EPA Science Forum 2004

Healthy Communities and Ecosystems

Valuation of Reduced Asthma Morbidity

Objectives

- Identify averting and/or mitigating actions and their determinants
- Compare stated preference with revealed preference methodologies to estimate willingness to pay for reduction in asthma morbidity

Methods

- Household health production survey
- Stated preference survey
- Households with asthmatic children ages 5-18 years old in Fresno, CA

Results

- Averting and mitigating actions

  Common household behavior to avoid and decrease severity of asthma symptoms included: reduction of triggers (for example, purchases of allergy barriers for mattresses, air filters, dehumidifiers), reduced activity, and use of daily and emergency medications. Many of the adaptive behaviors do not have an associated market price but do have implications for quality of life.

  - 50% changed daily activities to reduce triggers
  - 23% of households changed dwelling

- Averting and mitigating demand determinants

  In summary, families' averting and mitigating decisions are a complex optimization of multiple objectives.

  In addition to price, participants reported other aspects that were critical to the decision to take an action including: subjective risk assessment of triggers, subjective assessment of effectiveness of action, subjective risk assessment of medications, trade-off between prevention of symptoms and sense of normal childhood, and sense of self-efficacy in controlling asthma. Furthermore, there were substantial differences in subjective perceptions of asthma risks and clinical observations.

Constraints in common were limited budget, lack of control over dwelling, access to healthcare providers, and inability to perfectly monitor children. These constraints affect both demand and supply.

- Comparison of valuation methodologies

Averting and mitigating actions are complex processes

The chronic and episodic aspect of asthma creates potential measurement errors in expenditures. Observed investments in health capture only a portion of those investments families would make if the supply existed. The observed price of averting and mitigating actions underestimate their true costs, because the actions themselves have quality of life costs.

Thus a household health production model may be more suitable for comparison of instruments to reduce morbidity than for estimates of willingness to pay for reduction in asthma morbidity.

Contingent valuation scenario

Crucial elements of the validity of the CV scenario are the existence of pre-existing actions, socio-cultural perspective of the scenario (e.g. beliefs about or stigma from use of medications), and respondents perception of possible health states.

Implications for Policy

- EPA's outreach and education programs

  A model of averting and mitigating behavior can help to explain adherence to asthma management and the empirically observed disparities in morbidity. These results can be used to target asthma intervention programs effectively.

- EPA's cost-benefit analyses of air quality standards

  Estimates of WTP for reduced asthma morbidity can be used for cost-benefit analysis of regulation. Preliminary results indicate:

  - WTP estimates from health production function could underestimate the true WTP for reduced morbidity.
  - Contingent valuation WTP estimates will be biased if the CV scenario itself has unobserved costs to families.