BEACH program update

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Background

The Bettering the Evaluation and Care of Health (BEACH) program, a continuous national study of general practice clinical activity, is now in its 18th year. In March 2015 the database included details of almost 1.7 million encounters from 16,639 participants, representing about 10,300 individual general practitioners (GPs).

Objectives

This paper summarises the BEACH methods, the uses to which the data supplied by participating GPs are put and the many publications resulting from the program, with an indication of how these can be accessed by readers.

Discussion

BEACH is the only continuous nationally representative study of general practice in the world that provides direct linkage of GP management actions to the problem being managed. This paper provides the reference point for the coming series of more specific articles associated with the theme of each edition of *Australian Family Physician*.

General practitioners (GPs) are the gatekeepers to our healthcare system and provide the majority of health services to the estimated 23.3 million residents in Australia.[1] In 2013–14, government expenditure on general practice (including practice nurse) services was $6.4 billion.[2]

In April 2013 to March 2014 about 85% of the population had one or more Medicare-paid GP service (personal communication, Department of Health [DoH], August 2014) and an average of 6.8 services each (5.8 GP visits per head of population). Medicare paid rebates for about 133.4 million GP service items[3] – 2.57 million GP–patient encounters per week.

Medicare statistics provide information about frequency and cost of claimed GP visits. The Pharmaceutical Benefits Scheme (PBS) provides information about government-subsidised prescriptions filled, but not what problems the medications were prescribed for. By contrast, the Bettering the Evaluation and Care of Health (BEACH) program tells us about the content of GP–patient consultations, the problems GPs managed and the treatments they provide for each problem.

BEACH, a continuous, cross-sectional national study, began in April 1998 and is now in its 18th year. In March 2015 the database included details of almost 1.7 million encounters from 16,639 participants, representing about 10,300 individual GPs. The participating GPs receive audit points towards their continuing professional development program and an individual can be selected and approached only once in each program triennium.

The aims of the BEACH program are to:
- provide a reliable and valid data collection process for general practice that is responsive to the ever-changing needs of information users, and provides insight into the evolving character of GP–patient encounters in Australia
- assess patient risk factors and health states, and the relationship between these factors and health service activity.[4]

Methods

Detailed methods are published elsewhere.[4] In summary, each year approximately 1000 randomly sampled, recognised GPs (including registrars) answer a questionnaire about themselves and their practice, and each records on structured paper recording forms the content of 100 consecutive GP–patient encounters with consenting patients. Details collected include encounter type, patient demographics and their reason(s) for encounter (RFEs), problems managed (up to 4) and, for each problem, medications (prescribed, advised, and supplied), clinical treatments and procedures, pathology and imaging ordered, and new referrals made.

Data collection is evenly distributed across 50 weeks, with 2 weeks closure over Christmas.

GPs eligible for random sampling from Medicare claims data are those who claimed at least 375 GP Medicare items of service in the previous quarter (to ensure recent active practice). Samples are regularly drawn by the Australian Government Department of Health. Each year about 33% of contactable GPs agree to participate, of whom about 80% complete.

We use statistical weights to adjust for any difference (no matter how small) between the age–sex distribution of the final sample and that of all GPs in the sample frame, and for the activity level of each participant according to their number of Medicare claims in the previous year. The age–sex distribution of patients at BEACH-sampled encounters for which a Medicare item was claimed is repeatedly shown to accurately represent the age–sex distribution of patients at all consultations claimed from Medicare.[4]

All RFEs, problems managed, clinical and procedural treatments, referrals and investigations are classified by trained coders according to the International Classification of Primary Care, Version 2 (ICPC-2).[5] Pharmaceuticals are classified to the Anatomical Therapeutic Chemical (ATC) Classification (World Health Organization).[6]

Throughout the program, we conduct a series of Supplementary Analyses of Nominated Data (SAND) sub-studies. In these patient-based studies, the GP acts as an 'expert interviewer' to answer, in discussion with the patient, specific questions about aspects of the patient's health.

Statistical methods

BEACH has a single-stage cluster sample study design, the GP being the sampling unit. The patients and encounters (the subject of interest) form a 'cluster' around each participating GP. Each GP attracts a particular patient mix, so there are always some similarities within the sampled cluster. We use statistical procedures in SAS version 9.4[7] to calculate and adjust for the intracluster correlation created by these similarities.

Confidentiality

The privacy of both the GP and the patient is ensured. Returned, completed research packs are only identified by a GP participant number, and this identifier then remains throughout the program. We only link back to the GP name and address in order to send each GP an individual report of their results, which are compared with the national average and with results of nine other unidentified GPs who participated at the same time. The age group, sex, and rurality of the nine comparator GPs are provided to facilitate comparison of results by the individual GPs. Names of participants are never released and data are always grouped in analysed reports. We have no identifying information for individual patients and data are never released with birth dates or residential postcodes.

Ethics approval

The BEACH program and SAND sub-studies are approved by the Human Research Ethics Committee of the University of Sydney (ethics protocol Ref. No. 11428, valid until 31 March 2018).

Discussion

The reliability of BEACH is clearly demonstrated by the consistency of results over time where no change is anticipated, and the measured change in practice found where it is expected as a result of changes in policy and guidelines, new evidence or a new pharmacological product.

Many GPs ask why we do not extract these data from their electronic health records (EHRs). In 2013–14, BEACH estimated 96% of practising GPs used a computer for some clinical purpose, but many for selected purposes only (eg prescribing, pathology ordering). Further, the major advantage of BEACH over other GP studies is the linkage of all management actions to the problem being managed, a structure built into the recording form. Yet most EHRs lack a problem-oriented structure that enforces this linkage. There are also no standards for data field names and definitions, terminologies and classifications,[8] so drawing reliable data from multiple EHR systems is fraught with difficulties.[9]

Dissemination of results

BEACH allows us to measure changes over time. A recent publication[10] showed that, compared with 2004–05, in 2013–14:

- The average length of claimable consultations was almost a minute longer so, nationally, GPs spent an extra 10 million hours in face-to-face clinical time.
- The number of problems managed at consultations had increased, so GPs managed an additional 68 million health problems at encounters across the country.
- Management of these problems involved 10 million more procedures and 12 million more clinical treatments, such as counselling and advice.

There have been 37 BEACH books published, all available for free electronic download or hard copy purchase. Each year we publish two books, one describing GP clinical activity in the most recent year,[4] and another that identifies changes over the previous decade in GPs, their practices and their clinical work, and provides comparative results for each year.[11]

There are also some special reports investigating differences in practice by rurality[12] and by state/territory,[13] which could well be repeated since they are over a decade old, but the limited funding available for BEACH precludes preparation of reports on many topics of interest, including these. More recent special reports include changes in practice after policy changes in national health priority areas[14] and reports on pathology[15] and imaging ordering[16] in comparison with guidelines.

Reflecting the great breadth of general practice, we have published on a wide

range of topics, (refer to 'Publications' on our website). Many readers will have seen the brief BEACH articles reflecting the theme of each edition of *Australian Family Physician* since July 2003. Some current SAND sub-studies follow earlier BEACH work, including prevalence of chronic diseases[17,18] and multimorbidity,[19,20] and patient adverse drug events in the previous 6 months.[21,22] Other published topics include (among many) future workforce needs,[23] management of type 2 diabetes[24] and low back pain,[25] and patient home glucose monitoring.[26]

We also use the BEACH data to comment on policy matters. For example, when general practice was being constantly referred to in the media as '6-minute medicine', we showed clearly from BEACH that although consultations of 6 minutes or less accounted for 10% of all timed consultations they only used 3.3% of GP face-to-face clinical time.

Using BEACH data, we also recently contributed to the debate on the Medicare Benefits Schedule (MBS) freeze and proposed patient co-payments.[27] We estimated the likely additional patient costs that co-payments would generate and showed they would be higher than suggested in the media. We have critiqued published papers describing 'what GPs do' based on analyses of Medicare or PBS claims data, and have shown some published conclusions to be incorrect on the basis of what BEACH tells us about the measured behaviour. These 'Bytes from BEACH', can be accessed at http://sydney.edu.au/medicine/fmrc/beach/bytes/index.php. Abstracts for all SAND sub-studies can also be accessed online (http://sydney.edu.au/medicine/fmrc/publications/sand-abstracts/keyword-list.php).

We provide reports on specific topics in response to requests from professional bodies, pharmaceutical companies (particularly to inform their applications for PBS listing), health economists, educators, postgraduate research students and other researchers. Government committees request

analyses to feed into PBS medication reviews, quality use of pathology and imaging programs, Medicare item reviews and planning, Aboriginal and Torres Strait Islander health reports and many other areas. State governments seek information on geographic areas of health concern.

A limitation of BEACH is its cross-sectional nature, which does not provide an understanding of the longitudinal outcomes of patient care. However, it remains the only continuous, randomised study of general practice activity in the world, and the only national program that provides direct linkage of all management actions to the problem. It fills many people from other countries with envy because in Australia we can describe the activities of GPs, define their ever-changing contribution to healthcare, draw attention to areas that could be improved and provide an understanding of the health status and needs of the vast majority of the community who rely so much on GPs' care.

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Competing interests: Helena Britt and Graeme Miller have received a competitive grant from DoH and have research agreements with multiple organisations, including AstraZeneca, the Department of Veterans' Affairs, bioCSL, Abbivie, Novartis and others. All research agreements are at 'arms length', with no external control on research
or publications.

Provenance and peer review: Commissioned, externally peer reviewed.

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