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Performance Audit

Integrity of Medicare Enrolment Data

Health Insurance Commission

Australian National Audit Office

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Australian National
Audit Office

Canberra ACT
27 January 2005

Dear Mr President
Dear Mr Speaker

The Australian National Audit Office has undertaken a performance audit in the Health Insurance Commission in accordance with the authority contained in the *Auditor-General Act 1997*. Pursuant to Senate Standing Order 166 relating to the presentation of documents when the Senate is not sitting, I present the report of this audit and the accompanying brochure. The report is titled *Integrity of Medicare Enrolment Data.*

Following its presentation and receipt, the report will be placed on the Australian National Audit Office's Homepage—http://www.anao.gov.au.

Yours sincerely

P. J. Barrett
Auditor-General

The Honourable the President of the Senate
The Honourable the Speaker of the House of Representatives
Parliament House
Canberra ACT

AUDITING FOR AUSTRALIA

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Abbreviations

ACIR	Australian Childhood Immunisation Register
AIHW	Australian Institute of Health and Welfare
ANAO	Australian National Audit Office
AODR	Australian Organ Donor Register
BD&M	Births, Deaths and Marriages (Registrar of)
CDMS	Consumer Directory Management System
CDQI	Continuous Data Quality Improvement
DB2	Database 2 (see Glossary)
DSD	Defence Signals Directorate
ETL	Extract, Transform, Load (the data migration process developed by HIC)
FODD	Fact of Death Data
FOI	Freedom of Information
HIC	Health Insurance Commission
IBM	International Business Machines
IPP	Information Privacy Principles
IT	Information Technology
MEF	Medicare Enrolment File
OFPC	Office of the Federal Privacy Commissioner
PBS	Pharmaceutical Benefits Scheme
PIN	Personal Identification Number
POI	Proof of Identity
PSM	Protective Security Manual
RACF	Resource Access Control Framework
RDBMS	Relational Database Management System (see Glossary)
RHCA	Reciprocal Health Care Agreement
VSAM	Virtual Storage Access Method (see Glossary)

Glossary

Data integrity

1. The Australian and New Zealand Standard, AS/NZS 7799.2:2003, defines data integrity as:

Safeguarding the accuracy and completeness of information and processing methods.

2. The Webopedia encyclopaedia of computer technology[1], states that data integrity:

Refers to the validity of data. Data integrity can be compromised in a number of ways:

- *human errors when data is entered;*
- *errors that occur when data is transmitted from one computer to another;*
- *software bugs or viruses;*
- *hardware malfunctions, such as disk crashes; and*
- *natural disasters, such as fires and floods.*

3. The USA Wikipedia Internet site suggests data integrity has the following meanings:

- *the condition that exists when data is unchanged from its source and has not been accidentally or maliciously modified, altered or destroyed;*
- *the condition in which data are identically maintained during any operation, such as transfer, storage or retrieval;*
- *the preservation of data for their intended use; and/or*
- *relative to specified operations, the a priori expectation of data quality.*[2]

Drawing on the above definitions, in this audit the term 'data integrity' is used to refer to the accuracy, logical consistency and security of records. Where information is stored in more than one place, the consistency of that information is also important, as well as its 'fitness for purpose'. It is a measure of, and sometimes used synonymously with, 'data quality'.

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1 Most definitions above are based on material sourced from the JupiterWeb network's Internet site: <www.webopedia.com> — an Internet based encyclopaedia, dedicated to computer technology.

2 Sources quoted for these definitions include US Federal Standard 1037C and the National Information Systems Security Glossary (USA).

Data cleansing	Also referred to as data scrubbing, the act of detecting and removing and/or correcting a database's dirty data (i.e., data that is incorrect, out-of-date, redundant, incomplete, or incorrectly formatted). Often, the goal of data cleansing is not just to clean up the data in a database—but also to bring consistency to different sets of data that have been merged from separate databases.
VSAM	***V**irtual **S**torage **A**ccess **M**ethod*. First released by IBM in 1973, VSAM is a file management system used on IBM mainframe computers. Many legacy systems use VSAM to implement database systems.
DB2	***D**ata**b**ase **2***, a set of relational database products offered by IBM. DB2 provides an open database environment that runs on a wide variety of computing platforms. DB2 includes a range of application development and management tools.
Legacy or heritage applications	A legacy or heritage application is one in which a company or organisation has already invested considerable time and/or money. Typically, legacy applications are database management systems running on mainframe computers.
RDBMS	***R**elational **d**ata**b**ase **m**anagement **s**ystem*. This is a type of database management system that stores data in the form of related tables. Relational databases are powerful because they require few assumptions about how data is related or how it will be extracted and used by various applications. An important feature of relational systems is that a single database can be spread across several tables. This differs from flat-file databases, in which each database is self-contained in a single table. VSAM is a flat-file database.

Summary and Recommendations

Summary

1. Medicare is Australia's universal health insurance scheme. Underpinning Medicare is one of Australia's largest and more complex computer databases—the Medicare enrolment database. At the end of 2004, the Medicare enrolment database contained information on over 24 million individuals. This audit examines the quality of data stored on that database and how the Health Insurance Commission (HIC) manages the data.

2. HIC has had responsibility for administering Medicare since its introduction in 1984. It operates a network of over 230 Medicare Offices throughout Australia and, in 2003–04, HIC processed over 226 million Medicare claims, accounting for over $8.6 billion of government expenditure. An essential requirement for the successful administration of Medicare is reliable information on eligible people enrolled in the program. In 1984, HIC established the Medicare Enrolment File (MEF)—a computer database designed to receive, store and manipulate Medicare enrolment data.

3. Now 20 years old, the MEF has difficulty in supporting the range of e-Business initiatives envisaged by HIC. It cannot easily accommodate further enhancement. In 2004, HIC was preparing to replace the MEF with a Consumer Directory—incorporating a more up to date database management system, with improved Internet capability and greater functionality. One of HIC's major projects was the migration of Medicare enrolment data from the MEF to the Consumer Directory. HIC moved the data from the old to the new system in October 2003. However, the new system will not go into operation until 2005. Therefore, the audit was conducted just before the switch from the old MEF to the new Consumer Directory system, but at a time when the old and the new enrolment databases could be compared.

4. The objective of the audit was to examine the integrity of data stored on the Medicare Consumer Directory and to report on HIC's management of this data. In particular, the audit considered the data migration process as well as measures of the accuracy, completeness, validity and consistency of Medicare enrolment data. Data integrity also relies on ensuring the security of the data. The audit assessed whether HIC appropriately managed the data in accordance with legislative requirements—particularly in relation to maintaining the privacy and security of personal information.

Key Findings

Data migration

5. HIC carefully planned its data migration arrangements. The new Consumer Directory Management System (CDMS) is well documented and ANAO considers that it will provide better control over the recording and management of Medicare enrolment information than the old system.

6. As part of its day-to-day administration of the database, and in preparation for the large data migration exercise to come, HIC analysed large amounts of Medicare enrolment data. HIC implemented only some of its own recommendations for specific data cleansing. HIC carried out limited data cleansing prior to the first data migration trial. Consequently, the data migrated to the Consumer Directory in 2004 still exhibited many of the same data quality problems HIC identified in its 2002 analysis.

7. Allied to this, HIC decided not to apply all CDMS business rules during the data migration, thereby foregoing an opportunity to improve the integrity of Medicare enrolment information in the new system. As a result, the quality of data residing in the new Consumer Directory system is only marginally improved on that of the old MEF.

Data integrity testing results

8. ANAO found that the great majority of data contained in the Medicare enrolment database was sufficiently accurate, complete and up to date to support HIC's efficient administration of Medicare. Notwithstanding, we also found that some data, particularly in fields containing various dates, was logically inconsistent or in error. For example, some records indicated that the consumer was enrolled in Medicare before they were born.

9. ANAO found that up to half a million active Medicare enrolment records were probably for people who are deceased. The majority of these records were for people who would be over the age of 85 years, according to the recorded dates of birth in the Medicare enrolment database. This number represented approximately 2 per cent of the Medicare enrolment database and presented a risk, admittedly not significant, to the efficient administration of the Medicare program.

10. HIC allocates a Personal Identification Number (PIN) to each consumer. ANAO confirmed that all PINs in the Consumer Directory were valid and conformed to the required format. We found that a very small number of people appeared to be enrolled in Medicare more than once and that HIC was aware of the problem as well as working to merge the duplicate records.

11. Over 800 000 consumers were legitimately associated with more than one Medicare card—such as a child who is listed on both parents' *different* Medicare cards. Our analysis highlighted some inconsistent recording of data across these records. For example, we found a small number of people had their sex recorded as male on one card and female on the other—or had different dates of birth recorded against the two cards.

12. ANAO found that HIC had developed an automated process to consolidate consumer information for these 800 000 records. The technique took most of the consumer's information from the most recently active of the two records, and built a new, single record for inclusion in the Consumer Directory. ANAO found that, while this may be a sound approach to adopt, given the inconsistent recording of consumer information across the two records, HIC should have more thoroughly reviewed the effectiveness of the technique by manually assessing a sample of consolidated records.

13. HIC's CDMS incorporated an extensive set of business rules, against which ANAO assessed the integrity of Medicare enrolment data. While we considered most of the business rules to be well constructed and valid, we identified some minor deficiencies and reported these to HIC. For example, while a business rule identified a single, very narrow, application of recording an 'individual consumer reference number' of zero, we found that a zero was used to mean three distinct situations. ANAO also found that HIC had decided not to enforce business rules, relating to different Medicare entitlement types and dates, during the data migration.

14. ANAO found that HIC had successfully attempted to ensure the most up to date recording of Medicare consumer addresses. Although the number of known out of date addresses was small—at 1 to 2 per cent of the database—ANAO concluded that the database was sufficiently accurate to support the various business processes that relied on accurate mailing addresses for consumers.

15. The accuracy of dates of birth recorded in the Medicare enrolment database has become more important over time. In 2004, the Australian Government introduced a monetary incentive for doctors to bulk-bill Commonwealth Concession Card holders and children under 16 years of age. ANAO noted that a reliable record of the patient's age will be essential to ensure the correct level of Medicare benefits is paid to doctors in the future. In light of this, ANAO encouraged HIC to review the accuracy of recorded dates of birth.

Improving data quality

16. HIC had steadily improved the quality and integrity of Medicare enrolment information. HIC checked and revised consumer information through such activities as an automated Medicare card replacement program, families registering for the Safety Net scheme, identifying and merging duplicate enrolments and processing information from the State Registrars of Births, Deaths and Marriages.

17. ANAO found that HIC monitored the quality of enrolment data and had recently implemented its Continuous Data Quality Improvement Program. The Program was well conceived, business focused and designed to assist program managers to identify the causes of data quality problems.

Privacy and security

18. ANAO found that HIC's organisational culture incorporated a strong focus on protecting the privacy and security of consumers' personal information. A comprehensive Privacy, Information Access and Release Policy guided HIC staff in the use of consumers' personal information and established a series of robust administrative and procedural controls.

19. ANAO found that, in general, HIC's data collection, management and release practices complied with the Information Privacy Principles of the *Privacy Act 1988* and the secrecy provisions of the *Health Insurance Act 1973*. HIC had also designed and implemented a comprehensive Privacy and Security Training module for all staff, consultants and contractors.

20. ANAO found that the Federal Privacy Commissioner had required HIC to develop a Technical Standards Report, dealing with the physical separation of Medicare and Pharmaceutical Benefit Scheme claims data. HIC was unable to provide a copy of the required Technical Standards Report, although ANAO found evidence to support the view that such a report was developed in 1995.

21. In relation to the security of electronic records, ANAO found that HIC had taken reasonable steps to prevent unauthorised access to Medicare enrolment information, by HIC staff or outsiders. ANAO noted that HIC was improving its management of user access.

22. In 2003, the Defence Signals Directorate certified HIC's Internet Gateway.

Overall audit conclusion

23. As a result of our examination of HIC's data management practices and our analysis of key aspects of the Medicare enrolment database, ANAO concluded that the database is sufficiently complete, accurate and current to support the effective administration of Medicare. ANAO also noted that HIC has a strong culture of protecting the privacy and security of personal information stored on its database.

24. HIC is introducing the most significant change to the structure and form of the Medicare enrolment database in the twenty-year history of Medicare. ANAO noted that HIC had carefully planned its data migration strategy and concluded that the new system would deliver major improvements to the management of enrolment data. However, ANAO also noted that HIC had not comprehensively cleansed the data, nor had it enforced all the business rules for the new environment. ANAO encouraged HIC to complete these activities and so commence the operation of the new Medicare enrolment database with the highest possible quality dataset.

HIC's response

25. HIC provided the following response to the draft audit report.

26. *HIC welcomes the assurance provided by the ANAO's report that the Medicare enrolment database is sufficiently complete, accurate and current to support the effective administration of Medicare and the recognition HIC has a strong culture of protecting the privacy and security of personal information stored on the database.*

27. *In relation to the new Consumer Directory Management System, HIC further appreciates the recognition that HIC has carefully planned its data migration strategy and that the new system would deliver major improvements to the management of enrolment data.*

28. *HIC agrees with the ANAO's recommendations on data cleansing and the enforcement of business rules to achieve the highest possible quality dataset.*

29. In addition, HIC provided a response to each of the recommendations. The relevant responses appear immediately following each recommendation, in the body of the report.

Recommendations

Recommendations 1 and 2 are the most important. Recommendation 6 is also important for HIC to comply with a legislative requirement.

Recommendation No.1 Para 2.18

The ANAO recommends that HIC:

- fully implement the data cleansing recommendations contained in its *Medicare Enrolment Data Field Assessment Report: Recommendations for Data Cleansing*; and
- conduct a contemporary data field assessment to identify any records generated between 2002 and 2004, that require cleansing.

HIC's response: Agrees.

Recommendation No.2 Para 2.28

The ANAO recommends that, prior to the full implementation of the Consumer Directory Management System, HIC:

- reconsider enforcing all CDMS business rules during the data migration; and
- consider the risks of commencing the new system with incorrect data, against the associated costs and benefits of enforcing all business rules before the changeover from the MEF to the Consumer Directory.

HIC's response: Agrees.

Recommendation No.3 Para 3.11

ANAO recommends that HIC:

- produce a report on possible duplicate enrolments, employing the data matching criteria envisaged for use with the Consumer Directory; and
- resolve as many duplicate Medicare enrolments as possible, before the Consumer Directory is fully implemented.

HIC's response: Agrees.

Recommendation No.4 Para 3.20

ANAO recommends that HIC conduct a review of the effectiveness of the 'representative member segment' approach to consolidating Medicare enrolment information, by selecting a representative sample of such records and manually assessing the accuracy and validity of the consolidated records.

HIC's response: Agrees.

Recommendation No.5 Para 4.18

ANAO recommends that, to improve the accuracy of Medicare enrolment records and reduce the business risks associated with maintaining active consumer records relating to people who are deceased, HIC give a high priority to developing and implementing a system to make effective and efficient use of Fact of Death Data in the Consumer Directory.

HIC's response: Agrees.

Recommendation No.6 Para 5.49

ANAO recommends that HIC redevelop a Technical Standards Report, which complies with the requirements of the Privacy Commissioner's Guidelines issued under section 135AA of the *National Health Act 1953*, and lodge it with the Office of the Federal Privacy Commissioner.

HIC's response: Agrees.

Audit Findings and Conclusions

1. Introduction

This Chapter introduces Medicare, and it describes HIC's role in establishing and maintaining a register of those people eligible to receive Medicare benefits. It describes the type of information collected and the data structures employed to store the information in a computer database. The Chapter also provides some background to the conduct of this audit.

Medicare

1.1 Medicare is Australia's universal health insurance scheme. At some point in their lives, all Australian citizens and permanent residents will have something to do with Medicare. Since its introduction on 1 February 1984, the day-to-day operation of the Medicare program has been the responsibility of the HIC.[3]

1.2 HIC operates a network of over 230 Medicare Offices throughout Australia and, in 2003–04, processed over 226 million Medicare claims, accounting for over $8.6 billion of government expenditure.

1.3 A person must be enrolled in the Medicare program before he or she can claim or receive Medicare benefits. Essentially, all Australian citizens, New Zealand citizens and those people holding permanent resident status, residing in Australia, are eligible to enrol in Medicare. [4] The Australian Government has also signed Reciprocal Health Care Agreements (RHCAs) with some other countries. The RHCAs allow visitors from those countries to access necessary health care while in Australia. Appendix 1 provides more detail on eligibility criteria.

1.4 Therefore, an essential requirement for the successful administration of Medicare is a reliable database of information relating to eligible people enrolled in the program. In 1984, at the commencement of the program, HIC established the Medicare Enrolment File (MEF)—a computer database, designed to receive, store and manipulate Medicare enrolment data. Appendix 2 describes the initial enrolment process and highlights some data integrity issues associated with that process.

1.5 Information in the database is used to produce Medicare cards. The plastic Medicare card was chosen as the means of identifying eligible people.

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[3] The Department of Health and Ageing maintains primary responsibility for the administration of the Medicare Benefits Schedule and the provision of policy advice, affecting the scheme, to the Australian Government.

[4] Some applicants for permanent resident status may also be eligible as are persons covered under a Ministerial Order.

A Medicare card may contain the name of one individual or include other members of a family or group. As well as identifying those named as eligible for benefits, the cards also serve as a mechanism to facilitate the lodging and processing of claims for Medicare benefits—either by medical service providers or the Medicare card holders.

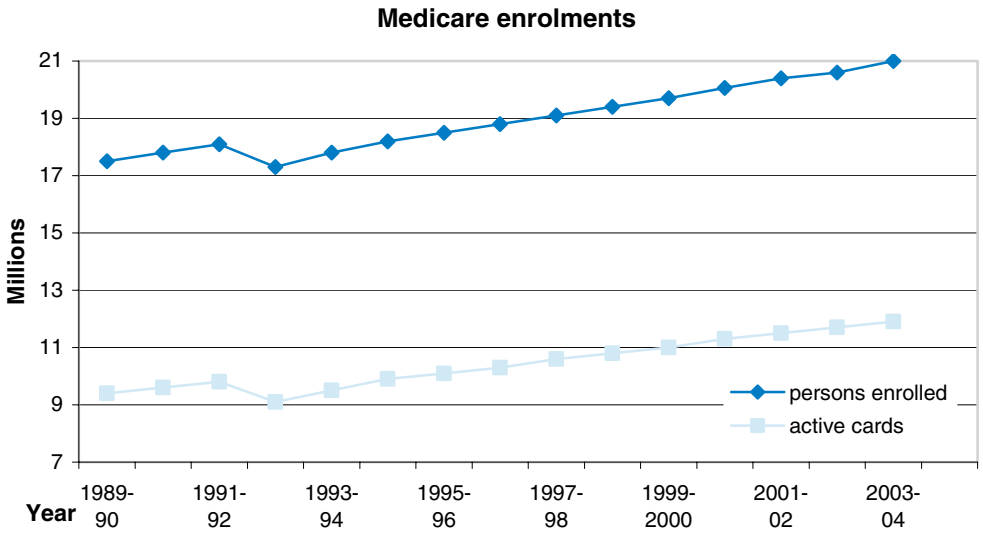
1.6 As such, the information contained in the MEF underpins HIC's computerised Medicare claims processing systems. Some elements of the MEF are also employed in the Pharmaceutical Benefits Scheme (PBS) claims processing systems. The integrity of Medicare enrolment data is, therefore, critical to the administration of claims for benefits under both Medicare and the PBS, which collectively accounted for over $14 billion of government expenditure in 2003–04.

The Medicare Enrolment File

1.7 In June 2004, 11.9 million active Medicare cards were in circulation, with approximately 3 million cards re-issued by HIC each year. The number of people enrolled in the Medicare program has steadily increased, at an average rate of around 2 per cent per annum for the past 10 years, as Figure 1.1 illustrates. At June 2004, HIC reported that 21 million people were enrolled in Medicare.

Figure 1.1

Medicare enrolments 1989–90 to 2003–04



Source: HIC Annual Reports 1989–1990 through 2003–04.

Note: In 1992–93, HIC cancelled the cards of people whose cards had not been used for five or more years; hence the significant decrease in figures for that year.

1.8 For 20 years, the MEF has taken the form of a Virtual Storage Access Method (VSAM) file.[5] First released by IBM in 1973, VSAM is a file management system used on IBM mainframe computers. Many older, large-scale data management systems use VSAM, although computer software developments over the past two decades have produced a range of more versatile data management systems.

1.9 Although still functional in supporting Medicare claims processing, enhancements to the system and the introduction of additional features to the Medicare program have seen the MEF's file management system reach its design limit. After nearly 20 years of evolution, the file management system had reached the point where it was difficult to incorporate any further expansion or functionality.

1.10 In 2001–02, the Federal Budget allocated $125.6 million over four years for HIC to undertake a Business Improvement Program, beginning in 2002–03. Also in 2001–02, HIC invested some money from its reserves to support other initiatives aimed at delivering the benefits of the Business Improvement Program sooner. A significant element of the Program was the Directories Project.

1.11 HIC described the Directories Project as follows:

> This project focuses on management of HIC's data holdings to maximise their efficiency and accuracy. It entails consolidation of existing data stores into new directories, the realignment of existing processes, and the transition of legacy systems to access new directories. A new Consumer Directory, available in 2002–03, will be a key enabler for future e-Business projects involving improved responsiveness to consumer needs.[6]

Consumer Directory

1.12 The project envisaged a Consumer Directory as the primary data holding of personal information for all consumers of HIC's services, across all programs administered by HIC. For example, it would hold all Medicare enrolment information, all personal information on people enrolled on the Australian Organ Donor Register (AODR) or the Australian Childhood Immunisation Register (ACIR). It would also serve as the source of personal information on those eligible to receive benefits under the PBS or any other programs administered by HIC.

1.13 Until HIC fully implements the Consumer Directory, consumers' personal information remains spread across separate databases—essentially

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5 See the Glossary for further information.

6 Health Insurance Commission, *Annual Report 2001–02*, HIC, Canberra, 2002, p.10.

one for each (consumer) program administered by HIC.[7] That is, there are separate databases for MEF, AODR, ACIR and PBS eligibility. While the programs and electronic databases holding consumer information are separately maintained, in some cases the programs need to share information between the different databases. In other cases, privacy considerations dictate that certain information must not be shared across particular programs.[8]

1.14 While this situation continues, the potential exists for inconsistent information to be recorded in the various databases. For example, an individual consumer who is eligible for Medicare and PBS benefits and who also participates in the AODR and other HIC programs, may have his or her name recorded, with small variations, in the different databases.[9] Should it be necessary to share information across two or more databases, any variation in recorded details could result in a mismatch. That is, in a data matching exercise based on an exact match of consumer name details, the consumer may not be identified as the same person.

1.15 Although other identifying information, such as date of birth and residential address might be used to attempt a data match, similar inconsistencies could occur in this information. For example, the consumer might have notified HIC of a change of address in relation to his or her Medicare enrolment, but neglected to inform HIC of his or her participation in the AODR.

1.16 The Consumer Directory will serve as the definitive source of personal information, identifying each of HIC's consumers and the HIC programs in which they participate. The consumers' personal information will be stored in one place only—the Consumer Directory—and detail of their participation in HIC programs will then be stored in other data tables. For example, consumers' Medicare claims history will be stored in a Medicare claims database and immunisation records in the ACIR data tables.

1.17 This maintains a functional separation between the various programs, while providing the benefit of consistent and more accurate identification of consumers. The Consumer Directory will contain a Consumer Identification Code to facilitate the linkage of personal details and program details.

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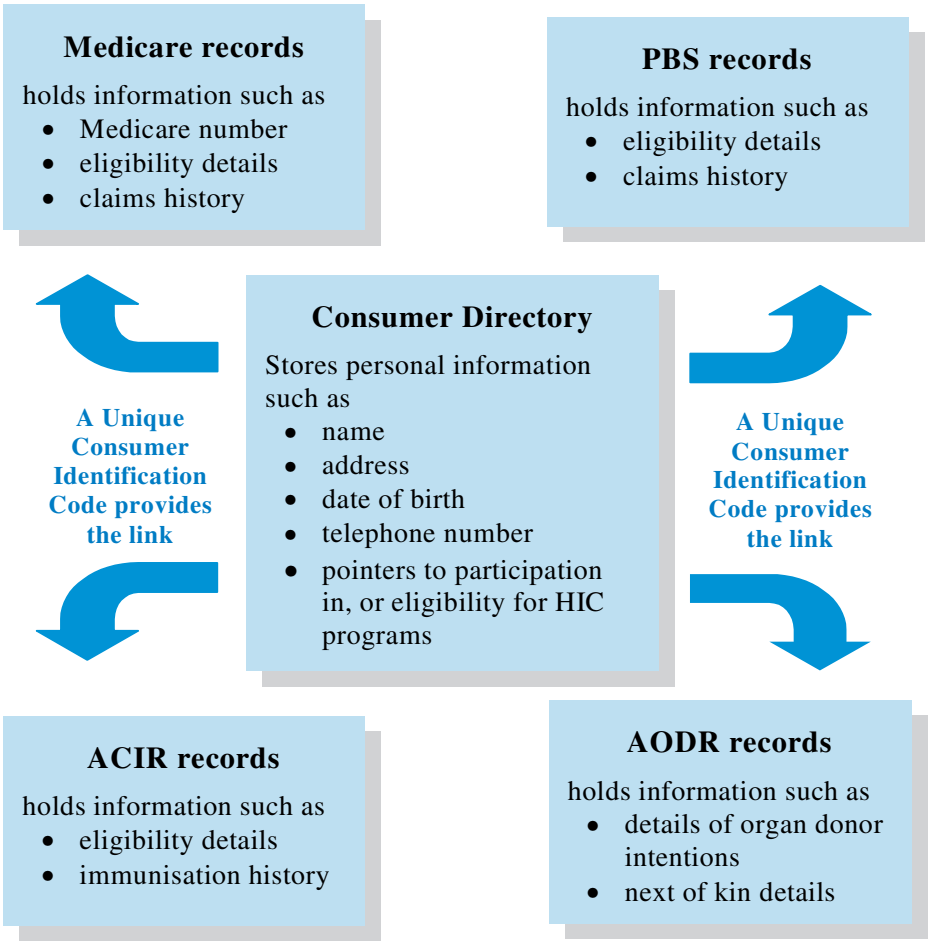
[7] A Provider Directory is similarly envisaged to serve as the definitive source of identifying information for providers of health services. HIC administers a number of programs in relation to providers. Along with close connections to Medicare, PBS and ACIR, certain providers also participate in the Practice Incentives Program, General Practice Immunisation Incentives Scheme, Rural Retention Scheme, 30 per cent Private Health Insurance Rebate Scheme, and others. Further information on HIC programs may be found at HIC's Internet site <www.hic.gov.au>.

[8] Commonwealth Privacy Commissioner Guidelines, issued under section 135AA of the *National Health Act 1953*, prohibit the linkage (or data matching) of certain Medicare and PBS information, and actually require the information to be held on two separate databases. The Guidelines are discussed in Chapter 5–Privacy and Security.

[9] Variations can be the absence or inclusion of a middle name, the use of name contractions or spelling variations.

Figure 1.2

Consumer Directory seen as a central repository of personal information



Source: ANAO's representation of the inter-relationship between the Consumer Directory and various HIC program databases.

1.18 This type of data structure is typically employed in a relational database management system, which stores data in the form of related tables.[10] This data structure differs from flat-file databases, in which each database is self-contained in a single table. The MEF is essentially one VSAM file—it does not constitute a relational database. The Consumer Directory will be operated in a DB2[11] environment and form part of a relational database.

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[10] Relational databases are powerful because they require few assumptions about how data is related or how it will be extracted from the database. As a result, the same database can be viewed in many different ways by various applications.

[11] Short for ***Database 2***, a family of relational database products produced by IBM. (See Glossary).

1.19 As well as providing the benefit of more consistent consumer identification, the Consumer Directory will also assist HIC to provide a broader range of e-Business services via the Internet. Unlike the VSAM environment, the DB2 environment more readily supports 24 hours-a-day, 7 days-a-week access, via the Internet, or other data communication networks. HIC sees this level of service as critical to the achievement of its Business Improvement Program objectives.

1.20 The Consumer Directory Project involves the conversion of all Medicare enrolment data from the VSAM environment to the DB2 environment—from the Medicare Enrolment File to the Consumer Directory. The next section of this report describes the type of data collected and stored in the MEF.

Collecting Medicare enrolment information

1.21 People apply to enrol in Medicare by completing a Medicare Enrolment Application form.[12] A completed form captures the following information about the person applying for enrolment:

- full name (title, family name, first name and second name);
- contact mailing address (and residential address if different from the mailing address);
- telephone numbers (both home and work);
- date of birth;
- sex;
- previous Medicare number and previous name (if applicable);
- (for people born outside Australia), the reason for entry to Australia and the dates of entry and departure; and
- an indication as to whether the person is of Aboriginal or Torres Strait Islander origin (this is a voluntary question on the form).

1.22 The Medicare Enrolment Application form allows for six people to be listed on a Medicare card, including the card holder. The form collects the same information for each person named on the card, with the exception of address and telephone number details—these details are sought for the card holder only.

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[12] As at July 2004, this form was designated as form number 3101 (Design Date 01/03). It is available from Medicare Offices throughout Australia and on HIC's Internet site: <www.hic.gov.au>.

1.23 The form requires the applicant to produce documents that can be used to establish the identity of the applicant and determine whether or not they are eligible to enrol in Medicare. The type of documents and HIC's procedures in relation to proof of identity requirements are described in Appendix 3.

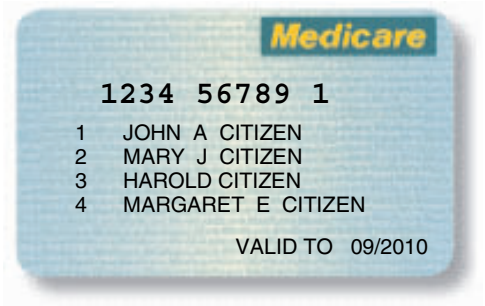
Other information stored on the enrolment database

1.24 The personal information collected through the Medicare Enrolment Application forms is entered into the MEF. Each person is assigned a PIN. The PIN is only used within HIC's IT systems and is designed to uniquely identify each person on the MEF.

1.25 A successful enrolment application will result in the production of a Medicare card. A Medicare number is assigned to the Medicare card.[13] Each person listed on the Medicare card will be associated with that Medicare number. They will also be associated with a number, which identifies the position in which their name is listed on the card. Figure 1.3 illustrates this.

Figure 1.3

Medicare card showing four enrolled people



Source: This is a representation of a Medicare card. The names, numbers and details of the card layout are not genuine. The Medicare name and symbol are protected by law—specifically section 41C of the *Health Insurance Commission Act 1973*.

1.26 In the above example, the card holder is identified by the numeral 1 appearing before the name JOHN A CITIZEN. The other three members of this family are assigned positions 2, 3 and 4—those numerals appearing immediately before the names of the individuals. The PINs are not included on the card. The PINs reside on the electronic database only.

[13] The Medicare number is different to the PIN. An individual may be associated with more than one Medicare card, and therefore, with more than one Medicare number. However, each individual should only ever be associated with one PIN. Certain security features are built into both the Medicare numbers and PINs allocated by HIC.

1.27 Consequently, in addition to the personal details collected via the Medicare Enrolment Application form, HIC stores the following information relating to the card: Medicare card number; the number of members enrolled on the card; the position of each member listed on the card; the issue number of the card[14] and the PIN assigned to each person. The 'valid to' date printed on the Medicare card is also recorded in the MEF.

1.28 The MEF also contains other information relating to the eligibility of individuals enrolled in Medicare, for example, the type of eligibility—Australian citizen, New Zealand citizen, permanent resident, RHCA visitor, and so on. Relevant dates are also stored in the MEF, such as the date eligibility commenced, the date eligibility is due to end and a 'close date'. The close date is used to record the date of death of a person, or the exclusion of this person from Medicare benefits from this date for any other reason.

1.29 A number of other indicators, or flags, are included in the MEF records. For example, a flag might be set to indicate a person is under investigation for possible fraud, or another flag set to indicate that mail has been returned from the address recorded on the MEF. Administrative information, time stamps for certain transactions and audit codes are also included. These permit HIC to track changes to Medicare records and to determine which HIC operators made particular changes at particular times.

1.30 Each of these separate pieces of information is stored in a 'data field'. Collectively, the fields constitute a 'record'. These records have been migrated from the MEF to the new Consumer Directory, although all enrolment processing currently relies on the MEF. HIC informed ANAO that the switch to the Consumer Directory is planned for March 2005, at which time the MEF will be decommissioned.

1.31 A major component of this audit was to review the data migration process, in order to form an opinion on the accuracy and completeness of Medicare enrolment information that was to reside on the Consumer Directory. At the time ANAO examined the MEF/Consumer Directory, it incorporated over 24 million records of up to 100 data fields per record.

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[14] In the example at Figure 1.3, the first nine digits printed on the card represent the Medicare card number. The tenth digit—in this example the numeral '1'—is the issue number of the card. The '1' indicates that this is the first issue of a card containing that particular Medicare number. When this card is re-issued (replaced upon expiry) in 2010, the card issue number will change to the numeral '2'.

The audit

Audit objective

1.32 The objective of the audit was to examine the integrity of data stored on the Medicare Consumer Directory and to report on HIC's management of this data.

1.33 We examined HIC's performance against four major criteria. These were that:

- HIC manages Medicare enrolment data in accordance with legislative requirements and relevant standards;
- information held on the Medicare enrolment database is complete and up to date;
- information held on the Medicare enrolment database is valid and consistent; and
- information held on the Medicare enrolment database is secure.

Audit scope and methodology

1.34 The audit took place when HIC had migrated Medicare enrolment information from the old Medicare Enrolment File to the newly created Consumer Directory, but before the new system commenced operation. The project was part of HIC's Business Improvement Program. It was designed to provide a greater degree of functionality and support, especially for Internet-based service delivery. The switch was also intended to assist HIC in improving data quality and maintaining a higher degree of data integrity into the future.

1.35 In pursuing the audit objective, we:

- interviewed HIC personnel;
- examined and analysed HIC policy, training and operational documents;
- engaged an IT consultancy firm to analyse HIC Consumer Directory data and reconcile these against the original VSAM file;
- examined the management of data migration from the Medicare Enrolment File to the Consumer Directory;
- reviewed relevant legislation and other literature; and
- liaised with the Office of the Federal Privacy Commissioner.

1.36 In terms of our technical analysis, and given that the MEF was about to be replaced by the Consumer Directory, our data testing concentrated on examining the integrity of Medicare enrolment data stored in the Consumer Directory.

1.37 We closely examined the data migration process to develop a level of confidence that data populating the various tables in the Consumer Directory were reliably copied from the MEF. We also performed a number of reconciliations of data between the MEF and Consumer Directory, once again, to ensure that no valuable data was lost or corrupted in the migration process.

1.38 Apart from the technical analysis, we considered HIC's policies and procedures in relation to information management. Maintaining data integrity relies, in part, on ensuring the security of the data—protecting it from alteration or deletion by unauthorised people. Therefore, the audit incorporated a consideration of privacy and security issues and HIC's compliance with relevant legislation concerning the management, use and release of Medicare data.

1.39 Audit fieldwork was conducted from June to September 2004. The audit was conducted in accordance with ANAO Auditing Standards at a cost of approximately $245 000. ANAO engaged consultants from *Ascent Governance* to carry out the data analysis.

Other relevant audits

1.40 Previous audits involving HIC and aspects of the Medicare program included:

- ANAO Audit Report No.11 2002–03, *Medicare Customer Service Delivery;*
- ANAO Audit Report No.5 2002–03, *The Strategic Partnership Agreement between the Department of Health and Ageing and the Health Insurance Commission;*
- ANAO Audit Report No.42 2001–02, *Integrity of the Electoral Roll; and*
- ANAO Audit Report No.49 2000–01, *Information Technology in the Health Insurance Commission.*

1.41 The audit of the Integrity of the Electoral Roll involved a matching of data between the Electoral Roll, the MEF and population estimates from the Australian Bureau of Statistics.

Structure of this report

1.42 This Chapter provides some general background on the type of information collected under Medicare and the manner in which it is stored and used. It also provides information on the conduct of the audit.

1.43 Chapter 2 considers HIC's planning and management of the migration of Medicare enrolment data, from the MEF to the Consumer Directory. It considers issues in relation to the entire dataset and the need to keep two database systems synchronised prior to decommissioning the MEF.

1.44 Chapter 3 presents the results of ANAO's data testing activities. These centred on a series of tables extracted from the Consumer Directory. It concentrates on the quality, or integrity, of data held in individual database fields. It considers the logical relationships between some fields and the accuracy and completeness of Medicare enrolment data.

1.45 Chapter 4 explores HIC's various projects and activities to improve data integrity and maintain a high quality of Medicare enrolment information.

1.46 Chapter 5 examines HIC's management of Medicare enrolment information to ensure the privacy and security of that information.

1.47 Appendices 1 to 3 include information on Medicare eligibility criteria, the initial Medicare enrolment process in 1984 and proof of identity.

2. Data Migration

This Chapter considers the migration of data from the Medicare Enrolment File to the Consumer Directory. This audit took place in the months leading up to the switch from the MEF to the Consumer Directory. ANAO concentrated on the data migration process to offer a level of assurance that the Consumer Directory was accurately and comprehensively populated with appropriate data drawn from the MEF.

Medicare Enrolment File to Consumer Directory

2.1 The Consumer Directory will permit more comprehensive information on consumers' eligibility to be stored and used. It will contain more data fields than the MEF. For example, a particular data field in the MEF is called 'close date'. Within the MEF, that field is used to store the date of death of an individual or the date from which that person was excluded from Medicare benefits for some other reason. The Consumer Directory has a specific field for recording the date of death of the individual and another means to record details of exclusion from the program for other reasons.

2.2 The Consumer Directory also contains fields to indicate which HIC programs individuals participate in, although in the early phase of transition, only Medicare eligibility information will be stored in the Consumer Directory.

2.3 In order to migrate the data from MEF to Consumer Directory, HIC developed a process called 'Extract, Transform, Load' (ETL). The primary functions of the ETL process are to: cleanse; extract; transform; load; and compare the data. The ETL process was run initially in October 2003. It has been run several times since then. The elements of ETL processing are described below.

2.4 *Cleansing*[15]—Cleansing of some data was required in order to ensure that data would exist in an appropriate format for inclusion in the Consumer Directory tables.

2.5 *Extraction*—This process extracts different subsets of information from the MEF that correspond to the broad areas of the various Consumer Directory tables.

2.6 *Transformation*—The data transformation process maps data fields extracted from the VSAM files to the corresponding data fields on the DB2 tables. It applies a set of transformation rules.

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[15] The Glossary includes a definition of data cleansing.

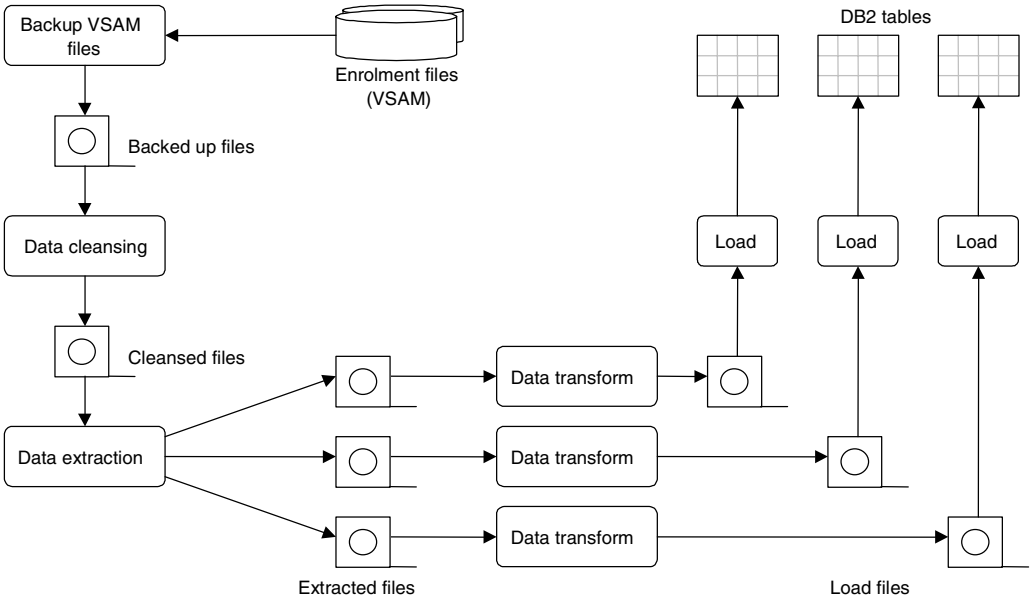
2.7 *Load*—This process inserts transformed data into the appropriate DB2 tables in the Consumer Directory. The DB2 tables exist in a separate environment and are subject to certain security access controls.

2.8 *Compare*—The compare function was introduced to ensure that the ETL run was successfully completed. It compares a sample of data in the newly created DB2 tables with the original data in VSAM files, taking into account the expected operation of the transformation and business rules.

2.9 Figure 2.1 illustrates the major steps in HIC's ETL process.

Figure 2.1

The Extract, Transform, Load process



Source: HIC

2.10 The ETL process always transforms the entire Medicare enrolment dataset. It does not merely operate on data that has changed or been created since the last ETL run. The product of an ETL run is always a fresh, new Consumer Directory dataset. The process generates an ETL exception report, which can be analysed and, if some records have been corrupted, they can be manually changed to the correct state.[16] These corrections would also need to

[16] An example of a corrupt record would be the inclusion of an alphabetic character in a date field that is expected to contain numeric characters only. Whether the alphabetic character was introduced during the original data entry process or at some subsequent time, by a computer program that copied or edited the data, such a record is corrupt and does not conform to a standard data definition for date fields. For example; that dates must consist of a valid date, comprising numeric characters, 0–9 inclusive, in the format DDMMCCYY (where D=day, M=month, C=century and Y=year). Another example of an invalid date is the 30th February (any year), or the 31st of any month which contains only 30 days.

be written back to the corresponding VSAM record, so that the same error will not occur at the next ETL run.

Data cleansing

2.11 In preparation for the migration of data from the MEF to the Consumer Directory, and prior to the first ETL run, HIC conducted a major analysis of the data held in various fields of the MEF. The exercise resulted in a report, which included recommendations for cleansing the MEF data prior to migration. The report was titled *Directories—Medicare Enrolment Data Field Assessment Report: Recommendations for Data Cleansing*.

2.12 The report stated:

> The purpose of the data analysis and data cleansing exercise is to:
>
> - identify data fields in error in the existing Medicare enrolment VSAM files;
> - provide a quantitative assessment of the identified problems;
> - where possible, suggest solutions to the problems; and
> - provide information to help the data migration team and the involved business areas in reaching a decision on how the erroneous records should be treated in the data cleansing and/or data migration.

2.13 HIC's analysis identified instances where either the format and/or the values of data stored in the MEF, did not meet the current or future business rules relating to that data. Some data had been corrupted with spurious characters, such as computer control characters embedded in consumers' names or addresses. Other data was anomalous. For example, where consumers' records indicated an eligibility start date prior to their date of birth, or date of entry into Australia.

2.14 The HIC analysis distinguished between cleansing data that was found to be in error or invalid prior to the migration, and translating data into acceptable formats to conform to the business rules of the Consumer Directory during the migration process. The report made nine recommendations for specific data cleansing activities to be undertaken prior to the migration. It also noted that most instances would require a business decision—rather than a technical one—as to how the data should be modified.

2.15 The report also made five recommendations seeking agreement to a proposed strategy. In these cases, specific recommendations for data cleansing were not possible, as the relevant business rules had not been finalised. Rather, a strategy was suggested for handling the data when the rules were finalised. In addition, another eight issues were identified for further analysis. These foreshadowed the need for further business decisions about how the quality or consistency of some data should be improved.

Audit findings

2.16 ANAO found that HIC had cleansed the MEF data once. This was done prior to the first full ETL run in October 2003. HIC had identified that, unless cleansed, certain records would cause the ETL process to operate less efficiently, result in huge exception reports and prevent some records from being migrated. Therefore, those data problems, and only those problems, were identified and corrected prior to the first ETL run.

2.17 ANAO's analysis revealed that not all data cleansing recommendations from the 2002 report had been implemented. This was confirmed through discussions with HIC staff. ANAO considers that, given the HIC resources devoted to identifying the errors and anomalies in the Medicare enrolment data, to have not proceeded with a comprehensive data cleansing exercise represents an inefficient use of those resources by HIC. The following Recommendation encourages HIC to complete its comprehensive data cleansing exercise, prior to decommissioning the MEF and switching to the Consumer Directory.

Recommendation No.1

2.18 The ANAO recommends that HIC:

- fully implement the data cleansing recommendations contained in its *Medicare Enrolment Data Field Assessment Report: Recommendations for Data Cleansing;* and
- conduct a contemporary data field assessment to identify any records generated between 2002 and 2004, that require cleansing.

HIC's response:

2.19 Agrees. It is agreed that HIC should fully implement the data cleansing recommended in the Medicare Enrolment Data Field Assessment Report: Recommendations for Data Cleansing (August 2002). HIC will undertake further analysis of all records generated and amended between 2002 and 2004.

Data migration strategy

2.20 ANAO's data analysis team employed the HIC Cleansing Strategy, Migration Rules and Consumer Directory Management System Business Rules as a framework within which to analyse data held in the MEF and the Consumer Directory.

2.21 Ownership of the data, along with the responsibility to ensure it is of sufficient integrity and quality to meet HIC's business needs, rests with the relevant business area within HIC. Our analysis of HIC's project

documentation and files indicated that the relevant business areas were regularly consulted in the various stages of project design and implementation.

2.22 ANAO observed that HIC's data migration strategy was generally well documented. The business specifications included in the CDMS indicate that the Consumer Directory environment will contain a broader range of controls, designed to achieve and maintain higher levels of data quality and integrity for Medicare enrolment records.

Audit findings

2.23 In comparing the MEF and Consumer Directory, we noted that the heritage applications, due to the limitations of the older technology, had resulted in insufficient controls at the application and database level. These deficiencies had resulted in some data quality issues for HIC. The new environment should offer a significant improvement in the validity and consistency of consumer data recorded after implementation of CDMS.

2.24 ANAO found that HIC's data cleansing and migration activities had ensured the conversion of MEF data into formats acceptable to the Consumer Directory. However, HIC had not directed a similar effort to actually improving the quality of Medicare enrolment data. The majority of cleansing rules and planning documentation were completed prior to finalisation of the business rules for the Consumer Directory. ANAO noted that a number of data quality issues identified in these documents, particularly recommendations for further analysis after the finalisation of CDMS business requirements, had not been addressed. ANAO found that, primarily due to the later development of the CDMS business rules, HIC decided not to enforce some of these rules during the cleansing and migration process. Consequently, the data migrated to the Consumer Directory still exhibits the identified data quality problems.

2.25 The migration process generated a series of exception reports, identifying records that did not conform to certain CDMS business rules. These reports were forwarded to business areas for appropriate follow-up action. ANAO found that HIC had not completed this manual processing for all elements of the exception reports.

2.26 The ANAO was advised that operator processing controls, being built into CDMS, will enforce all business rules when new consumer records are entered into the Consumer Directory. Furthermore, controls will also identify records that do not conform to CDMS business rules, whenever records are updated in the Consumer Directory. However, these procedures will be enforced only when a consumer visits a Medicare Office and has his or her record updated. Therefore, the records relating to consumers who do not normally visit a Medicare Office—for example, those who are bulk-billed by

their doctor—may continue to contain data that contravenes CDMS business rules.

Risk analysis

2.27 The ANAO was not able to identify any significant analysis, by HIC, of the risks of such an approach[17], nor any analysis of risks to the data being migrated. ANAO's analysis of HIC documentation revealed that a number of controls were implemented to help ensure the accurate replication of MEF data. However, there does not appear to be a comprehensive consideration of risks to guide HIC's efforts in relation to cleansing and migration. For example, higher risk data items have not received greater attention.

Recommendation No.2

2.28 The ANAO recommends that, prior to the full implementation of the Consumer Directory Management System, HIC:

- reconsider enforcing all CDMS business rules during the data migration; and
- consider the risks of commencing the new system with incorrect data, against the associated costs and benefits of enforcing all business rules before the changeover from the MEF to the Consumer Directory.

HIC's response:

2.29 Agrees. HIC agrees to reconsider enforcing all CDMS business rules taking into consideration the risks, including the costs and benefits, of commencing the new system before the changeover from the MEF to the Consumer Directory.

Double update process

2.30 As part of the preparation of the CDMS, HIC recognised that IT applications which currently accessed data in the MEF would require modification in order to access data in the Consumer Directory. In fact, a large number of applications used data from, or relied in some way on, the MEF—some of the more critical being Medicare enrolment processing and the Medicare claims processing applications.

2.31 HIC had to develop a way to permit applications, which were expecting to receive data from the old system, to request and receive data from

[17] Essentially an approach to enforce compliance with the business rules on a case-by-case basis after the data migration, rather than attempting to achieve the highest level of compliance possible, during the data migration.

the new. The reverse situation also applied—applications that wrote data to the old file formats would soon be required to write data to the Consumer Directory. HIC solved these challenges by developing two computer programs.[18]

2.32 Once the Consumer Directory dataset was created through the ETL process, it was necessary to ensure that the new dataset was synchronised with the MEF. Whenever a new record was created or an existing record updated in the MEF, a corresponding record was to be created in the Consumer Directory. HIC accomplished this through a 'double update process'—a regularly scheduled comparison process that helped ensure consistency of data across the two databases.

Conclusion

2.33 ANAO concluded that HIC had carefully planned its data migration strategy. The new CDMS is well documented and, from ANAO's analysis of its business specifications, it is evident that the CDMS will provide more control over the recording and management of Medicare enrolment data than that afforded under the MEF.

2.34 Subject to the audit findings outlined in the next Chapter, which deals with the results of data integrity testing of particular fields, ANAO concluded that, overall, the Consumer Directory had been populated with appropriate and comprehensive data from the MEF. However, ANAO also concluded that, due to the limited data cleansing that took place prior to the data migration, HIC had not improved the quality of Medicare enrolment data in any significant way. In other words, the quality of data now populating the Consumer Directory is only marginally improved on that populating the MEF. The data contains many of the same errors and inconsistencies identified in the MEF.

2.35 A number of CDMS business rules were not enforced during the data migration and this has resulted in some data populating the Consumer Directory, which will—from the new system's first day—contravene CDMS business rules. In ANAO's opinion, HIC had not taken advantage of an opportunity to thoroughly cleanse the database, and thereby improve the quality of Medicare enrolment data and commence operation of the Consumer Directory with the best possible dataset.

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[18] These were called the Heritage Application Program Interface and the Functional Application Program Interface.

3. Data Integrity Testing Results

This Chapter reports on the results of ANAO's data integrity testing. It considers the individuality of consumer records, integrity of various date fields, address fields and information relating to Medicare eligibility.

Individuality of consumer records

Personal Identification Numbers

3.1 An essential characteristic of an effective database is that each record is assigned, and can be distinguished from all other records by, a unique value. Within a computer database, this identification field is called a primary key. For Medicare enrolment records, this is the consumer's PIN—their personal identification number.[19]

3.2 No two people should share the same PIN. ANAO's testing confirmed that all PINs in the Consumer Directory[20] represented valid PINs. These PINs conformed to the required data format, fell within the upper and lower limits of the specified range and were unique values. Therefore, we can report with a high degree of confidence, that no two consumers shared the same PIN in the Consumer Directory.

3.3 Each consumer should be enrolled in Medicare once, under one PIN only. The database is designed so that each record relates to a single, individual consumer. If an individual consumer were enrolled twice—and was allocated two different PINs—it would constitute a duplicate enrolment. A duplicate enrolment is regarded within the database management system as two distinct records, relating to two separate individuals. Therefore, duplicate enrolments can result in fragmenting information about a consumer, such as Medicare claims history, change of address history or enrolment types or periods, across multiple records.

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[19] Within the Consumer Directory, the primary key is the Consumer Identification Number. During the data migration to the Consumer Directory, a record was created for each unique PIN in the MEF and assigned a Consumer Identification Number.

[20] The Consumer Directory tables extracted for testing in September 2004 contained 24 285 653 PINs. Note: HIC's Annual Report for 2002–03 states that 20.6 million people were enrolled in Medicare as at 30 June 2003—a difference of 3.7 million. The 24.3 million PINs referred to above include some 2.7 million closed records. Based on figures for estimated net population growth between June 2003 and September 2004, ANAO estimates another 550 000 records could have reasonably been created in that period. This still leaves a difference of approximately 400 000 between the number of PINs currently recorded in the Consumer Directory and the number of enrolled persons reported in HIC's Annual Report. HIC has investigated this variance and advised that it intends to source enrolment population figures from the Consumer Directory in the future.

3.4 ANAO's testing revealed that a number of people are enrolled in Medicare more than once and are, therefore, associated with more than one PIN. The number of duplicate enrolments is difficult to estimate, but we consider it is probably of the order of hundreds of individuals, rather than thousands. If so, this represents less than 0.005 per cent of total Medicare enrolments.[21]

3.5 How the duplicate enrolments come about is not clear. The Medicare enrolment process incorporates a number of controls designed to guard against duplicate enrolment. However, some of these rely on the information presented by the individual applying for enrolment. If the information is incomplete or not entirely consistent with information previously supplied, the controls may fail to correctly identify a previous enrolment and a second enrolment is permitted to proceed.

3.6 HIC is aware of the existence of duplicate enrolments and has developed a series of reports and checks to assist in identifying and resolving the duplicate enrolment problem. HIC runs Duplicate PINs Reports, on a weekly basis. The reports compare consumer records by internally data matching against criteria such as surname, first name, date of birth and postcode. By using four different combinations of matching criteria, four reports list potential duplicate PINs. These reports are sent to HIC's State Offices for further investigation.

3.7 Where staff in a State Office determine the records represent a duplicate enrolment, they merge the two PINs, ensuring that a full history is maintained for the consumer in question. Where State Office staff determine the two records to be those of two different individuals, they mark the records with a 'Not Duplicate PIN flag'. This flag excludes the pair of records from future Duplicate PINs Reports.

3.8 ANAO was informed that the CDMS will provide a better level of control over duplicate enrolments. The internal data matching criteria envisaged for the production of Duplicate PINs Reports from the Consumer Directory are, in ANAO's opinion, superior to those used under VSAM.

Audit findings

3.9 ANAO examined a set of Duplicate PINs Reports run in July 2004. These reports identified between 60 and 500 potential duplicate enrolments, depending on the choice of data matching criteria. Another report, the Closed PIN Report, revealed that 32 duplicate enrolments were merged during the

[21] This estimate was based on ANAO's analysis of HIC's internal data matching processes, which aim to identify potential duplicate enrolments.

preceding week. The Closed PIN Report also revealed that HIC had merged 54 140 duplicate PINs since Medicare enrolments commenced.

3.10 ANAO noted that the various HIC State Offices gave different priorities to examining possible duplicate enrolments and subsequently merging PINs. As the task can often be resource-intensive, the amount of resources available within a State Office was an appropriate consideration when assigning work priorities. However, given the relatively small number of possible duplicate enrolments, ANAO encourages HIC to resolve as many of these as possible, prior to moving the Consumer Directory into production.

Recommendation No.3

3.11 ANAO recommends that HIC:

- produce a report on possible duplicate enrolments, employing the data matching criteria envisaged for use with the Consumer Directory; and
- resolve as many duplicate Medicare enrolments as possible, before the Consumer Directory is fully implemented.

HIC's response:

3.12 Agrees. A new duplicate reporting system has been designed and programmed modelled on the CDMS matching criteria.

Medicare Card Numbers

3.13 Chapter 1 illustrated how all members of a family may be listed on the one Medicare card.[22] The Medicare card contains one number—the Medicare card number, and all people listed on that card share the Medicare card number, even though they each have a unique PIN.[23] An individual can be associated with more than one Medicare card. For example, a child may be associated with the (different) Medicare cards belonging to his or her mother and father. Some children in boarding school can be associated with the school's Medicare card while still appearing on his or her parents' Medicare card. There are approximately 800 000 PINs recorded on two Medicare cards.

3.14 Under the MEF system, whenever an individual is associated with a second Medicare card, the HIC operator is required to re-enter the individual's personal details. Data entry errors have resulted in a relatively small number of records that are inconsistent: for example an individual with their sex

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[22] One does not have to be part of a family to be included on a Medicare card. If eligible for Medicare and living at the same address as the Medicare card holder, a non-family member can be associated with that card. For example, four eligible students sharing a house could all be listed on the one Medicare card.

[23] The PINs are not embossed on the Medicare card.

recorded as male, under one Medicare number, but female under the second Medicare number. In August 2002, HIC identified over 200 PINs that were recorded on two cards with the consumer's sex showing as male on one card and female on the other. This number represents only 0.001 per cent of all records, or 0.03 per cent of the 800 000 PINs recorded on two cards.

3.15 Another example of corrupt records is that of different dates of birth recorded against the two Medicare numbers. HIC identified over 3000 PINs with different dates of birth recorded against two cards. This number represents 0.01 per cent of all records, or 0.4 per cent of the 800 000 PINs recorded on two cards.

3.16 While the percentage figures are very small, these records are easy to identify and correct. Some of these records were identified by HIC in August 2002, yet by August 2004 they had apparently not been corrected.

3.17 The risk of fragmented and inconsistent data, such as the above, will be significantly reduced in the new environment, as each consumer's personal details will be stored once, in a single record. During the data migration project, HIC developed a mechanism for consolidating personal information, recorded against two cards, into a single consumer record suitable for migration to the Consumer Directory. This process relied on an element called the 'representative member segment'—a means of selecting the most recently created or amended record for an individual consumer.

3.18 In other words, where HIC knew that an individual had two or more sets of personal information recorded in the MEF, it chose the record that had been most recently created or amended to migrate to the Consumer Directory. ANAO found that the representative member segment approach probably provides for the most complete representation of consumer information that can be derived through an automated process, using data from the MEF. However, given the previous discussion about data entry errors introduced during the creation of a consumer's supplementary card record, the technique cannot be relied upon to result in the most accurate information being recorded.

3.19 Unlike the previous examples, where a relatively small number of inaccurate records were easily identified and amenable to manual resolution, ANAO agrees that 800 000 records is too large a group to deal with manually. However, ANAO encourages HIC to manually verify the accuracy of a sample of records consolidated using the representative member segment approach. By doing so, a greater level of confidence might be achieved in the efficacy of the representative member segment approach.

Recommendation No.4

3.20 ANAO recommends that HIC conduct a review of the effectiveness of the 'representative member segment' approach to consolidating Medicare enrolment information, by selecting a representative sample of such records and manually assessing the accuracy and validity of the consolidated records.

HIC's response:

3.21 Agrees. HIC agrees to review the use of the 'representative member segment', including a manual assessment of a sample group to assess the confidence level in applying this process.

Medicare card reference numbers

3.22 Figure 1.3 in Chapter 1, introduced the concept of card reference numbers on Medicare cards.[24] The card reference number was introduced in 1991 and is used to list and distinguish between consumers associated with a Medicare card. It is also used in processing claims for Medicare benefits, indicating the particular patient on a card to which the medical service was provided. HIC has established certain business rules around the use of Medicare card reference numbers.

3.23 According to the business rules:

> The system shall allocate the card reference number in ascending order, from 1 to 9, to each individual consumer in order of association with the Medicare card number.
>
> Once allocated, an individual consumer's card reference number associated with the Medicare card number can never be amended.
>
> A card reference number that has been allocated to a consumer under a specific Medicare card number will not be allocated to another consumer, even when the original consumer is no longer associated with that Medicare card number and card reference number.[25]

3.24 The business rules make allowance for the card reference number '0', (zero) to be allocated when a consumer is associated with a Medicare card number and transferred off that card on the same working day. Other consumers' card reference numbers would then be renumbered to ensure there are no gaps between their card reference numbers. This rule only applies if a

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[24] The card reference number has also been referred to in various HIC documents as the sub-numerate, the patient reference number and the individual reference number. HIC's *Medicare Card Business Rules* uses the term 'card reference number'.

[25] Extracted from HIC's *Medicare Card Business Rules.*

consumer is both added to and deleted from a Medicare card on the same day.[26]

3.25 ANAO's analysis of the Consumer Directory identified over 4.7 million records of consumers with a card reference number of '0'. We considered this number too large to be generated solely by the application of the business rule outlined above. Further analysis by HIC revealed that the majority of these records related to consumers whose association with a card ended before 1991. For example, consumers who had died, moved overseas or transferred to another card, before the card reference number system was introduced.[27] Because the consumers are no longer actively associated with *these* cards, the '0' card reference numbers do not represent a significant risk to HIC's administration of Medicare. Nevertheless, the majority of the 4.7 million—historical—records with '0' card reference numbers contravene a Medicare card business rule.

3.26 ANAO also identified a provision of the data cleansing and migration procedures that assigned a card reference number of '0' to consumers listed as the tenth, eleventh or twelfth person on a card.[28] This means that a '0' card reference number can mean any of three different things—and only one of the intended meanings is reflected in the Medicare Card Business Rules.

3.27 ANAO's analysis identified 73 instances of two consumers on the one Medicare card sharing the same card reference number—that is two consumers might have been allocated the card reference number '2'. We identified one Medicare card where three consumers had been allocated the card reference number of '1'. This situation can represent a business risk to HIC, as the card reference numbers are used to distinguish between card members when processing Medicare claims.

3.28 Each of these examples represents an instance in which HIC's business rules have not been enforced within the Consumer Directory system. It also represents a deficiency in the business rule for use of the card reference number '0'.

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[26] ANAO considers that this rule was designed to apply when an error had been discovered.

[27] In order to maintain a comprehensive history of Medicare enrolments, records are not physically deleted from the database whenever an association with a card ends. The date the association ends is recorded and the consumer's status is changed from 'active' to 'inactive', in relation to that Medicare card group.

[28] In the MEF, the maximum number of members who could be associated with a particular Medicare card was twelve. However, under the Consumer Directory system the maximum is nine. Therefore, the valid values for card reference numbers in the Consumer Directory are 0 to 9.

Dates in Medicare enrolment records

3.29 Medicare enrolment records store a number of dates including:

- the consumer's date of birth and date of death;
- an 'active-from' date, which indicates when a consumer became actively associated with a particular Medicare card;
- eligibility start-date—the date the person was deemed eligible for Medicare and the HIC record was first created;
- eligibility end-date—signifies the end of eligibility;
- arrival and departure dates—for overseas visitors and migrants; and
- expiry date for the current issue of a Medicare card.

3.30 Many of these dates have a logical relationship, which ANAO tested. For example, a migrant to Australia should not have an eligibility start date recorded, which is prior to his or her recorded date of arrival in the country.

Audit findings

3.31 ANAO's testing revealed 2093 consumers whose records indicated they were enrolled for Medicare on a date prior to their recorded date of birth. This represents 0.01 per cent of all Medicare enrolment records. Furthermore, our testing revealed six records where the consumer's end-date was recorded as a date prior to the consumer's recorded date of birth. Neither of these date relationships is possible—the records are, therefore, inaccurate or corrupt.

3.32 CDMS business rules are designed to guard against these anomalies. ANAO notes that the CDMS will test logical relationships between consumers' dates of birth and other dates, such as start and end dates. However, CDMS will not correct errors that currently exist in the Consumer Directory.

3.33 At best, CDMS will alert HIC operators to an anomaly in a record as it is brought up for processing. For example, if a consumer attends a Medicare office to update his or her address, CDMS will determine whether all elements of the consumer's enrolment record, including dates, comply with the CDMS business rules. If not, the operator will be alerted to any anomalies and attempt to resolve these with the consumer. Recommendation 2, in the previous Chapter, calls for the enforcement of all CDMS business rules before the Consumer Directory is fully implemented.

Dates of birth

3.34 ANAO's testing revealed that 36 285 consumers had a recorded date of birth that indicated a year prior to 1900, with the earliest recorded date of birth in the 1860s.[29] Of these, 36 083 displayed an open entitlement date—meaning that a date of death was not recorded against these consumers. The Medicare cards of these consumers could conceivably be used to claim Medicare benefits.

3.35 With the assistance of HIC, ANAO examined the Medicare claims history for these consumers, over the last five years. Our analysis revealed that less than 1000 of these people had lodged a Medicare claim in the previous five years, and even fewer in the previous twelve months. This led ANAO to the view that some 35 000 records are likely to relate to consumers who are deceased. ANAO considers that this number of open Medicare enrolments—0.15 per cent of all enrolments—represents a small risk to HIC for the efficient administration of Medicare benefits.

3.36 The previous paragraphs related to consumers who would be 104 years and older. ANAO also compared the number of consumers aged 85 years and over (85+) with the Australian Bureau of Statistics figures for the Estimated Resident Population at 30 June 2003. Those figures estimated 289 523 Australian residents 85+ at 30 June 2003. Data extracted from HIC's Consumer Directory tables, in August 2004, contained 734 310 consumers 85+ with an open entitlement date—that is, still able to claim Medicare benefits.[30] The difference between the two figures is 444 787 and accounts for 2 per cent of all Medicare enrolments.

3.37 The data in Figure 3.1 support the view that many of these records relate to people no longer actively claiming Medicare benefits.

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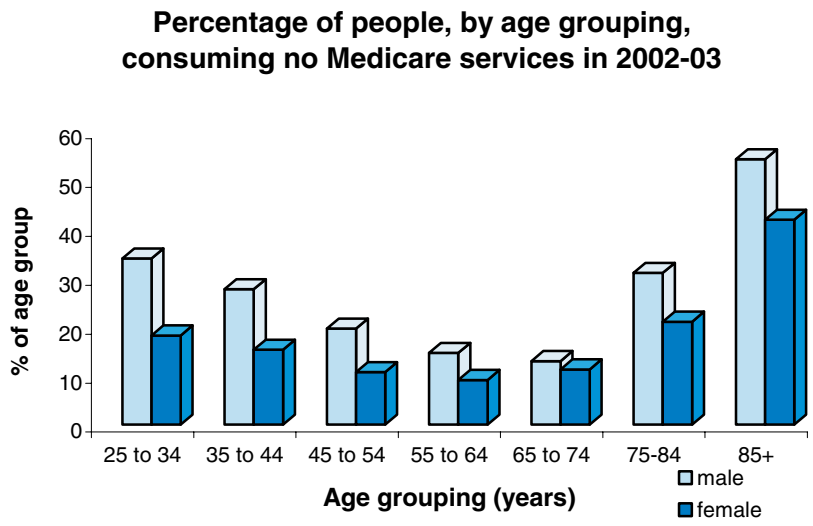
[29] This would make each of these consumers older than 104 years. Seen against the Estimated Australian Resident Population, produced by the Australian Bureau of Statistics (June 2003), it suggests that this HIC number significantly overstates the number of Australian residents over 104 years of age.

[30] HIC informed ANAO that this figure included a number of consumers that HIC knew were probably no longer eligible for Medicare, but that HIC was unable to remove from the database until HIC could confirm the consumers' status.

Figure 3.1

Percentage of enrolled people consuming no Medicare services



Source: HIC Statistical Tables. Table 20-Medicare-Percentage of enrolled people by number of services, age and sex - for services rendered from 1 July 2002 to 30 June 2003. HIC's Internet site, accessed January 2005. <www.hic.gov.au/abouthic/our_organisation/annual_report/03_04/statistics/mcare20.html>.

3.38 Figure 3.1 illustrates that, of the Medicare enrolment population, just over 30 per cent of males in the 25 to 34 years age grouping—and 18 per cent of similarly aged females—did not use any Medicare services during 2002–03. These figures steadily decrease as the age of the consumers increases, suggesting that as people age they tend to access medical services more frequently.

3.39 However, Figure 3.1 then reveals a notable reversal in this trend for the 85 years and over age group. According to HIC's statistics, 54 per cent of males and 42 per cent of females in this age group did not access Medicare services during 2002–03. This outcome is contradictory to most health research, which suggests that people over 85 years are more likely to access health services than those in the 25 to 34 year age group.

3.40 ANAO concluded that the figures for the 85 years and over age group reflected a statistical aberration, caused by the inclusion of a large number of records relating to people who are deceased and, therefore, no longer accessing Medicare services. In fact, the remainder of HIC's statistics[31] indicated that this age group consumed multiple Medicare services. That is, an expected medical

[31] HIC's Statistical Table 20 — as referenced in the source for Figure 3.1, above.

service consumption pattern, for the age group, was evident in every row of the HIC table except the row relating to zero services consumed.

Audit findings

3.41 ANAO found that almost half a million active Medicare consumer records—about 2 per cent of all enrolments—almost certainly relate to people who are deceased. These consumers are still enrolled in Medicare, with active Medicare cards capable of being used to claim Medicare benefits. ANAO found that this situation represents a small risk to HIC for the efficient administration of Medicare.

3.42 The next Chapter discusses HIC's use of information from the State Registrars of Births, Deaths and Marriages, and how this information may be used to reduce the risks associated with these records.

Entitlement types and dates

3.43 People are granted Medicare eligibility if they meet certain criteria—see Appendix 1 for more detail on the eligibility criteria. A code is used to identify the consumer's entitlement type. For example an entitlement type 'A' indicates an Australian citizen, 'E' indicates a migrant and 'R' an entitlement under a RHCA.[32] There are over 20 different entitlement types and most of these have an unrestricted end date—the entitlement to Medicare is ongoing for that class of individuals.

3.44 However, some entitlement types have a specific start and end date. For example, one entitlement type—represented by the code 'J'—relates to coverage for certain participants in the World Scout Jamboree in 1987. This entitlement type had a start date of 1 January 1987 and a mandatory end date of 31 January 1988. Another example is entitlement type 'B', which relates to academic and teaching staff eligible for funding under the *Higher Education Funding Act 1988.* This entitlement type had a start date of 1 March 1988 and a mandatory end date of 30 June 1995.

3.45 ANAO's analysis revealed 370 records where the entitlement start and end dates did not accord with HIC's business rules for Medicare entitlement. Analysis of Medicare claims history identified two consumers who had claimed Medicare benefits over the past five years, on an entitlement type that expired in 1995.[33] In addition, ANAO found over 10 000 records where the end date is unrestricted but the entitlement type requires an end date.

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[32] There are sub-types of the entitlement type 'R', to indicate the relevant RHCA country.

[33] One had made 65 claims for a total value of $4330; the other 19 claims for a total value of $673.

3.46 ANAO found that, although business rules had been developed to control the period of some consumers' entitlements, the rules had not been adequately enforced. Because of the relatively small number of consumers involved, this situation represents a slight risk to the efficient administration of Medicare. Recommendation 2, in the previous Chapter, calls for the enforcement of all CDMS business rules—this includes those associated with entitlement types and dates—before the Consumer Directory is fully implemented.

Addresses in Medicare enrolment records

3.47 Perhaps the most changeable element of a consumer's personal information stored in the Medicare enrolment system is their mailing address. Over the course of their association with Medicare, consumers are more likely to change their mailing address than their name, sex, date of birth or other personal details collected via the Medicare enrolment form.[34] To a large extent, HIC must rely on individual consumers notifying it of a change of address.[35]

3.48 Having a current mailing address for consumers is important because HIC relies on these details to forward replacement Medicare cards and to process some Medicare claims. Depending on the method of lodging a claim, a Medicare benefit can be provided by a cheque drawn in favour of the consumer or the doctor providing the service. The cheque is then mailed to the consumer's address.

3.49 HIC produces a standard set of statistical reports on a regular basis and makes these available on its Internet site. Table 3.1 is drawn from one of these reports and shows the percentage of Medicare services, by bill type, from July 2002 to June 2004.

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[34] Some consumers will change their name, either through marriage, divorce or deed poll. A small number of consumers will undergo gender reassignment surgery each year. If a consumer's date of birth has been recorded incorrectly, it needs to be corrected.

[35] HIC informed ANAO that it was standard practice for Medicare customer service staff to check address details with claimants who attend a Medicare Office. This practice is designed to ensure the most up to data address details are recorded for consumers. This issue is also discussed in the next Chapter.

Table 3.1

Medicare services by bill type

Bill type	Jul 02 to Jun 03 % services	Jul 03 to Jun 04 % services
Cheque to claimant	2.2	2.1
Cheque to provider via claimant	9.4	8.7
Cash	15.3	15.6
Bulk Bill	67.8	67.5
Simplified Billing[36]	4.3	4.8
Electronic Funds Transfer	1.1	1.2
Total	100	100

Source: HIC Internet site: <www.hic.gov.au>. *Table 3: Medicare – % bill type by state and various periods.* Last updated 24 September 2004, accessed by ANAO 28 September 2004. Totals may not equal 100 due to rounding.

3.50 Table 3.1 shows that for approximately 10 to 11 per cent of claimants, a current mailing address, correctly recorded with HIC, will be essential for them or their providers to receive a Medicare benefit resulting from a claim. In the other 90 per cent of cases, the card holder's address does not play an essential role in ensuring the claimant or provider receives a benefit payment.

3.51 At some time, the consumer's Medicare card will need to be replaced. All Medicare cards display an expiry date. When a consumer's Medicare card is due to be replaced, a correct and current mailing address will be required if the card holder is to receive his or her replacement card. The next Chapter includes a description of HIC's card replacement procedures and the actions taken to help ensure an up to date mailing address is used.

3.52 The MEF and Consumer Directory contain data fields that indicate whether mail sent to a card holder's mailing address has been returned to HIC—thereby indicating that the card holder no longer lives at that address. ANAO's analysis of the Consumer Directory tables revealed 204 965 such records. This represents approximately 1.3 per cent of mailing addresses in the Consumer Directory.

Audit findings

3.53 Generally, consumers' mailing addresses recorded in the Medicare enrolment database were sufficiently accurate and current to support the various HIC business processes that rely on a mailing address. Where outdated

[36] Simplified billing is designed to simplify medical billing and payment arrangements for private patients for in-hospital care. (HIC Annual Report 2002–03, p. 63.)

information is identified, HIC takes appropriate steps to revise the necessary information.

Conclusion

3.54 ANAO concluded that, generally, the Medicare enrolment database is sufficiently complete and up to date to support the various business functions that currently rely on the database. Even though some fields were found to contain inaccurate or anomalous data, ANAO concluded that the majority of Medicare enrolment data was sufficiently valid and consistent for HIC to rely upon the database to support the effective administration of the Medicare program.

3.55 An exception to the general conclusion above is the half million active Medicare enrolment records, which most probably relate to people who are deceased. The next Chapter discusses HIC's use of information from the State Registrars of Births, Deaths and Marriages, and how this information may be used to reduce the risks associated with these spurious records.

Future focus

3.56 HIC has acknowledged through its own research that a particular data item has insufficient accuracy or integrity—that is, the consumer's date of birth.[37] At this time, neither ANAO nor HIC is able to quantify the extent of the problem. Until recently, a lack of integrity in date of birth information represented a relatively small business risk to HIC. A person's age was seldom a critical element in determining the validity of a Medicare claim.

3.57 In 2004, the Australian Government introduced a series of changes to the Medicare program. One of these measures was to provide doctors, in certain rural and remote areas, with a monetary incentive to bulk-bill Commonwealth Concession Card holders and children under 16 years of age. From 1 May 2004, the incentive payment was increased from $5 to $7.50 for services provided in Rural, Remote, Metropolitan Areas 3–7, and in the whole of Tasmania, where those services are bulk-billed and delivered to Concession Card holders and children under 16 years of age.

3.58 This audit focused on the integrity of Medicare enrolment data; it did not consider the processing of Medicare claims. However, with the introduction of this policy, the age of the Medicare consumer becomes more important in determining the correct level of Medicare benefit payments. When processing claims, HIC will now have to have regard to the age of consumers, where doctors claim to have provided services to children under

[37] Appendix 2 notes that HIC has been aware of integrity issues associated with consumer date of birth information since the introduction of Medicare in 1984.

16 years of age. The Government has estimated that this particular initiative will cost $957 million over the four years 2003–04 to 2006–07.[38]

3.59 Therefore, the accuracy of date of birth information stored on the Medicare enrolment database has recently become more important to the efficient and effective administration of Medicare. ANAO strongly encourages HIC to explore options for verifying and improving the accuracy of all date of birth information currently stored on the Medicare enrolment database.

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[38] Department of Health and Ageing, *Portfolio Additional Estimates Statements 2003–04:Health and Ageing Portfolio (Explanation of Additional Estimates 2003–04)*, Department of Health and Ageing, Canberra, 2004, p. 57.

4. Improving Data Quality

This Chapter outlines HIC's activities to cleanse current Medicare enrolment data and to achieve a higher standard of data accuracy and integrity in the future. It also includes ANAO's findings on this HIC work.

Efforts to improve the quality of Medicare enrolment data

Card replacement

4.1 Medicare cards are automatically replaced when they approach their expiry date. The automatic card replacement program was introduced in 1992. Approximately two months prior to the expiry of a Medicare card, HIC automatically replaces the card where there has been some recent activity associated with that card. Each month a computer program scans the enrolment file and flags cards set to expire within the next two months. The system then checks for patient claims within the last nine months or a change of address on the enrolment file, within the last eighteen months. If either of these criteria is met, a replacement card is automatically generated and sent to the consumer.

4.2 Where there has been no such Medicare activity the cards are not automatically replaced. Through a contract with a third party, HIC attempts to confirm the details held on Medicare records with the Telephone White Pages directory database. Where the consumer's details are matched with a current telephone directory entry, a replacement Medicare card is automatically generated.

4.3 Where details cannot be confirmed through either Medicare records or the White Pages data matching, a letter is sent to the Medicare card holder, inviting him or her to replace the Medicare card. The letter requests that the card holder visit a Medicare Office to confirm their enrolment details, before a replacement card is issued.

4.4 Medicare cards have a typical 'lifespan', or validity period, of five to seven years. Cards issued under RHCA arrangements or to applicants holding particular visa types are usually valid for a shorter period of time—anywhere from three to 36 months. The automatic card replacement program should permit HIC to confirm or refresh most of the Medicare consumer address information, within a seven-year rolling cycle. In 2002–03, HIC re-issued some 3.03 million Medicare cards, or approximately 25 per cent of the 11.7 million active cards in circulation at that time.[39]

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[39] Health Insurance Commission, *Annual Report 2002–03*, HIC, Canberra, 2003, pp. 56–58.

Audit findings

4.5 ANAO found that, by seeking to establish a level of confidence in the currency of address details prior to automatically replacing Medicare cards, HIC has acted to improve incrementally the quality of Medicare consumer address details, over time.

4.6 ANAO also noted that, in 1992–93, during a major replacement of expired Medicare cards, HIC did not automatically replace the cards of those individuals who had not used their card for at least five years. By doing so, HIC was able to cancel the Medicare cards for some 800 000 people—most of whom were believed to be deceased or no longer living in Australia.

Safety net registration

4.7 In November 2003, the Government announced a new set of safety net arrangements under Medicare.[40] Patient costs incurred from January 2004 would count toward the achievement of revised safety net thresholds. Families were required to register for the safety net scheme.[41]

4.8 Between 1 January and 31 August 2004, almost 1.8 million families registered with HIC, bringing the total number of registered families and couples to almost 3.5 million.[42]

4.9 The process of registering for the safety net scheme involves associating eligible individuals with a 'safety net family'.[43] It also involves associating individual family members with their Medicare number(s). Some family members may be associated with more than one Medicare number.[44] During the registration process, HIC also sought to confirm or revise the mailing address of the Medicare card holder.

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40 Ministerial Media Release of 25 November 2003. Sourced at the Department of Health and Ageing Internet site: <www.health.gov.au>, on 31 August 2004.

41 This had been the case for the existing Safety Net scheme administered by HIC, although the new scheme was expected to affect more people.

42 Source: HIC, Business Information Reporting Section, Information Services Branch.

43 A 'safety net family' is defined as follows. 'For safety net purposes a family consists of (1) a couple legally married and not separated, or a man and a woman in a de facto relationship with or without dependent children, (2) a single person with dependent children under 16 years or a full time student under 25 years whom you support.' Source: HIC, Information Sheet—How does the Medicare Safety Net work? Accessed at HIC's Internet site <www.hic.gov.au> on 31 August 2004.

44 'If your child is a member of two registered families, for reasons such as separation or divorce, the family which pays the cost of the medical service receives the benefit. This is determined by the Medicare card used to claim the benefit' Source: HIC, Information Sheet—How does the Medicare Safety Net work? Accessed at HIC's Internet site <www.hic.gov.au> on 31 August 2004.

Audit findings

4.10 ANAO found that the safety net registration process afforded HIC an opportunity to confirm or update many consumers' Medicare enrolment information. HIC had taken advantage of that opportunity and achieved an incremental increase in the quality of Medicare enrolment data.

4.11 When lodging claims for Medicare benefits, at a Medicare Office,[45] HIC's standard practice is to ask claimants, at the counter, to confirm their current address details. ANAO found that this practice also results in an incremental improvement in the quality of Medicare enrolment data.

Fact of death information

4.12 The previous Chapter highlighted almost half a million active Medicare enrolment records, which probably relate to people who are deceased. HIC is aware of this issue and, to improve the accuracy and completeness of Medicare enrolment records, has for many years been working on the automatic updating of enrolment records based on national data for the dates of death of individuals.

4.13 HIC has a Memorandum of Understanding with the National Registries of Births, Death and Marriages, to provide Fact of Death Data (FODD). The Registrar of Births, Deaths and Marriages (BD&M) in Tasmania co-ordinates the program. However, the data is handled and validated by the Australian Institute of Health and Welfare (AIHW). AIHW extracts and processes the data from the State and Territory Registrars of BD&M. AIHW then validates the data for consistency—particularly the accuracy of recorded dates—and in turn sends the data to HIC on a monthly basis.

4.14 HIC has been working to develop a system for the automatic end-dating of enrolment records based on the national FODD. The system involves matching personal details from the FODD with details on the MEF. Where an exact match is made, and certain business criteria fulfilled, the enrolment record is automatically updated with the date of death from the FODD file—the date of death is entered into the 'close-date' field of the MEF record.

4.15 In the initial implementation of the system, where an exact match was made, but one or more of the business criteria were not met or where a partial match was made, a report was generated and passed to the relevant HIC State Office for a manual assessment of the information. Inconsistent results from data matching, combined with technical difficulties associated with comparing the FODD files with the MEF, has meant that HIC has not been able to make

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[45] Rather than through channels such as bulk-billing and Easy-claim.

effective use of the FODD. As at June 2004, HIC had accumulated in excess of 1.5 million FODD records, spanning the previous 10 years.

4.16 HIC indicated to ANAO that the implementation of the Consumer Directory would provide an opportunity for HIC to more readily process the FODD, as many of the technical difficulties associated with data matching are expected to be overcome.[46] It is not until after the implementation of the Consumer Directory that HIC is likely to effectively address the processing of the 1.5 million record backlog.

4.17 ANAO was also informed that HIC had commenced a project, in October 2004, to manually review the Medicare enrolment records of all enrolled people over the age of 85 years, with a view to cleansing the database of records that probably relate to people who are deceased. Following this phase of the project, which it expects to complete by March 2005, HIC then intends to develop a system to automatically process FODD.

Recommendation No.5

4.18 ANAO recommends that, to improve the accuracy of Medicare enrolment records and reduce the business risks associated with maintaining active consumer records relating to people who are deceased, HIC give a high priority to developing and implementing a system to make effective and efficient use of Fact of Death Data in the Consumer Directory.

HIC's response:

4.19 Agrees. HIC has recognised the high priority of this issue and has commenced work on the development and implementation of a system automated fact of death process.

Merging duplicate PINs

4.20 As mentioned previously, individual consumers may be associated with more than one Medicare number, but they should only ever be associated with one PIN. The previous Chapter noted that HIC runs weekly Duplicate PIN Reports and uses these as a basis to investigate and resolve duplicate Medicare enrolments.

4.21 ANAO found that HIC's actions to identify and merge duplicate PINs, on a weekly basis, contributed in another incremental improvement in the quality of Medicare enrolment data, (also see Recommendation 3 in Chapter 3).

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[46] Both the FODD and Consumer Directory exist as DB2 tables, whereas the MEF is a VSAM file and not compatible with the FODD DB2 table. This seems to have been the root of many of the technical difficulties experienced to date.

Continuous Data Quality Improvement Program

4.22 HIC has carried out a number of projects to improve the quality and integrity of its data holdings.[47] In December 2001, HIC established a National Continuous Data Quality Improvement (CDQI) Committee, comprising representatives from every Division and State Office within HIC.

4.23 The role of the CDQI Committee was as follows:

> Improve data and information quality within the HIC by co-ordinating the establishment, resourcing and implementation of data and information continuous quality improvement strategies, which will assist the HIC to achieve the objectives outlined in the Strategic Plan.[48]
>
> One of the primary aims of the National CDQI Working Party is to facilitate a holistic and coordinated approach to data quality issues using the National Data Quality Framework, culminating in continuous improvement of business processes and practices within HIC.[49]

4.24 The CDQI Committee prepared a budget bid, in April 2003, with the aim of developing and implementing a National Data Quality Framework for application across all HIC programs—supported by a three-year Action Plan—to assist in the continuous improvement of business practices and data integrity within HIC. The National Data Quality Framework was intended to assist in identifying the causes of weaknesses and gaps in the organisation's business processes. It incorporates a focus on improving both program data and metadata.[50] $472 000 was allocated to the Project in 2003–04, the first year of the three-year plan.

4.25 Under the CDQI initiative, each HIC program[51] will use the National Data Quality Framework to generate data measures and reports to monitor the quality of data in their area and to identify business improvement strategies. Flowing from this, HIC has developed a Medicare Consumer Data Quality Scorecard. The scorecard presents the results of a field level analysis of selected

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47 Chapter 2 discussed HIC's data cleansing exercise prior to the Consumer Directory data migration.

48 The Strategic Plan states that the HIC wishes to be known for: Improving Australia's health through payments and information; and producing complete accurate and timely payments and information. Source: <www.hic.gov.au/abouthic/our_organisation/strategic_direction/strategic_plan.htm>, November 2004.

49 HIC, Internal report: *Overview CDQI Structure and NDQ Framework*, 30 July 2004.

50 The National Archives of Australia produces the Australian Government Locator Service (AGLS) Metadata Element Set–Usage Guide, which describes metadata as follows.

Metadata can be thought of as data about other data. Although there are many varied uses for metadata, the term is commonly used to refer to descriptive information about online or computer-based resources. Metadata is information in a structured format that describes a resource or a collection of resources.

Source: <www.naa.gov.au/recordkeeping/gov_online/agls/AGLS_usage_guide.doc>, August 2004.

51 In 2004–05 these will include Medicare eligibility, Medicare processing and PBS.

elements of Medicare enrolment data, and rates the data against six criteria. These are:

- accuracy—the degree to which the data reflects the real world;
- completeness—the degree to which data is present in a field or group of fields;
- consistency—the degree to which two or more data values or structures agree with each other;
- currency—the degree to which data values are up to date;
- relevancy—the degree to which data address the requirements of the user; and
- validity—the degree to which the data values or structures match the business rules.[52]

4.26 The CDQI Working Party then assists program managers to identify the causes of problems and contributes to remedial action. The system engages each of the relevant groups in improving data quality—the business policy area, the IT group and the business applications area. It incorporates a communication strategy, for example, a CDQI newsletter and other initiatives, such as a National Data Quality Awareness Week.

Audit finding

4.27 ANAO found that HIC's National Data Quality Framework and Continuous Data Quality Improvement project should contribute significantly to a steady improvement in the quality and integrity of Medicare enrolment data.

Conclusion

4.28 ANAO concluded that HIC has been conscious of the need to monitor the quality of Medicare enrolment data over time and to devise appropriate strategies and practices to improve the quality of that data. HIC has also implemented technical and administrative controls designed to reduce the possibility of entering invalid or inaccurate information into the database.

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[52] Internal HIC report—*The path to Continuous Business Improvement via the National Data Quality Framework, Eligibility (Consumer and Provider) Quality Assurance Deliverables 2003–2004*, 17 June 2004. Another HIC document, *The Data Quality Scorecard, Eligibility—Consumer*, (23 June 2004) uses Reliability and Confidence in place of Currency and Relevancy.

5. Privacy and Security

This Chapter discusses HIC's management of the privacy and security of personal information stored on the MEF and Consumer Directory. Because of the serious nature of HIC's obligations to protect the privacy of personal information, this Chapter contains considerable detail on HIC's privacy policies and procedures.

Privacy

5.1 Over the course of the audit, ANAO formed the view that a pervasive feature of HIC's organisational culture is a strong focus on protecting personal information held on its various databases. HIC raises staff awareness of privacy matters through induction training for new staff, and through privacy awareness campaigns and reminders. HIC controls and monitors staff access to personal information through a number of technical and administrative control structures.

Privacy, Information Access and Release Policy

5.2 HIC has developed a *Privacy, Information Access and Release Policy*, which provides comprehensive guidance for all HIC staff in dealing with consumers' personal information. The policy document examined by ANAO was produced by HIC's Privacy Branch. It was released in March 2004 and replaced two previous documents—the *Control of Personal Information Handbook* and the *Information Access Manual.* The policy aims to assist HIC staff to protect and manage personal information by using procedures and practices that comply with the Information Privacy Principles (IPPs), contained in the *Privacy Act 1988*, and the secrecy provisions of the *Health Insurance Act 1973* and the *National Health Act 1953*.

5.3 The policy is made available to all HIC staff, via the HIC Intranet. The policy is not published, in full, on the Internet. However, the HIC Internet site provides information to the public on HIC's approach to protecting the privacy and security of personal information, consistent with that included in the policy. HIC's Internet site also contains links to relevant legislation and additional information on privacy and security matters, as well as HIC contact details and links, for people requiring further information.

5.4 The policy covers all personal information held by HIC—relating to programs including Medicare, PBS, ACIR and the Medical Indemnity program. This audit examined those elements of the policy that directly related to Medicare enrolment data. The policy identifies relevant legislation, points the reader to the appropriate references, and presents a plain English interpretation of the legislative provisions. These are mapped against procedures to be followed by HIC staff. Where procedures are complex, or the

HIC staff member is afforded some discretion in his or her decision-making, the policy includes numerous invitations for the reader to contact the Manager of the Privacy Policy Section, to seek advice or clarification.

The Privacy Act

5.5 HIC's policy reinforces to staff the fact that HIC must comply with the IPPs contained in the *Privacy Act 1988*. ANAO tested HIC's policy and procedures, as they relate to Medicare enrolment data, against the 11 IPPs of the *Privacy Act 1988.*

Information Privacy Principles 1–3

5.6 The first three IPPs relate to the collection of personal information. The policy notes that IPP 1 provides that HIC can only collect personal information for a lawful purpose; that is directly related to its functions; and that the information must be necessary for or directly related to, that purpose. HIC's functions are set out in section 5 of the *Health Insurance Commission Act 1973*. These include Medicare functions conferred on the Commission by or under the *Health Insurance Act 1973*.

5.7 ANAO found that HIC's Medicare Enrolment Application form sought appropriate information, for the lawful purpose of the Commission carrying out its Medicare functions. We also noted that the policy provided further guidance to staff on using additional personal information supplied by an applicant for registration. For example if, as part of supplying documentary evidence to HIC, an applicant provided a document that included his or her Tax File Number, the policy advises staff to remove the Tax File Number from any copy of the document, before placing it on a person's file. This is a specific reference to the Tax File Guidelines contained in the *Privacy Act 1988*.

5.8 IPP 2 requires that where HIC asks a person for personal information about himself or herself, HIC must normally tell the person:

- why HIC is collecting the information and how it is used by HIC;
- whether there is a legal authority to collect the information; and
- to whom HIC usually gives that type of information.

5.9 This is often referred to as a Privacy Note or an IPP 2 Notice or Statement. The policy requires that such a note should appear on any forms—both hard copy and online—that are used to collect personal information.

5.10 ANAO found that the Medicare Enrolment Application form contained an appropriate Privacy Note. It stated:

> The information you provide on this form will be used to determine eligibility for Medicare benefits and to maintain a record of entitled persons for the government programs administered by HIC. Collection of this information is

> authorised by law and may be disclosed to the Department of Health and Ageing, Centrelink, the Department of Veterans' Affairs and the Department of Immigration and Multicultural and Indigenous Affairs. Information concerning any identification number given to you by HIC may be provided to a person who renders a hospital, medical or pharmaceutical service, to a member of the staff of that person, or to a person nominated to administer your affairs.[53]

5.11 IPP 3 requires HIC to do its best to ensure that personal information is relevant, up to date and complete. ANAO considers the Medicare Enrolment Application form is designed to capture sufficient information for HIC to make a determination on Medicare eligibility, based on information provided by an applicant, at the time of completing the form. The issue of HIC making its best efforts to maintain the *latest currently available* information is discussed later in this Chapter.

Information Privacy Principles 4–6

5.12 IPP 4 requires that a record keeper who has possession or control of a record containing personal information should take all reasonable steps to protect that record from loss, unauthorised access and disclosure, damage and misuse. The policy notes that such safeguards should be consistent with the standards outlined in the Commonwealth Protective Security Manual (PSM)[54].

5.13 While not conducting a thorough audit of HIC's compliance with the provisions of the PSM, ANAO was satisfied that HIC's policy contained appropriate guidance and procedures in relation to securing personal records—whether electronically maintained or paper-based. Matters of physical security, electronic access controls, and a prohibition on using information about real people in training material, are addressed in the policy.

5.14 HIC's policy indicates that IPP 5 is satisfied by HIC lodging a Personal Information Digest, with the Office of the Federal Privacy Commissioner (OFPC), on an annual basis. The policy notes that the Personal Information Digest must be maintained throughout the year, and not simply revised once a year prior to its submission to OFPC. ANAO noted that the policy requires any staff member who initiates a new record system or deletes an old system—that contains personal information—to advise the Manager, Privacy Policy, in writing, so that the Personal Information Digest may be maintained.

5.15 IPP 6 relates to access to records containing personal information. IPP 6 gives similar rights of access to personal information as is available under the *Freedom of Information Act 1982* (FOI Act). If HIC receives a request for access to

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[53] Health Insurance Commission, *Medicare Enrolment Application form*, form number 3103 (Design date 01/03), HIC, Canberra, 2003.

[54] Produced by the Protective Security Coordination Centre within the Attorney-General's Department.

personal information under IPP 6, the policy requires that HIC address it under normal access processes that include FOI.

5.16 Individuals are normally allowed access to their own information to check its accuracy. The routine provision of such access is known as 'standard access'. The policy suggests that straightforward requests such as verifying information on a screen in a Medicare branch office be handled under IPP 6. More complex requests should be processed under the FOI Act and such requests should be referred to the FOI Officer in Privacy Branch. ANAO found that HIC's policy facilitates compliance with IPP 6.

Information Privacy Principles 7–8

5.17 IPP 7 requires HIC to take reasonable steps to ensure physical information is accurate, relevant, up to date, complete and not misleading, by making appropriate corrections, deletions and additions. A routine request to amend a record under IPP 7 may occur where an individual's name has been recorded incorrectly or where an address has been changed. The policy permits routine requests to be actioned by the person holding the record.

5.18 HIC's policy notes that applications to amend records, which are not merely a change of addresses or correction of name details, are not 'routine'. The policy requires such applications to be referred to the FOI Officer, who is specifically authorised under the FOI Act to handle such requests. In such circumstances the individual seeking to amend a record is asked to put their request in writing.

5.19 The policy identifies three additional amendment rights under the *Privacy Act 1988* that are not covered by the FOI Act. These are:

- where amendment is sought on the grounds that the information is irrelevant;
- where a person seeks deletion of personal information; and
- where a person seeks amendment of personal information in a record to which he or she has not been provided lawful access.

5.20 The guidance provided in the policy is that such requests be referred to the FOI Officer for consideration. The policy also provides guidance on a preferred approach to amending a record, or the steps to follow if a decision is taken not to amend the record. ANAO considers HIC's policy and procedures generally comply with IPP 7.

5.21 IPP 8 requires that HIC takes reasonable care to check that personal information is accurate, up to date, and complete, before using it. The policy suggests that the extent to which the quality of personal information is checked before using it depends on how likely it is that the personal information is inaccurate, out of date or incomplete.

5.22 HIC's automatic card replacement program was discussed earlier in this report. ANAO considers that HIC's procedures surrounding the re-issue of Medicare cards reflects a reasonable effort to ensure personal information is up to date, before using it.

Information Privacy Principles 9–11

5.23 The three remaining IPPs relate to use of personal information for relevant purposes (IPP 9), limits on use of personal information (IPP 10) and limits on disclosure (IPP 11). ANAO found that the policy dealt adequately with these IPPs and provided sufficient guidance to HIC staff to enable them to carry out their functions in conformance with the IPPs.

5.24 During 2003–04, HIC did not receive any complaints under the *Privacy Act 1988* from the OFPC. Of four complaints about the use and disclosure of personal information received directly by HIC during 2003–04, one was resolved, two were ongoing and one unsubstantiated.[55] The issue of disclosure of personal information is discussed later in this Chapter.[56]

Secrecy provisions

5.25 Section 130 of the *Health Insurance Act 1973* contains a number of secrecy provisions relating to Medicare data.[57] All HIC staff are bound by the secrecy provisions, which are additional to, and override, the provisions of the *Privacy Act 1988*.

5.26 The HIC *Privacy, Information Access and Release Policy*, provides extensive guidance on the application of the secrecy provisions, and in particular, the circumstances and procedures associated with the release of information. The policy consistently reinforces the principle that HIC staff are not to access, release or disclose information except as required for the performance of their duties or in the exercise of their delegated powers and functions under an Act.

Access to own information

5.27 The policy notes that consumers are entitled to access their own information. HIC staff are advised how to process such requests and so provide individuals with their own information. The policy clearly states that

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[55] Health Insurance Commission, *Annual Report 2003–04*, HIC, Canberra, 2004, p. 167.

[56] Also in 2003–04, HIC reported that the Commonwealth Ombudsman received 137 complaints about HIC. This number was not reported by issue (*Annual Report 2003–04*, p166). ANAO understands the majority related to customer service and other issues—not the release of personal information, which is more properly handled through the OFPC.

[57] Secrecy provisions also apply to PBS, ACIR and Medical Indemnity information.

the release of such information should only be undertaken by officers whose duties specifically allow for this. It also advises those staff that:

> Extreme care must, however, be exercised to ensure that people are only provided with their own information and that the information provided does not include the information of others. Requests must be in writing although some claims information can be provided in response to telephone queries.[58]

5.28 The policy provides further advice where a Medicare card has the name of more than one person.

> A Medicare card can list a number of people but only one person on the Medicare card is identified as the card holder. As a general rule, HIC addresses correspondence to the card holder. The card holder on a Medicare card has no special status over any other person on the card and is not entitled to receive information regarding any other person on the card, except where that person is the card holder's dependent child under the age of 14 or where one of the exceptions to the secrecy provisions applies.[59]

5.29 ANAO found that the policy provided appropriate guidance and detailed procedures for HIC staff, in relation to the release of personal (Medicare enrolment) information to individuals.

Access to third party information

5.30 The procedures and circumstances permitting the release of Medicare information relating to third parties are dealt with in considerable detail in the policy. It states:

> People may obtain access to third party information if their request meets one of the exceptions to, or release provisions of the secrecy provisions outlined [in the policy] or if the divulging of the information is authorised and released by an officer holding the appropriately delegated power.[60]

5.31 The policy then presents a plain English interpretation of each of the relevant subsections of section 130 of the *Health Insurance Act 1973* and highlights any particular procedures that must be followed when processing such requests. These provisions include authorised release of information:[61]

- in the performance of an officer's duties;

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[58] Health Insurance Commission, *Privacy, Information Access and Release Policy*, HIC, Canberra, March 2004.

[59] ibid.

[60] ibid.

[61] The list provided in the policy is more extensive than that presented here, and includes provisions for release of certain information relating to medical practitioners, PBS and immunisation information. This audit concentrated on Medicare enrolment information.

- where the Minister (or their delegate) certifies that the release is necessary in the public interest;
- where the Minister (or their delegate) is of the opinion that an express or implied authority exists from the person to whom the information relates;
- to a prescribed authority; and
- for statistical purposes, provided it is not published in a way that enables the identification of an individual.

5.32 The release of Medicare information, in response to an express or implied request, may be authorised by HIC officers who hold the appropriate delegation. Such delegates are employed in HIC's State Offices and National Office. The release of information under other provisions is strictly controlled.

5.33 Only specific delegates in HIC's National Office have the power to authorise the release of information 'necessary in the public interest'. A supplementary set of guidelines has been prepared for the use of delegates exercising this function. The policy states that this type of release must be 'necessary', not merely 'desirable, convenient or helpful'. There are further restrictions placed on the use of information divulged in the public interest.

5.34 The authority to release information in other circumstances, but still under the secrecy provisions, also resides in specific National Office delegates only. These delegations include releasing information to prescribed authorities or in cases where an individual has been convicted of specific offences or an order has been made under certain provisions of the *Crimes Act 1914.*

Audit findings

5.35 ANAO found the policies and procedures surrounding the release of Medicare information to third parties are consistent with relevant legislation and represent essential elements of a sound control framework. ANAO also noted that HIC's Privacy Branch provides the HIC Executive with regular reports on *Information Release Statistics*. These reports typically cover a period of some five to six months and include the number of new requests received, those completed, those outstanding and the number of voluntary agreements reached, for each month.

Statistical information

5.36 HIC distinguishes between identifiable information and de-identified information. Identifiable information is described as any information that contains elements that can identify an individual. De-identified information is described as information which, by itself, does not identify the individual to whom it relates.

5.37 The process HIC employs for de-identifying information involves removing all data elements that identify an individual. This process could include removing from each unit record—for example, details of a Medicare claim—all personal identification fields such as name, date of birth, address, telephone and Medicare number.

5.38 An example of de-identified data is the encrypted unit record Medicare data that HIC provides to the Department of Health and Ageing on a daily basis. The provision of this occurs under a strict protocol. The Department can neither identify individuals nor discern their Medicare numbers. HIC's policy notes that provision of de-identified data, when combined with other data or information, could potentially lead to identifiable data. Therefore, the Manager, Privacy Policy must be consulted when staff respond to requests for access to de-identified data, which could potentially be re-identified.

5.39 HIC publishes a considerable amount of statistical information about the programs it administers. As well as providing information directly to health research bodies, such as the AIHW, HIC publishes statistical information in its annual reports and on its Internet site.

Audit finding

5.40 Over the course of this audit, ANAO found that all publicly available Medicare enrolment statistical information conformed to HIC's privacy policy. None of the reports, tables or other aggregated information viewed by ANAO identified individuals.

Privacy Commissioner's Guidelines

5.41 Section 135AA of the *National Health Act 1953* requires the Federal Privacy Commissioner to issue Privacy Guidelines relating to the Medicare and PBS programs.[62] The Guidelines lay down rules that are legally binding. They state:

> The following standards must be observed by the Health Insurance Commission in managing patient claims information in the conduct of the Medicare and Pharmaceutical Benefits Programs.
>
> 1. Functional separation of programs
>
> 1.1 Medicare claims information and Pharmaceutical Benefits claims information must not be held on the same database. Procedures must not be established which permit claims information from either of these programs to

[62] Subsection 3 of s135AA states: The Privacy Commissioner must, by written notice, issue guidelines relating to information to which this section applies. The Privacy Commissioner's Guidelines were first issued on 24 November 1993. Since then they have been amended twice—once on 22 February 1994 and again on 22 January 1996. The complete text of the Guidelines is available through the Internet at <www.privacy.gov.au/publications/mapbpg.doc>.

be linked, merged or combined, other than in the exceptional circumstances listed in Guideline 1.4.

5.42 While Guideline 1.1 relates specifically to claims information under the two programs, Guideline 1.8 specifically mentions the Medicare enrolment database and the Pharmaceutical Benefits entitlement database:

> Enrolment and entitlement databases must be kept separate from the claims databases. Personal Identification Numbers referred to in Guideline 2 may be included in claims databases. Personal identification components must not be included in claims databases except as follows: in the case of Medicare claims database, the Medicare number; and in the case of the Pharmaceutical Benefits claims database, the Pharmaceutical entitlements number.

5.43 Guideline 1.2b requires that:

> Detailed technical standards must be established by the HIC which:
>
> (i) specify access controls applying to each database;
>
> (ii) limit access to each database to those officers or contractors who have a reasonable need for access in order to ensure the effective administration of the particular program; and
>
> (iii) specify the security procedures and controls which have been included in each database or in the system to prevent unauthorised comparison or merging of records held in either database about the same patient.

5.44 Guideline 1.3 states that HIC is required to file, with the Privacy Commissioner, a Technical Standards Report dealing with these matters. HIC is also required to advise the Privacy Commissioner of any variations to the technical standards by way of Variation Reports.

5.45 ANAO requested HIC to provide a copy of the Technical Standards Report referred to in the Privacy Commissioner's Guidelines. HIC was unable to locate a copy of the Technical Standards Report.[63]

5.46 ANAO approached the OFPC seeking information on HIC's lodgement, or otherwise, of the Technical Standards Report. The OFPC informed ANAO that it was unable to locate a copy of HIC's Technical Standards Report. However, the OFPC provided ANAO with a copy of an internal report of October 1995, which documented an OFPC audit of HIC in regard to the section 135AA Guidelines. That audit report indicated that HIC had sent a Technical Standards Report to OFPC on 27 February 1995.

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[63] HIC was able to provide a document titled *Pharmaceutical Benefits Entitlement Checking—Technical Standard Report*. However, the contents of that document did not appear to meet any of the requirements listed in Guideline 1.2b. Rather, the document outlined some of the technical aspects of data matching procedures when matching data relating to persons eligible to receive concessional pharmaceutical benefits.

5.47 The OFPC audit report appears to conclude that HIC had adequate technical controls in place to protect the privacy of personal information it held. Nevertheless, neither HIC nor the OFPC was able to produce a copy of an appropriate Technical Standards Report.

Audit finding

5.48 ANAO found that HIC was not able to produce a Technical Standards Report of the type required by the Privacy Guidelines issued under section 135AA of the *National Health Act 1953.* ANAO notes the evidence that a compliant Technical Standards Report had been developed by HIC and lodged with the OFPC in 1995. Nevertheless, the following Recommendation calls upon HIC to redevelop a compliant Technical Standards Report.

Recommendation No.6

5.49 ANAO recommends that HIC redevelop a Technical Standards Report, which complies with the requirements of the Privacy Commissioner's Guidelines issued under section 135AA of the *National Health Act 1953,* and lodge it with the Office of the Federal Privacy Commissioner.

HIC's response:

5.50 Agrees. HIC will redevelop this Technical Standards Report, lodge it with the Office of the Federal Privacy Commissioner and ensure it is maintained to reflect future amendments.

HIC privacy training program

5.51 In 2002, HIC introduced a revised Privacy and Security Training Module. At that time, all staff were expected to complete the Module. It is mandatory for all new employees—consultants, contractors, temporary and permanent staff—to complete the Module within the first three weeks of appointment to HIC.

5.52 HIC's Privacy Branch developed the Privacy and Security Training Module. As part of this audit, ANAO examined version 3.0 of the Module, published in February 2004. The package is readily accessed by all staff through HIC's Intranet and may be completed as a self-paced training module or as part of a structured group training session.

5.53 The Module consists of:

- an Information Booklet;
- an Exercise Workbook;
- a privacy awareness-raising video, titled *Minding Your Business*;

- a Video Facilitator's Guide, designed to assist people who deliver privacy training to tailor programs for their staff; and
- an evaluation form.

Audit findings

5.54 ANAO found the Information Booklet to be comprehensive—covering relevant aspects of the *Privacy Act 1988* and Information Privacy Principles, secrecy provisions, Privacy Commissioner's Guidelines and the *Freedom of Information Act 1982*. The material presents realistic case studies and examples of unauthorised staff access to HIC information. Staff are also advised about what to do if they witness suspect incidents.

5.55 The Exercise Workbook leads the reader through a series of questions, testing their knowledge and understanding of the material in the Information Booklet and/or video. Once again, ANAO found the material in the Exercise Workbook to be comprehensive and of a high quality. Each participant is required to complete an attendance record—included in the booklet—and have it endorsed by his or her manager or team leader. Completed attendance records are forwarded to the relevant HIC State Office.

5.56 State Offices have developed their own procedures for retaining privacy training records—some record training in electronic databases, others rely on paper files. The Privacy Branch maintains an overview of privacy training activities, across HIC.

5.57 Released in September 2003, the video *Minding Your Business* and the associated Video Facilitator's Guide form part of the HIC Privacy Training Kit. HIC designed the video to stimulate participants to consider more complex privacy issues in their work.

Security

5.58 The second part of the HIC Privacy and Security Training Module addresses physical security, information security, computer and Internet security. It provides a general introduction to the policies and practices relating to security matters, practical advice on how to comply with some of those policies and pointers to more detailed information such as the *Commonwealth Protective Security Manual 2000* and IT Security Policy.

5.59 This audit considered how HIC ensures the prevention of unauthorised access to Medicare enrolment data by HIC staff and from people outside HIC. Each year the ANAO audits HIC's financial statements.[64] As part of the

[64] This activity culminates in an Independent Audit Report, which is included in the HIC Annual Report, tabled in Parliament each year.

financial statement audit, the ANAO reviews HIC's IT control environment. This is done in order to identify any control weaknesses that have the potential to affect HIC's business processes. It is used to evaluate the inherent and control risks of material misstatement in the preparation of HIC's financial statements.[65] Rather than duplicate the work of ANAO's financial statement IT auditors, we reviewed their audit findings for 2003–04, and HIC's responses to those findings. We focused our attention on Medicare enrolment data and associated IT systems.

5.60 Many of HIC's significant business applications reside within the mainframe environment. Users are granted access through mainframe functional group structures, to perform key business processes including viewing and updating customer information, processing transactions, and initiating payments on key business applications. In earlier years, the ANAO advised HIC of significant findings on control practices and administration of user access to its main computers. In 2003–04, ANAO recognised that HIC had made notable progress in addressing these issues. However, in June 2004, two critical elements were still to be completed and implemented. These were the way in which user access is granted and managed and the procedures for ensuring appropriate changes to user access where staff change positions.

Managing user access

5.61 HIC manages staff access and privileges on the main computer through a Resource Access Control Framework (RACF). As part of its Financial Statement Audit of HIC, ANAO recommended that HIC adopt a role based approach to access control. ANAO noted that HIC has commenced work to address this recommendation.

5.62 Initially, HIC reviewed the mainframe access privileges of all users. This stage reviewed the appropriateness of RACF group membership based on the intended purpose of the various RACF groups. The next stage requires HIC to assess the specific transaction and data access provided by the RACF groups, to determine if these permissions are appropriate for the intended role that the RACF group represents. ANAO found that until this stage is completed the risk remains that users are not receiving access to only the transactions and data required for their role. ANAO also noted that in the next stage of the project HIC should improve the standard of associated documentation to ensure the results are maintainable and auditable.

5.63 In 2003–04, ANAO found that HIC had documented procedures for managing changes to access levels where users change positions. However, ANAO noted that these procedures would need to be revised as further

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[65] The risks are those relating to a reliance on IT in the financial reporting process.

progress is made in implementing role based access control. ANAO noted that, once the majority of users gain their access through a single RACF group, tighter controls should be applied to requests for any change to user access.

5.64 HIC responded to the ANAO recommendations and advised that a role based access to mainframe databases and online systems was implemented in January 2004. Further, HIC advised that it would ensure a minimum six monthly review of user access permissions.

Audit findings

5.65 ANAO found that, in relation to preventing inappropriate user access to Medicare enrolment information, HIC has implemented a number of recent improvements to its access control systems, and that reasonable reliance can be placed on the current system of controls. As IT security forms an integral component of the annual financial statement audits, ANAO will continue to monitor HIC's response to IT security-related recommendations.

External security

5.66 The Defence Signals Directorate (DSD) is Australia's national authority for signals intelligence and information security.[66] One of the Information Security services DSD offers is that of Gateway Certification. The Gateway Certification process is designed to assist Commonwealth agencies to minimise the risks incurred by connecting their systems to public networks, such as the Internet.[67]

5.67 Certification entails an independent reviewer validating that the gateway's safeguards are operating in compliance with an organisation's security policy. This requires the certifier to examine the security objectives and risk assessment, to verify the residual risk.[68] HIC received DSD Gateway Accreditation in 2003.

5.68 HIC has also audited security related matters, including IT processing and communications security. An audit conducted in 2003, by the Audit and Risk Assurance Services Branch, provided a reasonable level of assurance that a range of identified risks had been appropriately addressed.[69]

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[66] DSD has two principal functions: one is to collect and disseminate foreign signals intelligence; the other is to provide Information Security products and services to the Australian Government and its Defence Force. Source: DSD Internet site, <www.dsd.gov.au>, August 2004.

[67] The certification review provides an independent verification that appropriate risk management strategies have been employed in the gateway environment, and that identified countermeasures are in place and operating effectively.

[68] DSD Internet site, <www.dsd.gov.au>, August 2004.

[69] This audit concentrated on external security risks that did not significantly overlap with the DSD Gateway Certification exercise.

Audit findings

5.69 ANAO examined the detailed audit findings from this exercise and, while not including the technical details in this report, formed the view that HIC's network intrusion detection systems could be reasonably relied upon to protect the security and confidentiality of Medicare enrolment information.

Conclusion

5.70 ANAO concluded that HIC generally has a strong organisational culture of protecting the confidentiality of personal information. Policies and procedures have been established to help ensure HIC's compliance with privacy legislation, including the secrecy provisions of legislation administered by HIC. A mandatory privacy training program helps to ensure a consistent framework is adhered to by all HIC staff, consultants and contractors.

5.71 While ANAO noted evidence that, in 1995, HIC had developed a Technical Standards Report of the type required by the Privacy Commissioner's Guidelines, it was not able to produce a copy of the report in 2004.

5.72 Overall, ANAO concluded that HIC has taken reasonable steps to prevent unauthorised access of Medicare enrolment information by HIC staff and outsiders.

Canberra ACT
27 January 2005

P. J. Barrett
Auditor-General

Appendices

Appendix 1: Eligibility Criteria

1. *A plain English description of people eligible to receive benefits under the Medicare program is provided on the HIC's Internet site. Paragraphs two to five, below, were taken from the Internet address <www.hic.gov.au/yourhealth /ourservices/am.htm>, current at 30 June 2004. This is not a substitute for the eligibility criteria prescribed in legislation. Paragraph six, below, contains extracts from the* Health Insurance Act 1973. *These extracts were sourced from the Attorney General's Department's Internet site, <www.scaleplus.law.gov.au>. The material was taken from a compilation prepared on 26 March 2004, taking into account amendments up to Act No 17 of 2004.*

2. People who reside in Australia excluding, Norfolk Island, are eligible if they meet any of the following four criteria:

- they hold Australian citizenship;
- they have been issued with a permanent visa;
- they hold New Zealand citizenship; or
- they have applied for a permanent visa, restrictions apply to persons who have applied for a parent visa (other requirements apply).

3. Where Australian citizens return to Australia to reside after living outside Australia for more than five years, or New Zealand citizens request enrolment as a permanent resident, it is necessary to provide documentation to support their residency status. Documentation severing ties with the previous country of residence or documentation proving residence in Australia is required. In some cases both forms of documentation may be needed.

4. Norfolk Island does not participate in the Medicare program, however, Australian citizens who have been living in Australia and move to Norfolk Island from the mainland will be eligible for Medicare on return visits for up to a period of five years.

5. The Australian Government has signed Reciprocal Health Care Agreements with some countries. Under these arrangements, residents of these countries are entitled to restricted access to health cover while visiting Australia.

[This ends the HIC's plain English description.]

6. The *Health Insurance Act 1973*, section 3, Interpretation, defines an eligible person as:

> ***eligible person*** means an Australian resident or an eligible overseas representative.

eligible overseas representative means a person who is:

(a) the head of a diplomatic mission of another country, or the head of a consular post of another country, established in Australia; or

(b) a member of the staff of such a diplomatic mission, or a member of the staff of such a consular post; or

(c) a member of the family of a person referred to in paragraph (a) or (b), being a member who forms part of the household of that person;

being a person who is neither an Australian citizen nor a person domiciled in Australia but who, under an agreement between the Government of the Commonwealth and the Government of that other country, is to be treated, for the purpose of the provision of medical, hospital and other care, as if the person were an Australian resident.

Australian resident means a person who resides in Australia and who is:

(a) an Australian citizen; or

(b) a person who is, within the meaning of the *Migration Act 1958*, the holder of a permanent visa; or

(ba) a person who has been granted, or who is included in, a return endorsement or a resident return visa in force under the *Migration Act 1958*; or

(c) a New Zealand citizen who is lawfully present in Australia; or

(d) a person (not being a person referred to in paragraph (a), (b), (ba) or (c)) who is lawfully present in Australia and whose continued presence in Australia is not subject to any limitation as to time imposed by law; or

(f) a person who:

  (i) is, within the meaning of the *Migration Act 1958*, the holder of a temporary visa; and

  (ia) is not covered by regulations made under subsection 6A(1); and

  (ii) has applied for a permanent visa under that Act and the application has not been withdrawn or otherwise finally determined; and

  (iii) has not, both:

    (A) on or after the commencement of this paragraph, made an application for a protection visa under that Act (whether or not the person has applied for any other visa), other than an application that has been withdrawn or otherwise finally determined; and

    (B) whether before or after the commencement of this paragraph, made an application for a parent visa under that Act (whether or not the person has applied for any

other visa and whether or not the application for the parent visa has been withdrawn or otherwise finally determined); and

(iv) has not, whether before or after the commencement of this paragraph, made an application for a parent visa under that Act (whether or not the person has applied for any other visa), other than an application that has been withdrawn or otherwise finally determined; and

(v) in respect of whom either:

(A) another person, being the person's spouse, parent or child, is an Australian citizen or the holder of a permanent visa under that Act; or

(B) an authority to work in Australia is in force.

Appendix 2: Initial Medicare Enrolment

1. Over the past 20 years, HIC has mapped and improved the quality of Medicare enrolment data. ANAO found a particularly useful source of information, in terms of describing the early days of Medicare, to be an *Internal Study into the Utility and Integrity of the Medicare Card*. This Appendix draws on material contained in the report of that study (the 2002 Report).

2. Following the 1983 Federal election, the new Government introduced the Medicare program and determined that it would commence operation on 1 February 1984.

3. HIC was selected to administer the program and, in a relatively short space of time, was required to:

- develop and implement business processes, policies and regulations;
- establish a database;
- establish business offices and train staff;
- register, enrol and educate providers;
- distribute forms and machinery;
- publicise the program and educate the public; and, finally,
- register and enrol 95 per cent of approximately 15 million individuals.

4. The 2002 Report noted that HIC achieved those requirements. In establishing the Medicare program HIC had to address and resolve three main issues—determining eligibility; enrolment; and a mechanism to identify eligible persons. The mechanism chosen to identify eligible persons was an embossed plastic card—the Medicare card. As well as identifying eligible persons, the card provided a means by which patients and/or health service providers might claim payments from Medicare.

5. HIC combined the eligibility and enrolment processes and sourced eligibility information from three key data sets. Firstly, HIC automatically enrolled and issued cards to persons who were members of Medibank Private, sourcing details from the Medibank Private database.[70] Secondly, HIC enrolled and issued cards to persons in receipt of an age pension, sourcing details from the (then) Department of Social Security database. Thirdly, HIC conducted a

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[70] At that time, HIC administered Medibank Private. In 1998, Medibank Private became a separate Commonwealth owned company and administrative ties with HIC were dissolved.

mass enrolment by contracting Australia Post to deliver a Medicare enrolment form to every letterbox in Australia, inviting people to enrol.

6. The mass eligibility and enrolment process solved a range of administrative problems at the time. However, the abridged process had several implications. The 2002 Report noted that, in 1984, HIC had difficulty assessing the integrity of the data supplied by the Department of Social Security and Medibank Private. The 2002 Report cited examples of problems with data integrity, in establishing the Medicare program, in advice provided by HIC to the then Minister of Health. The following example is from 1985.

> For a number of reasons the identification of persons under Medibank proved to be a tremendously difficult task mainly because date of birth was such an unreliable component of the personal details. Where, at the time of processing a claim, it was not possible to locate the Medibank number of the patient from the information supplied, there was little option but to register the person on the details contained within the claim. The result was that many people were issued with more than one number and any thought that there was a unique patient identification system was destroyed by the inadequacy of the procedures and systems in use at the time.

7. Also, by its nature, the mass enrolment, through a letterbox drop, relied heavily on the honesty of applicants and their interpretation of the data requirements.[71] HIC considered the major issues that affected data integrity in 1984 were:

- incorrect date of birth—many people did not know or supply their date of birth or mistakenly supplied incorrect date of birth details to HIC;
- incorrect address details—many people mistakenly supplied incorrect address details to HIC or changed address between lodging their enrolment application and being issued a card; and
- incorrect name details—many people who wished to be addressed by their middle name rather than their first name enrolled under their middle name. Additionally, many people enrolled under the name they were most commonly known, such as Bob instead of Robert. It should also be noted that such people were entitled to enrol under these names.

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[71] The study team noted that, during the mass enrolment, while there were a few instances of individuals attempting to enrol the family pet, some people were more mischievous in attempts to gain possession of multiple cards.

8. The 2002 Report concluded that:

> The net result [of the above] was that, by the end of the 1984 enrolment period, the HIC database had been corrupted, but to an extent that was never, and has never been measured.

9. This audit could not attempt to measure the extent of corruption in the 1984 data. Nor was it feasible for the audit to attempt to verify the eligibility of all people included on the Consumer Directory. Instead, we developed a series of indirect tests of data integrity—focusing on the internal consistency of data holdings, the logical consistency across different, but logically related, data fields and identified anomalies in the data.

Appendix 3: Proof of Identity

1. The Medicare Enrolment Application form instructs the applicant to collect a number of documents that are required to determine eligibility for Medicare. The applicant is required to provide one 'eligibility' document and two 'residency' documents. Eligibility documents are listed on the form as:

- Australian passport;
- birth certificate or birth extract, or
- Australian armed services papers,

for applicants born in Australia, and:

- Australian or overseas passport or travel documents issued by the Department of Foreign Affairs and Trade, with a valid visa,

for applicants born overseas.

2. Residency documents include:

- photographic drivers licence;
- rates notices with electricity, gas or telephone accounts in the same name;
- financial institution cards where a signature is included;
- firearm licence;
- motor vehicle registration papers; and
- rental or employment contracts.[72]

3. Collectively, these are Proof of Identity (POI) documents that HIC will use to determine the applicant's eligibility for Medicare. There is a space on the form—marked 'Office Use Only'—for HIC staff to record the type of identification sighted and accepted as proof of the applicant's identity.

4. The Medicare Enrolment Application form is designed to collect personal information for up to six persons, to be enrolled on the one Medicare card, under the one Medicare number. However, the instructions on the form are unclear as to whether POI documentation is required for all persons to be listed, or for the card holder only. The instructions are written in the second person.

> You need to provide relevant documents to determine your eligibility for Medicare enrolment. You must have one eligibility document and two

[72] The list is not exhaustive and other documents may be acceptable to HIC.

> residency documents from the lists below. If you cannot provide the appropriate documents, call Medicare on 132 011.[73]

5. However, HIC's internal training and support material, particularly the *Procedures for Medicare Enrolment*, available to all staff through HIC's Intranet, makes it quite clear that the HIC operator is to:

> Examine the documentation to establish the eligibility of all persons to be enrolled.[74]

6. ANAO considers that HIC's procedures represent a sufficient administrative control to help ensure that all new Medicare enrolments meet the eligibility criteria. Nevertheless, in the interest of greater clarity, ANAO suggests that, at the next opportunity for revising the Medicare Enrolment Application form, HIC indicate that eligibility documentation is required for all persons to be listed on a Medicare card.

7. HIC informed ANAO that it has conducted a review of its evidence of identity policy, procedures and documentation. This was done partially as a result of HIC's participation on the Whole of Government Reference Group for Evidence of Identity and Identity Fraud, and in preparation for the implementation of the Medicare smartcard.

8. This review resulted in a new framework for the establishment of evidence of identity and residency for Medicare enrolment and smartcard registration. HIC informed ANAO that it is redesigning both the Medicare enrolment and smartcard registration forms to clearly indicate that all persons are required to provide relevant documentation. HIC expected to complete the redesign work in November 2004.

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[73] Health Insurance Commission, *Medicare Enrolment Application form*, form number 3103 (Design date 01/03), HIC, Canberra, 2003.

[74] Health Insurance Commission, *Procedures for Medicare Enrolment*, HIC, HIC Intranet (not accessible by the general public), August 2004.

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