

Supplemental Digital Content 2: Characteristics of included studies

Study reference Author (publication year)	Country	Study design	Study years	Number of sites Single or Multiple	Risk group	Age (years)	% Aged < 5 years (median)	Number of children		% > 6 months old vaccinated	% Receiving antivirals Total (% SRMC)
								Total N	SRMC n (%)		
Ampofo (2006)	USA	RC	2001-2004	single	ACIP 2005	≤18	62% <2yrs	325	120 (37)	NR	NR
Blyth (2018)	Australia	SS	2017	multiple	AIH	≤16	58%	1268	572(45)	15 ⁹	16(NR)
Burton (2008)	Canada	SS	2006-2007	multiple	NACI 2006 + SRMCs ¹	≤16	80%	371	188 (51)	10	8 (NR)
Chaves (2014)	USA	RC	2003-2012	multiple	HRMCs ²	<1	100% <1yr	3157	796 (25)	NR	28 (NR)
Coffin (2007)	USA	RC	2000-2004	single	ACIP 2005	<21	77%	745	363 (49)	NR	NR
Dawood (2010)	USA	RC	2003-2008	multiple	ACIP 2007	<18	75%	4015	180 (47)	31.6	44 ^(a)
Feldman (2017)	USA	RC	2004-2012	multiple	liver transplant	<18	(2.7 yrs)	143	143 (100)	NR	NR
Hassan (2009)	USA	RC	2003	multiple	ACIP 2002	≤18	40% <2yrs	27,363	6,745 (25)	NR	NR
Ipp (2003)	Canada	RC	1994-1997	single	NACI 2002	≤18	43% <6mo	208	76 (37)	NR	NR
Kaczmarek (2016)	Australia	RC	1997-2013	multiple - ICU	AIH	≤16	69%	704	287 (41)	NR	NR
Launes (2013)	Spain	CC	2010-2011	multiple	not specifically listed ³	0.5-<18	(2 yrs)	143	55 (38)	4 ¹⁰	48 ^{b(51^b)}
Lee (2015)	USA	RC	1999-2011	multiple	ALL + comorbidities ⁴	<19	(5.7yrs)	577	577 (100)	NR	(55 ^c)
Leung (2014)	Taiwan	RC	2009-2011	single	ACIP 2009	≤18	mean 6.7 yrs	917	257 (28)	NR	95(NR)
Moore (2006)	Canada	RC	2003-2004	multiple	chronic conditions ⁵	≤18	84%	505	210 (41)	26 ¹¹	7(12)
PHAC (2006)	Canada	SS	2004-2005	multiple	NACI 2004 + SRMCs ⁶	≤16	80%	391	211 (54)	10	7(11)

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Punpanich (2014)	Thailand	RC	2010	single	ACIP 2010	≤18	61%	289	41 (14)	1%	95(NR)
Rojo (2006)	Spain	RC	1996-2003	single	chronic conditions ⁷	<3	100% <3yr	117	48 (41)	NR	NR
Sam (2010)	Malaysia	RC	2002-2007	single	ACIP 2008	<15	88%	132	48 (36)	NR	0(0)
Schrag (2006)	USA	SS	2003-2004	multiple	ACIP 2004 + neuromuscular / cognitive dysfunction conditions	<18	80%	1308	339 (26)	35 ¹²	25(NR)
Serwint (1991)	USA	RC	1988-1989	single	ACIP 1988	≤19	NR	99	43 (43)	11 ¹³	NR
Spaeder (2011)	USA	RC	2002-2008	single - ICU	ACIP 2007	<18	44%	59	36 (61)	NR	NR
Suntarattiwong (2007)	Thailand	PC	2004-2005	single	"underlying diseases" ⁸	<5	100%	39	8 (20)	NR	NR

Footnote: RC= retrospective cohort, CC =Case control, DB=database, SS=Surveillance study. Advisory Committee on Immunization Practices (ACIP), National Advisory Committee on Immunization (NACI), Australian Immunisation Handbook (AIH), Public Health Agency Canada (PHAC), Acute lymphoblastic leukaemia (ALL). 1: Included neurological/ developmental disorder, genitourinary, gastrointestinal or hepatic disorder, nutritional disorder, bone joint or connective tissue disorder, multi system disorder or syndrome, relevant concurrent acute infection, prematurity, admitted within first year of life; 2: included lung and cardiovascular disease; metabolic disease; renal disease; neurologic and neuromuscular disorder; immunocompromised condition and prematurity (<37 weeks of gestation); 3: included in results as pulmonary, neurological, cardiac, renal, diabetes, immunodeficiency; 4: chronic pulmonary, cardiac, neuromuscular or renal conditions; 5: pulmonary disease, neurologic disease, immune deficiencies, hematologic, cardiac, gastrointestinal, malignancy, renal, endocrine/metabolic; 6: those listed at 1 and

chronic infection or severe skin disorder; 7: chronic lung disease, congenital heart disease, HIV, anticancer treatment, malnutrition, drepanocytosis, coeliac, mitochondrial diseases, chronic renal failure; 8: Not clearly defined but included: asthma, CP, ventricular septal defect, adrenogenital syndrome, Sotos syndrome; 9: 5.1% of those with complete data; 10: Data were only available for n=135 and unclear if this included aged <6mo and was both seasonal/pandemic influenza; 11: data on vaccine uptake available for only 55% of high risk group of this only 26% vaccinated against influenza; 12: When data were limited to four surveillance areas with <1% of case patients with unknown vaccination status; 13: Of those aged \geq 6mo with high-risk medical conditions; a: In children aged >1 year with symptom onset within 48 hours of positive results on influenza diagnostic test. The range reported for antivirals was higher across the study period for those with SRMC 33-55% compared to overall (range 37-48%); b: n=111 as 32 children from the study were missing these data; c: Proportion of hospital admissions administered Neuraminidase inhibitors.