**Appendix F. Supplemental Tables**

**Table F-1. KQ 1—Study characteristics**

| **Study** | **N** | **Patient Population** | **Cough Measures** | **Study Objectives** | **Dimensions** | **Risk of Bias** |
| --- | --- | --- | --- | --- | --- | --- |
| ***Studies in Adults and Adolescents*** |  |  |  |  |
| Au, 20051 | 64 | Chronic bronchitis | * CBSAS
* Pulmonary function tests
* SGRQ
* San Diego Shortness of Breath Questionnaire
 | Develop the CBSAS | Severity/QOL | High |
| Baiardini, 20052 | 95 | Chronic cough | * CCIQ
 | Develop the CCIQ | Severity/QOL  | High |
| Barnabe, 19953 | 119 | Dry or slightly productive cough due to respiratory disorders | * Cough count (by a human)
* Electronic sound recorder
* VAS
 | Evaluate the efficacy and safety of moguisteine vs. codeine | FrequencySeverity/QOL  | Low |
| Barry, 20064 | 33 | Chronic cough | * Hull Automatic Cough Counter
* Cough count by observer
 | Evaluate the Hull Automatic Cough Counter | Frequency | Low |
| Berkhof, 20125 | 54 | COPD | * LCQ
* SGRQ
* SF-36
 | Examine the psychometric performance of the LCQ in patients with COPD and chronic productive cough | Severity/QOL  | Low |
| Birring, 20086 | 65 | Chronic cough | * Leicester Cough Monitor
* Video recording
* Cough count by 2 observers
 | Evaluate the Leicester Cough Monitor | Frequency | Low |
| Birring, 20067 | 20 | Chronic cough | * LCQ
* Leicester Cough Monitor
* Capsaicin cough challenge
 | Evaluate the Leicester Cough Monitor | FrequencySeverity/QOL  | Low |
| Birring, 20038 | 104 | Chronic cough | * LCQ
* Self-reported cough severity
* Self-reported clinical change
* SGRQ
* SF-36
* Capsaicin cough challenge
 | Develop the LCQ | Severity/QOL  | Low |
| Braido, 20069 | 95 | Chronic cough | * CCIQ
* SF-36
 | Evaluate the CCIQ | Severity/QOL  | Low |
| Chernecky, 200410 | 31 | Lung cancer | * LCCQ
* Lung Cancer Wheezing Questionnaire
 | Evaluate the LCCQ and the Lung Cancer Wheezing Questionnaire | Severity/QOL  | High |
| Coyle, 200511 | 8 | COPD | * LifeShirt cardio-respiratory monitoring system
* Video recorder
 | Evaluate the LifeShirt system in COPD patients | Frequency | Low |
| Crawford, 200812 | 671 | Chronic bronchitis | * CASA-Q
* SGRQ
* SF-36
* Medical Research Council Dyspnea Scale
* Self-reported symptom change scale
* 24-hour ambulatory cardiorespiratory monitoring
* 24-hour sputum specimen collection
 | Develop and validate the CASA-Q | FrequencySeverity/QOL  | Low |
| De Vito Dabbs, 200213 | 37 | Lung transplant | * Questionnaire for Lung Transplant Patients
* Modified Symptom Frequency/Symptom Distress Scale
* Functional Performance Inventory
* Self-reported cough severity (VAS)
* Pulmonary function tests
* Qualitative interview
 | Reliability and validity of the Questionnaire for Lung Transplant Patients | Severity/QOL  | Low |
| Decalmer, 200714 | 62 | Chronic cough | * LCQ
* Self-reported cough severity
* Self-reported cough frequency
* Citric acid cough challenge
* Ambulatory cough recording
 | Compare cough reflex sensitivity and subjective assessments with objective cough counts | FrequencySeverity/QOL  | Low |
| Dicpini-gaitis, 200615 | 100 | Chronic cough | * CES-D
* Subjective cough score
 | Estimate prevalence of depressive symptoms among patients with chronic cough | Severity/QOL  | High |
| Doherty, 200016 | 205 | Asthma or COPD | * Questionnaire administered in hospital
* Self-reported cough score
* Self-reported cough severity (VAS)
* Capsaicin cough challenge
 | Evaluate capsaicin cough challenge | Severity/QOL  | High |
| Doherty, 200017 | 15 | Cryptogenic fibrosing alveolitis | * Self-reported cough severity (VAS)
* Cough diary
* Tussigenic challenge
 | Evaluate the relationship between capsaicin responsiveness and the severity of cryptogenic fibrosing alveolitis | Severity/QOL  | Low |
| Faruqi, 201118 | 25 | Chronic cough | * LCQ
* Symptom Assessment Score
* Self-reported cough severity (VAS)
* Self-reported composite cough score
* 24-hour Hull Automatic Cough Counter
* Capsaicin cough challenge
 | Compare objective and subjective measures of cough | FrequencySeverity/QOL  | Low |
| Field, 200919 | 151 | Chronic cough | * CQLQ
* Cough-specific QoL
* Subjective cough assessment
 | Evaluate whether certified respiratory educators could assist pulmonologists in managing patients with chronic cough | Severity/QOL  | Low |
| Fisman, 200120 | 21 | Cough from ACE inhibitor | * Self-reported cough severity score
* Self-reported cough frequency score
* Combined severity and frequency score
 | Compare cough severity and frequency scores  | FrequencySeverity/QOL  | High |
| Fletcher, 201021 | 127 | Cough | * Punum Ladder
* Global Rating of Change Scale
* CQLQ
 | Evaluate the GRC, Punum Ladder, and CQLQ | Severity/QOL  | Low |
| Freestone, 199722 | 67 | Cough from common cold | * Self-reported cough severity score
* Audio recording device
* Cough counts by observer
 | Assess the antitussive efficacy of codeine for cough | FrequencySeverity/QOL  | Low |
| French, 200223 | 215 | Chronic bronchitis or COPD | * CQLQ
 | Evaluation of CQLQ | Severity/QOL  | Low |
| French, 199824 | 28 | Chronic cough | * Adverse Cough Outcome Survey
* SIP
 | Assess the relationship between chronic cough and adverse psychosocial or physical effects | Severity/QOL  | Low |
| Hsu, 199425 | 47 | Asthma or chronic cough | * Self-reported cough score
* Self-reported asthma score
* 24-hour ambulatory recorder
 | Evaluate an ambulatory cough recorder | Frequency | Low |
| Huisman, 200726 | 152 | Chronic cough | * LCQ
* Modified Borg score for cough
* HADS
* Self-reported change in disease control
 | Validate a Dutch-language version of the LCQ | Severity/QOL  | Low |
| Irwin, 200227 | 8 | Chronic cough due to gastroesophageal reflux disease | * ACOS
* Self-reported cough severity (VAS)
 | Evaluate the relationship between esophageal acid suppression and chronic cough | Severity/QOL  | Low |
| Jones, 201128 | 27 | Idiopathic pulmonary fibrosis | * LCQ
* Self-reported cough severity score
* Self-reported cough severity (VAS)
* Cough challenge test
 | Mechanical induction of cough in idiopathic pulmonary fibrosis | Severity/QOL  | Low |
| Kelsall, 201129 | 57 | Chronic cough | * Self-reported cough score
* Self-reported cough severity (VAS)
* 24-hour ambulatory cough recording
 | Compare objective and subjective measures of cough | FrequencySeverity/QOL  | Low |
| Kelsall, 200930 | 86 | Chronic cough | * LCQ
* Electronic cough recorder
* Tussigenic challenge
* Cough history
 | Determine the predictors of objective cough frequency in patients with chronic cough | Severity/QOL  | Low |
| Kelsall, 200831 | 70 | Chronic cough | * LCQ
* Self-reported cough severity (VAS)
* Audio recording device
* Cough count by observer
 | Compare methods of quantifying coughing  | FrequencySeverity/QOL  | Low |
| Key, 201032 | 19 | Idiopathic pulmonary fibrosis | * LCQ
* Cough severity VAS
* 24-hour ambulatory cough recording
* Manual cough count
 | Measure objective cough frequency | FrequencySeverity/QOL  | Low |
| Krahnke, 200433 | 28 | Cough | * Home telemetry device
* Score
 | Validate novel measurement tools with video recording as gold standard | Frequency | Low |
| Krajnik, 201034 | 16 | Chronic cough | * Self-reported cough score (NRS)
* Automatic portable cough analyzer
 | Evaluate an automatic portable cough analyzer | Frequency | Low |
| Leconte, 201135 | 10 | Cough | * LR102 Electronic cough recorder
* Video cough recorder
* LR102 device
 | Assess the accuracy of an automatic identification of cough episodes by the LR102 | Severity/QOL  | Low |
| Ma, 200936 | 110 | Chronic cough | * LCQ
* SF-36
* Capsaicin cough challenge
 | Validate a Chinese-language version of the LCQ | Severity/QOL  | Low |
| Marsden, 200837 | 56 | Asthma | * LCQ
* Cough severity VAS
* Numeric cough frequency score
* Ambulatory cough sound recording
* Citric acid cough challenge
 | Compare objective and subjective measures of cough in asthma | FrequencySeverity/QOL  | Low |
| Matos, 200738 | 18 | Cough  | * Leicester Cough Monitor
* Cough count by observer
 | Evaluation of the Leicester Cough Monitor | Frequency | Low |
| Monz, 201039 | 59 | Chronic bronchitis or COPD | * CASA-Q
* Self-reported cough frequency
* Self-reported shortness of breath
* Self-reported phlegm production
* Self-reported symptom change
 | Evaluate the CASA-Q | Severity/QOL  | Low |
| Morice, 200740 | 27 | Chronic cough | * LCQ
* Cough diary
* Tussigenic challenge
 | Evaluate the efficacy of morphine sulfate for chronic cough | Severity/QOL  | Low |
| Murray, 200941 | 120 | Cough | * LCQ
 | Compare the LCQ with the SGRQ | Severity/QOL  | Low |
| Mwachari, 200742 | 649 | Acute bronchitis | * ABSS
 | Evaluate new scoring system | Severity/QOL  | Low |
| Nandha, 200043 | 48 | Cough | * Cough diary
 | Compare cough diary with a structured recall interview | Severity/QOL  | Low |
| Nieto, 200344 | 101 | Chronic cough | * Tussigenic challenge
 | Repeat tussigenic challenge to evaluate responsiveness to treatment | Severity/QOL  | Low |
| Novitsky, 200245 | 21 | Chronic cough due to GERD | * ACOS
* SIP
 | Prospective evaluation of consecutive patients with chronic cough due to GERD | Severity/QOL  | Low |
| O’Connell, 199446 | 87 | Chronic cough | * Tussigenic challenge
 | Comparison of cough severity with cough sensitivity | Severity/QOL  | Low |
| Polley, 200847 | 147 | Chronic cough | * EuroQol
* LCQ
* CQLQ
 | Compared with each other | Severity/QOL  | Low |
| Raj, 200948 | 52 | Cough | * LCQ
 | Determination of minimal important difference for the LCQ | Severity/QOL  | Low |
| Ribeiro, 200749 | 64 | Chronic cough | * Cough diary
* Self-reported cough severity (VAS)
 | Compare the effects of beclomethasone and placebo in patients with chronic cough | FrequencySeverity/QOL  | Low |
| Shaheen, 201150 | 40 | Chronic cough | * CQLQ
* Fisman cough severity/frequency scores
 | Assess the impact of high-dose acid suppression with proton pump inhibitors on chronic cough in subjects with rare or no heartburn | FrequencySeverity/QOL  | Low |
| Singapuri, 200851 | 13 | Chronic cough | * Mannitol challenge test
* LCQ
* VAS
 | To investigate the utility of the mannitol challenge as a cough-provocation test in non-asthmatic chronic cough | Severity/QOL  | Low |
| Smith, 200652 | 8 | Chronic cough | * Human cough count
* Video recording device
 | Comparisons of digital audio recordings with video recordings | Frequency | Low |
| Smith, 200653 | 19 | Cystic fibrosis | * Electronic cough recorder
* Score
* Self-reported cough severity (VAS)
 | Evaluate objective measurements of cough during pulmonary exacerbations of cystic fibrosis | FrequencySeverity/QOL  | Low |
| Smith, 200654 | 21 | COPD | * Electronic cough recorder
* Tussigenic challenge
* Self-reported cough severity (VAS)
 | Quantify the effect of codeine on chronic cough | FrequencySeverity/QOL  | Low |
| Smith, 200655 | 26 | COPD | * Electronic recording device
* Tussigenic challenge
* Score
* CQLQ
 | Determine relationships between objective cough rates, cough reflex sensitivity, subjective estimates of cough frequency, and cough-related quality of life in patients with COPD | FrequencySeverity/QOL  | Low |
| Thomas, 197856 | 42 | Chronic cough | * Automated electronic cough-counting device
* Cough count
 | Evaluate a cough recording device | Frequency | Low |
| Vernon, 201057 | 39 | Chronic cough | * Cough severity diary
 | Evaluation of new cough severity diary | Severity/QOL  | Low |
| Woodcock, 201058 | 91 | Subacute cough | * Electronic cough recorder
* Cough diary
 | Evaluate the efficacy of a NOP1 agonist (SCH486757) in subacute cough | FrequencySeverity/QOL  | Low |
| Woolf, 196459 | 1 | Chronic cough | * Electronic cough recorder
* Self-reported cough severity (VAS)
 | Assess the effects of cough suppressants | Frequency | High |
| ***Studies in Adults, Adolescents, and Children*** |  |  |  |
| Hamutcu, 200260 | 14 | Inpatients with cystic fibrosis | * Self-reported VAS score
* Self-reported clinical cough score
* LR100 cough monitoring device
* Audio recording device
* Pulmonary function tests
 | Objective monitoring of cough in children | Frequency | Low |
| Hartnick, 200961 | 120 | Parents of children with chronic cough | * Pediatric Cough Questionnaire
* Parent-reported clinical change
 | Evaluate the Pediatric Cough Questionnaire | Severity/QOL  | Low |
| Kalpakli-oglu, 200562 | 40 | Asthma | * LCQ
* CQLQ
* SF-36
* HADS
 | Compare specific vs. generic quality-of-life questionnaires for chronic cough | Severity/QOL  | Low |
| Paul, 200663 | 15 | Cough | * Electronic recording device using an accelerometer
 | Validate new recording device using video recording as gold standard | FrequencySeverity/QOL  | Low |
| ***Studies in Children Only*** |  |  |  |  |
| Archer, 198564 | 8 | Asthma | * Self-reported cough severity (VAS)
* Self-reported cough severity (VCD)
* Parent-reported cough severity (VAS)
* Parent-reported cough severity (VCD)
* 24-hour ambulatory cough meter
 | Compare recorded night cough counts with diary card scores | Frequency | High |
| Chang, 201265 | 346 | Chronic cough | * PC-QOL
* PedsQL
* Cough diary
 | Evaluate the burden and etiologies of children with chronic cough | Severity/QOL  | Low |
| Chang, 200366 | 37 | Recurrent cough | * Ambulatory cough meter
* Self-reported VAS (unspecified)
* Parent-reported VAS (unspecified)
* Capsaicin cough challenge
 | Compare measurements of cough severity | FrequencySeverity/QOL  | Low |
| Chang, 199867 | 39 | Recurrent cough | * Self-reported cough severity (VAS)
* Self-reported cough severity (VCD)
* Parent-reported cough severity (VAS)
* Parent-reported cough severity (VCD)
* 24-hour ambulatory cough meter
 | Compare child and parent-reports with objective measurement of cough frequency, and comparison of VAS with VCD scoring of cough severity | FrequencySeverity/QOL  | Low |
| Chang, 199768 | 21 | Recurrent cough | * Ambulatory cough meter
* Audio recording device
 | Describe and evaluate a modified Holter monitor for use as an ambulatory cough meter | Frequency | Low |
| Corrigan, 200369 | 9 | Infants with coughing illnesses | * LR100 cough monitoring device
* Video recorder
 | Objective cough monitoring in infants | Frequency | Low |
| Dales, 199770 | 41 | Community sample | * Interviewer-administered questionnaire
* Recording device
* Cough counts
 | Assess possible bias in parental reporting of children's coughing | Frequency | Low |
| Falconer, 199371 | 15 | Asthma | * Self-reported presence of nocturnal cough
* Self-reported respiratory symptoms
* Recording device
 | Compare reported and recorded nocturnal cough | Frequency | High |
| Faniran, 199972 | 109 | Children with or without cough | * A questionnaire to assess cough prevalence
 | Develop a questionnaire to measure prevalence of persistent cough in children | Severity/QOL  | High |
| Fuller, 199873 | 39 | Inner-city children with night cough | * Video cough recorder
* Cough diary
 | Determine whether cough at night keeps children awake | FrequencySeverity/QOL  | High |
| Hoskyns, 199174 | 16 | Cough | * Audio recording device
* Parental cough diaries
 | Compare diaries with electronic recording and assess response to salbutamol | Frequency | Low |
| Newcombe, 201175 | 34 | Chronic cough | * PC-QOL
 | Create and validate new questionnaire | Severity/QOL  | Low |
| Newcombe, 201076 | 43 | Chronic cough | * PC-QOL
 | Validate PC-QOL by comparison with:* Audio recording
* VAS
* Pediatric Quality of Life Questionnaire
* SF-12
* Verbal category descriptive score
 | FrequencySeverity/QOL  | Low |
| Newcombe, 200877 | 170 | Chronic cough | * PC-QOL
 | Validate PC-QOL by comparison with:* Pediatric Quality of Life Questionnaire
* SF-12
 | Severity/QOL  | Low |
| Zihlif, 200578 | 20 | Primary ciliary dyskinesia | * Electronic cough recorder
* Self-reported cough severity (VAS)
 | Explore the relationship between cough frequency and airway inflammation | Frequency | Low |

Abbreviations: ABSS=Acute Bronchitis Severity Score; ACE=angiotensin-converting enzyme; BPC=bronchoprovocation challenge; CASA-Q=Cough and Sputum Assessment Questionnaire; CBSAS=Chronic Bronchitis Symptoms Assessment Scale; CCIQ=Chronic Cough Impact Questionnaire; CES-D=Center for Epidemiologic Studies Depression Scale; COPD=chronic obstructive pulmonary disease; CQLQ=Cough-specific Quality of Life Questionnaire; EuroQol=European Quality of Life questionnaire; GERD=gastroesophageal reflux disease; GRC=Global Rating of Change; HADS=Hospital Anxiety and Depression Scale; LCQ=Leicester Cough Questionnaire; LCCQ=Lung Cancer Cough Questionnaire; PC-QOL=Parent Cough-Specific Quality-of-Life Questionnaire; QOL = quality-of-life; SF-36/SF-12=Medical Outcomes Study 36-Item/12-Item Short Form Health Survey; SGRQ=St. George's Respiratory Questionnaire; SIP=Sickness Impact Profile; VAS=visual analog scale; VCD=verbal category descriptive scale