**Evidence Table H1. Data abstraction of systematic reviews**

|  |  |  |  |
| --- | --- | --- | --- |
| **Author, Year****Country** | **Aims** | **Timeperiod Covered** | **Eligibility Criteria** |
| Aabenhus, 2014Denmark | To assess the benefits andharms of point-of-care biomarker tests of infection to guide antibiotic treatment in patients presenting with symptoms of acute respiratory infections in primary care settings regardless of age. | Through January 2014 | Study Designs:Randomized controlled trials (RCTs) and cluster-RCTs in primary care.Participants:Patients of all ages defined as having ARIs.Interventions:(1) Point-of-care biomarkers including C-reactive protein, procalcitonin and white blood cell count. Excluded Strep A test or Monospot.(2) Standard of care.Outcome Measures: Primary(1) Number of patients given an antibiotic prescription at the index consultation and at 28 days followup.(2) Number of patients with substantial improvement (including full recovery) at day seven. (3) Total mortality at 28 days followup.Secondary(1) Number of patients in need of a reconsultation at 28 days followup.(2) Number of patients in need of a hospital admission at 28 days followup.(3) Duration of the ARI (e.g. mean or median days with restrictions in daily activities due to the infection).(4) Number of satisfied patients.(5) Number of patients with substantial improvement (including full recovery) at 28 days followup. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Author, Year****Country** | **Number of****Participants** | **Characteristics of Identified****Articles: Study Designs** | **Characteristics of Identified Articles:****Populations** | **Characteristics of Identified Articles:****Interventions** |
| Aabenhus, 2014Denmark | 3,284 | RCTs studying the treatment ofARIs with the C-reactive protein point-of-care test versus the standard of care. | Adults and children with:(1) Cough(2) Discolored/increased sputum(3) Fever(4) Runny nose(5) Respiratory distress(6) Feeling unwell(7) Combinations of focal and systemic symptoms having a duration of less than four weeksDiagnoses included:(1) Lower or upper respiratory tract infection(2) Pneumonia(3) Bronchitis(4) Acute exacerbations of chronic obstructive pulmonary disease or asthma (5) Pharyngitis(6) Tonsillitis(7) Laryngitis(8) Rhinosinusitis, (9) Common cold(10) Acute otitis media(11) Influenza | (1) Point-of-care test vs. the standard of care(no point-of-care test)\*The only point-of-care biomarker of infection available to primary care at the time of this review was C-reactive protein. |

|  |  |  |
| --- | --- | --- |
| **Author, Year****Country** | **Main Results** | **Adverse Events** |
| Aabenhus, 2014Denmark | KQ 1: A reduction in the use of antibiotic treatments was found in the C-reactive protein group (631/1685) versusstandard of care (785/1599). The pooled result showed a statistically significant effect of C-reactive protein testing on the number of antibiotic prescriptions issued inprimary care settings for ARIs, RR: 0.78, 95% CI: 0.66 to 0.92. Appropriateness of antibiotic prescribing and useNR/not defined. KQ 2: NRKQ 3: No deaths or serious complications were reported in any of the studies. Five of the six studies reported that there had been no hospitalizations in the followup period, 30 hospitalizations in the C-reactive protein group reported in Little2013, 15 cases reviewed: cardiac (two); respiratory (eight), generally unwell/fever (two); gastrointestinal symptoms(two); sinusitis (one). All hospitalizations may not have been directly related to the intervention.KQ 4:Patient satisfaction: Detected no differences. However, unable to draw clear conclusions as only 2 of the included studies reported this outcome.Reconsultation rates: There were no significant differences in reconsultation rates.Patient symptoms: No difference between using a C-reactive protein point-of-care test and standard care in clinical recovery (defined as at least substantial improvement at day 7 and 28 or need for re-consultations day 28). No differences were observed in patient-reported measures (e.g. mean or median days with restrictions in daily activities due to the infection).KQ 5: NR | KQ 6: NR |

|  |  |  |  |
| --- | --- | --- | --- |
| **Author, Year****Country** | **Aims** | **Timeperiod Covered** | **Eligibility Criteria** |
| Doan, 2014Canada | Determine if the use of arapid viral detection test for children with an ARI in EDs changes patient management and resource use (including precautionary testing, antibiotic use, and length of visit) in the ED, compared with not using a rapid viral detection test | Through December2011 | Study Designs:RCTs evaluating the use of rapid viral diagnosis in children admitted to the ED with an ARIParticipants:(1) Studies of otherwise healthy children aged 0-18 years old(2) Studies which reported separately on subgroups of children under 18 years of age, admitted to an ED with a clinical presentation consistent with ARI (fever and respiratory symptoms such as cough, runny nose, sore throat, or congested nose)Interventions:Rapid viral diagnosis from nasal pharyngeal aspirates or swabs by direct or indirect immunofluorescent test, enzyme immunoassays, optical immunoassay, or molecular testing such as multiplex polymerase chain reaction. Results are made available during the participants' stay in the EDOutcome MeasuresPrimary Outcomes:(1) Antimicrobial prescription rate in the ED (reduction of antibiotic use by 25% [RR=0.75]as clinically important)Secondary Outcomes:(1) Length of ED stay (reduction of 30 minutes considered clinically important)(2) Rate of ancillary tests (any blood tests or chest imaging or urine investigations) requested (reduction in ancillary testing of 25% [RR=0.75] considered clinically important) (3) Rate of physician visit (ED or office) within 2 weeks after discharged from ED (relative increase in physician visit within 2 weeks of discharge from an ED or 10% [RR=1.10] considered clinically important) |
| Doan, 2014CanadaContinued. |  |  | (4) Hospital admission rate (reduction in admission rate of 25% [RR=0.75] consideredclinically important)(5) Acceptability of nasal specimen collection sampling for rapid viral testing (discomfort level with invasiveness of the procedure) |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Author, Year****Country** | **Number of****Participants** | **Characteristics of Identified****Articles: Study Designs** | **Characteristics of Identified Articles:****Populations** | **Characteristics of Identified Articles:****Interventions** |
| Doan, 2014Canada | 1,588 (759 inrapid viral testing group, 829 in control group) | Three RCTs and one quasi-RCTwere included | Bonner 2003: Previously healthyparticipants, age 2 months to 21 years old, presenting to ED with fever, respiratory symptoms, malaise, or headaches of ≤ 72 hours durationPoehling 2006: children < 5 years old presenting to ED with fever or acute respiratory symptoms during the 2002-2003 and 2003-2004 influenza seasonsIyer 2006: children 2 to 24 months of age presenting to ED with feverDoan 2009: previously healthy children age 3 to 36 months old presenting to ED with fever and any respiratory symptoms | Bonner 2003:Treatment: results of nasopharyngeal swab for rapid influenza testing using FluOIA test (turnaround time < 25 minutes) being revealed to treating physicians at initial patient assessmentControl: results of the rapid test were not made available to the treating physiciansPoehling 2006:Treatment: results of rapid influenza testing were made available to the treating physician prior to patient assessmentControl: standard testing with results made unavailable until the subject had been discharged from the EDIyer 2006:Treatment: nasal swab for rapid influenza testing (using Quickvue), providing a result within 30 minutesControl: nasal swab for rapid influenza testing (using Quickvue), but these were performed only twice daily to simulate routine laboratory testing turnaround, and results were not made available to the treating physician using the patient had been discharged from the ED |
| Doan, 2014CanadaContinued. |  |  |  | Doan 2009:Treatment: nasopharyngeal aspirate for rapid respiratory virus panel (influenza A/B, parainfluenza 1/2/3, RSV, Adenovirus) using direct immunofluorescence assay (Light Diagnostics SimulFluor Respiratory Screening agent)Control: routine admission to ED. Any test done was requested after assessment by treating physician |

|  |  |  |
| --- | --- | --- |
| **Author, Year****Country** | **Main Results** | **Adverse Events** |
| Doan, 2014Canada | KQ 1:Antibiotics Prescribed in ED (Rapid Viral Testing vs. Control RR): RR=0.89; 95% Cl, 0.71 to 1.12Antibiotics Prescribed in ED, sensitivity analysis: 0.86 (0.61 to 1.22) KQ 2: NRKQ 3: NRKQ 4:Blood investigations (e.g. cell count and/or culture) (Rapid Viral Testing vs. Control RR): RR=0.79; 95% Cl, 0.62 to1.00Blood investigations, sensitivity analysis: 0.61 (0.42 to 0.89)Urine testing (Rapid Viral Testing vs. Control RR): RR=0.97; 95% Cl, 0.79 to 1.19Urine testing, sensitivity analysis: 0.93 (0.70 to 1.25)Chest radiography (Rapid Viral Testing vs. Control RR): RR=0.77; 95% Cl, 0.65 to 0.91Chest radiography, sensitivity analysis: 0.59 (0.43 to 0.81)Visits to physician or ED post ED discharge (Rapid Viral Testing vs. Control RR): RR=1.00; 95% Cl, 0.77 to 1.29KQ 5: NR | KQ 6:Mean ED length of visit in minutes (Rapid Viral Testing vs. Control, meandifference; 95% CI): -10.61;95% Cl, -22.47 to 1.25Mean ED length of visit in minutes, sensitivity analysis: -19.47 (-51.38 to12.44) |
| Doan, 2014CanadaContinued. |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Author, Year****Country** | **Aims** | **Timeperiod Covered** | **Eligibility Criteria** |
| Huang, 2013China | To systematically reviewstudies that have examined the association between POC C- reactive protein testing and antibiotic prescribing for RTIs in general practice | Through June 2013 | Population and Interventions:Studies were included that examined patients who had been diagnosed with RTIs and compared the antibiotic prescribing rate of a POC CRP testing group with a no-POC CRP testing groupStudy Designs:RCTs (including parallel-group RCTs, cluster RCTs, crossover RCTs, and factorial RCTs)or observational studies |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Author, Year****Country** | **Number of****Participants** | **Characteristics of Identified****Articles: Study Designs** | **Characteristics of Identified Articles:****Populations** | **Characteristics of Identified Articles:****Interventions** |
| Huang, 2013China | 10,005 patientswith RTIs | 3 cluster RCTs, 4 parallel-groupRCTs, and 6 observational studies | Included studies of populations from theNetherlands (4 studies), Norway (3 studies), Denmark (2 studies), Spain (2 studies), Ireland (1 study), and the US (1 study) | POC testing vs. no-POC testing |

|  |  |  |
| --- | --- | --- |
| **Author, Year****Country** | **Main Results** | **Adverse Events** |
| Huang, 2013China | KQ 1:Antibiotic prescribing at the index consultation\*: RR=0.75; 95% Cl, 0.67 to 0.83Antibiotic prescribing at any time during the 28-day followup period\*: RR=0.85; 95% Cl, 0.70 to 1.01KQ 2: NR KQ 3: NR KQ 4:Patient satisfaction\*: RR=1.07; 95% Cl, 0.98 to 1.17KQ 5: NR | KQ 6: NR |

|  |  |  |  |
| --- | --- | --- | --- |
| **Author, Year****Country** | **Aims** | **Timeperiod Covered** | **Eligibility Criteria** |
| Schuetz, 2011Schuetz, 2012United States, Canada | Schuetz 2011:Summarize the evidence based on previous RCTs for using PCT measurement in respiratory infections and sepsis from the clinical settings for which the most RCT data are available, namely, primary care, the ED, the medical ICU, and the surgical ICU. Proposed clinical algorithms for use in future US trialsSchuetz 2012:Assess the safety and efficacy of using procalcitonin for starting or stopping antibiotics over a large range of patients with varying severity of ARIs and from different clinicalsettings | Through 2011 | Study Designs:Schuetz 2011:RCTs including adults with a diagnosis of respiratory tract infections (i.e. pneumonia, acute exacerbations of COPD, or other respiratory tract infections) or sepsisSchuetz 2012:RCTs of adult participants with ARIs who received an antibiotic treatment either based on a procalcitonin algorithm or usual care/guidelinesClinical Settings:Primary care, the ED, or the ICUInterventions:Measurement of PCT levels to inform decisions regarding antibiotic therapy (i.e. regarding its initiation and/or duration)Primary Endpoints:Schuetz 2012: all-cause mortality and treatment failure at 30 daysSecondary Endpoints:Schuetz 2012: antibiotic use, length of hospital stay, length of ICU stay, number of days with restricted activities within 14 days after randomization |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Author, Year****Country** | **Number of****Participants** | **Characteristics of Identified****Articles: Study Designs** | **Characteristics of Identified Articles:****Populations** | **Characteristics of Identified Articles:****Interventions** |
| Schuetz, 2011Schuetz, 2012United States, Canada | 4,221 total(2,610 in studies applicable to present review, e.g. primary care and select ED settings) | 4 RCTs applicable to presentreview (2 multicenter noninferiority; 1 ED only, single center; 1 ED and inpatient multicenter) | Subjects with upper and lower RTI (2studies) or CAP, AECOPD, bronchitis (2 studies) | Algorithm by PCT Level (µg/L)Primary care setting: <0.10, SRAA; 0.10-0.25, RAA; > 0.25, FRA; recheck PCT level at 6-24 hours if no antibiotics initiated; or <0.25, RAA;>0.25. RFAED settings: <0.10, SRAA; 0.10-0.25, RAA;0.25-0.50, RFA; >0.50, SRFA; recheck PCT level after 6-24 hours if no antibiotics initiated; or <0.10, SRAA; 0.10-0.25, RAA; 0.25-0.50, RFA; >0.50, SRFA; retest PCT level every 2 days; discontinue antibiotics with same cutoffs |

|  |  |  |
| --- | --- | --- |
| **Author, Year****Country** | **Main Results** | **Adverse Events** |
| Schuetz, 2011Schuetz, 2012United States, Canada | KQ 1:*Schuetz 2011*Briel 2008:Antibiotics Use, Control vs. PCT Prescription: 97% vs. 25% Duration (mean): 7.1 vs. 6.2 days Relative Reduction, % Prescription: -74Duration: -13Burkhardt 2010:Antibiotics Use, Control vs. PCT Prescription: 36.7% vs. 21.5% Duration (mean): 7.7 vs. 7.8 days Relative Reduction, % Prescription: -42Duration: 1*Schuetz 2012*PCT (n (%)) vs. Control (n (%)), Adjusted OR; 95% CI; pInitiation of antibiotics, Upper ARI: 43 (15) ED. 129 (48), OR=0.14; 95% Cl, 0.09 to 0.22; p< 0.001Initiation of antibiotics, Acute bronchitis: 61 (24) vs. 185 (66), OR=0.15; 95% Cl, 0.10 to 0.23; p< 0.001PCT (median (IQR)) vs. Control (median (IQR)), Adjusted OR; 95% CI; pDuration of antibiotics in days, Upper ARI: 7 (5 to 8) vs. 7 (6 to 7), OR=-1.16; 95% Cl, -2.08 to -0.24; p=0.013Total exposure of antibiotics in days, Upper ARI: 0 (0 to 0) vs. 0 (0 to 7), OR=-2.64; 95% Cl, -3.16 to -2.11; p< 0.001Duration of antibiotics in days, Acute bronchitis: 7 (4 to 9) vs. 7 (5 to 8), OR=-0.38; 95% Cl, -1.21 to 0.46; p=0.375Total exposure of antibiotics in days, Acute bronchitis: 0 (0 to 0) vs. 5 (0 to 7), OR=-3.06; 95% Cl, -3.69 to -2.43; p<0.001 | KQ 6: NR |

|  |  |  |  |
| --- | --- | --- | --- |
| **Author, Year****Country** | **Aims** | **Timeperiod Covered** | **Eligibility Criteria** |
| Schuetz, 2011Schuetz, 2012United States, CanadaContinued. |  |  |  |
| Spurling, 2013Australia, UnitedStates | Evaluate use of delayedantibiotics compared with immediate or no antibiotics as a prescribing strategy for ARTIs | Through February2013 | Study Designs:Randomized controlled trials and open randomized trialsParticipants:Patients of all ages defined as having ARTIsInterventions:(1) Delayed antibiotic use defined as strategy involving use of or advice to use antibiotics more than 48 hours after initial consultation(2) Immediate antibiotic use defined as immediate use of prescription oral antibiotics given at initial consultation(3) No antibiotic use defined as no prescription of antibiotics at initial consultationOutcome Measures: Primary(1) Clinical outcomes for sore throat, AOM, bronchitis, common cold(2) Antibiotic use(3) Patient satisfaction(4) Antibiotic resistanceSecondary(1) Adverse events of antibiotics(2) Complications of disease(3) Re-consultation(4) Use of alternative therapies |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Author, Year****Country** | **Number of****Participants** | **Characteristics of Identified****Articles: Study Designs** | **Characteristics of Identified Articles:****Populations** | **Characteristics of Identified Articles:****Interventions** |
| Schuetz, 2011Schuetz, 2012United States, CanadaContinued. |  |  |  |  |
| Spurling, 2013Australia, UnitedStates | 3,157 | RCTs studying the treatment ofARTIs with delayed antibiotics versus immediate or no antibiotics | Adults and children with:(1) common cold or(2) cough or(3) sore throat or(4) cough and at least one symptom or sign localizing to lower respiratory tractChildren with: (1) AOM or(2) sore throat | (1) Delayed antibiotics vs. immediateantibiotics(2) No antibiotics vs. delayed antibiotics(3) Delayed antibiotics vs. immediate antibiotics vs. no antibiotics |

|  |  |  |
| --- | --- | --- |
| **Author, Year****Country** | **Main Results** | **Adverse Events** |
| Schuetz, 2011Schuetz, 2012United States, CanadaContinued. | KQ 2: NRKQ 3:*Schuetz 2011*PCT Algorithm vs. No PCT Algorithm, Total; Weight, %; Fixed, Peto OR; 95% CI Mortality in Primary Care Trials: 507 vs. 501, 0.3, OR=0.13; 95% Cl, 0 to 6.64*Schuetz 2012:* PCT (n (%)) vs. Control (n (%)), Adjusted OR; 95% CI; pMortality, Upper ARI: 0 (0) vs. 1 (0.4); NR; NRTreatment failure, Upper ARI: 93 (33.0) vs. 92 (34.5), OR=0.95; 95% Cl, 0.73 to 1.24; p=0.687Mortality, Acute Bronchitis: 0 (0) vs. 2 (0.8); NR; NRKQ 4:*Schuetz 2012:* PCT (median (IQR)) vs. Control (median (IQR)), Adjusted OR; 95% CI; pDays with Restricted Activities: 9 (6 to 14) vs. 9 (5 to 14), OR=0.05; 95% Cl, -0.46 to 0.56, p=0.854KQ 5: NR |  |
| Spurling, 2013Australia, UnitedStates | KQ 1: Delayed antibiotics resulted in a significant reduction in antibiotic use compared with immediate antibiotics. A 'noantibiotics' strategy resulted in the least antibiotic use. Appropriateness of antibiotic prescribing and use NR/not defined.KQ 2: NRKQ 3: Minor differences in clinical AEs of antibiotics with no significant difference in complication rates. Antibiotic resistance: NR.KQ 4:Patient satisfactionDelayed vs. immediate antibiotics, OR; 95% CI: OR=0.52; 95% Cl, 0.35 to 0.76Overall 92% of participants in immediate antibiotics arms were satisfied vs. 87% in the delayed arms. Delayed vs. no antibiotics, OR; 95% CI: OR=1.44; 95% Cl, 0.99 to 2.10Reconsultation rates: no difference between immediate and delayed groupsPatient symptoms: no difference between delayed, immediate, and no prescribed antibiotics for clinical outcomes evaluated in cough and common cold. In patients with AOM and sore throat, immediate antibiotics were more effective than delayed for fever, pain, and malaise in some studies.KQ 5: NR | KQ 6: NR |