AN OVERVIEW OF INFORMATION TECHNOLOGY, DATA QUALITY AND DATA STANDARDS IN IRISH EMERGENCY DEPARTMENTS: ARE WE COMPARING LIKE WITH LIKE?

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Master of Science in Health Informatics

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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

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ABBREVIATIONS

- ANP Advanced Nurse Practitioner
- DoHC Department of Health and Children
- ED Emergency Department
- HIQA Health Information and Quality Authority
- HIS Hospital information system
- HSE Health Services Executive
- MDR Management Data Returns
- NHO National Hospitals Office
- PAS Patient administration system
- PMU Performance Monitoring Unit

SUMMARY

Does the availability of IT affect data capture and data quality in Irish Emergency Departments: are we comparing like with like?

Aims:

- ◊ to determine the level of IT in Irish ED;
- ◊ to determine if data for the PMU MDR is being captured and submitted and
- ◊ to determine if there is consensus between hospitals and the PMU and hospitals in relation to data definitions and standards

Methodology: comprises of 2 parts: firstly a review of 12 randomly selected weekly PMU reports and a survey of each hospital with an ED. A total of 37 surveys were distributed 47% of which were returned (n=17).

Findings: The existing PAS is available in 94% of hospitals and of these 82% are greater than 10 years; No hospital yet in Ireland is capable of capturing all data in relation to a patient episode on an IT system; Hospitals where data is captured on IT are more compliant with completing the PMU MDR than those who are dependant on manual records and logs; there is little agreement between hospitals and between hospitals and the PMU in relation to data standards and definitions.

Conclusions: The availability of IT does affect data capture and data quality and data comparisons suggest that we are not comparing like with like.

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CHAPTER 1: INTRODUCTION AND BACKGROUND

The Emergency Department (ED) is often seen as the "front door" or window of the acute hospital services and is often seen as a barometer for how the acute hospital services are performing. It is by nature an information rich environment with thousands of people attending the service daily, registering for treatment, being cared for and discharged home or admitted to the in-patient environment. Information technology (IT) encompasses the hardware and software to support the collection, storage, analyses and dissemination health information. There is a much greater requirement for reliable accurate and timely data from all aspects of healthcare.

1.1 IRISH HEALTH SERVICE REPORTS

There have been several comprehensive audits of the Irish health service in general and the ED services in particular. Deloitte and Touche (2001) highlighted that there was a piecemeal approach to the implementation of information systems and that non-standardisation of data within and between agencies inhibited the development of benchmarking, the comparability of data and the sharing of information between various stakeholders and in the health service. A Comhairle na nOspidéal committee set up to investigate the structure, operation and staffing of ED in Ireland in 2002 found that comprehensive and comparable information on the work of Irish ED was extremely limited. Prospectus (2003) found that there was inadequate system-wide health information co-ordination and that there was a requirement for a formal performance management framework to link individual and team performance to strategic objectives.

1.2 IRISH ED SPECIFIC REPORTS AND 100+ PLAN

In 2005, the Minister for Health and Children announced a €70 million package to be used to implement services which would alleviate the pressure on EDs. Tribal Secta (2005) was commissioned by the Health Services Executive to identify how the patient pathway from admission from the ED to discharge could be improved by application of international best practice and maximising the appropriate utilisation of existing acute capacity. This report stated that the cornerstone of any governance system is good information. Issues identified in this review from an IT and data quality perspective included that many of the hospitals did not have adequate information and technology to support effective patient management. The ability to quantify performance data for clinical teams was central to identifying and resolving bottlenecks in the patient pathway. The review encountered significant data quality issues due to a poor information base in many hospitals. There were no clear and consistent data definitions in place across the acute hospital sector without which each hospital was impeded in understanding its operational performance and how it compared to other similar hospitals. Very few hospitals collected and used their own performance data to inform clinical and corporate planning. Without formulating and standardising minimum data sets for emergency and inpatient care it would be impossible to compare and contrast like with like.

The Tribal Secta (2005) report recommended the introduction of a reward scheme for hospitals achieving specific benchmark targets to be set by the HSE. It also described a number of internationally recognised benchmark measures for ED performance. In line with this recommendation and in order to encourage performance improvements in patient processing in ED the HSE published the 100+ plan rewarding hospitals with high performing EDs, in July 2006. This plan set out basic and exceptional performance targets to be achieved by individual ED who in return and on achievement of the basic targets

could apply for funding for additional consultants posts. Hospitals not achieving the basic targets would not qualify for funding for additional consultant posts. Up to 100 additional consultants would be appointed by the HSE to the higher achieving hospitals.

1.3 ED TASK FORCE REPORT 2007

In March 2006, the HSE established the Emergency Department Task Force to facilitate the implementation of the HSE's Framework for addressing problems in Emergency Department Services. The report of the ED task Force which reviewed services in 18 ED hospitals throughout the country was published in June 2007. This report stated that the IT infrastructure in ED was poor nationally and that information on ED activity was not used by clinicians and management outside ED in a number of hospitals. This report recommended the introduction of system wide definitions to apply to all hospitals and EDs for better comparative performance analysis. The report also recommended the development of National Frameworks to establish norms on patient process elements such as triage, supporting infrastructure, transport and treatment. The most significant recommendations by the Task Force were (1) to establish initially a 12 hour target time from decision to admit until the patient was transferred from the ED, (2) for the HSE to set a date from which the target time from decision to admit to transfer from the ED would be reduced to 6 hours and (3) for the HSE to set a date from which the target total time from admission to discharge or transfer for all patients would be a maximum of 6 hours.

> *"Achieving this objective requires that hospitals measure wait time for all patients from time of arrival at the Emergency Department. While this will require significant effort and resources, total wait time for arrival to discharge / admission is central to the accurate assessment of clinical need and the volume of demand. Such information should determine the allocation of*

resources in line with measurement of actual hospital and health system performance."

1.4 The Performance Monitoring Unit

The task of establishing a method of monitoring hospital performance indicators and benchmarking above was charged to The Performance Monitoring Unit (PMU) of the National Hospitals Office (NHO). The PMU was set up in 2006. The key objectives of the PMU are:

To define (in consultation with key stakeholders) the information requirements of the HSE/NHO;

- To embed Management Data Returns (MDRs) or standard information templates within each hospital (Appendix 1);
- To define information standards and validation protocols (Appendix 2) and
- To co-ordinate the analysis of national and regional activity data for use by all management within the HSE/NHO.

The PMU has already defined and linked with every hospital to embed the MDR. Data collected in the MDR includes information about in-patients, day cases, and outpatients as well as ED patients. The MDR is considered the target information suite which hospitals must accelerate to meet each year. Knowledge and information analysis arising from the PMU/NHO and HSE generally must be based on trusted high quality data. If the data standards are not achieved, erroneous conclusions or poor projections will affect decision making and outcomes of the NHO. The inclusion of the ED performance indicators was

made by the National Director and Network Managers of the NHO. Reasons for including the ED PIs include prior history, international uses and available information (PMU, 2008)

This provided a framework within which individual EDs can be both individually assessed and monitored and where similar capacity EDs could be compared in relation to performance. Each hospital is requested to complete the MDR on a weekly basis. The PMU weekly reports (Appendix 3) are compiled from data provided by the MDRs. These reports are available from the PMU by email request for all administrative and clinical staff within hospitals and the HSE. The data is presented in table format with each hospital named on the right side. The tables include:

- ◊ Table 1: presents a profile of the new and return attendances and the time profile of presentations to each ED.
- ◊ Table 2: gives an overview of the pattern of new attendances to each ED
- ◊ Table 3: presents the profile of attendances by triage category (where information is available).
- ◊ Table 4: outlines the profile the length of time patients wait to get to and in-patient bed across.
- ◊ Table 5: shows hospital admission profiles.
- ◊ Table 6: profiles in-patient and day-case cancellations (due to resource issues rather than a patient's clinical condition).
- ◊ Table 7: outlines the total time in ED for both admitted and non-admitted patients.

Performance management and benchmarking, accreditation and quality improvement systems are becoming the norm for monitoring the delivery of health services internationally. The demand for accurate data the need for fully integrated, hospital wide information technology is becoming more evident. Each of the reports discussed,

acknowledges poor consistency in information quality and data standards in ED in Ireland. The focus of these reports however, is on patient processing and to identify the causes of bottlenecks throughout the healthcare system in order to reduce overcrowding and waiting times in ED. The reports also establish that there is a lack of consistency between hospitals with regard to the availability of relevant information. To be in a position to accurately measure performance and quality of service in EDs, hospitals need to have the resources to record the relevant data in a timely and efficient manner. The PMU collect data on ED performance on a weekly basis however, the evidence in previous reports would suggest that the ability to collect and assimilate this information varies in each ED and the extent to which the data recorded at hospital level accurately captures and reflects ED performance (ED Task Force, 2007). Although the PMU has distributed a draft definitions document there is no national consensus on these definitions. In order to be able to draw inferences form the data collected in the PMU document we must first establish if each hospital and ED has the capability to collect the data i.e. what information technology is available in each ED. Secondly we must establish if data definitions and standards in each ED concurs with the PMU definitions.

1.5 Research Question

Given the reported lack of IT nationally and the volume of specific data, the research question for this study is:

Does the availability of IT affect data capture and data quality in Irish Emergency Departments: are we comparing like with like?

The aims of this study are:

- ◊ To establish the level of IT availability in Irish ED.

- ◊ To determine if the data to complete the PMU MDR is being captured and submitted
- ◊ To determine if there is a consensus between the ED in Ireland on the definitions and standards of data collected the PMU weekly template data collection document and if these concur with the definitions and standards set out by the PMU.

This research project focuses primarily on how data is collected in ED and the definitions used to describe this data. It does not look at the collection of data or data definitions and standards outside of the ED environment. This study also does not focus on specific clinical data other than triage acuity and discharge diagnoses. The methodology for this study comprises firstly of a review of the weekly PMU documents to ascertain the completeness of these reports which are complied from the information returned to the PMU from each ED hospital (See Appendix 3).

Secondly a quantitative survey (Appendix 4) has been sent to the CEO or hospital manager of each 34 hospitals with an ED for completion. The survey was distributed and collected by the PMU. This is to ensure that the identity of each individual hospital was protected from the author. As the research proposal was approved by the PMU, did not involve patient data and the anonymity of the participating hospitals guaranteed, no further ethical approval is required. The survey comprises of five sections. The first section is general information and the following sections represents part of the ED process registration; triage; clinical assessment; admission and discharge.

Chapter 2 provides an overview of the ED and the patient flow process within. It also provides an overview of the PMU and the PMU ED template document and definitions. Chapter 3 provides a detailed review of international literature in relation to the

development and use of IT in ED; the argument for and against performance management and benchmarking etc. and how to ensure data quality. Chapter 4 details the methodology of the project, the design of the questionnaire, how this was distributed and how the responses were managed etc. Chapter 5 provides the results of the survey analyses the data returned. Chapter 6 is a discussion of the results and chapter 7 draws conclusions from the research.

This research project will ascertain the levels of IT availability in ED in Ireland. It will determine how data is currently captured manually or electronically. The study will also ascertain if there is consensus between the EDs and the PMU on the definitions of terms used in the PMU template document. In short this study will provide an overview of where we are now in relation to IT and data quality in ED in Ireland. This will identify some of the steps which need to be taken in order to have IT systems which can capture and provide good quality ED data for all stakeholders.

CHAPTER 2: CONTEXT AND LITERATURE REVIEW

2.1 Emergency Department Overview

This study is investigating how the availability of IT affects data quality in ED. The hospital emergency department (ED), also called the accident & emergency (A&E) department or occasionally the casualty department, provides initial treatment to patients with a broad spectrum of injuries and illnesses, some of which may be life-threatening and requiring immediate attention. There are 34 EDs in Ireland. Most provide a 24 hour, 7 day service 365 days of the year. In some hospitals all emergency patients attend the ED directly and are referred to specialty clinics or departments if necessary or a relevant on-call team who will assess the patient in ED. In a number of hospitals specialised units have been set up to take patients directly to the specialty. These include medical assessment units (MAU) or medical admission units where GP's patients can attend directly or GP's can refer patients for admission. Other units include acute psychiatry walk in clinics; Obstetrics and Gynaecology assessment units; chest pain assessment units (CPAU); paediatric assessment units. Patients will only attend the ED if these units are closed. The patient journey through the ED typically follows a pattern similar to that shown in Figure 1; however, the condition of the patient and the investigations and treatments they require may dictate the order in which these steps may be taken.

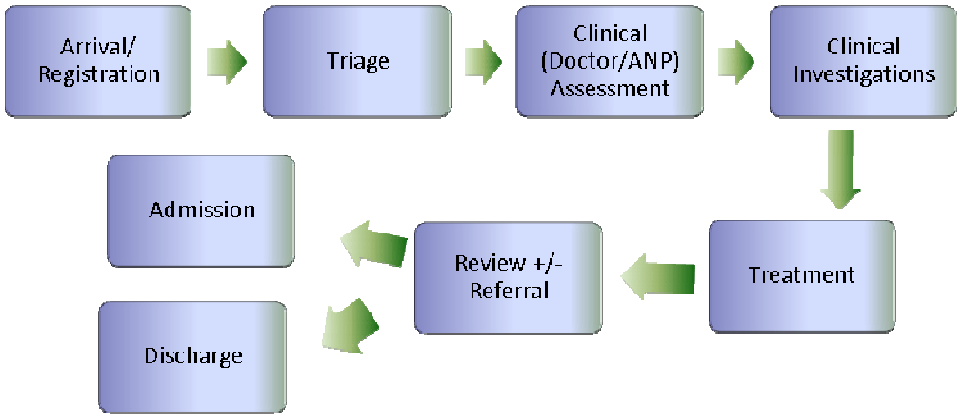


FIGURE 1: TYPICAL BASIC PATIENT FLOW PROCESS IN ED

The ED does not exist in isolation and circumstances outside of ED can influence the performance of ED. Problems of overcrowding at the ED have been identified as bottlenecks elsewhere in the hospital system for example patients requiring long-term care staying in acute hospital beds because of a shortage of long-term care beds in the community. At each stage in the ED process data is collected. In Irish EDs some parts of the process are supported by IT others are not. The evidence form the various reports on ED services suggests that a number of hospitals have better IT capability for data capture. A key issue for both patients and staff in ED is waiting time (Comhairle na nOspidéal, 2002). There are several causes of delays throughout the ED patient journey. Waiting for an ED trolley and space to become available; waiting to be seen by an ED doctor, waiting for diagnostic services and waiting for the in-house team to assess the patients need for admission and waiting to be admitted to a hospital bed can all impact on ED waiting times.

2.1.1 ARRIVAL/REGISTRATION:

A patient attendance at ED may be "New" or "Return". An attendance at ED by a patient who has not attended previously or a patient who is attending the ED with a new complaint is considered a new patient. A new *episode* number is created for the patient. A return patient has been defined any patient scheduled to return to any specific ED clinic (scheduled return) or as any patient returning to the ED with the *same complaint* who was not scheduled (unscheduled return). Data is only collected on "scheduled return" patients by the PMU.

Registration is a vital part of the ED process. On arrival, the patient is registered by clerical/administration staff either manually (on paper) or on the patient administration system (See 2.2). The *Arrival/Registration Time* is the time the patient registration at the ED commences. This is the time against which most other ED process times are

measured. One study argues that the ambulance arrival time should be redefined as the time when the patient arrives in the clinical area because of the length of time it took the patient to get to the clinical area after arriving at the hospital. Hospitals have no method of recording the actual time the patient arrives at the hospital door (Taylor et al., 2006) therefore the arrival time is generally accepted as the time the patient is registered. Occasionally there is may be a delay in registering a patient, due mostly to their physical condition, however most registration systems (manual or electronic) will accept a retrospective date and time. To this end, for the purpose of this study the arrival time and the registration time will be interchangeable. Data is collected by the PMU on the arrival times of patients per four hour time-blocks over 24 hours. Following registration patients are generally interviewed by a triage nurse.

2.1.2 TRIAGE:

Triage, derived from the French verb *trier* or "to sort", and was originally developed by military personnel to classify degrees of injury for casualties on the frontline for evacuation purposes. Triage is still undertaken in disaster emergencies and in multi-casualty incidents for the same purpose. ED triage is undertaken by nursing staff and involves a brief interview and assessment of the patient to determine the seriousness of their illness or injury and the urgency of treatment required on arrival at the ED. Triage is defined

> *"as a dynamic decision-making process that prioritizes a person's need for medical care on arrival at an emergency department"*

(Gerdtz and Bucknall, 2001). The presenting complaint or chief complaint is the main reason for the patient's presentation to the ED. This is generally recorded at triage and is used to help determine an accurate triage category for the patient. Presenting complaints and triage categories also help depict ED case-mix and acuity for comparative or benchmarking purposes. Formalised chief or presenting datasets have been created and

are often integrated into Triage software. For example the Manchester Triage system has 52 presentational flowcharts into which almost every reason for presentation can be categorised. This has been integrated into a number of software applications for ED Information technology. Other datasets include the Canadian ED triage presenting complaint list (Grafstein et al. 2003). Woolwich (2000) states that the goals of triage include:

- ◊ The rapid identification of patients with life threatening and urgent conditions and to ensure that patients with the greatest need for immediate care receive treatment as quickly as possible;
- ◊ To determine which treatment area is most appropriate for patients presenting to the ED and to decrease overcrowding in emergency treatment areas;
- ◊ To facilitate ongoing assessment of patients;
- ◊ To provide current waiting time information to patients and families;
- ◊ To accumulate information that helps to determine ED acuity and casemix, to inform ED process development in the development policies and procedures at departmental, hospital, national and international level;
- ◊ To provide data that can be used for clinical research.

2.1.2 A METHODS OF TRIAGE

Methods of triage as described by Woolwich (2000) include: *Non-professional*: the patient attends the ED, is registered by reception staff and waits to be called by the doctor. A nurse is only called to assess the patient if the receptionist has reason for concern. This method is only likely to be found if resources within an ED do not allow for a more formal triage process for example at night. *Basic or informal triage*: the patient is assessed on arrival by a registered nurse, prioritised and allocated a treatment area. The triage role or designated triage nurse may not be identified. Informal triage is usually only performed

when time and staffing levels allow. Written policies or protocols and staff training in the role may not be available. Documentation of assessments may be poor and unstructured. *Intermediate*: there is a recognised triage role in the ED. The patient is assessed and prioritised on arrival by a registered nurse and some initial investigations for example blood tests, and limited treatments e.g. administration of analgesia, are carried out in accordance with agreed policies, guidelines and protocols within the specific ED. Training for triage is an essential component of the role and ongoing audit of triage decisions is carried out to ensure consistency and professional accountability. *Advanced Triage*: This is the most comprehensive triage system and involves the initial assessment of the patient, commencement of diagnostic procedures including a physical examination, radiology and laboratory examinations, referral to departments or agencies outside the ED. Nurses are generally highly experienced in ED nursing and have undergone specific training for the role. There is evidence of each of these triage methods in Irish EDs (Comhairle na nOspidéal, 2002) however, the advanced triage nurse level is generally beyond the scope of practice of most Irish ED nurses as yet and is not widely available to most EDs.

2.1.2 B TRIAGE SYSTEMS

Triage systems are validated tools which assist the triage nurse allocate an appropriate score or category on a scale reflecting the degree of urgency with which the patient requires treatment for any given medical emergency or condition. Triage systems set out objective time frames indicating the maximum length of time a patient should wait for treatment after being triaged. These systems vary from three-level (emergency, urgent, non-urgent) to five-level triage systems (emergency, very urgent, urgent, standard and non-urgent). Examples of triage systems include the Australasian Triage Score (ATS); the Canadian Triage Assessment Scale (CTAS); and the Manchester Triage System (MTS). A brief overview of these triage systems (Table 1) has been developed from Zimmerman

(2001) American triage systems; the Canadian Association of Emergency Physicians (1998); Australasian College of Emergency Medicine (2000); and The Manchester Triage Group (2005).

TABLE 1: OVERVIEW OF TRIAGE SYSTEMS

Triage Category/ Level	Three Tier Triage Scale	Australasian Triage Scale	Canadian Triage Acuity Scale	Manchester Triage Scale	Description/Example
1/A	Emergent Immediate/ Constant	ATS 1/ Immediate	Critical Stat	Immediate stat	Immediately Life-threatening. e.g. Cardiac Arrest
2/B	Urgent <2.5 Hours	ATS 2/ 10 Minutes	Emergent <15 minutes	Very Urgent 10 Years	Imminently Life-threatening or important time critical treatment or severe pain e.g. Chest pain
3/C	-	ATS 3/ 30 Minutes	Urgent/ 30 minutes	Urgent/ 60 minutes	Potentially life threatening or situational urgency or humane practice mandates the relief of severe discomfort or distress within 30 minutes e.g. acute psychosis; abdominal pain
4/D	-	ATS 4/ 60 Minutes	Semi-urgent <60 Minutes	Standard/ 120 minutes	Potentially life serious or situational urgency or significant complexity or severity or humane practice mandates the relief of severe discomfort or distress within 60 minutes e.g. limb injury
5/E	Non-Urgent >2.5 Hours	ATS 5/ 120 Minutes	Non-urgent/ 120 Minutes	Non-urgent/ 240 minutes	Less urgent or clinical administrative problems e.g. mild pain; rash

Both the ATS and CTAS use lists of clinical descriptors for each level or triage category. These include:

- ◊ related high-risk historical factors e.g. poison ingestion,
- ◊ symptoms e.g., abdominal pain,
- ◊ signs e.g., shortness of breath, deformity,
- ◊ physiologic parameters e.g. temperature,

- ◊ point-of-care testing e.g., blood sugar level and pulse oximetry, and
- ◊ Nursing assessment-diagnosis e.g., dehydration and angina. . (Fernandez et al, 2005).

The ATS also states the performance indicator threshold with the timeframes within the triage levels

- ◊ ATS 1-100%;
- ◊ ATS 2-80%;
- ◊ ATS 3-75% and
- ◊ 4&5-70 % (Australasian College for Emergency Medicine, 2005).

The Manchester triage system (MTS) uses broad description, presentational flow-chart diagrams, to assist the in the triage of specific presenting complaints (e.g., abdominal pain and chest pain). Within the selected flowchart each triage category has key discriminators. The MTS requires the triage nurse to assess the patient select the highest discriminator which best describes the patients condition at that time. The triage category will be the category in which this discriminator has occurred. The patient may require re-triage if their condition changes prior to assessment by the doctor.

Studies have found the 5-level triage systems to be more reliable and better at predicting resource consumption, admission rates, length of stay, and mortality (Cameron et al, 1996; Cooke and Jinks, 1999; Travers et al, 2002; Tanabe et al, 2004; Elshove-Bolk et al, 2007). Brillman et al (1995) concluded that triage decisions should not be used to determine the timeliness of access to emergency care unless triage methods were standardised and validated. With increased pressure on resources, fewer level triage systems do not provide

adequate discriminatory aptitude to identify acuity in high volume, overcrowded EDs. (Fernandez et al, 2005).

2.1.2 c Triage in Ireland

The Comhairle na nOspidéal report of the committee on Accident and Emergency Services (2002) stated that one of the main causes of delay in ED in Ireland was the absence or partial implementation of formal triage processes. Anecdotal evidence at the time showed that formal triage was not always available at the time of patient presentation to ED and that patients may have to wait for up to one hour for triage assessment after arriving at ED. To date the methods of triage or triage systems used in Irish ED at a national level has not been fully determined. A descriptive study on the implementation of the Manchester Triage System to an ED in Cork was published in 2003 (Cronin, 2003) and a recent ESRI publication stated that the Manchester triage system was being used in four teaching hospitals in Dublin (Smith, 2007). A search of individual hospital websites show, that a number of hospitals use the MTS or ATS or a modified version of both. A number of EDs have their triage system available on an IT programme as a module of PAS; as a stand alone product or as part of a fully or partially integrated ED information system (EDIS).

EDs, where IT support for triage is not available, record the triage details on the patients record and will usually maintain a manual log of attendance, triage and disposition details. The PMU collect data on the number of new or unscheduled return patients classified as Triage category 1, 2, 3, 4, 5 and not classified in a triage category or in another category per week. EDs are not however asked which triage system they use. Following triage the patient waits to be seen by a doctor or advanced nurse practitioner (ANP).

2.1.3 CLINICAL ASSESSMENT:

Clinical assessment is an examination of the patient by an ED doctor or Advanced Nurse Practitioner (ANP). The time of commencement of this assessment is recorded on the patient's notes. This time is also called the "*time seen*" by the ED doctor or ANP. The time seen by ED doctor or ANP may be recorded in a manual log on a stand alone program or on an Emergency Department Information System (EDIS). The waiting time to see a doctor or ANP in ED is calculated from the registration time. The patient may require further clinical investigations or treatment following this assessment. Most hospitals record clinical assessment notes in paper format. Some hospitals have the capability to scan these notes onto a digital document scanning system which allows for easy retrieval at subsequent visits. Other hospitals may have the capability of recording all clinical ED notes in electronic format.

2.1.4 CLINICAL INVESTIGATIONS:

Clinical investigations are radiology or laboratory examinations undertaken to assist the diagnosis or confirm a patient condition. For some hospitals this requires the doctor or a nurse to hand write order forms for the laboratory or radiology department other hospitals have order communication systems which allow the specific investigation to be ordered electronically. In some hospitals the laboratory results are phoned to the ED as soon as they are confirmed by laboratory staff; in other ED the results are returned electronically. Radiology examinations generally require that the ED patient attends the radiology department for the procedure. There are exceptions to this if the patient is too ill to attend the radiology department a portable x-ray may be taken in the ED. In some hospitals the film of the procedure is returned to the ED and read by the ED doctor or ANP. The film will then be returned to the radiology department for reporting by a radiologist and for

archiving. Other hospitals have picture archiving and communication systems (PACS) which are computers or networks dedicated to the storage, retrieval, distribution and presentation of medical images. Here the procedure is requested on the PACS system and the procedure is undertaken in the radiology department. The image is immediately available for review in ED and will be reported as soon as possible by the radiologist.

2.1.5 REVIEW/ REFERRAL:

Review/referral is where the ED Doctor or ANP reviews the patient with all investigation results and decides on the care pathway that patient requires. Patients may be: discharged home; require a minor treatment e.g. dressing or plaster cast then discharged home; may be referred back to their GP; be admitted for a short period of time under the care of the ED consultants or be referred to an in-house specialty for assessment or admission. Where patients are referred for an opinion from the specialty team as to the best course of treatment or management for them at that time, the time the patient is referred to the in-house team is recorded in the patient notes. Some EDs have the facility to record the referral time electronically. Generally the in-house or on-call doctor attends the ED to assess and review the patient. The time the on-call doctor attends the patient is recorded in the patient notes and again some hospitals have the ability to electronically record this information. The PMU collects data (1) in relation to the number of patients admitted to an in house consultant, but treated and discharged within ED without gaining access to an inpatient bed. This is recorded daily and in total. This does not include patients treated by the ED team and discharged. (2) The number of ED patients, where a decision was made by the In-house team to admit to the hospital. (3) Number of patients from the time of referral by the ED consultant to the time seen by in-house team within - 1 hour/60 minutes.

2.1.6 ADMISSION AND DISCHARGE:

Frequently patients are admitted to an in-patient ward in the hospital. The time of decision to admit is the time that the specialty team decides that the patient requires admission to the hospital. Once the decision to admit has been made, the bed is requested from the bed management team or nursing administration. In some hospitals the bed management process is recorded on the PAS creating electronic date and time stamps for each step of the process. The time the bed is requested, the time the bed is allocated along with the ward name and the time the ward is ready to accept the patient and the time the patient leaves the ED are recorded. These date and time stamps allow ED, ward and hospital managers audit the processes to identify where the process is working well and the causes of delays in the process.

If patients are not admitted to the hospital they discharged home. The time the patient is discharged is also recorded. Generally the patient diagnosis is also recorded in the patient notes at this time. In some hospitals the discharge diagnosis may be captured electronically. Although a number of discharge nomenclatures are in use internationally, currently they are not used for ED diagnoses in Ireland. At the time a patient is discharged the patient may be closed or be kept open. In some hospitals the episode will be kept open in case the patient returns with the same complaint or if the patient has been asked to return in relation to the same complaint for example for a review clinic. In the event that the episode remains open the PAS may close it automatically after a period of time however no definitive time period has been specified for when the episode should be closed. The PMU collects data on (1) the total length to time for ED Episode of care in which the ED attendee was admitted; (2) the number of ED attendances that where admitted by the In-house team and placed in a bed within 6 hours of this decision; and (3) the total length of time for ED

episode of care for all ED attendances (weekly) including attendances who where admitted/discharged. Figure 2 provides a summary of all data captured in ED.

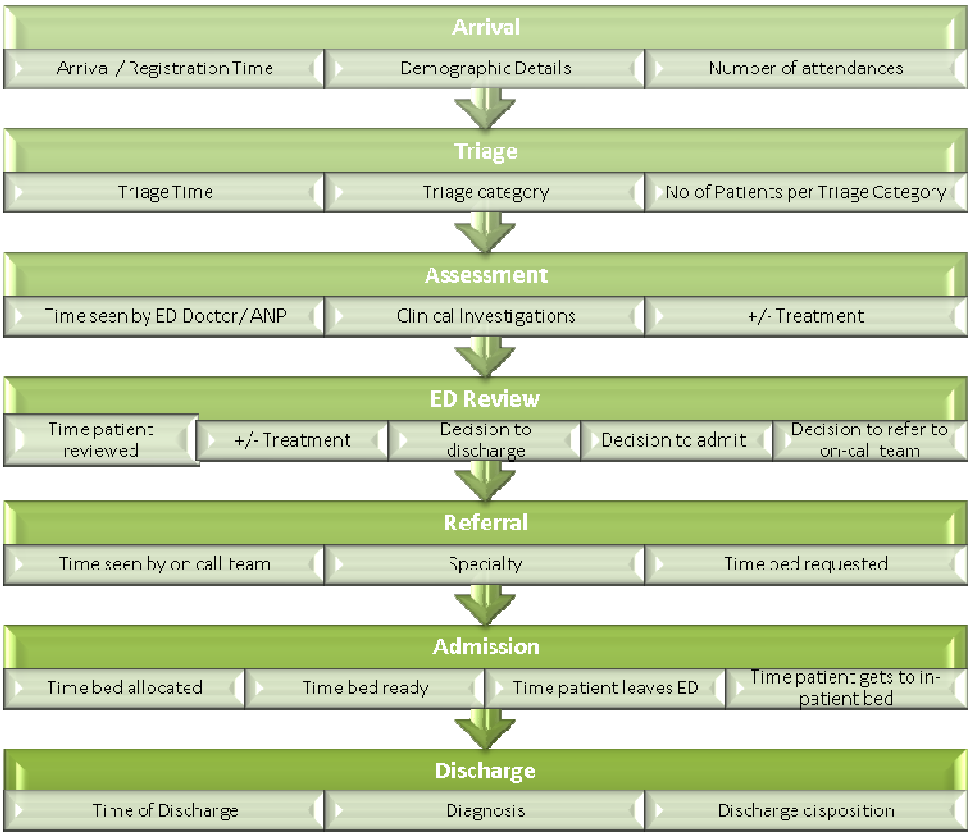


FIGURE 2 SUMMARY OF ED DATA CAPTURE

2.2 INFORMATION TECHNOLOGY IN ED

As stated in the introduction the ED is a data rich environment. Demographic, administrative and clinical data is collected on every patient. Demographic details include name, address, date of birth, eligibility e.g. Medical card status etc.; Administrative data includes date and time stamps for process mapping purposes e.g. registration time and time admitted. Clinical data includes details of the patient's condition etc. Data items including attendances, waiting times, admission rates, outcomes, acuity and access block, afford departmental and hospital managers an invaluable tool for workflow prediction and resource management. This information may be collected manually (in manual logs) or

electronically depending on the availability of information technology (IT) in the ED or throughout the hospital. The limitations of paper based records include:

- ◊ Substantially labour-intensive, paper-based processes: particularly when collecting and collating patient data, such as patient demographics, diagnostic information and clinical outcomes for monitoring the quality of healthcare.
- ◊ high administrative costs;
- ◊ Insufficient real-time accurate and up-to-date data for process management and service planning.

2.2.1 PATIENT ADMINISTRATION SYSTEM (PAS)

Most hospitals in Ireland have a PAS also known as a hospital information system (HIS). A PAS is one of the earliest and most vital components of a hospital computer system. This is an integrated information system designed to manage the administrative, clinical and financial functions of a hospital. Patient's demographic details are recorded or updated at each contact with the ED, outpatient department or inpatient admission. A vital function of PAS is the generation and retention of a unique Medical Record Number (MRN) for each individual patient at the first contact with the system. All clinical and administration details in the future will be recorded against that MRN. The PAS can be purely be used for administration and financial purposes or can be composed of one or more specialty specific modules both clinical and administrative. Modules of a PAS system used in ED include:

- ◊ The patient administration function which admits the patient to the ED commencing or opening a patient episode, searches the patient master index for previous records (to prevent duplication) and discharges the patient from the ED thereby ending or closing that patient episode.

- ◊ An ED module which can include a Triage function which records the details outlined in 2.1.2.
- ◊ A clinical administration function which records the doctor looking after the patient and any clinical detains they choose to include. This function is rarely used in Irish hospitals.
- ◊ An order communication system where laboratory and radiology and other orders can be placed and results can be posted for easy access at any computer in the hospital with access to the PAS.
- ◊ A patient chart tracking module which is used to record the location of a patients chart along with the name and location the staff member who recorded the information.
- ◊ A bed management module which allows a bed to be requested, allocated and a patient to be admitted, transferred and discharged. This module also allows the patient to be admitted to and discharged from specific beds on specific wards in hospitals.

In Ireland, a very small number of hospitals may still operate without IT support, using paper-based solutions (manual logs) for administrative and clinical patient processes. A larger number of hospitals will have a patient administration system (PAS) purely for registration and discharge purposes (See 2.2.1).These hospitals will also use manual logs to record the time stamps and discharge arrangements. A number of hospitals will have additional modules integrated to the PAS which allow for greater administrative functions and some clinical functions; these hospitals continue to maintain paper based clinical patient records and manual logs.

2.2.2 ADVANCES IN ED IT

Many advances have been in recent years in relation to IT in ED for example the introduction of picture archiving and communication systems (PACS), radiology information systems, laboratory information systems, Telemedicine, (including electronic transfer of CT images to Beaumont Neurological Unit from almost every ED in Ireland. The scans are assessed by the Neurological team in Beaumont and a patient management plan is agreed between the hospitals); point-of-care testing devices including glucometers for the detection of blood sugar levels; digital electrocardiograph equipment and cardiac monitors, data from which can be uploaded into electronic patient records.

Hospitals store all captured data in data warehouses. In many hospitals the different modules of PAS and stand alone or bespoke software applications store data individually with no link between the modules which allow identification of a complete patient record. A patient will retain the same medical record number throughout the various hospital information systems however these systems run individually. An example of this is where a patient attends and is registered in the ED and is subsequently admitted to the hospital. The initial contact is carried out in an ED module and the admissions process in completed in the In-patient module. The data created in both must be matched in a separate environment in order to create a complete patient episode. This is one of many difficulties that arise with data quality and improvement of IT infrastructure in hospitals particularly when attempting to introduce new software applications. Because the PAS has been installed in many hospitals for several years some difficulties have arisen when attempting to integrate the newer technologies with the existing system. Very few hospitals in Ireland have the capability of capturing full clinical data on IT systems. Currently data in many hospitals is captured manually on ED documentation which, is subsequently scanned into a digital imaging system for ease of retrieval.

2.2.3 ED INFORMATION SYSTEMS (EDIS)

Emergency department information systems (EDIS) were first developed in Australia in the 1990's and are fully integrated systems providing a means to register and track patients along with clinical documentation and incorporation of laboratory and radiology procedures, results and images. All documentation, administrative or clinical is managed electronically. EDIS have provided the benchmark for electronic patient registration and tracking systems in ED. Its emergence has been instrumental in validating the Australasian Triage Score and benchmarking ED activity across Australasia (Dinh and Chu). Teich (1998) argues that EDs should try to choose an information system suitable for both practice and research. The requirements for a dual-role IT system should be one that collects, organises, and analyses data, and presents the most important information at all times to the provider. It should also be based on a broad, integrated database, featuring standard query capabilities, and with a notifying or altering function to help identify patients for research or specific clinical care pathways (Teich, 1998). EDIS have been implemented in many countries including Australia, New Zealand, USA, Canada and mare recently in the UK. With the reported piecemeal approach to the development of IT in hospitals and in ED in particular it is difficult to understand that how some hospitals are in a position to provide complete and accurate data on a weekly basis for the PMU report.

2.3 DATA QUALITY

High-quality data is defined as data that is fit for use by data consumers, meaning that usefulness and usability are important aspects of data quality (Strong et al., 1997). It should be intrinsically good, contextually appropriate for the task, clearly represented, and accessible to the data consumer (Wang and Strong, 1996). Four of the main dimensions of data quality are accuracy, consistency, timeliness and completeness (Ballou and Pazer, 1985). *Accuracy*: The content of ED data should be as near real-time as possible.

Timeliness: The data should be available to use, as soon as it is required and for the purpose it is required either clinical or administrative. *Completeness*: The data should contain a complete record for every patient and for every ED visit. *Consistency:* Multiple data from multiple sources should be consistent for example the format of such items as date and time. Although IT provides a means to improve data capture, accuracy, completeness and consistency, it cannot ensure high quality data alone. Training issues in relation to data capture and an understanding of the uses and benefits of good quality data need to be highlighted regardless of the method of data collection. Ensuring the quality of data through specific data quality indicators such as the source of the data, when and how the data was captured allow the user to judge the available data for the specific purpose it is required (Hlaing et al., 2006).

2.3.1 Data Capture

The ability of individual hospitals to quantify and provide data on ED activity is dependant on good quality, easily accessible and real-time information. Valid and reliable data acquisition has a strategic role to play in understanding ED processes. Poor quality data makes finding the solutions to issues, such as protracted waiting times and bed crises, much more difficult. One of most key elements in the quality of information available for the management and development of ED services is how the data is collected. Identifying methods of data collection (electronic or manual) in EDs and investigating information gaps are important steps in understanding how ED activity is recorded. This will assist in developing a standardised approach for measuring ED activity which would allow comparison between EDs of different sizes and capacities (Rowe et al., 2006). A study of Canadian ED data collection found that and national surveillance of ED activity was deficient: most provinces relied on low-quality retrospective data collection; less than half EDs could describe the population that left without being seen by a doctor; and the

presenting complaint was captured in less than 25% of provinces (Rowe et al., 2006). This study concluded that the wide variation in method of data capture and in the data collected presented serious barriers to meaningful comparison of ED across the country.

2.3.2 DATA STANDARDS

Data standards are defined as tools of considerable complexity that facilitate the storing, indexing, processing and sharing of information (Coonan, K.M., 2004). Key requirements for good quality health information are to have consistent definitions, coding and classification systems for the data items, ranging from the most objective and quantitative (e.g. attendance date and time, gender) to the more subjective and descriptive (e.g. symptoms). Standards are essential for clinical and administrative terminology, for example, a "new patient" and "return attendance" or 'waiting times' must each mean exactly the same thing in every hospital; otherwise comparisons of activity and acuity may be futile (DoHC, 2004). In the context of this project data standards refer to the definitions of the common ED terms e.g. triage and process elements e.g. admission time. The Health Information Strategy (2004) states that:

> *"The Health Information and Quality Authority (HIQA), in cooperation with health service agencies and others as appropriate, will be responsible for developing a framework for adopting and implementing data, technical and quality information standards and common indicators throughout the health sector. The standards will be decided on a priority basis by the Health Information and Quality Authority on the advice of standing committees of appropriate stakeholders appointed by the Authority. Wherever possible, international or pre-existing standards will be adopted. National and international expertise will be used so as to build upon the progress made in this area."*

2.3.3 INTERNATIONAL MINIMUM ED DATASETS

A review of international literature reveals common themes in similar difficulties in relation to data standards and quality. Australia, Canada, the USA and the UK have established frameworks to develop standardisation and definition of data elements collected for the performance measurement and service planning of ED Services and for the development of IT infrastructure to enhance the quality of the data collected (Kennedy et al. 2002; Grafstein et al. 2003; Stiell et al. 2003; National Health Data Committee, 2003; Tran 2003; Moller, 2004; Coogan, 2004; Welch et al. 2006).

To maintain and protect patient privacy, only the minimum data required for effective monitoring and analysis purposes are collected, hence the term "Minimum dataset". This minimum dataset collection provides information for epidemiological purposes, health service planning and coordination, policy assessment and formulation, clinical research, quality improvement and patient and ED management. Validated minimum datasets include:

- The Victoria Emergency Minimum Dataset (VEMD) , 1995 Australia,
- Data Elements for Emergency Department Systems (DEEDS), 2001, USA;
- Canadian Emergency Department Information System dataset 2004, (CEDIS) and
- Accident and Emergency Quarterly Monitoring Dataset 2005 (UK).

In the respective countries, these minimum datasets were created by consensus between physician, nursing, administrative and government health representatives and where relevant health insurance representatives were also included. Data collection for these minimum data sets is mandatory in so far as the IT infrastructure currently allows. Hospitals and health service authorities are required to develop IT strategies which, meet the data

requirements of the minimum datasets. Data collected includes patient demographic, clinical, administrative and financial details, each of these data elements conforming to a specified format. Where possible standardised data elements are included for example, triage categories, ICD-10 discharge diagnosis coding (modified for suitability to ED) or an equivalent agreed dataset.

Chief complaint (presenting complaint) datasets have also been developed in Australia, USA and Canada. As yet in Ireland, no agreed chief complaint or discharge diagnosis datasets have been developed or agreed. These would significantly enhance the triage category when determining ED acuity, and would be a significant factor when conducting clinical audit and for ensuring correct financial reimbursement. An American syndromic surveillance study by Beiger et al 2003, found that the chief complaint appeared better for the capture of illnesses for which nonspecific symptoms like fever are the most important features. Discharge diagnosis appeared better at tracking illnesses that could be identified after brief ED clinical evaluation and testing, such as sepsis and possible meningitis. The researchers suggested that when monitoring both types of illness, coding both data types were recommended. Again in relation to data standards the data is only as good as the data that is captured. One study showed wide variations in systems and personnel employed to enter data across the EDs surveyed. Factors that impacted on the quality of the data entered, included time constraints, software difficulties, knowledge of the purpose of data collection and lack of training. The study concluded that consideration should be given to appropriate staff training, education and feedback and the standardisation and improvement of existing software systems. (Marson et al, 2005).

Outlining the ED process shows where the opportunities for time specific or process specific data, either clinical or administrative, can be captured. From the reports which have been completed in relation to the provision of healthcare and ED services in Ireland it

is evident that (1) there is a lack of IT infrastructure in hospitals in general; (2) the quality of data available for underpinning and planning future ED services is poor and that (3) there is a need to agree the definitions for the performance indicators and standards to be achieved in order to benchmark current services nationally and internationally. Indeed international evidence suggests that a consensus approach between representatives from all stakeholders to developing and defining standards for ED provides a means for generating comparable data for performance management. IT software suppliers can use these standards to develop site and national specific products which simplify the capture of required data.

This study will provide a baseline of the levels of IT infrastructure in Ireland at present. It will also ascertain how much agreement there is between the various hospitals and the PMU in relation to data being currently collected. The following chapter outlines the methodology for the study.

CHAPTER 3 METHODOLOGY

Successive Irish reports into the provision of Irish healthcare and ED services have highlighted the poor quality of available data and the lack of IT infrastructure. The purpose of this research project is to determine how data is captured in Irish EDs and if there is a consensus between EDs in relation to the terms and definitions provided by the PMU template document. The study intends to determine if there is any evidence to show that the availability of IT improves the quality data collected for the PMU MDR.

A two pronged approach has been taken to this study. Firstly, a review of the weekly reports published by the PMU, created from information provided by the weekly template document (Appendix 1), to determine the completeness of these reports. Secondly a quantitative, purpose-designed survey of each hospital with all EDs is being undertaken.

3.1 Review of the Weekly Reports

The first part of the methodology for this study is to review 12 randomly selected, weekly PMU reports. The 12 PMU weekly reports were selected from weeks between January and June, 2008. Information forwarded to the PMU in the weekly MDR is presented in table format. The tables in the selected reports were converted from PDF documents to Microsoft Excel for analysis. The purpose of this review is to establish:

1. how many hospitals are currently submitting weekly ED data;
2. how complete each table is in each of the 12 reports; and
3. how complete the data is for each hospital;

This review will not analyse specific data details, rather that data is consistently provided to the PMU from each hospital. The results from the review of these reports will be cross referenced with corresponding responses from the survey to ascertain if and how data for each of the tables is collected in the hospitals.

3.2 THE SURVEY DEVELOPMENT PROCESS

The second part of this study has been undertaken by means of a survey of all 34 hospitals with EDs in the Republic of Ireland. The purpose of the survey was to ascertain the level of IT currently available in Irish ED; to determine if there is a consensus between the ED in Ireland on the definitions ad standards of data collected by the PMU and to ascertain if these concur with the definitions and standards set out by the PMU.

The research proposal and a draft survey questionnaire were initially discussed with the CEO and IT manager of a large Dublin teaching hospital to assess its political acceptability. A meeting was then held with the chairman of the PMU in the National Hospitals Office in November 2007. The PMU approved the project and agreed to facilitate the distribution and collection of the surveys to and from the CEOs or hospital managers.

In January 2008, the questionnaire was reviewed by a number of industry experts including clinical and non-clinical ED personnel, people experienced in performance data collection and assimilation and IT Personnel. The questionnaire was adjusted to reflect feedback received from these experts. As part of the consultations with the people involved in the meetings regarding this project a number of questions were added to the original draft. These included questions about standard definitions and how date and time stamps were captured.

Following these adjustments the survey was piloted to ensure that the questions were relevant, purposeful and comprehensible. Six people including two IT personnel involved in data management; two ED Nursing Managers; and two data quality managers both of whom are involved in correlating data for performance monitoring on an ongoing basis completed the pilot survey. A small number of adjustments were made to the questionnaire to aide the clarity and understanding of some questions. This included adding additional

answer choices to a number of questions and giving the option to provide an answer not included in the initial choice. The PMU approved the final version of the questionnaire for the survey (Appendix 4) which they received on 27th February 2008.

3.3 The Survey Questionnaire Design

The survey was initially created using *InstantSurvey.com,* an online survey creation tool which manages the distribution and collection of surveys. Due to the potentially sensitive nature of the information in the survey the PMU was unhappy with this survey method. The survey was then recreated in Microsoft Word and was forwarded to the PMU for distribution on February 27th 2008.

The survey questionnaire was structured to reflect the patient process through the ED. The questions in each section were based on how data is collected for the information returned weekly to the PMU and on the definitions or standards set by the PMU. A number of questions were also asked in relation to data definitions for information not collected by the PMU but relevant to clinical audit and comparability of data nationally and internationally and to determine the degree of IT integration in hospitals.

The questions in this study do not focus on specific clinical information although some administrative clinical information is collected weekly in the PMU document. The questionnaire was divided into five sections: general information; registration information; triage information; clinical assessment information; admission and bed management information and discharge information. A very brief statement of the aims of the survey is given at the beginning of the survey. There were no questions asked in the survey which would deliberately or accidently lead to discovery of the individual responder or the hospital. Along with an assurance of anonymity was a request for honest co-operation. The parts of the survey are outlined in brief below.

PART 1-GENERAL INFORMATION (11 QUESTIONS);

Question 1: in General information asks to which departments/units acute emergency patients attend. In some hospitals all emergency patients will attend the ED, in others there are specialised units or clinics have been set up to see emergency patients directly. This question is to ascertain if hospitals are including information on the same cohort of patients regardless if they attend the ED or a specialised unit or clinic.

Question 2: asks the number of new emergency patients attending the hospital per month. This is the number of patients who are attending the ED with a new complaint as opposed to the number of patients for whom this is the first visit to the hospital. This is to ascertain the volume of emergency activity each hospital and to determine if the hospitals with higher attendance volumes are better able to provide information.

Questions 3 to Question 8: ask whether there is a Patient administration system (PAS) available in the hospital, for how long and if this is used throughout the hospital. This is to determine if each hospital has a PAS system, if the system is used and if there is a manual alternative if the system is not used.

Question 9: asks if the ED has an EDIS to determine the level of sophistication of IT integration in EDs.

Question 10: asks what grades of staff in the hospital are aware that the information in sent weekly to the PMU.

Question 11: is a comment box where the respondent is invited to add any relevant comments about this section of the survey.

PART 2-REGISTRATION INFORMATION (10 QUESTIONS);

Question 1: asks how the registration information is collected. This will verify the question in the first section on the use of the PAS system. It also determines if a manual log is retained and indeed if both systems are used (efficiency!).

Question 2: if the attendance or registration time is recorded and how this is recorded, electronically manually or both.

Question 3: asks if there is a standardised method of registering patients throughout each unit of the hospital. This is to ensure that there is standard data collection at registration throughout the hospital. It will not establish that the data collected is standard between hospitals.

Questions 4 and 5: are asking the hospitals how they define "New" and "Return" patients this is to establish if there is consensus between hospitals on these definitions and if they are in agreement with the PMU definition of these terms.

Question 6: asks the hospital to state within what timeframe they consider a patient to be "Return".

Question 7: asks if "mode of arrival" data is collected in the hospital. (Nationally this is used to determine emergency ambulance usage among other things!) This question is also asked on the in the PMU document.

Questions 8 and 9: ask if registration data is submitted to the PMU. This is to establish how many hospitals are returning this information. Also if the hospitals are not returning information

Question 10: invites the participants to give any additional comments relevant to this section.

PART 3-TRIAGE INFORMATION (12 QUESTIONS);

Questions 1 2 and 3: asks how triage information is recorded, electronically or manually and if a manual log of patient triage details is maintained

Questions 4 5 and 6: ask if the ED use a validated triage system is used, which system and if this is a five level triage system.

Questions 7 8 and 9: ask if a chief complaint is recorded, if this is a standardised dataset and if yes is it internationally recognised and which dataset.

Questions 10 and 11 ask if triage information is submitted to the PMU and if not to give a reason.

Question 12 is a comment box.

PART 4-CLINICAL ASSESSMENT INFORMATION (16 QUESTIONS);

Questions 1and 2 ask if and how the time a patient is seen by the ED doctor or ANP is recorded and if a manual log of this is kept.

Question 3: asks if clinical information is recorded electronically

Questions 4 and 5: ask if radiology and laboratory tests can be ordered and their results viewed electronically

Questions 6 to 10 inclusive: ask if patients are referred to an in-house team is this recorded manually or electronically, the time of referral, if a manual log is kept and if the time seen by the in-house team is recorded.

Questions 11 12 and 13 ask if a discharge diagnosis is recorded, if this is an internationally recognised nomenclature and which system this is.

Questions 14 and 15 ask if the data is submitted to the PMU and if not to give a reason.

Question 16 is a comment box

PART 5-ADMISSION/DISCHARGE INFORMATION (14 QUESTIONS)

Questions 1 and 2 ask if the time a patient is discharged is recorded manually or electronically and if a log is kept of this.

Question 3 asks if the patient ED episode is closed when the patient is discharged.

Questions 4 and 5 ask if and how the time of decision to admit is recorded and if a manual log is kept.

Question 6 again asks if the ED patient episode is closed when the patient is admitted to the hospital.

Question 7 asks the participant to define at what stage a patient is considered admitted in their hospital.

Questions 8 to 11 inclusive ask if there is a bed management function available; if the times the bed is requested, allocated and the time the patient goes to the bed are recorded and if a manual log are maintained.

Questions 12 and 13: ask if the Admission/Discharge information is submitted to the PMU and if not for a reason.

Question 14: is a comment box.

In each section of the survey questions have been specifically asked to answer the research question and to achieve the aims of the study. These include:

The levels of integrated IT in Irish ED:

- Part 1: Questions 3, 4, 5, 7, 9;

- ◊ Part 2: Questions 1, 7;
- ◊ Part 3: Questions 1, 2, 7 and 8;
- ◊ Part 4: Questions 1, 3, 4, 5, 6, 7, 9 and 11;
- ◊ Part 5: Questions 1, 3, 4, 6, 8, 9, 10 and 11.

Is the data to complete the PMU MDR is being collected:

- ◊ Part1: Questions 1 and 6;
- ◊ Part2: Questions 1, 2, 3 and 7;
- ◊ Part 3: Question 1 and 2;
- ◊ Part 4: Questions 1, 6, 7, 8 and 9;
- ◊ Part 5: Questions 1, 2, 5, 9, 10 and 11.

Is the collected data in PMU MDR is being submitted:

- ◊ Part 1 None
- ◊ Part 2 Questions 8 and 9;
- ◊ Part 3 Questions 10 and 11;
- ◊ Part 4 Questions 14 and 15;
- ◊ Part 5 Questions 12 and 13.

The agreement between hospitals in relation to data standards and definitions

- ◊ Part 1 Question1
- ◊ Part 2 Questions 3, 4, 5 and 6;
- ◊ Part 3 Questions 4, 5, 6, 7, 8 and 9;
- ◊ Part 4 Questions 9, 11, 12 and 13;
- ◊ Part 5 Questions 3, 6 and 7.

The agreement between the PMU and hospitals in relation to the data standards and definitions:

- Part 1 Question1
- Part 2 Questions 4, 5 and 6;
- Part 3 Question 6.
- Part 4 none
- Part 5 Question 7

3.4 THE SURVEY DISTRIBUTION AND COLLECTION PROCESS

As the PMU were facilitating the distribution and collection of the surveys and the author had no direct contact with the participants of the survey and since the survey was not directly related to patient data, further ethical approval was not required. The anonymity of each individual participant and of the participating hospital was assured by the PMU removing all names and identifying information from the completed surveys. No individual person or individual hospital is identified in the final report.

No hospital ED was excluded from the survey. The survey was distributed by the PMU as an attachment by email to each of the participating hospital CEOs or managers by the PMU on 6th March, to be returned by 20th March 2008 (see Appendix 3). Although the CEO or hospital manager is generally not responsible for the collection of the data, he/she is in a position to confirm the hospitals definitions for the data elements with those responsible for the data collection in the ED. Every participant also received a cover letter describing the survey and the proposed aims of it. Return of the ED survey was on a voluntary basis. Contact details of the author were also given to be used if the participant had difficulties with the document or with specific questions. The design of the questionnaire is outlined in Section 4.4.

The responses to each section were collected and returned to the PMU. Any identifying information was removed from the correspondence and the surveys were then forwarded to the author, thus preserving the anonymity of each individual hospital. Participants were sent email reminders in the week prior to the closing date. The response rate up to April 15th was very poor; only 5 out of 34 were returned. In the following two weeks reminders were sent again to the participating hospitals yielding a further 6 responses. Reminders were sent weekly to participating hospitals throughout April and 4 further responses were received. On May 27th, the survey was resent specifically to the hospitals who had not responded, with a final deadline of June 10th, only one further questionnaire was returned. A total of 17 responses have been returned by the PMU. The results and analysis of the review of the weekly PMU reports and the ED information survey will be outlined in the following chapter.

CHAPTER 4: RESULTS

This chapter will initially outline the results of the review of the weekly PMU reports and the ED information survey. These results will then be analysed in the following chapter in relation to the research question and the overall aims of the project.

4.1 Review of the PMU weekly reports

For this study, data returns from 12 random weekly PMU reports from January 2008 to June 2008 were converted from PDF files to Excel spreadsheets to facilitate analysis. This review focused predominantly on tables 1,2,3,4 and 7 as these are specifically related to data captured in ED. Tables 5 and 6 profile in-patient data which were not included in the ED survey, however the hospitals ability to produce data for these tables will give an indication of the availability of IT throughout ED. The purpose of this review was to establish:

1. how many hospitals are currently submitting weekly ED data;
2. is complete data provided by each hospital for each table; and
3. is the MDR completed and submitted each week.

4.1.1 Table 1 General Attendance Information

Table 1 of the PMU weekly report presents a profile of the new and return attendances for the last week and the time profile of presentations to each ED across the 24 hour period.

A. Total weekly attendances.

The total number of attendances per week is provided by 27 hospitals (73%) for each of the 12 weeks examined. 3 hospitals (8%) have not provided this data for any of the 12 weeks.7 other hospitals (19%) provided incomplete data – 3 hospitals were missing 1 of the 12 weeks data; 3 hospitals were missing 2 of the 12 weeks data and 1 hospital was missing 3 of the 12 weeks data. A note at the bottom of Table 1 state that one hospital

produces monthly data only due to IT systems. A list of hospitals that have not provided data for the week is also provided at the end of Table 1.

B. TOTAL NEW ATTENDANCES

Total "new attendances" is defined by the PMU as the number of patients attending the ED either ***for the first time or as an unscheduled return*** (with a new episode number) broken down by time of attendance. This is recorded daily and in total. The total number of "New" attendances is provided for each of the 12 weeks by 27 hospitals (73%). 3 hospitals (8%) did not return this information for any of the 12 weeks. 7 hospitals (19%) have provided incomplete data- 3 hospitals were missing 1 of the 12 weeks information; 3 hospitals were missing 2 of the 12 weeks data and 1 hospital was missing 4 of the 12 weeks data.

C. TOTAL RETURN PATIENTS

This is defined by the PMU as the number of patients attending the ED as a ***scheduled*** re-attendance (should not include fracture clinics and dressing clinics) broken down by time of attendance. This is recorded daily and in total. The total return attendances per week were provided for each of the 12 weeks by 26 hospitals. 4 hospitals did not provide this data. 7 hospitals provided incomplete data- 3 hospitals were missing 1 of the 12 weeks data; 3 hospitals were missing 2 of the 12 weeks data 1 hospital was missing 4 of the 12 weeks data.

D. ATTENDANCES DIRECT TO WARD

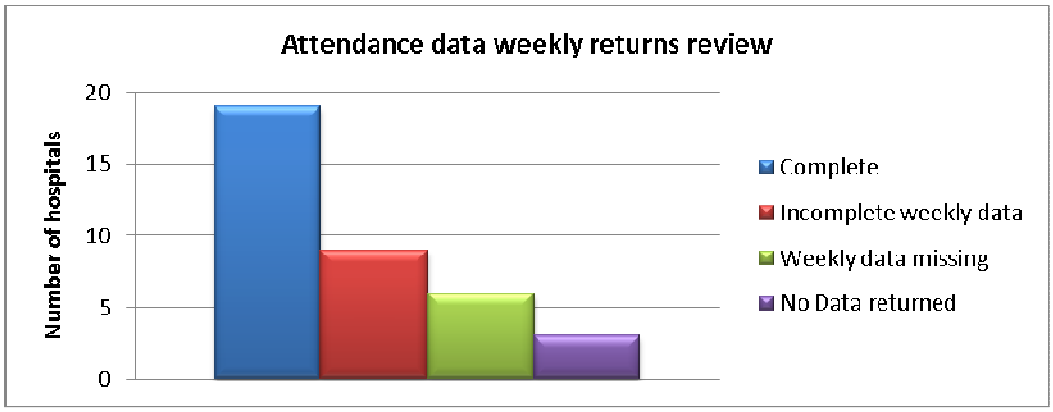
The number of patients who do not attend the ED, but who are referred by their GP directly to an in-house team, and seen either on a ward or in another area of the hospital ,other than OPD or MAU. The total number of emergency patients attending the wards directly is

provided by 7 hospitals for each of the 12 weeks. 24 hospitals did not provide this information. This may be due to a number of hospitals where all emergency patients attend ED only or ED and a medical assessment unit only. The report does not make clear which hospitals see emergency patients in wards other than ED. 6 hospitals provided incomplete data for between 1 and 11 weeks of the 12 reviewed.

E. Medical Assessment Unit Attendances

This is defined by the PMU as The number of patients who do not attend the ED, but who are referred by their GP directly to an in-house team, in the Medical Admissions Unit. The definition stated that this applies currently to four specific hospitals only one of which provided the data. This data was however provided by three other hospitals. 2 hospitals including the one listed by the PMU and another provided complete data for each of the 12 weeks. The data was provided for 6 of the 12 weeks by one hospital and by 7 of the 12 weeks by the remaining hospital.

The completeness of attendance data returned to the PMU in the MDR for Table 1 of the PMU Weekly report is outlined in Graph1.



GRAPH 1 REVIEW OF ATTENDANCE DATA TABLE 1

F. New attendance time-bands

New patient attendance time bands are divided into three groups: Day (08:00-16:00); Evening (16:00-00:00) and Night (00:00-08:00). 19 hospitals (51%) provide complete time band data for each of the 12 weeks examined. 9 hospitals (24%) did not provide this information. 9 hospitals (24%) provide incomplete data: 6 have not provided data for 1 or more weeks while the other 3 provide data weekly but consistently do not provide data for 1 or more of the time bands.

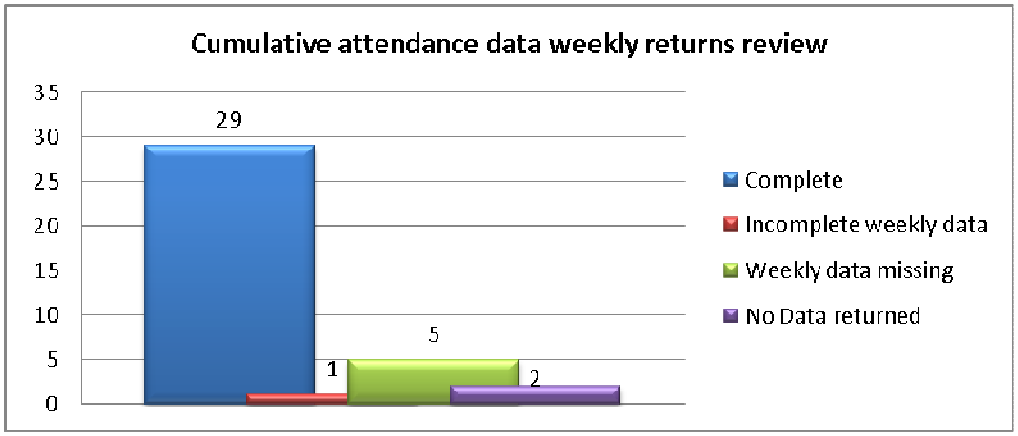
4.1.2 Cumulative New Attendance Information

Table 2 in the weekly PMU report gives an overview of the pattern of new attendances to each ED. This table presents an overview of the average run rate of new ED attendances during each quarter over the past 4-8 weeks. It presents: For reports from January 2008 to the beginning of April 2008, the average number per quarter, of new attendances each week to the ED for 2007 are shown in the first four columns. For reports from April onwards in 2008 the average number of new attendances the first quarter of 2008 is shown in the first column. The average attendance for each month(s) of the current quarter is shown in the subsequent columns, the actual number of new attendances each week to the ED for that month is given in the last columns.

The PMU report states that comparing the average run rates for each quarter with the present actual number of new ED attendances across hospitals allows a person to view the pattern of ED attendances in real time. However the term “new attendance” appears to apply to the ED only and does not include new attendances of emergency patients direct to ward or medical assessment units for hospitals where this applies.

The data in Table 2 is dependant on the new attendances data in Table 1 being complete and accurate. As previously outlined in 4.2.2 complete data is provided by 27 of the 37 hospitals for each of the 12 reports examined. 10 other hospitals have provided

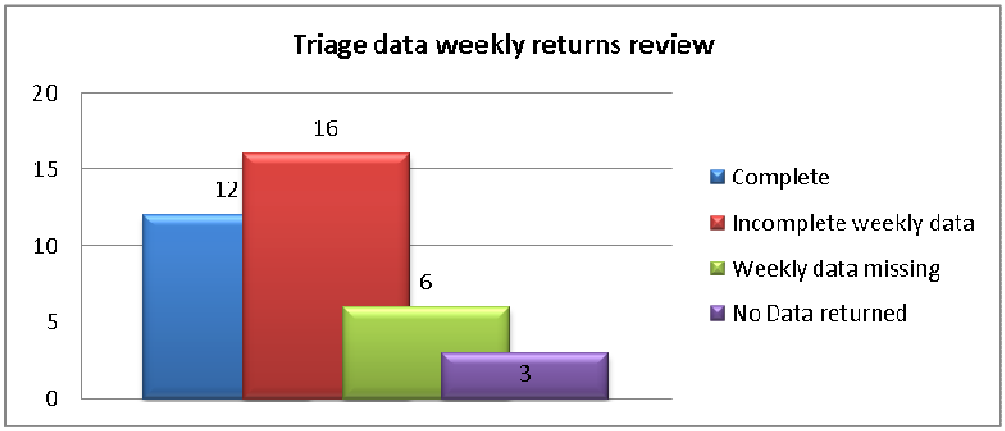
either partial or no attendance information for each of the 12 reports. The completeness of cumulative new attendance data returned to the PMU in the MDR for Table 2 of the PMU Weekly report is outlined in Graph 2.



GRAPH 2 CUMULATIVE ATTENDANCE DATA REVIEW TABLE 2

4.1.3 TRIAGE INFORMATION

Table 3 profiles the weekly number of attendances per triage category where this information is available. 3 hospitals (8%) did not return either attendance or triage information. 12 hospitals (32%) returned full data for each of the 12 weeks examined. 16 hospitals returned attendance numbers but did not return triage information on the attendances. 4 were missing 1 of the 12 weeks data; 1 was missing 2 weeks data; 1 was missing 4 of the 12 weeks data. The completeness of triage data returned to the PMU in the MDR for Table 3 of the PMU Weekly report is outlined in Graph 3.



GRAPH 3 TRIAGE DATA WEEKLY RETURNS REVIEW TABLE 3

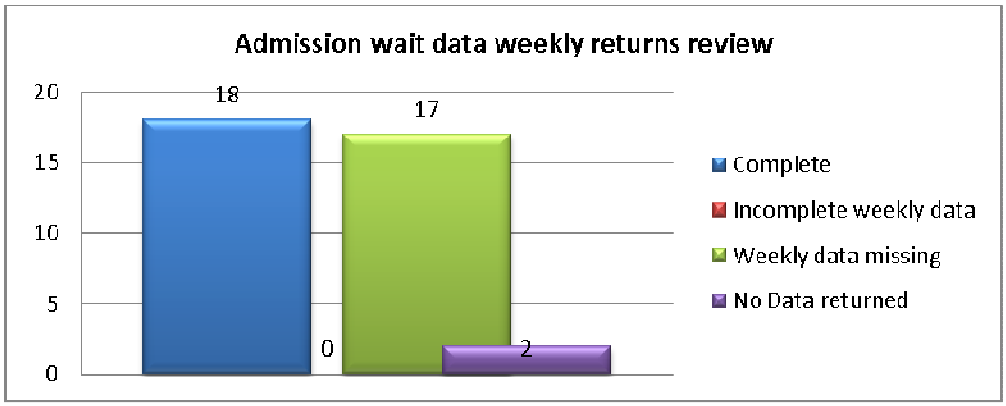
4.1.4 Admission Wait Information

Table 4 in the PMU weekly report outlines the profile of admission waits across hospitals nationally for the previous week. It outlines:

- ◊ The percentage of days in the previous week where a hospital had at least 1 person waiting over 12 or 24 hours (7 day period last week);
- ◊ The average number of persons per day waiting across all time categories (7 day period last week);
- ◊ The average number of persons per day waiting within each of the time categories (7 day period last week).

Of the 12 reports reviewed in this study 18 hospitals (49%) supplied admission wait information for each of the 12 weeks. 2 hospitals (5%) did not return data for this table. 17 hospitals (46%) provided partial admission wait information; 3 hospitals were missing 1 of the 12 weeks data; 4 hospitals were missing 2 weeks data; 2 hospitals were missing 3 weeks data; 3 hospitals were missing 4 weeks data; 3 hospitals were missing 5 weeks

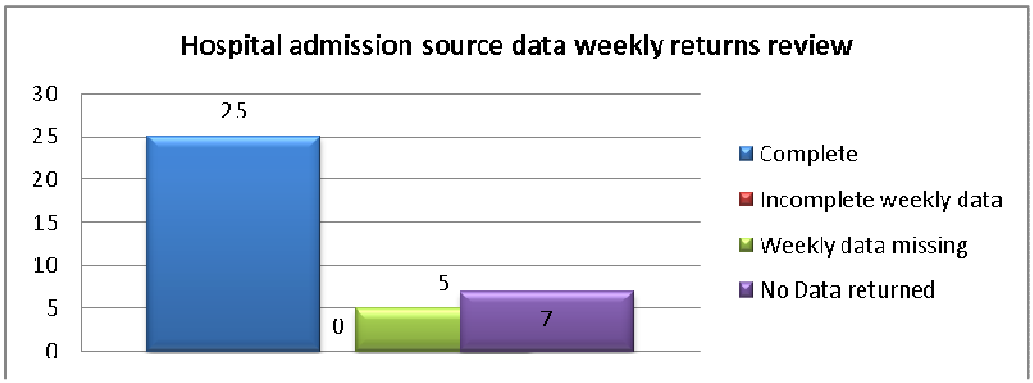
data; 2 hospitals were missing 9 weeks data. The completness of admission wait data in Table 4 of the PMU Weekly report is outlined in Graph 4.



GRAPH 4 ADMISSION WAIT DATA WEEKLY RETURNS REVIEW TABLE 4

4.1.5 Hospital Admission Source Profile

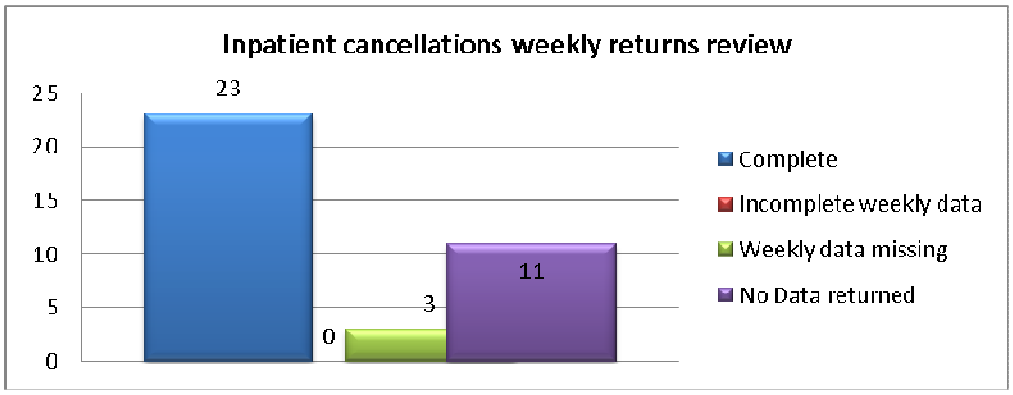
Table 5 profiles the source of all admissions into hospitals for the previous week. This information has been provided in full by 25 hospitals (68%) for each of the 12 weeks examined. This data for this table was not provided by 7 hospitals (19%). 7 hospitals (19%) provided incomplete data – 3 hospitals had 1 of the 12 weeks missing; 3 hospitals had 3 of the 12 weeks missing and 1 hospital had 11 of the 12 weeks missing. The completeness of hospital admission source for Table 5 of the PMU Weekly report is outlined in Graph 5.



GRAPH 5 HOSPITAL ADMISSION SOURCE DATA WEEKLY RETURNS REVIEW TABLE 5

4.1.6 IN-PATIENT CANCELLATIONS

Table 6 profiles the inpatient and day case cancellations. This information represents cancellations in relation to hospital resources as opposed to patient condition cancellations. 23 hospitals (62%) returned this data for each of the 12 weeks reviewed. 11 hospitals (30%) did not return this information. 3 hospitals (8%) returned incomplete data, with 1 hospital missing 2 of the 12 weeks information; 1 hospital missing 4 weeks information and 1 hospital missing 10 weeks information. The in-patient cancellation data for Table 6 of the PMU Weekly report is outlined in Graph 6.

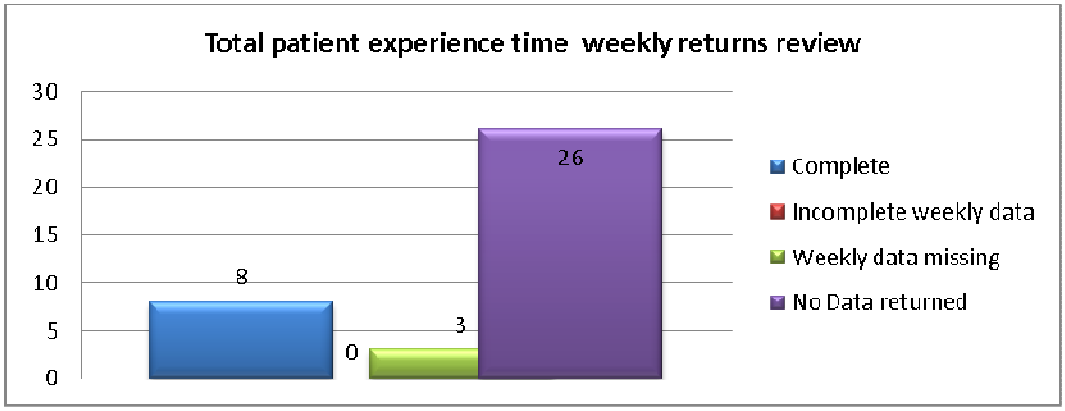


GRAPH 6 IN-PATINET CANCELLATIONS WEEKLY RETURNS REVIEW TABLE 6

4.1.7 TOTAL PATIENT EXPERIENCE TIME

Table 7 presents the average patient experience time. Patient experience time is the patient registration time to the ED discharge time. NHO policy states that a person is discharged from the ED upon being admitted to an admission lounge. The three categories are included in this table: All patients; Patients discharged from the ED who were subsequently admitted and Patients discharged from the ED who were not admitted.

In the review of the 12 weekly reports 23 hospitals did not return this information; 8 hospitals returned data for each of the 12 weeks. 3 hospitals returned incomplete data; 1 for 1 of the 12 weeks; 1 for 4 of the 12 weeks and 1 for 10 of the 12 weeks. The total patient experience time data returned to the PMU in the MDR for Table 7 of the PMU Weekly report is outlined in Graph 7.

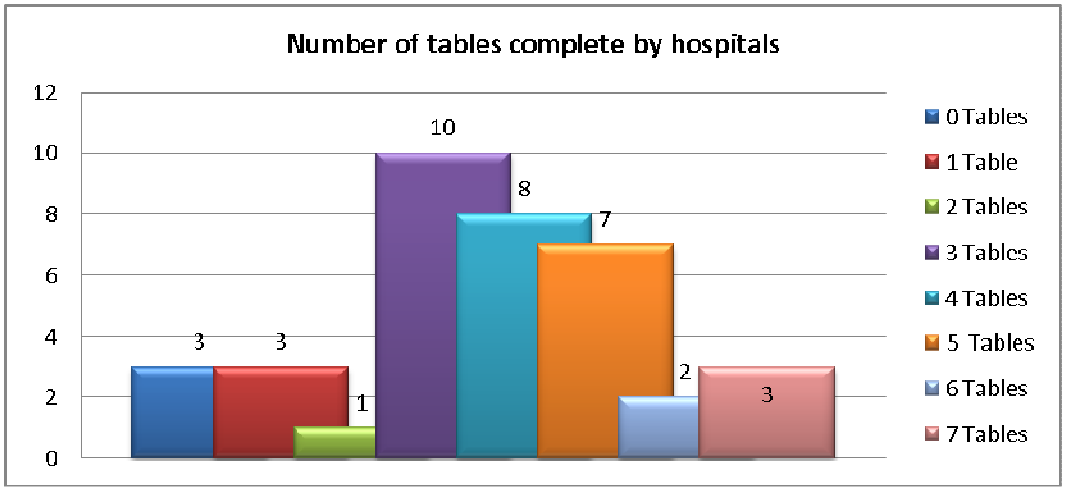


GRAPH 7 TOTAL PATIENT EXPERIENCE TIME WEEKLY RETURNS REVIEW TABLE 7

4.1.6 OVERVIEW OF PMU RETURNS

Hospitals submit information to the PMU on the weekly MDR. The PMU correlates the data and produces the combined information in table format. Each hospital is listed individually in each of the tables in the reports with the data submitted in the MDR for the week. A total of 37 hospitals are listed in the PMU weekly reports. Of the 12 weekly reports reviewed 3 hospitals (8%) did not submit data or submitted insufficient data to complete any of the

tables. 1 of these hospitals submits data on a monthly basis only, as noted at the end of each report. 3 hospitals (8%) submitted data to complete 1 Table only. These hospitals may submit other data but it is insufficient for the data requirements to complete the other tables. 1 hospital (3%) submitted complete data for 2 tables; 10 hospitals (27%) submitted complete data for 3 tables; 8 hospitals (22%) submitted complete data for 4 tables; 7 hospitals (19%) submitted complete data for 5 tables; 2 hospitals (5%) submitted complete data for 6 tables and 3 (8%) hospitals have submitted sufficient data to complete each of the 7 tables. This information is represented in Graph 8.



GRAPH 8 NUMBER OF TABLES COMPLETED BY HOSPITALS IN WEEKLY RETURNS REVIEW

To summarise; the main findings from the review of the 12 weekly PMU reports include:

- Only 3 hospitals of the 37 provided sufficient data to complete each of the 7 Tables in the reports for each of the 12 weeks.
- 73% of hospitals (27) returned complete number of attendance data and 51% of hospitals (19) returned complete attendance time band data for each of the 12 weeks for Table 1.
- 32% of hospitals (12) returned complete triage information data for Table 3 for each of the 12 reports examined.

- ◊ 49% of hospitals (18) provided complete admission wait information for Table 4.
- ◊ 22% of hospitals (8) provided complete total patient experience data for Table 7 and 70% of hospitals did not provide for this table.

4.2 ED Information Survey Results

The PMU facilitated the distribution of the ED information survey to each of the 37 hospitals listed in the weekly PMU reports. The purpose of the survey was to determine if hospitals had sufficient means by which to capture, correlate and return the MDR information to the PMU; to determine if there is consensus between hospitals in relation to data definitions and if there is a consensus between hospitals and the PMU in relation to the definitions set out by the PMU. The survey was divided into 5 sections: General Information; Attendance Information; Triage Information; Clinical Information; Admission/Discharge Information. A total of 17 (46%) of the 37 hospitals returned the ED completed surveys through the PMU. These 17 hospitals were from across the spectrum in terms of size and location and are representative of the varying PMU MDR compliance rates identified in 4.1.

4.2.1 General Information

This section consisted of 11 questions. In order to protect the anonymity of the participating hospitals no questions regarding the identity of either the individual hospital or the person completing the survey were asked.

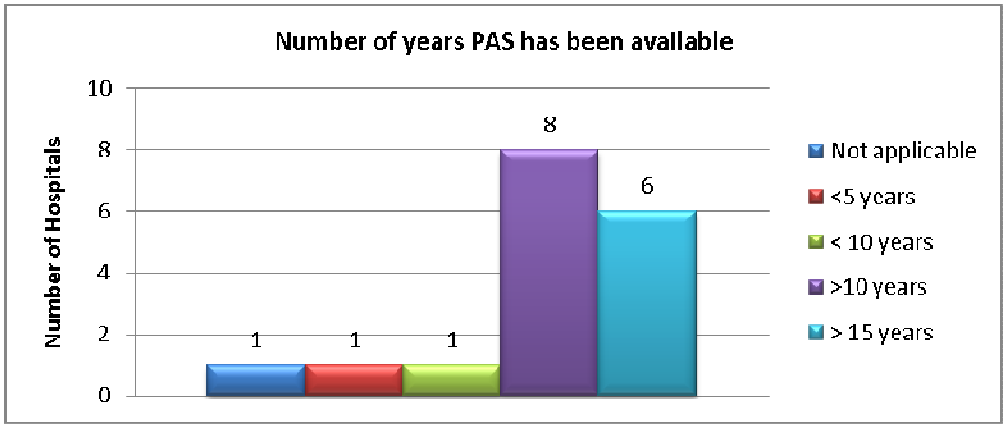
Question 1 asked which units or departments acute emergency patients attended in each participating hospital. 100% of respondents (17 hospitals) replied that emergency patients attended the hospital ED. 8 hospitals (47%) have an ED only. In 2 hospitals (12%) paediatric patients attend the paediatric ward directly; 2 hospitals (12%) use a Medical assessment Unit (MAU) where medical patients are assessed directly, 5 hospitals (29%) use Obstetrics and Gynaecology units; acute psychiatric units are used by 2 hospitals

(12%). A number of other units were stated including an ENT treatment room, general surgery and orthopaedic wards, direct referral to ward by GP, an emergency medical assessment ICU bed and same day OPD appointments to specialties given to patients.

QUESTION 2 asked hospitals to give the average number of "new" emergency patients, who attended each hospital per month in 2007. This shows that the 17 completed and returned surveys were from across the spectrum of hospital bands in the country. The range of hospitals was from 229 to 4772. Graph 8 shows the average number of new patients attending the responding hospitals per month in 2007.

QUESTION 3 asked if there a Patient Administration System (PAS) or Hospital Information System (HIS) in the hospital. For the purpose of this study PAS and HIS are interchangeable. Of the 17 responses 16 (94%) did have a PAS available and 1 (6%) responded that it did not have a PAS available.

QUESTION 4 asked if a PAS was available how long had it been installed in the hospital. 1 hospital (6%) did not have a PAS; in 1 hospital (6%) the PAS was installed less than 5 years ago and 1 hospital (6%) stated the PAS was available for between 5 and 10 years. 8 hospitals (47%) have PAS for greater than 10 years but less than 15 years and 6 hospitals (35%) have PAS for greater than 15 years. One hospital stated that PAS had been available for greater than 15 years but that it recently had a new PAS installed in September 2007. This data is outlined in Graph 9.



GRAPH 9 THE NUMBER OF YEARS PAS HAS BEEN AVAILABLE

QUESTION 5 asks if PAS is available in each unit where emergency patients attend. 13 hospitals (76%) responded that the PAS was available in each unit where emergency patients attend. 3 hospitals (18%) responded that the PAS was not available in each unit where emergency patients attend and 1 hospital (6%) responded that the PAS was available but it was not used in ED.

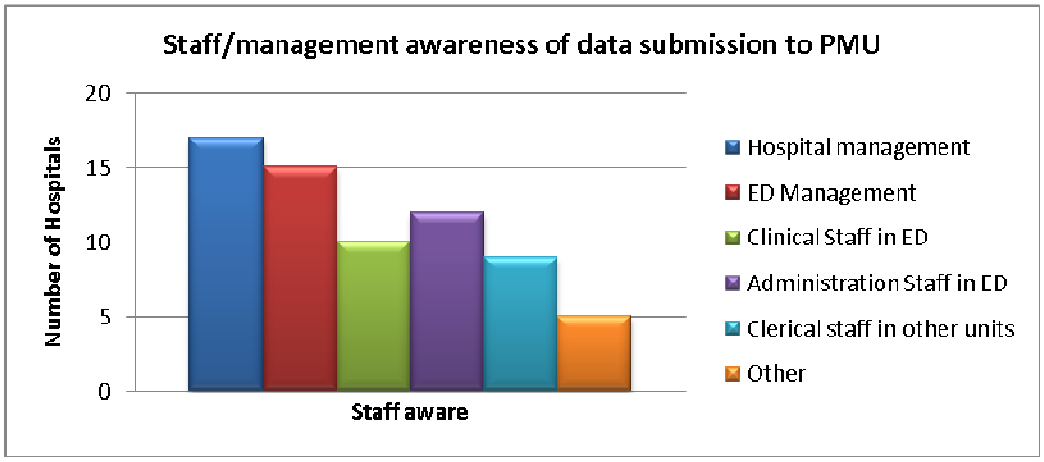
QUESTION 6 asks if the PAS is used to collect patient data. 15 hospitals (88%) responded that PAS was used to collect patient data; 2 hospitals (12%) stated that it was not used to collect patient data. One hospital stated that the PAS was used to collect demographic and attendance data only, another hospital stated that some of this data was collect manually.

QUESTION 7 asked if the PAS had an ED module. This question was not applicable to 1 participant. 4 hospitals (24%) did not have an ED module. 9 hospitals (53%) responded that their PAS had an ED module. One of which stated that this was not used to collect clinical data and another stated that the ED module was introduced in February 2008. 1 hospital (6%) stated that the ED module was used for triage only; 1 hospital (6%) stated that the data was "recorded on HIS and integrated with ED system"; and 1 hospital (6%) stated that they used IMS Maxims IT system with a bi-directional interface to PAS.

QUESTION 8 asked if the PAS was not available in their hospital was a manual patient attendance log maintained in each unit where emergency patients attended. 8 hospitals (47%) responded that this was not applicable as the PAS was available. 7 hospitals (41%) stated that they did keep a manual attendance log. Both hospitals who did not use PAS to collect patient data (Question 6) stated that they do maintain a manual register. 2 of the 3 hospitals who did not have and ED module also maintained a manual record. 2 hospitals (12%) stated that a manual register was maintained along with the PAS data.

QUESTION 9 asked if an Emergency Department Information System (EDIS) was integrated in the hospital. 14 hospitals (82%) stated that they did not have an EDIS while 3 hospitals (18%) stated that they did have an EDIS. However, an examination of all the responses to the ED survey for these hospitals reveals that the EDIS in these hospitals are not fully integrated with one or more IT component in the ED process.

QUESTION 10 asked which staff in the ED or units where emergency patients attend were aware that performance indicator information is sent weekly to the PMU. These included Hospital management; ED management; Clinical staff in ED; Administration staff in ED; Clerical staff in other units or others to be specified. All participants (100%) stated that the hospital management was aware that the information was sent to the PMU. 15 hospitals (88%) stated that the ED management was aware of this. Other staff to be specified included admissions and information services staff; nurse managers; bed management staff; Director of nursing and other administration.



GRAPH 8 STAFF/ MANAGEMENT AWARENESS OF DATA SUBMISSION TO PMU

GENERAL INFORMATION COMMENT Participants were asked to state any additional information about their unit(s) or facilities which would enhance data collection for the PMU. Two comments were returned firstly: "a *module for ED that allows the capture of clinical information; system for scanning ED cards*" and "*an IT Solution with appropriate inputting staff in ED*."

4.2.2 ATTENDANCE/REGISTRATION INFORMATION

QUESTION 1 asked how patient attendance data is collected. 2 hospitals (12%) responded that attendance data was collected manually; 8 hospitals (47%) stated that data was collected electronically and 7 (41%) hospitals stated that both methods were used to collect this information.

QUESTION 2 asks if the time the patient attends/registers recorded. 3 hospitals (18%) stated the time was recorded manually. 13 hospitals (77%) stated that the time recorded electronically on the IT system. 1 (6%) hospital stated that it recorded the registration/attendance time both manually and electronically.

QUESTION 3 asks if there is a standardised method of collecting patient registration/attendance data throughout your hospital. 16 hospitals (94%) stated they had a

standardised method of collecting registration/attendance data throughout their hospital. 1 (6%) hospital stated it did not have a standardised method of collecting this data throughout the hospital.

QUESTION 4 asks how a "New" patient is defined. The PMU define a new patient as attending the Emergency Department either ***for the first time or as an unscheduled return***. 3 (18%) hospitals defined a new patient as any patient who attends the hospital as an emergency (new or return); 10 (59%) hospitals defined a new patient as any patient who attends as an emergency with a "new" complaint only and 4 (23%) hospitals defined new patients as all patients except those scheduled to return to a specific ED clinic (in accordance with the PMU). No hospital provided a different definition of a "new" patient.

QUESTION 5 asked the hospitals how they defined a "Return" patient. The PMU define a return patient as attending the ED as a ***scheduled re-attendance.*** 5 hospitals (29%) defined a return patient as any patient who returns within a specified period of time with the same complaint. 4 hospitals (23%) defined a return patient as any patient who returns to attend an appointment for a specific ED Clinic e.g. dressing/Review (in accordance with the PMU). 7 hospitals (41%) defined a return patient as both the above definitions and 1 other hospital (6%) stated that all patients are recorded as "new."

QUESTION 6 asks if a return patient is defined as one who returns within a specified period of time to please state what that period of time. 4 hospitals (24%) replied "not applicable"; 2 hospitals (12%) stated the time period was within 1 week; 4 hospitals (24%) replied that the time period was within 1 month. 5 hospitals provided different time frames: 2 hospitals (12%) stated the return time period was 6 months and 3 hospitals (18%) had no specific time frame for return patients.

QUESTION 7 asks if "mode of arrival" data is recorded. 16 hospitals (94%) stated they did collect mode of arrival data. 1 hospital (6%) stated it did not record mode of arrival data.

QUESTION 8 asks if the patient attendance information collected is submitted to the PMU i.e. the number of "New" and "Return" patient attendances between specific time periods; ED, MAU, other emergency patients and "mode of arrival" information; as per weekly PMU MDR. 15 hospitals (88%) stated they did submit this information, 2 hospitals (12%) stated they did not submit this information.

QUESTION 9 asks each hospital to indicate from which units the emergency patient information is submitted to the HSE. 16 hospitals stated the ED. 1 hospital (6%) stated the information came from General Management. Of the 16 hospitals 1 hospital (6%) stated the information from the acute psychiatry unit was also included; 2 hospitals (12%) submit MAU data along with the ED data and another stated the information on their ICU Medical assessment bed was submitted. 1 hospital (6%) stated the information form the obstetrics and Gynaecology acute unit was submitted. Finally two hospitals (12%) also stated that all information on emergency patients who attend wards or units outside the ED is submitted to the PMU.

GENERAL ATTENDANCE INFORMATION COMMENT Three hospitals made a general comment that the data is correlated by the statistics office or Information services department and submitted to the PMU.

4.2.3 TRIAGE INFORMATION

QUESTION 1 asks if the triage time is recorded. Of the 17 hospitals 1 hospital (6%) did not answer this question, 1 (6%) hospital stated that the triage time was not recorded. 7 hospitals (41%) record the triage time manually. 5 hospitals (29%) record the triage time

electronically and 3 hospitals (18%) responded that they recorded the triage time both electronically and manually on the ED card. Triage time is not requested in the PMU MDR.

QUESTION 2 asks how triage details are recorded. As with Question 1, 1 hospital (6%) did not answer this question and 1 (6%) hospital stated that the triage details were not recorded. 8 hospitals (47%) record the triage details manually, 5 hospitals (29%) record the Triage details electronically and 2 hospitals (12%) record the triage details both electronically and manually.

QUESTION 3 asks if PAS is unavailable is there a manual record of triage details kept. For 3 hospitals (18%) this question was not applicable. 1 hospital (6%) did not answer the question. 6 hospitals (35%) do not keep a manual record of triage details. 6 hospitals (36%) stated that a manual record of triage details was maintained and 1 hospital (6%) stated that the triage details were recorded in the ED notes only.

QUESTION 4 asks if a validated triage system is used by staff in the ED. 4 hospitals (29%) answered that they do not use a validated triage system. 13 hospitals (76%) stated that they did use a validated triage system.

QUESTION 5 asks which validated triage system is used if applicable. For 3 hospitals (18%) this question was not applicable. 2 hospitals (12%) stated the Australasian was used, 11 hospitals (65%) use the Manchester triage system and 1 hospital (6%) stated it used a modified Manchester triage system.

QUESTION 6 asked if the triage system used was a 5 scale triage system. For 2 hospitals (18%) this question was not applicable. 1 hospital (6%) stated that their system was not a 5 scale system. The vast majority of respondents, (13 (76%)) used the Manchester Triage system or Australasian Triage system, these triage systems both have 5 scales and responded to this question accordingly. The hospital which stated that its system did not

have 5 scales uses a modified Manchester triage system in that they have reduced the system to 3 scales. Patients are triaged by the nurse prior to being registered and are allocated one of the three categories depending on the severity of condition of the patient. The scales are RED: Urgent; yellow: <20 Minutes and Green: <1 hour to identify the patient problem. The Manchester triage system has been validated as a 5 scale system not a three scale system. The PMU collects triage information in relation to the number of patients who attend per triage category per week.

Question 7 asked if a chief complaint is recorded for each patient. 1 hospital (6%) did not answer the question. 1 hospital (6%) does not record a chief complaint. 15 hospitals (88%) do record a chief complaint for each patient. Again this data is not required for the MDR.

Question 8 asked if a standardised chief complaint data set was used. 2 hospital (12%) did not answer the question. 1 hospital (6%) did not use a standardised chief complaint dataset. 2 hospitals (6%) use free text to record the chief complaint. 9 hospitals use the chief complaint dataset provided by the Triage system, 3 hospitals use a locally developed chief complaint recorded on the IT system.

QUESTION 9 asked if any hospital responded to the previous question that an internationally recognised chief complaint data set was used, which data set was this. No hospital stated that an internationally recognised Chief complaint dataset was being used.

QUESTION 10 asked if triage information was submitted to the PMU: that is the number of patient attendances per triage category per week. 7 hospitals (41%) stated that their hospitals did not submit triage information to the PMU. 10 hospitals (59%) responded that they do submit this information.

QUESTION 11 asked the hospitals who did not submit the triage information to give a reason for this. The comments included: that the data "*was recorded manually with no facility to record this electronically"*

"Data is not collected in real-time Mon-Thurs as A&E does not have clerical cover 24/7"

2 hospitals stated that they were small EDs with no triage system in place. 3 hospitals stated that the data was not available electronically to the person(s) submitting the information to the PMU. Only one comment was given **triage Information comment**:

"It would be useful for recording purposes to record triage information onto an IT system if resources were available to do this"

4.2.4 CLINICAL INFORMATION

QUESTION 1 asked if the time the patient is seen by the ED Doctor or Advanced Nurse Practitioner (ANP) recorded. 4 hospitals (23%) stated that they did not record this time. 7 hospitals (41%) record the clinical assessment time on the ED notes. 1 hospital (6%) stated that the time could be recorded electronically but this was not always done. 5 hospitals (29%) recorded the time seen by doctor or ANP both manually and electronically.

QUESTION 2 asked if the the time seen by doctor or ANP is recorded in a manual log if the hospital does not have an IT system. 7 hospitals (41%) stated that the question was not applicable as they recorded the time either electronically or both electronically and manually on the ED notes. 6 hospitals (35%) stated that the a manual log is not maintained. 4 hospitals (24%) stated they did maintain amanual record of this time.

QUESTION 3 asked if the clinical notes are recorded on an IT system. 15 hospitals (88%) stated that they did not record clinical notes. 1 (6%) hospital stated that it does record

clinical notes on an IT system and 1 (6%) hospital stated it recorded some clinical notes on the IT system.

QUESTION 4 asks if patient tests are ordered on an IT system (including radiology and technology etc.). 12 hospitals (71%) stated that they did not order patient tests on an IT system. 1 hospital (6%) stated it ordered radiology tests only on an IT system. 4 hospitals (24%) responded that it ordered all tests on an IT system.

QUESTION 5 asks if patient test results are available on an IT system. 1 hospital (6%) stated that that tests results were not available on an IT system. 12 hospitals (71%) stated that the results were available on an IT system. 5 hospitals (29%) stated that only laboratory results were available on the IT system.

QUESTION 6 asked if the patient was referred to an in-house team was this recorded. 13 hospitals (76%) recorded this on the ED notes. 4 hospitals (24%) recorded this both manually and electronically.

QUESTION 7 asked if the time the patient was referred was recorded. 2 hospitals (12%) responded that they did not record this time. 11 (65%) hospitals stated the referral time is recorded in the ED notes. 1 hospital (6%) records this time electronically. 3 hospitals (18%) record this time both manually in the ED notes and electronically.

QUESTION 8 asked if this time was not recorded electronically was a manual log of this time maintained. 5 hospitals (29%) responded that this question was not applicable. 10 hospitals (59%) do not keep a manual log record of the referral time. 2 hospitals (12%) responded that they did maintain a manual log of this time.

QUESTION 9 asked if the time a patient was seen by the in-house team was recorded. 3 hospitals (18%) responded that they did not record this time. 13 hospitals (76%)

responded that they recorded this time in the clinical notes. 1 hospitals (6%) response was that the recording of this time depended on the in-house team.

QUESTION 10 asked if this time was not recorded on an IT system was a manual log maintained. 2 hospitals (12%) responded that this question was not applicable. 14 hospitals (82%) do not maintain a manual log of this time. 1 hospital (6%) stated that it did maintain a manual log.

QUESTION 11 asks if the patients discharge diagnosis is recorded. 14 hospitals (82%) stated that this was recorded ion the ED notes. 3 hospitals (18%) record the discharge diagnosis both manually on the ED notes and on an IT system.

QUESTION 12 asks if an internationally recognised discharge coding nomenclature for ED emergency patients used. 1 hospital (6%) did not answer this question. 14 hospitals (82%) responded that they did not use an internationally recognised discharge coding nomenclature. 2 hospitals (12%) did state they do use an internationally recognised discharge coding nomenclature however in the following **QUESTION (13)** which asks which discharge coding nomenclature is used neither hospital provided the name.

Question 14 asks if the clinical assessment information is submitted to the PMU. This includes the total number of patients referred to an in-house team and the number of patients referred and seen by an in-house team within 60 minutes. 1 hospital (6%) did not answer this question. 13 hospitals (76%) do not submit this information, 1 hospital (6%) does submit this information. 3 hospitals (18%) submit partial information that is the number of patients referred to an in house team is submitted but the number of patients seen within 60 minutes of referral is not submitted.

Question 15 asked for a reason if that data is not submitted. 5 hospitals (29%) did not give a reason. 4 hospitals (24%) stated that the data is not available electronically. Other reasons for not submitting the clinical information include:

> *"Information is not collected in real-time No 24/7 clerical cover to input and capture information" and*
>
> *"Labour intensive; staffing issues and manual systems"*

CLINICAL INFORMATION COMMENT Two comments were made in this section:

> *"A Clinical information system has been repeatedly requested by the ED team"* and
>
> *"A log of patient presenting complaints is recorded manually in order to provide a backup and to inform the clerical staff that the patient was seen, did not wait and what the outcome was i.e. That is discharged or admitted. All other notes are recorded in the clinical chart".*

4.2.5 ADMISSION/DISCHARGE INFORMATION

QUESTION 1 asked if the time the patient is discharged from the ED recorded. 5 hospitals (29%) stated the discharge time is recorded in the ED notes. 1 hospital (6%) responded that this is recorded on an IT system. 10 hospitals (59%) stated the discharge time is recorded both on the ED notes and electronically. 1 hospital (6%) answered that the time recorded was *"not the real discharge time."*

QUESTION 2 asked if the discharge time is recorded in a manual log if an IT system is not available. 10 hospitals (59%) stated that this question was not applicable. 3 hospitals (18%) do not retain a manual log. 3 hospitals (18%) state that they do maintain a manual log of the discharge time.

QUESTION 3 asks if the ED episode is closed on the PAS when the patient is discharged home. 1 hospital (6%) did not answer the question. 3 hospitals (18%) do not close the ED episode when the patient is discharged home. 9 hospitals (53%) stated that they do close the ED episode at discharge. 2 hospitals (12%) answered that PAS was not used in ED. The final hospital stated that *"IMS Maxims, not PAS is used in the ED and the Bi-directional does not include ED episodes yet".*

QUESTION 4 asks if the decision to admit time is recorded. 4 hospitals (24%) do not record the decision to admit time. 5 hospitals (29%) record the time manually. 1 hospital (6%) records this on their IT system. 3 hospitals (18%) record the data both manually and on the IT system. 4 hospitals (24%) have other manual recording methods. 2 hospitals (12%) use admission record books in which the time is recorded. 1 hospital (6%) records this in the "Manual Nurses Book" and 1 hospital (6%) records the time in "the ED Diary".

QUESTION 5 asked if the decision to admit time was not recorded in the PAS was this recorded in a manual log. 1 (6%) hospital did not answer the question and it was not applicable to 5 hospitals (29%). 4 hospitals (24%) do not keep a manual log of this time. 6 hospitals (35%) responded that they do keep a manual log of this time and one hospital responded "other" but did not provide a clarification of the response.

Question 6 asks if the patient ED episode is closed if the patient is admitted to hospital. 1 (6%) hospital did not answer this question. In 3 (18%) hospitals this was not applicable as PAS was not used and 1 hospital uses IMS Maxims with a bidirectional interface. 12 (71%) hospitals do close the ED episode when patients are admitted.

QUESTION 7 asked each hospital at what stage a patient is considered admitted. The PMU have not provided a definitive definition or standard for when a patient should be considered admitted. 9 hospitals (53 %) replied when the patient is seen by in-house team

and decision to admit is made; 2 hospitals (12%) stated when the patient is referred to and accepted by the in-house team; 2 hospitals (12%) stated when an in-house bed is available and allocated to the patient; 2 hospitals (12%) stated when the patient is physically transported from the ED to the in-house bed; 1 hospital stated when ED informs Admissions unit that a decision to admit has been made with the relevant team and 1 hospital replied that medical patients were considered admitted when referred to and accepted by the medical team on call; surgical and cardiology patients are considered admitted when seen by team and a decision to admit is made.

QUESTION 8 asked if there is a bed management function available on the IT system in each hospital. 11 hospitals (65%) replied that they did not have a bed management function on their IT system; 4 hospitals (24%) do have a bed management function on their IT system. 1 hospital (6%) replied that the IT system does have a bed management function but this was not in use and 1 hospital (6%) replied that the *"bed waiting and bed available are manually inputted by staff"*

QUESTION 9 asked if the time the bed was requested for a patient was recorded. 5 hospitals (29%) replied no; 8 hospitals (47%) replied that the time was recorded manually; 2 (12%) replied that the time was recorded on the IT system and 2 (12) replied that the time the bed was requested was recorded both manually and on the IT system.

QUESTION 10 asked if the time the patient's bed is allocated on the ward is recorded. 9 hospitals (53%) replied no the time was not recorded. 5 hospitals (29%) replied that this time was recorded manually 1 of which stated that this time was only recorded manually during office hours. 1 hospital (6%) recorded the time on an IT system and 1 hospital (6%) recorded the time both manually and on the IT system.

QUESTION 11 asked if the time a patient is transferred for the ED/MAU to the ward recorded. 4 hospitals (24%) responded that they did not record this time. 6 hospitals (35%) record this time manually; 3 hospitals (18%) record this time on an IT system and 4 hospitals (24%) record the time both manually and on the IT system.

QUESTION 12 asked if the admission/discharge information was submitted to the PMU. This data includes the total time for all attendances; the number of attendances subsequently admitted; the total time in ED as per weekly PMU MDR. 6 hospitals (35%) do not submit this data to the PMU; 10 hospitals (59%) do submit the data, and 1 hospital (6%) replied that "*only the number of attendances subsequently admitted is submitted"*

QUESTION 13 asked for the reason the data was not submitted to the PMU if this applied. 2 hospitals (12%) gave no reason; 1 hospital (6%) replied that the data was not available electronically; 1 (6%) replied the data was not readily available and 1 (6%) replied that there is a *"lack of timely accurate information and a lack of use of the IT system".*

There were no additional admission/discharge comments given by any of the respondents to the survey.

4.3.2 OVERVIEW OF THE SURVEY RESULTS

A total of 37 hospitals were forwarded the Emergency Department Information Survey by the PMU. 17 hospitals (46%) returned the survey. Of this 17; 10 survey questionnaires were complete and 7 hospitals left 1 or more questions unanswered. The data submitted each week in the MDR contains more information than that used to complete each of the tables in the weekly PMU reports. The ED information survey sent to each hospital assesses their individual ability to return the MDR information including both the information in the published tables and information not published. The main findings from the survey include:

- ◊ 8 hospitals (47%) use and ED only for emergency patients;
- ◊ The responses came from across the spectrum of hospital bands.
- ◊ 16 of the 17 hospitals have a PAS/HIS; of these 8 are greater than 10 years old and a further 6 are greater than 15 years old.
- ◊ 13 hospitals (76%) responded that the PAS/HIS was available in each unit where emergency patients attend.
- ◊ 9 hospitals (53%) had an ED module on PAS.
- ◊ 73% of hospitals responded that they do not have an EDIS.
- ◊ All hospital management and 88% of ED management are aware that MDR data is sent to the PMU.
- ◊ 88% (15) of hospitals collect attendance data electronically
- ◊ 14 hospitals (82%) record the attendance time on an IT system.
- ◊ 94% of hospitals have a standardised method of attendance data collection.
- ◊ 23% of the respondents (4) agreed with the PMU definition of a "new" patient as attending the ED either ***for the first time or as an unscheduled return*** or as all patients except those scheduled to return to a specific ED clinic (in accordance with the PMU).
- ◊ 23% of the respondents also agreed with the PMU definition of a return patient as attending the ED as a ***scheduled re-attendance.*** These two points will be discussed in the following chapter.
- ◊ 94% of hospitals collect mode of arrival data
- ◊ 15 hospitals (88%) of respondents submit mode of arrival data to the PMU
- ◊ 8 hospitals (47%) responded that they recorded triage time and 7 hospitals (47%) recorded the triage details electronically

- ◊ 13 hospitals (76%) use a validated triage system 11 use the Manchester triage system and 2 use the Australasian Triage system (1 hospital had created a 3 scale system but regularly returned this data to the PMU).
- ◊ 59% (10) hospitals submit triage information to the PMU.
- ◊ 5 hospitals (29%) record the time the patient is seen by the ED doctor or ANP on an IT system.
- ◊ 2 hospitals (12%) can record clinical information on their IT systems
- ◊ 24% (4) hospitals order patient diagnostic tests on their IT systems and 71% (12) receive the test results on the IT system.
- ◊ 4 hospitals (24%) record that a patient is referred to an in-house team and the time that patient is referred on their IT systems.
- ◊ No respondents to the survey record the time the patient is seen by the in-house team electronically.
- ◊ 14 hospitals (82%) do not use a discharge diagnosis nomenclature (2 hospitals responded that they do but did not name the nomenclature)
- ◊ 13 hospitals do not submit the clinical referral data to the PMU, 1 hospital does submit full data and 3 further hospitals provide partial data to the PMU.
- ◊ 11 hospitals (65%) record the discharge time electronically.
- ◊ 4 hospitals record the decision to admit time on their IT systems.
- ◊ 11 hospitals (65%) do not have an electronic bed management system
- ◊ 4 hospitals (24%) electronically record the time the bed is requested; 2 hospitals (12%) record the time the bed is allocated and 7 hospitals (41%) record the time the patient is transferred to the bed on their IT systems.
- ◊ 10 hospitals (59%) submit admission/discharge information to the PMU.

The following chapter will discuss the findings of the review of the weekly PMU reports and the ED information survey in terms of the aims of the study and the research question.

CHAPTER 5: ANALYSIS

This chapter will analyse and discuss the results of the review of the 12 weekly PMU reports and the results of the ED information survey to which there were 17 respondents. It will outline how the main findings of the PMU weekly report review and the ED information survey relate to the aims of the project. This will ascertain if the research question has been answered and if the aims of the research have been achieved. This will help determine what further research is needed in this area and will highlight any limitations of the research project. The research question for this study is: Does the availability of IT affect data capture and data quality in Irish Emergency Departments: are we comparing like with like?

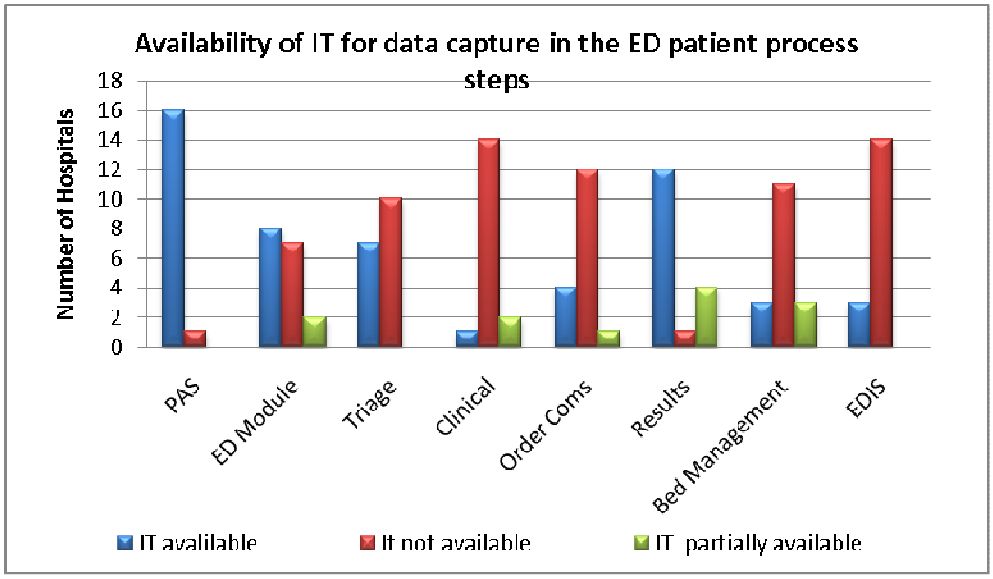
The aims of this study are:

- ◊ To establish the level of IT integration in Irish EDs
- ◊ To establish if the data for the weekly PMU MDR is being captured and submitted to the PMU.
- ◊ To determine if there is a consensus between the EDs in Ireland on the definitions and standards of data collected the PMU weekly template data collection document and if these concur with the definitions and standards set out by the PMU.

5.1 THE LEVEL OF IT INTEGRATION IN IRISH ED.

The first aim of this study is to determine the levels of IT integration in EDs in Ireland. As stated in the introduction successive reports into hospital and ED services particularly outlined that IT integration in hospitals in Ireland was poor. This has lead to inadequate and poor quality real time data for the organisation and management of current services. To date no report has determined what IT if any is available in ED to support data capture and data management. In the ED survey questions were asked to ascertain what if any

additional IT has been integrated in EDs. Graph 10 below shows the availability of IT for capturing relevant data throughout the patient episode in ED.



GRAPH 9 AVAILABILITY OF IT FOR DATA CAPTURE THROUGHOUT ED PATIENT EPISODE (N=17)

This graph shows that while PAS is available in most hospitals the system for 82% (14) respondents is greater than 10 years old. 15 hospitals in the survey use PAS to collect patient data. PAS systems have generally functioned beyond their initial specifications for many years. However, modifications and integration of additional modules or software products has often proven very difficult.

10 hospitals (59%) in the ED information survey stated that they have an ED module on PAS, 5 (29%) are using this module to collect triage data. Of the 7 hospitals (41%) that do not have an ED module, 2 (12%) collect triage information using specific stand alone IT triage software packages.

Only 3 hospitals (18%) who responded to the ED survey have the technology to capture full or partial clinical information on IT. Clinical information includes both the documentation of clinical notes and the administrative data for example time seen. 1 hospital stated it

developed a bespoke system using real-time data captured in PAS to capture the time seen by the ED Doctor or ANP this system does not include clinical documentation.

Laboratory and radiology information systems when fully integrated allow for the ordering of tests and the viewing of results on IT systems. In this study only 5 (29%) of the 17 hospitals have the functionality to order patient tests on IT, 1 hospital can order radiology tests only and 4 (23%) can order both radiology and laboratory tests. In contrast only 1 hospital (6%) cannot view the test results on the computer system, 4 hospitals (23%) can view laboratory tests only and 12 hospitals (71%) can view all test results on the IT system.

Of the 17 respondents, 6 hospitals have either a partial or complete bed management system. 11 hospitals (65%) do not record the bed management process on an IT system.

No participating hospital in the ED survey can capture all data generated in ED on IT. Of the 3 hospitals (18%) who responded that they had an EDIS none as yet are fully integrated. 2 of the three hospitals with EDIS however provided sufficient information to complete each table in the 12 PMU reports. The third hospital that provided complete data does not have an EDIS but has sufficient IT capability to capture the time seen by ED doctor/ANP, referral to specialty time and decision to admit time along with a bed management module on PAS. 82% (14) participants have a PAS which is greater than 10 years old.

5.1.1 SUMMARY OF THE MAIN FINDINGS OF THE LEVELS OF IT IN IRISH ED:

- ◊ 94% of hospitals have a PAS of which 82% are greater than 10 years old.
- ◊ 7 hospitals (41%) use an ED module, EDIS or a stand alone triage package to electronically capture this data.
- ◊ 3 hospitals (18%) can capture either full or partial clinical documentation.

- ◊ 4 hospitals have the functionality to order all patient tests while 12 hospitals (18%) can view test results on the system.
- ◊ 65% of hospitals responding to the survey do not capture the bed management process in ED.
- ◊ Of the 3 hospitals (18%) with an EDIS, none are fully integrated with the hospitals existing systems.
- ◊ No participating hospital in the ED survey can capture all data generated in ED on IT.

5.2 DATA CAPTURE AND DATA SUBMISSION FOR WEEKLY FOR PMU MDR.

The MDR was developed by the PMU to streamline and focus the data to be collected and submitted in order to assess, monitor and manage resource requirements for ED and acute hospital services nationally. Data is captured as the patient journeys through the ED process either manually or electronically. Section 5.1 outlines the IT available for data capture in EDs in Ireland. Table 2 below shows how data is currently being captured for each data of the main data elements in ED. The numbers in the table represent the number of hospitals that capture data using IT, manually and where data is not collected.

Data	IT	Manual	Not Collected
Attendance data	15	2	0
Attendance Time	14	2	1
Triage Details	7	8	2
ED Clinical assessment time	6	7	4
Clinical Notes on IT	2	15	0
Clinical Test Orders	5	12	0
Results available*	16	1	0
Referral	4	12	1
Referral Time	4	11	2
Time seen by In-house team	0	14	3
Discharge Time	11	6	0
Bed Management system	4	11	2
Bed Request Time	4	8	5
Time bed allocated	2	6	9
Time patient is transferred	7	6	4

TABLE 2 ED PATIENT DATA CAPTURE AT SPECIFIC TIME POINTS IN ED EPISODE.

The MDR specifies which data the PMU wish to monitor in relation to service provision and management. Some but not all of the data returned in the MDR is reproduced in table format in the weekly report. Table 3 below is a summary of the completeness of data provided for each of the tables in the PMU reports reviewed for this study. This table shows that Table 2 which is based on the "new" attendance data in Table 1 is the most complete at 78% while Table 7 the Total ED time is the least complete at 22%. The data produces in table 7 is the data which will determine if hospitals are complying with the 100+ plan set out by the DoHC and the HSE in 2007.

	Table 1 Attendance data	Table 2 Cumulative attendance data	Table 3 Triage Data	Table 4 Admission wait data	Table 5 source of admission data	Table 6 in-patient cancellation data	Table 7 total ED experience time data
Complete	19 (51%)	29 (78%)	12 (32%)	18 (49%)	25 (68%)	23 (62%)	8 (22%)
Incomplete weekly data	9 (24%)	1 (3%)	16 (43%)	0	0	0	0
Weekly data Missing	6 (16%)	5 (14%)	6 (16%)	17 (46%)	5 (14%)	3 (8%)	3 (8%)
No Data	3 (8%)	2 (5%)	3 (8%)	2 (5%)	7 (19%)	11 (30%)	26 (70%)
Total	37	37	37	37	37	37	37

TABLE 3 SUMMARY OF COMPLETENESS OF TABLES IN WEEKLY PMU REPORT REVIEW

Other data is submitted to the PMU but is currently not reported in the weekly document. For example the clinical information requested by the PMU asks hospitals to return data on the number of patients referred to an in-house team and the number of these patients who were seen within 1 hour of being referred by the in-house doctor or team. The number of patients referred to an in house team and the time they are referred are recorded on the IT systems by 4 hospitals and manually by 13 hospitals. Table 2 illustrates that this data is not collect on an IT system by any of the 17 hospitals who responded to the survey. 14 hospitals stated that they capture the time seen by in-house team on the clinical notes but that this information is not kept in a manual log or on an IT system. This makes this particular data very difficult to assimilate for individual hospitals use on a weekly basis not to mention for the PMU MDR. In the ED information survey only 1 hospital is in a position to capture and submit this information, 3 other hospitals submit partial information as in the number of patients referred but not the numbers seen within 1 hour of referral.

Some hospitals maintain a manual log of ED patient episodes if an IT system is not available, this provides a log of patient attendances with date and time stamps, the triage category if applicable, some will include the time seen by ED doctor or ANP, the time

referred to an on-call or in-house team, the time seen by the in-house team, the time of discharge, the time of decision to admit the time the bed was requested, the time the bed was allocated and the time the patient was transferred to the bed. There is no standardised format for these logs therefore each hospital individually decides what data if any it will capture in the manual log. This information will be maintained by either the nursing staff in the clinical office area or in the reception area. In hospitals where IT systems cannot capture the entire patient episode the manual log plays a vital role in providing the data to complete the MDR. Table 4 below shows how data is collected as per the ED survey and the data which is subsequently submitted to the PMU.

Data	IT data capture	Submitted	% Submitted	Manual data capture	Submitted	% submitted
Attendance Data	15	13	87%	2	2	100%
Triage Data	7	7	100%	8	3	38%
Clinical data	6	0	0%	7	1	14%
Admission /Discharge data	4	4	100%	9	4	44%

TABLE 4 DATA CAPTURE AND SUBMISSION TO PMU BY THE ED SURVEY RESPONDENTS

Table 5 represents the volume of data captured on IT and manually and how the submission of data results compare. This table demonstrates that having data captured on IT systems allows for easier data analysis and processing in order to submit the MDR data. The difficulties with capturing data manually are in the correlation of this data usually directly from patient notes or manual log books into electronic format for processing. The main reasons given throughout the report for non-submission of PMU MDR data was the lack of electronic data and lack of personnel.

Data	IT data capture	Manual data capture	Data not collected	Total	Data submitted to PMU	% data submitted to PMU
Attendance Data	15	2	0	17	15	88%
Triage Data	7	8	2	17	10	59%
Clinical data	0	14	3	17	1	6%
Admission /Discharge data	7	6	4	17	10	59%

TABLE 5 DATA CAPTURE METHODS WITH SUBMISION TO PMU DATA

One suggestion to potentially simplify ED data management in the hospitals would be to provide a standardised spreadsheet in which the ED process data can be recorded instead of the manual record. This spreadsheet can be updated as easily as maintaining a manual log, and would provide a means of maintaining relevant data which can be used for ED and hospital use as well as the data required for the MDR

5.2.1 SUMMARY OF DATA CAPTURE AND SUBMISSION FOR THE WEEKLY PMU MDR

- Table 2 outlines that the majority of data generated in ED is captured either on an IT system or manually in the patient records or manual logs.
- Table 3 shows a summary of the review of the Tables in the 12 weekly reports and the hospitals compliance with providing the data. Table 2 which is 78% complete is generated from new attendance data in Table 1 which is 51% complete
- Data which will determine how hospitals are compliant with one of the targets of the 100+ plan is currently not captured by 70% of the 37 hospitals.
- Table 4 shows hospitals in the ED survey were 88% compliant submitting attendance data and less than 60% compliant with data in relation to Triage and the admission/discharge process. Only 1 hospital submitted clinical information data.

- ◊ Many hospitals maintain manual logs of data capture which are vitally important in their compliance with fulfilling the PMU MDR.
- ◊ Table 5 shows that hospitals in the ED survey who are capturing data on IT systems are more compliant with submitting the MDR data than those where data is collected manually.

5.3 DATA STANDARDS AND DEFINITIONS.

The PMU have provided a list of data definitions which accompany the MDR. Other data elements for example a triage system have not been specified by the PMU nor has any prior agreement on a national triage system ever been achieved prior to the existence of the PMU.

This study asked participants to state how their hospital defined a "new" patient. The PMU consider a "new" patient to be the number of patients attending the ED either ***for the first time or as an unscheduled return*** (with a new episode number). Hospitals were given three choices of what a new patient might be and the option to provide their own definition. 4 hospitals (23%) agreed with the PMU definitions while 10 (59%) considered a "new patient" as those who attend with a new complaint only and the remaining 3 (18%) as all attendances to the ED. No other definition of "new" was provided. The profile of a "new" attendance is therefore different depending on the hospital the patient attends and on whether the patient attends an ED or another unit within the hospital directly.

Table 2 of the weekly PMU report profiles the "new" attendances to ED only. In 8 of the hospitals (46%) who participated in the survey, all acute patients attend the ED. In the 9 other hospitals (54%) patients will attend the ED, but also attend a MAU or a specialised unit (Direct to ward) or other alternative depending on their reason for attending the hospital. A new attendance in the MDR captures only those who attend the ED. Therefore

ED data, in hospitals where units outside the ED are accepting emergency patients, is being distorted by these patients not being included in the new attendance numbers. Also it has not been established in this study if these patients are triaged in a similar manner to those in the ED.

Participants were then asked to define a "return patient. The PMU define a return patient as attending the ED as a ***scheduled re-attendance.*** Again 4 hospitals (23%) agreed with the PMU definition, 5 hospitals (29%) defined a return patient as any patient who returns within a specified period of time with the same complaint. 7 hospitals (41%) defined a return patient as both the above definitions and 1 hospital (6%) stated that all patients are recorded as "new." When asked, in what timeframe patients would be considered as return 2 hospitals (12%) stated within 1 week; 4 hospitals (24%) within 1 month, 2 hospitals (12%) stated the return time period was 6 months and 3 hospitals (18%) had no specific time frame for return patients. Again this shows that the profile of a return patient depends on the hospital attended.

Triage is a vital part of a modern ED as discussed in Chapter 2 .The PMU asks hospitals to provide data in relation to the number of attendances per triage category per day each week. As previously stated, the PMU any particular triage system nor has any prior agreement on a national triage system ever been achieved prior to the existence of the PMU. It appears from the MDR that the PMU consider triage to have 5 scales. 1 hospital has developed its own triage system which while in use in this hospital, does not appear to have been validated. This triage system has 3 scales and data is returned weekly for this to the PMU. 11 hospitals use the Manchester triage system and one uses a modified version of triage (this has not been elaborated on) 2 use the Australasian triage system and 3 do not formally triage the patients. This shows that while the PMU have not made a recommendation as to what triage system should be used, the majority of hospitals in the

survey agree that formal triage should be in place. A consensus on which triage system should be reached on which triage system should be in place in order to make direct comparisons between hospitals both nationally and internationally in terms of acuity, volumes and comparable clinical data.

The PMU have not defined when a patient should be considered admitted, other than to state that NHO policy states that a person is discharged from the ED upon being admitted to an admission lounge. From the analysis of responses to this question there appears to be little agreement between the participating hospitals for this, for 9 hospitals (53 %) it is when the patient is seen by in-house team and decision to admit is made; 2 others (12%) stated when the patient is referred to and accepted by the in-house team; 2 hospitals (12%) stated when an in-house bed is available and allocated to the patient; 2 hospitals (12%) stated when the patient is transported from the ED to the in-house bed; 1 hospital stated when ED informs Admissions unit that a decision to admit has been made with the relevant team and 1 hospital replied that medical patients were considered admitted when referred to and accepted by the medical team on call; surgical and cardiology patients are considered admitted when seen by team and a decision to admit is made.

5.3.1 SUMMARY OF DATA STANDARDS AND DEFINITIONS

The PMU have provided definitions for “new and “return” patients in the data definition document which accompanied the MDR. This document also stated what data was to be included in each of the data elements in the MDR.

- ◊ Despite the definition document only 4 hospitals (23%) concurred with the PMU definition of a new patient

- ◊ 10 hospitals (59%) consider a new patient to be a patient attending with a new complaint only
- ◊ 4 hospitals (23%) agreed with the PMU definition of a return patient, how ever there appears to be less agreement on a different definition of the term from the other hospitals.
- ◊ 11 hospitals use the Manchester Triage System with 2 others using the Australasian triage system, both of which are 5 scale systems. 1 hospital uses its own non-validated three scale system.
- ◊ The PMU have not defined when they consider a patient to be admitted and there appears to be very little consensus between the hospitals on this also.

CHAPTER 6: CONCLUSION.

The results of the study have been discussed in the previous chapter in terms of the research question and the aims of the study. The existing PAS is available in 94% of hospitals and of these 82% are greater than 10 years. Additional modules or software packages which allow for data capture throughout the ED process are installed to much lesser extents. These include an ED Module Triage software, Clinical documentation and bed management systems. As yet only 3 hospitals have an EDIS and of these none are completely integrated with the existing IT infrastructure in the hospitals.

No hospital yet in Ireland is capable of capturing all data in relation to a patient episode on an IT system Table 5 in Chapter 5 shows that hospitals where data is captured on IT are more compliant with completing the PMU MDR than those who are dependant on manual records and logs. However this study also shows that a number of hospitals are very compliant with completing the MDR despite having little or no IT support.

This study highlights that there is little agreement between hospitals and between hospitals and the PMU in relation to data standards and definitions.

6.1 THE RESEARCH QUESTION

The research question asked "Does the availability of IT affect data capture and data quality in Irish Emergency Departments: are we comparing like with like?" this study shows that the availability of IT does affect data capture and data quality. This study has shown that most hospitals are not in a position to capture the data required to complete the PMU MDR electronically. This means that the data are being captured in paper-based formats which must be retrospectively compiled to complete the MDR, a costly exercise in terms of both time and personnel resources.

The quality of data being compiled by the PMU is affected by the availability of IT as it is evident from this study with only 3 hospitals are able to provide sufficient data to complete

each of the 12 reports. Table 4 provides a comparable overview of the same data collect either electronically or manually with the submission rates to the PMU. This shows that while a small number of hospitals are collecting data manually and submitting the data to the PMU, the majority of hospitals where the data is captured electronically are more compliant with submitting the MDR.

The quality of data being compiled by the PMU is also being affected by the disagreement between hospitals and between the PMU and hospitals in terms of data being submitted. As a result the while data submitted week on week to the PMU by individual hospitals will be consistent this data will not be comparable with another hospitals data unless both agree the definitions and standards. Currently as the research question asks and as is outlined in 5.4 we are not comparing like with like.

6.2 LIMITATIONS

Though part of the study design to protect the anonymity of the individual hospital, one of the main limitations of this study was the inability to directly compare the data returned in the ED survey with the particular hospitals ability to complete the data tables in the PMU reports. This would have made the study more complete. Also with the PMU facilitating the distribution and collection of the survey to the hospitals the author had little control on the return of the surveys. This study did not examine any political issues which may be affecting how hospitals comply with the PMU document completion.

6.3 FURTHER RESEARCH

This survey should be repeated on a more formal setting perhaps by the PMU or HIQA. Individual hospitals need to address their shortcomings in relation to the availability of IT for accurate timely capture of data in the ED setting and throughout the hospital. The HSE and Department of Health and Children will ultimately be responsible for the cost of upgrading

IT and therefore would benefit form a more complete picture. The study would also benefit greatly by examining the three main elements in greater detail including the levels of IT; how data is captured and compliance with the PMU MDR and particularly in relation to data standards and definitions.

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APPENDIX 1: PMU TEMPLATE DOCUMENT FOR WEEKLY ED DATA

ReportName	Weekly Emergency Department Report
ProviderCode	
Provider	
Week Ending	
Hospital Network	
Hospital Band	

HOSPITAL Week ending								
Number of elective beds in use for emergencies	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**	**Sun**	**Total**
a) Elective Day Beds in use for emergencies								
b) Elective Inpatient Beds in use for emergencies								
New attendances (Emergency Department (ED) ONLY)								
a) No. new attendances between 00:00-03:59hrs								
b) No. new attendances between 04:00-07:59hrs								
c) No. new attendances between 08:00-11:59hrs								
d) No. new attendances between 12:00-15:59hrs								
e) No. new attendances between 16:00-19:59hrs								
f) No. new attendances between 20:00-23:59hrs								
Total New Attendances								
Return attendances (ED ONLY)								
a) No. return attendances between 00:00-03:59hrs								
b) No. return attendances between 04:00-07:59hrs								
c) No. return attendances between 08:00-11:59hrs								
d) No. return attendances between 12:00-15:59hrs								
e) No. return attendances between 16:00-19:59hrs								
f) No. return attendances between 20:00-23:59hrs								
Total Return Attendances								
Other Emergency Attendances								
a) Walk ons to wards (patients seen directly on wards, except for MAU's)								
b) Medical Assessment Unit (MAU) Attendances (all attendances)								
Mode of arrival of new attendances (ED ATTENDANCES ONLY)								
a) Ambulance								
b) Other								
c) Total								
Mode of New attendances by referral type (ED ATTENDANCES ONLY)								
a) GP referral								
b) Other								
c) Total								
Inpatient admission profile - source of admission								
a) Emergency Department								
b) Other non-elective								
b1) OPD								
b2) Transfers								
b3) Medical Assessment Unit								
b4) Direct GP Referral to other specialties apart form those referred to MAU								

b5) Consultants Private Rooms (emergency admissions only)									
b6) Other									
Total Other non-elective admissions									
c) Elective									
d) Total									
DayCase admissions									
No of day case admissions (All specialties apart from MAU)									
No of day case admissions (MAU ONLY) i.e patients who are referred by GP assessed and discharged without admission to inpatient bed									
Throughput of Admission Lounge/Transit facility/Transition Facility									
No of transfers into Admission Lounge									
No of transfers out of Admissions Lounge									
Patients admitted to an in house consultant, but treated and discharged within the ED without gaining access to an inpatient bed									
a) No. patients									
No.of planned admissions cancelled by the hospital									
a) Inpatients									
b) Day cases									

*** Where daily information is not available for 9 & 10 above, please insert weekly figure into totals column**

Any Comments

Number of New Attendances by Triage category									
a)Triage Category 1									
b)Triage Category 2									
c)Triage Category 3									
d)Triage Category 4									
e)Triage Category 5									
f)Other /not classified									
Total									
Elective Admission Profile									
a) No from inside Region									
b) No from outside Region									
c) Total									
Total time in ED									
Total time of all attendances (in minutes)									
Number of attendances per day that where subsequently admitted									
Total time (in minutes) of attendances who where subsequently admitted									
Total number of attendances referred to an in-house team									
Number of attendances referred and seen by in-house team within 60 minutes									
Number of attendances where total time in Emergency Department was under 6 hours									
Number of Emergency Admissions who waited less than 6 hours for a bed									

APPENDIX 2: DRAFT DATA DEFINITIONS FOR THE ED WEEKLY REPORT

1	**BEDS**	
a)	Number of Elective beds in use for emergencies	The number of elective day beds(part a) and inpatient beds (part b) which are normally for elective use, but which are being utilised by emergency admissions. This is recorded daily and in total.
2	**New Attendances**	
	Number of new Attendances broken down by timeband	The number of patients attending the Emergency Department either ***for the first time or as an unscheduled return*** (with a new episode number) broken down by time of attendance. This is recorded daily and in total.
3	**Return Attendances**	
	Number of Return attendances	The number of patients attending the Emergency Department as a ***scheduled*** re-attendance (should not include fracture clinics and dressing clinics) broken down by time of attendance . This is recorded daily and in total.
4	**Other Emergency Attendances**	
	a) Walk ons to wards (patients seen directly on wards, except for MAU's)	The number of patients who do not attend the Emergency Department, but who are referred by their GP directly to an in-house team, and seen either on a ward or in another area of the hospital ,other than OPD or MAU.
	b) Medical Assessment Unit (MAU) Attendances (all attendances)	The number of patients who do not attend the Emergency Department, but who are referred by their GP directly to an in-house team, in the Medical Admissions Unit. This currently apples to Sligo, Mayo, Mullingar and St Lukes Kilkenny.
5	**Mode of arrival of new attendances (ED Attendances Only)**	
a)	Ambulance	The number of patients who arrive at the emergency department by ambulance (both new and unscheduled return attendances). This is recorded daily and in total
b)	Other	The number of patients who arrive at the emergency department by means of transport other than ambulance (both new and unscheduled return attendances). This is recorded daily and in total
c)	Total	The sum of a & b above. This is recorded daily and in total
6	**Mode of new attendances by referral type(ED Attendances Only)**	
a)	GP referral	The number of patients who arrive at the emergency department with a referral letter from their GP (both new and unscheduled return attendances).This is recorded daily and in total
b)	Other	The number of patients who arrive at the emergency department who are not referred by their GP (both new and unscheduled return attendances).This is recorded daily and in total
c)	Total	The sum of a & b above. This is recorded daily and in total
7	**Inpatient admission profile - source of admission**	
a)	ED	The number of patients admitted through the Emergency Department. This is recorded daily and in total.
b)	Other non-elective	The number of emergency inpatient admissions who are not admitted through the Emergency Department. This is recorded daily and in total.

b1)	OPD	The number of patients admitted through OPD. This is recorded daily and in total.
b2)	Transfers	The number of patients transferred into hospital from other hospitals. This is recorded daily and in total.
b3)	Medical Assessment Unit	The number of patients admitted from the MAU. Currently only applies to Sligo, Mayo, Mullingar and St Lukes Kilkenny
b4)	Direct GP Referral to other specialties apart from those referred to MAU	The number of patients admitted directly by GP except for those referred to MAU. This is recorded daily and in total.
b5)	Consultants Private Rooms	The number of patients admitted from Consultant Private Rooms as an emergency admission. This is recorded daily and in total.
b6)	Other	The number of emergency inpatient admissions who are not admitted through the Emergency Department or by any other reason given above. This is recorded daily and in total.
	Total Other non-elective admissions	The sum of b1+b2+b3+b4+b5 above
c)	c) Elective	The number of planned inpatient admissions. This is recorded daily and in total.
d)	d) Total	The sum of a, b, & c above
8	**Day Case Admissions**	
	No of day case admissions	No. of Day Cases admitted for all specialties except for MAU This is recorded daily and in total.
	No. of day case admissions (MAU ONLY) i.e patients who are referred by GP assessed and discharged without admission to inpatient bed	No of day case admissions (MAU ONLY) i.e patients who are referred by GP assessed and discharged without admission to inpatient bed
9	**Throughput of Admission Lounge/Transit Facility& Transition Facility**	
	a) No of transfers into Admission Lounge	No. of patients transferred from ED into Admissions lounge/ transit facility/ Transition facility. This is recorded daily and in total
	b) No of transfers out of Admissions Lounge	No. of patients transferred from Admissions lounge/ transit facility/ Transition facility to In Patient Ward. This is recorded daily and in total
10	**Patients admitted to an in house consultant, but treated and discharged within ED without gaining access to an inpatient bed**	
	a) No. patients	No of patients admitted to an in house consultant, but treated and discharged within ED without gaining access to an inpatient bed. This should not include patients treated by A&E team and discharged. This is recorded daily and in total
11	**Number of Planned admissions cancelled**	
a)	Inpatients	The number of planned inpatient admissions cancelled by the hospital, for any reason This is recorded daily and in total
b)	Day cases	The number of planned Day case admissions cancelled by the hospital, for any reason. This is recorded daily and in total
12	**Any other comments**	
		Please insert any relevant information in this section.e.g if data cannot be returned etc.
13	**Number of New Attendances by Triage category**	
	a)Triage Category 1	The Number of new or unscheduled return patients classified as Triage

		category 1
	b)Triage Category 2	The Number of new or unscheduled return patients classified as Triage category 2
	c)Triage Category 3	The Number of new or unscheduled return patients classified as Triage category 3
	d)Triage Category 4	The Number of new or unscheduled return patients classified as Triage category 4
	e)Triage Category 5	The Number of new or unscheduled return patients classified as Triage category 5
	f)Other/Unclassified	The Number of new or unscheduled return patients
	Total	The total number of new or unscheduled return patients classified in all triage categories
14	**Elective Admission Profile**	
	a) No from inside region	For hospitals in the former ERHA area- no. of elective patients admitted from inside the former ERHA region. For all other hospitals no. of elective patients admitted from outside the network area.
	b) No from outside region	For hospitals in the former ERHA area- no. of elective patients admitted from outside the former ERHA region. For all other hospitals no. of elective patients admitted from outside the network area.
	c) Total	The total number of elective admissions (equal to the total number shown in question 6 part d)
	Total Time in ED	
	Total time of all attendances (in minutes)	Total length of time for ED Episode of care for all ED attendances (weekly) including attendances who where admitted/discharged
	Number of attendances per day that where subsequently admitted	Number of ED patients, where a decision was made by the In-house team to admit to the hospital.
	Total time (in minutes) of attendances who where subsequently admitted	Total length to time for ED Episode of care in which the ED attendee was admitted.
	Total number of attendances referred to an in-house team	Number of ED patients that where referred and seen by the In-house team
	Number of attendances referred and seen by in-house team within 60 minutes	Number of patients from the time of referal by the ED consultant to the time seen by in-house team within - 1 hour/60 minutes
	Number of attendances where total time in Emergency Department was under 6 hours	Number in which an attendence was triaged than treated than admitted/discharged from the ED area in under 6 hours
	Number of Emergency Admissions who waited less than 6 hours for a bed	Number of ED attendances that where admitted by the In-house team and placed in a bed within 6 hours of this decision

APPENDIX 3 WEEKLY PERFORMANCE MANAGEMENT UNIT REPORT

Emergency Departments

Weekly ED Management Information Report

Report Week Ending: 23rd March 2008

This report is circulated by the PMU each week to all HSE hospitals. Requests to join the mailing list for the is report should be sent to pmu@hse.ie

The PMU can be contacted for further information on 01-6201800.

Introduction

This information is produced by the PMU to assist operational management and decision making processes related to effective Emergency Department functioning. It is intended for use by all personnel (administrative and clinical) within hospitals and the HSE.

ED Attendance patterns

Table 1 presents a profile of the new and return attendances for last week and the time profile of presentations to each ED across the 24 hour period.

Table 2 gives an overview of the pattern of new attendances to each ED for 2007. This table present an overview of the average run rate of new ED attendances during each quarter (so far this year) and most importantly, over the past 4-8 weeks.

It presents:

- For Quarter's 1, 2, 3 and 4 (2007) the average number of new attendances each week to the ED
- For February, the actual number of new attendances each week to the ED for that month

Comparing the average run rates for each quarter with the present actual number of new ED hospitals across hospitals allows a person to view the pattern of ED attendances in real time. No prior year comparator information is available.

Table 3 presents the profile of attendances by triage category (where information is available).

Admission waits

Table 4 outlines the profile of admission waits across hospitals nationally. It outlines:

- The percentage of days last week where a hospital had at least 1 person waiting over 12 or 24 hours (7 day period last week)
- The average number of persons per day waiting across all time categories (7 day period last week)
- The average number of persons per day waiting within each of the time categories (7

day period last week)

Hospital Admissions Profile

Table 5 profiles the source of all admissions into hospitals last week.

Hospital admissions are categorised as

- **Emergency**
- Elective

Emergency admissions comprise of admissions from

- The Emergency Department
- Other sources within the hospital (e.g. OPD, MAU)
- Other sources linked with the hospital (e.g. consultant private rooms, GPs, etc).

Therefore, emergency admissions to a hospital are comprised of

- Admissions directly from the ED / A&E
- Other non-elective admissions

In-patient Cancellations

Cancellation information is provided for:

- In-patients
- Day case

This information represents hospital based cancellations and NOT patient based cancellations.

In-patient cancellation information is only available from a small number of hospitals. Table 6 outlines:

- the average number of in-patient and day case cancellations for quarter 1, 2 3 and 4 2007
- the average number of in-patient and day case cancellations last week.

Total patient experience time

Table 7 presents the average patient experience time for three categories of patients.

Patient experience time is taken from the time the person registers to the time they are discharged from the ED. NHO policy states that a person is discharged from the ED upon being admitted to an admission lounge.

The three categories are:

- All patients
- Patients discharged from the ED who were subsequently admitted
- Patients discharged from the ED who were not admitted.

NOTE

Due to the fact that the Weekly Ed report runs from Monday to Sunday there is usually a crossover of days that fall into separate months from a single return at the end of each month as opposed to monthly returns which run from the first to last day of each month.

For the purposes of the weekly report which is distributed by the Performance Management Unit the quarterly and monthly averages consist of individual weeks as follows:

Quarter 1	Week ending 7th Jan 2007 – Week ending 1st April 2007
Quarter 2	Week ending 8th April 2007 – Week ending 1st July 2007
Quarter 3	Week ending 8th July 2007 – Week ending 30th September 2007
Quarter 4	Week ending 7th October 2007 – Week ending 30th December 2007
February	Week ending 10th February 2008 – Week ending 2nd March 2008

* Daytime (8.00-16.00)

Table 1: Attendance rate across hospitals

* Evening (16.00-00.00)

* Night (00.00-8.00

Hospital	Total Emergency	New attendances	Return attendances (week	Emergency Presentations Direct to Ward (week ending	Medical Assessment Unit	Daytime* new attendances (week ending 22/03/09)	Evening* new attendances	Night* new attendance
South East								
Waterford Regional	1,242	898	124	220		475	328	95
Wexford General	699	630	60	9	0	0	0	0
St Luke's General	651	384	67	81	119	384	0	0
Sth Tipperary	654	470	61	123	0	200	183	87
Southern Hospitals								
Cork University	1,018	924	94	0	0	497	335	92
Bantry General	103	85	11	7	0	43	36	6
Kerry General	632	538	94	0	0	267	212	59
Mercy University	477	477	0	0	0	0	0	0
Mallow General	255	223	32	0	0	109	91	23
South Infirmary	422	324	98			151	126	47
North East								
Our Lady of Louth County	785	749	36	0	0	360	289	100
Cavan General	564	505	36	23	0	0	0	0
Monaghan General	224	185	39	0	0	98	75	12
Our Lady's Hospital								
Dublin North								
Mater Hospital	868	808	60	0	0	393	287	128
Beaumont Hospital	870	842	28			400	298	144
Connolly Hospital*	-	-	-	-	-	-	-	-
Western Hospitals								
Sligo General								
Letterkenny General	611	594	17	0	0	283	239	72
University College	1,140	1,060	40	40	0	585	367	108
Mayo General								
Roscommon County	304	243	29	32	0	125	91	27
Portiuncula	377	367	10	0	0	180	144	43
Mid West Hosptials								
Limerick Regional								
Ennis General	284	247	37	0	0	0	0	0
Nenagh General	354	262	73	19	0	121	117	24
St John's Hospital	338	279	38	21	0	211	68	0
Dublin Midlands								
Longford	643	568	54	0	21	0	0	0
Tullamore Midland	567	508	59	0	0	0	0	0
Portlaoise General	837	826	11	0	0	0	0	0
AMNCH	861	830	31	0	0	451	265	114
Naas General	528	521	7	0	0	279	190	52
Dublin South								
St Vincent's	766	686	80	0	0	331	253	102
St Columcilles	453	435	18	0	0	204	161	70
St James's Hospital	972	931	41			429	340	162
St Michaels Hospital	269	196	73	0	0	144	52	0

Sligo only produce monthly basis due to IT systems

Note that there was no return made from Louth, Navan, Mayo and Limerick Regional Note that Connolly's ED Statistics are unavailable

Louth have returned no ED attendances

Table 2: Pattern of average weekly new attendances across the year and this month to date

Hospital	Qtr 1 average weekly new	Qtr 2 average weekly new	Qtr 3 average weekly new	Qtr 4 average weekly new	February average weekly new attendances	Total new attendances (02/03/08)	Total new attendances (09/03/08)	Total new attendances (16/03/08)	Total new attendances (23/03/08)
South East									
Waterford Regional	801	868	887	901	866	808	959	825	898
Wexford General	563	625	648	616	574	551	615	611	630
St Luke's General	366	407	408	373	386	380	398	383	384
Sth Tipperary	364	370	404	420	416	417	426	471	470
Southern Hospitals									
Cork University	944	964	1020	971	923	901	1064	996	924
Bantry General	79	95	103	81	87	85	83	79	85
Kerry General	477	541	581	511	488	470	494	525	538
Mercy University	478	480	463	465	463	435	389	494	477
Mallow General	222	239	248	223	222	203	223	219	223
South Infirmary	-	-	-	-	309	287	317	374	324
North East Hosptials									
Our Lady of	532	768	743	782	735	747	774	771	749
Louth County	-	51	-	-	-	-	-	0	-
Cavan General	447	464	466	493	434	427	467	481	505
Monaghan General	213	215	199	193	174	167	163	219	185
Our Lady's Hospital	-	337	470	353	337	-	367	-	-
Dublin North									
Mater Hospital	853	844	878	828	834	799	875	891	808
Beaumont Hospital	849	835	867	853	838	800	848	881	842
Connolly Hospital	524	559	589	579	550	516	571	635	-
Western Hospitals									
Sligo General	526	543	597	565	0				
Letterkenny General	550	617	625	561	548	541	546	569	594
University College	1038	1107	1160	1086	1058	1,016	1,033	1,032	1060
Mayo General	-	-	-	-					
Roscommon County	214	241	240	224	215	191	226	226	243
Portiuncula	365	400	390	384	342	378	379	365	367
Mid West Hosptials									
Limerick Regional	938	-	987	951	985	916	-	1074	
Ennis General	237	260	275	204	249	239	253		247
Nenagh General	205	240	248	221	225	206	208	212	262
St John's Hospital	285	370	322	323	328	321	341	342	279
Dublin Midlands									
Longford	578	600	579	611	576	528	587	587	568
Tullamore Midland	527	553	567	520	550	545	556	503	508
Portlaoise General	714	748	736	755	744	746	719	823	826
AMNCH	875	849	898	852	820	785	841	858	830
Naas General	481	491	514	513	527	533	527	511	521
Dublin South									
St Vincent's	712	705	733	753	722	667	775	753	686
St Columcilles	437	452	418	449	428	408	466	465	435
St James's Hospital	842	870	901	897	868	817	869	881	931
St Michaels Hospital	201	179	202	199	190	171	199	180	196

Sligo only produce monthly basis due to IT systems

Note that there was no return made from Louth, Navan, Mayo and Limerick Regional Note that Connolly's ED Statistics are unavailable

Louth have returned no ED attendances

Table 3: Profile of attendances by triage category

Hospital	New attendances	Non-triaged	Triage Category	Triage Category	Triage Category 3	Triage Category 4	Triage Category 5 (%)
South East Hospitals							
Waterford Regional	898	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Wexford General	630	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
St Luke's General	384	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sth Tipperary General	470	12.8%	0.6%	7.4%	40.6%	31.7%	6.8%
Southern Hospitals							
Cork University	924	3.9%	1.5%	7.5%	56.3%	29.9%	1.0%
Bantry General	85	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Kerry General Hospital	538	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mercy University	477	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mallow General	223	100.0%	0.0%	0.0%			
South Infirmary Victoria	324	40.1%	0.0%	0.0%	18.5%	0.0%	41.4%
North East Hospitals							
Our Lady of Lourdes	749	5.3%	0.4%	16.4%	51.9%	25.2%	0.7%
Louth County Hospital	0						
Cavan General	505	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Monaghan General	185	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Our Lady's Hospital	0	7.1%	0.7%	9.0%	52.4%	30.1%	0.7%
Dublin North Hospital							
Mater Hospital	808						
Beaumont Hospital	842	1.5%	0.7%	19.1%	55.0%	22.0%	1.7%
Connolly Hospital							
Western Hospitals							
Sligo General	0						
Letterkenny General	594	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
University College	1060	5.7%	2.4%	26.2%	61.0%	4.4%	0.3%
Mayo General Hospital							
Roscommon County	243	8.9%	0.4%	2.8%	51.6%	34.6%	1.6%
Portiuncula Hospital,	367	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mid West Hospitals							
Limerick Regional	0						
Ennis General Hospital	247	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nenagh General	262	0.4%	0.0%	0.8%	55.3%	37.8%	5.7%
St John's Hospital	279	2.2%	0.0%	6.8%	40.1%	50.2%	0.7%
Dublin Midlands							
Longford Westmeath	568	0.0%	0.0%	24.5%	66.5%	8.5%	0.5%
Tullamore Midland	508	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Portlaoise General	826	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
AMNCH	830	2.3%	0.7%	10.8%	45.4%	37.3%	3.4%
Naas General Hospital	521	1.0%	0.4%	7.3%	56.8%	33.4%	1.2%
Dublin South Hospitals							
St Vincent's University	686	0.9%	0.1%	22.0%	54.4%	22.3%	0.3%
St Columcilles Hospital	435	2.8%	2.5%	18.4%	48.7%	25.5%	2.1%
St James's Hospital	931	1.9%	0.9%	17.4%	54.4%	22.6%	2.9%
St Michaels Hospital	196	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Note that there was no return made from Louth, Navan, Mayo and Limerick Regional Sligo only produce monthly basis due to IT systems Note that Connolly's ED Statistics are unavailable

Table 4: Profile of admission waits for week ending 23rd March 2008 across hospitals

Hospital	% days last week > 12hrs	% days last week > 24 hrs	Daily average	0-6 hrs	6-12hrs	12-24hrs	24+
South East Hosptials Group							
Waterford Regional Hospital	0	0	0.7	0.7	0	0	0
Wexford General Hospital	0	0	1	0.1	0.9	0	0
St Luke's General Hospital	0	0	0.1	0	0.1	0	0
Sth Tipperary General Hospital Clonmel	14	0	0.9	0.3	0.3	0.3	0
Southern Hospitals Group							
Cork University	43	14	4.9	1.4	1.6	1.6	0.3
Kerry General Hospital	14	0	1.3	0	1	0.3	0
Mercy University Hospital Cork	0	0	0.7	0.7	0	0	0
South Infirmary Victoria university Hospital	0	0	0	0	0	0	0
North East Hosptials Groups							
Our Lady of Lourdes Hospital Drogheda	71	29	6.4	2	1.7	2.1	0.6
Louth County Hospital	0	0	0.7	0.7	0	0	0
Cavan General Hospital	0	0	1.6	1.4	0.1	0	0
Monaghan General Hospital	29	14	2.6	1.7	0.4	0.3	0.1
Our Lady's Hospital Navan	0	0	0	0	0	0	0
Dublin North Hospital Group							
Mater Hospital	57	14	6.4	1.6	2.4	1.7	0.7
Beaumont Hospital	71	14	11.3	2.3	2.7	6.1	0.1
Connolly Hospital	57	0	4.7	2.3	1.4	1	0
Western Hospitals Group							
Sligo General	14	0	0.7	0.6	0	0.1	0
Letterkenny General	0	0	0.1	0.1	0	0	0
University College Hospital Galway	43	14	5.9	3.4	1.4	0.9	0.1
Mayo General Hospital	43	0	3.6	0.4	1.3	1.9	0
Roscommon County Hospital	14	0	1.6	0	1.4	0.1	0
Portiuncula Hospital, Balinasloe	0	0	0.1	0.1	0	0	0
Mid West Hosptials Group							
Limerick Regional Hospital	43	0	4.6	1.6	2.1	0.9	0
Ennis General Hospital	0	0	0.3	0.3	0	0	0
Nenagh General Hospital	0	0	0.4	0.4	0	0	0
St John's Hospital	0	0	0	0	0	0	0
Dublin Midlands Hospitals Group							
Longford Westmeath General Hospital	0	0	0.1	0.1	0	0	0
Tullamore Midland Regional Hospital	0	0	0.1	0.1	0	0	0
Portlaoise General Hospital	29	0	1.1	0.6	0.3	0.3	0
AMNCH	100	29	13.4	2.6	1.6	5.1	4.1
Naas General Hospital	0	0	1.1	0.9	0.3	0	0
Dublin South Hospitals Group							
St Vincent's University Hospital	0	0	8.3	3.4	4.9	0	0
St Columcilles Hospital	0	0	0	0	0	0	0
St James's Hospital	43	0	6.6	3.6	1.3	1.7	0
St Michaels	0	0	1.1	1.1	0	0	0

Table 5: Profile of the source of admissions to hospitals

Admission Categorises	Emergency								Elective
Admission sources (grouped)		From ED	Other non-elective						Elective
Hospital	Total all admissions this week	ED admissions	Admissions from OPD	Transfers into hospital	Admissions from MAU	Direct GP referrals (non-MAU)	Admissions from Consultant Private rooms	Other	Elective
South East Hosptials Group									
Waterford Regional Hospital	428	309	0	2	0	0	0	0	117
Wexford General Hospital	306	182	0	5	0	0	0	68	51
St Luke's General Hospital	254	67	0	5	60	0	0	44	78
Sth Tipperary General Hospital Clonmel	259	128	1	0	0	0	0	51	79
Southern Hospitals Group									
Cork University	445	284	28	12	0	32	0	4	85
Bantry General Hospital	35	14	0	0	0	0	0	16	5
Kerry General Hospital	296	170	2	2	0	26	1	18	77
Mercy University Hospital Cork	113	89	0	0	0	0	0	12	12
Mallow General Hospital	96	71	0	0	0	0	0	25	0
South Infirmary Victoria university	0	0	0	0	0	0	0	0	0
North East Hosptials Groups									
Our Lady of Lourdes Hospital Drogheda	234	178	3	4	0	0	0	0	49
Louth County Hospital									
Cavan General Hospital	270	200	0	0	0	0	0	14	56
Monaghan General Hospital	40	5	0	0	0	0	0	33	2
Our Lady's Hospital Navan	332	204	26	29	0	0	3	5	65
Dublin North Hospital Group									
Mater Hospital									
Beaumont Hospital	367	218	14	41			1	35	58
Connolly Hospital*	148	130	3	7	0	0	0	1	7
Western Hospitals Group									
Sligo General									
Letterkenny General	365	219	0	0	0	0	0	74	72
University College Hospital Galway	636	326	0	37	0	0	0	203	70
Mayo General Hospital									
Roscommon County Hospital	0	0	0	0	0	0	0	0	0
Portiuncula Hospital, Balinasloe	203	125	2	3	0	0	0	7	66
Mid West Hosptials Group									
Limerick Regional Hospital									
Ennis General Hospital	0	0	0	0	0	0	0	0	0
Nenagh General Hospital	79	54	1	1	0	18	0	2	3
St John's Hospital	54	31	0	1	0	0	0	3	19
Dublin Midlands Hospitals Group									
Longford Westmeath General Hospital	310	183	2	9	2	27	0	0	87
Tullamore Midland Regional Hospital	91	65	2	0	0	0	0	0	24
Portlaoise General Hospital	207	195	3	0	0	0	4	0	5
AMNCH	0	0	0	0	0	0	0	0	0
Naas General Hospital	153	136	7	4	0	0	0	0	6
Dublin South Hospitals Group									
St Vincent's University Hospital	277	179	4	22	0	0	0	18	59
St Columcilles Hospital	50	45	0	2	0	0	0	0	3
St James's Hospital	404	234	63	15				18	79
St Michaels Hospital	80	24	1	1	0	0	0	0	54

Note that there was no return made from Louth, Navan, Mayo and Limerick Regional Sligo only produce monthly basis due to IT systems

Table 6: Number of In-patient and Day Case Cancellations over the year to date and this month

Hospital	Qtr 3 average weekly cancellation	Qtr 4 average weekly cancellation number (in-pt)	Monthly average weekly cancellation	In-patient Cancellation	Qtr 3 average weekly cancellati	Qtr 4 average weekly cancellati	Monthly average weekly cancellation number (day case)	Day Case Cancellation numbers
South East Hosptials Group								
Waterford Regional Hospital	4	5	9	4	6	6	10	2
Wexford General Hospital	1	1	2	0	5	2	1	0
St Luke's General Hospital	2	4	0	12	2	2	0	0
Sth Tipperary General Hospital	1	1	1	0	0	0	0.3	0
Southern Hospitals Group								
Cork University	17	20	17	6	33	27	42	33
Bantry General Hospital	0	0	0	0	0	0	0	0
Kerry General Hospital	1	2	2	6	0	0	0.8	0
Mercy University Hospital Cork		0	0	0		0	0	0
Mallow General Hospital	1	0	0	0	5	5	4	4
South Infirmary Victoria			0	0			4	0
North East Hosptials Groups								
Our Lady of Lourdes Hospital	1	1	10	0	4	1	3	0
Louth County Hospital	0	0	0		9	0	0	
Cavan General Hospital	0	2	0	0	1	2	0	0
Monaghan General Hospital	0	0	0	0	0	0	0	0
Our Lady's Hospital Navan	0	0			0	0		
Dublin North Hospital Group								
Mater Hospital	7	26	24	0	1	2	1	0
Beaumont Hospital	15	19	27	16	4	7	2	2
Connolly Hospital	5	4	4	0	6	7	3	0
Western Hospitals Group								
Sligo General	4	13			0	0		
Letterkenny General	5	7	15	0	3	1	2	1
University College Hospital	0	0	0	0	0	0	0	0
Mayo General Hospital								
Roscommon County Hospital	0	0	0	0	0	0	0	0
Portiuncula Hospital, Balinasloe	0	2	0	0	0	0	0	0
Mid West Hosptials Group								
Limerick Regional Hospital	0	0			0	0		
Ennis General Hospital	0	0	0	0	0	4	0	0
Nenagh General Hospital	0	0	0	0	0	1	0	0
St John's Hospital	0	0	0	0	0	0	0	0
Dublin Midlands Hospitals								
Longford Westmeath General	0	0	0.5	0	1	1	4	0
Tullamore Midland Regional	4	2	4	1	1	2	1	0
Portlaoise General Hospital	2	1	2	1	4	1	0.2	4
AMNCH	13	25	31	0	0	2	0	0
Naas General Hospital	0	0	0	0	0	0	0	0
Dublin South Hospitals Group								
St Vincent's University Hospital	11	13	25	12	4	3	4	4
St Columcilles Hospital	0	0	0.3	0	0	0	0	0
St James's Hospital	29	55	105	54	2	2	6	1
St Michaels Hospital	0	0	0	0	0	0	0	0

Note that there was no return made from Louth, Navan, Mayo and Limerick Regional Sligo only produce monthly basis due to IT systems

Table 7: Average patient experience time in ED

Hospital	Average Time of Attendances - All	Average time of Attendances - Admitted	Average Time of Patients - Not Admitted	Referred and Seen by Inhouse Team Within 60 Minutes	Total Time in ED < 6 Hrs	Emergency Admissions waited < 6 Hrs	Emergency Admissions Waiting over 6 Hrs
South East Hosptials Group							
Waterford Regional Hospital							
Wexford General Hospital							
St Luke's General Hospital							
Sth Tipperary General Hospital							
Southern Hospitals Group							
Cork University	5.5	6.1	5.3	0	622	179	85
Bantry	1.2	1.5	1.2	0	96	14	0
Kerry General Hospital	2.8	3.2	2.6	0	481	125	45
Mercy University Hospital Cork							
South Infirmary Victoria university							
North East Hosptials Groups							
Our Lady of Lourdes Hospital							
Louth County Hospital							
Cavan General Hospital							
Monaghan General Hospital							
Our Lady's Hospital Navan							
Dublin North Hospital Group							
Mater Hospital							
Beaumont Hospital	11.5	20.9	8.6		368	62	115
Connolly Hospital							
Western Hospitals Group							
Sligo General							
Letterkenny General	2.9	2.6	3.3	230	0	0	365
University College Hospital Galway							
Mayo General Hospital							
Roscommon County Hospital							
Portiuncula Hospital, Balinasloe	2.8	2.7	2.8	0	352	109	16
Mid West Hosptials Group							
Limerick Regional Hospital	-	-	-	-	-	-	-
Ennis General Hospital							
Nenagh General Hospital	0	0	0	0	335	54	0
St John's Hospital							
Dublin Midlands Hospitals Group							
Longford Westmeath General							
Tullamore Midland Regional Hospital							
Portlaoise General Hospital							
AMNCH	12.1	6.8	15.4	0	840	179	155
Naas General Hospital							
Dublin South Hospitals Group							
St Vincent's University Hospital	8	6.9	8.1	0	498	0	59
St Columcilles Hospital							
St James's Hospital	7.9	10.3	7.2	0	435	156	54
St Michael's Hospital							

* Sligo only produce monthly basis due to IT systems

APPENDIX 4: SURVEY QUESTIONNAIRE

EMERGENCY INFORMATION AND DATA QUALITY SURVEY

Dear Participant,

The following study is being undertaken by the Performance Management Unit (PMU) in order:

- To establish the level of Information Technology (IT) integration in Emergency Departments (ED) in Ireland.
- To determine if there is a consensus between the ED in Ireland on the definitions and standards of data collected the PMU weekly template data collection document and if these concur with the definitions and standards set out by the PMU.
- To ascertain the current level of compliance with completing and returning this document and
- The impact, if any, of the availability IT on completing the document.

You are being asked to complete this survey as you are the link person between your establishment and the PMU. Please be assured that this study is completely anonymous and that at no time in this process will you as an individual or your hospital be identified. The survey takes the form of 5 parts, each part representing an area of data collection throughout the patient process in the ED:

Part 1-General Information (11 Questions);

Part 2-Registration Information (10 Questions);

Part 3-Triage Information (12 Questions);

Part 4-Clinical Assessment Information (16 Questions);

Part 5-Admission/Discharge Information (14 Questions).

In order to complete the survey successfully you may need to contact management staff working in the ED. Your co-operation in completing the survey is paramount to its success and your participation is gratefully appreciated.

Please do not hesitate to contact us with any questions or difficulties you are having in completing this survey.

The contact details are as follows:

Thanking you in advance for completing this survey,

Regards,

The Performance Management Unit.

Please Note: this survey is to include all "emergency" patients who attend your facility. It is not to include Outpatient attendances, elective admissions or planned attendances to specific units/departments

PART 1- GENERAL INFORMATION.

1. Please indicate which units/departments acute emergency patients attend directly in your hospital. Please tick all that apply:

- ☐ Emergency Department
- ☐ Paediatric Ward
- ☐ Medical Assessment Unit (MAU)
- ☐ Medical Admissions Unit
- ☐ AMAU
- ☐ CDU
- ☐ Obstetrics and Gynarcology Assessment Unit
- ☐ Acute Psychiatry Unit
- ☐ Other please specify _____

2. Please state the average number of "new" emergency patients who attended your hospital per month in 2007. Please indicate the total monthly average number of all patients who attend all the units indicated in Question 1.

_____

3. Is there a Patient Administration System (PAS) or Hospital Information System (HIS) in your hospital?

- ☐ Yes
- ☐ No

4 If "Yes" please state how long the PAS/ HIS system has been installed in your hospital (if "No" please go to Question 8). Please select one of the following:

- ☐ Less than 6 months
- ☐ Less than 1 year
- ☐ Less than 2 Years
- ☐ Less than 5 years
- ☐ Less than 10 Years
- ☐ Greater than 10 Years
- ☐ Greater than 15 years

5 If available in your hospital, is the PAS/HIS available in each unit where emergency patients attend?

- ☐ Yes
- ☐ No

☐ Other Please Specify

6 If available in your hospital, is the PAS/HIS used to collect patient data?

☐ Yes

☐ No

☐ Other (Please specify)

7 If PAS/HIS is available, does it have an ED module?

☐ Yes

☐ No

☐ Not Applicable

☐ Other (Please specify)

8 If you do not have a PAS/HIS or do not use the PAS/HIS in your hospital do you maintain a manual patient attendance log in each unit?

☐ Yes

☐ No

☐ Not Applicable

☐ Other (Please specify)

9 Is there an integrated Emergency Department Information System (EDIS) in your hospital?

☐ Yes

☐ No

10 Are all staff in your ED (or units where emergency patients attend) aware that performance indicator information is sent weekly to the HSE/PMU?
Select those who are aware:

☐ Hospital Management

☐ ED Management

☐ Clinical Staff in ED

☐ Administration staff in ED

☐ Clerical Staff in other units

☐ Other please specify

11 Comment
Please state any additional information about your unit(s) or facilities which would enhance data collection for the PMU

PART 2- REGISTRATION INFORMATION

1. How is patient attendance data collected?
   - ☐ Manually
   - ☐ Electronically
   - ☐ Both

2. Is patient registration/attendance time recorded?
   - ☐ Yes, manually
   - ☐ Yes, on IT system
   - ☒ No
   - ☐ Other (Please specify)

3. Is there a standardised method of collecting patient registration/attendance data throughout your hospital?
   - ☐ Yes
   - ☐ No

4. How is a "New" patient defined in your ED? Please select one of the following:
   - ☒ Any patient who attends the hospital as an emergency (new or return)
   - ☐ Any patient who attends as an emergency with a "New " complaint only
   - ☐ All patients except those scheduled to return to a specific ED Clinic
   - ☐ Other (Please specify)

5. How does your ED define a "Return" patient? Please select one of the following:
   - ☐ Any patient who returns within a specific period of time with the same complaint
   - ☐ Any patient who returns to attend an appointment for a specific ED Clinic e.g. Dressing/Review
   - ☐ Both
   - ☒ Other (Please specify)

6. If a "Return" patient is defined as one who returns within a specified period of time please state what that period of time is in your hospital.

- ☐ Within 48 Hours
- ☐ Within 1 week
- ☐ Within 1 Month
- ☐ Other (Please specify) _____

7. Is "mode of arrival" information collected in your hospital?
   - ☐ Yes
   - ☐ No
8. Is the emergency patient attendance information collected in your hospital submitted to the HSE/PMU? i.e. The number of "New" and "Return" patient attendances between specific time periods; ED, MAU, other emergency patients; Mode of arrival information; as per weekly HSE/PMU data collection document.
   - ☐ Yes
   - ☐ No
   - ☐ Other (Please specify) _____
9. Please indicate from which units in your hospital emergency patient information is submitted to the HSE/PMU. Please tick all that apply:
   - ☐ Emergency Department
     - ☐ Paediatric Ward
     - ☐ Medical Assessment Unit (MAU)
     - ☐ Medical Admissions Unit
     - ☐ AMAU
     - ☐ CDU
     - ☐ Obstetrics and Gynarcology Assessment Unit
     - ☐ Acute Psychiatry Unit
   - ☐ Other please specify _____
10. Comment
    Please add any additional comments you wish about registration information

PART 3-TRIAGE INFORMATION

1. Is the triage time recorded?
   - ☐ Yes, manually on ED notes
   - ☐ Yes, electronically on IT system
   - ☐ Both
   - ☐ No
   - ☐ Other please specify _____
2. How are the patient triage details recorded?
   - ☐ Manually, written on ED notes
   - ☐ Electronically, on IT system (printed on ED notes)

- ☐ Both
- ☐ Other please specify

3. If PAS/HIS is unavailable do you record the triage details in a manual log?
   - ☐ Yes
   - ☐ No
   - ☐ Not applicable
   - ☐ Other please specify

4. Does the ED staff in your hospital use a validated triage system? (If no please go to question 7)
   - ☐ Yes
   - ☐ No

5. If "Yes" please state which triage system they use? eg. Manchester, Australasian

6. Is this a 5 scale triage system?
   - ☐ Yes
   - ☐ No

7. Is a chief presenting complaint recorded for each patient? (If no please go to Question 10)
   - ☐ Yes
   - ☐ No

8. If "Yes" is this a standardised chief complaint data set?
   - ☐ Yes, an internationally recognised chief complaint data set
   - ☐ Yes, based on the triage system presenting complaints data set
   - ☐ Yes, a locally developed data set recorded on PAS/HIS system
   - ☐ Yes, a locally developed data set manually recorded on ED notes
   - ☐ No, free text only
   - ☐ Other please specify

9. If an internationally recognised chief complaint dataset is used please state which one.

10. Is the triage information collected submitted to the HSE/PMU?
    i.e. The number of patient attendances per triage category as per weekly HSE/PMU data collection document.
    - ☑ Yes
    - ☐ No
      - ☐ Other please specify

11. If "No" please state reason

12. Comment
    Please add any additional comments you wish about triage information

PART 4-CLINICAL ASSESSMENT INFORMATION

1. Is the time the patient is seen by the ED Doctor or Advanced Nurse Practitioner (ANP) recorded?
   - ☐ Yes, manually on ED notes
   - ☐ Yes, on IT system
   - ☐ Both
   - ☐ No
2. If you do not have and IT system do you record the time a patient is seen by the ED doctor or ANP in a manual log?
   - ☐ Yes
   - ☐ No
   - ☐ Not Applicable
   - ☐ Other please specify
3. Are the clinical notes recorded on your IT system?
   - ☐ Yes
   - ☐ No
4. Are patient tests ordered on your IT system (e.g. Radiology, laboratory etc)?
   - ☐ Yes, all tests
   - ☐ Radiology Only
   - ☐ Laboratory only
   - ☐ No
   - ☐ Other please specify
5. Are patient tests results/reports available on your IT system?
   - ☐ Yes, all tests
   - ☐ Radiology Only
   - ☐ Laboratory only
   - ☐ No
   - ☐ Other please specify
6. If a patient is referred to an in-house team is this recorded?
   - ☐ Yes, on ED notes
   - ☐ Yes. on IT system
   - ☐ Both
   - ☐ No
   - ☐ Other please specify
7. Is the time the patient is referred to an in-house team recorded?
   - ☐ Yes, on ED notes
   - ☐ Yes, on IT system
   - ☐ Both

☐ No

☐ Other please specify

8. If you do not record the time a patient is referred to an in-house team on an IT system do you record this time in a manual log?

☐ Yes

☐ No

☐ Not applicable

☐ Other please specify

9. Is the time a patient is seen by the in-house team recorded?

☐ Yes, on ED notes

☐ Yes, on IT system

☐ Both

☐ No

☐ Other please specify

10. If you do not record the time a patient is seen by the in-house team on an IT system do you record this time in a manual log?

☐ Yes

☐ No

☐ Not applicable

☐ Other please specify

11. Is the patient discharge diagnosis recorded?

☐ Yes, manually on ED Notes

☐ Yes, electronically on IT system

☐ Both

☐ No

☐ Other please specify

12. Is an internationally recognised discharge coding nomenclature for ED/ emergency patients used e.g. Snomed CT; ICD-10 etc.

☐ Yes

☐ No

13. If an internationally recognised discharge nomenclature is used please state which one.

14. Is the clinical assessment information collected submitted to the HSE/PMU?

The total number of patients referred to an in-house team; the number of patients referred and seen by an in-house team within 60 minutes as per weekly HSE/PMU data collection document.

- ☐ Yes
- ☐ No
- ☐ Other please specify

15. If "No" please state reason

16. Comment
Please add any additional comments you wish about clinical assessment information

PART 5- ADMISSION/DISCHARGE INFORMATION

1. Is the time the patient is discharged from the ED recorded?
   - ☐ Yes, manually on ED notes
   - ☐ Yes, on IT system
   - ☐ Both
   - ☐ Other please specify

2. If you do not have an IT system is the time a patient is discharged recorded in a manual log?
   - ☐ Yes
   - ☐ No
   - ☐ Not applicable
   - ☐ Other please specify

3. Is the patient ED episode closed on the PAS/HIS when the patient is discharged home?
   - ☐ Yes
   - ☐ No (the episode is left open in case the patient returns with the same complaint)
   - ☐ Other please specify

4. Is the time of decision to admit recorded?
   - ☐ Yes, on ED notes
   - ☐ Yes, on IT system
   - ☐ Both
   - ☐ No
   - ☐ Other please specify

5. If the PAS/HIS is not available in your hospital is the time of decision to admit recorded in a manual log?

- ☐ Yes
- ☐ No
- ☐ Not applicable
- ☐ Other please specify

6. Is the patient ED episode closed on PAS/HIS if the patient is admitted to the hospital?

- ☐ Yes
- ☉ No (the episode remains open in case the patient returns with the same complaint)
- ☐ Other please specify

7. At what stage in the admission process is the patient considered admitted in your hospital?

- ☉ When the patient is referred by ED and accepted by the in-house team
- ☐ When the in-house team assesses the patient and a decision to admit is made
- ☐ When an in-house bed is available and allocated to the patient
- ☐ When the patient is physically transported from the ED to the in-house bed
- ☐ Other please specify

8. Is there a bed management function available on your IT system?
An IT system that records bed requests, allocates patients to beds on wards and to admit/transfer patients

- ☐ Yes
- ☐ No
- ☐ Other please specify

9. Is the time that a bed is requested for a patient recorded?

- ☐ Yes, on a manual log
- ☐ Yes, on IT system
- ☐ Both
- ☐ No
- ☐ Other please specify

10. Is the time that the patient bed is allocated on the ward recorded?

- ☐ Yes, on a manual log
- ☐ Yes, on IT system
  - ☐ Both
  - ☐ No
  - ☐ Other please specify

11. Is the time the patient is transferred to the ward from ED/MAU recorded?

- ☐ Yes, on a manual log
- ☐ Yes, on IT system
  - ☐ Both

- [ ] No
- [ ] Other please specify

12. Is the ED discharge/admission data submitted to the HSE/PMU?
    Total time of all attendances; number of attendances subsequently admitted; total time in ED as per weekly HSE/PMU data collection document.
    - [ ] Yes
    - [ ] No
    - [ ] Other please specify

13. If "No" please state reason

14. Comment
    Please add any additional comments about discharge/admission information

Dear Participant,

We wish to thank you for completing this survey on behalf of your hospital. We appreciate the time and effort it took. Your continued co-operation in achieving our aims of data quality and consistency is paramount to the success of the Performance Management Unit. Please be assured that this survey is confidential and anonymous and neither you as an individual nor your hospital will be identified at any stage.

Copies of the final report will be made available to you when published.

Kind regards,

The Performance Management Unit.

APPENDIX 5: COVER LETTER FROM PMU TO ACCOMPANY INITIAL EMAIL

07/03/2008

Hello

The PMU has agreed to facilitate a study on the Weekly Activity Report which focuses on the quality of the information being returned and the resources currently available to hospitals.

Attached is the survey which can be completed electronically and which is completely anonymous. I would be most grateful if you could find the time to complete the survey and return it to PMU@hse.ie by Thursday March 20th 2008.

In order for the survey to be completed electronically you need to ensure that security on Macro's in your version of Microsoft are set to low or medium.

If you have any queries regarding the questions asked, you can contact Catherine Redican. Catherine can be contacted on creddee@gmail.com or 087 6478460

Thanking you in advance for your assistance.