

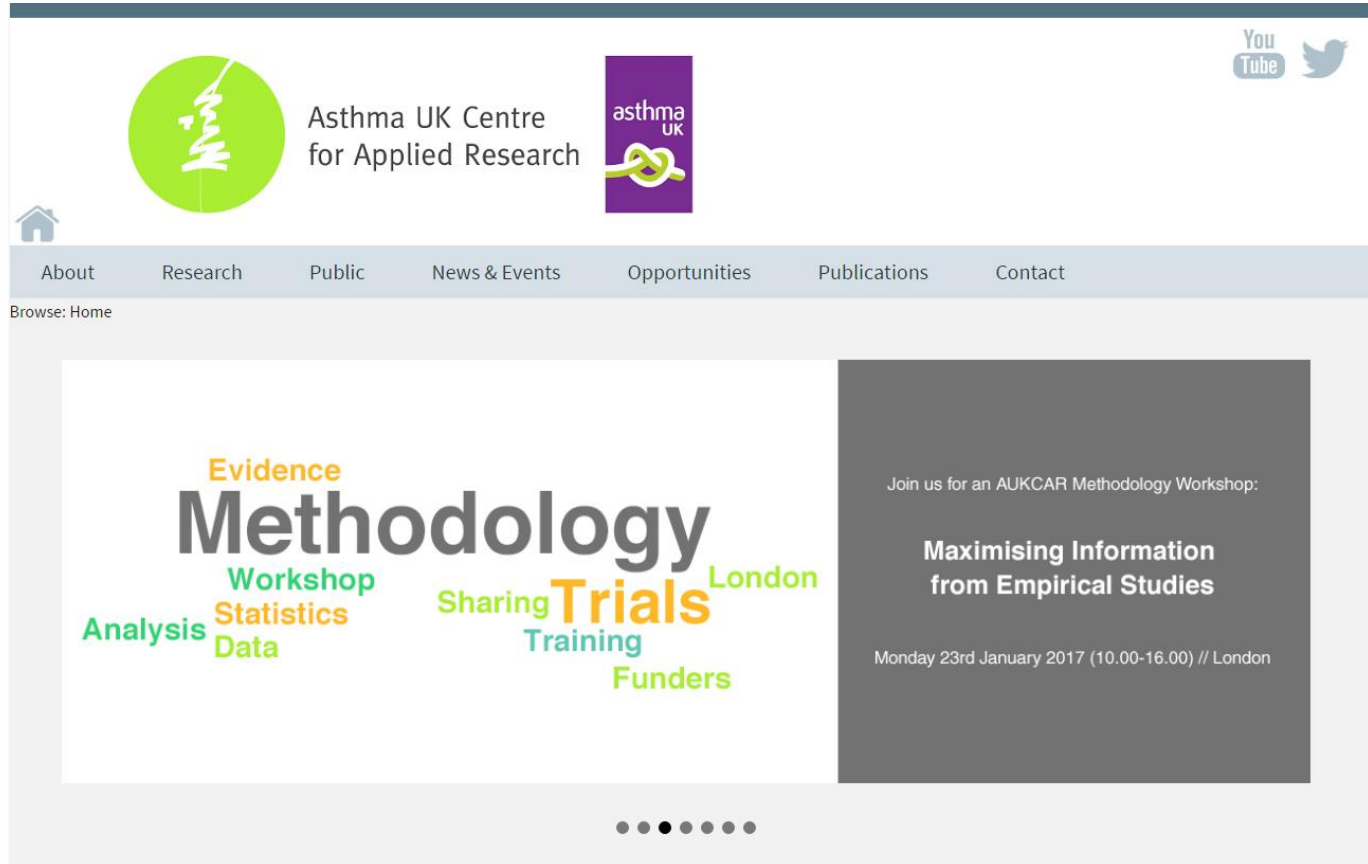
Development of core outcome sets for the economic evaluation of healthcare interventions for people with asthma

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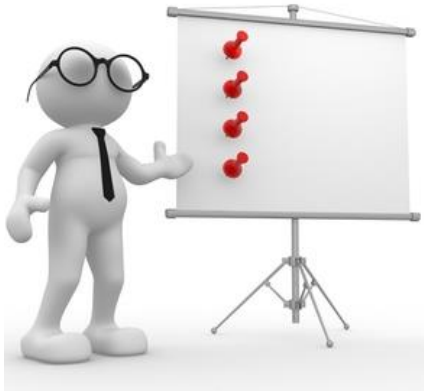
<http://www.aukcar.ac.uk/>



The screenshot shows the website's header with a home icon, a green circular logo with a white tree-like shape, and the text "Asthma UK Centre for Applied Research". To the right is the "asthma UK" logo and social media icons for YouTube and Twitter. A navigation menu includes "About", "Research", "Public", "News & Events", "Opportunities", "Publications", and "Contact". Below the menu, it says "Browse: Home". The main content area features a word cloud with "Methodology" as the largest word, surrounded by "Evidence", "Workshop", "Statistics", "Data", "Analysis", "Sharing Trials", "Training", "Funders", and "London". To the right of the word cloud is a dark grey box with the text: "Join us for an AUKCAR Methodology Workshop: Maximising Information from Empirical Studies Monday 23rd January 2017 (10.00-16.00) // London". At the bottom of the main content area are five small black dots.

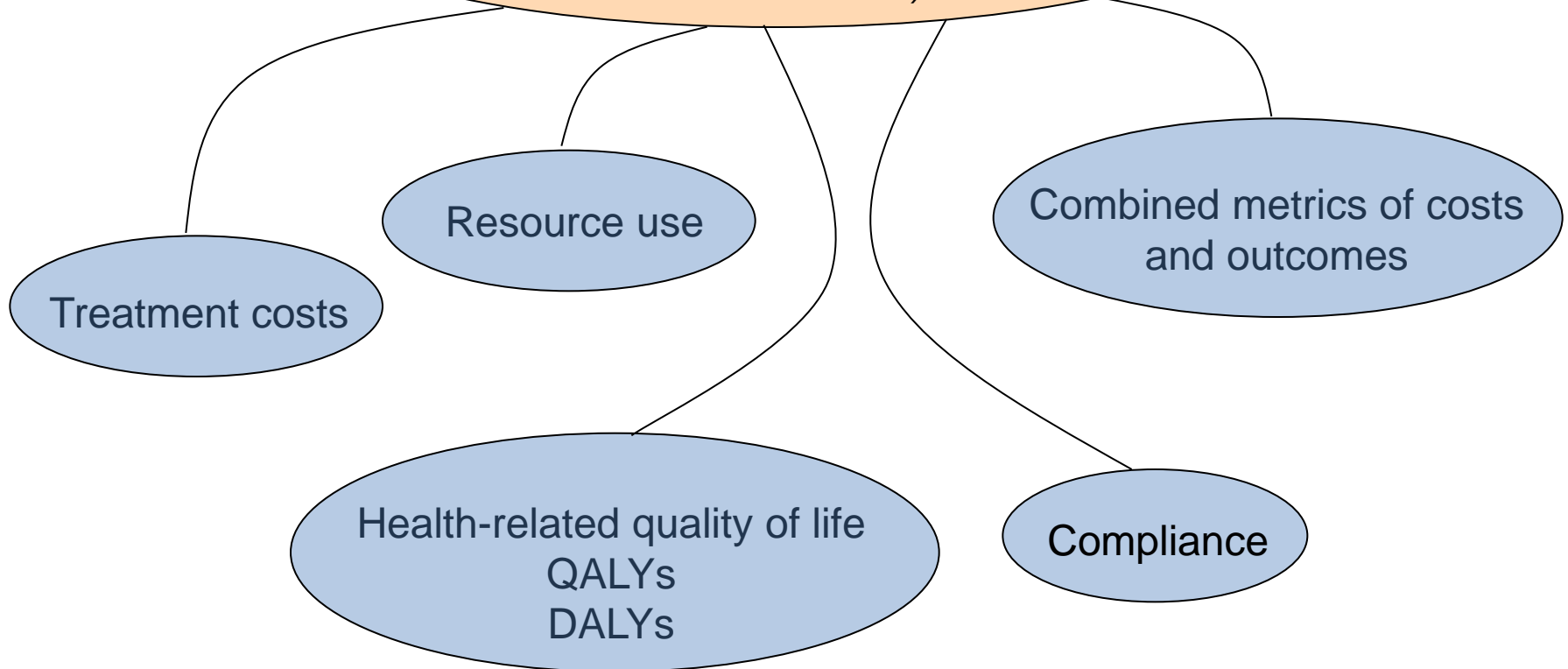
Outline

- What are economic outcomes?
- Why do we need economic core outcome sets?
- How will we derive economic core outcome sets?
- What are our findings to date?



Economic outcomes

(economic results or consequences of an intervention)



Health-related quality of life

Asthma-specific instruments

1. Asthma Quality of Life Questionnaire (AQLQ)
2. Asthma Quality of Life Questionnaire for 12 years and older (AQLQ +12)
3. Acute Asthma Quality of Life Questionnaire (Acute AQLQ)
4. Paediatric Asthma Quality of Life Questionnaire (PAQLQ)
5. Paediatric Asthma Caregiver's Quality of Life Questionnaire (PACQLQ)

Generic instruments

1. Medical Outcomes Study 36-Item Short Form (SF-36) health survey
2. Nottingham Health Profile (NHP)
3. Sickness Impact Profile (SIP)
4. Quality of Well-Being (QWB) Scale
5. Health Utilities Index (HUI)
6. EuroQol Instrument (EQ-5D)
7. 15D Instrument (15D)

Asthma Severity Scores

Parameter*	Mild	Moderate	Severe	Imminent Respiratory Arrest
Breathlessness	Walking Can lie down	Talking (infant: shorter cry/difficult feeding); Prefers sitting	At rest (infant will stop feeding) Hunched over	
Talks in	Sentences	Phrases	Words	
Alertness	May be agitated	Usually agitated	Usually agitated	Drowsy/confused
Respiratory rate	Increased	Increased	Increased	Bradypnea
Accessory muscles and suprasternal retractions	Usually not	Usually	Usually	Paradoxical movement
Wheeze	Moderate (end expiration)	Loud	Usually loud	Absence of wheeze
Pulse/min	< 100	100-120	> 120	Bradycardia
Pulsus paradoxus (mm HG)	Absent (< 10)	10-25	> 25	Absence suggests respiratory muscle fatigue
PEFR (after bronchodilator)	> 80%	60-80%	< 60%	
PaO ₂ on room air and/or PaCO ₂ (mm Hg)	Normal (need not be tested)	< 45	> 45	
Saturation	> 95%	91-95%	90% or less	
*The presence of several parameters, but not necessarily all, indicates the severity of the attack PEFR = peak expiratory flow rate				
Source: Becker AB, Nelson NA, Simons FE. The pulmonary index. Assessment of a clinical score for asthma. <i>Am J Dis Child</i> 1984;138:574-576				



Asthma Control Test (ACT)

1. In the past 4 weeks, how much of the time did your **asthma** keep you from getting as much done at work, school or at home?

All of the time	①	Most of the time	②	Some of the time	③	A little of the time	④	None of the time	⑤
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2. During the past 4 weeks, how often have you had shortness of breath?

More than once a day	①	Once a day	②	3 to 6 times a week	③	Once or twice a week	④	Not at all	⑤
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3. During the past 4 weeks, how often did your **asthma** symptoms (wheezing, coughing, shortness of breath, chest tightness or pain) wake you up at night or earlier than usual in the morning?

4 or more nights a week	①	2 or 3 nights a week	②	Once a week	③	Once or twice	④	Not at all	⑤
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4. During the past 4 weeks, how often have you used your rescue inhaler or nebulizer medication (such as albuterol)?

3 or more times per day	①	1 or 2 times per day	②	2 or 3 times per week	③	Once a week or less	④	Not at all	⑤
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5. How would you rate your **asthma** control during the past 4 weeks?

Not controlled at all	①	Poorly controlled	②	Somewhat controlled	③	Well controlled	④	Completely controlled	⑤
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SCORE

TOTAL

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Asthma Diary



Name: Maya Jones

ASTHMA DIARY SIGNS

For children under five years of age
 O - Before quick relief
 X - After quick relief

Triggers, Comments
 Good day
 Husky slightly hoarse
 very irritable
 Visit with doctor

Date	4/1	4/2	4/3	4/3	4/4	4/4	4/5	4/5	4/6	4/6	4/7	4/7	4/8	4/9													
SIGNS																											
Cough	0	0	1	0	1	1	2	1	2	2	2	1	1	1	1	1	0	0	0	0	1	0	0				
Wheeze	0	0	0	0	1	1	2	1	2	1	1	1	2	1	1	2	0	2	1	1	0	0	0	0	0	0	0
Chest skin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Breathing faster	0	0	0	0	1	0	2	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0
TOTAL:	0	0	1	0	3	2	6	3	5	4	3	5	3	4	2	4	1	3	2	2	0	0	0	0	1	0	0
ZONES																											
Green Zone	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
High Yellow Zone	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Low Yellow Zone	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Red Zone	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
MEDICINES																											
Inhaled steroid	2-4x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Quick relief	2-4x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Oral steroid	1x				✓	✓		✓		✓		✓															
DAILY																											
Activity	7	0	0	1		1		1		1		0		1	1												
Sleep	7	0	0	0		1		0		0		0		1	0												

See back for instructions. Please bring to each visit.

SIGNS

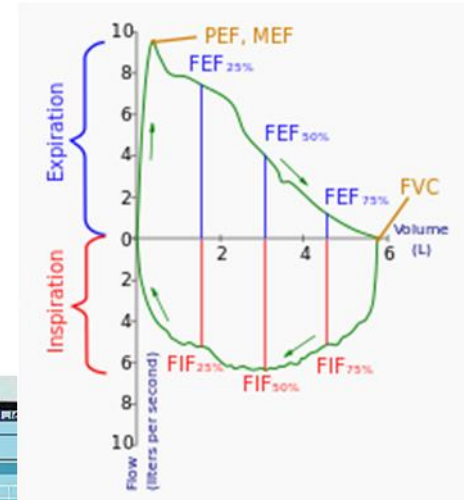
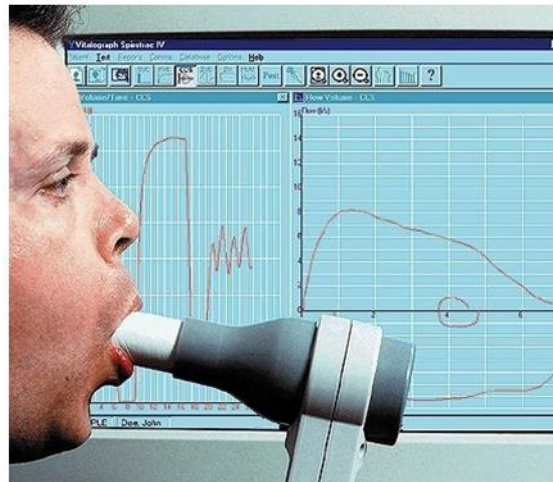
- ◆ Cough in past 5 minutes
 - None 0
 - Less than 1 per minute 1
 - 1 - 4 per minute 2
 - More than 4 per minute 3
- ◆ Wheeze
 - None 0
 - End of exhale 1
 - Throughout exhale 3
 - Inhale and exhale 5
- ◆ Sucking in chest skin
 - None 0
 - Barely noticeable 1
 - Obvious 3
 - Severe 5
- ◆ Breathing faster
 - None 0
 - Slight increase 1
 - Up to 100% increase 2
 - Over 100% increase 3

DAILY ROUTINE

- ◆ Activity
 - Fully active 0
 - Runs less 1
 - Plays quietly 2
 - Sleeps during day 3
- ◆ Sleep
 - Fine 0
 - Slight wheeze or cough 1
 - Awake 2 - 3 times because of wheeze or cough 2
 - Awake most of the night 3

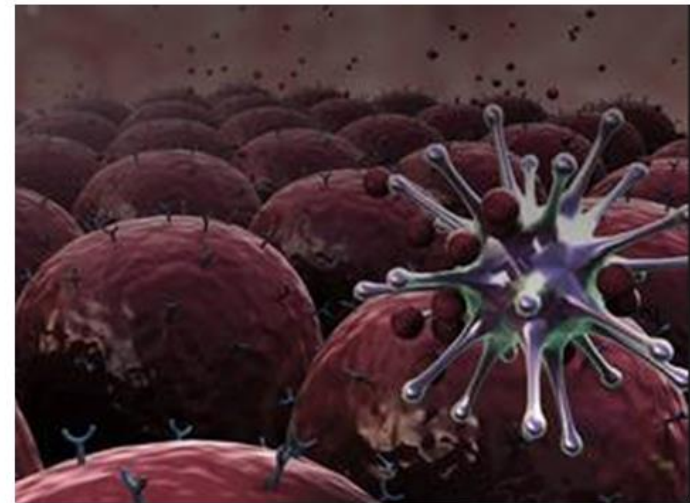
* Fill in the brand name of your medicine, dose, and number of times per day you take it.
 From Dr. Tom Plaut's Asthma Guide for People of All Ages © Pedipress, Inc. All rights reserved. Pedipress publishes One Minute Asthma, El asma en un minuto, Winning Over Asthma, the Asthma Peak Flow Diary and the Asthma Signs Diary. 125 Red Gate Lane, Amherst, MA 01002, (800) 611-6081. <http://www.pedipress.com>

Lung function tests (peak expiratory flow, forced expiratory volume)



Biomarkers

(exhaled nitric oxide, hydrogen peroxide, isoprostanes, prostanoids, leukotrienes)

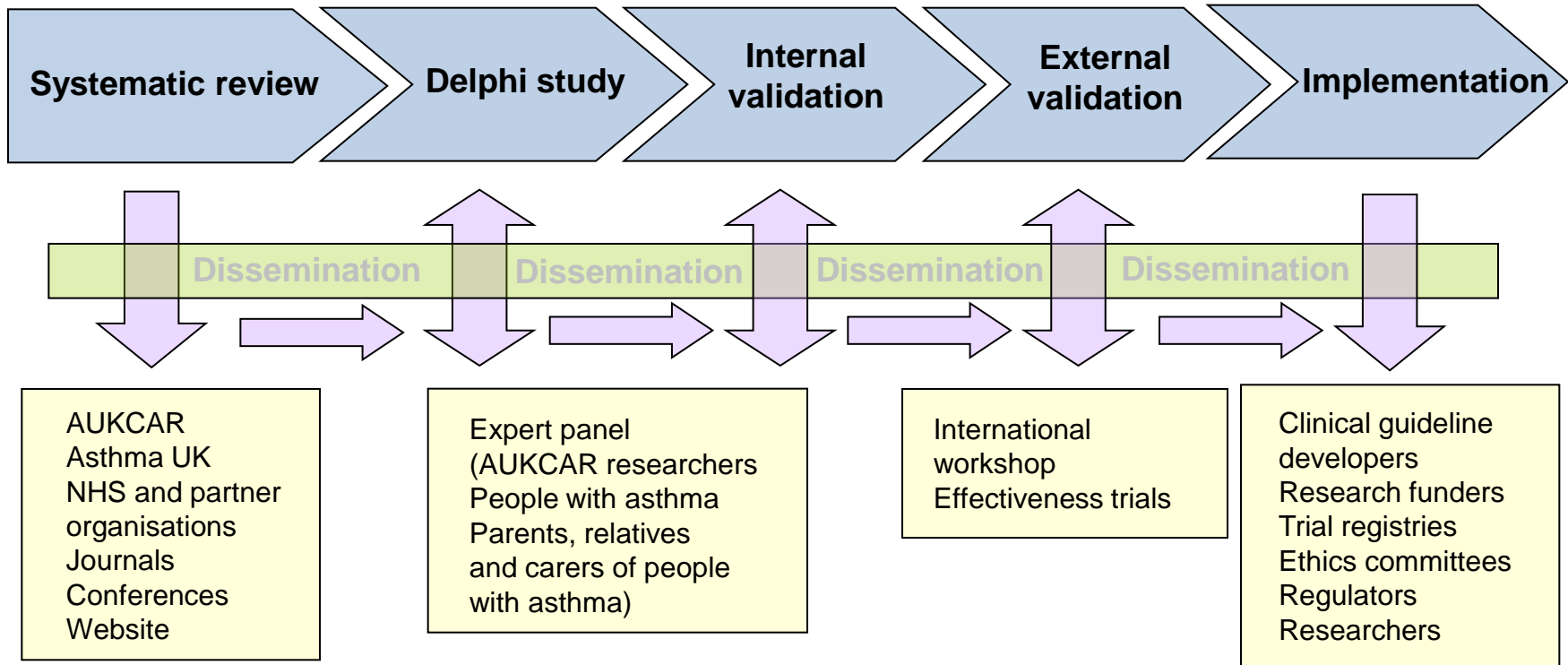


Cost-effectiveness analysis

5 cost outcomes and 5 effectiveness outcomes =
25 cost-effectiveness outcomes!



Developing core outcome sets for economic evaluation



Realist review

Pawson R, Greenhalgh T, Harvey G, Walshe K. Realist review - a new method of systematic review designed for complex policy interventions. J Health Serv Res Policy. 2005 1:21-34.

- What type of outcome?
- In what studies?
- How measured?
- Does it answer the economic research question?
- Is it useful for decision makers?



Results



Outcome group	Outcome	Measuring method	Instrument
Intervention-related costs	Cost of intervention (excluding research costs)	Bills, claims, invoices, trial records	Not identified
Scheduled outpatient care (<i>general practitioner, specialist nurse</i>)	Number of contacts	Questionnaires and medical records	Non-validated questionnaires
Unscheduled outpatient care (<i>general practitioner, specialist nurse, other specialists, tests and investigations</i>)	Number of contacts/test	Questionnaires and medical records	Non-validated questionnaires
Emergency care (A&E attendance, ambulance)	Number of visits	Questionnaires and medical records	Non-validated questionnaires
Hospitalisations	Length of stay Intensive unit stay	Questionnaires and medical records	Non-validated questionnaires
Medication	Name, dose, duration	Questionnaires and medical records	Non-validated questionnaires
Productivity loss	Number of days off work/school	Questionnaires and organisation records	WPIA Non-validated questionnaires
Self-care (<i>mobile- and internet-based self-management, exercise, air quality control</i>)	Asthma control scores Symptom-free days	Questionnaires	ACQ KASE-AQ Non-validated questionnaires
Health-related quality of life	Health scores QALY	Questionnaires	AQLQ IAQLQ EQ-5D

Work Productivity Impairment-Asthma questionnaire (WPIA); Knowledge, Attitude, and Self Efficacy Asthma Questionnaire (KASE-AQ); Asthma Control Questionnaire (ACQ); Asthma Quality of Life Questionnaire (AQLQ); Impact of Asthma on Quality of Life Questionnaire (IAQLQ)

Conclusions so far...

- **There is a lack of standardised instruments for measurement of resource use;**
- **Intervention costs – a checklist for estimating intervention costs for people with asthma should be developed;**
- **Outpatient care – there is a need for the separation of scheduled and unscheduled use of resources;**
- **Emergency care – ambulance costs should be included in resource questionnaires;**
- **Inpatient care – there is a need for reporting stays in intensive care;**
- **Medication – it is important to report doses and the duration of treatment.**