Table sup 1: Study characteristics of articles included in the meta-analysis

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Digital object identifier (DOI)** | **Author and year of publication** | **Journal** | **Country** | **Vaccine type** | **Influenza season(s)** | **Diagnosis test used** | **Maximum delay between symptoms onset and swabbing** | **Clinical inclusion criteria** | **Vaccination status (vaccine ascertainment)** | **Study population** | **Adult age group included** | **Adjustment variables** |
| 10.1016/j.vaccine.2010.09.042 | Puig-Barbera\_2010 | Vaccine | Valencia, Spain | monovalent pandemic | 2009-2010 | RT-PCR | 75% of swabs collected within 7 days | ILI | 7 days after vaccine administration (self-report and vaccine register) | All | 18 years and above | Calendar time |
| 10.1093/infdis/jiq014 | Andrews\_2011 | JID | England | monovalent pandemic | 2009-2010 | RT-PCR | >80% of swabs taken within 7 days | ILI | 14 days after vaccine administration (treating physician) | target group for vaccination | 25 years and above | Calendar time, age |
| 10.1186/1471-2334-12-127 | Hellenbrand\_2012 | BMC Inf Dis | Germany | monovalent pandemic | 2009-2010 | RT-PCR and Haemagglutination inhibition (HI) | 7 days | ARI | 10 days after vaccine administration (vaccination card, self-report or treating physician) | Community dwelling | Under 65 years | Calendar time, age |
| 10.1016/j.vaccine.2011.07.087 | Cheng\_2011 | Vaccine | Australia | TIV | 2010 | RT-PCR | no limit | suspected influenza (decision to test left to the discretion of the clinician) | Vaccinated before symptom onset (self-report and/or treating physician) | All | 18 years and above | Age, presence of chronic conditions/co-morbidites and other (pregnancy) |
| 10.1093/cid/cis574 | Treanor\_2013 | CID | US | TIV | 2010-2011 | RT-PCR | 7 days | ARI | 14 days after vaccine administration (self-report, medical record review and/or vaccine registry) | Community dwelling | 18 years and above | Age, presence of chronic conditions/co-morbidites, study site, and other (insurance, race). |
| 10.1186/1471-2458-13-191 | Martinez-Baz\_2013 | BMC Pub Health | Spain | TIV | 2010-2011 | RT-PCR | 7 days | ILI | 14 days after vaccine administration (vaccine registry) | Community dwelling | 18 years and above | Age, sex, presence of chronic conditions/co-morbidites, study site, other (functional dependence, hospitalization in the previous year). |
| 10.1371/journal.pone.0068760 | Cheng\_2013 | PlosOne | Australia | TIV | 2011 | RT-PCR | no limit | suspected influenza (decision to test left to the discretion of the clinician) | Vaccinated before symptom onset (hospital medical record and self-report) | All | 18 years and above | Age, presence of chronic conditions/co-morbidites and other (pregnancy). |
| 10.1111/irv.12233 | Dawood\_2013 | IORV | Thailand | TIV | 2011 | RT-PCR | no limit | ARI | 14 days after vaccine administration (vaccine registry) | All | 50 years and above | Calendar time, age, presence of chronic conditions/co-morbidites, study site. |
| 10.5694/mja15.01017 | Kelly\_2016 | MJA | Australia | TIV | 2011, 2012 and 2013 | RT-PCR | 7 days | suspected influenza (decision to test left to the discretion of the clinician) | Vaccinated before symptom onset (hospital medical record and self-report) | All | 18 years and above | Age, presence of chronic conditions/co-morbidites and other (pregnancy, ethnicity). |
| 10.1371/journal.pone.0059681 | Rondy\_2013 | PlosOne | EU | TIV | 2011-2012 | RT-PCR | 7 days | ILI | 14 days after vaccine administration (self-report, treating physician or vaccine registry) | Community dwelling target group | 18 years and above | Calendar time, age, sex, presence of chronic conditions/co-morbidites, study site, other (outpatient visits in past three months, hospitalization in past year). |
| 10.1128/CVI.00009-13 | Choi\_2013 | CVI | Korea | TIV | 2010-2011 | rapid antigen test (RAT), PCR test, or influenza virus culture | 2 days | ILI | 14 days after vaccine administration (self-report or medical records) | All | 18 years and above | Age, presence of chronic conditions/co-morbidites and other (smoking). |
| 10.1093/cid/cit404 | Kwong\_2013 | CID | Canada | TIV | 2010-2011 | RT-PCR | no limit | suspected influenza (decision to test left to the discretion of the clinician) | Vaccinated before symptom onset (physician billing claims) | Community dwelling | 65 years and above | Calendar time, age, sex, presence of chronic conditions/co-morbidites, other (rural residence, neighbourhood income, healthcare utilization, functional dependence, number of hospitalizations in past three years). |
| 10.1016/j.vaccine.2014.04.013 | Turner\_vac\_2014 | Vaccine | New Zealand | TIV | 2012 | RT-PCR or viral culture | 7 days | SARI | 14 days after vaccine administration (self-report) | All | 18 years and above | Calendar time, age, sex, presence of chronic conditions/co-morbidites, other (ethnicity, smoking, functional dependence, neighbourhood income, long-term use of oxygen, obesity, self-rated health). |
| PMID\*: 24890961 | Cheng\_CDI\_2013\_1 | Comm Dis Intell | Australia | TIV | 2012 | RT-PCR | no limit | Suspected influenza (decision to test left to the discretion of the clinician) | Vaccinated before symptom onset (hospital medical record and self-report) | All | 18 years and above | Age, presence of chronic conditions/co-morbidites. |
| 10.2807/1560-7917.ES2015.20.2.21011 | Rondy\_2014 | Eurosurveillance | EU | TIV | 2012-2013 | RT-PCR | 7 days | ILI | 14 days after vaccine administration (vaccination resgiter, treating physician or self-report) | Target group | 18 years and above | Calendar time, age, presence of chronic conditions/co-morbidites, study site. |
| 10.2807/1560-7917.ES2014.19.34.20884 | Turner\_Eur\_2014\_1 | Eurosurveillance | New Zealand | TIV | 2013 | RT-PCR | 7 days | SARI | 14 days after vaccine administration (self-report) | All | 18 years and above | Calendar time, age, sex, presence of chronic conditions/co-morbidites, other (ethnicity, smoking, functional dependence, neighbourhood income, long-term use of oxygen, obesity, self-rated health). |
| PMID\*: 25222208 | Cheng\_CDI\_2013\_2 | Comm Dis Intell | Australia | TIV | 2013 | RT-PCR | no limit | Suspected influenza (decision to test left to the discretion of the clinician) | Vaccinated before symptom onset (hospital medical record and self-report) | All | 18 years and above | Age, presence of chronic conditions/co-morbidites, other (pregnancy, ethnicity). |
| 10.2807/1560-7917.ES2014.19.9.20729 | McNeil\_2014 | Eurosurveillance | Canada | TIV | 2013-2014 | RT-PCR or viral culture | 7 days | Any respiratory infection or diagnosis, or any respiratory or influenza-like symptom | 14 days after vaccine administration (self-reportand/or vaccine registry) | All | 16 years and older | Age, presence of chronic conditions/co-morbidites. |
| 10.1080/21645515.2015.1126013 | Rondy\_2016 | Hum Vacc and Imm | EU | TIV | 2013-2014 | RT-PCR | 7 days | ILI | 14 days after vaccine administration (self-report, treating physician or vaccine registry) | Target group | 18 years and above | Calendar time, age, presence of chronic conditions/co-morbidites. |
| 10.1016/j.vaccine.2015.10.016 | Cheng\_2014 | Vaccine | Australia | TIV | 2014 | RT-PCR | 7 days | Suspected influenza (decision to test left to the discretion of the clinician) | Vaccinated before symptom onset (hospital medical record and self-report) | All | 16 years and older | Age, presence of chronic conditions/co-morbidites and other (pregnancy, ethnicity). |
| 10.1016/j.vaccine.2015.11.073 | Pierse\_2015 | Vaccine | New Zealand | TIV | 2014 | RT-PCR or viral culture | 7 days | SARI | 14 days after vaccine administration (self-report) | All | 18 years and above | Calendar time, age, sex, presence of chronic conditions/co-morbidites, other (ethnicity, smoking, obesity, self-rated health, long-term oxygen use, functional dependence). |
| 10.2807/1560-7917.ES2015.20.5.21024 | McNeil\_2015 | Eurosurveillance | Canada | TIV | 2014-2015 | RT-PCR or viral culture | 7 days | Any respiratory infection or diagnosis, or any respiratory or influenza-like symptom | 14 days after vaccine administration (self-reportand/or vaccine registry) | All | 16 years and older | Age, presence of chronic conditions/co-morbidites. |
| 10.2807/1560-7917.ES2015.20.8.21044 | Puig-Barbera\_2015 | Eurosurveillance | Spain | TIV | 2014-2015 | RT-PCR | 7 days | ILI | 14 days after vaccine administration (self-report, medical records and vaccine registry) | All | 18 years and above | Calendar time, age, sex, presence of chronic conditions/co-morbidites, study site, number of days between illness onset and specimen collection, other (smoking, number of outpatient visits in past three months, hospital admissions in the past year). |
| 10.1371/journal.pone.0098716 | Choi\_2016 | Plos One | Korea | TIV | 2011-2012 | rapid antigen test (RAT), PCR test, or influenza virus culture | 2 days | ILI | 14 days after vaccine administration (medical records and self-report) | All | 18 years and above | Age, presence of chronic conditions/co-morbidites, study site. |
| 10.1371/journal.pone.0132195 | Gilca\_2016 | Plos One | Canada | TIV | 2014-2015 | RT-PCR | 7 days | cough, sore throat, or fever/feverishness of unknown etiology | 14 days after vaccine administration (self-report) | All | 65 years and above | Calendar time, age, presence of chronic conditions/co-morbidites, number of days between illness onset and specimen collection, study site, and other (primary residence). |
| 10.1016/j.vaccine.2016.01.054 | Castilla\_Vac\_2016 | Vaccine | Spain | TIV | 2014-2015 | RT-PCR | 7 days | ILI | 14 days after vaccine administration (vaccine registry) | all | 18 years and above | Calendar time, age, presence of chronic conditions/co-morbidites, number of days between illness onset and specimen collection, sex, functional dependence, hospitalization in the previous year. |
| 10.1016/j.vaccine.2016.03.068 | Qin\_2016 | Vaccine | China | TIV | 2014-2015 | RT-PCR | 7 days | ILI | 14 days after vaccine administration (vaccine registry) | All | 18 years and above | Age, sex, presence of chronic conditions/co-morbidites. |
| 10.1002/jmv.24551 | Lytras\_2016 | J Med Virology | Greece | TIV | 2014-2015 | RT-PCR | >90% taken up to 10 days after onset | Suspected influenza (decision to test left to the discretion of the clinician) | Vaccinated before symptom onset (self-report) | All | 18 years and above | Age, sex, study site, number of days between illness onset and specimen collection. |
| 10.1093/cid/ciw432 | Petrie\_2016 | CID | USA | TIV | 2014-2015 | RT-PCR | 10 days | ARI | 14 days after vaccine administration (self-report, medical records or vaccine registry) | All | 18 years and above | Calendar time, age, sex, presence of chronic conditions/co-morbidities, study site, number of days between illness onset and specimen collection, other (frailty score, Charlson comorbidity index). |
| 10.2807/1560-7917.ES.2016.21.1.30101 | Bissielo\_2015 | Eurosurveillance | New Zealand | TIV | 2015 | RT-PCR or viral culture | 7 days | SARI | 14 days after vaccine administration.patient self-report. | All | 18 years and above | Calendar time, age, presence of chronic conditions/co-morbidites, number of days between illness onset and specimen collection. |

Table sup 2: List ofa articles excluded after full review and reason for exclusion

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Digital object identifier (DOI) | Author and year of publication | Year | Country | Reason for exclusion |
| [10.1371/journal.pmed.1000258](http://dx.doi.org/10.1371%2Fjournal.pmed.1000258) | Skowronski\_2010 | Plos Medicine | Canada | non TND study design |
| [10.1371/journal.pone.0010722](http://dx.doi.org/10.1371%2Fjournal.pone.0010722) | Johns\_2010 | PlosOne | USA | Before 2009-10 or effects of seasonal on pandemic |
| [10.1093/infdis/jiq076](http://dx.doi.org/10.1093%2Finfdis%2Fjiq076) | Talbot\_2011 | JID | USA | Several seasons pooled |
| <https://doi.org/10.1016/j.vaccine.2011.01.046> | Pebody\_2011 | Vaccine | England | Before 2009-10 or effects of seasonal on pandemic |
| [10.1186/1471-2334-11-196](http://dx.doi.org/10.1186%2F1471-2334-11-196) | Steens\_2011 | BMC Inf Dis | Germany | non TND study design |
| <https://doi.org/10.1016/j.vaccine.2011.11.024> | Castilla\_2011 | Vaccine | Navarre, Spain | Duplicated estimates or study sites included in multicentre |
| <https://doi.org/10.1016/j.vaccine.2011.11.033> | Amour\_2012 | Vaccine | France | Before 2009-10 or effects of seasonal on pandemic |
|  | Bonmarin\_2012 | Eurosurveillance | France | non TND study design |
| <https://doi.org/10.1016/j.vaccine.2012.06.090> | Dominguez\_2012 | Vaccine | Spain | non TND study design |
| <https://doi.org/10.1016/j.vaccine.2012.07.006> | Puig-Barbera\_2012 | Vaccine | Valencia, Spain | non TND study design (case-case study design) |
|  | Castilla\_Eur\_2013 | Eurosurveillance | Spain | Duplicated estimates or study sites included in multicentre |
| <https://doi.org/10.1093/cid/cit194> | Castilla\_CID\_2013 | CID | Spain | non TND study design |
| [10.4161/hv.23090](http://dx.doi.org/10.4161%2Fhv.23090) | Dominguez\_2013 | Hum Vacc Immuno | Spain | non TND study design |
|  | Thomas\_2013 | EpidemiolInfect | UK | non TND study design |
|  | Widgren\_2013 | Eurosurveillance | Sweden | non TND study design |
| [10.1186/s12879-015-0882-3](http://dx.doi.org/10.1186%2Fs12879-015-0882-3) | Remschmidt\_2015 | BMC Inf Dis | Germany | non TND study design |
| [10.1080/21645515.2015.1038002](http://dx.doi.org/10.1080%2F21645515.2015.1038002) | Martinez-Baz\_2015 | Hum Vacc and Imm | Spain | Duplicated estimates or study sites included in multicentre |
| [10.1001/jama.2015.12160](http://dx.doi.org/10.1001%2Fjama.2015.12160) | Grijalva\_2016 | JAMA | USA | Several seasons pooled |
| [10.1016/j.vaccine.2016.02.037](http://dx.doi.org/10.1016%2Fj.vaccine.2016.02.037) | Talbot\_2016 | Vaccine | USA | Several seasons pooled |
|  | Castilla\_Eur\_2016 | Eurosurveillance | Spain | Duplicated estimates or study sites included in multicentre |

Table sup 3: List of estimates

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Type or subtype** | **Age group** | **Vaccine type** | **Author and year of publication** | **Country** | **Antigenic Similarity between A(H3N2) vaccine and circulating strains** | **Hemisphere** | **Influenza season** | **VE** | **95%CI** | **Meta estimate\*** | |
| ALL | 16-64 | TIV | Martinez-Baz\_2013 | Spain |  | North | 2010-2011 | 51 | (-42;83) |  | |
| ALL | 16-64 | TIV | Choi\_2013 | Korea |  | North | 2010-2011 | 53 | (36;71) | yes | |
| ALL | 16-64 | TIV | Rondy\_2013 | EU |  | North | 2011-2012 | 39 | (-4;64) |  | |
| ALL | 16-64 | TIV | Rondy\_2014 | EU |  | North | 2012-2013 | 49 | (15;69) |  | |
| ALL | 16-64 | TIV | Turner\_vac\_2014 | New Zealand |  | South | 2012 | 51 | (28;67) |  | |
| ALL | 16-64 | TIV | McNeil\_2014 | Canada |  | North | 2013-2014 | 60 | (39;74) |  | |
| ALL | 16-64 | TIV | Turner\_Eur\_2014\_1 | New Zealand |  | South | 2013 | 61 | (34;77) |  | |
| ALL | 16-64 | TIV | Rondy\_2016 | EU |  | North | 2013-2014 | 50 | (10;72) |  | |
| ALL | 16-64 | TIV | Castilla\_Vac\_2016 | Spain |  | North | 2014-2015 | 36 | (-78;77) |  | |
| ALL | 16-64 | TIV | McNeil\_2015 | Canada |  | North | 2014-2015 | 11 | (-66;52) |  | |
| ALL | 16-64 | TIV | Cheng\_2014 | Australia |  | South | 2014 | 50 | (35;61) |  | |
| ALL | 16-64 | TIV | Qin\_2016 | China |  | North | 2014-2015 | -67 | (-212;11) |  | |
| ALL | 16-64 | TIV | Petrie\_2016 | USA |  | North | 2014-2015 | 40 | (-13;68) |  | |
| ALL | 16-64 | TIV | Bissielo\_2015 | New Zealand |  | South | 2015 | 46 | (1;70) |  | |
| ALL | 65+ | TIV | Martinez-Baz\_2013 | Spain |  | North | 2010-2011 | 26 | (-82;70) |  | |
| ALL | 65+ | TIV | Kwong\_2013 | Canada |  | North | 2010-2011 | 42 | (29;53) |  | |
| ALL | 65+ | TIV | Choi\_2013 | Korea |  | North | 2010-2011 | 0 | (-156;61) |  | |
| ALL | 65+ | TIV | Rondy\_2013 | EU |  | North | 2011-2012 | 17 | (-7;36) |  | |
| ALL | 65+ | TIV | Rondy\_2014 | EU |  | North | 2012-2013 | 36 | (14;53) |  | |
| ALL | 65+ | TIV | Turner\_vac\_2014 | New Zealand |  | South | 2012 | 6 | (-51;42) |  | |
| ALL | 65+ | TIV | Cheng\_CDI\_2013\_1 | Australia |  | South | 2012 | 32 | (9;50) |  | |
| ALL | 65+ | TIV | Turner\_Eur\_2014\_1 | New Zealand |  | South | 2013 | 34 | (-28;66) |  | |
| ALL | 65+ | TIV | Cheng\_CDI\_2013\_2 | Australia |  | South | 2013 | 51 | (16;71) |  | |
| ALL | 65+ | TIV | McNeil\_2014 | Canada |  | North | 2013-2014 | 58 | (35;73) |  | |
| ALL | 65+ | TIV | Qin\_2016 | China |  | North | 2013-2014 | 27 | (-114;75) |  | |
| ALL | 65+ | TIV | Rondy\_2016 | EU |  | North | 2013-2014 | 37 | (9;57) |  | |
| ALL | 65+ | TIV | Petrie\_2016 | USA |  | North | 2014-2015 | 48 | (-33;80) |  | |
| ALL | 65+ | TIV | McNeil\_2015 | Canada |  | North | 2014-2015 | -25 | (-74;10) |  | |
| ALL | 65+ | TIV | Gilca\_2016 | Canada |  | North | 2014-2015 | -2 | (-105;49) |  | |
| ALL | 65+ | TIV | Lytras\_2016 | Greece |  | North | 2014-2015 | 30 | (-3;53) |  | |
| ALL | 65+ | TIV | Puig-Barbera\_2015 | Spain |  | North | 2014-2015 | 40 | (13;59) |  | |
| ALL | 65+ | TIV | Cheng\_2014 | Australia |  | South | 2014 | 52 | (36;63) |  | |
| ALL | 65+ | TIV | Castilla\_Vac\_2016 | Spain |  | North | 2014-2015 | 24 | (-25;53) |  | |
| ALL | 65+ | TIV | Qin\_2016 | China |  | North | 2014-2015 | -13 | (-1220;90) |  | |
| ALL | 65+ | TIV | Bissielo\_2015 | New Zealand |  | South | 2015 | 52 | (-14;79) |  | |
| ALL | all | TIV | Dawood\_2013 | Thailand |  | South | 2010 | 17 | (-127;70) |  | |
| ALL | all | TIV | Choi\_2013 | Korea |  | North | 2010-2011 | 50 | (25;68) |  | |
| ALL | all | TIV | Martinez-Baz\_2013 | Spain |  | North | 2010-2011 | 39 | (-18;69) |  | |
| ALL | all | TIV | Treanor\_2013 | US |  | North | 2010-2011 | 56 | (26;74) |  | |
| ALL | all | TIV | Cheng\_2011 | Australia |  | South | 2010 | 22 | (-10;52) |  | |
| ALL | all | TIV | Rondy\_2013 | EU |  | North | 2011-2012 | 23 | (3;38) |  | |
| ALL | all | TIV | Choi\_2016 | Korea |  | North | 2011-2012 | -16 | (-73;22) |  | |
| ALL | all | TIV | Cheng\_2013 | Australia |  | South | 2011 | 45 | (8;66) |  | |
| ALL | all | TIV | Dawood\_2013 | Thailand |  | South | 2011 | 52 | (-1;77) |  | |
| ALL | all | TIV | Rondy\_2014 | EU |  | North | 2012-2013 | 40 | (23;54) |  | |
| ALL | all | TIV | Turner\_vac\_2014 | New Zealand |  | South | 2012 | 44 | (26;62) | yes | |
| ALL | all | TIV | Kelly\_2016 | Australia |  | South | 2012 | 35 | (8;54) |  | |
| ALL | all | TIV | McNeil\_2014 | Canada |  | North | 2013-2014 | 59 | (44;69) |  | |
| ALL | all | TIV | Turner\_Eur\_2014\_1 | New Zealand |  | South | 2013 | 56 | (37;76) | yes | |
| ALL | all | TIV | Kelly\_2016 | Australia |  | South | 2013 | 52 | (19;71) |  | |
| ALL | all | TIV | Rondy\_2016 | EU |  | North | 2013-2014 | 40 | (18;56) |  | |
| ALL | all | TIV | Qin\_2016 | China |  | North | 2014-2015 | -65 | (-175;45) | yes | |
| ALL | all | TIV | McNeil\_2015 | Canada |  | North | 2014-2015 | -17 | (-56;13) |  | |
| ALL | all | TIV | Castilla\_Vac\_2016 | Spain |  | North | 2014-2015 | 26 | (-14;52) |  | |
| ALL | all | TIV | Pierse\_2015 | New Zealand |  | South | 2014 | 52 | (30;74) | yes | |
| ALL | all | TIV | Petrie\_2016 | USA |  | North | 2014-2015 | 43 | (5;66) |  | |
| ALL | all | TIV | Cheng\_2014 | Australia |  | South | 2014 | 52 | (42;60) |  | |
| ALL | all | TIV | Puig-Barbera\_2015 | Spain |  | North | 2014-2015 | 33 | (6;53) |  | |
| ALL | all | TIV | Bissielo\_2015 | New Zealand |  | South | 2015 | 48 | (20;76) | yes | |
| A(H1N1)pdm09 | 16-64 | pandemic | Hellenbrand\_2012 | Germany |  | North | 2009-2010 | 50 | (-380;100) |  | |
| A(H1N1)pdm09 | 16-64 | TIV | Martinez-Baz\_2013 | Spain |  | North | 2010-2011 | 50 | (-46;83) |  | |
| A(H1N1)pdm09 | 16-64 | TIV | Rondy\_2016 | EU |  | North | 2013-2014 | 61 | (-2;85) |  | |
| A(H1N1)pdm09 | 16-64 | TIV | McNeil\_2014 | Canada |  | North | 2013-2014 | 54 | (22;73) |  | |
| A(H1N1)pdm09 | 65+ | TIV | Martinez-Baz\_2013 | Spain |  | North | 2010-2011 | 5 | (-145;63) |  | |
| A(H1N1)pdm09 | 65+ | TIV | Kwong\_2013 | Canada |  | North | 2010-2011 | 90 | (51;98) |  | |
| A(H1N1)pdm09 | 65+ | TIV | Rondy\_2014 | EU |  | North | 2012-2013 | 16 | (-49;53) |  | |
| A(H1N1)pdm09 | 65+ | TIV | Rondy\_2016 | EU |  | North | 2013-2014 | 35 | (-20;65) |  | |
| A(H1N1)pdm09 | 65+ | TIV | McNeil\_2014 | Canada |  | North | 2013-2014 | 63 | (35;79) |  | |
| A(H1N1)pdm09 | all | pandemic | Andrews\_2011 | England |  | North | 2009-2010 | 1 | (-156;62) |  | |
| A(H1N1)pdm09 | all | pandemic | Puig-Barbera\_2010 | Valencia, Spain |  | North | 2009-2010 | 90 | (48;100) |  | |
| A(H1N1)pdm09 | all | TIV | Cheng\_2011 | Australia |  | South | 2010 | 22 | (-10;52) |  | |
| A(H1N1)pdm09 | all | TIV | Martinez-Baz\_2013 | Spain |  | North | 2010-2011 | 30 | (-37;65) |  | |
| A(H1N1)pdm09 | all | TIV | Choi\_2013 | Korea |  | North | 2010-2011 | 51 | (32;64) |  | |
| A(H1N1)pdm09 | all | TIV | Rondy\_2014 | EU |  | North | 2012-2013 | 21 | (-25;51) |  | |
| A(H1N1)pdm09 | all | TIV | Rondy\_2016 | EU |  | North | 2013-2014 | 43 | (6;65) |  | |
| A(H1N1)pdm09 | all | TIV | McNeil\_2014 | Canada |  | North | 2013-2014 | 58 | (38;72) |  | |
| A(H1N1)pdm09 | all | TIV | Cheng\_2014 | Australia |  | South | 2014 | 60 | (40;73) |  | |
| A(H3N2) | 16-64 | TIV | Rondy\_2013 | EU | Variant | North | 2011-2012 | 40 | (-4;66) |  | |
| A(H3N2) | 16-64 | TIV | Turner\_vac\_2014 | New Zealand | Variant | South | 2012 | 51 | (28;67) |  | |
| A(H3N2) | 16-64 | TIV | Turner\_Eur\_2014\_1 | New Zealand | Similar | South | 2013 | 61 | (34;77) |  | |
| A(H3N2) | 16-64 | TIV | Rondy\_2016 | EU | Similar | North | 2013-2014 | 8 | (-145;65) |  | |
| A(H3N2) | 16-64 | TIV | Petrie\_2016 | USA | Variant | North | 2014-2015 | 40 | (-13;68) |  | |
| A(H3N2) | 16-64 | TIV | Castilla\_Vac\_2016 | Spain | Variant | North | 2014-2015 | 42 | (-122;85) |  | |
| A(H3N2) | 16-64 | TIV | McNeil\_2015 | Canada | Variant | North | 2014-2015 | 8 | (-102;58) |  | |
| A(H3N2) | 65+ | TIV | Kwong\_2013 | Canada | Similar | North | 2010-2011 | 40 | (26;52) |  | |
| A(H3N2) | 65+ | TIV | Rondy\_2013 | EU | Variant | North | 2011-2012 | 16 | (-9;35) |  | |
| A(H3N2) | 65+ | TIV | Rondy\_2014 | EU | Similar | North | 2012-2013 | 58 | (14;79) |  | |
| A(H3N2) | 65+ | TIV | Turner\_vac\_2014 | New Zealand | Variant | South | 2012 | 6 | (-51;42) |  | |
| A(H3N2) | 65+ | TIV | Cheng\_CDI\_2013\_2 | Australia | Similar | South | 2013 | 51 | (16;71) |  | |
| A(H3N2) | 65+ | TIV | Rondy\_2016 | EU | Similar | North | 2013-2014 | 41 | (10;62) |  | |
| A(H3N2) | 65+ | TIV | Turner\_Eur\_2014\_1 | New Zealand | Similar | South | 2013 | 34 | (-28;66) |  | |
| A(H3N2) | 65+ | TIV | Petrie\_2016 | USA | Variant | North | 2014-2015 | 48 | (-33;80) |  | |
| A(H3N2) | 65+ | TIV | Castilla\_Vac\_2016 | Spain | Variant | North | 2014-2015 | 26 | (-36;60) |  | |
| A(H3N2) | 65+ | TIV | Gilca\_2016 | Canada | Variant | North | 2014-2015 | -2 | (-105;49) |  | |
| A(H3N2) | 65+ | TIV | McNeil\_2015 | Canada | Variant | North | 2014-2015 | -33 | (-103;13) |  | |
| A(H3N2) | all | TIV | Rondy\_2013 | EU | Variant | North | 2011-2012 | 18 | (-4;35) |  | |
| A(H3N2) | all | TIV | Rondy\_2014 | EU | Similar | North | 2012-2013 | 62 | (27;80) |  | |
| A(H3N2) | all | TIV | Turner\_vac\_2014 | New Zealand | Variant | South | 2012 | 44 | (26;62) | yes | |
| A(H3N2) | all | TIV | Turner\_Eur\_2014\_1 | New Zealand | Similar | South | 2013 | 56 | (37;76) | yes | |
| A(H3N2) | all | TIV | Rondy\_2016 | EU | Similar | North | 2013-2014 | 38 | (8;58) |  | |
| A(H3N2) | all | TIV | Castilla\_Vac\_2016 | Spain | Variant | North | 2014-2015 | 25 | (-29;57) |  | |
| A(H3N2) | all | TIV | McNeil\_2015 | Canada | Variant | North | 2014-2015 | -22 | (-77;16) |  | |
| A(H3N2) | all | TIV | Cheng\_2014 | Australia | Variant | South | 2014 | 35 | (9;54) |  | |
| A(H3N2) | all | TIV | Petrie\_2016 | USA | Variant | North | 2014-2015 | 43 | (5;66) |  | |
| B | 16-64 | TIV | Castilla\_Vac\_2016 | Spain |  | North | 2014-2015 | 39 | (-116;83) |  | |
| B | 16-64 | TIV | Cheng\_2014 | Australia |  | South | 2014 | 45 | (-6;72) |  | |
| B | 65+ | TIV | Kwong\_2013 | Canada |  | North | 2010-2011 | 13 | (-77;58) |  | |
| B | 65+ | TIV | Rondy\_2014 | EU |  | North | 2012-2013 | 37 | (10;56) |  | |
| B | 65+ | TIV | Castilla\_Vac\_2016 | Spain |  | North | 2014-2015 | 12 | (-67;54) |  | |
| B | 65+ | TIV | Cheng\_2014 | Australia |  | South | 2014 | 23 | (-71;65) |  | |
| B | all | TIV | Choi\_2013 | Korea |  | North | 2010-2011 | -13 | (-2280;95) |  | |
| B | all | TIV | Choi\_2016 | Korea |  | North | 2011-2012 | -36 | (-180;34) |  | |
| B | all | TIV | Rondy\_2014 | EU |  | North | 2012-2013 | 43 | (21;59) | |  |
| B | all | TIV | Cheng\_2014 | Australia |  | South | 2014 | 39 | (0;63) |  | |
| B | all | TIV | Castilla\_Vac\_2016 | Spain |  | North | 2014-2015 | 23 | (-34;56) |  | |

\*Study specific age group IVE meta-estimates computed based on smaller age group breakdown estimates

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table sup 4: Pooled seasonal vaccine effectiveness (VE) against influenza hospitalizations by type and subtype of influenza virus and by age group, restricted to studies using clear clinical criteria for patients inclusion | | | | | | | | | | |
|  | | | | | | | | |  |  |
|  | | | | **Pooled VE (%)** | | | **95%CI** | **number of VE estimates** | **p-value for heterogeneity** | **I2** |
| ***Any influenza*** | | | | | | |  |  |  |  |
| All adults | | | | 39 | | | 31;48 | 19 | 0.003 | 54 |
| Under 65 years | | | | 52 | | | 44;59 | 13 | 0.697 | 0 |
| 65 years and above | | | | 32 | | | 21;43 | 16 | 0.148 | 27 |
| ***A(H1N1)pdm09*** | | | | | | |  |  |  |  |
| All adults | | | | 49 | | | 39;60 | 5 | 0.425 | 0 |
| Under 65 years | | | | 55 | | | 34;76 | 3 | 0.948 | 0 |
| 65 years and above | | | | 44 | | | 19;69 | 4 | 0.240 | 29 |
| ***A(H3N2)*** | | | |  | | |  |  |  |  |
| All adults | | | | 37 | | | 23;52 | 8 | 0.012 | 61 |
| Under 65 years | | | | 50 | | | 38;62 | 7 | 0.775 | 0 |
| 65 years and above | | | | 27 | | | 11;43 | 9 | 0.169 | 31 |
| ***B*** | | | |  | | |  |  |  |  |
| All adults | | | | 38 | | | 21;55 | 4 | 0.471 | 0 |
| Under 65 years | | | | ONLY ONE ESTIMATE | | |  |  |  |  |
| 65 years and above | | | | 34 | | | 12;55 | 2 | 0.451 | 0 |
|  |  |  |  | |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table sup 5: Pooled seasonal vaccine effectiveness (VE) against influenza hospitalizations by type and subtype of influenza virus and by age group, restricted to studies using exclusively RT-PCR for laboratory testing | | | | |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **Pooled VE\* (%)** | **95%CI** | **number of VE estimates** | **p-value for heterogeneity** | **I2** | | ***Any influenza*** | |  |  |  |  | | All adults | 43 | 38;49 | 20 | 0,343 | 9 | | Under 65 years | 50 | 42;57 | 11 | 0,811 | 0 | | 65 years and above | 37 | 30;44 | 16 | 0.688 | 0 | | ***A(H1N1)pdm09*** | |  |  |  |  | | All adults | 40 | 22;58 | 5 | 0.134 | 43 | | Under 65 years | 58 | 22;94 | 2 | 0.774 | 0 | | 65 years and above | 25 | -6;57 | 3 | 0.788 | 0 | | ***A(H3N2)*** |  |  |  |  |  | | All adults | 41 | 30;51 | 8 | 0.127 | 38 | | Under 65 years | 51 | 39;64 | 6 | 0.830 | 0 | | 65 years and above | 31 | 18;44 | 8 | 0.398 | 4 | | ***B*** |  |  |  |  |  | | All adults | 40 | 25;55 | 3 | 0.721 | 0 | | Under 65 years | 45 | 8;81 | 2 | 0.907 | 0 | | 65 years and above | 33 | 12;53 | 3 | 0.720 | 0 | | \* and 95% confidence interval in parentheses. |  |  |  |  |  | |  |  |  |  |