

THE ADVANTAGES OF A DAME DATABASE

Dr Dave Baldwin

ABSTRACT

Dr Dave Baldwin is a longstanding DAME/AME in New Zealand. He has up to 1800 pilots registered with the Bulls Flying Doctor Service, and has developed a Personal Pilot Medical Database which provides a simple and effective query builder to allow the review of pilot demographics and disease profiles of the pilots registered with his service. A database of this kind has many advantages for DAMEs and for pilots and is a great resource for aviation medicine research.

BACKGROUND

Dr Dave Baldwin is a longstanding DAME/AME in New Zealand. His core training is General Practice and Family Medicine, and he practices in the small town of Bulls, located in the lower half of the North Island of New Zealand and situated next door to RNZAF Base Ohakea. He works half time as one of five doctors at the Bulls Medical Centre, a semi-rural General Practice where the workload includes routine family medicine, screening and preventative health, minor surgery (such as vasectomies), and some accident and emergency work. Bulls Medical Centre has been fully computerized for many years, using the MedTech™ practice-management package. In addition to information related to appointments and finances, Medtech™ can easily provide a clinician with data that describes the practice's patient demographics, disease prevalence, and an overview of screening and health promotion programmes.

In addition to working in general practice, Dr Baldwin works half time in aviation medicine. Bulls Flying Doctor Service is based at Palmerston North Airport, and is located in a purpose-built aviation medicine centre which has consulting rooms and classroom facilities (for teaching Massey University Students in aviation medicine, and for various conferences), as well as an administration area and hangar space for its two aircraft: a Cessna XP2 HAWK and a helicopter. These aircraft have been equipped to accommodate all the specialist medical equipment required for an aviation medicine examination.

The Bulls Flying Doctor Service performs aviation medical examinations for approximately 1700 pilots, 30% of which have their medical examinations performed at the Palmerston North Airport Aviation Medical Centre. In addition, the Bulls Flying Doctor Service provides a fly-in aviation medicine service to the remaining 70% of pilots on its register. These pilots have their aviation medicals performed at outreach clinics located at regional and rural airports spread across two thirds of New Zealand. These outreach clinics are visited on a regular monthly schedule.

The outreach clinics give the Bulls Flying Doctor Service the opportunity to “live the dream” – get out of the surgery, do mountain flying, and practice aviation medicine in one of the of the most beautiful places in the world.

Unfortunately, in contrast to the fully computerised practice at the Bulls Medical Centre, the Bulls Flying Doctor Service had no way to track client demographics or disease prevalence. However, Dr Baldwin has now developed a DAME-specific database that provides the Bulls Flying Doctor Service with the benefits he sees in his general practice.

Authors Details

Dr Dave Baldwin
PO Box 4694 Palmerston North
New Zealand

Correspondence

dave@flyingdoctor.co.nz

THE DATABASE

The database is based on Borland Delphi™, a relatively simple software package that can be set up to store demographic data, disease information, and flight details for each pilot. It is cheap to set up, and doesn't need expensive licences and upgrades like larger practice management programs. Figure 1 shows the initial screen.

Figure 1

For each pilot, the database records the ARN or CAA number, basic demographic data (gender and date of birth), basic aviation data (type of flying, class of licence), and disease codes. The bottom of the screen displays real-time summary statistics: total number pilots, average age, gender mix, total flight hours, and average flight time over the last six months.

The disease codes used in the database have been generated by the author. They are intended to identify clients with specific conditions, in order for the clinician to get the casenotes and read through the relevant clinical entries. As such, the disease codes used in this database are not as specific as those used by other clinical management software packages. For example, Figure 2 shows “dyslipidaemia” is segregated into “treated” and “non treated” groups. However, the disease codes are flexible – the DAME can easily add, delete, or modify disease categories as they wish. One drawback to this flexibility in disease coding is that there may be difficulty sharing or comparing datasets between different aviation medical practitioners.

Figure 2

The database has very simple but effective sort and search functions. Sorting is done by clicking the heading buttons for each column. Figure 3 shows the data sorted by ascending date of birth.

The Advantages of a DAME Database

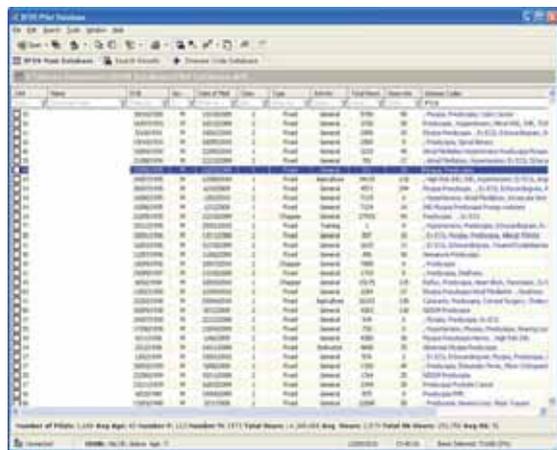


Figure 3

Searching for relevant demographic or disease information is easily performed by entering the search term in the window at the top of each column and clicking the search icon as in Figure 4.

in New Zealand, spread across approximately two-thirds of the country. As a result, the database that he has created could provide significant insight into the demographic profile and health of New Zealand's pilots. He intends to undertake a structured review of the clinical and demographic data he has collected in order to better understand the health of his pilots. He would be interested in undertaking collaborative research with other aviation medicine specialists who would be interested in determining the extent to which the dataset he has collected could further our appreciation and understanding of the health of pilots in general, and clinical aviation medicine more broadly.

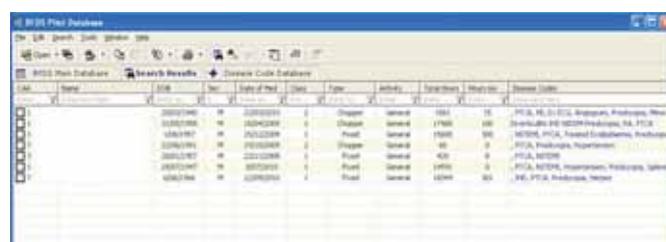


Figure 4

THE ADVANTAGES OF PILOT DATABASES.

The author considers that using a database to capture relevant demographic and clinical information for his pilots brings significant advantages, not only to his clinical practice, but also to the service he is able to provide his pilots as well as the potential to create a dataset for aviation medicine research.

ADVANTAGES FOR THE DAME.

The database provides the DAME with evidence-based insight into their aviation medicine practice, enabling the DAME to obtain an accurate profile of their pilot population: the age distribution, gender mix, and the proportion of pilots who fly fixed- or rotary-wing aircraft. The database also allows the DAME to determine the prevalence of particular diseases in their pilot population, and provides them with an understanding of how many of their pilots have hypertension requiring medication, how many have asthma, and how many require spectacles. Furthermore, the author's experience is that his clinical history and examination has become more meticulous since the introduction of the database, due in part to his understanding that the quality of the results he gets out of the database are only as good as the quality of the data he feeds into it. For example, he would record that a pilot has flown 10560 hours (rather than "about 10 000 hours"), and he now records the method of fixation for a pilot who reports a fracture in the previous 12 months.

ADVANTAGES FOR THE PILOT.

Rather than simply performing routine medical examination for pilots to gain medical certification to continue flying, the Bulls Flying Doctor Service provides a "service" to the pilots. The database allows the DAME to provide pilots with ongoing medical advice tailored to their particular demographic or clinical profile. The database makes it easy for a DAME to identify pilots with a particular medical condition, and send them copies of the latest treatment guidelines relevant to their condition.

ADVANTAGES FOR AVIATION MEDICINE RESEARCH

Although New Zealand's population is relatively small – only 4.3 million people – its disease demographics are representative of many other western countries. The author's aviation medicine practice covers approximately 18% of all pilots

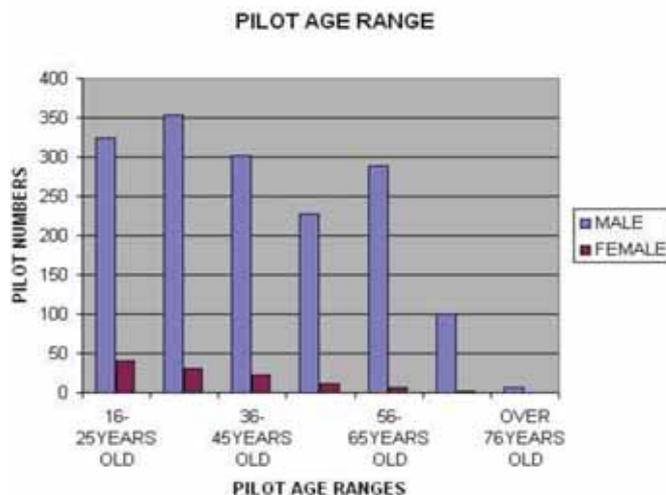


Figure 5