

2 Methods

2.1 Delphi survey

Pilot test

The initial questionnaire was designed as a web-based one and pilot-tested by five respondents prior to the commencement of the study. Minor changes to the wording of the participant information statement and questionnaire were made to ensure clarity. The web-based format was also adjusted to ensure simplicity and completion.

Ethics

Approval was sought and given by the University of Sydney Human Research Ethics Committee on 30 July 2008 (Ref No. 11003).

Sample

A list of potential participants was identified at a national level by investigators, based on all of the following selection criteria:

- 1) Currently practicing respiratory physician, paediatrician, general practitioner, asthma researcher, epidemiologist, asthma educator, policy maker, or representative from health departments or relevant interest groups
- 2) Highly knowledgeable about some aspects of asthma and data monitoring in Australia
- 3) Interest in monitoring the status of asthma in Australia using indicators.

ACAM employees and members of the project steering committee were excluded from participation in this project.

Recruitment

Potential participants were contacted and invited to participate by email. They received a Participant Information Statement with an explanation of the Delphi survey purposes and process, and the activities they would be asked to undertake as panellists (including the time it would take, the number of rounds and how the information would be used). Detailed instructions on how to complete the initial questionnaire were also provided.

The identities of the panel members were not revealed to the panellists, and participants were reassured that their responses would be anonymous to the rest of the panel at all times. It was also made clear that their participation was voluntary and they could withdraw at any point without penalty. It was planned to include approximately 20 panellists.

Email addresses were obtained from an existing list of stakeholders held at ACAM. This list of stakeholders has evolved since ACAM's inception in 2002. It contains an extensive list of experts who have worked directly and indirectly with ACAM in a variety of capacities, and is regularly maintained.

Questionnaire

A full copy of the questionnaire is provided in Appendix 1. Briefly, panellists were asked to rate the value of each of the asthma indicators and to identify between five and ten indicators that they recommended for retention. They were also asked to list up to three indicators they considered could be excluded. Panellists were encouraged to provide qualitative explanations for their rankings and selections, although these were optional. Finally, participants were given the opportunity to suggest additional asthma indicators they believed could be important in monitoring the status of asthma in Australia. The same questionnaire was used in the second round of the survey, but no free text was collected.

Survey rounds

The survey was designed to include up to three rounds of testing, although only two were conducted (see below). Those who completed the initial questionnaire were invited to participate in the second round of the survey. In the second round, respondents were given feedback including their own previous responses, pooled results from all respondents and anonymised comments of other participants (see Appendix 2). Participants were asked to consider refining their answers based on this feedback provided.

Data collection

Surveys were administered as web-based questionnaires with communication to the panellists via email. Completed surveys were stored in a password protected database. Participants were given two weeks to complete the initial questionnaire, and three weeks to complete the second questionnaire in an effort to ensure a high retention rate. Non-responders received two follow-up emails as reminders to complete the survey.

2.2 Correlation analysis

We investigated correlations among several of the asthma indicators to identify potential redundancy. In order to investigate correlation among indicators, it is necessary to aggregate the data for the indicator by population characteristics (age group and sex) and geographical characteristics (socioeconomic status and remoteness of the location of residence). Indicators that are not highly correlated with any other indicator offer independent information. On the other hand, highly correlated indicators may indicate redundancy and there may be opportunities to cull one of the indicators from the recommended list. Six of the 24 indicators were able to be aggregated by age group, sex, Socio-Economic Indexes For Areas (SEIFA) (providing an indication of socioeconomic status) and Australian Standard Geographical Classification (providing an indication of remoteness of residence). These were:

- *Ever asthma*, defined as the proportion of ever having doctor diagnosed asthma per 100,000 resident population (data source: National Health Survey)
- *Current asthma*, defined as the proportion of people with current asthma (ever being doctor diagnosed with asthma and still having it) per 100,000 resident population (data source: National Health Survey)
- *Asthma action plans*, defined as the proportion of people with current asthma who had an asthma action plan (data source: National Health Survey)
- *Deaths (all ages and 5 to 34 years)*, defined as deaths with asthma listed as the underlying cause of death (ICD-10 codes J45 and J46) per 100,000 resident population (data source: National Mortality Database)

- *Hospitalisations*, defined as hospital separations with asthma listed as the principal cause (ICD-10-AM codes J45 and J46) per 100,000 resident population (data source: National Hospital Morbidity Database)
- *Hospital patient days*, defined as the number of patient days in hospital due to asthma per 100,000 resident population (data source: National Hospital Morbidity Database).

Data for each of the six indicators were derived from the various data sources used to monitor these indicators on a regular basis, including the National Mortality Database, the National Hospital Morbidity Database and the National Health Survey. Data were aggregated by sex, age group (four levels), SEIFA (five levels) and remoteness (three levels). A correlation matrix was constructed to examine how these indicators were correlated to each other. For the purpose of this analysis, we defined redundancy as >80% shared variance, in other words, a correlation coefficient >0.9.

Additionally, some subpopulation analyses were conducted if the graphical representation of the correlation analysis indicated the possibility of another factor, such as age or sex, having an important effect on the correlation. An investigation of the correlation between the trend in *deaths (all ages)* and *deaths (5 to 34 years)* indicators over time was also conducted.