BEACH – Bettering the Evaluation and Care of Health:

a continuous national study of general practice activity

General practice is recognised as the first port of call for most patients in the Australian healthcare system with GPs performing a gatekeeper role. There are more than 17,000 vocationally registered general practitioners in Australia and about 1,500 registrars currently training[1] or one GP per 974 persons. Almost all of us (82%) attend a GP at least once during any given year. GPs provide by far the majority of the 100 million non-specialist services to the population that are paid by Medicare,[1] at an average rate of 5.4 per person.[2]

In 1998, little was known about the problems managed and treatments provided by general practitioners. Over the previous quarter century only one major study of general practice clinical activity had been undertaken. This was the Australian Morbidity and Treatment Survey (AMTS), conducted in 1990–91.[3]

The methods applied in the AMTS and those used in Bettering the Evaluation and Care of Health (BEACH) program are similar, though BEACH collects more detailed information about pharmacological management, and tests and investigations ordered or undertaken. The methods were developed over two decades, in the Department of General Practice at the University of Sydney and were continued by the Family Medicine Research Centre (FMRC) when it was formed in the nineties.

In 1997 the Australian Institute of Health and Welfare (AIHW), recognised the need to include in their reports of the health of the community, data about what happens in general practice. As the FMRC was recognised for its work in this area, the AIHW and the University of Sydney formed the GP Statistics and Classification Unit (GPSCU) as a collaborating unit of the Institute. Its duties are to fill the (then) void in data pertaining to general practice and to continue to develop and promote classifications in primary care.

The Director of the Centre is A/Professor Helena Britt, and the Medical Director is Dr Graeme Miller. BEACH is managed by a multi-disciplinary team including graduates and post-graduates of medicine (general practice), epidemiology, statistics, psychology, health information management and information technology.

The BEACH program, a continuous study of general practice activity, began in April 1998 and is now in its sixth year. It fills the first of the GPSCU's objectives. BEACH is endorsed by the Royal Australian College of General Practitioners (RACGP) and the Australian Medical Association (AMA).

BEACH aims:

- to provide a reliable and valid data collection process for general practice which is responsive to the ever-changing needs of information users;
- to establish an ongoing database of GP–patient encounter information; and
- to assess patient risk factors and health states and the relationship these factors have with health service activity.

Funding

The BEACH program is currently funded by:

- the Commonwealth Department of Health & Ageing;
- AstraZeneca (Australia);
- Roche Products Pty Ltd;
- Janssen-Cilag Pty Ltd; and
- Merck Sharp & Dohme (Australia) Pty Ltd.

Management

The program is overseen by the BEACH Advisory Board which is made up of representatives of the GPSCU and the AIHW, a representative of each of the funding organisations, and of the RACGP, the AMA, the Australian Divisions of General Practice, the Australian College of Rural and Remote Medicine and the Consumers Health Forum.

The activities of the GPSCU are overseen by a Management Committee made up of two representatives of the University of Sydney and two representatives from the AIHW, with an independent Chair (currently Emeritus Professor Charles Bridges-Webb).

BEACH methods

In any year, each of a random sample of approximately 1,000 GPs completes details about 100 consecutive patient encounters on structured paper encounter forms and provides information about themselves and their practice. The source population includes all GPs who claimed a minimum of 375 general practice A1 Medicare items in the most recently available 3-month Health Insurance Commission data period. This equates with 1,500 Medicare claims a year and ensures inclusion of the majority of part-time GPs while excluding those who are not in private practice but claim for a few consultations a year. The General Practice Branch of the Commonwealth Department of Health and Ageing draws a sample on a regular basis. GPs are rewarded

for participation by provision of Quality Assurance points required for their professional recognition.

The characteristics of the final sample of GPs are compared with those of GPs who decline to participate, and with those of the source population. Post-stratification weighting adjusts for a consistent under-representation of young GPs, the majority of whom are registrars who are not required to follow the quality assurance program. Weights are also applied to each GP's 100 encounters according to how 'busy' they were in the previous quarter and statistical techniques adjust for the cluster effect of the sampling design.

BEACH includes three interrelated data collections: encounter data, GP characteristics, and patient health status.

Encounter data

- Patient data include: date of birth, sex and postcode of residence. Tick boxes are provided for status as health care card holder, Veterans' Affairs card holder, non-English-speaking background, an Aboriginal person (self-identification) and Torres Strait Islander (self-identification). Space is provided for up to three patient reasons for encounter.

- Encounter data include: date of consultation, type of consultation (direct, indirect), Medicare/Veterans' Affairs item number (where applicable), specified other payment source.

- Morbidity data: at each encounter the GP can record up to four diagnoses/problems managed and their status to the patient (new/old)

- Pharmacological management of each problem includes medications prescribed, over-the-counter medications advised and other medications supplied by the GP. Details comprise brand name, form (where required), strength, regimen, status (new medication for this problem, this patient) and number of repeats.

- Non-pharmacological management of each problem includes counselling, procedures, new referrals, and pathology and imaging ordered.

GP characteristics

- Data elements include age and sex, years in general practice, number of GP sessions worked per week, number of GPs working in the practice (to generate a measure of practice size), postcode of major practice address (to provide state and rural/metropolitan classification), country of graduation, postgraduate general practice training and RACGP Fellowship status.

Supplementary analysis of nominated data (SAND)

Many sub-sample studies are conducted throughout each year. These cover a wide range of topics and usually rely on the GP asking the patient and using their own knowledge of the patient to complete questions relating to the prevalence or incidence of a selected disease, current management and (sometimes) some previous history. Several investigate the extent of vaccine coverage for, or the incidence of, selected infectious disease.

These sub-studies do not depend on what is, or is not, managed at the current encounter as the data are patient rather than encounter based. Sample size is usually about 3,000 patients. These subjects are summarised in abstract form and published on the web at the time the annual BEACH report is released (in early December each year). The reports are available from: http://www.fmrc.org.au/publications/ (BEACH – SAND Abstracts)

BEACH is the result of over 20 years methodological work undertaken in the Department of General Practice (and later the FMRC) since 1978. The validity and reliability of each step in the process has been tested over the years. The reliability of the methods is further demonstrated by the consistency of results over the first five years of the program, for areas in which you would not expect change, together with the ability of the process to identify changes where they would be anticipated (e.g. when a new medication is released on the Pharmaceutical Benefits Scheme).

Data are currently available regarding 512,100 encounters from 5,121 GPs. These include data on the management of 743,625 problems. Problems are classified according to the International Classification of Primary Care–2nd edition (ICPC–2), a product of the World Organization of Family Doctors (Wonca).[4] The ICPC is used in over 45 countries as the standard for data classification in primary care.

The ICPC has a bi-axial structure, with 17 chapters on one axis (each with an alphabetic code) and seven components on the other (numeric codes). Chapters are based on body systems, with additional chapters for psychological and social problems. Component 1 includes symptoms and complaints. Component 7 covers diagnoses. These are independent in each chapter and both can be used for patient reasons for encounter (the subjective reasons given by the patient for the visit) or for problems managed (as described by the GP).

Components 2 to 6 cover the process of care and are common throughout all chapters. The processes of care, including referrals, non-pharmacological treatments and orders for pathology and imaging, are classified in these process components of ICPC–2.

Component 2 (diagnostic screening and prevention) is also often applied in describing the problem managed (e.g. immunisation, check-up).

In Component 7, there are five sub-groups of diseases, one of which is infections. Infections account for 15.1 per cent of all problems managed in general

practice, being managed at a rate of more than 20 infections per 100 encounters. This extrapolates to about 20 million contacts with infectious diseases in general practice across the country per year. GPs manage a broad range of infectious diseases. The most commonly managed are:

- upper respiratory tract infection (managed at a rate of 6.2 contacts per 100 encounters, extrapolated estimate 6.2 million consultations p.a. in general practice in Australia);
- acute bronchitis/bronchiolitis (2.7 contacts per 100 encounters, estimated 2.7 million consultations p.a.);
- urinary respiratory tract infection (1.6 contacts per 100 encounters, extrapolated 1.6 million consultations p.a.);
- unspecified viral illness (1.5 contacts per 100 encounters or 1.5 million consultations p.a.);
- acute sinusitis (1.4 contacts per 100 encounters, 1.4 million consultations p.a.);
- acute otitis media (1.3 contacts per 100 encounters, 1.3 million consultations p.a.);
- gastroenteritis, presumed infectious (1.1 contacts per 100 encounters or 1.1 million consultations p.a.).

Infectious diseases less frequently managed in general practice include:

- pelvic inflammatory disease (managed at a rate of 67.7 contacts per 100,000 encounters) 67,700 consultations per year;
- Ross River virus infection (19.3 contacts per 100,000 encounters) 19,300 consultations per year;
- tuberculosis (12.0 contacts per 100,000 encounters) 12,000 consultations per year;

and vaccine preventable diseases such as:

- chickenpox (160.7 contacts per 100,000 encounters) 160,700 consultations per year;
- hepatitis C (119.0 contacts per 100,000 encounters) 119,000 consultations per year;
- whooping cough (27.0 contacts per 100,000 encounters) 27,000 consultations per year nationally.

Data are also available regarding immunisations and vaccinations given by GPs, including childhood immunisations, influenza vaccines, malaria prophylaxis and others.

The BEACH encounter data cannot be used to estimate incidence as the encounters include both new cases and follow-up consultations for a problem. They also cannot be used to estimate prevalence of disease as patients may have multiple encounters involving the management of the problem. What they do provide is an estimate of the proportion of the general practice clinical workload taken up by a specific morbidity, and detailed data pertaining to the management of any selected problem dealt with by GPs.

However, the SAND sub-studies can often provide an estimate of incidence or prevalence (depending on the topic under study) within the patients who attend general practice.

The results of the BEACH program are published annually by the AIHW-University of Sydney. These, and other more specific reports are available through AusInfo or can be downloaded from the AIHW website – www.fmrc.org.au/publications (go to Books-General Practice Serries and select the book you want).

There are many secondary analyses conducted on the BEACH data, for researchers, government and industry. The GPSCU is not funded to provide secondary analytical services so some charges have to be made. These vary from full commercial rates to academic rates. Please contact A/Professor Helena Britt to discuss possible secondary analysis of a specific topic.

Further information

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References

1. Commonwealth Department of Health and Aged Care. General practice in Australia: 2000. Canberra: Department of Health and Aged Care, 2000.

2. Australian Institute of Health and Welfare. Australia's health 2000: the seventh biennial health report of the Australian Institute of Health and Welfare. Canberra: Australian Institute of Health and Welfare, 2000.

3. Bridges-Webb C, Britt H, Miles DA, Neary S, Charles J, Traynor V. Morbidity and treatment in general practice in Australia 1990–1991. *Med J Aust* 1992;157 Suppl:S1–S56.

4. Classification Committee of the World Organization of Family Doctors (WICC). ICPC–2: International Classification of Primary Care. 2 ed. Oxford: Oxford University Press, 1998.