



Agency for Healthcare Research and Quality

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Quality improvement for asthma care: The asthma care return-on-investment calculator

**Ginger Smith Carls, M.A.,
Thomson Healthcare (Medstat)**

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Agenda

- What is the Asthma Care Return-on-Investment calculator?
- Background
 - Definitions
 - Key issues
 - How can the calculator help evaluate asthma care programs?
What does it provide?
- How does the calculator work?
- Features of the calculator
- Summary of literature review
- Conclusions
- Resources



What is the Asthma Care ROI Calculator?

■ Purpose

- Help state policy makers and health plans estimate financial returns asthma quality improvement programs

■ Why developed?

- Most studies don't address financial impact, rather clinical and use impacts only
- Clinical or use impacts need to be translated into costs or savings

■ How are estimates generated?

- Combine clinical evidence about impacts on utilization with separate cost data to estimate financial impact





Background: definitions

- Asthma care programs typically follow NAEPP (National Asthma Education and Prevention Program) guidelines
 - Patient education
 - Provider activities

- Financial metrics

$$\text{Return on Investment (ROI)} = \frac{\text{Savings}}{\text{Program Cost}}$$

= \$1 break-even

$$\text{Net Present Value (NPV)} = \text{Savings} - \text{Program Cost}$$

= \$0 break-even

Background: cost vs. quality

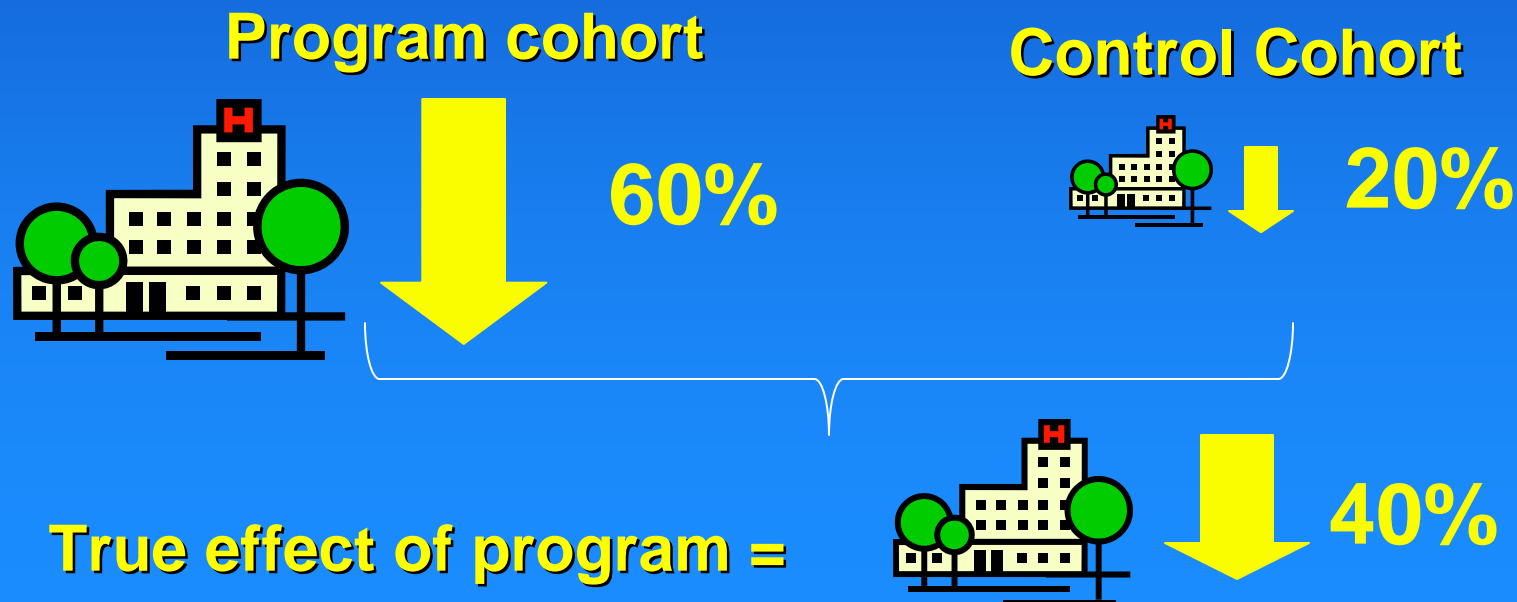
- Programs that improve quality of asthma care may or may not reduce total medical care costs



Background: program evaluation methods

■ Regression to the mean bias

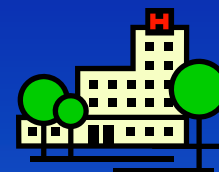
- Sick patients may get better over time, even without the program
- To be successful, a program must “beat” the regression to the mean bias



How does the calculator work?

72,777 participants who average

0.25 ED visits per year



18,194 annual visits to ER

Asthma program



30%



5,458 visits to ER saved

Each visit costs **\$88**



\$480,304 saved

Repeat for each component asthma-related costs

Compare change in medical care expenditures with program cost

How does the calculator work?

Cost components

- Asthma-related medical care
 - Emergency department visits
 - Hospital stays
 - Outpatient visits
 - Medications
 - Ancillary testing
- Productivity
 - Missed school or work days



Data sources

1. Population demographics

- Medicaid (CMS 2003)
- Employer sponsored health insurance (CPS 2003-2005)
 - State employees (BLS 2003-2005)

2. Large, nationwide, medical claims database (MarketScan™)

- Prevalence rates
- Utilization and costs for asthma patients

3. Literature review (52 studies)

- Impact of asthma care programs
- Cost to implement asthma care programs

4. You!

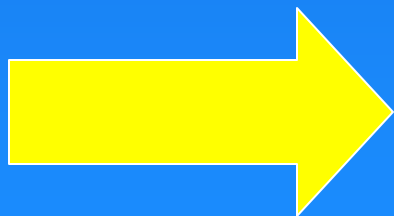
- Virtually all data used by the model can be changed by the user

Calculator features

- **Ability to examine how the following factors may change financial impact of program**
 - Who is included in the program
 - Children, adults, or both
 - All asthma patients, or only those with persistent asthma
 - Medicaid, employer-sponsored insurance, or state employees
 - What benefits are counted?
 - Only medical care savings or also include productivity gains?
 - Length of the program
 - Cost to implement the program
- **Options to describe benefits and costs from a third-party payer or society perspective.**

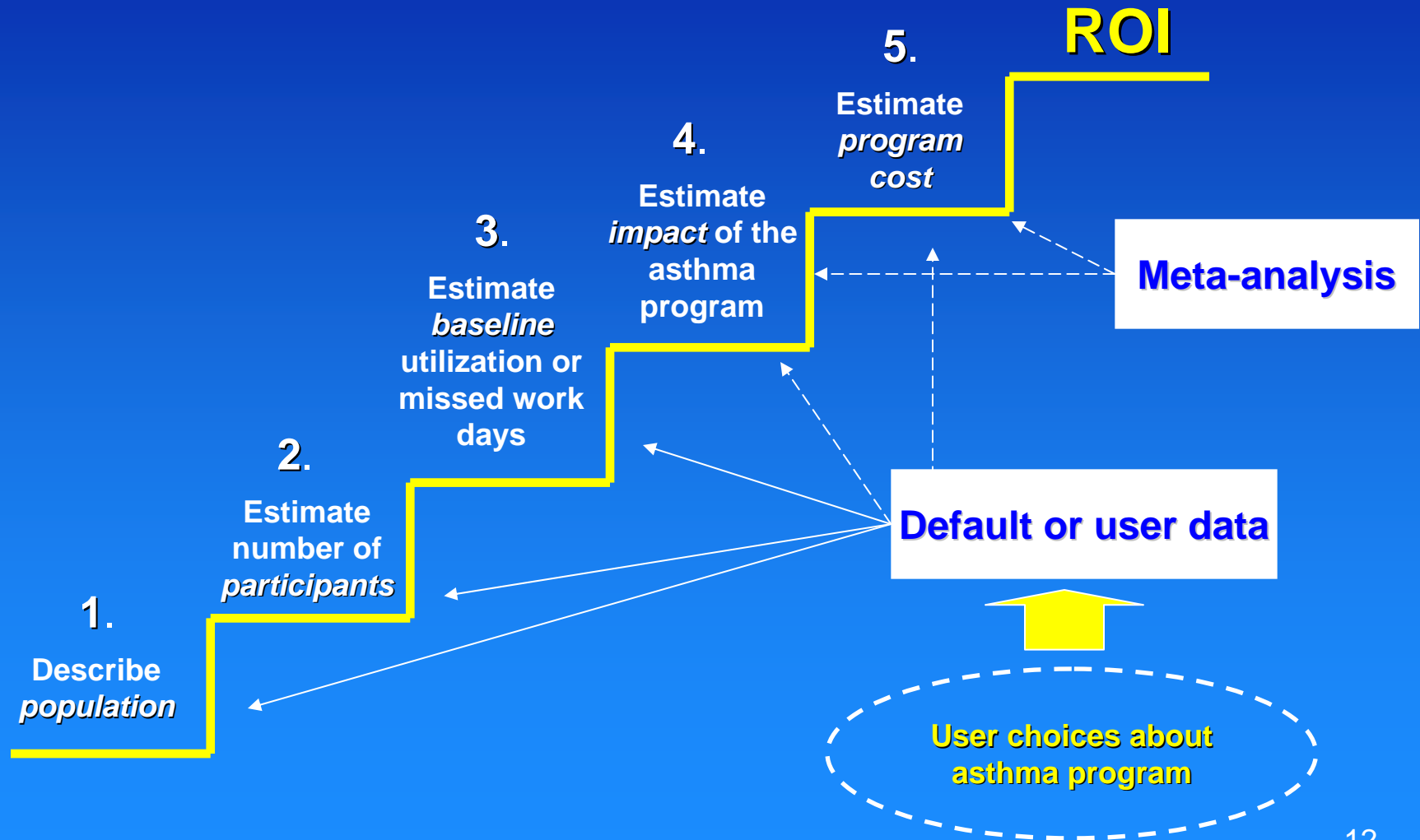
Calculator features

- Ability to choose the research design to use in estimating savings
 - Studies without a control group
 - Use as a benchmark for preliminary results
 - Studies with a control group
 - shows expected **true savings**
 - Comparisons between study designs can be used to assess magnitude of regression to the mean bias



Use calculator in planning, monitoring and/or evaluative phases of an asthma care program

Steps in the ROI calculator



Results from the literature review

Savings more likely for some populations than others, depending on the component of care. For example:

- Interventions on people with **persistent asthma** (versus all asthma) had:
 - Higher savings on ED visits and outpatient visits
 - Similar savings on missed work/school days
 - Lower savings on hospitalizations
 - Smaller increases in medication costs (so higher savings)

Results from the literature review

- Interventions on **Medicaid** populations (versus other coverage) had:
 - Higher savings on hospitalizations, outpatient visits, missed work/school days
 - Lower savings on ED visits
- Interventions on **children** (versus adults) had:
 - Higher savings on outpatient visits and asthma medications
 - Lower savings on ED visits, hospitalizations, and missed work/school days
- **Controlled studies** showed lower savings than non-controlled studies



Results from literature

- Few studies reported **program cost**; those that did reported a wide range (7 studies)
 - Average of \$395 dollars per patient per year
 - Low of \$81 for automated educational mailing to general populations
 - High of \$989 per year, targeted to highest cost patients



Results from literature

- Few studies reported the impact on **asthma medication** use (10 studies)
 - Studies **without a control group** reported larger increases in medication costs
 - Studies **with a control group** reported smaller increases in medication costs
 - **Baseline** asthma medication costs varied a great deal, suggesting different cost and utilization settings
 - Recent increase in use of drug formularies and availability of generics may result in lower increases in medication cost than reported by some of the older studies included in our review



Conclusions

What kinds of programs are more likely to find savings?

Programs that...

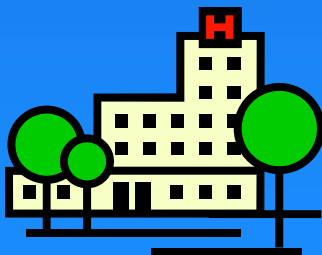
- Target patients who use the **emergency department and hospital** for asthma care
- Target **children**
- Target **Medicaid** program



Conclusions

What are the key drivers of ROI?

- Decrease in costs due to hospitalizations
- Increase in medication use
- Cost to implement the program



Conclusions

What can the asthma care calculator do?

- Help plan, monitor and evaluate **financial** impact of asthma care programs
- Summarizes published evidence on financial impact of asthma care programs





Resources

- Breakout sessions
 - Policy implications
 - Hands-on-Training
- Handouts
 - Screen shots example
- Detailed report available on request
 - Documents methods, definitions used for the default baseline data
 - List of studies included in the literature review
- Send questions, suggestions and stories about the use of the calculator to:
Ginger Carls (Ginger.Carls@thomson.com) or
Rosanna Coffey (Rosanna.Coffey@thomson.com)