

relative error = 100(NOA – Est-NOA)/NOA [100(mean-LOS – Est-LOS)/mean-LOS]

was calculated for each year. The mean of the relative error of Est-NOA and Est-LOS for staphylococcal infection in the years 1985–2008 were 0.3% (±<0.1%) and 1.7% (±0.3%), respectively. More details are available from the authors.

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Seroepidemiologic Effects of Influenza A(H1N1)pdm09 in Australia, New Zealand, and Singapore

Technical Appendix

Technical Appendix Table 1. Dates samples collected in serologic studies to estimate attack rates of influenza A (H1N1) pandemic 2009 in the Southern Hemisphere, winter 2009.

Study	Start date	End date
A	2004 Apr 14	2009 Apr 22
B	2009 Nov 12	2010 Apr 13
C	2009 Dec 21	2010 Mar 4
D	2006 Oct 7	2009 Jul 16
E	2005 Jun 29	2009 Jun 3
	2009 Jun 20	2009 Jun 27
	2009 Aug 20	2009 Aug 29
	2009 Oct 6	2009 Oct 11
F	2009 Jun 22	2009 Jul 7
	2009 Aug 19	2009 Sep 3
	2009 Sep 23	2009 Oct 15
G	2009 Jul 17	2009 Jul 28
	2009 Oct 5	2009 Oct 7
H	2009 Jun	2009 Jul 1
	2009 Aug 20	2009 Sep 3
	2009 Sep 10	2009 Oct 9
I	2008 Nov 3	2009 May 15
	2009 Aug 1	2009 Nov 30
J	2009 Jan 2	2009 Feb 27
	2009 Aug 2	2009 Sep 30
K	2007 Jul 3	2008 Dec 30
	2009 Aug 3	2009 Sep 30
L	2009 Jul 22	2009 Jul 26
M	2009 Jun 1	2009 Sep 29
N	2009 Apr 2	2009 May 20
	2009 Oct 13	2009 Oct 30
	2009 Nov 16	2009 Dec 1
O	2009 Aug 3	2009 Sep 4
P	2009 Jan 10	2009 May 29
	2009 Sep 3	2009 Sep 30
Q	2009 Nov 10	2009 Nov 25
R	2009 Apr 19	2010 Jan 25
S	2008 Sep 1	2009 Jun 16
	2009 Sep 1	2010 Jun 2

Technical Appendix 2. Dates defining pandemic phases in serologic studies to estimate attack rates of influenza A (H1N1) pandemic 2009 in the Southern Hemisphere, winter 2009

Region	First notified case	90% of 2009 cases notified + 2 weeks
New South Wales	May 20	Aug 24
New Zealand	Apr 25	Jul 31
Northern Territory	May 29	Aug 30
Queensland	May 8	Aug 31
Singapore	May 26	Not defined
South Australia	May 22	Sep 14
Tasmania	May 21	Aug 23
Victoria	May 20	Aug 15
Western Australia	May 24	Sep 7