

# Accident & Emergency HRGs Version 3.2 Definitions Manual



February 2002

## PURPOSE OF THIS DOCUMENT

To give details of the refined Healthcare Resource Groups for Accident & Emergency Medicine.

- How A&E HRG assignment is achieved
- Outline of plans for future development
- How to obtain A&E HRGs Version 3.2 Grouping Software

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## FOREWORD

HRGs are a casemix analysis tool which enables the NHS to use actual activity data to better understand what it does, how its resources are used, what services to commission and provide and monitor its own performance.

In order to make the most of this powerful analytical tool it is important that we develop HRGs covering all services and that those HRGs reflect activity intensity and cost as consistently and accurately as possible. Casemix analysis can then make a significant contribution to more accurate budgeting, planning, commissioning and performance management.

Version 3.2 HRGs for Accident and Emergency Medicine constitute a significant step forward in more accurate understanding of A&E Services. They will be involved in the National Schedule of Reference Costs and form one of the steps in enabling us all to make better decisions about future provision of services overall.

This work has been a collaborative exercise between Population Health & Service Management Information, the group of Clinical Experts led by Nigel Brayley, Consultant in Emergency Medicine at Colchester and the five pilot sites (Harrogate District Hospital, Derbyshire Royal Infirmary, Sandwell Healthcare NHS Trust, The Princess Alexandra Hospital and Stoke Mandeville Hospital NHS Trust) who volunteered to contribute to this important work. I am grateful to all those involved, and particularly Mr Brayley, for all their hard work and commitment.

**Leonie Mountney**  
**Head of Delivery**  
**Population Health & Service Management Information Programme**

## CLINICAL WORKING GROUP LEADER'S INTRODUCTION

**Written by Mr Nigel Brayley FRCS FFAEM  
Consultant in Emergency Medicine, Colchester General Hospital  
Chairman Clinical Working Group 2000**

The historical perspective is stated in Mr. Jonathan Marrow's Foreword for Healthcare Resource Group (HRGs) Version 2.1 in 1996.

*"It is estimated that about 11 million people are cared for in the Accident and Emergency Departments of the United Kingdom in the course of each year. There is active debate about what resources are needed in the Departments who look after them. Comparisons between hospitals are difficult because patients range from those who need very little treatment to those who effectively need intensive care from the moment of arrival. Global numbers can thus miss huge differences in the workload of apparently similar departments.*

*The casemix measure which we put forward in this document is intended to give a practical way of breaking down the clinical workload of each Accident and Emergency Department, to allow some measurement of resource use, especially relative to other departments. We have intentionally restricted our scale initially to information routinely collected in all hospitals.*

*This scale is a first version, only. Other data, which might allow further refinement, is still being studied. This includes triage category and procedures used in the course of treatment. More uniformity is needed in the way in which these are recorded before they can be applied in this country".*

The initial casemix measure V 2.1 was driven by the disposal category which proved to be a robustly collected data item and proved to be useful in several tests of resource use. It was however subject to criticism by clinicians who felt it was not clinically discerning between different groups of patients.

Investigations and procedures are the obvious cost drivers, but the working party felt unsure that this data was routinely collected to a sufficient level of accuracy to be useful as a driver of a system that in the future might be used for driving a prospective payment/reimbursement system.

Work in Australia suggested that the recently adopted U.K. five point National Triage Scale should be studied again.

Trolley Waiters associated with "Winter pressures" suggested that time in the department might be a surrogate for attracting nursing resources.

The changed clinical practice of expensive thrombolytics being administered increasingly by Specialty staff to Cardiac and DVT patients suggested another avenue of study.

The Clinical Working Group advised Population Health & Service Management Information of the NHS Information Authority of its areas of interest. A study was commissioned in five English hospitals representing a broad spectrum of patient care. In the year 1999 a database of over 100,000 attendances was compiled and studied to try and refine the casemix measure.

### The findings:

A hierarchy of investigations in broad groups appeared to be useable when combined as a screen with the disposal.

Triage proved to be a surrogate for disposal, was less consistently collected, and was not currently a minimum dataset item.

Trolley Waits were only a significant discriminator in the first two hours, after that the resource usage merged, disabling it as a cost driver.

Cardiac patients as a group proved to be expensive but there was no single easy handle or minimum dataset item identified for this group.

### The Clinical Working Group made the following recommendations

Investigations in broad groups appeared to be useable when combined as a screen with the disposal.

Triage category and thrombolytic usage should become future minimum dataset items.

Triage needed to be more evenly applied if it was to become a cost driver as in Australia.

*(The reduction in variance RIV achieved by the new HRG version was 64%, which compared favourably with the Australian casemix measure.)*

Further refinement work would be necessary after gaining experience in how the new version performed in practice.

All patients, including GP admissions, should be included in the Departmental Casemix analysis and triaged on arrival.

All departments should be resourced to overcome any logistical problems in achieving the data capture required to drive the new casemix measure.

In summary; steering the casemix measure forward requires determined application of the new HRG Version **NOW**. It can be delivered by diligent application of existing minimum dataset items. Further refinement routes have been identified. Appropriate application of the new Version should result in opportunities for improving patient care at a critical time of change in NHS funding.

**Mr Nigel Brayley FRCS FFAEM**

## CASEMIX DEVELOPMENT IN THE NHS INFORMATION AUTHORITY

The development of successful healthcare services requires, among other things, access to rich sources of information.

A standardised method of measuring healthcare need against provision provides valuable assistance in service planning, performance appraisal and commissioning.

Casemix development in the NHS Information Authority aims to establish a methodology which will support all healthcare professionals in better understanding local healthcare needs.

Health Benefit Groups (HBGs) categorise people according to their healthcare needs and expected outcomes (given similar interventions), and enable healthcare managers to view the normal range of care appropriate to treat them.

Healthcare Resource Groups (HRGs) provide a categorisation of interventions undertaken and the resources required to deliver them. A patient's record of treatment is assigned an HRG using a nationally agreed set of standard rules.

While the original set of HRGs was created for inpatient interventions. The Authority is developing sets of HRGs to cover more of the services provided by the NHS.

HRGs are the foundation of the National Schedule of Reference Costs and an important component of the published High Level Performance Indicators.

## OTHER ANALYTICAL TOOL DEVELOPMENTS

Analytical Tool development includes:

- Acute HRG developments for Radiotherapy, Chemotherapy, Radiology, A&E and Critical Care. Additional work is ongoing for Paediatrics, Neonates and Pathology.
- Development of HBG and HRG groupings for Mental Health.
- Developments of groupings for Adults with Learning Disability
- Development of HBGs for diabetes, osteo-arthritis of the hip, fractures of neck and femur, site-specific cancers, stroke, and head injury.

### Further Information and Services

For further information please contact:

Helpdesk  
NHS Information Authority  
Population Health and Service Management Information  
Highcroft  
Romsey Road  
Winchester  
Hampshire  
SO22 5DH

Tel: 01962-844588

Fax: 01962-844711

E-mail: [helpdesk3@srj.nhsia.nhs.uk](mailto:helpdesk3@srj.nhsia.nhs.uk)

Website: [www.casemix.nhsia.nhs.uk](http://www.casemix.nhsia.nhs.uk)

**NHSnet:** [www.casemix.nhsia.nhs.uk](http://www.casemix.nhsia.nhs.uk)

## ACCIDENT & EMERGENCY MEDICINE HRGs REFINEMENT PROJECT

### 1. Background

In 1995, a preliminary version of Healthcare Resource Groups (HRGs) for Accident and Emergency Medicine was published. These HRGs were derived solely from the Attendance Disposal variable as defined for the purposes of the Accident and Emergency Minimum Data Set (MDS) and split Accident and Emergency attendances into four basic groups (plus a 'U' group):

**Table 1: A&E HRGs Version 2.1:**

V01	Died
V02	Transferred
V03	Referred
V04	Discharged

The initial version of the A&E HRGs, given the known limitations of the A&E MDS, was felt at the time to be both statistically-valid and have some clinical meaning. However, it was agreed that a further refinement project would be undertaken in the future to provide an improved casemix measure for the specialty.

As from June 2000, the National Schedule of Reference Costs includes A&E activity from all acute trusts, utilising the first version of the A&E HRGs (attendance count and costs by HRG). The results of a short costing pilot undertaken by the National Steering Group on Costing in 1998 supported the requirement for a more clinically-significant version of the A&E HRGs to be made available, for use in NSRC costing at the earliest opportunity.

In order for this requirement to be met and for A&E departments to be given notice of any new mandatory data requirements, a deadline for delivery of the second version of the A&E HRGs of summer 2000 was agreed.

### 2. Accident and Emergency Refinement Project

#### Method

In order to establish an analytical basis for refinement of the A&E HRGs, a pilot costing exercise was established involving five A&E providers selected in accordance with agreed shortlisting criteria by A&E Clinical Working Group members. Pilot sites were asked to provide four months' activity data to A&E MDS specifications, together with triage data in accordance with the UK National Triage Scale. This then provided a consistent basis for statistical analysis.

Project participants were also provided with a project costing methodology, which was further supplemented by data from a short time and motion study conducted by one of the pilot sites.

The project yielded good quality data from the pilot sites, amounting to over 100,000 attendances. The data was then analysed to identify potential grouping approaches, for further discussion with the Clinical Working Group and pilot site representatives.

**Results**

Not surprisingly, the analysis of the data has again questioned the usefulness of a number of the variables within the A&E MDS in terms of measurement of resource variation. It is important that HRGs are derived where possible from routinely-collected data and so A&E HRG refinement is limited to some degree by this requirement. However, this does not preclude the possibility of some changes being made to the A&E MDS in tandem with the release of the second version of the A&E HRGs.

The performance of triage as a potential grouping variable was also disappointing, highlighting a lack of uniformity in the application of the UK National Triage Scale across the pilot sites. This was nonetheless a valuable lesson for A&E specialists to learn.

Following considerable discussion with A&E Clinical Working Group members and re-evaluation of the pilot data, the preferred grouping option utilises Attendance Disposal in conjunction with the Investigation variable, with attendances to be assigned to an HRG on the basis of the most resource-intensive investigation. The existing Attendance Disposal splits have been used ('transferred' has been re-labelled 'admitted' which is clinically preferable). These have then been combined with the investigations, which have been categorised in a costing hierarchy as follows:

**Table 2: A&E Investigations by Cost Level**

Code	Investigation	Cost Level
01	X-ray	High
02	ECG	Lower
03	Haematology	Lower
04	Cross match	High
05	Biochemistry	Lower
06	Urine	Lower
07	Bacteriology	Lower
08	Histology	High
09	Computerised Tomography	High Cost Imaging
10	Ultrasound	High
11	Magnetic Resonance Imaging	High Cost Imaging
99	Other	Lower

As regards the project data, the split in terms of the refined A&E HRGs (Version 3.2) is as follows (cost apportionments are expressed in Relative Value Units):

**Table 3: Summary of Refinement Project Data in respect of A&E HRGs Version 3.1**

Group	Label	Count	%	Relative value unit
V013.1	High Cost Imaging (died/admitted)	168	0.2	7.0
V023.1	High Cost Imaging (referred/discharged)	63	0.1	5.7
V033.1	Other High Cost Investigation (died/admitted)	8014	7.6	2.1
V043.1	Other High Cost Investigation (referred/discharged)	25267	25.0	1.5
V053.1	Lower Cost Investigation (died/admitted)	3837	4.2	1.4
V063.1	Lower Cost Investigation (referred/discharged)	5742	5.9	1.1
V073.1	No Investigation (died/admitted)	5821	5.8	0.8
V083.1	No Investigation (referred/discharged)	49958	49.8	0.6
U063.1	Invalid For Grouping	1373	1.4	0.7
	<b>Total</b>	<b>100243</b>		

Given the limitations of the A&E MDS, the refined A&E HRGs are an improvement on the first version and give more indication of what has been ‘done’ to the patient, as a proxy for the treatment the patient has received in the A&E department. The A&E Treatments themselves as defined in the A&E MDS have not performed well statistically in either of the A&E HRG development projects and lack clinical credibility. Investigations are viewed as being relatively easy to collect and non-gameable. There will be enormous potential to develop the A&E HRGs further in line with a three-year refinement cycle.

### 3. Further Work

In tandem with the publication of the second version of the A&E HRGs, Population Health & Service Management Information has agreed to undertake the following:

- The further clarification of certain MDS data items e.g. Treatments, Investigations, Patient Grouping.
- To make a case to the Management Information Standards Board for the addition of the UK National Triage Scale as an MDS data item.
- To clarify the MDS definition of ‘Accepted Patient’.
- To support BAEM representations to the National Costing Strategy Group with regard to defining an appropriate national costing approach to A&E.
- To ask the five pilot sites to supply 12 months’ data in order for the refined HRGs to be explored further (and to input to the costing methodology deliberations).
- To refine the A&E HRGs further in three years’ time.

- To provide support with any articles that Clinical Working Group members may wish to write as a result of the project.
- To make the project database available to the BAEM for its own analytical purposes (subject to the agreement of the participating pilot sites).

#### **4. Additional Work since the Release of A&E V3.1 HRGs**

The A&E Clinical Working Group requested changes to national A&E definitions to bring them more into line with current practice, and the introduction of a national triage scale. These changes have been approved by the Management Information Standards Board.

Parenteral Thrombolysis is required for the National Service Framework and has been added as a separate classification of Accident and Emergency Treatment.

Magnetic Resonance Imaging is now available within some A&E Departments and has been added as a classification of Accident and Emergency investigation.

A&E initial assessment triage category has been added as a new attribute to Accident & Emergency attendance to introduce a single national scale for A&E patient triage.

DSCN 25/2001 introduces these changes effective from 1 April 2002.

#### **5. A&E HRGs V3.2**

The mandated collection of Magnetic Resonance Imaging from April 2002 has resulted in this revision of the Definitions Manual and a revision of the A&E HRG Grouper, both are released as V3.2.

It should be noted this is not a complete revision of the A&E Definitions Manual and the Introduction remains as issued in V3.1.

DSCN 46/2001 introduces this change from April 2002.

## ACCIDENT AND EMERGENCY MEDICINE HRGs VERSION 3.2

Publication of HRG codes concatenate both the HRG code and HRG Code – Version Number to provide an instantly identifiable code. In implementation, these codes are to be treated as the separate group code, for example “VO1” and the algorithm version for example “3.2”. Both the group code and the algorithm version are of the format AAA.

Please note that some version designations may appear to be shorter than 3 characters being right padded by spaces, for example “op” indicates the Outpatient Version 1 groupings.

HRG Code	HRG Text Label
V013.1	High Cost Imaging (died/admitted)
V023.1	High Cost Imaging (referred/discharged)
V033.1	Other High Cost Investigation (died/admitted)
V043.1	Other High Cost Investigation (referred/discharged)
V053.1	Lower Cost Investigation (died/admitted)
V063.1	Lower Cost Investigation (referred/discharged)
V073.1	No Investigation (died/admitted)
V083.1	No Investigation (referred/discharged)
U063.1	Invalid For Grouping

## HOW TO OBTAIN A&E HRGs VERSION 3.2 GROUPING SOFTWARE

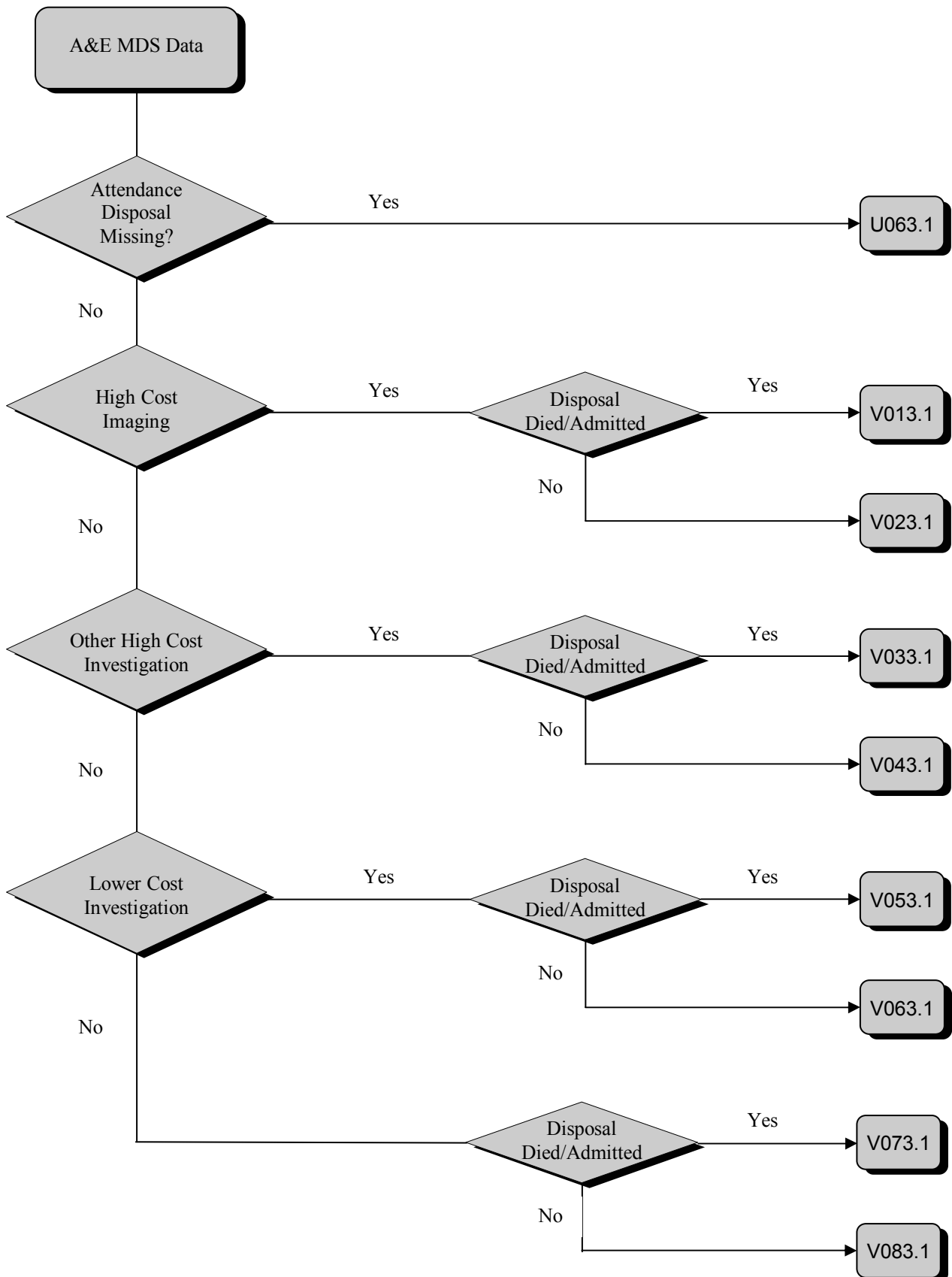
The grouping algorithms for the V3.2 HRG grouping software can be obtained from the ‘Downloads’ section of the Population Health & Service Management Information website:

[www.casemix.nhsia.nhs.uk](http://www.casemix.nhsia.nhs.uk)  
[www.casemix.nhsia.nhs.uk](http://www.casemix.nhsia.nhs.uk)

The software can also be obtained on floppy disk from the Project Support Office (contact details as below).

An order form for the HRGs Version 3.2 grouper can be obtained from the ‘Product Catalogue’ on the Population Health & Services Management Information website or from the Helpdesk, NHS Information Authority(Population Health & Service Management Information), Highcroft, Romsey Road, Winchester, SO22 5DH. Tel: 01962 844588, Fax:01962 844711, E-mail: [helpdesk3@nhsia.nhs.uk](mailto:helpdesk3@nhsia.nhs.uk).

**ACCIDENT & EMERGENCY MEDICINE HRGs VERSION 3.2  
FLOW DIAGRAM**



## A&E HRGs VERSION 3.1 AND A&E INVESTIGATION/ATTENDANCE DISPOSAL CODES MAP

A&E HRG v3.1 Label/Codes		A&E Investigation/ Codes *		A&E: Attendance Disposal *
High Cost Imaging (died/admitted) V013.1	→	Computerised Tomography (CT) – 09 Magnetic Resonance Imaging (MRI) - 11	→	Admitted to hospital bed / became a lodged patient of the same Health Care provider – 01 Transferred to other Health Care provider – 07 Died in department – 10
High Cost Imaging (referred/discharged) V023.1	→	Computerised Tomography (CT) – 09 Magnetic Resonance Imaging (MRI) - 11	→	Discharged to care of – follow up treatment to be provided by General Practitioner – 02 Discharged – did not require any follow up treatment No General Practitioner – 03 Referred to A&E Clinic – 04 Referred to Fracture Clinic – 05 Referred to other Out-Patient clinic - 06 Referred to other Health Care Professional – 11 Left Department before being treated – 12 Left Department having refused treatment –13
Other High Cost Investigation (died/admitted) V033.1	→	X-ray – 01 Cross match – 04 Histology – 08 Ultrasound - 10	→	Admitted to hospital bed / became a lodged patient of the same Health Care provider – 01 Transferred to other Health Care provider – 07 Died in department – 10
Other High Cost Investigation (referred/discharged) V043.1	→	X-ray – 01 Cross match – 04 Histology – 08 Ultrasound - 10	→	Discharged to care of – follow up treatment to be provided by General Practitioner – 02 Discharged – did not require any follow up treatment No General Practitioner – 03 Referred to A&E Clinic – 04 Referred to Fracture Clinic – 05 Referred to other Out-Patient clinic - 06 Referred to other Health Care Professional – 11 Left Department before being treated – 12 Left Department having refused treatment –13
Lower Cost Investigation (died/admitted) V053.1	→	ECG – 02 Haematology – 03 Biochemistry – 05 Urine – 06 Bacteriology – 07 Other – 99	→	Admitted to hospital bed / became a lodged patient of the same Health Care provider – 01 Transferred to other Health Care provider – 07 Died in department - 10

\* As defined in the NHS Data Dictionary.

A&E HRG v3.1 Label/Codes		A&E Investigation/ Codes *		A&E: Attendance Disposal *
Lower Cost Investigation (referred/discharged) V063.1	→	ECG – 02 Haematology – 03 Biochemistry – 05 Urine – 06 Bacteriology – 07 Other - 99	→	Discharged to care of – follow up treatment to be provided by General Practitioner – 02 Discharged – did not require any follow up treatment No General Practitioner – 03 Referred to A&E Clinic – 04 Referred to Fracture Clinic – 05 Referred to other Out-Patient clinic - 06 Referred to other Health Care Professional – 11 Left Department before being treated – 12 Left Department having refused treatment –13
No Investigation (died/admitted) V073.1	→	-	→	Admitted to hospital bed / became a lodged patient of the same Health Care provider – 01 Transferred to other Health Care provider – 07 Died in department – 10
No Investigation (referred/discharged) V083.1	→	-	→	Discharged to care of – follow up treatment to be provided by General Practitioner – 02 Discharged – did not require any follow up treatment No General Practitioner – 03 Referred to A&E Clinic – 04 Referred to Fracture Clinic – 05 Referred to other Out-Patient clinic - 06 Referred to other Health Care Professional – 11 Left Department before being treated – 12 Left Department having refused treatment –13
Invalid for Grouping U063.1	→	Invalid	→	Other – 14, blank or invalid

\* As defined in the NHS Data Dictionary.