# The Potential Impact of Money Follows the Patient and Universal Health Insurance on Clinical Coding in Ireland

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## Declaration

I declare that the work described in this dissertation is, except where otherwise stated, entirely my own work, and has not been submitted as an exercise for a degree at this or any other university. I further declare that this research has been carried out in full compliance with the ethical research requirements of the School of Computer Science and Statistics.

Signed: _____

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## Abstract

The Irish government's vision for healthcare is a single-tier system with universal access to healthcare for all based on need, which is underpinned by compulsory Universal Health Insurance (UHI). Transition to a transparent funding model that drives efficiency and ensures fair allocation of resources is essential to achieve this vision. The introduction of a Money Follows the Patient (MFTP) model where hospitals are paid based on the services they provide in accordance with defined quality standards is the first step. This type of case-based (or Diagnosis Related Group [DRG]) reimbursement model requires consistent and unambiguous communication between the service provider and the payer, which is achieved through clinical coding of the patient's medical record. The objective of this research is to ascertain the potential impacts that the introduction of MFTP and UHI will have on clinical coding in Ireland.

The current state of clinical coding in Ireland was investigated using an online questionnaire with staff from public and private hospitals, while a literature review presented the international perspective. Interviews were conducted with six key stakeholders including clinical coders and a representative from a private non-coding hospital, insurers, the HSE, and the ESRI. Given the similarity with Australia, a case study was carried out to determine what lessons Ireland could learn from their experience of transitioning to a DRG-based reimbursement model. As insurers in Ireland will play a key role in the move to UHI, a second case study was undertaken to assess their challenges in relation to clinical coding.

It was concluded that MFTP and UHI will impact on clinical coding in Ireland. Operationally process change will be required, the coding workforce will expand and adapt to its escalated profile, all public and privates hospitals will have to code, additional services will necessitate coding, and increased clinical interaction will ensue. Senior management commitment will be vital to the success of this transition. The quality of coded data, and the underlying clinical documentation, will achieve unprecedented significance as providers strive to maximise income and payers introduce measures to ensure appropriate pay out. In addition to funding, coded data will continue to experience an upsurge in consumption as awareness grows of the value that can be derived from it. Coded data will be used by a variety of stakeholders for an increasingly diverse range of purposes including performance management, benchmarking, price setting, policy development, resource allocation and contract negotiation. Streamlining of data collection and national datasets, which require government mandate, will be crucial.

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## Abbreviations

| | |
|---|---|
| ABF | Activity Based Funding |
| ACHI | Australian Classification of Health Interventions |
| ACS | Australian Coding Standards |
| AHIMA | American Health Information Management Association |
| AIHW | Australian Institute of Health and Welfare |
| APC | Admitted Patient Collection |
| AR-DRG | Australian Refined Diagnosis Related Groups |
| AVLOS | Average Length of Stay |
| CC | Clinical Coder |
| CPT | Current Procedural Terminology |
| CQUIN | Commissioning for Quality and Innovation |
| DBC | Diagnosis-Treatment Combinations |
| DAD | Discharge Abstract Database |
| DOH | Department of Health |
| DOHA | Department of Health & Aging |
| DIT | Dublin Institute of Technology |
| DRG | Diagnosis Related Group |
| ECLIPSE | Electronic Claim Lodgement and Information Processing Service Environment |
| ED | Emergency Department |
| EDRS | Emergency Department Reference Set |
| EMP | Emergency Medicine Programme |
| EMR | Electronic medical record |
| ESRI | Economic & Social Research Institute |
| GDP | Gross Domestic Product |

| | |
|---|---|
| GPIT | General Practice Information Technology |
| HCAT | HIPE Clinical Audit Toolkit |
| HCP | Hospital Casemix Protocol |
| HIM | Health Information Manager |
| HIMAA | Health Information Management Association of Australia |
| HIPAA | Health Insurance Portability and Accountability Act |
| HIPE | Hospital In-Patient Enquiry Scheme |
| HIQA | Health Information and Quality Authority |
| HSE | Health Service Executive |
| HWA | Health Workforce Australia |
| ICD | International Classification of Disease |
| ICGP | Irish College of General Practitioners |
| ICHI | International Classification of Health Interventions |
| ICPC | International Classification of Primary Care |
| ICT | Information and Communications Technology |
| IHRIM | Institute for Health Record and Information Management |
| IPCRN | Irish Primary Care Research Network |
| IR-DRG | International Refined Diagnosis Related Group |
| ISO | International Standards Organisation |
| KPI | Key Performance Indicator |
| KVA | Swedish national classification system for surgery and nonsurgical procedures |
| MAU | Medical Assessment Unit |
| MBS | Medical Benefit Scheme |
| MDC | Major Diagnostic Category |
| MFTP | Money Follows the Patient |

| | |
|---|---|
| MRN | Medical Records Number |
| NCCH | National Centre for Classification in Health |
| NCCQ | National Clinical Coding Qualification |
| NHS | National Health Service |
| NMDS | National Minimum Data Set |
| NordDRG | Nordic patient classification system |
| NPI | National Patient Identifier |
| NPIRS | National Psychiatric Inpatient Reporting System |
| NPR | National Patient Register |
| NTPF | National Treatment Purchase Fund |
| OECD | Organisation for Economic Co-operation and Development |
| OPCS | Operating Procedure Code Supplement |
| OPD | Out Patient Department |
| PAS | Patient Administration System |
| PFS | Prospective Funding Study |
| PHDB | Private Hospital Data Bureau |
| PICQ | Performance Indicators for Coding Quality |
| PMS | Patient Management System |
| PMSI | Hospital activity database (France) |
| SHO | Senior House Officer |
| SNOMED-CT | Systematized Nomenclature of Medicine Clinical Terms |
| UHI | Universal Health Insurance |
| URG | Urgency Related Groups |
| WHO | World Health Organisation |

## Glossary

Casemix:
An internationally accepted system which allows for the monitoring and evaluation of health services. It is the comparison of activity and costs between hospitals by classifying hospital data into a manageable number of discrete groups, which are clinically similar and consume similar resources

Clinical Indicators:
Specific medical criteria (symptoms and or confirmed diagnosis) which support the medical necessity to perform a particular procedure or service

E-claiming:
Irish online claiming system, facilitating the electronic exchange of claim data between hospitals and health insurers

Episode of care:
All treatment provided to a patient for a medical problem, within a specific period of time, across a continuum of care in an integrated system

Medical Necessity:
Medical treatment which can be justified as reasonable, necessary, and/or appropriate, founded on evidence-based clinical standards of care

Outlier:
Generally this is something that is outside the normal experience. More specifically from a healthcare funding perspective, this refers to patients whose length of stay, or treatment costs, are outside the norm for their condition

Over-coding:
Selection of a more complex, and/or higher cost, procedure than was actually performed

Under-coding:
Selection of a code that does not capture the true intensity, or amount of work actually performed

Upcoding:
The deliberate improper selection of a code for a medical procedure or diagnosis that results in a higher payment to the healthcare service provider than is warranted by the true procedure or diagnosis

# Chapter 1 Introduction

## 1.1 Background

The vision for healthcare in Ireland as outlined in the government's Future Health strategy is a single tier system based on social solidarity, where compulsory universal health insurance (UHI) should ensure universal access to healthcare for all based on need rather than ability to pay (Department of Health, 2012). One of the first elements of the government's strategy for reform is a move towards a Money Follows the Patient (MFTP) funding model that will ensure fairer allocation of resources, drive efficiency, increase transparency and support the move towards UHI (Department of Health, 2013b). Transitioning to a prospective case-based, or Diagnosis Related Group (DRG), funding model is a key component of this reform where hospitals will be paid based on the individual episodes of care they deliver in accordance with clear quality standards. This represents a significant change from the current block grant allocation model with budgets based on historical data.

This funding model will be "*driven by communication of patient level information*" and will necessitate a fully integrated process of financing, performance management and governance (Department of Health, 2013b). Patient information is sourced from the patient's medical record (ESRI, 2013e) , the primary purpose of which is to provide continuity of care, in other words to document the patient's care to-date so that other professionals can use it as a basis for additional care and treatment. Provision of data to third-party payers for reimbursement is a secondary use of the patient's medical record (Green and Rowell, 2012).

Reimbursement can be described as payment to healthcare providers for services rendered to patients. Communication between the provider and the payer, the State or health insurer, of the delivered services is achieved through coded data which ensures consistency, transparency and reliability of the information (Casto and Layman, 2009). DRG codes, which will form the basis of the proposed funding model, group hospital activity according to common clinical characteristics and resource usage. Therefore in addition to providing a transparent means to fund and track hospital activity, the model enables comparison of factors such as efficiency, quality and cost (Department of Health, 2013c).

Clinical coding is the process of abstracting coded data from medical charts. This process has been in operation in Ireland to some degree since 1969 (ESRI, 2013c) but its adoption has

developed significantly over the years with a total of 1.47 million inpatient and daycase discharges being coded in 2011 (ESRI, 2012a). The profile of clinical coding is likely to undergo significant change as a result of the changes outlined above.

## 1.2 Research Rationale and Aim

These government healthcare reforms have already made their presence felt on clinical coding in Ireland with the introduction of coding targets (HSE, 2012a). While private hospitals and insurers are not immediately affected, it is possible that they will be impacted in the future with a move to a single-tier system. Very little research has been carried out to-date on clinical coding by private hospitals or insurers in Ireland.

Impact can be defined as any effect of the service (or of an event or initiative) on an individual or group (Fitz-Gibbon, 1996). Based on this definition, the MFTP policy document makes several references to coding and classification that could be construed as potential impacts such as the timeliness of coding, unintended consequences, version of classification and services covered (Department of Health, 2013b). Similarly the preliminary paper on UHI describes a prospective funding study (PFS) on orthopaedics, which while demonstrating substantial quality improvements in areas such as average length of stay and day of admission surgery rates, also highlighted impacts on clinical coding such as determining activity rates and timelines of coding (Department of Health, 2013c).

Both the MFTP and UHI initiatives are in the early stages yet potential impacts to clinical coding are already being highlighted. Internationally several countries including Australia have undergone similar transitions. Therefore it would seem plausible that value could be gained by examining their experiences and applying lessons learnt to the Irish situation in an effort to possibly smooth our changeover.

In light of the above, this dissertation proposes to explore clinical coding in Ireland and to determine the following:

a. How and where clinical coding is currently carried out in the Irish health sector
b. How MFTP and UHI will impact on the current coding process in terms of people, process and technology
c. Who the stakeholders are and how they will be affected

d. How other countries have transitioned to this model and what Ireland can learn from their experiences
e. Whether the clinical coding process can be streamlined to enable a 'code once, use many' approach

This exploration comprises a literature view, a questionnaire to public and private hospitals, interviews with stakeholders and two case studies - one of the Australian transition to DRG reimbursement and the other of clinical coding by insurers in Ireland. The output of this study attempts to address the following research question:

***"What Potential Impact will Money Follows the Patient and Universal Health Insurance have on Clinical Coding in Ireland?"***

## 1.3 Overview of the Dissertation

The remainder of this dissertation has been divided into five chapters, each of which focuses on a particular aspect of the research as outlined below.

Chapter Two explores the current State of the Art in relation to healthcare funding and its association with clinical coding. The part that data quality and audit play in accurate reimbursement is examined along with the current trends into the collection and use of coded data. The clinical coder role and process are considered in the context of their increasing profile.

In Chapter Three the rationale for the research methodology adopted to address the research question is outlined along with details of the research design carried out and limitations of the methodology used.

Chapter Four provides detailed analysis of the research conducted and summarises the various themes that emerged from it. The Australian context as it pertains to clinical coding during their transition to DRG reimbursement is highlighted in addition to an in-depth examination of an Irish insurer in relation to clinical coding.

Chapter Five provides an evaluation of the research findings and in this context posits the potential impact that Money Follows the Patient and Universal Health Insurance will have on clinical coding in Ireland.

Finally Chapter Six summarises the research conducted and the resultant findings. Areas for further study are recommended, while reflections of the researcher as well as limitations of the research are discussed.

# Chapter 2 State of the Art

## 2.1 Introduction

As stated in section 1.3, this chapter explores the current context in relation to healthcare funding, clinical coding and the connection between the two. The process of clinical coding and the role of the clinical coder who performs it are examined in light of an increased profile. Trends in the use of coded data are discussed and the significance of data quality and audit as a result of this usage is investigated. International context is highlighted in relation to the effect similar changes have had on clinical coding. Given the broad scope of the topic undertaken, the literature review focuses primarily on inpatient and daycase activity although some references to outpatient are made where appropriate.

Section 2.2 provides an overview of healthcare funding, how this is currently achieved in Ireland and the proposed changes as outlined by the government's proposals for MFTP and UHI. An overview of clinical coding is given, including the various layers of coded data and the connection between them. The association between healthcare funding and coding is then expounded.

Section 2.3 outlines the types of services coded and the classifications used comparing the Irish case with international evidence.

Section 2.4 explores the role of the clinical coder and some of the issues currently being experienced. Training and qualifications are discussed, in addition to resource shortages and the limited profile of the role.

Section 2.5 examines the factors that impact on data quality and the measures used to alleviate issues with quality. Data audit is discussed along with the types of errors encountered and their consequences. Lastly clinician involvement and electronic medical records are highlighted as options to improve data quality.

Section 2.6 explores the increasing use of coded data for a wide range of functions outside of funding and discusses the need for national datasets that incorporate private data.

Section 2.7 then summarises the main findings from this exploration of the state of the art.

## 2.2 Healthcare Funding and Clinical Coding – The Connection

### 2.2.1 Healthcare Funding Overview

Healthcare spend is one of the biggest items of public and private expenditure in most developed countries (OECD, 2013b). In Ireland healthcare spend accounted for 8.9% of Gross Domestic Product (GDP) in 2011, which was slightly less than the Organisation for Economic Co-operation and Development (OECD) average of 9.3% (see Figure 2.1) (OECD, 2013c).

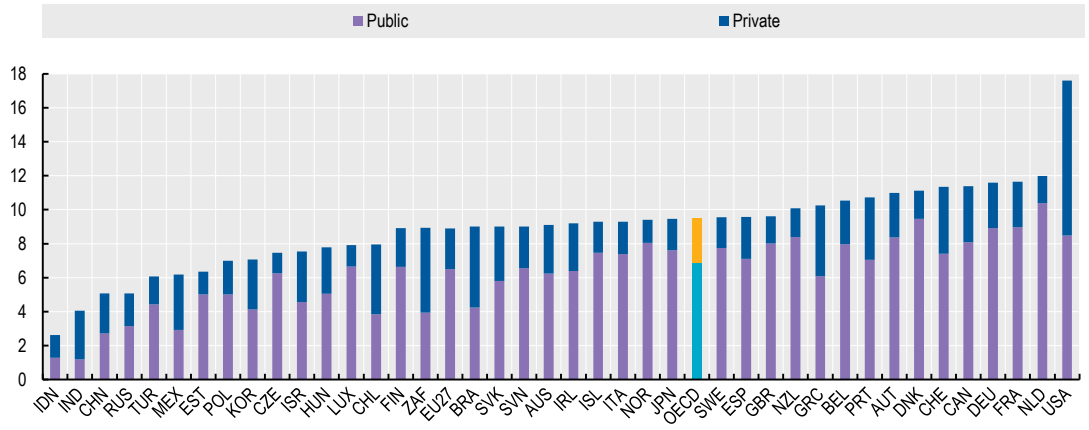


**Figure 2.1 OECD Public and Private Health Expenditure as a Percentage of GDP (OECD, 2013b)**

Spend on healthcare increased consistently year on year by approximately 5% between 2000 and 2009 with Ireland having a growth rate of 8.9%. However, this growth has dropped to circa 0.5% for 2010-2011 with Ireland experiencing a drop of 5.4% (see Figure 2.2). Initial figures suggest that this decline continued into 2012 (OECD, 2013a). While funding has dropped in absolute terms, the allocation of government budget has remained stable at approximately 26%. However, the growth in demand has increased significantly as a result of the economic recession (Evetovits et al., 2012).

In light of these figures, many countries are investigating options to curtail healthcare spend while maintaining a quality service to patients. In 2011 the Australian government announced a new healthcare funding model, as projections showed that by 2045-2046 healthcare spending alone would be more than the combined revenue collected by all states and local government. They attributed this to an ageing population, increased rates in chronic disease, new treatments and the rising cost of healthcare (Department of Health and Ageing, 2011). The Irish government in 2012 outlined its 'Future Health' strategy which includes a prospective

case based funding model, citing similar reasons for reform in addition to significantly reduced budgets, capacity deficits, and large waiting lists (Department of Health, 2012).

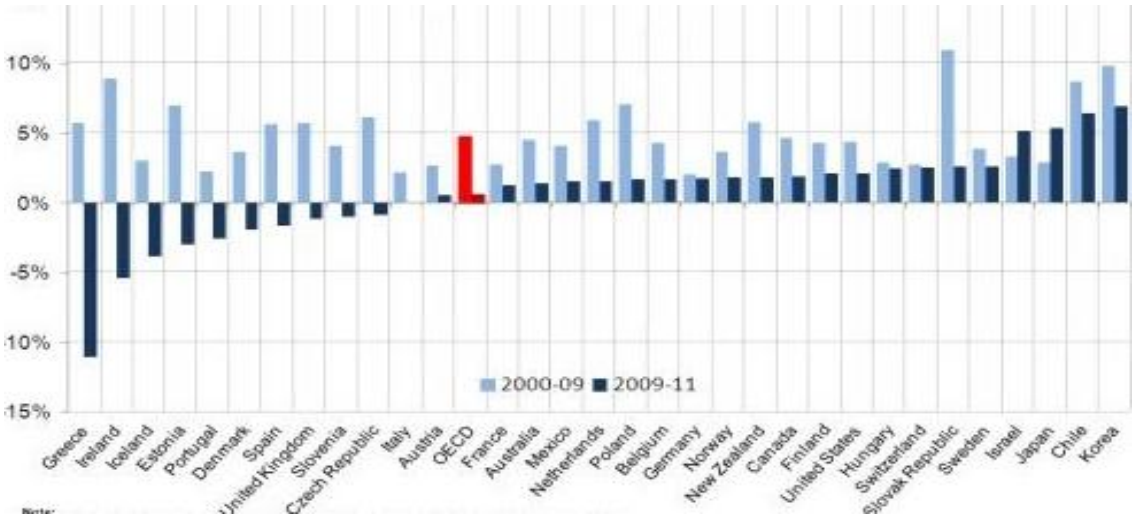


**Figure 2.2 Average Annual Growth in Health Spending across OECD Countries, 2000-2011 (OECD, 2013a)**

Various models of healthcare funding exist internationally which are summarised in Table 2.1 (Casto and Layman, 2009) and variations also exist for many of these models. Retrospective payments are made after the service is carried out, meaning that the payer cannot accurately predict costs. In prospective models on the other hand payment rates for services are set in advance for a predetermined period (Casto and Layman, 2009).

**Table 2.1 Healthcare Funding Models**

| Funding Model | Description | Retrospective/ Prospective |
|---|---|---|
| Block Grant | Fixed amount to cover all services for an agreed period, with no consideration given to volumes or complexity | Retrospective |
| Capitation | Fixed amount per person for an agreed period | Retrospective |
| Case / DRG-based | Fixed amount per case or DRG, based on the condition of the patient | Prospective |
| Fee Per Service | Fixed amount for every service provided, based on an agreed fee schedule | Retrospective |
| Per Diem | Daily rate for each inpatient day | Prospective |

### 2.2.2 Current Healthcare Funding in Ireland

The Irish healthcare system is currently a public private mix. In 2011, government revenue funded 67% of health spending (OECD, 2013c). Public hospitals are funded by an annual block grant from the Health Service Executive (HSE) that covers the cost of treatment for public patients. Calculation of the allocation is based on historical data with some minor adjustments for inflation or salary variations (Department of Health, 2013b).

Currently 39 public hospitals participate in the National Casemix Programme, where a portion of their budget is adjusted based on their casemix complexity and performance (National Casemix Programme, 2011). Casemix can be defined as the relative proportions of various case types that a hospital treats (Fetter et al., 1980). It is calculated using historic activity data sourced from the Hospital In-Patient Enquiry (HIPE) system and cost data from audited annual account statements, which results in the data being two years old at any given time. Under casemix, hospitals are grouped so that they can be compared against their peers while not being disadvantaged for providing services such as teaching (National Casemix Programme, 2011).

Private treatment in public hospitals is funded on a per diem basis. The charges are determined by the Minister for Health and vary by hospital category and status (private, semi-private, or daycase (Department of Health, 2013b)). Until recently this charge only applied to designated private or semi-private beds in public hospitals. However, changes introduced in the recent Health Amendment Bill 2013 mean that all patients who elect to be privately treated will be charged regardless of the bed they occupy (Department of Health, 2013a). Private hospitals are funded on a prospective model based on individual contracts with insurers. The exact model used varies by insurer and potentially by service type.

### 2.2.3 Proposed Changes for Irish Healthcare Funding

As stated previously, the Irish government revealed a new health strategy in 2012, which includes a move to an integrated care model. Reform of the funding system is required to enable transition to a more integrated payment model, whereby a single payment would be made for an episode of care across multiple providers. Any new payment mechanism must provide incentives to encourage treatment at the lowest level of complexity which is safe, timely and efficient (Department of Health, 2012).

## Money Follows the Patient

Such a radical change cannot be achieved overnight and one of the first steps along this road will be the introduction of a MFTP funding model. This will replace the current block grant allocation mechanism for public hospitals described above with a prospective case, or DRG-based, payment system. This would support integrated care across various settings so that the money always follows the patient to the most appropriate care setting.

The objectives of the MFTP funding model include (Department of Health, 2013b):

- ✓ *"A **fairer** system of resource allocation where hospitals are paid for the quality care they deliver,*
- ✓ ***Efficiency** in the provision of high quality hospital services*
- ✓ *Increased **transparency** in the provision of hospital services*
- ✓ *Support the move to an **equitable**, single-tier universal health insurance system where every patient is insured and has their care financed on the same basis"*

In order to achieve these objectives, the government published a policy paper on MFTP that offers details of the new model and outlines how the new funding model will be introduced - initially in shadow form in 2013, moving to a full phased implementation in 2014 (Department of Health, 2013b).

The new model will apply to episodes of care provided in a range of settings, with the same price being allocated to a service regardless of the setting or category of hospital. However, some services such as Emergency departments and teaching will be financed separately. Outpatient services, which are part of an episode of care, will be part of the new model as will mental health services although not in the initial implementation.

Prices will be assigned to DRGs at a national level and the system will be based on the Australian Refined Diagnosis Related Groups (AR-DRG) system currently in use in the public system with some possible extensions or changes if deemed appropriate (Department of Health, 2013b).

The implementation is dependent on the creation of new Hospital Groups, which will ultimately be replaced by Hospital Trusts. Annual contracts will be agreed with each Hospital Group. These contracts will set out quarterly activity targets, funded at the national DRG

price. However, in line with the objectives, they will also include quality targets that are underpinned by financial sanctions. Payment will be made to the Hospital Groups once confirmation has been received that the activity has been delivered. In order to ensure budgetary discipline, costs will also be capped at Hospital Group level. Funding will be available for additional targeted activity if required, but only facilities that have met their own activity targets can apply to be considered for this additional activity. There may also be potential for private facilities to bid for any additional activity.

As stated in section 1.1, patient level information in coded format will be a key enabler to achieving the objectives of MFTP. While the activity data gathered will primarily be used to determine funding, it will also provide significant input for performance management and the monitoring of activity and quality targets, resource allocation, and determination the national DRG price annually (Department of Health, 2013b).

### Universal Health Insurance

Another key element of the government's health strategy is the introduction of UHI. The government published a preliminary paper in February 2013 providing an initial insight into the system (Department of Health, 2013c). Under UHI, all citizens will be insured for a standard package of primary and hospital care services while potentially having an option to purchase additional services. There will no longer be a distinction between public and private patients. People will have a choice of health insurer and payments will be related to ability to pay. Primary and hospital care services will be funded primarily by the UHI system itself. Other specialised and social services, such as long-term care, will continue to be funded by the tax system.

Regulation of the health insurance market will still be required, but will have to change to support UHI competitively. In order to maintain the social principle of community rating, where all citizens pay the same rate for health insurance regardless of age (HIA, 2013a), an equitable risk equalisation system will be required which neutralises differences in insurer's costs arising from variation in their member's age profile (HIA, 2013b).

The design of the UHI model for Ireland is still in its infancy and contains numerous components, as outlined in Figure 2.3. These interconnected policy areas will form the basis of Ireland's future health system.

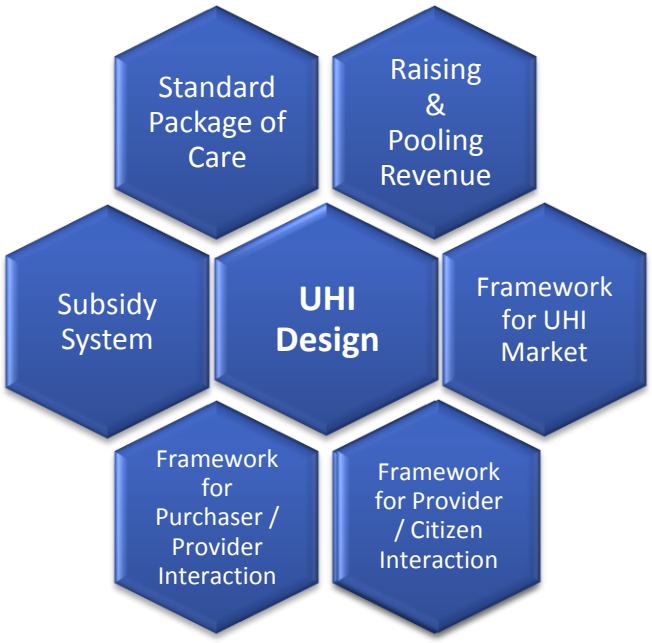


**Figure 2.3 Key Policy Areas of the Universal Health Insurance Design (Department of Health, 2013c)**

High quality health information will be essential to the delivery of integrated care across multiple settings. It was acknowledged that considerable investment would be required in Information and Communications Technology (ICT) to support the envisaged reform. The Health Information Bill was also highlighted as a key enabler as it will provide a legal framework for the better governance of health information and the necessary enabling legal framework for a number of initiatives including unique identifiers, and national datasets (Department of Health, 2013c).

### 2.2.4 Clinical Coding Overview

Health is information-intensive, generating vast quantities of data daily. Management and processing of this data is estimated to consume up to 30% of the total health budget (HIQA, 2013d). There are many ways in which a clinical concept can be represented. This poses difficulties when attempting to analyse or use this data in a structured way. The need to classify data was recognised as far back as Aristotle who introduced the notion that abstract concepts represent definitions of things that have been classified by describing their attributes (Chute, 2000). In the 17th century, John Graunt used data from a mortality classification, gathered seventy years earlier by the London Bills of Mortality, to make insights into the patterns of mortality that emerged (Chute, 2000). Notes from Florence Nightingale, dated 1863, reveal that she was similarly interested in *"… some uniform system of publishing the statistical records of hospitals*" (Nightingale, 1863).

The introduction of information systems accelerated the necessity for structured data that is consistent and comparable. In healthcare, the classification of data was primarily used for billing and insurance claims (Chute, 2000). However, the advent of electronic health records and decision support systems, which require the integration of data from multiple systems, has meant that the standardisation of clinical data is now vital. This has resulted in the emergence of various structures for different types of healthcare information. Figure 2.4 shows the various layers in this structure.

Clinical terminology can be described as "*standardized terms and their synonyms which record patient findings, circumstances, events, and interventions with sufficient detail to support clinical care, decision support, outcomes research, and quality improvement; and can be efficiently mapped to broader classifications for administrative, regulatory, oversight, and fiscal requirements*" (Chute, 2000)

Language is not used uniformly in healthcare. The use of a clinical terminology enables unambiguous data exchange between systems and a common platform for both systems and clinicians to communicate and compare(Bos, 2006)(Bos, 2006). Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT) is the most comprehensive clinical terminology in use. It comprises concepts, terms, and relationships with the aim of "*precisely representing clinical information across the scope of healthcare*" (IHTSDO, 2013). While clinical terminologies are

vital for system interoperability, the vast quantity of terms make it impractical for use at a more general level such as statistics or analysis.

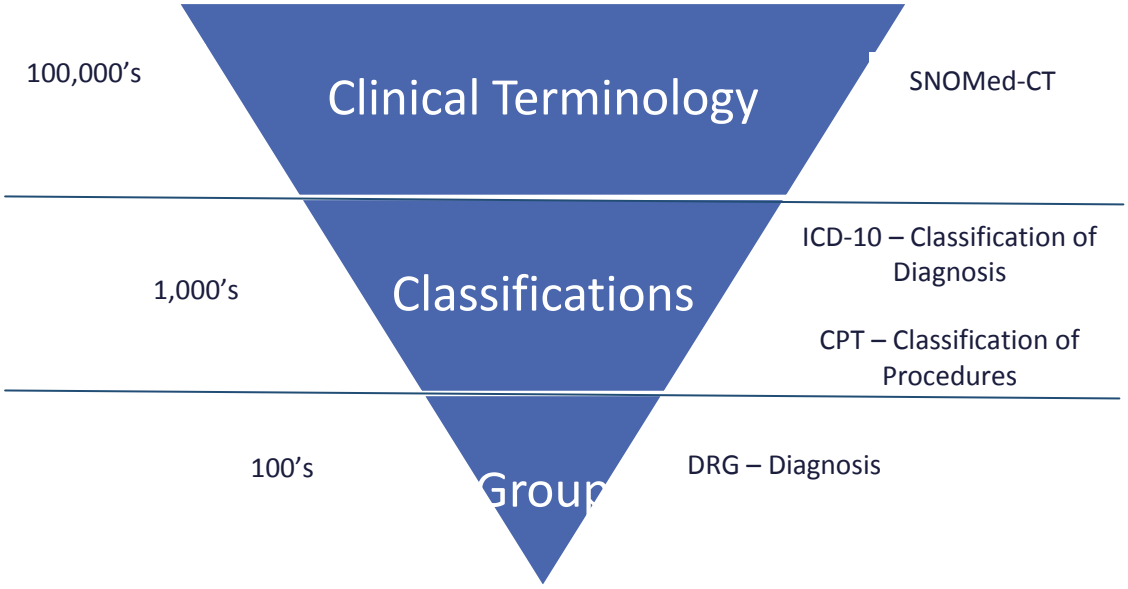


**Figure 2.4 Layers of Healthcare Information**

**Adapted from (2009)**

Classifications provide a means of ordering or grouping information within a distinct domain according to defined criteria (de Lusignan et al., 2001). ISO 17115 defines a classification as '*an exhaustive set of mutually exclusive categories to aggregate data at a pre-prescribed level of specialization for a specific purpose' (Madden et al., 2007)*. The primary use of classified information is in statistical analysis of information.

The International Classification of Diseases (ICD) is the most prevalent classification for diagnosis and is the global health information standard for mortality and morbidity statistics. It defines the universe of diseases, disorders, injuries, and other health-related conditions (WHO, 2012). The other common classification is the application of procedures codes for health interventions carried out by medical professionals. Further details on the various classifications in use internationally are provided in Appendix I.

Groups are a way to refine classifications further, by grouping patients that are clinically and resource homogenous together. As far back as 1913, experts such as Dr. Eugene Codman have been trying to solve the problem of how to measure the outcomes and cost of hospital

treatment. The Diagnosis Related Group (DRG) classification system has emerged as the international standard for achieving this measurement and some version of this standard is now in use in almost all countries around the world (Busse et al., 2011).

DRG systems typically serve two purposes: increased transparency of the services provided by hospitals using patient classification and output measurement, and more efficient resource utilisation by paying hospitals based on the type and number of cases treated. These measures should also contribute to increased quality of care (Busse et al., 2011). Table 2.2 (Busse et al., 2011)shows the reasons why DRGs were originally introduced into some European countries, as well as their current purpose as at 2010.

**Table 2.2 Year of Introduction and Purpose of DRG System over Time in Various European Countries**

| Country | Year of DRG Introduction | Original Purpose(s) | Principle Purpose(s) in 2010 |
|---|---|---|---|
| Austria | 1997 | Budgetary Allocation | Budgetary Allocation<br>Planning |
| England | 1992 | Patient Classification | Payment |
| Estonia | 2003 | Payment | Payment |
| Finland | 1995 | Description of Hospital Activity<br>Benchmarking | Planning and Management<br>Benchmarking<br>Hospital Billing |
| France | 1991 | Description of Hospital Activity | Payment |
| Germany | 2003 | Payment | Payment |
| Ireland | 1992 | Budgetary Allocation | Budgetary Allocation |
| Netherlands | 2005 | Payment | Payment |
| Poland | 2008 | Payment | Payment |
| Portugal | 1984 | Hospital Output Measurement | Budgetary Allocation |
| Spain | 1996 | Payment | Payment<br>Benchmarking |
| Sweden | 1995 | Payment | Benchmarking<br>Performance Measurement |

Updates to coding systems are required at regular intervals to incorporate advances in medical technology and practices. DRG systems are generally reviewed annually in terms of costs. Updates to the actual codes themselves would be less frequent, for example splitting or merging DRGs. The Australian AR-DRG coding system was updated to version 7.0 in 2012 with the number of DRG codes increasing by 73 to 771. Thirty seven of the new DRGs are for daycase admissions reflecting the change in clinical practice (NCCC, 2012a). Many countries with their own DRG system have a governance process and criteria around when codes are changed. In Poland, for example, evidence must be provided that any new proposed group would comprise at least 300 cases before a new code is introduced. Simulation is frequently used to estimate the financial impact of any proposed changes (Busse et al., 2011).

Clinical coding is the process of classifying data. The National Health Service (NHS) Clinical Coding instruction manual describes it as *'… the translation of medical terminology, as written by the clinician, to describe a patient's complaint, problem, diagnosis, treatment or reason for seeking medical attention, into a coded format' which is nationally and internationally recognised*" (NHS, 2008). A Clinical Coder (CC) carries out this task. The term Health Information Manager (HIM) is also used, particularly in Australia. While HIM can perform coding, they typically perform other tasks related to the management of health information and data (Collins et al., 2010).

### 2.2.5 How Clinical Coding is linked to Healthcare Funding

As outlined above in a DRG-based funding model, the prices are set against DRG codes. DRG codes are generated or grouped using grouper software. Key inputs to determining the DRG code are the diagnosis and procedure codes including those indicating complications and co-morbidities (Steinbusch et al., 2007). As previously stated, the quality of the clinical documentation is a key determinant of accurate coding as shown in Figure 2.5.

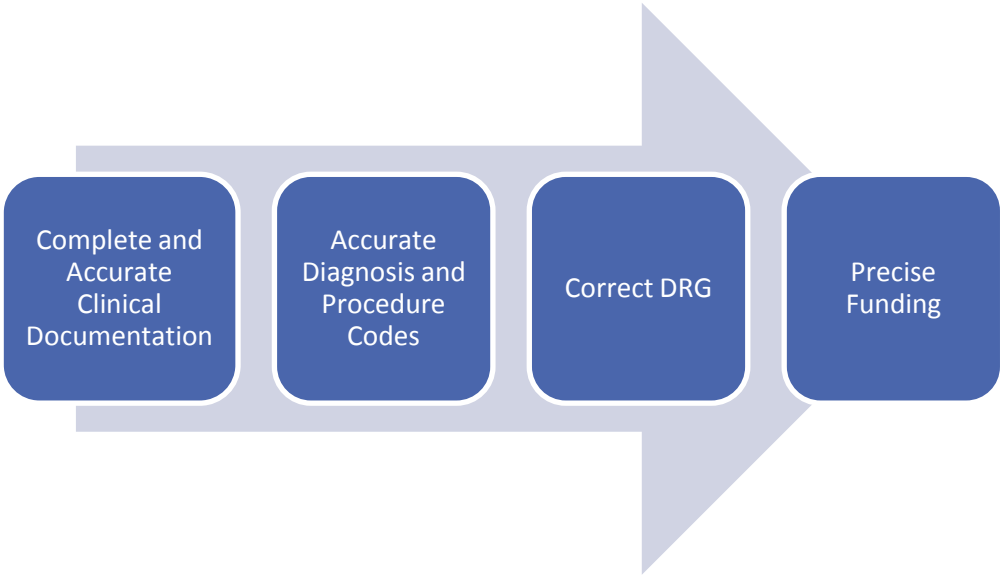


**Figure 2.5 Connection between Clinical Documentation, Clinical Coding & Funding**

Seemingly small differences in clinical documentation can have considerable impacts on reimbursement. Cheng et al 2009 discovered that a 16% DRG error rate on their sample study resulted in monies due to the hospital of almost AU$575,300. The majority of these errors related to errors in clinical documentation (Cheng et al., 2009). A similar study on 100 stroke patients in Ireland revealed that errors on 45 episodes resulted in a financial difference of €129,983 (Clarke et al., 2010). These examples illustrate the importance of clinical coding in relation to DRG-based healthcare funding.

Transition to a DRG-based reimbursement model requires considerable planning and change for both the providers and payers with increased awareness of costs being a key factor. In order to identify the effort and risk involved, a PFS of the model being proposed under MFTP was undertaken by the HSE. It was restricted to a small number of orthopaedic DRG codes (HSE, 2011b). In addition to providing insight into costing and the requirement for hospitals to improve their capability in this regard, this study illustrated that this type of funding model does lead to efficiency improvements as demonstrated by the reduction in average length of stay (AVLOS) and improvement in the rate of day of surgery admissions achieved (Department of Health, 2013c).

## 2.3 Coded and Non-Coded Services

In most countries, clinical coding commenced with inpatient activity and has since expanded to include daycase (Busse et al., 2011). This reflects the Irish situation where the HIPE scheme, established in 1971, was initially designed to gather administrative and clinical data for inpatient discharges (ESRI, 2012a). It has subsequently been extended to cater for daycase activity. Public hospitals with over 5,000 discharges annually are part of the National Casemix Programme and therefore must submit clinical data to the Economic and Social Research Institute (ERSI) through the HIPE portal. Currently, there is no requirement for private hospitals to code in Ireland. This differs from France and Poland where private hospitals must code and submit data to the relevant authority (Busse et al., 2011).

HIPE is based on the ICD-10-AM/ACHI/ACS classification, which is an Australian modification (AM) of the World Health Organisation (WHO) version, along with the Australian grouping system, which is referred to as the Australian Refined DRG (AR-DRG). Each record contains demographic, administrative, and clinical data relating to an episode of care. Coders enter ICD-10-AM diagnosis and Australian Classification of Health Interventions (ACHI) procedure codes into the HIPE portal, which automatically assigns the appropriate AR-DRG code for the admission using grouper software. The data is exported monthly to the ESRI and aggregated nationally (ESRI, 2013d). Figure 2.6 provides an overview of this process.

Within HIPE, an episode of care commences at date of admission to hospital and ends at date of discharge from that hospital. This differs greatly to the Dutch situation where an episode commences at first contact with a medical professional and concludes upon termination of treatment. Therefore one or more inpatient stays and various outpatient activities could be encompassed in a single episode of care (Steinbusch et al., 2007).

A hospital-level unique patient identifier, the Medical Records Number (MRN), is part of HIPE dataset (ESRI, 2013d). Acknowledgement exists that a national unique patient identifier would benefit the quality of patient care and help to enable the integrated care model outlined in the health strategy (HIQA, 2013a, Department of Health, 2013c). Sweden assigns a personal identification number to all citizens at birth, which allows all data in the National Patient Register (NPR) to be linked to an individual (Busse et al., 2011).

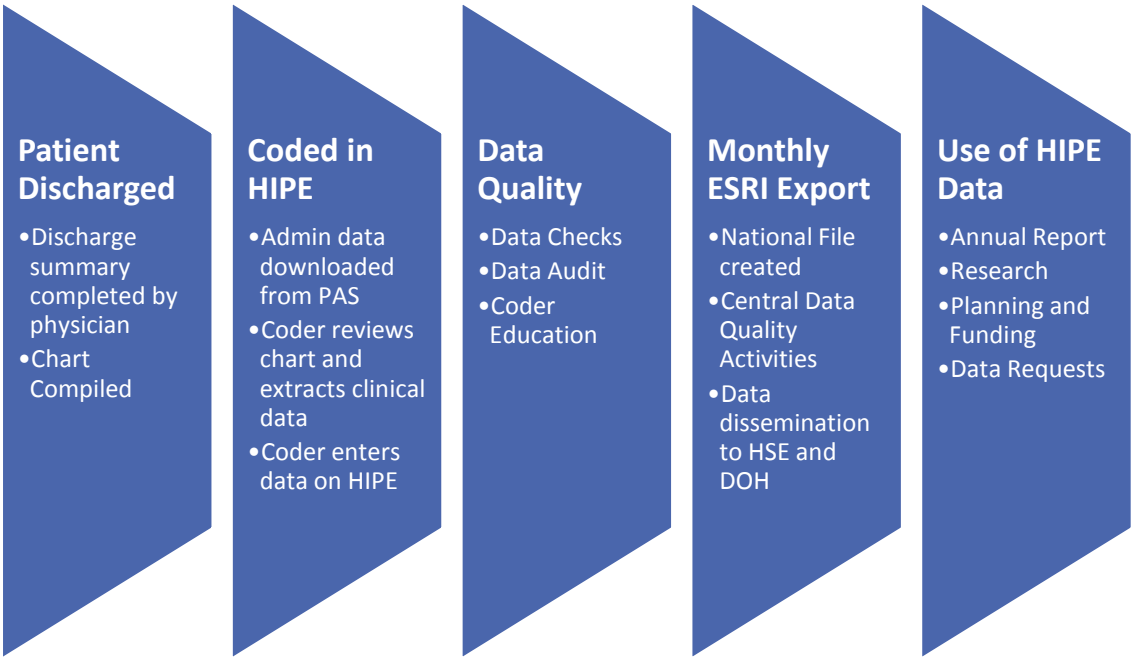


**Figure 2.6 Overview of the HIPE Data Collection Process**

Adapted from (ESRI, 2013d)

Psychiatric hospitals are not required to enter discharge details into HIPE. This would reflect the international norm with psychiatry being excluded from DRG-based funding models to date. The Netherlands is an exception where psychiatry has been funded based on their Diagnosis-Treatment Combinations (DBC) model since 2008 (Busse et al., 2011), with mental health services coded using a combination of therapeutic diagnosis codes and length of stay categories (Block, 2009). In relation to the adoption of MFTP, it is important to note that there is no specific classification for the coding of mental health services. Diagnosis codes such as ICD10 codes are used in many countries but on their own, these do not provide sufficient information to accurately cater for the differences in the provision of mental health services (MCHA, 2012). Several countries are attempting to address this including the UK and France (Busse et al., 2011). Data is, however, available on psychiatric admissions in Ireland since 1963 through the National Psychiatric Inpatient Reporting System (NPIRS) database. It contains a record of all admissions to and discharges from inpatient psychiatric institutions by both public and private patients. The data includes diagnosis codes that are coded using the ICD-10 classification (HRB, 2012).

Emergency department (ED) activity in Ireland is not captured in the HIPE system. Data is captured in relation to patient attendances and duration in ED care in the hospital's Patient Administration System (PAS). However, there is currently no mechanism to accurately and consistently capture the diagnosis or treatment that would allow for performance management and value-for-money assessment. The Emergency Medicine Programme (EMP) plans to introduce a national measure (EMP, 2012). This is an issue internationally and both Australia and the UK are using a combination of ICD and Snomed for ED coding to handle it (Hansen et al., 2011, NHS, 2011).

HIPE does not capture outpatient department (OPD) activity (ESRI, 2012e). The introduction of the Outpatient Data Quality programme has resulted in the capture of standardised data relating to consultant-delivered outpatient services. This provides valuable information relating to waiting times, for example, which can then be used to help address the issue (HSE, 2012c). Internationally, OPD is coded in many countries and is increasingly being reimbursed on a DRG basis. OPD activity is coded in the US using Current Procedural Terminology (CPT) codes (Green and Rowell, 2012). In Sweden, OPD activity is coded using the Nordic variation of ICD-10 for diagnosis and their national procedure classification, KVA. The full version of NordDRG is used to group 80% of outpatient activity, with 30% being reimbursed based on the DRG (Busse et al., 2011).

## 2.4 Clinical Coders

Clinical coding in Ireland is performed by dedicated coders who typically come from an administrative background. HIPE coordinators perform a supervisory and mentoring role. Internationally there is growing emergence of two distinct roles in relation to coding: clinical coders who carry out coding and HIMs who are responsible for education, mentoring, and auditing to ensure data quality. HIMs are also involved in the development of the classification and costing systems (Shepheard, 2010, AHIMA, 2013a).

Formal qualification for clinical coders would be the norm internationally. The American Health Information Management Association (AHIMA) offers certification courses for both HIMs and clinical coders (AHIMA, 2013b). In the UK, the Institute for Health Record and Information Management (IHRIM) delivers the National Clinical Coding Qualification (NCCQ) accredited courses (HSCIC, 2013).

Responsibility for the training and support of CCs in Ireland lies with the ESRI. Staff shortages and HSE travel restrictions have led to adaptations to the training courses so that they can be attended online. Various training courses are available in addition to specialised workshops (ESRI, 2013a). In contrast to the international situation, the Irish courses are currently not accredited. However, several staff from one Irish hospital have successfully completed formal Health Information Management Association of Australia (HIMAA) courses (Mater, 2010).

Due to the increased significance and profile of high quality coded data as a result of DRG-based reimbursement, most organisations internationally prefer certification for employment while others require it (BLS, 2012). New Zealand, Australia, United Kingdom, United States, and Canada have experienced problems in relation to resource shortages and have all instigated programmes to try to address the issue (Collins et al., 2010, McKenzie et al., 2004). Other issues highlighted in the UK were NHS recruitment difficulties due to competition from commercial companies, lack of funding for coders, and pressure to meet deadlines (Collins et al., 2010).

In the Irish context, coding staff have a relatively low profile within hospitals and the perception is that other staff, particularly clinicians, do not comprehend or value their work while experience in the role receives no recognition (Bramley and Reid, 2005b). Previous attempts to create a dedicated coder grade met with union opposition. Momentum is growing toward the establishment of an accredited coding profession with clear career progression that would enhance coders working conditions, retention, motivation, experience, and education (Murphy, 2010).

Coding in the private sector incorporates an additional dimension, that of contracts. Contracts exist between the payer and the private hospital, the member and the payer, and potentially the private hospital and the government. Therefore, the coder needs to be aware of the principles of the contracts to ensure accurate coding of the episode of care (Prudames, 2009). This raises an interesting point in relation to ethics as it would appear to conflict with the AHIMA Standards for Ethical Coding which state: "*Diagnoses or procedures should not be inappropriately included or excluded because payment or insurance policy coverage requirements will be affected*" (Casto and Layman, 2009).

Timelines for coding are condensing and "*the distance between the bed sheet and the spreadsheet is becoming shorter all the time"* (ESRI, 2012b). Healthstat, the HSE's

performance management system, includes a target for 80% of all cases entered into HIPE to be coded within 10 weeks of discharge and generates monthly reports to measure this for each public hospital (HSE, 2012a). While many hospitals achieve their targets consistently, others lag noticeably behind the targets (HIQA, 2011). One Irish hospital commenced mobile coding on the ward level in 2006, which eliminated their backlog and resulted in timely data being available two weeks after month end. The two week period allows sufficient time for histology results to be returned (Mater, 2008). Coder education is also considered critical to data quality, which will now be examined in further detail (Bramley and Reid, 2005a).

## 2.5 Data Quality and Audit of Coded Data

The data quality of coded data is an acknowledged issue internationally and recent Irish reports indicate data quality issues among some hospitals (HIQA, 2011). As strategic decisions are made on the basis of this data, it is imperative that stakeholders have confidence in the quality of the data in terms of accuracy, validity, reliability, timeliness, relevance, legibility and completeness (HIQA, 2013c). Two major factors influence the quality of coded data. Firstly the accuracy, completeness, and clarity of the data provide by clinicians on the medical chart and secondly the accuracy and consistency of the coder in applying the code(s) (Hennessy et al., 2010). The Australian Coding Standards (ACS) standards state that *"the responsibility for recording accurate diagnosis and procedures, in particular primary diagnosis, lies with the clinician, not the clinical coder"* (NCCH, 2008). Numerous studies have highlighted the deficiencies in patient records that result in difficulties during coding. These include incomplete medical records, principle diagnosis not specified, comorbidities and complications not specified, illegibility and ambiguity (Robinson and Shepheard, 2004, Busse et al., 2011, McKenzie and Walker, 2003, Nouraei et al., 2009).

In recognition of this fact, considerable effort is expended in attempting to improve data quality. There appear to be several possible approaches, as outlined below, with different countries adopting some or all of these (Busse et al., 2011).

1. Systematic checks are carried out on the data as it is being entered that alert the coder to errors, or possible errors. These can range from simple numeric checks to plausible diagnosis-procedure combination validation. Similar checks are often carried out by the government agency upon receipt of files from hospitals, with failures returned.

2. Secondly hospitals may perform their own internal audits on data prior to submission. For example, in Portugal internal audit has been performed regularly since 1995, with each hospital assigning an internal auditor who is responsible for this task (Busse et al., 2011). To enable hospitals to more easily execute their own audits, the HIPE Clinical Audit Toolkit (HCAT) has been made available under the HIPE portal (ESRI, 2013b).

3. External audits can be performed where a sample of medical charts are recoded and compared to the hospital data submitted. These are generally performed by the government agency or department responsible for healthcare coding, but are also performed by health insurers where reimbursement is based on coded data. The quality controls built into the HIPE system are summarised in Figure 2.7 (ESRI, 2013b, ESRI, 2012b, Wiley, 2005, ESRI, 2012d).

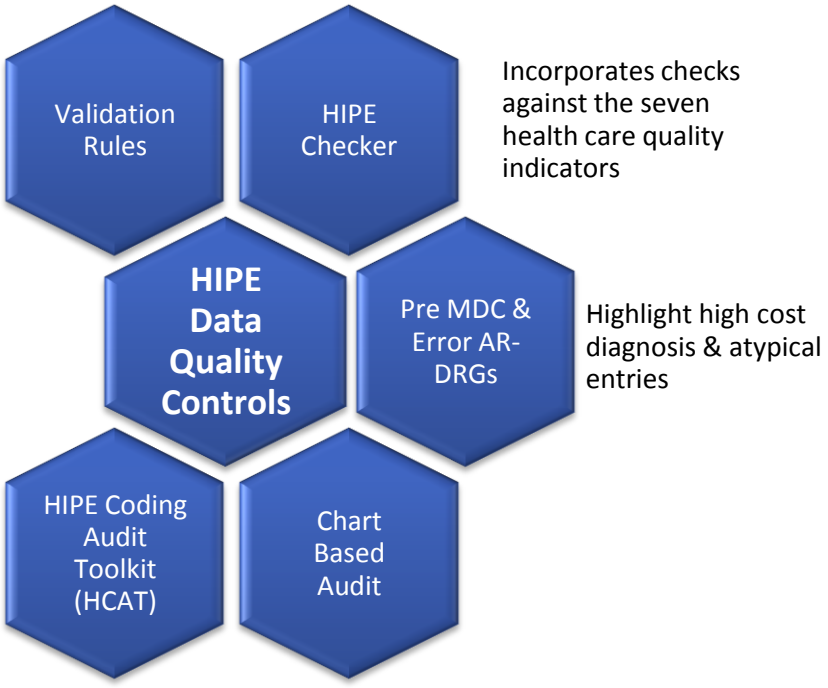


**Figure 2.7 HIPE Data Quality Controls**

Where errors are discovered in these audits, the standard practice appears to be that monies are returned to the affected party. In order words so called 'over-coding', where a code is used which results in a higher DRG rate, results in monies being returned to the insurer, and conversely money is repaid to the provider in the case of 'under-coding'. Some countries go a step further, however, imposing penalties where the over-coding error is deemed intentional, in other words upcoding. Poland, for example, imposes high fines and may terminate the contract in certain cases. In Germany similar fines are inflicted up to the value of the reimbursement, while France can enforce fines up to 5% of the annual budget (Busse et al., 2011).

Evidence suggests that errors are generally not deliberate and in some cases under-coding is more common than over-coding, as proven in Estonia due to insufficient documentation. One third of the records audited in Portugal between 2006 and 2008 presented errors, although only 11% of these errors resulted in a change of DRG and some of these were for higher codes. Indications from Finland, where only some hospitals operate DRG reimbursement, suggest that coding quality is higher in the hospitals where it is operational (Busse et al., 2011).

However, deliberate upcoding can be a feature of DRG reimbursement, particularly in cases where hospitals believe the DRG rates are too low. Continuous review and adjustment of the DRG system is one way to reduce opportunities for upcoding (Mathauer and Wittenbecher, 2012, Radu and Haraga, 2008). Similarly the design of the DRG system can reduce the incentives for upcoding. Organisational status also influences the risk, with for-profit organisations being higher risk (Steinbusch et al., 2007). Controls are typically put in place to reduce exposure. These include audits, software to check for coding quality indicators such as Performance Indicators for Coding Quality (PICQ), checks in the grouper software, standards, and a code of ethics (Steinbusch et al., 2007).

Responsibility for the auditing of coded HIPE data resides with the ESRI. It is recognised that this role will take on added significance under MFTP with increased demand, and a requirement for additional audits (ESRI, 2013b, Wiley, 2013). Commitment has been given to carry out more frequent chart-based audits in a higher number of hospitals using a small sample. More detailed audits can then be performed if warranted. Audits can also be requested by the HSE or the Department of Health (DOH). Findings from all audits are passed to the HSE (ESRI, 2013b).

Involvement of clinicians in the coding process has been shown to improve data quality (Burns et al., 2012). Recognising this, Sweden is altering physician training to allocate more time to coding issues. In Portugal, physicians are part of the external audit team. As such they are responsible for promoting, supporting, and monitoring clinical quality in hospitals as well as performing audits (Busse et al., 2011). Multidisciplinary teams involving both coders and clinicians have demonstrated increased revenue as a result of enhanced data quality (Nouraei et al., 2009).

The Irish Health Information and Quality Authority (HIQA) have recently published a national standard for patient discharge summary information, which it is hoped will improve the quality of coded data by providing standardised and complete discharge summaries (HIQA, 2013d). Tallaght Hospital has shown that the use of their TEAMS system, which generates electronic discharge summaries, improves coding over the use of paper (Tallaght, 2012). Electronic medical records (EMR) have the ability to eliminate, or at least reduce, some quality issues such as illegibility and ambiguity (Robinson and Shepheard, 2004). In the early 2000s, EMRs were touted as having the capability to remove the necessity for manual application of clinical codes (Robinson and Shepheard, 2004, McKenzie and Walker, 2003). While this view is still held today, there is uncertainty around when the use of EMRs will be sufficiently prevalent to have any impact on the coding workforce (Shepheard, 2010). The Northern Territory in Australia is investing in offsite coding in an effort to address its coding resource issues. This is made possible through a combination of electronic discharge summaries and diagnostic results, shared information systems, and scanning (Collins et al., 2010).

## 2.6 Use of Coded Data

HIPE data is increasingly being used for a broad range of purposes. It is used by the DOH and the HSE for planning, policy development, resource allocation, and the provision and measurement of health services in the acute sector (ESRI, 2012c, Department of Health, 2010b). The Annual Activity in Acute Public Hospitals report (ESRI, 2012a) produced by the ESRI is based on the HIPE data and is a key input to these processes. HIPE-sourced activity data was a key input into the formulation of the government's strategy in relation to hospital groups (HSE, 2013b). Calculation of casemix is based on activity and cost data and HIPE is the source of inpatient and daycase activity data (National Casemix Programme, 2011). Consultant contracts were renegotiated in 2008 to regulate consultant's public/private activity ratio and

HIPE-sourced activity data is used in the monitoring of consultants public/private activity (HSE, 2008). Clinical programmes use statistics on specific diagnosis in the formulation of their programmes (HSE, 2011a). They also use the HIPE portal as a vehicle to capture additional data and coded data is used as a mechanism to ensure accurate coverage. In other words, reports highlight where a primary diagnosis indicates the presence of a condition, hence the patient should have been included in the appropriate registry, such as stroke for example (HSE, 2012b).

Increasing numbers of research papers are using HIPE as a source of data. The ESRI carry out health-related research using this data, but it is also made available to other parties on request. These papers may subsequently be used for future policy development. However, care must be taken by researchers to ensure they fully understand the data and interpret it correctly (Wiley, 2013). HIQA also use HIPE data to inform their investigations (HIQA, 2011, HIQA, 2012).

DRG data has several national applications (Busse et al., 2011). Since 1993 it has been used by the National Casemix Programme to adjust public hospitals' budgetary allocation based on relative performance and casemix complexity as mentioned previously in Section 2.2.2. Activity data sourced from HIPE is adjusted using DRG data from the casemix system to ensure complexity is factored into the consultant's workload when monitoring their public/private activity (HSE, 2008). Healthstat sources data from casemix to feed into performance management (HSE, 2013d).

Quality of care is a key factor for most healthcare organisations. Many countries are using coded data to measure performance against best practice quality guidelines in relation to readmission rates or AVLOS for example. In Poland, this information is used during contract negotiations with hospitals. Several countries also factor this into their DRG reimbursement models. In Portugal, hospitals can receive a bonus if their readmission rate remains under a defined target. Similarly in the UK, under the Commissioning for Quality and Innovation (CQUIN) framework, a portion of budget is based on achievement of quality targets. In Germany, if a readmission is within 30 days for the same condition, it is paid under the original DRG in an effort to reduce the risk of inappropriate early discharge (Busse et al., 2011).

There is an acknowledged scarcity of data in relation to private activity nationally (Busse et al., 2011). As strategy is moving towards an integrated model, resource allocation, planning, and policy development will need to consider both public and private services (Department of Health, 2010a). This reflects the international situation where there has been a growing need for national health datasets that incorporate private hospital data therefore enabling analysis and comparison at a national level. Many countries have introduced such datasets, for example France, where the PMSI hospital activity database was set up for public hospitals in 1996 and incorporated private hospitals in 1998 (Busse et al., 2011). In Canada, the Discharge Abstract Database (DAD) contains demographic, administrative, and clinical data on all inpatient and daycase discharges. Other national datasets are populated from this database such as the Hospital Morbidity Database (CIHI, 2013).

In New Zealand, all inpatient and daycase discharges are coded into the hospital's Patient Management System (PMS). Coded summaries are then forwarded to the Ministry of Health where they are loaded into the National Minimum Data Set (NMDS) to support national and regional morbidity and mortality analysis, contract monitoring, and payment. For public hospitals this is done electronically in a standard file format that must be submitted within 21 days of discharge. Private hospitals must also submit information to the NMDS (Ministry of Health, 2012).

These datasets typically commenced with public hospital data only, with private hospital data being incorporated at a later stage. This was a problem in Australia in the past until certain states mandated the regular reporting of coded data for private hospitals. Prior to this, little coding was carried out in the private sector and where it was, it was done by untrained personnel (Robinson and Shepheard, 2004).

In many countries such as the US, South Africa, and Australia, this coded data is also forwarded to the health insurers as part of the claim submission data. In the US, information such as diagnosis and procedure codes, as well as other standard information, is submitted to the insurer. While this information was traditionally submitted using paper forms, the Health Insurance Portability and Accountability Act of 1996 (HIPAA) mandated national standards for the electronic exchange of this information (Green and Rowell, 2012).

## 2.7 Conclusion

This chapter set out to establish the state of the art in relation to clinical coding, in particular how it might be impacted by proposed government changes. Ireland is not the first country to make these changes and examples exist of other countries that have undergone similar transformations. While the design of DRG systems varies by nation, the principles are essentially the same.

Ireland has a solid base to develop from, as it has been executing clinical coding in public hospitals for over 40 years in the area of inpatient and daycase activity. The expansion of coding into mental health and outpatient services would necessitate change. The Dutch situation in relation to the boundaries of an episode of care appears to reflect the government's proposal and warrants further investigation.

Clinical coders are already experiencing challenges in relation to tighter deadlines for coding and this is likely to continue. A shortage in the availability of experienced and qualified coders is an international problem. The government will have to act quickly to ensure that this shortage does not to become a roadblock. Formal qualification is the norm in most other countries where DRG reimbursement is in place and it appears to afford many advantages, which would be of benefit here in Ireland also.

DRG reimbursement does place additional emphasis on coding quality and will necessitate additional controls and audit. Many of the issues with data quality stem from the upfront documentation of medical charts rather than the subsequent coding itself. Clinician involvement in the coding process shows potential to improve data quality, as does increasing the use of electronic records. It is important to emphasise that the majority of errors are not deliberate but are as a result of insufficient documentation or lack of knowledge. However, unintended consequences, such as upcoding, can result from DRG-based reimbursement with a higher risk associated with for-profit facilities.

There is a growing use of coded data for a wide variety of functions many of which have wide ranging consequences outside of the payment of an episode of care, including for example government policy and planning. For this reason, it is important to have national datasets that incorporate private data as well as public. Much of this is legislated for in other countries and

submitted electronically. Measurement of the quality of care is another key use that is starting to be incorporated into reimbursement in some countries.

So it would appear that there will be impacts to clinical coding as a result of the implementation of MFTP and UHI. The information outlined in this chapter predominately pertains to public hospitals. However, little evidence was found in relation to private hospitals or insurers. Chapter 4 will reveal further insights into the state of the art through interaction with stakeholders in the area.

# Chapter 3 Research Methodology and Design

## 3.1 Introduction

This chapter outlines the methodology used to address the research question along with the rationale for the selected approach. Various data sources were used during the research and the data gathering and analysis techniques are described. Particular case studies were selected to offer insight into the research question and the choice of these case studies is explained. Limitations of the methodology on the research findings are also outlined.

## 3.2 Research Methodology

The question posed by this research is "What are the potential impacts of Money Follows the Patient and Universal Health Insurance on Clinical Coding in Ireland". This question infers exploratory research as the study is attempting to identify the potential impacts of a future change rather than measure or assess the impact of a recent transformation. Identification of impacts can be a complex, emergent process involving multiple stakeholders. Qualitative research is concerned with "*understanding and insight rather than measurement*" (McGivern, 2006) and is suitable when an issue needs to be explored and a complex, deep understanding is required (Creswell, 2013). Therefore a qualitative approach was deemed appropriate for this research.

## 3.3 Research Design

Research design can be considered the plan for conducting the research (Creswell, 2013). The purpose of research design is to structure the research so that it produces the evidence to address the research question as accurately, clearly, and unequivocally as possible (McGivern, 2006). Triangulation of data sources and data collection methods were used to increase the validity and accuracy of the research through a convergence of evidence (Yin, 2009). Figure 3.1 summarises the sources and methods used to achieve triangulation.

Qualitative research is not a strictly sequential process. Rather it is an iterative, emergent process where the data required and direction reveals itself during the process (Richards, 2009). The original research question "What are the challenges & enablers to the introduction of Universal Health Insurance (UHI) in Ireland" was amended after an initial literature review that revealed insufficient secondary research and access to data sources. As the impacts on

clinical coding had arisen as a theme from initial research and preliminary discussions with parties involved in MFTP and UHI policy making, the revised research question emerged. This topic was also of interest to the researcher in the context of her employment.

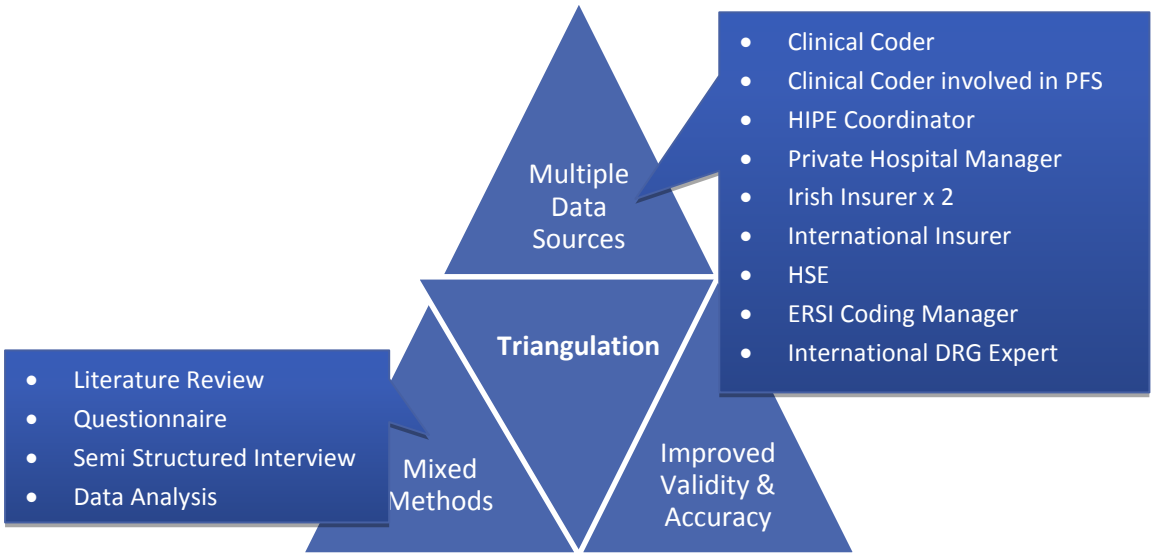


**Figure 3.1 Methods and Data Sources used to achieve Triangulation**

### 3.3.1 Literature Review

Secondary research was predominately carried out through a literature review of existing research. Given the scale of the topic under consideration, the literature review was important to frame the discussion and provide context. However, literature reviews should not be solely concerned with describing that which is already known on a topic but rather using the existing literature to develop definite and more insightful questions (Yin, 2009). The initial literature review revealed that while there was secondary research available in relation to clinical coding in the public sector in Ireland, little was documented in relation to the private sector or insurers. This afforded an opportunity for the researcher to add something new to the literature, a desirable outcome of research (Creswell, 2003). In addition, this helped to shape the questionnaire and early interviews both in terms of question formulation and participant selection, and highlighted the aptness of a case study on insurers. Analysis of the resultant data necessitated further secondary research, as well as adjustments to the data collection approach.

### 3.3.2 Questionnaire

The online questionnaire method facilitates the simple, anonymous collection of data from a widely dispersed population in a short period of time (McGivern, 2006). The use of the Survey Monkey tool enabled complex branching that facilitated a single questionnaire to be issued to all participants who traversed divergent paths based on their responses. Analysis of the data was also expedited through the use of the tool.

The survey was designed for HIPE co-ordinators, or equivalent, in public and private hospitals in Ireland. It comprised 39 questions in total and was piloted on one clinical coder prior to general circulation. Some minor adjustments were made as a result of initial feedback. Further details of the survey can be in Appendix II. The aims of the survey included:

- Establishing the current context of clinical coding particularly pertaining to private hospitals where information is sparse
- Determining the awareness of MFTP and UHI
- Ascertaining the views of participants on the impacts that MFTP and UHI are likely to have on clinical coding
- Establishing what steps, if any, were being taken in preparation

The target population was enumerated from the HIPE Hospital Code List (ESRI, 2013c) for public hospitals and the researcher's own contacts for private hospitals. As the population size was not large, it was decided to target all members. Letters were issued to the HIPE department in all public hospitals and an email sent to the private hospitals contact. Both included an information sheet and a link to the online survey – refer Appendix III.

### 3.3.3 Interviews

In order to increase the likelihood of the findings revealing different perspectives, maximum variation sampling was adopted when selecting participants for interview (Creswell, 2013). Table 3.1 outlines the six interviewees, excluding those involved in the case studies, and lists the rationale for their inclusion along with the purpose of the interview. Opportunistic and snowball sampling were also used as the analysis unfolded.

**Table 3.1 Interview Participants, Rationale for Inclusion and Interview Purpose**

| Participant | Rationale for Inclusion | Purpose of Interview |
|---|---|---|
| Public Hospital Coder | Currently involved in the clinical coding process | • Establish the current process & issues<br>• Ascertain level of awareness of coming changes<br>• Determine view of potential impacts and their concerns<br>• Assess level of preparation |
| Coder involved in PFS | Exposure to MFTP to some degree already | • Establish whether experienced any differences while involved in the PFS<br>• Determine view of potential impacts and their concerns based on this experience |
| HIPE Coordinator | Currently involved in the coding process in a more senior position | • Similar to those above but from a slightly different perspective |
| Private Hospital | Currently not coding but will likely be forced to commence | • Establish level of awareness<br>• Determine impact and concerns if required to code |
| HSE – a representative from both the Clinical Programmes and the Corporate Planning and Corporate Performance Directorate | Consumer of clinical coded data | • Establish use of data and future plans<br>• Identify any existing issues or perceived impacts<br>• Determine if any impact on clinical programmes |
| ESRI Manager | Knowledge of current clinical coding | • Expand on some themes from the research<br>• Determine awareness and preparations for change |

In qualitative research, interviews can be described as conversations with a purpose (Burgess, 1984). Table 3.1 summarises the initial purpose of each interview. However, as is the nature of qualitative research, the main findings from the interview were occasionally different to the original purpose. Semi-structured interviews using open ended and non-directive questions, as outlined in Appendix IV and V, were employed as this has been shown to encourage detailed responses expressing attitude and opinion (McGivern, 2006), which is crucial to identifying potential impacts. The majority of the interviews were conducted face-to-face but

information from one source was received via email in response to a set of questions outlined. The audio recordings were transcribed and where subsequent clarifications were required to ensure accuracy or aid understanding, this was done using email.

### 3.3.4 Case Studies

DRG based reimbursement has been in place in various countries for many years (Busse et al., 2011). This affords Ireland an opportunity to probe the impact this has had on clinical coding in those jurisdictions and learn from their experiences. Case studies explore a particular issue through in-depth, detailed investigation in the real-life context using a variety of data collections techniques (Creswell, 2013), making it the preferred choice for addressing how and why type questions, pertaining to a current issue over which the researcher has little or no control (Yin, 2009). They provide a detailed description and understanding, and if the case(s) studied are representative of the wider population, they can be used to make generalisations about the wider group (McGivern, 2006). Thus a single case approach was adopted to ascertain the impact DRG reimbursement had on clinical coding in Australia, in particular how clinical data is shared. A second case study was carried out on insurer clinical coding in Ireland due to the researcher's access to sources of information in this area and the scarcity of published research. This resulted in a revelatory case study (Yin, 2009) as little secondary research was available on this topic previously.

Further details on the data collection approach for each case study are outlined in the appropriate section of the next chapter.

### 3.3.5 Data Analysis

A large quantity of data was collected from the various data sources. The transcribed interviews, literature review, and questionnaire data were examined and coded to identify recurring topics. These were then further aggregated based on similarities into major themes. Various iterations of coding were performed from different perspectives (descriptive, topical, and analytical) (Yin, 2009). This involved a transition from sensitising, preliminary, exploratory analysis, through to a detailed interpretation of the data allowing connections or inferences to be drawn between themes, which developed into the findings of the research (Creswell, 2003). Unexpected information and results were also highlighted. Given the nature of the research question, to discover the potential impacts of the introduction of MFTP and UHI on clinical coding in Ireland, this inference of potential impacts based on information gathered was

particularly important. The themes discovered during the analysis are discussed in more detail in the following chapter.

### 3.4 Ethical Considerations

Ethical approval was obtained from the School of Computer Science and Statistics, Trinity College prior to the commencement of data collection. An information sheet was provided to all participants outlining the voluntary nature of their involvement, assuring their anonymity, and signed consent was obtained from all participants.

### 3.5 Limitations of the Methodology

While anonymity can increase survey participation, and is required from an ethics perspective, it limits the ability to probe a respondent further where a particular point of interest is expressed. Although the point can be explored with others, their perspective may differ from the original viewpoint.

Self-selection bias may be perceived as a factor in the online questionnaire used as research shows that participants are more likely to respond to questionnaires that interest them (Eysenbach and Wyatt, 2002). Therefore, the views expressed may be more representative of those who are more aware of the potential impacts.

Access to a clinical coder in Australia was not possible. As a result, the perspective of those involved in the coding activity on a daily basis is lacking from the Australian case study. This would have provided valuable insight to confirm or refute the information gathered from other sources.

### 3.6 Conclusion

This chapter covered all the elements involved in the research study and included the methodology, design, data collection and analysis, ethical considerations and limitations. The results of the analysis are outlined in the next chapter.

# Chapter 4 Research

## 4.1 Introduction

In this chapter, changes highlighted in the MFTP policy document that have the potential to impact clinical coding are outlined. The themes uncovered from the qualitative research are then explored. This research involved an online questionnaire, which was completed by 6 private hospitals, representing 26% of the population, and 10 public hospitals (17%). Semi-structured interviews were also conducted as outlined in Table 3.1. The private hospital interviewed also operates in the US. Therefore, this interview afforded insights into the US context in addition to its original purpose.

The research themes are followed by a case study outlining the current situation regarding clinical coding in Australia, which is the closely aligned to Ireland in that Ireland uses the Australian versions of the ICD and DRG codes and Australia has undergone a similar transition to DRG reimbursement.

Finally, a second case study explores the current situation in Ireland with regard to clinical coding by insurers as this was highlighted early in the research as an area of duplication within the system, which could potentially be eliminated but little research was available.

## 4.2 Money Follows the Patient and Universal Health Insurance – Implications for Coding

The MFTP report (Department of Health, 2013b), either directly or indirectly, highlights various changes that in the researcher's view have the potential to impact on clinical coding. Table 4.1 outlines these areas and their potential impact on clinical coding in Ireland.

Many of these topics are now discussed further in the following analysis of the themes discovered from the research.

**Table 4.1 Areas of Change highlighted in MFTP report and Potential Impact on Clinical Coding**

| Area of Change | Potential Impact on Clinical Coding |
|---|---|
| Included and Excluded Services | • MFTP initially limited to inpatient and daycase activity<br>• Outpatient services that represent a response to a diagnosis or assessment will be funded under MFTP, as they could be comparable to services carried out on a daycase or Medical Assessment Unit (MAU) basis. Outpatient services to establish whether treatment is required will be financed separately for now. This is due to the absence of a unique patient identifier to link related episodes of care, and the fact that HIPE currently defines episodes of care from point of admission to discharge. This will be considered further as MFTP evolves<br>• Mental health services should be funded under MFTP but based on international evidence, the required data and classification systems are not yet in place. Therefore, mental health services will not be funded under MFTP initially but will be incorporated at a later date<br>• Emergency services will not be funded under MFTP but this will be kept under review<br>• Long-term residential care and outreach services will also be excluded |
| Hospital Category | • All hospitals will have to code as hospital category is no longer a consideration due to the fact that services such as emergency services, teaching, and research will be funded separately |
| Timeliness of Coding | • Dramatic improvements will be necessary to the timeliness of coding as hospitals will be encouraged to submit claims within seven days of discharge |

| Area of Change | Potential Impact on Clinical Coding |
|---|---|
| Claims Management | • Electronic submission of claim details will be a prerequisite for payment requiring electronic claims management systems at the individual hospitals and the payer<br>• Ultimately, the vision is that the HIPE data would be automatically transferred to the hospital's claims management system and submitted electronically from there to the payer |
| Classification and Grouping Systems | • ICD-10-AM is updated every two years in Australia but Ireland only adopts every second edition<br>• HIPE system will be maintained as the standard coding and classification system on which future payment systems will be built<br>• MFTP will initially be based on the current AR-DRG grouping. Continuous reviews will be implemented in light of adjustments to the MFTP policy, clinical innovation, and stakeholder consultation to enable an evolving DRG system |
| Medical Data Dictionary | • To ensure consistent and accurate coding of services, the creation of a national medical data dictionary is required |
| Outlier Policy | • Medical necessity will be used to determine any additional payment for cases which exceed their average length of stay |
| Boundary Issues | • Under MFTP an episode of care will be deemed to commence at the point of admission and end when the patient is judged medically fit for discharge<br>• On-going review will be needed to ensure that this approach is promoting the transition of patients to the most appropriate care setting |
| Data Usage | • Activity and cost data will be used to determine the national DRG prices in addition to activity and quality targets<br>• The State must always retain access to a comprehensive set of demographic, cost and clinical data for planning and health policy development purposes |
| Legislation | • National datasets, covering both public and private facilities, will be mandated at hospital level |

| Area of Change | Potential Impact on Clinical Coding |
|---|---|
| Data Collection | • Collect once, use many should be a key data principle of MFTP. The administrative burden of collecting data should be minimised, while capitalising on the use and value add of the data |
| Data Quality & Best Practice | • Unintended consequences and incentives for exploitation will need to be managed e.g. upcoding or gaming<br>• Measures will need to be put in place to reduce the associated risk<br>• A robust auditing function will be required to expand and enhance the work that is already carried out by the ESRI in this area<br>• The funding model could also incorporate quality and best practice principles in the future |
| Unique Patient Identifier | • A national unique patient identifier was highlighted as a dependency to enable the linking of episodes of care and expansion of the funding model to restrict payment of readmissions for the same condition within 30 days |

## 4.3 Themes

As stated previous, themes were identified from analysis of questionnaire responses, literature review and interviews conducted. These will now be discussed.

### 4.3.1 Clinical Coding Resources

The availability of skilled clinical coders was one of the key concerns expressed by almost all respondents, particularly those in private hospitals that currently do not code. Examples were cited of coders being redeployed to other areas due to budget constraints. Some small hospitals have ceased coding completely for the same reason. Contracting coding deadlines are compounding this issue with hospitals requiring additional coders to meet the revised deadlines. The survey also indicated that some coders carry out activities other than coding, as outlined in Figure x, which would impact their coding capacity.

In Australia and the US, there are formal qualifications of varying levels for clinical coders and HIMs. These courses typically provide some medical background and the point was made by several interviewees that having some clinical background is an advantage for a clinical coder.

A view was expressed by some Irish respondents that introducing a formal qualification for Irish clinical coders would be a positive step and would recognise the increased profile of the role, as well as leading to increased data accuracy. However, the point was also made that coders who complete this qualification would justifiably expect increased remuneration and there were concerns that this would be difficult to achieve within the current economic environment. This view was corroborated by an Australian DRG expert who said that wages for coders had increased in Australia for those who had obtained the formal qualification.

This increase in salaries was also related to an increase in demand. Several factors were mentioned that would create an increased demand for coders in Ireland. These include the requirement for all hospitals to code, increased quality checks on coded data within hospitals, extension of coding to other services such as OPD, and the creation of agencies to audit coded data as mentioned below.

Currently in Ireland, coders can operate across multiple sites, for example working one day per week in a small hospital and the remainder of the working week in another larger hospital. There were also instances cited of coders temporarily assisting in other hospitals to reduce

backlogs. However, the HIPE coordinator interviewed did not envisage a situation where coders would essentially be centralised for the hospital group. In another interview, a coder mentioned great difficulty getting paid for time spent in another hospital due to administrative complexities. Concern was expressed that if this was to become the norm to optimise capacity, then measures would need to be put in place to ensure that payment issues were resolved.

As mentioned previously, there is no formal qualification in Ireland currently however discussions are on-going between the ESRI and Dublin Institute of Technology (DIT) in this regard. Appendix II outlines the type of training currently received. Training for clinical coders in Ireland is the responsibility of the ESRI who estimate that it takes approximately one year for a new clinical coder to become proficient assuming they attend the relevant courses and receive appropriate on –the-job experience and mentoring. The survey results (Appendix II) indicate that over half of the respondents who currently code, undergo training more than once a year. Typically the training was carried out over several days, generally in Dublin. However, restrictions in travel budgets from the HSE mean that the ESRI have had to adapt their training methods and many courses are now broken down into shorter modules and delivered remotely over WebEx. One coder expressed a view that while these training sessions are useful, remote attendance is more difficult as interruptions are commonplace and participants are less likely to contribute and ask questions. The ERSI are currently endeavouring to extend their hospital-based training as a result of the travel restrictions.

### 4.3.2 Charts

Locating and collecting charts was cited as a significant issue in Ireland where the majority of coding is still carried out using paper charts as indicated by the survey results – see Appendix II. A large portion of coder's time is spent away from their desks in pursuit of charts. Figure 4.1 outlines the coding process as described by the interviewees and demonstrates the volume of tasks involved in locating charts. There appear to be diverse practices among hospitals in relation to who collects and "*chases the charts*" ranging from porters, to coders, to clerical staff.

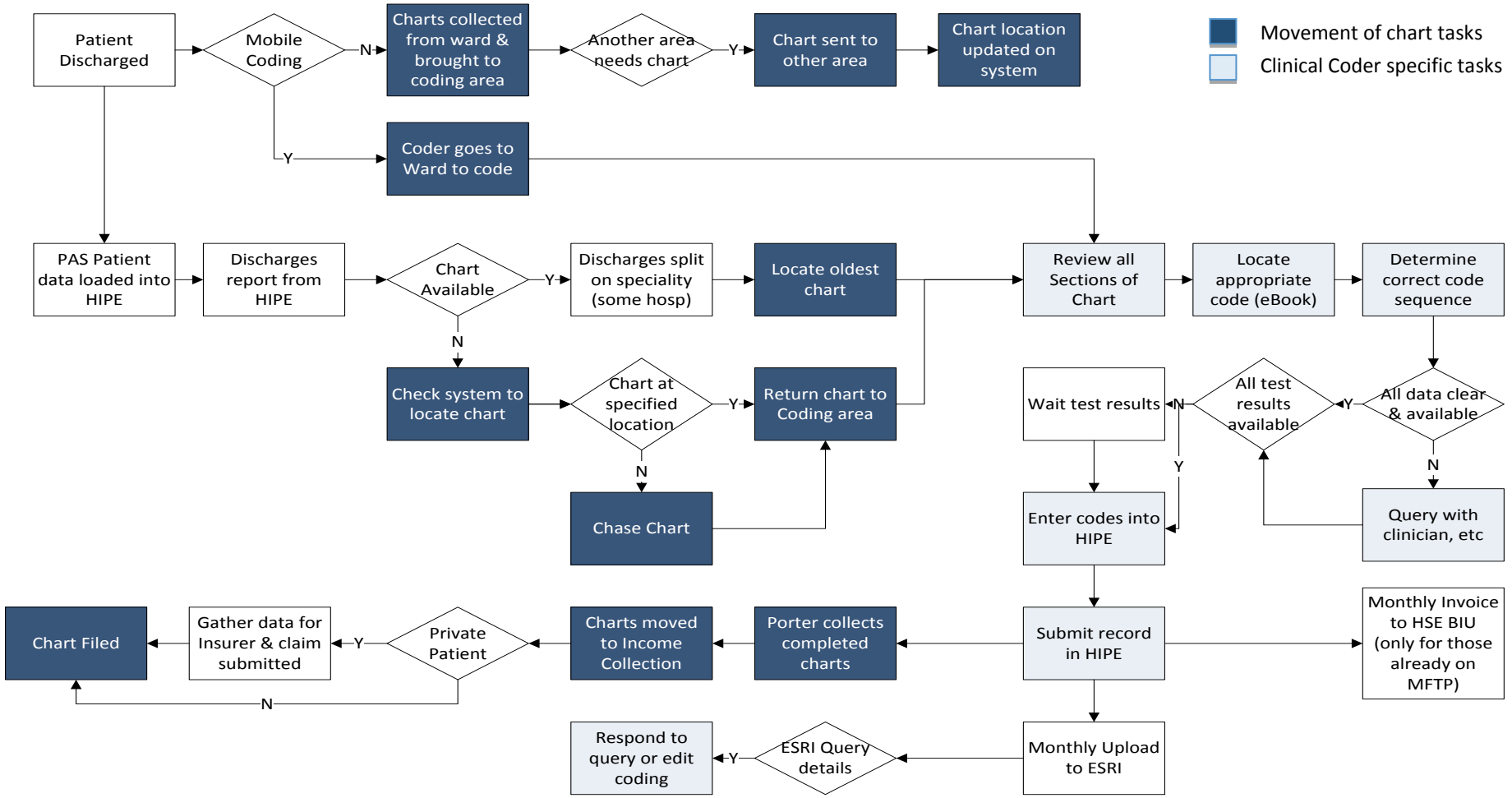


**Figure 4.1 Overview of the Clinical Coding Process**

Some of the reasons cited for this difficulty in relation to tracking and locating charts included:

- Competition for charts from other areas such as income collection
- Tighter deadlines for coding and income collection
- Increased daycase activity, which has a shorter turnaround for OPD appointments, and a higher likelihood of repeat procedures, necessitating chart availability in OPD
- Readmissions within a month which medical advances are precipitating in some instances, for example having both hips replaced within a month
- Charts having to be on the wards during admission
- Individuals not tracking charts correctly so they are not where they are supposed to be
- Physical distances to travel in larger hospitals

Examples were provided of attempts to reduce this issue such as coding beside medical secretaries, assessing best practice in chart delivery, or coding outside of normal hours. Many hospitals have also commenced mobile coding where the coder goes to the ward to code using dedicated machines or laptops so the charts do not need to move. However, instances were also highlighted where similar initiatives met with resistance from other areas of the hospital and had to be terminated due to a lack of co-operation. The opinion was expressed that unless senior management within the hospital mandated these changes, they would not happen. This direction has not been given to-date despite verbal commitment to do so.

### 4.3.3 Awareness of the Importance of Clinical Coding

There was considerable variation in participant response to the importance of coding within the organisations surveyed as outlined in Appendix II. While the coders interviewed considered coding to be very important, they felt the view amongst other areas of the hospital was less positive. The reason expressed for this was that other areas of the hospital could not see any direct or tangible benefit. This view was reinforced by the representatives interviewed from the HSE and the private hospital who indicated that it is difficult to instil the importance of coding unless people can see how it benefits them.

In Australia, the view is that coding has been prevalent since the 1980s. People there understand the rationale and what the coded data is used for, so there is no question of it not being deemed important. Conversely in Ireland, the survey indicated that within public hospitals that already code there is varying awareness of how the coding data is used as

outlined in Appendix II. This viewpoint changed for the coder involved in the PFS, who observed an increase in her profile within the hospital during the study. This was because other areas were educated and understood why they were looking for the charts and even senior management knew her name because they were interested in the coding statistics, which they now knew would directly impact the hospital's finances.

Another coder observed that in the past the data was not made accessible for reporting or use by clinicians, but that more recently conferred clinicians are more interested in the data, wanting to know their casemix, statistics, and so forth. These clinicians actually query why more detailed coding is not done. The same respondent outlined examples where clinicians are unaware of the data they need to specify to support coding. These include a clinician who was providing a lot of textual data describing what they did without naming the procedure in the mistaken belief that they were helping the coders. In addition, as the Senior House Officers (SHOs) rotate every six months, there is always a peak in queries for coders while the SHO becomes familiar with the level of detail they must provide for that speciality.

Results from the survey reveal that approximately half of the respondents cited that clinicians were involved in the coding process – Appendix II. However, examination of the details revealed the majority indicated involvement as documenting the medical chart which is used in coding. Auditing, clarification of queries and regular meetings were also mentioned by single respondents.

### 4.3.4 Increased Use of Clinical Coding Data

One of the key observations from the interviewees was the increased use of clinical coded data, predominately HIPE but insurers have their own coded data, for various purposes within their organisation. Table 4.2 summarises these uses and what type of organisations are currently using them or plan to in the near future.

An increasing number of the Key Performance Indicators (KPIs) that form the basis of performance management by the Corporate Planning and Corporate Performance Directorate within the HSE use HIPE as their data source. Of the 37 clinical programme KPIs currently in place, 21 are measured using HIPE data (HSE, 2013a) (see Appendix VII).

Both the HSE and several coders highlighted a growing volume of requests for reports based on clinical data from a variety of sources including clinicians, hospital departments including

finance, and the clinical programmes. Insurers also mentioned the importance of clinical data for external benchmarking and studies such as the Milliman Report (Buckle et al., 2010).

The importance of the transparency of this data was also highlighted by several interviewees particularly where it is being used to measure or compare performance. The HSE have developed a datasheet based on HIQA guidelines that is available online, which outlines precise details for each of their KPIs, for example, Rationale, Target, Source, and Calculation (HIQA, 2013b). Similarly data governance, with a single source of truth, was also mentioned as being an important consideration with increasing numbers of people and organisations producing similar reports but with slight variances that take time to resolve and detract from the issue the data is trying to address.

Equally data governance in relation to the collection of data was highlighted as an issue. An example was given of extra screens added to the HIPE portal to gather data for the clinical programmes, which duplicated other existing data. An Executive Information Group has now been created between the DOH, ESRI, and the National Treatment Purchase Fund (NTPF) to work together in an attempt to ensure data is only collected once and to avoid duplication of effort. One recipient felt very strongly that as the private sector is considerable in Ireland, there should be an organisation with responsibility for pulling national information together – not just from the public hospitals.

**Table 4.2 Uses of Clinical Coded Data by Organisation Type**

| Use of Data | Description | Public Hospitals | Private Hospitals | Insurer | HSE / DOH |
|---|---|---|---|---|---|
| Reimbursement | Determine payment for medical services performed | X | X | X | X |
| Determination of Medical Necessity | Examine the link between the coded diagnosis and procedures to determine the medical appropriateness of the treatment and whether the payer will need to pay on this basis | X | X | X | |
| Monitoring of Claim Leakage | Carry out data analytics based on coded and other data to identify anomalies or areas for further investigation | | | X | |
| Input for Provider Contracts | Provide meaningful data for use in negotiations to compare hospitals or doctors with their peers, or their public/private mix | | | X | |
| Definition of Funding Model | Analyse the clinical data to help refine the funding model, for example, introduce stepped funding for certain procedures based on AVLOS | | | X | X |
| Management of Episodes of Care | Link to the funding model, for example, paying for readmission within a certain number of days as part of the original admission | | | X | X |
| Performance Measurement | Measure performance of providers against KPIs or targets such as readmission rates or AVLOS, making comparisons or benchmarking between providers or internationally | X | X | X | X |
| Clinical Programme Development | Monitor trends and volumes to identify conditions or members that could benefit from a targeted programme | | | X | X |
| Chronic Disease Management | Identify patients that meet predetermined criteria who are contacted by nurses offering advice and support in managing their condition | | | X | |
| Product Design | Provide information to influence product benefits and pricing | | | X | |

* The hospitals and insurers included are a mixture of both Irish and International hospitals.

### 4.3.5 Data Quality

"*The clinical record should be the primary source for the coding of inpatient morbidity data. Accurate coding is only possible after access to consistent and complete clinical information*" (NCCH, 2008).

Therefore, the quality of the coded data is hugely dependent on the quality of the input data, in other words, the medical charts themselves. This appears to be a problem in Ireland, Australia, and the US with several interviewees pointing this out as a key problem in terms of data quality. An Australian insurer observed that they are finding a lot of coding errors, which in fact result from incomplete discharge summaries. This situation would appear to be reflected in Ireland with one public hospital indicating that in some hospitals discharge summaries are still not being completed in approximately 50% of cases despite major efforts being made to educate clinicians of their importance. While discharge summaries are only one element of the chart and not the only element used in coding, they are a key input.

Deciphering handwriting was also cited as an issue for coders in Ireland but one coder noted that the increased use of printouts by consultants is making a positive difference in this regard. The majority of interviewees confirmed that while there is an increased usage of electronic records, paper charts are still widely used particularly in Ireland. However, it was observed in the US that the use of electronic records would appear to be improving the situation as there is more data available and it is in a structured format.

In addition to the effect that incomplete or inaccurate medical charts have on the data quality of the coding, they also introduce delays into the coding process as the coder must contact either the consultant through their secretary, the SHO, or some other clinician for clarification or to establish the correct data to include. With increasing pressure in relation to coding deadlines, several interviewees pointed out that it will be very difficult to strike a balance between meeting the deadlines and ensuring data quality, with several of the opinion that data quality will suffer as a result.

The experience of the coder themselves was cited as an important factor in relation to data quality. It is only through experience that familiarity with the data is achieved and therefore anomalies or gaps in the charts can be detected which need to be queried.

While there appears to be a desire to carry out quality checks on the coded data within the hospitals themselves in Ireland, due to time and resource constraints there is minimal quality assurance currently. However, in the opinion of one respondent involved in the PFS, this will need to increase once the hospital funding is directly based on the coded data. The private hospital revealed that the norm in the US would be for hospitals to have their own internal audit function to assess the coded data.

The ESRI carries out audits based on the data submitted through the HIPE portal. These audits differentiate between an actual coding error and incomplete or inaccurate information in the medical record. A concern was voiced by Irish payers that upcoding could potentially increase with the introduction of a DRG based reimbursement system and that appropriate auditing would need to be put in place to address this risk.

### 4.3.6 Perceived Impacts of Money Follows the Patient/Universal Health Insurance

The survey provides a number of potential impacts of MFTP and UHI on coding in Ireland as outlined in Table 4.3. Many of these were reiterated and expanded upon during the interviews.

**Table 4.3 Survey Responses of the Impact of MFTP and UHI on Clinical Coding and Number of Respondents who Cited each one by Respondent Type**

| Impact | Public Hospital | Private Hospital | Public Hospital Not Coding |
|---|---|---|---|
| Timeliness of Coding to increase | 6 | | |
| Funding Implications | 3 | 1 | |
| Increased Pressure on Coders | 4 | | |
| All Hospitals must code | | 2 | |
| Accuracy/Data Quality of Coding & Charts | 1 | | |
| Reimbursement Changes | | 1 | |
| Increased Awareness of own Costs | | | 1 |
| Shortage of Experienced Coders | 1 | | |
| Education to Clinicians on Timely Delivery of Charts | 1 | | |
| Additional Cost of Coders | | 1 | |
| Need to develop Coding Expertise | | 1 | |

### Timelines of Coding

New targets have been introduced for coding that are reducing timelines considerably. The HSE indicated that many hospitals are currently behind target in terms of their coding performance KPI but that improvements have been achieved in recent months. This would be reiterated by the survey results (see Figure X). These targets are even tighter for the hospitals involved in the PFS on orthopaedics, which required all discharges for the procedures in a given month to be coded by the 4th day of the following month.

One coder participating in the PFS indicated that her time at the hospital increased in order to meet the new deadlines. This was a relatively small hospital and only affected two DRGs, so the number of discharges per month was small. The coder expressed concern about how larger hospitals would deal with this when it is implemented for all DRGs.

One of the biggest obstacles expressed against the timely completion of coding is the dependency on other areas of the hospital for test results particularly histopathology. Coding standards dictate that records are not submitted until all data is available, including test results. This creates a conflict as some results can take up to six weeks to process. It appears that some hospitals may be ignoring the guidelines in order to meet the deadlines, and editing the records if necessary when the results come back. Others are holding the record until the results are available, meaning they may miss their deadlines.

### Increased Pressure on Coders

The decreasing timelines outlined above and the knowledge that their input is directly affecting the hospital's funding were highlighted as putting increased pressure on coders. Those involved in the orthopaedic PFS were particularly conscious of this increased responsibility. A HIPE coordinator expressed concern that this additional pressure could increase sick leave in the area, which is already quite high, and encourage staff to take early retirement as this would be an option for a significant number of coders. This would further compound the resource shortages outlined earlier in this section.

### All Hospitals must Code

Results from the survey indicated that of the ten public hospitals that responded, two or 20% are currently not coding. However, this was considerably higher in relation to the private hospitals where only one of the six is currently carrying out clinical coding.

As outlined in Figure x, the factors that would cause these hospitals to commence coding are very similar. This was corroborated during an interview with a private hospital which indicated that there would have to be some incentive for the hospital to justify the expense of engaging in clinical coding. They expect that reimbursement methods will change in the near future, even without the introduction of UHI, which will necessitate coding.

Appendix II outlines the perceived challenges expressed by the respondents if they did commence clinical coding. The availability of clinical coders and how this would be funded was similarly the key concern of the private hospital interviewed. Clinical coding is viewed as a specialised skill that does not exist currently within the majority of private hospitals. An abridged casemix would be typical of private hospitals, which would reduce the complexity involved and by extension the training required. In addition, private hospitals would potentially pay more than those in the public sector. This could incentivise public hospital coders to move thus reducing the recruitment burden for private hospitals.

### Additional Services to Code

Interviews indicate that outpatient services are coded in both Australia and the US. However, services carried out on an outpatient basis are not currently coded in Ireland. Procedure codes exist for many of these ancillary services as they are coded if they take place as part of an inpatient stay, for example, physiotherapy or speech therapy. However, only a single instance is captured regardless of how many sessions occur during the admission. It was observed that this could have a financial impact under MFTP.

Currently the HSE do gather some information in relation to OPD but this is primarily in relation to waiting times. The same situation applies to community services where the information gathered currently relates mainly to volumes and percentages. The view of the HSE interviewees is that while data will have to be gathered on these services at a more procedural level, Ireland is a long way away from this as the systems do not yet exist to track at that level. In addition, these services are primarily paper based at present.

Concerns expressed by a coder relating to the introduction of clinical coding of OPD services included:

- Increased resources required to code due to the large volume of OPD appointments annually, even factoring in their reduced complexity

- Additional system support required to streamline coding for repeat patients, for example the Warfarin clinic
- Potential introduction of errors if the coder has to enter outpatient details, which are not captured at present in the hospital's PAS system

Other services that were pointed out as not being coded to any international classification to-date in Ireland include emergency and mental health services.

### Best Practice

The HSE outlined that the clinical programmes are concerned with introducing best practice and the best models of care into the Irish health system. While hospitals are advised to implement these models, they are not mandatory and hospitals can prioritise the elements they wish to introduce. The assumption is that in order to meet their KPIs, hospitals will incorporate the models and therefore will be following best practice. Many of these KPIs are based on clinical coded data as mentioned above.

Similarly according to a private US hospital, many payers have quality standards built into their contracts. Some of these are based on clinical data while others are not, for example, restrictions on the number of hospital-acquired infections. The clinical data is typically submitted by the hospitals as part of the claim data whereas other data is submitted annually, such as details of staff training provided. Insurers in Australia do not have clinical best practice built into their funding models at present.

### Unique Patient Identifiers

A requirement for a national unique patient identifier was highlighted by several interviewees as being essential in achieving some of the MFTP objectives. These include the need to track patients across treatment settings in order to reimburse for an episode of care and measure some key KPIs such as readmission rates.

### Version of ICD-10 in Use

One coder highlighted the fact that they are experiencing an increasing number of instances where the procedure codes are out of date or codes for new procedures are not available. The ESRI indicated that only every second edition of ICD-10-AM is adopted in Ireland for practical and economic reasons. Any update to the classification requires huge effort and impacts the

coders themselves in addition to anyone analysing the data over a number of years. They indicated that a balance must be struck between a stable and an up-to-date classification.

## 4.4 Australian Case Study

### 4.4.1 Data Collection

Two informants were identified for the Australian case study – a DRG expert who was heavily involved in the introduction of DRG reimbursement in the 1990s, and the Head of Business and Clinical Analysis at an Australian health insurer. The former provided valuable insight into the experiences of some states which transitioned to DRG-based reimbursement in 1993, and those which are currently undergoing the change. A national dataset is legislated in Australia in addition to a protocol to gather clinical data from private hospitals and payers as well as the public hospitals. The insurer provided significant information into how this operates in Australia.

### 4.4.2 Brief History of Clinical Coding in Australia

Coding of discharge abstracts has been taking place in Australia for over 30 years with a large number of hospitals coding the majority of their discharges since the early 1980s. UHI was introduced across all states in Australia in 1984 and the government provided funding for states to increase coding to 100% nationally. Itinerant coders were introduced for smaller hospitals that did not have the volumes to justify hiring full-time coders. Clinical coding was promoted as being required for accurate record keeping and research purposes. Hospital accreditation was also viewed as a factor for overcoming resistance as the record must be good enough for someone else to take over the care.

DRG reimbursement was introduced in Victoria in 1993 and this had an immense impact on the profile of clinical coding in those states, in addition to increasing productivity and accountability for quality (Robinson and Shepheard, 2004). Several other states followed Victoria shortly afterwards. Hospitals typically had large coding backlogs prior to this with one Victoria hospital having a 12-month backlog. Various reasons were cited by hospitals as to why this situation could not be improved upon. However, the pricing system introduced dictated that any discharges not coded after one month were only paid at 50% of the DRG rate, 25% after month two, and no payment was made after that. This focused attention and provided the impetus for hospitals to quickly introduce changes so that these targets were met. The view of the interviewees was that while practicalities must be considered and

hospitals given time to adapt, reasonable timelines must also be imposed in Ireland or the change will never occur.

Several other changes occurred in Australia during the same timeframe that also influenced clinical coding. Table 4.4 summarises these changes and their impact on clinical coding (Robinson and Shepheard, 2004).

**Table 4.4 Changes in Australian Healthcare during the 1990s and their Clinical Coding Impact**

| Change in Healthcare | Impact on Clinical Coding |
|---|---|
| Hospital accreditation attained greater focus which necessitated improvements in clinical documentation and audit processes | Improved medical records enhanced the quality of clinical coding |
| Establishment of the National Centre for Classification in Health (NCCH) with responsibility for standardising coding practice and rules nationally | Professionalisation of coders, with increased focus on remaining current in terms of changes to classifications and standards, as well as clinical developments and the relationship between them |
| Establishment of the Australian Council for Quality and Safety in Healthcare utilised data better to recognise, learn from, and avert errors | Recognition of the value that could be derived from coded data at individual hospital, state, and national level |
| Introduction of more complex reimbursement systems by private payers | Understanding that hospitals, particularly private hospitals, must code and must code accurately |
| Increased use of evidence-based medicine | Requirement for comparable and reliable morbidity and mortality data |
| Increased interest in public health intelligence to support public health policy planning and development | Requirement for long-term, accurate, and consistent population-based health information |

Several potential changes to the role of the coder were identified at this time. These included the transition of the role towards quality and audit; additional pressure and complexity; increased involvement in funding and financial issues; clinician education in relation to the connection between their clinical documentation, coding, and reliable coded data; enhanced interaction with the clinical team; management and planning for upgrades and changes in the classifications and standards over time to ensure minimal impact and continued applicability of

historical data; increased IT capability and use of electronic medical records; more prevalent mapping between classifications and terminologies. Concern was expressed that with pressure to increase productivity, coders would lose sight of the bigger picture while they focused on meeting targets to ensure appropriate funding. Salary concerns and resource shortages were expressed in addition to the need to promote clinical coding as a career option (Robinson and Shepheard, 2004, McKenzie and Walker, 2003).

Surveys carried out during 2009 in the state of Victoria (Shepheard, 2010), which had introduced DRG funding, would appear to validate several of these predictions. Coders were in high demand with an elevated profile. Increased clinical interaction by coders was required to educate other hospital staff on the funding and classification models and their impacts on funding, attend clinical meetings, conduct quality and documentation improvement initiatives, and remain current in terms of coding standards. Increased financial knowledge was now required and a new role, labelled costing specialist, is also emerging in Australia. This role requires knowledge of casemix, finance, costing, relative values, and national efficiency pricing in order to negotiate with payers on behalf of providers (Collins et al., 2010).

The introduction of case-based funding in Victoria led to resource shortages for clinical coders and HIMs. This was addressed through various means across organisations including paid and unpaid overtime, engaging contract coders, and the outsourcing of coding activity (Shepheard, 2010). With the national implementation of Activity Based Funding (ABF) and other health reform initiatives, such as performance management that rely on coded data, it has been acknowledged that there are resource shortages in the area of HIMs and CCs (COAG, 2009, Collins et al., 2010). There are still resource shortages for clinical coders in Australia and there appears to be an increasing demand for the services of external agencies that provide this expertise. The insurer observed that when they started carrying out coding audit, there were no issues in obtaining the services of an external agency to carry out the audit. However, in recent times they are finding it increasingly difficult to obtain these services at a time that suits them due to the increase in demand.

Several states have adopted strategies to address this issue by investigating options to increase coder productivity. These include increased use of technology, increased education and support for coders, new pay arrangements, and the creation of auditor and education roles (Collins et al., 2010). Health Workforce Australia (HWA) was established to "*build a*

*sustainable health workforce for Australia*" (HWA, 2013), which includes clinical coders and HIMs.

The increased profile of clinical coders and the shortage of suitably skilled resources resulted in the introduction of formal qualifications for clinical coders. One of the interviewees is currently involved in a study to compare aspects of coding in states where they previously had casemix funding and those where they did not. Coding depth, or the number of diagnoses per record, is similar across all states. However, the proportion of complex DRG is much higher in Victoria, where they had casemix funding, than in any other state. While they do not know for sure why this is the case as yet, one theory is that it is because Victoria has had a degree programme in health information management for many years and has a much stronger culture in this area. While not all coders in Victoria have these degrees, a considerable number would and they tend to be in supervisory positions.

Training in clinical coding in Australia is achieved in several ways (Collins et al., 2010):

- Formal HIM university degree programme
- Distance education programmes at three levels through HIMAA with recognition achieved through a formal coder certification programme
- Short intensive classroom type training
- On-the-job training

Low enrolment figures in recent years have led two Australian universities to discontinue their HIM degree. Other universities have altered their programme in an attempt to encourage uptake and better reflect market needs (Collins et al., 2010).

In Australia, while smaller hospitals might consider employing a coder who has a basic coding qualification, a coder would need to have a degree in clinical coding to get a job in a large hospital. This is due to the complex casemix involved and therefore the requirement for the coder to be familiar with a wide range of codes, since their accuracy has a considerable bearing on the hospital's finances due to the large sums involved.

Certain services such as psychiatry and rehabilitation are not being included in the initial Australian move to national DRG reimbursement, as appropriate classification systems are not

yet available. These services will continue to be funded via a block grant mechanism. A prototype for mental health interventions is being developed and piloted (AIHW, 2013).

### 4.4.3 Quality and Audit

Both Australian interviewees viewed coding audits as being vital when reimbursement is based on coded data. States which have been reimbursing based on DRG for many years all carry out regular coding audits. These are not typically based on random samples but rather they target particular hospitals or conditions based on their sampling design. The execution of the audits is contracted out to qualified health information specialists.

Penalties are built into funding guidelines if systematic upcoding is found but this is rare. Generally there is as much under-coding as over-coding. Also they have found that while there may be quite a degree of error at the individual ICD diagnosis or procedure code level, once this is aggregated to DRG, there is generally little difference.

Private payers carry out quality controls on the clinical data they receive from the hospitals by running it through various software programmes. However, these are only validating the alpha numeric format of the codes and validating the DRG code mapping by running it through the grouper software. Therefore, they also carry out coding audits using an external agency to validate the content. They code a sample of claims blind and compare the results with those submitted by the hospital. Where there is a difference they will either ask for the money back, or pay the difference. They have experienced coding error rates as high as 15%, which would be a combination of under-coding and over-coding. This would not correspond to a 15% price difference but even a small variance of 1 or 2% when paying out millions of dollars can be significant.

Coding accuracy has improved since the introduction of audits, but not as much as they would like or had expected. Their view is that some hospitals are slow to address the issue of poor charting with doctors due to a fear that they will go elsewhere. However, they think the government will address this with the move to ABF nationally. In addition, they emphasised that good record keeping is a requirement for hospital accreditation, quality, and patient safety, and therefore should not be considered solely for reimbursement purposes.

### 4.4.4 Use of Clinical Coded Data

Reimbursement is the most prominent use of the coded data. Within the public system a significant proportion of the hospital's funding will now be based on a DRG model. DRG based funding is also used extensively within the private system with this insurer indicating that approximately 60% of their episodes would be DRG funded.

The use of mandated datasets that apply to both public and private hospitals means that the Australian government has a complete picture nationally. This data is used for planning and policy development for private hospitals and private health insurance.

Funding models are becoming increasingly complex and the clinical data is vital to achieve these. For example, if a patient is readmitted within 28 days of discharge to the same hospital for the same condition, it is treated as the same episode of care. Where a stepped-funding model applies, for instance with a reduced rate applied after day seven, this could mean a considerable reduction in the monies paid to the hospital.

Coded data is used increasingly by payers to determine medical necessity and perform data analytics to identify inappropriate billing or practices. An example was given where cosmetic surgery was examined as this is not payable by any payer in Australia. Analysis showed that for rhinoplasty the ratio of women to men was approximately 3:1 across all age profiles. As there is no medical explanation of this gender imbalance, this alerted the payer to investigate further and monies were recouped.

Analytics is also performed on the data to assist in provider contracts. This data helps the hospital negotiators to hold a reasonably sophisticated discussion with the provider about their clinical data. Providers are benchmarked against their peers in areas such as AVLOS or fall rate and while this information is not published publicly, it is used as part of the contract negotiations.

In looking for ways to help their members stay healthy and avoid hospital admissions and readmissions, the clinical data is also used to develop clinical programmes or target members to participate in chronic disease management programmes.

### 4.4.5 Data Sharing of Coded Data between Hospitals & Insurers

Insurers in Australia do not carry out any clinical coding. Clinical data is part of several nationally mandated data collections as outlined in Appendix IX. Under the Private Health Insurance Act 2007, hospitals must provide insurers with data using the Hospital Casemix Protocol (HCP) file specification (Department of Health and Ageing, 2013). This contains demographic, clinical, and financial information in respect of each episode of admitted inpatient treatment for which a benefit has been paid. This data must be provided to the insurers monthly and no later than six weeks after the discharge. Private hospitals must submit the full HCP dataset. Public hospitals are required to supply insurers with at least the information they supply for claiming but should work towards supplying the full HCP dataset. The insurers then match this data to their membership and claim data and send a combined file to the Department of Health and Aging (DoHA).

Private hospitals must also submit their clinical data to the Private Hospital Data Bureau (PHDB) and the National Admitted Patient Collection (APC) (KPMG, 2011). There is considerable overlap between these three datasets particularly the HCP and PHDB. Despite this apparent duplication, the policy they are working towards in Australia is supply once, use many. Figure 4.2 outlines the current flow of data in Australia as determined from the case study informant and published literature.

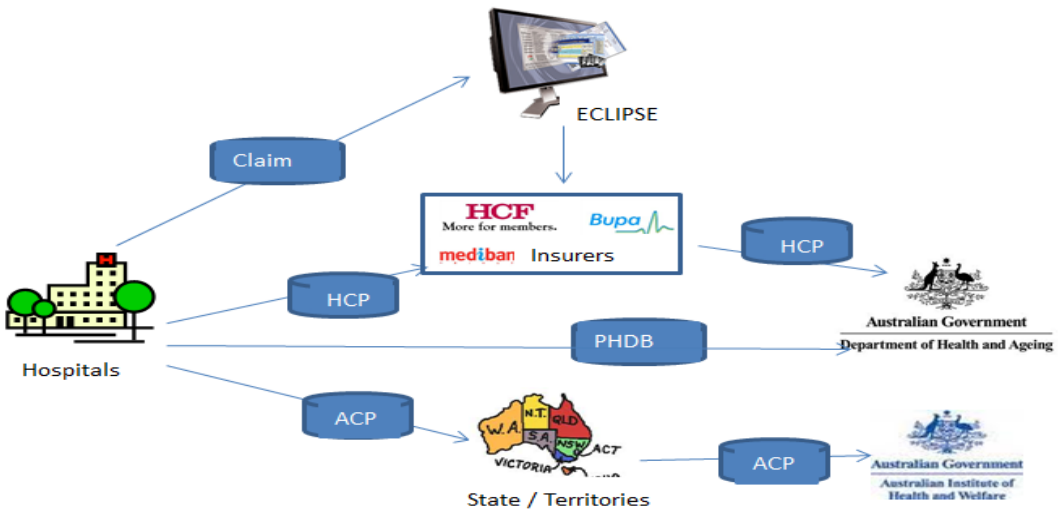


**Figure 4.2 Overview of Clinical Data Flows in Australia**

Claim data is submitted separately by the hospitals using another nationally mandated dataset. This dataset contains some clinical data such as the DRG, primary diagnosis, and procedure codes but is less than that specified by the HCP. The claim would generally be paid prior to the submission of the corresponding HCP data. The Australian government have introduced an electronic claims processing engine called ECLIPSE. Hospitals submit their claims to the hub and it distributes the claims to the appropriate payer. Approximately 40 to 50% of this insurer's claims are now going through ECLIPSE and this is even higher for other payers.

The DoHA commissioned a review of private hospital data collection in 2011 (KPMG, 2011). The report highlighted the commonality between the HCP, PHDB, and APC datasets and recommended investigation into a common specification for common fields to be rolled out across all private hospitals and jurisdictions. It observed that while ECLIPSE initially incorporated the HCP specification, this had not been used or kept up to date. It recommended that this be updated and maintained to ensure its capability to transmit HCP data. This report also pointed out two key differences where data collection is different in private and public hospitals. Firstly there are contracts in place between insurers and private hospitals that dictate what data must be collected and secondly, the cost of the data collection must be recouped in fees and charges for private hospitals.

## 4.5 Irish Insurer Case Study

### 4.5.1 Data Collection

One of the key principles underpinning MFTP is that data should be collected once but used for various purposes by multiple stakeholders (Department of Health, 2013b). Early in the research it became apparent that there was duplication of clinical coding in Ireland with the health insurers coding episodes of care that had already been coded by the public hospitals. The MFTP and UHI documents also highlighted impacts for insurers. Therefore, it was decided that a case study to investigate this area would be prudent. The data was predominately gathered by interviews with representatives from two Irish health insurance companies and the researcher's own experience. An assessment was carried out to compare the HIPE data with the E-claiming dataset and how the data exported to the ESRI differs from that input to the HIPE portal. The HIPE dataset was also compared to the Australian HCP dataset. Potential

options to obtain coded data were presented to an insurer and discussions ensued as to their preference.

### 4.5.2 Current Situation

Two of the four health insurance companies in Ireland carry out clinical coding on the claims they receive. The remaining two insurers were not contacted and therefore it is not known whether they code or what versions they use. The main reason for this apparent duplication appears to be that the larger portion of claims would be from private hospitals and as the majority of private hospitals in Ireland do not code, the insurer would have to code these anyway and traditionally it was therefore easier to code all claims.

Until recently the public hospitals would have experienced coding backlogs but the claims would generally be submitted in a more timely manner as there is no dependency on the coded data. If the hospitals were asked to provide the coded data along with the claim information, this would have delayed the claim submission and subsequent payment of the claim. This would not have been acceptable for the hospitals, particularly as the coded information would traditionally only be used by the insurer for research and analysis purposes, rather than the actual reimbursement of the claim. Claim data is received in paper format from all hospitals currently. Two hospitals are currently engaged in an E-claiming pilot with a multi-insurer group that would see claims being electronically submitted to all insurers.

While the public system in Ireland codes using ICD-10-AM/ACHI/ACS and AR-DRG classifications, the health insurers are coding using ICD-9-CM (Clinical Modification) and International Refined-DRG (IR-DRG) classification. The use of different DRG systems makes comparison between the private and public systems difficult at present as insurers are coding the private hospital discharges. In addition, should the insurers move to DRG-based reimbursement founded on IR-DRG, there would likely be considerable challenge from hospitals as their DRG codes could differ.

### 4.5.3 Desire to take Codes from Hospitals

Both insurers interviewed are considering a move to ICD10. The reasons for this include a desire to carry out comparisons both nationally and internationally, a potential move to DRG reimbursement for certain admissions, and in preparation for UHI which will force insurers to reimburse based on the DRG codes, and potentially prices, set down by the government.

Insurers are under similar pressures to curtail costs as the government and constantly review their funding models. The introduction of DRG-based reimbursement is a logical move in this regard but this would not be possible without ICD-10 data. UHI will force this issue as all admissions will be based on nationally set DRG prices regardless of payer.

However, as the ICD-10 codes are considerably more granular than ICD-9, there was a concern that the limited data received by the insurer in order to pay the claim, would be insufficient to accurately code to ICD-10. In an attempt to validate this assumption, one insurer engaged a clinical coder to code a small sample of claims in ICD-10 based on the claim data only. This exercise established that, in the sample examined, only 45% of claims could accurately be coded under ICD-10 to a level that would be sufficient for reimbursement. The main observation was that the claim information provided was vague, ambiguous, and just enough to ensure the claim was actually paid. Appendix VI provides some examples of the type of scenarios encountered. If claims were to be reimbursed based on a DRG model, this could have a serious financial impact, predominately on the hospitals. During the interviews both public and private hospitals indicated that if reimbursement were to be based on coded data, the hospital would need to be in control of this data. Increased interaction with clinicians is required when coding in ICD-10. It would be difficult for insurers to have access to clinicians and this would slow down the process.

Regardless of reimbursement, there is an increasing desire to use the coded data for analytics and research as mentioned above. In order to successfully compare and benchmark providers and to use this information in contract discussions, the coded data would have to be of a high quality so that it could not be challenged by the providers. Therefore, as the hospitals can code more accurately due to accessibility to the full medical chart, the insurers are of the view that they should receive the coded data from the hospitals as part of the claim dataset. This would also be the international norm. One insurer indicated that they would expect this to be a prerequisite of UHI.

Initial discussions have taken place between one insurer and the ESRI, the HSE, and one public hospital with regard to taking the coded data from the public hospitals either through the ESRI or directly from the hospitals.

### 4.5.4 Challenges with taking Codes from Hospitals

The biggest challenge facing insurers is that the majority of private hospitals currently do not carry out clinical coding. The analysis would indicate they are unwilling to do so unless reimbursement or legislation forces the issue.

In order to devise a DRG reimbursement model and the associated prices, insurers would need access to coded data for a period of time. While this could be retrospectively sourced from the public hospitals subject to appropriate authorisation, the public hospital casemix is quite different to that of the private hospitals. Therefore, it would be imprudent to construct a reimbursement model purely based on public hospital data.

The initial view of one insurer was that the coded data could be taken from the ESRI for all public hospitals, and potentially private hospitals in the future if they were to use the HIPE portal to code. However some preliminary analysis by the insurers has highlighted some issues with this approach:

1. The HIPE data would have to be matched to the claim data once both were received. Various timing scenarios would have to be considered
2. As the HIPE data is only exported to the ESRI on a monthly basis, this could delay payment of the claim. The ICD data is required to adjudicate a percentage of claims currently but if DRG reimbursement were introduced, this would impact all claims
3. As the ESRI are a data processor, rather than the data controller of this data, permission would have to be obtained from each hospital, for the data to be shared with the insurers

Examination by the researcher of the HIPE data exported to the ESRI revealed that several key fields are either encrypted or manipulated (see Appendix VIII), as the ESRI explicitly do not want patient identifiable data from hospitals (ESRI, 2013d). Some of these fields, such as date of birth, would be vital for the insurer to enable matching of HIPE and claim data.

Consideration would need to be given as to whether all of the HIPE data was passed to insurers or only that which is strictly required, for example, ICD diagnosis and procedure codes as well as data required to match the claim. Data protection considerations may impact this decision. The DRG codes are provided by hospitals in Australia whereas in the US this is only provided if required by the payer. If the ICD information was provided, the insurers could

derive the DRG codes themselves using grouper software. However, this could be open to challenge from providers if the code differed from their own, particularly when DRG based reimbursement is introduced. If all data was being supplied, mapping would be required for various fields between the values used by the ESRI and those of the insurers including hospital identifiers, and discharge destination.

As a result of these issues, this insurer is now considering taking the coded data directly from the hospitals. Process changes would be required in the hospitals to accommodate this and depending on the mechanism agreed, this could introduce a dependency on coding to submit the claim to the insurer. An initial conversation has raised data protection concerns regarding the use of the data that would need to be addressed.

Both insurers indicated that the E-claiming dataset, which contains the information required to adjudicate a claim, includes fields for the ICD coding information. However, these are currently optional and neither of the two hospitals involved in the pilot will be providing this data. Interestingly, examination of this dataset revealed the following(MIG, 2013) :

- ICD diagnosis code field is present and can have multiple values but there is no distinction between primary and secondary diagnosis, in other words, there is no separate primary ICD diagnosis field
- No field to gather ICD procedure codes
- No field to gather DRG code or version
- ICD version field is present but it is a string field, whereas ideally it should be an enumeration of valid values

Further probing with a member of the E-claiming project team revealed that capturing of ICD codes was ruled out of scope early in the project due to the volume of change required and resistance from private hospitals.

Regardless of how the data is obtained, both insurers indicated that coding audits would be required if the data were to be sourced from the hospitals particularly if it is to be used for reimbursement. Ideally this would be outsourced if there was a suitably skilled agency or company available to provide the service as coding would no longer be a core competency on the insurer side.

### 4.5.5 Comparison with the Australian Model

In Australia, legislation governs the submission of clinical data both to payers and government departments. This legislation covers the data itself, the frequency and the format. In contrast, there is little legislation in Ireland in this regard. As stated in section 2.3, the majority of public hospitals must submit clinical data to the ERSI. Part of the ESRI's contract with the DOH is to ensure that accurate and timely coded data is returned from participating hospitals. There is no legislation for private hospitals to submit this information. Contracts exist between the private hospitals and insurers. Details from one insurer indicate that no individual data items are specified in the contract but the direct settlement clause does state that the claim form must be completed in full. A medical necessity clause also stipulates that access to medical records can be requested. A separate clause states that the parties agree to cooperate regarding the exchange of information (Insurer, 2013b). There are currently no contracts in place between the public hospitals and the insurers.

Much of the transmission of clinical and claim data is now electronic in Australia both through the use of the ECLIPSE system and other agreed electronic file formats as described in Appendix IX. By comparison, Ireland is just commencing this journey with the E-claiming project. Based on current plans it is likely to be several years before this is implemented in all hospitals (Insurer, 2013a). However, coded data is transferred electronically between hospitals and the ESRI.

A comparison of the HIPE and HCP datasets revealed considerable similarity as outlined in Table 4.5 (ESRI, 2013d, Department of Health and Ageing, 2013). The additional HIPE fields consisted primarily of ward identifiers, public/private differences, and consultant details. In contrast, the additional HCP fields were predominately related to financial data, durations spent in various types of care, DRG details, and Medical Benefit Scheme (MBS) codes. Full details can be found in Appendix X.

**Table 4.5 Comparison of HIPE and HCP Datasets**

| Comparison | Number of Fields |
|---|---|
| Present in both | 29 |
| Present in HIPE but not in HCP | 24 |
| Present in HCP but not in HIPE | 38 |

There was some indication of capturing quality indicator data in both datasets. The HIPE dataset includes an indicator against each diagnosis as to whether it was hospital acquired. This indicator is not present in the HCP dataset. However, it contains indicators for readmission within 28 days and unplanned theatre visits, neither of which are present in the HIPE dataset.

### 4.5.6 Proposed Solution

Based on the information gathered, consideration was given to the options available to the insurers to obtain clinical coding data directly in the absence of government legislation. A summary of these options is outlined in Table 4.6.

These options were discussed with one of the health insurers and while it was recognised that further analysis would be required, a combination of options three and four was expressed as the preference from their perspective. While the use of E-claiming would be the ultimate goal, it was acknowledged that this would not be widely used for some time and therefore an alternate solution would be required in the interim. Option four achieves the insurer objective of receiving the coded data, with the minimum disruption to the hospitals. Once E-claiming is operational, this data could then be incorporated into the E-claiming dataset, eliminating the need for a separate file and the associated matching of data. Hospitals will have tighter deadlines for coding as a result of MFTP and will have to code in order to receive payment for their public patients so this would actually standardise the process across public and private patients. Therefore they perceived that there should be little or no delay in payment due to the introduction of a dependency on the coding data.

Similar options exist for private hospitals once they commence coding. The requirement to provide clinical coding data would need to be included in hospital contracts and sufficient time given to allow hospitals to prepare. Consequently it could be into 2015 before the insurers are collecting coded data from the private hospitals. The view from one private hospital was that they would require approximately one year's notice. They would consider using the HIPE system if that was an option but if reimbursement was going to be based on this data, they would need to be certain that this system was maximising their reimbursement and so may consider using their own system.

**Table 4.6 Options for Insurers to Obtain Coded data from Hospitals**

| | Overview | Pros | Cons |
|---|---|---|---|
| 1 | **Take Data from ESRI** | | |
| | Hospitals continue to enter data into HIPE. ESRI makes a consolidated data file, filtered by insurer, available monthly for each Insurer who then match these clinical details to claims prior to adjudicating the claim. HIPE would be changed to capture insurer policy number to assist matching to claim data | • No change to hospital process or systems<br>• Similar process for private hospitals if they started coding using the HIPE portal | • Timing issues matching clinical data to claims data<br>• Permission must be sought from each hospital to use the data<br>• Some key matching data not included in ESRI file<br>• Potential to delay hospital payment waiting for coded data |
| **2** | **Include on Claim Form** | | |
| | Include fields on the claim form to capture ICD-10 diagnosis and procedure codes and DRG codes | • No delay to hospital payment once claim data submitted<br>• No need for insurer to match clinical and claim data<br>• All data available in hospital<br>• Insurers get single source of data | • Considerable change to hospital process and potentially systems<br>• Submission of claim now dependant on coding<br>• Requires data entry of coded data by insurers |
| **3** | **Include in E-Claiming** | | |
| | Include fields in the E-Claiming dataset to capture ICD-10 diagnosis and procedure codes and DRG codes | • No delay to hospital payment once claim data submitted<br>• No need for insurer to match clinical and claim | • Change to hospital process and potentially systems<br>• Submission of claim now dependant on |

| | Overview | Pros | Cons |
|---|---|---|---|
| | | data<br>• All data available in hospital<br>• Insurers get single source of data<br>• Less manual effort for hospital<br>• No data entry of coded data for insurers<br>• Eliminate risk of transcription errors | coding<br>• Changes to E-Claiming dataset required<br>• E-claiming will not be widely used for some time |
| **4** | **Collect from Hospitals separately** | | |
| | Hospitals submit a separate coding data file regularly to insurers who match these details to claims details prior to adjudicating claim | • Less process change for the hospital<br>• No data entry of coded data for insurers<br>• Eliminate risk of transcription errors | • Change to hospital systems<br>• Potential to delay hospital payment waiting for coded data<br>• Issues matching clinical data to claims data |

### 4.5.7 Further Opportunities to Streamline Coding

Health insurers have proprietary procedure codes that are used for reimbursement of claims. While these were initially homogenous, since the introduction of competition into the health insurance market divergence has occurred as new codes have been added over time. This creates complexity for the hospitals as they must manage multiple sets of codes. Providers must include the procedure code(s) when submitting claim data to the insurer in order to receive payment. These codes are loaded into the provider's invoicing system and appear on the invoice, but must also be entered on the claim form. Comparison and benchmarking are more difficult for insurers as mappings must be created to the ICD-10 procedure codes. These mappings are also needed for the insurers to use grouper software to create DRG codes from the coded data. As stated previously, procedures are coded in HIPE using the ICD-10-AM/ACHI/ACM classification. This means that procedure codes are being coded twice under two different sets of standards.

Suggestions were made by the insurers interviewed and the private hospital, that Ireland should standardise its procedure codes most likely on ICD-10-AM/ACHI/ACM as they are currently in use within the public system. A similar situation exists in Australia where MBS codes are used in addition to the ICD-10-AM procedure codes (Department of Health and Ageing, 2013). This was an issue previously in the US where some payers used proprietary procedure codes. However this is no longer permitted under HIPAA which stipulates the use of standard codes for diagnosis, procedures, and drugs (Matherlee, 2002). This transition would involve considerable change in terms of the current reimbursement models that are largely fee-for-service based on the insurer procedure codes, as there are significantly more ICD-10 procedure codes than insurer codes. The mappings mentioned above would also become more important to ensure a link is maintained to valuable historical data.

In addition, insurers require hospitals to provide clinical indicators for certain procedures, in other words, the condition that actually necessitated the procedure to be performed. These are not coded. This is very similar to medical necessity, which can be described as linking every procedure or service code reported on an insurance claim to a condition code (disease or symptom) that justifies the need to perform that procedure or service (Green and Rowell, 2012). This is achieved in the US and Australia through the linking of ICD diagnosis and procedure codes, whereby the procedure is required as a result of the diagnosis. One interviewee highlighted that Medicare in the US have Local Medical Review policies that outline the list of diagnosis for which it will pay certain procedures. They also have software in

their hospitals in the US to check whether the procedure is payable based on the diagnosis and payer's policies and if not this can be queried with the physician prior to treatment. This linking of ICD diagnosis and procedure codes is included in the coding standards used in Ireland, which state that procedures should be sequenced as per the diagnosis (NCCH, 2008). Therefore, it was observed that clinical indicators could potentially be retired and medical necessity demonstrated using the combination of ICD diagnosis and procedure codes.

As outlined in Appendix VIII, ward identifiers are captured in coded format for HIPE. Hospitals must register certain wards with the National Casemix Programme and obtain a ward identifier (ESRI, 2013d). In contrast, the insurers also require ward identifiers, to ensure payment for approved wards only for example, but there is no standard and these are supplied as ward names in textual format. This can cause difficulties during analysis, and adjudication of the claim as a result of misspelling of ward names.

A comparison of the HIPE and E-claiming datasets (ESRI, 2013d, MIG, 2013), as illustrated in Appendix VIII, highlighted several examples where similar data is required but slightly different values exist between the two datasets. Table 4.7 lists the values for the discharge destination (where is the patient going on discharge) offered by the two datasets, and highlights where these are similar.

**Table 4.7 Comparison of Discharge Destination values for HIPE and E-Claiming Datasets**

| HIPE Dataset | E-Claiming Dataset |
|---|---|
| Self-discharge | |
| Home | Home |
| Nursing home, convalescent home or long stay accommodation | Convalescence<br>Long Term Care |
| Transfer to hospital - emergency | Transfer to another hospital |
| Transfer to hospital - non emergency | |
| Transfer to psychiatric hospital/unit | |
| Transfer to non-acute hospital not in HIPE hospital listing - emergency | |
| Transfer to non-acute hospital not in HIPE hospital listing - non emergency | |
| Transfer to external rehabilitation facility (not in HIPE hospital listing) | |
| Hospice (not in HIPE hospital listing) | |

| HIPE Dataset | E-Claiming Dataset |
|---|---|
| Died with post mortem | Deceased |
| Died no post mortem | |
| Prison | |
| Absconded | |
| Other (e.g. foster care) | |
| Temporary place of residence (e.g. hotel) | |
| | Still in hospital* |

* For long-term admissions, hospitals may sometimes claim multiple times during the stay

Lastly each hospital and consultant has a unique identifier within HIPE and also with each individual insurer. However, these are different in each system.

### 4.6 Conclusion

This chapter outlined the key themes that emerged from the research, which related to clinical coding and more specifically the potential impact of MFTP and UHI on this area. The Australian situation was then described as a basis for comparison having undergone a similar transition. Particular focus was given to the situation in relation to insurers in Ireland as this situation is very different to the international norm.

Other items were highlighted during the analysis that would be impacted by the move to MFTP and UHI, but as they are not directly related to clinical coding, they were not included above. These include a need for hospitals to have an increased awareness and detailed knowledge of their own costs and potential structural changes within hospitals may result. In addition, the design of the DRG reimbursement model itself was deemed very challenging and needs to consider items such as whether professional services and prosthesis are included in the DRG price, how reimbursement for high and low outliers will be achieved, and how varying cost structures will be addressed.

An evaluation of this analysis is presented in the following chapter.

# Chapter 5 Evaluation of Results

## 5.1. Introduction

Previous chapters have described the state of the art and the views of stakeholders. This chapter will evaluate the themes derived from the researcher's study, as listed in Chapter 4, to identify the potential impacts of MFTP and UHI on clinical coding that emerged and to determine how lessons learnt from international comparisons can be applied to the Irish context.

## 5.2 The Clinical Coder Role

Clinical coding resourcing will undoubtedly be affected by the introduction of the government's plans and Future Health strategy. The reduction in coding timelines is already forcing a requirement for additional coders in public hospitals. Private hospital coding will compound this issue, as will the subsequent introduction of additional coding services such as outpatient. Private hospitals will likely provide enhanced remuneration, which will exacerbate the problem in the public hospitals if coders relocate to avail of the better salary. International experience suggests that this is not just an initial challenge but rather an unremitting problem. Therefore, immediate national strategy formulation is necessary due to the lengthy timeline to achieve proficiency. Such strategy, while addressing the immediate problem, should also ensure a continued supply of trained professionals who will be required given the significant role that quality coded data will play in the healthcare reform. Australia has established an authority dedicated to securing the appropriate healthcare workforce to implement its reforms (HWA, 2013). This may be an option for the Irish government with health information management being one of the areas for attention. Differences of opinion were expressed as to whether the new Hospital Group structure could offer opportunities for consolidation of clinical coder resources to gain efficiencies (HSE, 2013b). In the view of the researcher, while this offers potential it would be difficult to achieve in an environment of predominately paper charts. Therefore, it may need to be a consideration for the future.

In addition to resource capacity, the roles and responsibilities in relation to clinical coding should also be reviewed as this is likely to evolve as emphasis transitions to quality and audit with an increased financial focus. New responsibilities related to costing and financial implications may need to be incorporated as hospitals seek an in-depth understanding of their costs and reimbursement, although this could equally be a dedicated role within hospital

groups. Increased interaction with clinical staff will certainly be required at various levels. Constant review, feedback and development of the coding system will be a new element of the role particularly if Ireland diverges from AR-DRG to a national grouping. Revised remuneration is a probable consequence of these changes, particularly if accreditation is introduced (McKenzie et al., 2003).

Clinical coding accreditation, which is being considered, would appear to promote data quality. Other benefits include heightened profile and recognition, increased awareness of coding as a career option, and an assurance of continued education. For the coders themselves, accreditation would offer increased employment opportunities and improved remuneration. Regular training updates throughout the year would appear to reflect the international norm but provision needs to be made for this when resourcing is being considered as regular training has been highlighted as another key element to increased data quality.

Opportunities will present for supplementary coding expertise as coding audit skills rise in demand with payers representing an additional source of employment. Possibilities exist for contract coders or outsourcing of coding to address resource shortages. The new National Information and Pricing Office may perform this function (Department of Health, 2013b) but could be augmented by other companies.

### 5.3 The Coding Process

Timeliness of coding is the most prominent issue relating to coding in Ireland resulting from the recent deadline changes. Given budgetary constraints and a shortage of skilled clinical coders, efficiencies in the process need to be identified to improve coder throughput while maintaining data quality.

Paper charts introduce significant delays and frustration into the coding process. The ability to effectively use resources between sites and potential outsourcing are curtailed due to reliance on the paper chart. Scanning can alleviate this issue but may be costly. Changes to the operating model in hospitals could lessen the problems associated with charts. While attempts have been made in this regard, they are often unsuccessful due to resistance from, or conflicts with, other areas of the hospital. Education of all hospital staff in relation to the role clinical coding will play in hospital funding and performance management - and therefore their future - is essential if cooperation and active participation in change is to be achieved. Dependencies between the coding and income collection functions will have to deepen as

coding becomes a prerequisite for payment. Consideration could be given to examining the interactions and processes intertwining these areas to see whether they could be amalgamated or at least streamlined. Senior management leadership is essential if this type of change is to succeed (Caldwell et al., 2008).

In Ireland, paper medical charts are still the norm although some elements are now available electronically. It appears that a full EMR is still very much the exception internationally but continuous progress is being made in this regard. Coding could be automated based on a full EMR. While this is some time away (Stanfill et al., 2010), even with just a portion of electronic elements including discharge summaries, improvements in coding quality are being achieved as a result of more structured and complete data. Electronic records also reduce the amount of queries for clinical staff.

The process change will be more pronounced for those smaller public hospitals which currently do not code, due to resource constraints or availability of experienced clinical coders, and private hospitals, the majority of which do not code currently as there is no requirement for them to do so. In addition to the recruitment and training of appropriate staff, processes will also have to be put in support the collection and review of the data.

If additional services are to be coded in the future, for example to cover outpatient or emergency services, consideration should be given to the process prior to commencement. The purpose of this would be to determine the most efficient means of coding and ascertain whether technology could be used to automate or streamline the process in any way.

### 5.4 Data Quality and Audit

*"Pray, Mr. Babbage, if you put into the machine wrong figures, will the right answers come out?' I am not able rightly to apprehend the kind of confusion of ideas that could provoke such a question."*

*Charles Babbage* (Babbage, 2011)

As previously asserted the quality of clinical coding is largely dependent on the standard of clinical documentation on which it is based. With the introduction of MFTP, coding will have a direct bearing on reimbursement. Other ways in which coding will indirectly affect funding were also identified. These include performance measurement and the achievement of activity targets, which are largely based on coded data. These in turn will impact resource

allocation and the ability to obtain additional funding, while DRG pricing will be based on previous activity levels. Penalties for poor data quality could be incorporated into contracts or reimbursement models in the future as evidenced by international examples. Therefore, the quality of coded data assumes added significance from a managerial, financial, and clinical perspective (Nouraei et al., 2009).

Clinician education and awareness of the impact of poor quality coded data is vital to improve the quality of the clinical documentation that is provided as raw input. This will require constant

support and mentoring from coders. Clinician involvement in the coding process has proven successful in enhancing data quality.

Conflicting views were found as to the current quality of Irish coded data. However, there was consensus that while great improvements have been made in recent years, more could be done. Constant review, analysis and improvement of quality processes must be maintained. The quality checks incorporated into the HIPE system would appear to be largely in line with other countries but will need to evolve constantly. A careful balance will need to be struck between achieving coding deadlines and quality coding.

Acknowledgement exists that auditing will need to be enhanced, both at the hospital and ESRI level. Additional audits will also be required by health insurers if they receive coded data directly from hospitals and commence DRG reimbursement.

Concerns were raised about deliberate upcoding with the introduction of DRG funding. This view was not upheld by international experience where little evidence of systematic upcoding is found (Busse et al., 2011). Rather there is generally as much under-coding as over-coding identified, often as a result of poor quality clinical documentation. However, it appears that upcoding is a bigger concern in relation to profit-making organisations. Therefore, insurers will need to ensure appropriate measures are in place to mitigate this risk once private hospitals commence coding for reimbursement. Similarly clinical coder awareness of the ethical coding standards will need to be reiterated regularly.

### 5.5 Data Collection and Usage

Usage of clinical data has risen dramatically in recent years and this surge is likely to continue. Reimbursement will always be a flagrant use. However, coded data is increasingly enabling

the design of more complex reimbursement systems particularly in the private sector. Evidence of medical necessity is increasingly required by payers and coded data can provide such justification.

In addition to reducing expenditure, the healthcare reforms are equally concerned with providing an integrated model to improve the quality of care (Department of Health, 2012, COAG, 2009). The design of such a model will require detailed activity data so that informed decisions can be made in relation to resource allocation, performance measures and provision of services. Quality measures are being incorporated into funding models internationally that would corroborate the government plans for a similar model in the future. Coded data is the basis for these plans, and as stated in Section 1.1, provides a consistent and transparent means of communication between all those involved.

Accurate, timely, and consistent national data is required by governments for planning, resource allocation, and policy development. National datasets are typically mandated for this purpose. The HIPE database currently forms the basis of much government decision making. However, as there is no mandate in Ireland for private hospitals to provide activity data, the government does not have a complete picture currently on which to base their integrated model. A national cost dataset will also be required as input for to pricing decisions (Busse et al., 2011). Government mandates will be required to instigate national datasets and enforce compliance. Implementation of some policies under MFTP will force the need for a National Patient Identifier (NPI), such as the expansion of an episode of care to include associated outpatient services. This will require legislation to enact.

International best practice dictates that data is collected as close to source as possible and should be collected once and used many times (HIQA, 2013c). While this is the aim of the Australian government, different views were expressed as to the degree to which it is being achieved. Data governance will play a vital role in Ireland's adherence to this principle, in addition to ensuring the appropriate and valid use of coded data. As the design of UHI becomes more definitive, consideration could be given to the inclusion of insurer representation on the Executive Information Group which has already been established for this purpose. This practice, however, corroborates the insurer's view that coded data should be provided to them from the hospitals as they have access to the medical chart. International practice would indicate that this is the norm. Of course, data protection considerations also have to be addressed in this context.

Opportunities exist to reduce the data collection overhead for hospitals. Proprietary procedure codes could be standardised nationally based on the ICD-10-AM procedure codes. The use of clinical indicators to verify medical necessity could be eliminated through the association of ICD-10-AM diagnosis and procedure codes. Implementation would require considerable change for both hospitals and insurers. It would be dependent on hospitals providing ICD-10-AM codes to insurers, but could provide substantial benefit in the longer term. The timing of these changes could be significant as the change to DRG reimbursement for insurers would eliminate much of the need for their proprietary procedure codes while simultaneously imposing change to their own and hospitals' systems to accommodate DRG reimbursement. Therefore, consideration could be given to implementing these changes concurrently.

Improved ICT capability has been acknowledged as a prerequisite for the delivery of the integrated care model envisaged (Department of Health, 2013c). The proposed standards based approach to interoperability allows hospitals to continue with their disparate systems while enabling the exchange of data (HIQA, 2013e). The use of standards could simplify the changes required for private hospitals when they need to commence exchange of data with national bodies and insurers. Technology appears to be used more extensively throughout the coding process in other countries, particularly in relation to electronic medical records. Although the extensive use of paper in Ireland prohibits the use of technology somewhat, there are areas where its potential could be used. Expanded use of technology would introduce efficiencies in the coding process and improves data quality.

### 5.6 Claims Management

Claims management processes and systems will be required in addition to a national minimum dataset for claims data. While a simple mechanism may suffice initially, UHI will require integration of coding and claims management systems. To reduce each hospital's administrative burden associated with the collection of data, a single system should operate for all payers.

The solution outlined in the government's MFTP policy paper (Department of Health, 2013b) and the insurer's preferred solution summarised above are similar. Both involve the merging of coded and claim data, with a single file being submitted to the payer, as illustrated in Figure 5.1. Some hospitals have already implemented a claims management system called Claimsure, and consideration could be given to integrating HIPE and Claimsure. This would provide

benefits in advance of the transition to MFTP and UHI if insurers are going to request ICD-10 coded data from hospitals.

The E-claiming project dataset agreed between insurers and pilot hospitals, may have to be amended prior to expansion beyond the initial pilot. This project could also consider incorporating national standards to aid integration in the future, such as demographic details (HIQA, 2013a). It is unlikely that the E-claiming dataset could form the basis for a national claiming dataset as health insurers typically require significantly more information. However, the national claim dataset could become a subset of the E-claiming one.

Insurers will be a key stakeholder in the proposed government changes, particularly UHI. Differences were apparent in the level of thought and preparation that has been invested in this topic to-date between the two insurers interviewed. Much of this change cannot be achieved in isolation and therefore will require insurers collaborate and work together towards a single solution that allows for variations in policies while reducing the administrative burden for hospitals.

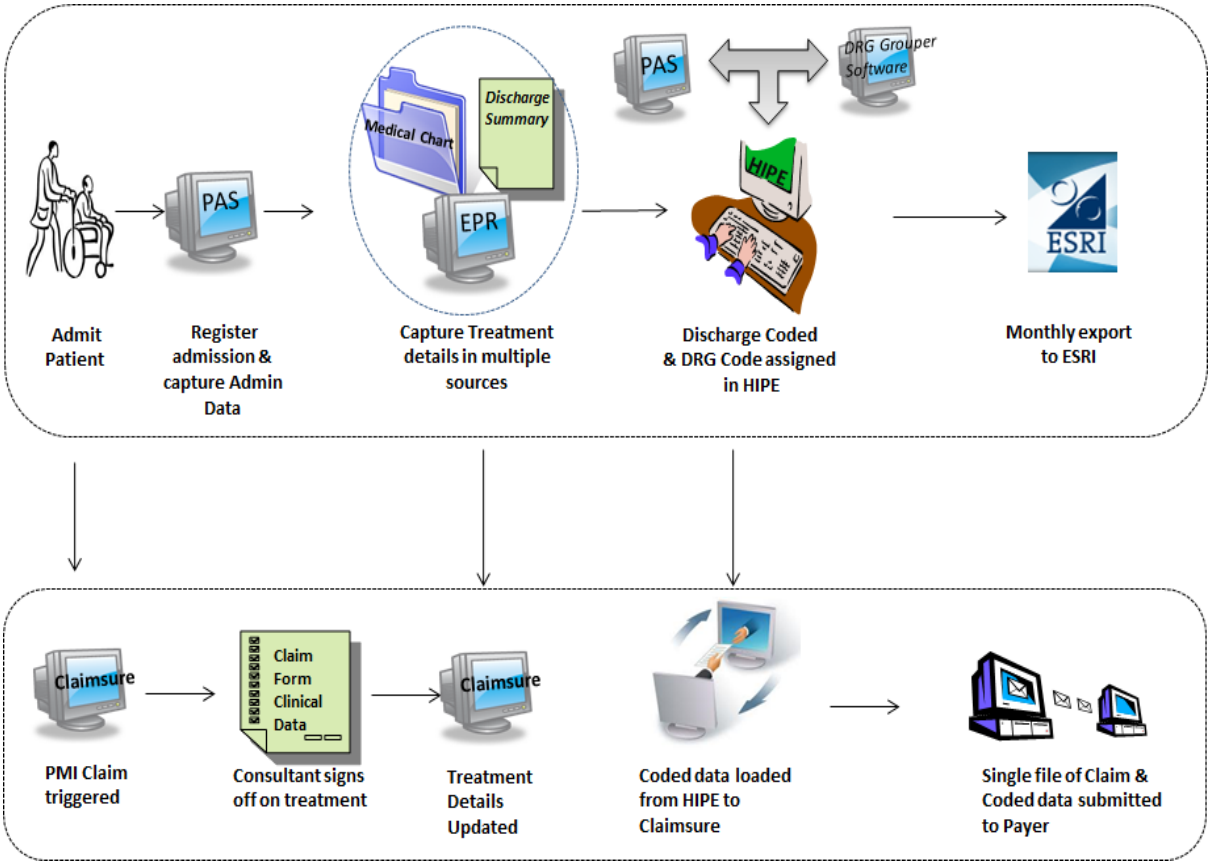


**Figure 5.1 Overview of Potential Claims Management Solution**

## 5.7 Coding Systems

Ireland is well placed in terms of classification systems for inpatient and daycase services. Other countries are facing similar issues in relation to classifications for mental health and emergency services. Given the rapid rate of clinical innovation, consideration should be given to more frequent updates of the ICD classification. In Ireland, the ICD version is typically updated every five years. The current version, which has been used since 2009, is the 6th edition of ICD-10-AM for both diagnosis and procedures (ESRI, 2013c). The 7th edition has been available since July 2010 and the 8th edition since July 2013 (NCCC, 2012b). More frequent updating would ensure accurate coding for reimbursement. Increased awareness of changes to the classification and standards is emblematic of a DRG based model.

The introduction of DRG funding is likely to result in divergence from the AR-DRG grouping system. Constant review and amendment of the DRG model is essential to reduce the risk of unintended consequences such as upcoding. The design of DRG reimbursement is complex and additional expertise may be required if Ireland diverge from the Australian model which has been used to date. Governance processes and criteria will also be required to ensure that control is maintained over changes to the grouping system.

The use of medical dictionaries and terminologies offers potential to improve the quality of clinical data as ambiguity is reduced. Use of terminologies could facilitate a move towards the automation of coding. A national medical data dictionary could standardise key terms across the industry, thus reducing the data collection overhead. HIQA are currently preparing guidelines for the use of terminologies. The choice of terminologies and classifications must be compatible to ensure an integrated system (HIQA, 2013e).

## 5.7 Conclusion

This chapter evaluates the research findings, highlighting the potential impact of MFTP and UHI on clinical coding in Ireland, and offers some thoughts on how Ireland might learn from international experience. Conclusions are drawn in the following chapter.

# Chapter 6 Conclusion and Future Work

## 6.1 Introduction

This research set out to examine how clinical coding in Ireland might be affected by the proposed government changes in relation to MFTP and UHI. The aim was to explore the current situation in this country along with the international context to determine whether any knowledge could be gained that would assist in a smooth transition for Ireland to this modus operandi. Opportunities to streamline coding were also to be examined. The research question being posed was:

***"What Potential Impact will Money Follows the Patient and Universal Health Insurance have on Clinical Coding in Ireland?"***

## 6.2 Research Summary

Initial research indicated that many countries have undergone similar transitions and clinical coding was impacted as a result. Australia was of particular relevance given their similarity to the Irish model and the volume of research available. Therefore, a case study was conducted to investigate the Australian experience further. As insurers in Ireland appeared to be duplicating coding, a second case study was undertaken to determine the rationale for this and to assess if and how it could be eliminated. Qualitative research was conducted of various stakeholders to ascertain their awareness of the proposed changes and their views on what it would mean for them and their organisations. Common themes naturally emerged following analysis of all the research, together with an extensive literature review, and this is summarised below.

## 6.3 Dissemination of Findings

The improvement required to the timeliness of coding is of major concern in the public sector. This is contributing to increased pressure on the coding workforce. Achieving and sustaining the newly introduced targets is a vast change for hospital operational areas, involving shifts in process, structure, and human resources. Leadership from senior management will be vital to ensuring success.

Availability of skilled coding resources will be an increasing and enduring issue within the industry. A formalised clinical coding qualification would enrich the profile of clinical coders, generate increased interest in the role, and potentially improve the quality of coded data.

Greater demand will be driven by the requirement for all public and private hospitals to code, tight coding deadlines, expansion of the services to be coded, and specialised clinical coding audit services. This heightened demand coupled with formal qualification will compel the case for enhanced remuneration of clinical coders. An opportunity exists to provide coding audit services to payers also as this service will be deemed necessary, particularly when insurers commence DRG reimbursement. New specialist roles will emerge in this area relating to price and costing.

The consequences of poor quality clinical coded data are increasing. Hospital funding has the potential to be adversely impacted, as does performance and quality scoring. This in turn can influence resource allocation and ultimately patient safety. The coded data is a classified representation of the medical record. Therefore, to ensure accuracy of coded data, the medical record must be complete and correct. In order to maximise their reimbursement potential, hospitals and indeed consultants, will need to place increased significance on data quality. Closer collaboration will be required between clinicians and coders. Payers will expand their audit functions in an attempt to curtail inappropriate reimbursement. Penalties for poor data quality may be considered and incorporated into contracts with both hospitals and consultants.

Awareness of the use, and potential impact, of coded data can be a contributing factor to data quality. Prevalence in the use of coded data is escalating significantly. The introduction of DRG reimbursement in the public system, and possibly in the private, is the most prominent change. The use of coded data enables increased complexity and granularity of funding models. More and more coded data is being employed to support medical necessity. Performance management, benchmarking, and contract negotiation are other areas where the use of coded data has proved beneficial. Payer and government price setting, as well as policy and programme development can also be driven by this activity data. Data governance and transparency are vital to ensure unimpeded implementation.

MFTP is also concerned with improved quality care, treating patients in the most appropriate setting, and incorporating best practice into patient care. While clinical coding cannot directly contribute to these objectives, the coded data can be used to measure adherence and monitor KPIs that are related to the achievement of these goals, for example, monitoring the rate of date of admission surgery. Many of the KPIs for acute services outlined in the National

Operational Plan (HSE, 2013c) are already based on coded data. Best practice can also be factored into the funding model using coded data.

In order to keep pace with clinical advancement, ensure appropriate coding and subsequent reimbursement, consideration should be given to adopting every edition of the ICD-10-AM classification. The implications of separating from the AR-DRG grouping should be carefully considered. Agreed and consistent terminologies will increase in significance as electronic records and the interchange of data become more prevalent.

To attain elements of the MFTP strategy certain government mandates will be necessary. National unique patient identifiers will be required, and used to measure end-to-end delivery of each episode of care. This will enable the amalgamation of episodes of care for reimbursement and improve quality and performance measurement, for example, by assessing readmission rates across hospitals. Improved quality would also be a consequence. National datasets will also need to be mandated to ensure a consistent set of coded data is gathered from all sources.

A government mandate that coded data be provided to payers by all hospitals would assist the insurers now. This would be a prerequisite for the introduction of UHI, as under a DRG reimbursement system the coded data is a fundamental constituent of the claims data; it is essential to determine remuneration. This adds credence to the insurer view that they should receive coded data directly from the hospitals.

The MFTP policy document (Department of Health, 2013b) stipulates that the administrative burden on hospitals to collect data should be minimised (collect once), while the use and value add from the data by strategic stakeholders should be maximised (use many). Similarity exists between the ultimate method of claim data collection outlined in the MFTP policy document and that indicated by an insurer as their preferred solution. Therefore it would seem reasonable that both sides should work together towards a solution for claims management that will be suitable for all payers both now and with the introduction of UHI in the future.

Other opportunities to rationalise hospital data collection exist once coded data is available to insurers. These include the substitution of clinical indicators with ICD-10 diagnosis codes and the standardisation of the industry on ICD-10 procedure codes, thus eliminating the need for proprietary insurer codes. While these changes would necessitate considerable modifications for both the insurers and hospitals, the benefits could be extensive.

There appears to be little use of technology in the coding process in Ireland. The fact that paper charts are the predominant input does reduce the feasibility of adopting technology to improve timeliness. However, there are some areas of opportunity. The use of technology should be investigated further particularly as coding is extended to other services such as OPD. Technology could aid standardisation in the coding and claim management process across hospitals introducing efficiencies.

While not directly related to clinical coding, MFTP will introduce considerable change for hospitals with regard to cost awareness and management. Payers will require similar visibility of costing information for price setting. Based on the assumption that insurers will be setting their own prices for at least some services under UHI, a mandated national cost dataset will be required.

The question posed was what potential impacts MFTP and UHI will have on clinical coding in Ireland. This research demonstrates that the introduction of MFTP and UHI will have a considerable impact on all stakeholders involved in clinical coding in Ireland as outlined above. To summarise, the prominence of clinical coding will go from "*the basement to the penthouse*" (Shepheard, 2010).

## 6.4 Recommendations for Future Research

Some hospitals have been more successful than others at changing their processes, for example, through the introduction of mobile coding. Examination of the factors that led to this success, and the factors that differentiated successful hospitals from others, could be considered to determine how these improvements could be applied to other hospitals for national benefit.

Much of the government's plans are based on the Dutch model. Therefore, investigation into this model and how is has impacted clinical coding would be valuable. This was initially part of the research design for this study, but time constraints led to its removal.

While not part of the initial implementation, part of the strategy is to extend DRG funding to mental health and outpatient services, ultimately extending the boundaries of an episode of care. Many other countries are considering similar changes and appear to be at various stages on this path. Value could be gained from more detailed research into this area which would aid definition of the strategy in relation to these aims.

Potential exists for Ireland to diverge from the Australian AR-DRG grouper to a national version. While there are good reasons and much precedence for such a move, consideration should also be given to what this would entail to determine whether it is an appropriate move for a country of Ireland's size.

## 6.5 Reflections on the Study

In the view of the researcher, the aims of the research were achieved and the research question was answered. In addition to the understanding gained on the actual topic under investigation, considerable knowledge was attained on the research process itself, which was a new and enjoyable experience. The researcher looks forward to monitoring the progress of MFTP and UHI, particularly as they pertain to clinical coding, to observe whether the impacts identified come to fruition.

## 6.6 Limitations of the Study

In addition to the limitations of the research methodology adopted, referred to in Section 3.5, the reader may also need to consider other limitations in relation to this study. The researcher is an employee of a health insurer in Ireland and this may exert influence over her view of clinical coding from the perspective of the insurer and how this might change the in future. It should also be noted that time constraints were imposed to complete this dissertation in order to achieve the MSc in Health Informatics.

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# Appendices

## Appendix I: Overview of Clinical Classifications

As stated in chapter 2, ICD is the pervasive classification of diagnosis. There are various versions of ICD in use internationally. Version 10 is the current version which is predominately used. Transition is underway in the US from version 9 to version 10 with the revised date for completion of 1st October 2014. Development of version 11 is currently underway and is expected to be finalised in 2015 (WHO, 2012). Additional versions also exist which are modifications to the WHO version. Ireland uses ICD-10-AM which is the Australian modification. This contains some additional codes which are more specific than the original ICD-10 and are more current (Henderson et al., 2006).

In relation to procedure or health intervention classifications, many countries have developed their own national standard which leads to problems when attempting international comparisons (Mathauer and Wittenbecher, 2012). The International Classification of Health Interventions (ICHI) is being developed by the WHO in an attempt to address this gap (WHO, 2013). It is largely based on the Australian Classification of Health Interventions (ACHI) which is used in countries such as Australia, Ireland and New Zealand. Other classifications in popular use include ICD-10, Current Procedural Terminology (CPT) used in the US, and OPCS-4 (operating procedure code supplement) used by the NHS in the UK.

There is no specific classification for the coding of mental health services. Diagnosis codes, such as ICD10 codes, are used in many countries but on their own, these do not provide sufficient information to accurately cater for the differences in the provision of mental health services. Several countries have supplemented these codes with additional codes for supplementary information which is then used along with the diagnosis codes to determine payment. In the Netherlands acute mental health services are coded using a combination of therapeutic diagnosis codes and length of stay categories (Block, 2009). In Australia, for inpatient admissions, the ICD-10 Diagnosis codes and ACHI procedure codes are used with criteria defined as to which codes are clinically or statistically relevant to mental health (AIHW, 2012). However as Australia moves to an ABF model, it has been acknowledged that the current classifications are not appropriate to reimburse packages of care across settings and do not reflect the specialised nature of mental health services. An interim model using AR-

DRG codes for in-patient and Urgency Related Groups (URG) for emergency care has been agreed but a review of the classifications is being undertaken (MCHA, 2012).

Clinical coding for emergency departments typically involves diagnosis coding using the classification in use in the jurisdiction e.g. ICD-10, and intervention coding. The CPT classification system for interventions includes specific emergency and management codes which are used in the US (Lojewski, 2008). However, there is recognition that these codes on their own do not adequately describe the intensity and range of emergency department services.

In Australia it was recognised that while ICD-10 codes were being used to code diagnosis within the emergency department, this classification is not ideal for recording emergency department data and there were considerable local refinements and free text in use. In an attempt to define a nationally consistent approach to the gathering of presenting problem and diagnosis, and to enable the e-health systems which are being rolled out, the Emergency Department Reference Set (EDRS) was introduced which is based on the Australian adaption of Snomed-CT (Hansen et al., 2011). In the UK, a combination of ICD and Snomed-CT codes are being used in some hospitals for emergency department coding (NHS, 2011).

Current Procedural Terminology (CPT) mentioned above for procedure coding in the US is also used there for coding of out-patient services. A subsection of Evaluation and Management codes are used to describe the place and type of service and any miscellaneous services (Green and Rowell, 2012).

The classifications described above are typically used to describe diagnosis and procedures or health interventions for acute services carried out on an inpatient or daycase basis. Classification systems also exist for primary care. The most prevalent classification is the International Classification of Primary Care, Second edition (ICPC-2). It allows classification of the patient's reason for encounter, diagnosis and interventions across an episode of care i.e. from the first presentation to a health care provider for a health problem to the last encounter for that same health problem. This also combines the transitions between encounters. Australia developed ICPC-2 Plus which incorporated additional terms enabling more detailed meaning to be derived (de Lusignan, 2005).

A feasibility study into a national general practice morbidity and epidemiological database conducted by the Irish College of General Practitioners (ICGP) in 2010 concluded that the data

quality and reporting structures where not sufficient for service planning or research purposes at that time (Collins and Janssens, 2012). ICPC-2 is now the recommended coding system for primary care and has been incorporated into General Practice Information Technology (GPIT) accredited Patient Management Systems (PMS) (Meade, 2011). An initiative by the Irish Primary Care Research Network (iPCRN) in conjunction with GPIT has provided an infrastructure for searching and reporting on coded data both at practice level and aggregated for all participating practices nationally (IPCRN, 2013).

## Appendix II: Questionnaire Results

The questionnaire contained 39 questions in total but participants would not have been required to answer all questions, as dynamic routing was incorporated into the questionnaire design. The results of key questions which provided relevant information are included below. The health insurer shown below was the researcher's test and is excluded from other results.

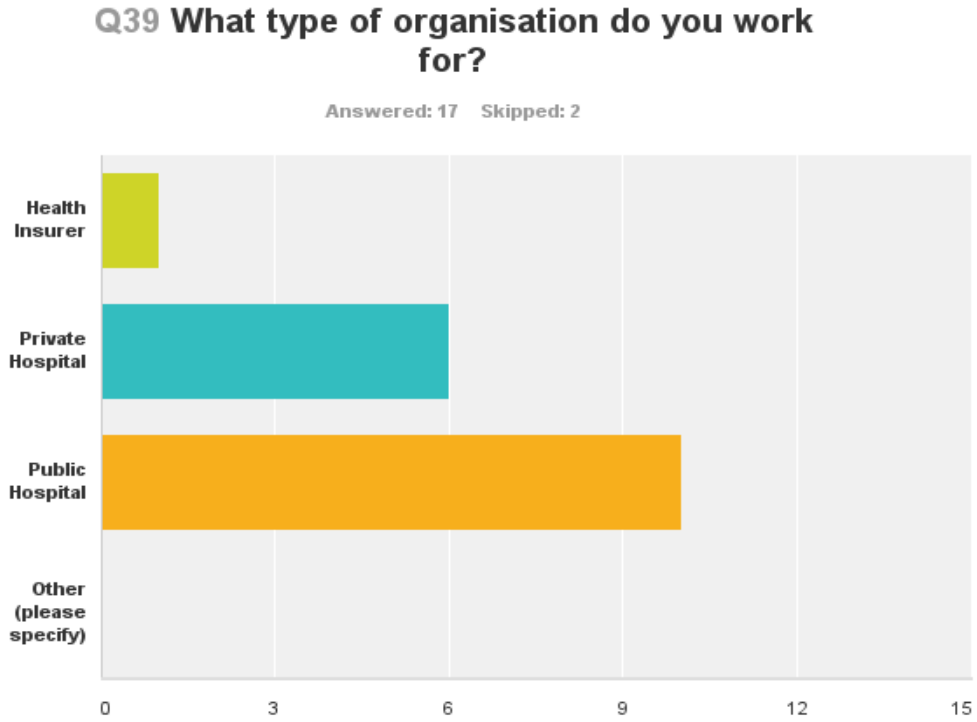


**Figure 7.1: Types of Organisation**

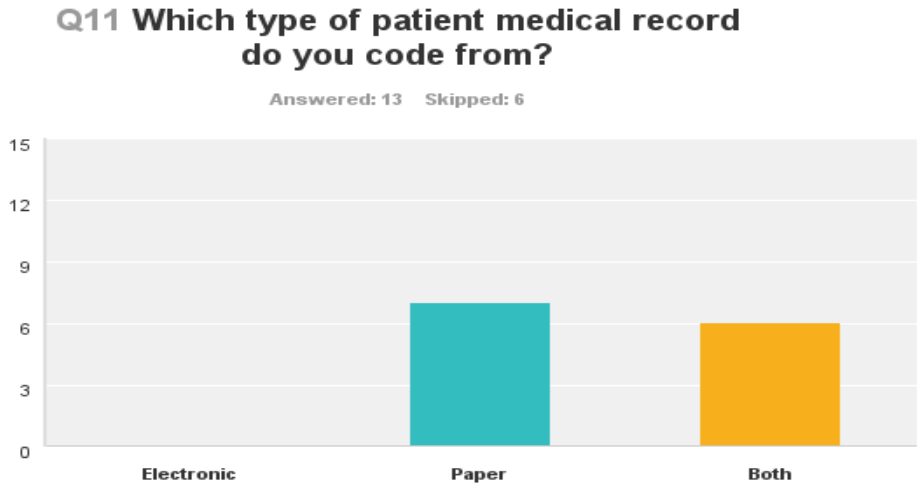


**Figure 7.2 Type of Medical Record used when Coding**

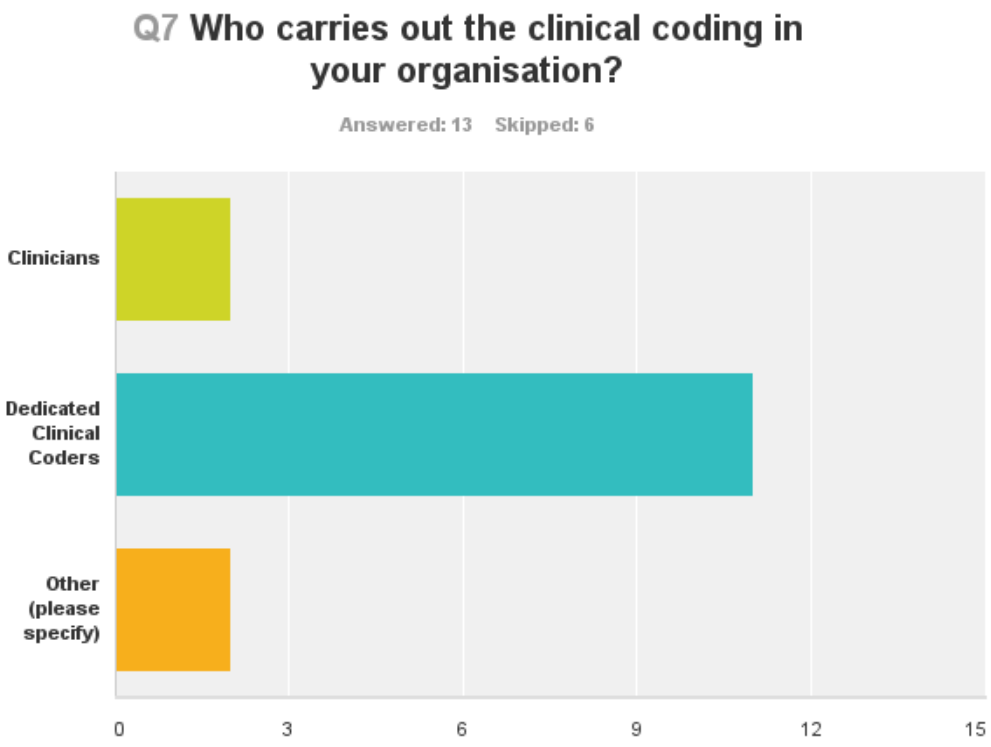


**Figure 7.3: Who Performs the Clinical Coding**

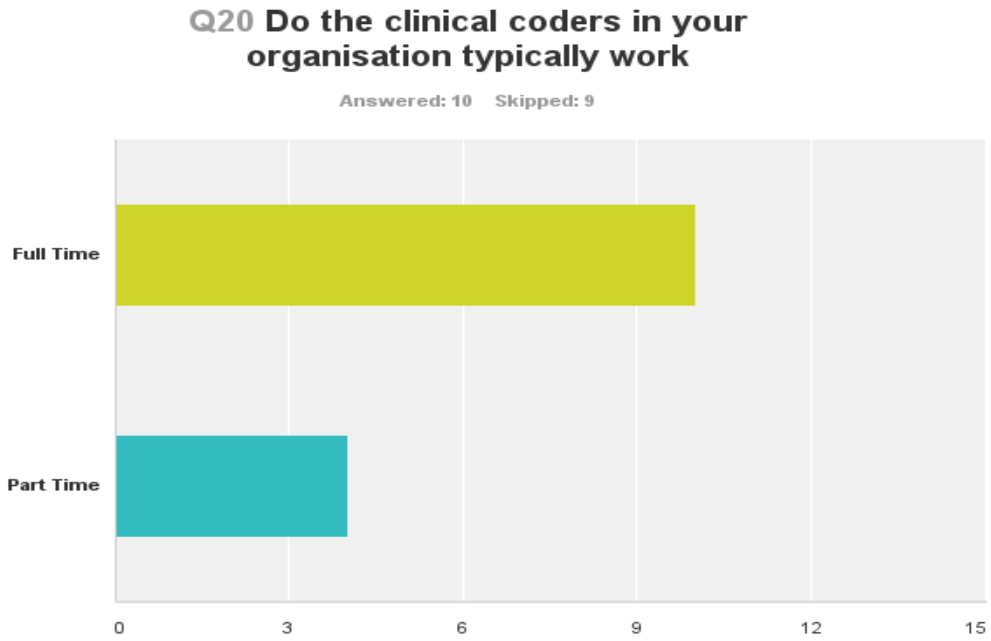


**Figure 7.4: Type of Employees – Full-time or Part-time**

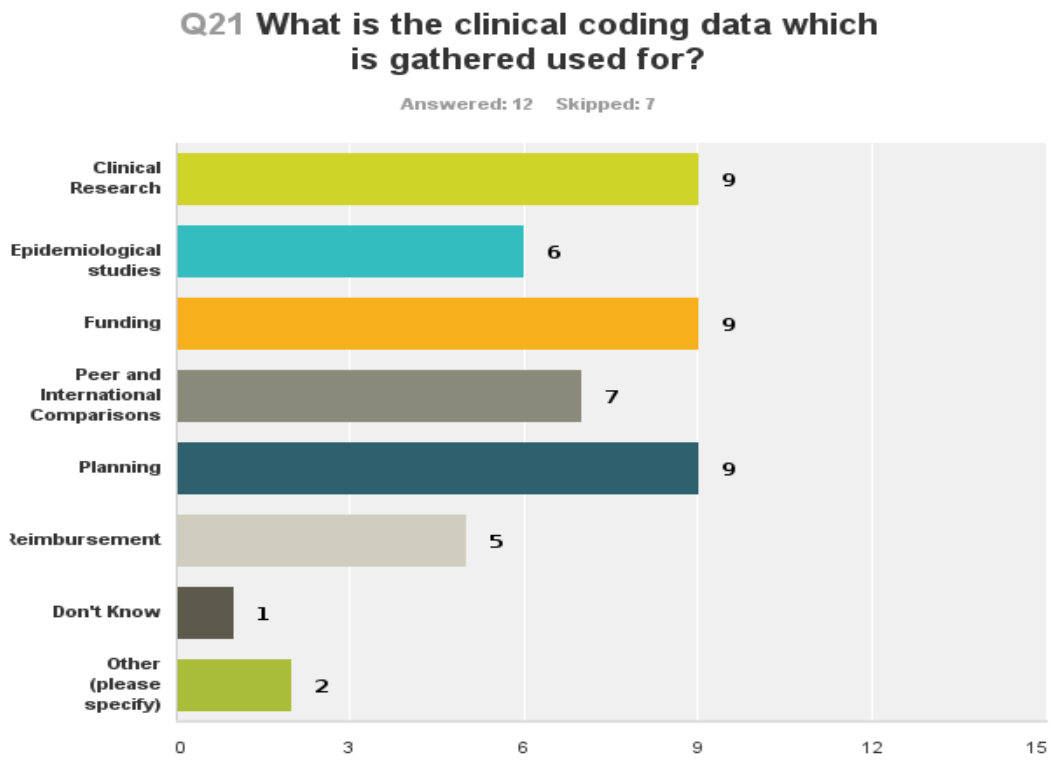


**Figure 7.5: Uses of Coded Data**

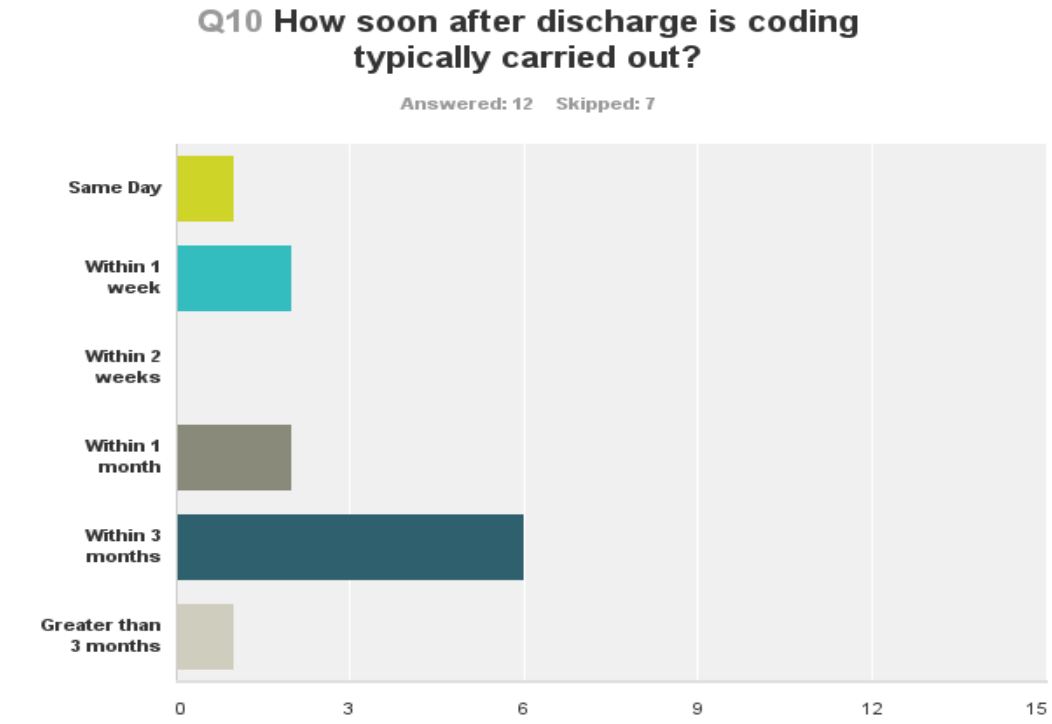


**Figure 7.6: Timeliness of Coding**

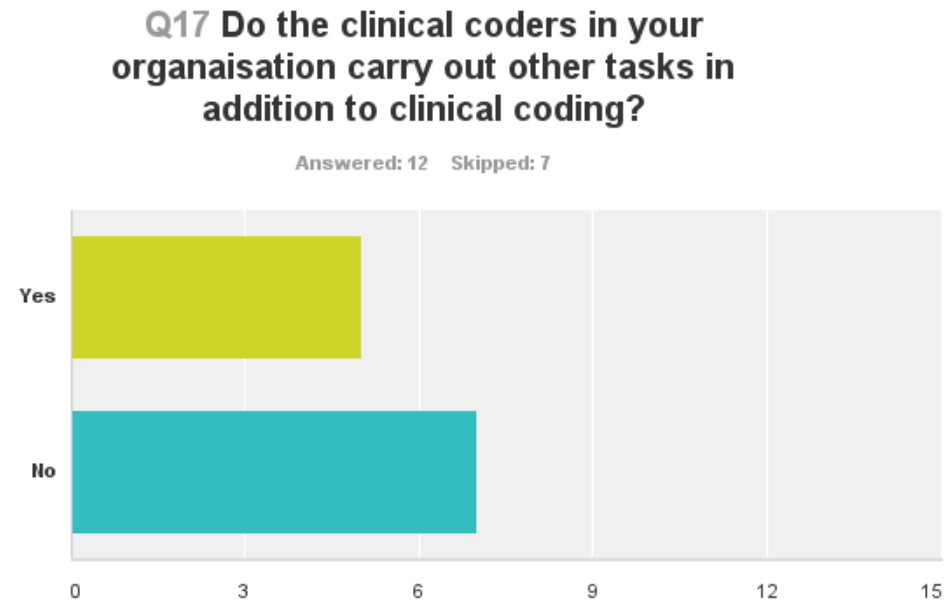


**Figure 7.7: Do Coders Perform Other Activities**

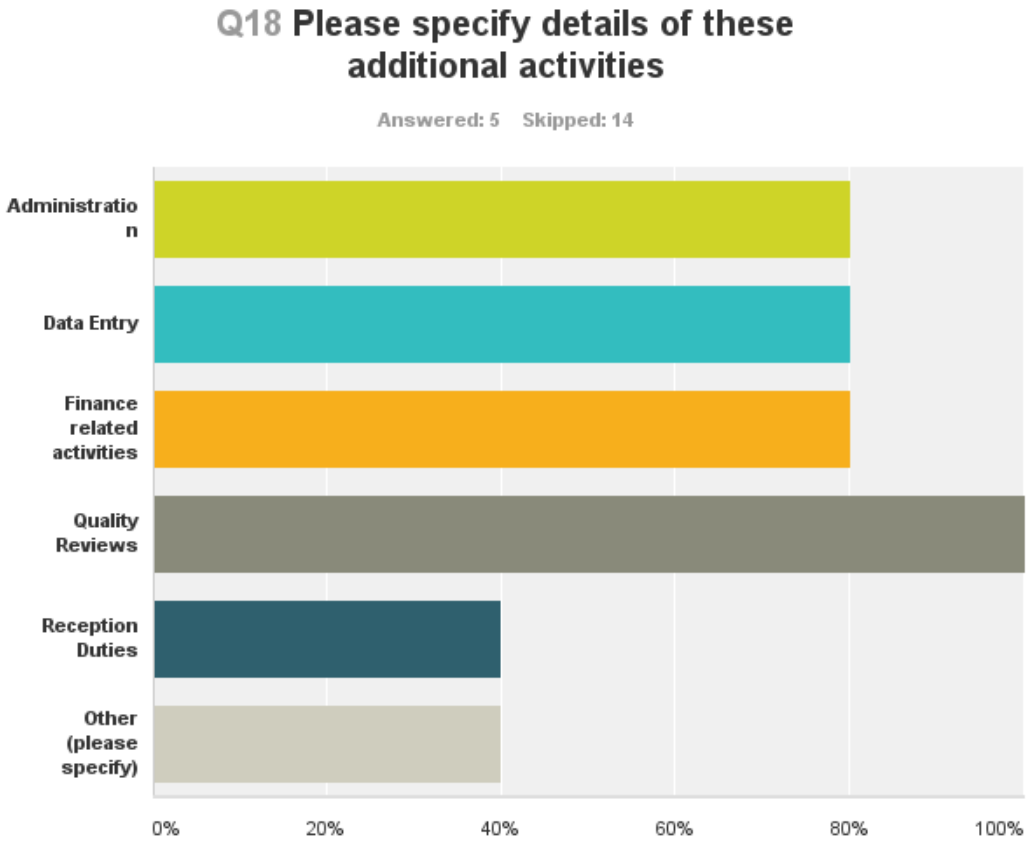


**Figure 7.8: Other Activities Performed**


**Figure 7.9: Clinician Involvement**

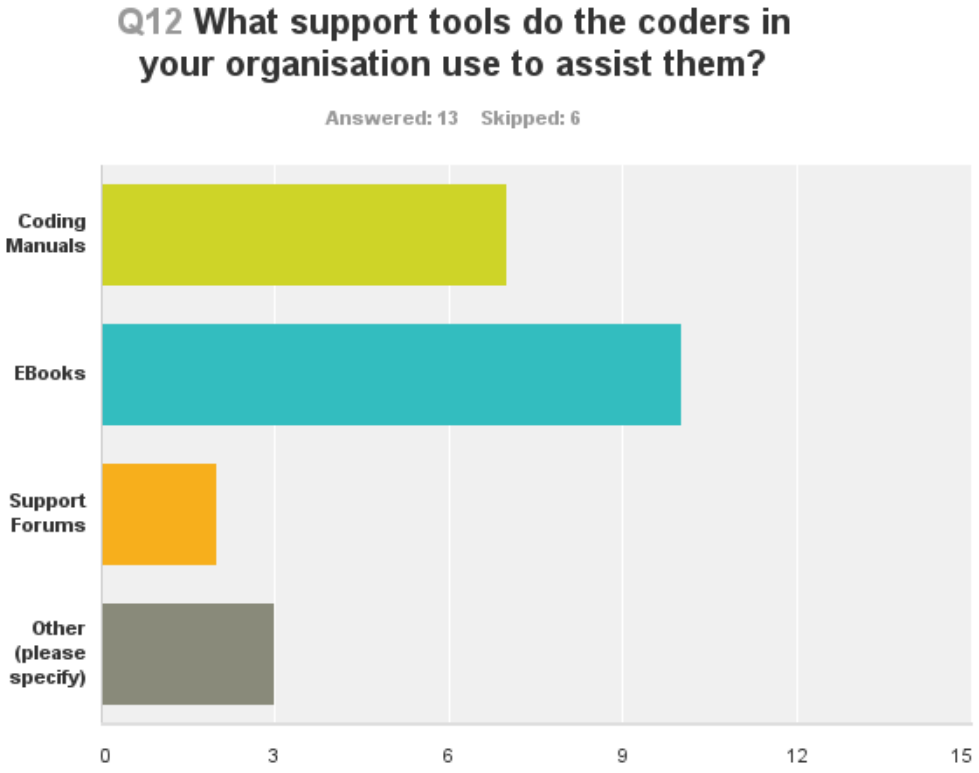


**Figure 7.10: Support Tools Used**

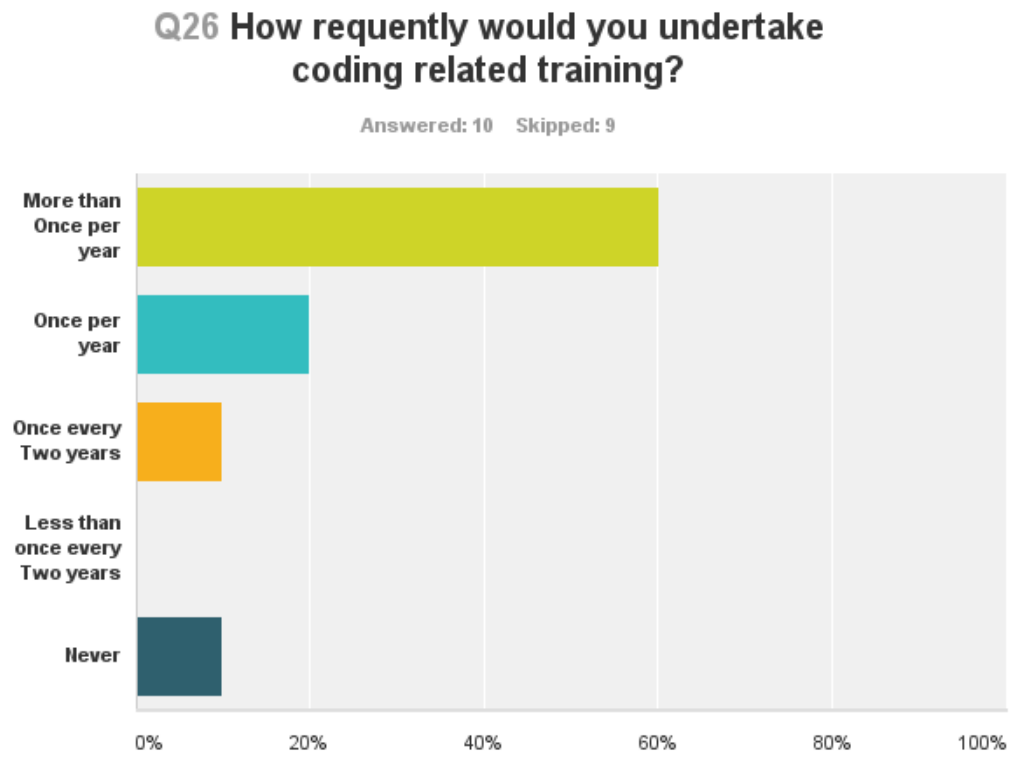


**Figure 7.11: Frequency of Training**


**Figure 7.12: Types of Training**

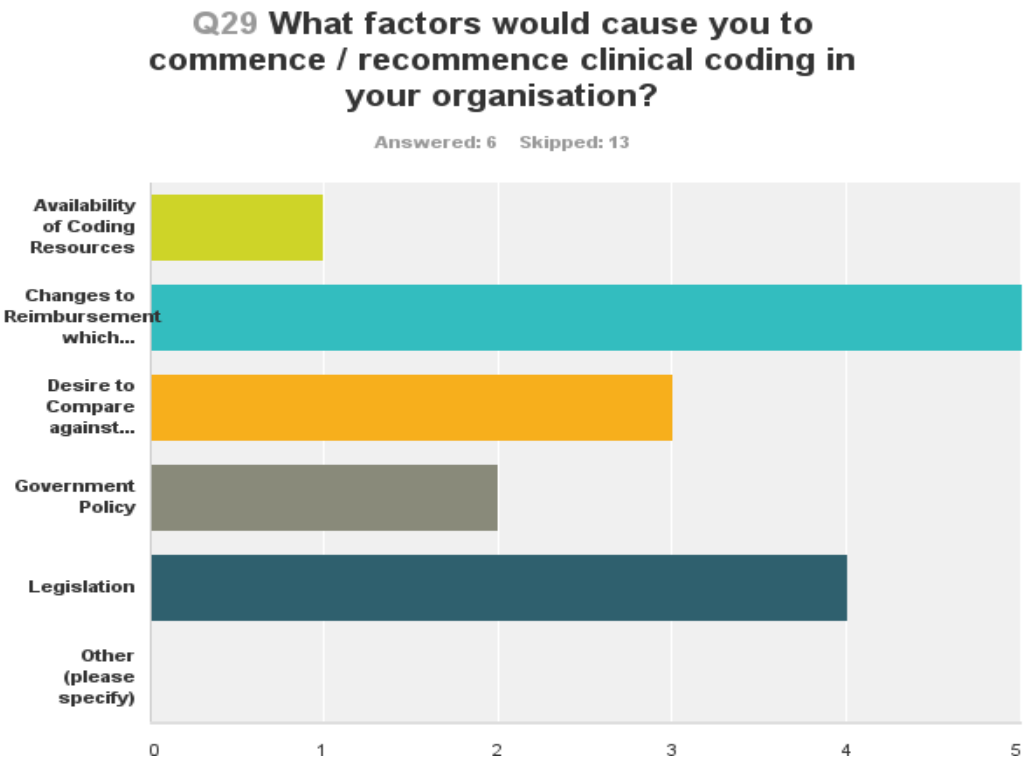


**Figure 7. 13: Factors which would Cause Commencement/Recommencement of Coding**

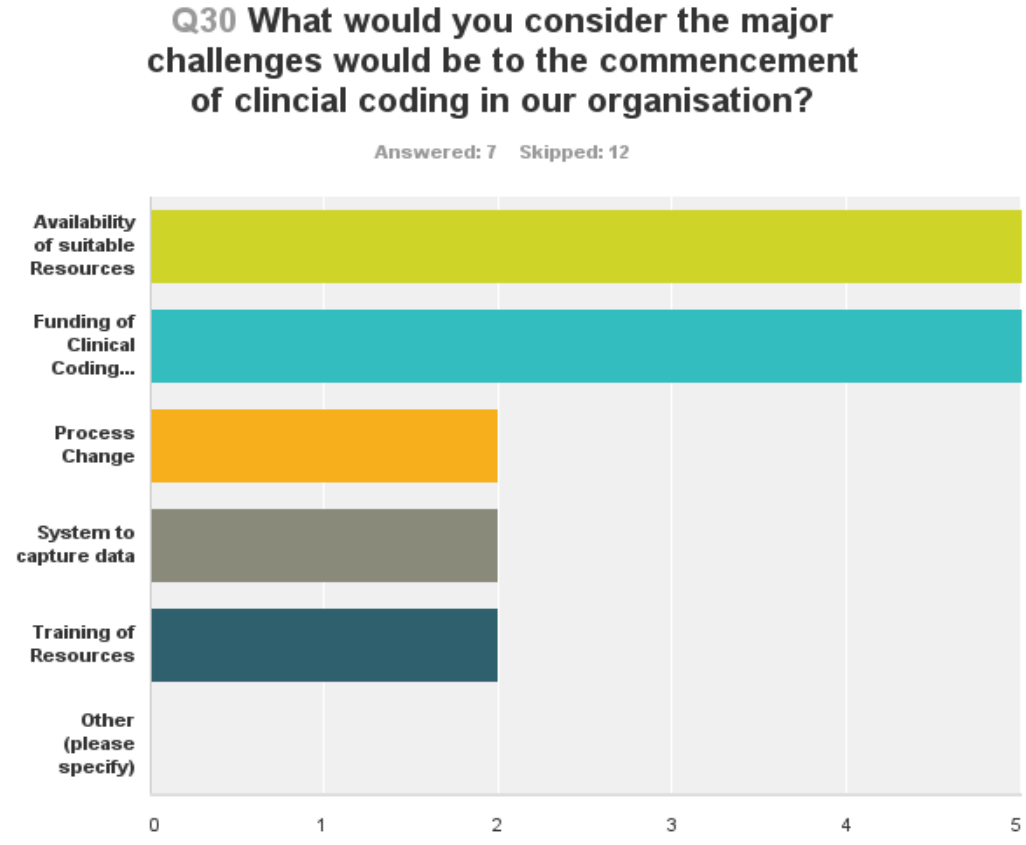


**Figure 7.14: Challenges to the Commencement of Clinical Coding**

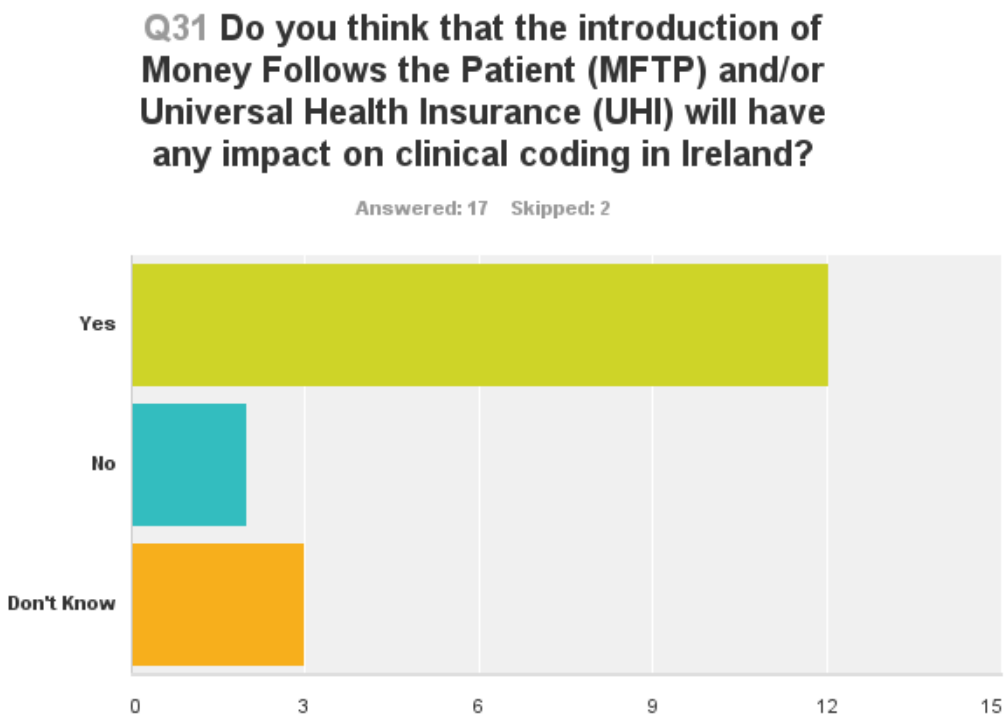


**Figure 7.15: Will MFTP and UHI have any impact on Clinical Coding in Ireland**

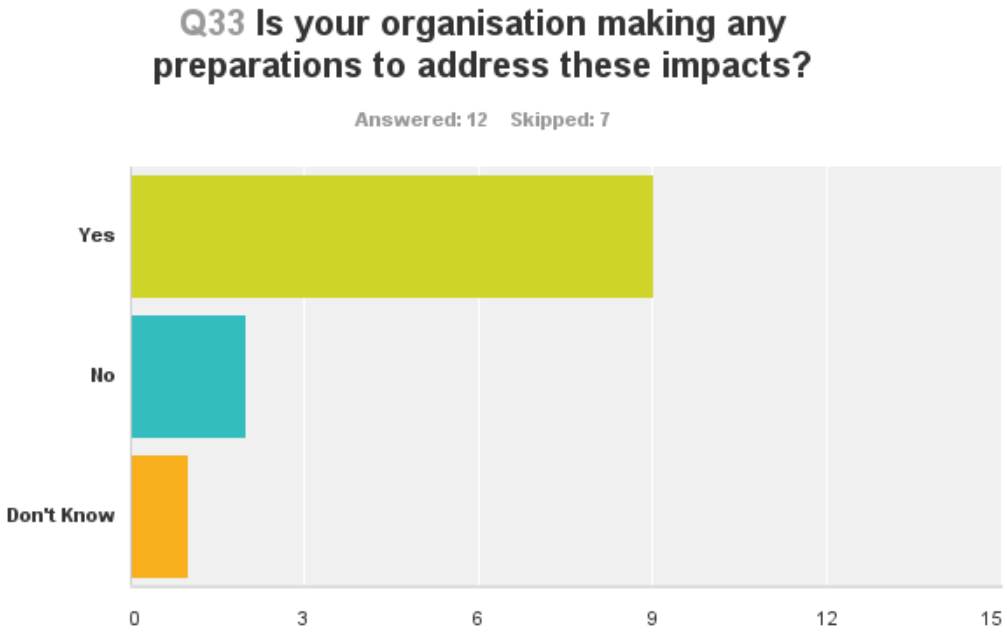


**Figure 7.16: Preparations being Made**

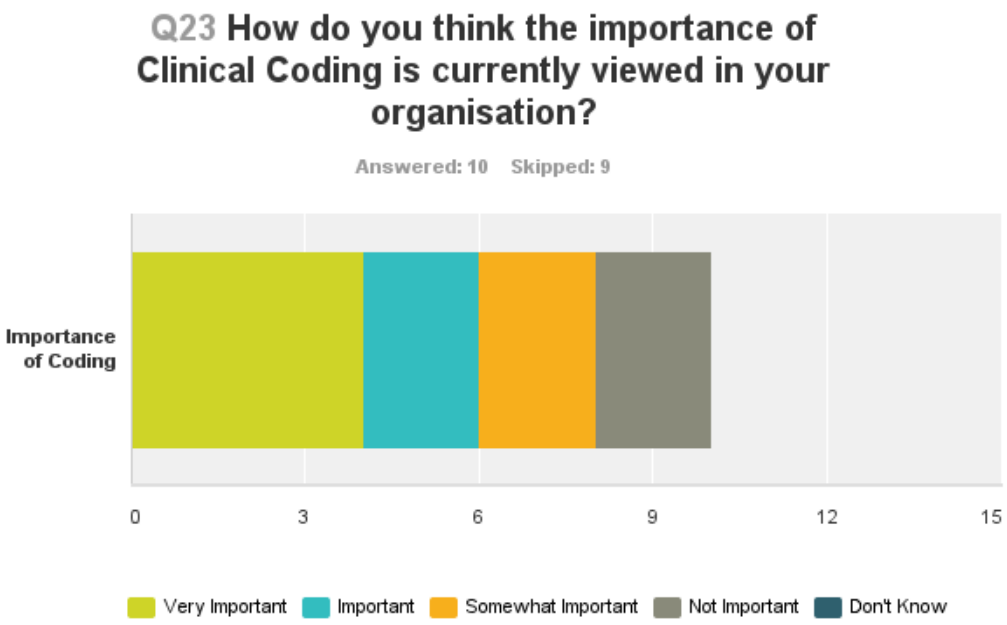


**Figure 7.17: Current Perception of Importance of Coding**

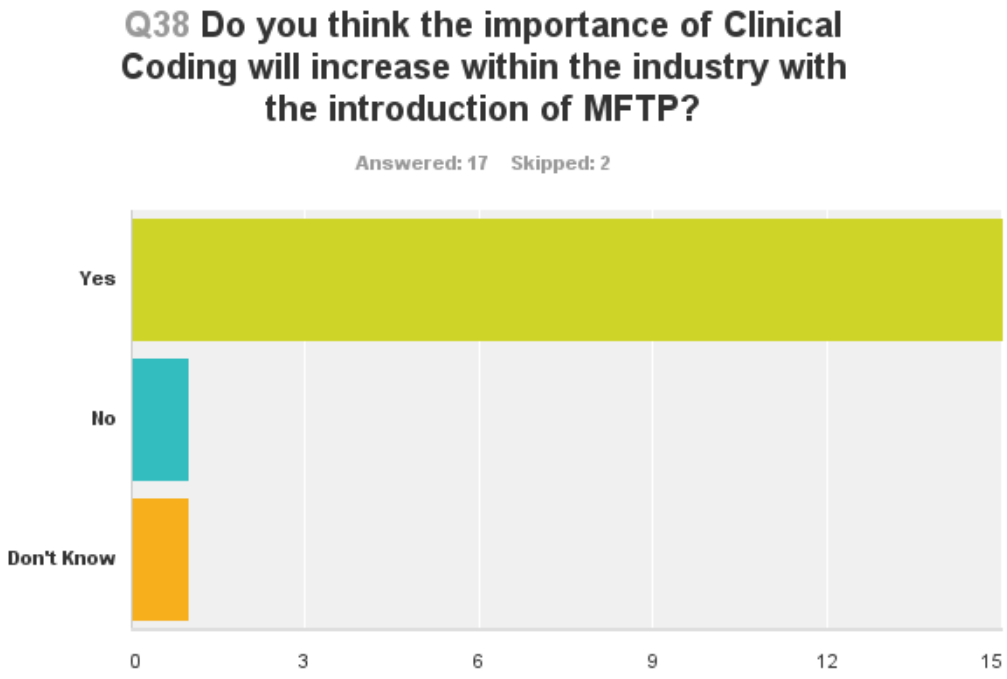


**Figure 7.18: Will Importance Increase with MFTP and UHI**

## Appendix III: Information Sheet provided to Questionnaire Participants

**The Research Title:**

What impact will the introduction of Money Follows the Patient (MFTP) and Universal Health Insurance (UHI) have on clinical coding in Ireland.

**Purpose of the Research Study**

The aim of this research is to determine the current situation with regard to clinical coding in Ireland and using literature review and international comparisons to establish the likely impacts that the proposed government changes regarding the introduction of MFTP and UHI will have on all stakeholders in respect of clinical coding. Recommendation will then be made as to how these impacts might be addressed. The research will also seek to determine whether clinical coding could be streamlined in Ireland i.e. code once use many.

This research is being carried out as part of the completion of a M. Sc. in Health Informatics at Trinity College, Dublin.

**Participation**

As a stakeholder in the clinical coding process, you have been invited to take part in this research as gaining an insight into how clinical coding is currently carried out and what impact you think the proposed changes are likely to have on your area would be very valuable to this research. Clinical coders in all public and private facilities have been invited to participate. Your contact details have been obtained from the ESRI or VHI Healthcare Hospital Relations department.

Participation in the questionnaire is voluntary. You are under no obligation to participate in this research project and there are no negative consequences should you decide not to participate. If you do agree to participate, you are not obliged to answer specific questions or to provide information you do not wish to give. However, the researcher would greatly appreciate if you could complete as fully as possible. In the extremely unlikely event that illicit activity is reported to me during the interview I will be obliged to report it to appropriate authorities.

The questionnaire should be completed online at https://www.surveymonkey.com/s/WCJJSL2. It contains a series of questions which should take no longer than 15 minutes to complete.

**Confidentiality and Anonymity**

All data disclosed will be kept in complete confidence. While the researcher is an employee of an Irish health insurance company, no information gathered will be disclosed to the employer and will be used solely for the purpose of the research. Preservation of participant anonymity, in analysis, publication and presentation of resulting data and findings, will be maintained.

**Anticipated risks/benefits to the participant**

There are no anticipated risks to the participant. The participant may benefit from awareness of the results of the research.

**Contact Information**

The researcher, Caroline Fanning, can be contacted at any time during the study on 087-2936403 or cafannin@tcd.ie.

## Appendix IV: Interview Questions for Public and Private Hospitals

1. Can you outline the current process for clinical coding in your hospital, and what variations exist between hospitals

2. Does your facility have an emergency department, and if so, is coding carried out there. What differences are there between ED coding and an inpatient admission

3. What is the awareness within your organisation of the importance of coding and what the coding info is used for

4. How is training currently carried out, by whom etc. What support is available to coders

5. What difficulties, if any, do you currently experience in relation to clinical coding

6. What importance do you think is attached to data quality currently, and how would you consider the current data quality.

7. Can you provide an example of how an incorrect code could impact on the payment received

8. What impacts do you see the introduction of MFTP and UHI having on clinical coding in Ireland and specifically in your facility

9. Would you currently come under any pressure to change the code i.e. upcode, and do you think that this might change

10. What actions do you think could be taken to minimise the effects of these impacts, both internally within your facility and within the industry as a whole

11. When do you think that your facility will start to actively prepare for this transition, and what factors would influence this decision

12. There is no coding currently carried out for outpatient services to my knowledge. Are there outpatient services carried out at your hospital, and if so, what changes do you think the introduction of coding to these services would require

13. How would you perceive the importance of clinical coding currently within your facility, and in what way do you think that this will change with the introduction of MFTP and/or UHI

14. Are clinicians involved in the coding process, and how would you see this changing with the introduction of MFTP and UHI
15. If the coding data were to be incorporated with the health insurer claim data, what changes or impacts would you envisage this would introduce in terms of process and technology etc.

If not hospital not currently coding, the following questions replaced some of those above.

16. What factors would cause you to consider commencement of clinical coding

17. What challenges to you think you would face, if clinical coding was required at your facility

## Appendix V: Interview Questions for Health Service Executive

1. Are you using the current HIPE data and if so, how is the data received i.e. from the ESRI or from the individual hospitals. Are they using both the ICD and DRG data or only one or the other

2. What is the data used for currently, and there are any future plans to extend to other areas

3. Extra screens have been added to HIPE for stoke, hip fracture, heart failure and heartbeat. Are these particular to those clinical programmes. What made you decide to use HIPE to gather the information

4. Clinicians rather than HIPE coders input this information prior to HIPE coding – what is the rationale for this

5. Are there any data gaps at present, and if so, what plans are being made to address these. Will any of these require clinical coding

6. MFTP document talks collecting and transmitting data once but used for multiple purposes by different strategic stakeholders. What progress, if any, has been made in this regard

7. Is their duplication of data between the different programmes and if so, what plans are being made to ensure that this is just captured once and shared among all the areas which need it.

8. MFTP talks about introducing best practice guidelines in the future (not in first phase). Would the clinical programmes be involved in determining what these best practices are, and has any thought be given as yet as to how this would be measured and therefore, whether any additional data would be required for this

9. MFTP is focused on moving patients to outpatient services where appropriate. There is currently no coding carried out on outpatient services, but it would appear that this will be required in the future. What OPD data is currently being capture, and are there any plans to extend clinical coding to this area

10. Similarly there will be a requirement to code for mental health services in order to move to a MFTP model there. Mental health is also one of the clinical programmes. What considerations have been given to clinical coding and data collection in this area

11. There are other organisations which are looking for clinical data e.g. National Cancer Registry. What consideration is being given to sharing information between these organisations where appropriate

12. What barriers if any do you see to collecting the information which you will require e.g. would you be dependent on a unique patient identified to track patients across providers and settings

13. Orthopaedics was used as a pilot for MFTP – what visibility have you had, if any, on the findings from this study, particularly in relation to clinical coding

14. The Clinical Programmes are mentioned in the recent paper on the Enabling Change section of 'The Path to Universal Healthcare' paper. Says the objectives is improve quality, access and cost effectiveness. How important would you see the correct data being to the achievement of these objectives

15. Quality of the data coded is only as good as the clinical documentation in the chart which the coder uses – there are issues with this currently. What factors to you think contribute to data quality and what plans, if any, are being made to address this.

16. Electronic medical records would go a long way towards improving clinical coding. Are the clinical programmes, or HES, doing anything to push this agenda

17. Is there any other ways you can see which MFTP and/or UHI will impact on the clinical programmes, or the HSE, particularly in terms of coding or clinical data

## Appendix VI: Observations from Insurer ICD10 Sample

The following is a sample of the findings of analysis carried out by a health insurer on their ability to accurately code claims using the ICD-10 classification system based on claim information only.

1. Claims are being submitted prior to the histopathology results' being received which is standard for the submission of claims but not for clinical coding. For example one claim related to a patient with elevated Prostate Specific Antigen (PSA) findings in a blood test which would correspond to ICD-10-AM code R798. High PSA is usually the sign of benign prostatic hypertrophy (ICD-10AM code N40) or even cancer of the prostate (ICD-10AM code C61). The DRG benefit for R798 would be lower than C61.

2. For cancer patients the final diagnosis did not give the location of the cancer e.g. liver cancer. More specificity would be required as the location impacts the DRG benefit.

3. One claim form was in relation to a 'pre term infant'. For ICD-10-AM purposes, the exact timeframe would need to be provided i.e. how many weeks early the baby was born.

4. Some of the claim forms stated that the patient had IV fluids given but there was no mention that the patient was dehydrated – ICD-10-AM code E86. The DRG value for E86 is high so a loss could occur on claims for members who were treated for this condition.

5. The PET scan claim forms provided minimal detail and therefore the true diagnosis may not be captured.

6. The accident details on claim forms would have to be more detailed to ensure non-specific ICD-10-AM codes were used.

7. ICD 10 codes must be sequenced correctly. On some of the claim forms the diagnoses were randomly quoted e.g. urinary infection, pneumonia, urinary retention and asthma. The urinary codes should be sequenced together as should the respiratory codes.

8. Consider the use of 'Z' codes as they provide an explanation as to why a patient was in hospital for longer. This would help with the assessment of claims that exceed the average length of stay

## Appendix VII: Clinical Programme Key Performance Indicators Source Data

**Table 7.1 Clinical Programme KPIs sourced from HIPE Data**

| Clinical Programmes: Performance Indicators | |
|---|---|
| **Performance Indicators** | **Sourced from HIPE** |
| **Acute Medicine** | |
| % of all new medical patients attending the acute medical unit (AMU) who spend less than 6 hours from ED registration to AMU departure | N |
| Medical patient average length of stay | Y |
| **Surgery** | |
| Percentage of elective surgical inpatients who had principal procedure conducted on day of admission | Y |
| Percentage of surgical re-admissions to the same hospital within 30 days of discharge | Y |
| Surgical patient (corrected) average length of stay Note corrected refers to the AVLOS figure being adjusted for increases in Daycase rates. | Y |
| **Emergency Department** | |
| % of all patients arriving by ambulance wait < 20 minutes for handover to doctor / nurse | N |
| % of new ED patients who leave before completion of treatment | N |
| % of patients spending less than 24 hours in Clinical Decision Unit | N |
| **Stroke** | |
| % acute stroke patients who spend all or some of their hospital stay in an acute or combined stroke unit | Y* |
| % of patients with confirmed acute ischaemic stroke in whom thrombolysis is not contraindicated who receive thrombolysis | Y* |
| % of hospital stay for acute stroke patients in stroke unit who are admitted to an acute or combined stroke unit | Y* |
| **Heart Failure** | |
| Rate (%) re-admission for heart failure within 3 months following discharge from hospital | Y |
| Median LOS and bed days for patients admitted with principal diagnosis of acute decompensated heart failure | Y |
| % patients with acute decompensated heart failure who are seen by HF programme during their hospital stay | Y* |
| **Acute Coronary Syndrome** | |
| % STEMI patients (without contraindication to reperfusion therapy) who get PPCI | Y* |
| % reperfused STEMI patients (or LBBB) who get timely a) PPCI or b) thrombolysis | Y* |
| Median LOS and bed days for a) STEMI b) Non-STEMI pts | Y |
| **Chronic obstructive pulmonary disease (COPD)** | |
| Mean and median LOS (and bed days) for patients with COPD | Y |
| % re-admission to same acute hospitals of patients with COPD within 90 days | Y |
| No. of acute hospitals with COPD outreach programme | N |

| Clinical Programmes: Performance Indicators | |
|---|---|
| **Performance Indicators** | **Sourced from HIPE** |
| Access to structured Pulmonary Rehabilitation Programme in Local Health Area | N |
| % of acute hospitals and Operational Areas with access to Pulmonary Rehabilitation Programme | N |
| **Asthma** | |
| % nurses in primary and secondary care who are trained by national asthma programme | N |
| No. of asthma bed days prevented annually | Y |
| No. of deaths caused by asthma annually | Y |
| **Diabetes** | |
| % reduction in lower limb amputation from Diabetes | Y |
| % reduction in hospital discharges for lower limb amputation and foot ulcers in diabetics | Y |
| % of registered Diabetics invited for retinopathy screening | N |
| **Epilepsy** | |
| % reduction in median LOS for epilepsy inpatient discharges | Y |
| % reduction in no. of bed days for epilepsy inpatient discharges | Y |
| **Dermatology Out Patient Department** | |
| No. of new patients waiting > 3 months for dermatology OPD appointment | N |
| No. of new dermatology outpatients seen per hospital per year | N |
| Referral: New Attendance ratio | N |
| **Rheumatology Out Patient Department** | |
| No. of new rheumatology outpatients seen per hospital per year | N |
| Referral: New Attendance ratio | N |
| **Neurology Out Patient Department** | |
| No. of new neurology patient seen per year | N |
| Referral: New Attendance ratio | N |

Y* Indicates that the source data includes data gathered from the supplementary data capture screens added to the HIPE portal in additional to the regular HIPE data

## Appendix VIII: Comparison of HIPE & E-Claiming Datasets

The table below compares the HIPE and E-Claiming datasets (ESRI, 2013d, MIG, 2013), providing details of the differences and the relevance of these differences if the insurer were to take the HIPE data either directly from the hospitals or from the ESRI.

**Table 7.2: Comparison of HIPE and E-claiming Datasets**

| Type of Data | Variable | HIPE Dataset | E-Claiming Data Set | Description | Difference | Relevance to Insurer if Receiving Coded data from Hospital or ESRI |
|---|---|---|---|---|---|---|
| **Demographic** | Name | Y | Y | Patients Name | Not sent to ESRI | In the absence of HIPE containing insurer policy number, this would be required to match HIPE & claim data. Could get directly from hospitals. |
| **Demographic** | Date of Birth | Y | Y | Patients Date of Birth | Full Date Of Birth collected at Hospital level only. Only month and year are exported to the ESRI. E-claiming captures the full date of birth | Key field to match HIPE data to claim data even if policy number is present as need to uniquely identify the patient. If were obtaining data from the ESRI could not accurately match in all cases without accurate date of birth. |
| **Demographic** | Age | Y | Y | Age - derived from DOB | | |
| **Demographic** | Sex | Y | N | Gender of patient | Not in E-claiming dataset as insurers have this information once can identify patient | |
| **Demographic** | Marital status | Y | N | Marital status of patient | Not in E-claiming dataset as not relevant for the payment of claims | |

| Type of Data | Variable | HIPE Dataset | E-Claiming Data Set | Description | Difference | Relevance to Insurer if Receiving Coded data from Hospital or ESRI |
|---|---|---|---|---|---|---|
| **Demographic** | Infant admission weight | Y | N | Weight for neonates and infants up to 1 year old with admission weight < 2,500 grams. | Not in E-claiming dataset as not relevant for the payment of claims | |
| **Demographic** | Parity | Y | N | Maternity related: the number of previous live births and the number of previous stillbirths (over 500g) | Not in E-claiming dataset as not relevant for the payment of claims | |
| **Demographic** | Area of residence by county or country | Y | Y | Dublin post code, county or country of residence if outside Ireland | Different information. Full textual postal address for e-claiming dataset. HIPE just includes the county or Dublin postal code and is a coded value specific to HIPE. Also HIPE is the patient address whereas E-claiming is the policyholders | |
| **Clinical** | One principal diagnosis | Y | V | Primary Diagnosis for the patient for the specific episode of care | HIPE captures the ICD-10 code for the primary diagnosis. For E-claiming the primary diagnosis is captured in text along with diagnosis type (specific to insurers). It also includes a single value for ICD diagnosis but no differentiation between the primary and the secondary | Would appear from the way ICD fields are structured currently in the E-claiming dataset that the insurers do not know or did not spend much time on this. Would need to change to capture the primary ICD-10 diagnosis code separately to the secondaries. Potentially remove the textual diagnosis field is all insurers agree |
| **Clinical** | Nineteen additional diagnoses | Y | V | As above | HIPE captures the ICD-10 code for the secondary diagnosis. E-claiming includes a field for the secondary diagnosis but only text. No fields available to specify the codes for these | Similar to above, E-claiming dataset would need to be amended to include an additional 19 fields for secondary diagnosis codes. Also potential to remove the textual ones |

| Type of Data | Variable | HIPE Dataset | E-Claiming Data Set | Description | Difference | Relevance to Insurer if Receiving Coded data from Hospital or ESRI |
|---|---|---|---|---|---|---|
| **Clinical** | Hospital Acquired | Y | N | Indicate if diagnosis was acquired while in the hospital | Not in E-claiming dataset as not relevant for the payment of claims currently | Would be a useful piece of information if insurers are considering provider benchmarking or building quality measures into reimbursement |
| **Clinical** | One principal procedure | Y | V | Primary procedure carried out on the patient | HIPE captures the ICD-10 code for the primary procedure. In E-claiming procedure codes are specified but they are the insurer procedure codes rather than the ICD-10 version. No concept of Principle procedure | Similar to above, E-claiming dataset would need to be amended to include a field specifically for the primary ICD-10 procedure code. This would be in addition to the insurer specific codes on the assumption that these would still be required also |
| **Clinical** | Nineteen additional procedures | Y | V | As above | HIPE captures the ICD-10 code for the additional procedures. E-claiming allows numerous procedure codes to be provided but these are insurer codes rather than ICD-10 codes | Similar to above, E-claiming dataset would need to be amended to include an additional 19 fields for secondary procedure codes |
| **Clinical** | Procedure Dates | Y | Y | A procedure date is collected for all coded procedures. | | |
| **Clinical** | Australian Refined Diagnosis Related Group | Y | N | DRG associated with admission | Not in E-claiming dataset as not relevant for the payment of claims currently | Should be included in E-claiming dataset |
| **Clinical** | Major Diagnostic Category | Y | N | Major Diagnostic Category (MDC) | Not in E-claiming dataset as not relevant for the payment of claims currently | Not strictly required but might be useful |

| Type of Data | Variable | HIPE Dataset | E-Claiming Data Set | Description | Difference | Relevance to Insurer if Receiving Coded data from Hospital or ESRI |
|---|---|---|---|---|---|---|
| **Administrative** | Hospital of Discharge | Y | Y | Code for the hospital which the patient attends | The hospital codes used by HIPE are different to those used within E-claiming both in terms of value and format. Each insurer has proprietary codes. There is another field in E-claiming which seems like will be government identifier for hospitals under UHI i.e. unique provider code | Opportunity for national hospital identifiers as would simplify all around |
| **Administrative** | Hospital number | V | V | Code of the hospital submitting the record | HIPE uses different coded values for these than those outlined above to specify the discharge hospital. E-claiming uses the insurer specific hospital codes | Again if had national hospital identifiers would be beneficial |
| **Administrative** | National Hospital Office Flag | Y | N | National Hospital Office Flag | Not in E-claiming dataset as not relevant for the payment of claims | |
| **Administrative** | Episode Number | Y | N | Identifier for the episode of care | Not in E-claiming dataset as not relevant for the payment of claims currently | |
| **Administrative** | Chart number (MRN) | Y | Y | Patient identifier for the patient - unique to the hospital | In addition to the patient MRN E-claiming also contains a field for unique patient Identifier with a comment that may be required for UHI | This is only unique per hospital and does not track across hospitals. Appears insurers were trying to future proof for UHI by including the unique patient identifier. Even as is will help with matching HIPE and claim data. |
| **Administrative** | Date of Admission | Y | Y | Date when patient was admitted to the hospital | | |
| **Administrative** | Time of Admission | Y | Y | Time when patient was admitted to the hospital | | |

| Type of Data | Variable | HIPE Dataset | E-Claiming Data Set | Description | Difference | Relevance to Insurer if Receiving Coded data from Hospital or ESRI |
|---|---|---|---|---|---|---|
| **Administrative** | Date of Discharge | Y | Y | Date when patient was discharged from the hospital | | |
| **Administrative** | Time of Discharge | Y | Y | Time when patient was discharged from the hospital | | |
| **Administrative** | Day case indicator | Y | N | Indicates if a patient is admitted on an elective basis and does not require an overnight stay | Not in E-claiming dataset as not relevant for the payment of claims | |
| **Administrative** | Day ward indicator | Y | V | Indicates if a day case patient was admitted to a dedicated named day ward. | Boolean Y/N in HIPE. E-Claiming has ward type field of which Day ward is one of the values | |
| **Administrative** | Day ward identifier | V | V | Identifier for the day ward | HIPE hospitals must register their dedicated day wards with the National Casemix Programme and the code assigned is used here. E-claiming is a textual field. | Opportunity to standardise nationally on ward identifiers. Potential to eliminate some insurer issues |
| **Administrative** | Oncology ward indicator | Y | N | Oncology ward indicator | Not in E-claiming dataset as not relevant for the payment of claims | |
| **Administrative** | Type of admission | Y | V | Type of Admission | For HIPE Values include elective, elective readmission, emergency, emergency readmission, maternity, or newborn. In E-Claiming there is just two values - planned or emergency | Potential to standardise again and would provide insurers with more information |
| **Administrative** | Type of Elective Admission | Y | N | For HIPE only required where admission type = Elective. Values are Planned Admission, Admission from Waiting List or unknown | Not in E-claiming dataset as not relevant for the payment of claims | |

| Type of Data | Variable | HIPE Dataset | E-Claiming Data Set | Description | Difference | Relevance to Insurer if Receiving Coded data from Hospital or ESRI |
|---|---|---|---|---|---|---|
| **Administrative** | Type of Waiting List category | Y | N | For HIPE only required where admission type = Elective. Used to determine if the case is funded by the NTPF. | Not in E-claiming dataset as not relevant for the payment of claims | |
| **Administrative** | Mode of emergency admission | Y | N | For HIPE indicates where the patient with admission codes emergency or newborn was treated prior to being admitted to the hospital as an in-patient, or when the patient was treated only in a registered Medical Assessment Unit (MAU). | Not in E-claiming dataset as not relevant for the payment of claims | |
| **Administrative** | Source of admission | Y | N | Where the patient was Prior to admission. | Not in E-claiming dataset as not relevant for the payment of claims | |
| **Administrative** | Hospital Transferred From | Y | N | If transferred from a HIPE hospital, the code of that hospital. | Not in E-claiming dataset as not relevant for the payment of claims | |
| **Administrative** | Discharge destination | V | V | Where the patient is going on Discharge | Different list of values between HIPE and E-claiming but similar | Potential to standardise nationally |
| **Administrative** | Hospital Transferred To | V | V | In HIPE this is the hospital code if transferred to another hospital on discharge. In E-Claiming its where transferred for a test/procedure during episode of care | Different meaning for the value as outlined in description | |
| **Administrative** | Discharge status | Y | V | IN HIPE this refers to the public/private status of the patient on discharge and not to the type of bed occupied. | This could be the same as the question whether the patient elected to be treated as a private patient | |

| Type of Data | Variable | HIPE Dataset | E-Claiming Data Set | Description | Difference | Relevance to Insurer if Receiving Coded data from Hospital or ESRI |
|---|---|---|---|---|---|---|
| **Administrative** | Insurer | Y | N | In HIPE if select Private for discharge status, enter the name of the Insurer if known or No Insurance | No required for E-claiming as insurer only gets own claims | |
| **Administrative** | Medical Card Indicator | Y | N | Refers to whether the patient is a medical card holder. | Not in E-claiming dataset as not relevant for the payment of claims | |
| **Administrative** | Medical Card / General Medical Services Card number | Y | N | If answer yes to Medical Card indicator, specify the number on the card. | Not in E-claiming dataset as not relevant for the payment of claims | Another field not exported to ESRI but not required for insurers anyway |
| **Administrative** | Days in an intensive care environment | Y | Y | Number of days spent in an intensive care environment | | |
| **Administrative** | Days in a private bed | Y | Y | Number of days spent in a private bed | | |
| **Administrative** | Days in a semi-private bed | Y | Y | Number of days spent in a semi private bed | | |
| **Administrative** | Days in a public bed | Y | Y | Number of days spent in a public bed | | |
| **Administrative** | Date of transfer to a Pre-Discharge Unit/Rehab | Y | N | Date the patient was transferred to a Pre-Discharge Unit/Rehab prior to discharge - will not be the same as discharge date | Not in E-claiming dataset as not relevant for the payment of claims | |
| **Administrative** | Consultant Identifiers | Y | Y | Unique code for each consultant | HIPE use consultant codes which are assigned by ESRI. E-claiming uses insurer specific codes which vary per insurer.<br>These codes are encrypted before being sent to the ESRI | National consultant identifiers would standardise |

| Type of Data | Variable | HIPE Dataset | E-Claiming Data Set | Description | Difference | Relevance to Insurer if Receiving Coded data from Hospital or ESRI |
|---|---|---|---|---|---|---|
| **Administrative** | Consultant type | V | V | Different types of consultant | In HIPE can include type against each identifier. E-claiming not as easily identified but can be derived | |
| **Administrative** | Speciality of Discharging Consultant | Y | V | Speciality of the consultant | HIPE has specific values similar to the type. E-claiming has codes assigned to various clinical specialities so different meaning. Also HIPE more concerned with discharge consultant where E-claiming with the Admitting | Another opportunity to standardise |
| **Administrative** | Admitting Ward | Y | V | Admitting ward: The ward to which the patient was admitted. | Unique ward identifier for HIPE assigned by Casemix. E-claiming captures all wards in text and based on dates would derive which one was admitting and discharge | Opportunity to standardise nationally on ward identifiers |
| **Administrative** | Discharge Ward | Y | V | Discharge ward: The ward from which the patient was discharged. | As above | As above |
| **Administrative** | Temporary leave days | Y | N | Refers to the number of days the patient was absent from the hospital during an episode of care. Exceptions to this | Not in E-claiming dataset as not relevant for the payment of claims | |

Note: V indicates that the field exists but is a variation rather than an exact match.

## Appendix IX: Australian Clinical Datasets

**Table 7.3: Summary of Australian Clinical Datasets**

| Collection | Collected by | Given To | Frequency | Format | Data | Usage | Mandated by |
|---|---|---|---|---|---|---|---|
| Hospital Casemix Protocol (HCP) | Private Hospitals<br>Public Hospitals | Insurers<br>Department of Health & Aging | Monthly | Electronic<br>Fixed file format<br>ASCII standard | Demographic<br>Clinical<br>Financial<br>Administrative<br>Benefit * | Insurer – Analysis<br>Department – Policy & Planning in relation to private hospitals and private health insurance | Private Health Insurance Act 2007 |
| Private Hospital Data Bureau (PHDB) | Private Hospitals | Department of Health & Aging | Monthly | Electronic<br>Fixed file format<br>ASCII standard | Demographic<br>Clinical<br>Administrative | Policy Development<br>Private Hospital Profiles<br>Research | Private Health Insurance Act 2007 |
| National Admitted Patient Collection (APC) | Private Hospitals<br>Public Hospitals | Australian Institute of Health and Wellbeing<br>Local Government | Annually<br>Monthly ** | Electronic<br>National Minimum Dataset (NMDS)<br>specification | Demographic<br>Clinical<br>Administrative | National Performance Measures<br>Research<br>Statistics<br>Policy Development | National Health Information Agreement |

* The insurer adds the benefit data and removes the patient name prior to submitting to the Department

** The submission of APC data to the state or territory is dedicated by local agreements. In some states this is governed by legislation whereas in others it is voluntary. The submission of the data from the states or territories to the Australian Institute of Health and Welfare (AIHW) is governed under the National Health Information Agreement

## Appendix X: Comparison of HIPE and Hospital Casemix Protocol (HCP) Datasets

The table below compares the HIPE and HCP datasets (Department of Health and Ageing, 2013, ESRI, 2013d), providing details of the differences where appropriate.

**Table 7.4: Comparison of HIPE and Hospital Casemix Protocol (HCP) Datasets**

| Type of Data | Variable | HIPE Dataset | HCP Data Set | Description | Difference Detail |
|---|---|---|---|---|---|
| **Demographic** | Family Name | Y | Y | Patient Surname | |
| **Demographic** | Given Name | Y | Y | Patient First Name | |
| **Demographic** | Date of Birth | Y | Y | Patients Date of Birth | |
| **Demographic** | Age | Y | N | Patients Age | |
| **Demographic** | Sex | Y | Y | Gender of patient | |
| **Demographic** | Marital status | Y | N | Martial status of patient | |
| **Demographic** | Infant admission weight | Y | Y | Weight for neonates or infants less than certain weight | Not exactly the same criteria |
| **Demographic** | Parity | Y | N | Maternity related: the number of previous live births and the number of previous stillbirths | |
| **Demographic** | Area of residence by county or country | Y | Y | Area identifier for Patient | |
| **Clinical** | One principal diagnosis | Y | Y | Primary Diagnosis for the patient for the specific episode of care | |
| **Clinical** | Additional diagnoses | Y | Y | Additional diagnosis | Significantly more additional diagnosis available in HCP – 29 in HIPE but 49 in HCP |
| **Clinical** | Hospital Acquired | Y | N | Indicate if diagnosis was acquired while in the hospital | |

| Type of Data | Variable | HIPE Dataset | HCP Data Set | Description | Difference Detail |
|---|---|---|---|---|---|
| **Clinical** | One principal procedure | Y | Y | Primary ICD Procedure code | |
| **Clinical** | Additional procedures | Y | Y | Additional ICD Procedure Codes | No difference between primary procedure and any other in HCP which can capture up to 50. Only 19 in HIPE |
| **Clinical** | Primary MBS Procedure | N | Y | A valid primary Medical Benefits Schedule item | These are like insurer procedure codes |
| **Clinical** | Additional MBS Procedures | N | Y | Additional Medical Benefits Schedule items | |
| **Clinical** | Miscellaneous Service Codes | N | Y | Any miscellaneous service codes e.g. non MBS items | |
| **Clinical** | Procedure Dates | Y | Y | A procedure date is collected for all coded procedures. | Supplied for MBS procedures in HCP |
| **Clinical** | Diagnosis Relation Group | Y | Y | Diagnosis Relation Group | |
| **Clinical** | DRG Version | N | Y | Version of DRG code being used | May have to be added to HIPE in the future if DRG is going to change more frequently |
| **Clinical** | Major Diagnostic Category | Y | N | Major Diagnostic Category (MDC) | |
| **Clinical** | Type of Care | N | Y | The category of care provided e.g. acute, rehab, etc | |
| **Administrative** | Hospital of Discharge | Y | Y | Code for the hospital which the patient attends | |
| **Administrative** | Hospital number | Y | Y | Code of the hospital submitting the record | |
| **Administrative** | National Hospital Office Flag | Y | N | National Hospital Office Flag | |
| **Administrative** | Episode Number | Y | Y | Number for episode of care | |
| **Administrative** | Chart number (MRN) | Y | Y | Unique identifier for the episode of care in that hospital | |
| **Administrative** | Date of Admission | Y | Y | Date when patient was admitted to the hospital | |

| Type of Data | Variable | HIPE Dataset | HCP Data Set | Description | Difference Detail |
|---|---|---|---|---|---|
| **Administrative** | Time of Admission | Y | Y | Time when patient was admitted to the hospital | |
| **Administrative** | Date of Discharge | Y | Y | Date when patient was discharged from the hospital | |
| **Administrative** | Time of Discharge | Y | Y | Time when patient was discharged from the hospital | |
| **Administrative** | Hospital Type | N | Y | Type of hospital where the episode occurred | |
| **Administrative** | Day case indicator | Y | Y | Indicates if a patient does not require an overnight stay | Some differences in value but same principle |
| **Administrative** | Day ward indicator | Y | N | Indicates if a day case patient was admitted to a dedicated named day ward. | |
| **Administrative** | Day ward identifier | Y | N | Identifier for the day ward | |
| **Administrative** | Oncology ward indicator | Y | N | Oncology ward indicator | |
| **Administrative** | Type of admission | Y | Y | Type of Admission | Some differences in value but same principle |
| **Administrative** | Type of Elective Admission | Y | N | For HIPE only required where admission type = Elective. Values are Planned Admission, Admission from Waiting List or Unknown | |
| **Administrative** | Type of Waiting List category | Y | N | For HIPE only required where admission type = Elective. Used to determine if the case is funded by the NTPF. | |
| **Administrative** | Mode of emergency admission | Y | N | For HIPE indicates where the patient with admission codes emergency or newborn was treated prior to being admitted to the hospital | Could be deemed a version of next field |
| **Administrative** | Source of admission | Y | Y | Where the patient was Prior to admission or where referred from | |
| **Administrative** | Hospital Transferred From | Y | Y | If transferred from another hospital, the code of that hospital. | |

| Type of Data | Variable | HIPE Dataset | HCP Data Set | Description | Difference Detail |
|---|---|---|---|---|---|
| **Administrative** | Intended Discharge Destination | N | Y | The intended discharge status at time of admission | |
| **Administrative** | Inter Hospital contracted identifier | N | Y | Identifier for patient being treated between hospitals | |
| **Administrative** | Mental Health legal status | N | Y | Mental health status of the patient - involuntary patient | |
| **Administrative** | Palliative Care Status | N | Y | Indicator of whether palliative care is provided | |
| **Administrative** | Readmission within 28 days | N | Y | An indicator of the readmission of a patient to hospital within 28 days of previous discharge for treatment of a similar or related condition | Potentially useful quality indicator for the future |
| **Administrative** | Unplanned theatre visit | N | Y | An indicator of whether the patient required a theatre visit which was not anticipated or planned at the time of admission | Potentially useful quality indicator for the future |
| **Administrative** | Discharge destination | Y | Y | Where the patient is going on Discharge | Some differences in value but same principle |
| **Administrative** | Hospital Transferred To | Y | Y | Hospital transferred to is discharged to another hospital | |
| **Administrative** | Discharge status | Y | N | IN HIPE this refers to the public/private status of the patient on discharge | |
| **Administrative** | Insurer | Y | Y | Insurance company identifier | |
| **Administrative** | Insurance Identifier | N | Y | Membership number with insurance company | Will most likely be added to HIPE in future |
| **Administrative** | Medical Card Indicator | Y | N | Refers to whether the patient is a medical card holder. | |
| **Administrative** | Medical Card / General Medical Services Card number | Y | N | If answer yes to Medical Card indicator, specify the number on the card. | |

| Type of Data | Variable | HIPE Dataset | HCP Data Set | Description | Difference Detail |
|---|---|---|---|---|---|
| **Administrative** | Days spent in ICU | Y | Y | Number of days spent in an intensive care environment | |
| **Administrative** | Hours spent in ICU | N | Y | Number of days spent in an ICU | |
| **Administrative** | Days in a private bed | Y | N | Number of days spent in a private bed | |
| **Administrative** | Days in a semi-private bed | Y | N | Number of days spent in a semi private bed | |
| **Administrative** | Days in a public bed | Y | N | Number of days spent in a public bed | |
| **Administrative** | Days in a psychiatric bed | N | Y | Number of days spent in a psychiatric bed | |
| **Administrative** | Non Certified days of stay | N | Y | Number of non certified days that exceeded 35 | |
| **Administrative** | Days in Palliative Care | N | Y | Number of days spent in palliative care | |
| **Administrative** | Days in Hospital in the Home Care | N | Y | Number of hospital in the home days occurring during the episode of care | |
| **Administrative** | Start date of Hospital in the Home Care | N | Y | Start date of the hospital in the home care during the episode of care | |
| **Administrative** | End date of Hospital in the Home Care | N | Y | End date of the hospital in the home care during the episode of care | |
| **Administrative** | Hours on Mechanical Ventilation | N | Y | Total number of hours patient spend on mechanical ventilation | |
| **Administrative** | Hours of Special Care Nursing | N | Y | Total number of special care nursing hours | |
| **Administrative** | Days of Special Care Nursing | N | Y | Total number of special care nursing days | |
| **Administrative** | Hours of Coronary Care Unit | N | Y | Total number of coronary care unit hours | |
| **Administrative** | Days of Coronary Care Unit | N | Y | Total number of coronary care unit days | |
| **Administrative** | Minutes of operating theatre time | N | Y | Minutes patient spent in the operating theatre | |
| **Administrative** | Number of qualified days for a newborn | N | Y | Number of qualified days for a newborn | |

| Type of Data | Variable | HIPE Dataset | HCP Data Set | Description | Difference Detail |
|---|---|---|---|---|---|
| **Administrative** | Date of transfer to a Pre-Discharge Unit/Rehab | Y | N | Date the patient was transferred to a Pre-Discharge Unit/Rehab prior to discharge - will not be the same as discharge date | |
| **Administrative** | Consultant Identifiers | Y | N | Unique code for each consultant | |
| **Administrative** | Consultant type | Y | N | Different types of consultant | |
| **Administrative** | Speciality of Discharging Consultant | Y | N | Speciality of the consultant | |
| **Administrative** | Admitting Ward | Y | N | Admitting ward: The ward to which the patient was admitted. | |
| **Administrative** | Discharge Ward | Y | N | Discharge ward: The ward from which the patient was discharged. | |
| **Administrative** | Temporary leave days | Y | Y | Refers to the number of days the patient was absent from the hospital during an episode of care. Exceptions to this | |
| **Financial** | Accommodation Charge | N | Y | Gross amount charged for accommodation | |
| **Financial** | Theatre Charge | N | Y | Total amount charged for theatre / procedure | |
| **Financial** | Labour Ward Charge | N | Y | Gross amount charged for labour ward | |
| **Financial** | ICU Charge | N | Y | Gross amount charged for ICU | |
| **Financial** | Prosthesis Charge | N | Y | Gross amount charged for prosthesis | |
| **Financial** | Pharmacy Charge | N | Y | Gross amount charged for pharmacy | |
| **Financial** | Other Charges | N | Y | Gross amount for any chargeable items not categorised elsewhere | |
| **Financial** | Bundled Charge | N | Y | Gross bundled charge amount | |
| **Financial** | Hospital in the Home care Charge | N | Y | Gross amount charged for hospital in the home | |
| **Financial** | Special Care Nursery Charge | N | Y | Gross amount charged for special care nursery | |
| **Financial** | Coronary Care Unit Charge | N | Y | Gross amount charged for coronary care unit | |