National Casemix Office

NHS Digital

Casemix Companion

HRG4+ 2018/19 Local Payment Grouper

HRG4+ 2017/18 Local Payment Grouper

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1 Introduction

This document is intended to provide a starting point and general reference for the Casemix Classification system that is widely used by the NHS in England, providing an introduction to:

- Casemix
- Healthcare Resource Groups (HRGs)
- HRG design concepts
- Groupers and grouping logic

At the end of the document (**Section 8**), you will also find useful links to further information about our external partner organisations.

This document can be broken down into a number of layers that build upon each other.

- The first layer, **Section 4 HRG Design Concepts**, explains the underlying design concepts of the classification that have been in use for a number of years
- The second layer, **Section 5 Introduction to HRG4+**, explains the developments that have been made recently to these HRG design concepts
- The third layer, **Section 6 Grouping Logic**, explains how the design concepts and recent developments are built into the software. This section also explains the different stages of grouping patient data

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2 What is Casemix

Casemix is a method of classifying patient care based on expected clinical resource use for the provision of that care. HRGs are the main casemix classification within the NHS in England and are developed and maintained by the National Casemix Office (NCO) at NHS Digital.

The NCO is an impartial, independent body accountable to the NHS, NHS England, NHS Improvement (previously known as Monitor) and the Department of Health. Our remit is to develop and enforce national standards underpinning the monitoring, measurement and improvement of healthcare performance at a local, regional and national level. A rigorous and effective casemix currency can make a significant difference to the health service and can be used to provide the basis for delivering local improvements in patient care.

We actively involve the broadest range of stakeholders possible; NHS England, NHS Improvement, and the Department of Health as well as NHS senior clinicians, finance and information colleagues, who make up our Expert Working Groups (EWGs).

The Casemix design relies on the availability of national data flows, data definitions and data standards. The NCO manages a complex interface between each of these in order to develop and improve our service and maintain our status in the national and international arena.

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3 Healthcare Resource Groups

HRGs are clinically meaningful groupings of patient activity derived primarily from procedure (OPCS-4) and diagnosis (ICD-10) codes within patient records. They are used, amongst other things, as a means of determining fair and equitable reimbursement for healthcare services, by providing consistent 'units of currency' to support standardised commissioning across the NHS, at a local, regional and national level.

For further information regarding both OPCS-4 procedure codes and ICD-10 diagnosis codes, please see **Section 8** of this document.

The HRGs are reviewed and enhanced on an annual basis to ensure that the classification keeps pace with NHS advancements. The most current version of the Casemix classification is HRG4+ (used for the nationally mandated Reference Costs collection from the 2012/13 financial year onwards).

HRGs can also help organisations to better understand their activity, the different types of patients they care for, and the treatments they deliver. They enable activity comparisons within and between organisations, as well as providing an opportunity to benchmark treatments and services, and support trend analysis over time, to underpin informed local decision-making, and improve patient outcomes.

The NHS used HRG4 to cost clinical activity from the 2006/07 financial year to the 2011/12 financial year, and have been reimbursed via the HRG4 classification from April 2009. It is expected that with effect from 1st April 2017, the national reimbursement of NHS services will be based on the enhanced HRG4+ classification.

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4 HRG Design Concepts

4.1 Casemix Design Framework

Casemix classification design is governed by the Casemix Design Framework which provides comprehensive guidance for stakeholders involved in the design process regarding scope, format, data and HRG performance requirements.

Stakeholders are comprised of representatives from Royal Colleges, clinical professions, NHS Improvement, NHS England, NHS Chief Executives and professional bodies within the independent sector. In brief, the design rules stipulate that:

- HRGs must be clinically meaningful and contain activity with similar expected resource intensity. This not only ensures that HRGs provide a valuable dialogue mechanism between clinical and finance professionals, but that average costs or national tariffs at the HRG level do not systematically under-represent the resource use of the care provided when treating particular groups of patients
- Data used to define HRGs should be routinely available, to minimise the burden of data collection on the NHS
- There should be a manageable number of HRGs to cover all patients, ensuring that the administrative burden of processing and evaluating HRG-level data in terms of costing and reimbursement is curtailed.

4.2 HRG Code Structure

HRGs are identified by a five character code structure:

Chapter/Subchapter	HRG Number	Split
AA	NN	A

- The first alphabetical character **(A)** represents the **HRG Chapter**
- The first two alphabetical characters **together (AA)** represent the **HRG Subchapter**
- The next two numeric characters **(NN)** represent the **HRG Number** within the Subchapter
- The final alphabetical character **(A)** signifies the **Split** applicable to the HRG.

The first four character codes, when combined, are classed as the HRG root.

General principles for the HRG design are that:

- HRGs are divided into clinically meaningful sections (chapters and subchapters)
- The lower the HRG Number, the higher the expected resource use of that HRG in relation to other HRGs within the subchapter
- The final character split within the HRG code structure is a single character code which further describes activity, such as age, length of stay or complications/comorbidities. Other than the value of ‘Z’, indicating that no split is present, split characters are not standardised across the HRG design

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For example, the HRG4+ HRG **GA04C Complex Open, Hepatobiliary or Pancreatic Procedures, with CC Score 3+** can be broken down into the following component parts:

- Chapter **G** - Hepatobiliary and Pancreatic System
- Subchapter **GA** - Hepatobiliary and Pancreatic System Surgery
- HRG Number **04** - Complex Open, Hepatobiliary or Pancreatic Procedures
- Split **C** - with CC Score 3+

The Code to Group spreadsheet (released with each Grouper product) lists the chapters and subchapters relevant to an individual grouper product. As the HRG design necessarily changes over time, you should always make sure that the Code to Group Excel file used relates to the same Grouper software in both purpose (Costing / Payment) and financial year.

4.3 Setting-independence

Setting-independence means that if a procedure can be performed across different care settings, the same HRG can be derived regardless of setting. For example, an endoscopy would generate the same HRG regardless of whether it was performed as an outpatient, day case or inpatient procedure. It is important to understand that Setting-independence applies to procedure-driven HRGs only. It does not apply to diagnosis-driven HRGs, nor HRGs that are derived from data items other than the procedure (OPCS-4) or diagnosis (ICD-10) primary classifications.

4.4 Non-Admitted Consultations (Outpatients)

Non-admitted consultation (Outpatient) HRGs are derived where no (relevant) procedure code is recorded. HRG derivation, for outpatient data, is not dependent on diagnosis as these data are not mandated as part of the Outpatient Commissioning Data Set.

In certain settings, for example outpatient clinics, it is possible that a procedure may not carried out, or may not always be recorded, meaning that a procedure-driven HRG cannot be generated.

In these situations, where minimum mandatory information is recorded, one of the global non-admitted HRGs within Subchapter WF, Non-Admitted Consultations will be assigned. For further information, please refer to the chapter summary for subchapter WF. Chapter summaries are available for every HRG subchapter and provide an overview of the HRGs, details of changes made from previous grouper releases and a brief description of the design concepts utilised in the development of the HRGs in the subchapter.

4.5 Procedure Hierarchies

Where a patient has more than one procedure recorded, the dominant (highest expected resource use) procedure will be used to derive the HRG. Each procedure is assigned a hierarchical value associated with its expected resource consequences (see **section 6.2** for further information). These hierarchical rankings are intended to reflect the relative costs of individual procedures.

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In the event of two (or more) procedures being recorded within a single patient record with the same procedure hierarchy, the first in the patient record will drive HRG grouping at both the episode and spell level.

In certain circumstances, particularly where it is common clinical practice to undertake two or more procedures within the same hospital admission, escalator logic may be used within the HRG design to generate an HRG that reflects the fact that more than one procedure has been undertaken. The surgical HRGs that are designed to identify where more than one procedure has taken place within a single hospital admission are intended to reflect the higher expected resource use of patient care (see **section 6.8** for further information).

4.6 Diagnosis Hierarchies

Each Finished Consultant Episode (FCE) will have a primary diagnosis recorded, reflecting the primary reason for care, and as determined by the clinical record for the patient.

Each diagnosis that is valid in the primary position of the patient record is assigned a hierarchical level associated with its expected resource consequences (see **section 6.3** for further information). These hierarchical rankings reflect the expected relative cost of each primary diagnosis.

Where a patient has more than one primary diagnosis in a spell, because that patient spell contains more than a single FCE (as a result of a transfer of consultant responsibility), and the primary diagnoses of the FCEs within that spell differ, it is necessary to determine the primary diagnosis of the spell, before the spell activity can derive an appropriate spell HRG.

For HRG grouping purposes, the primary diagnosis of a spell is therefore deemed to be:

- The primary diagnosis of the episode containing the dominant procedure;

  or, where no dominant significant procedure exists within the patient record,

- The primary diagnosis with the first highest diagnosis hierarchy in the patient record.

4.7 Complication and comorbidity splits

Complication and comorbidity (CC) splits are a way of incorporating varying severity and complexity levels within the design of the HRGs. Some HRGs are split by complication and comorbidity by use of a CC list.

The purpose of each CC list is to identify secondary diagnoses that result in additional resources being used by patients, and are a way of incorporating severity and complexity within the design of the HRGs.

It is important to attempt to describe severity and complexity as concepts where severity describes the extent of a particular condition and complexity describes the multiple natures of problems and conditions that a patient has. Dual-coded diagnoses often provide a way of describing the severity of a condition and are a principle used in disease staging. CC splits are used in particular in the diagnosis-driven HRGs as a way of indicating varying illness severity for patients with the same primary diagnosis.

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The coding of multiple morbidities and complications describes the complexity of the patient. The ICD-10 diagnosis coding classification also includes a number of social factors and proxies that may help to describe the wider health needs of a patient.

It is important to note that a particular secondary diagnosis may be a major complication for some procedures or conditions whilst not being a relevant complication for others. The relevance and ranking of complications and comorbidities have therefore been assessed at subchapter level by individual Expert Working Groups (EWGs) to ensure that CCs are appropriately allocated. For CCs to be recognised in HRG derivation terms, therefore, they must be both unique, and clinically relevant.

4.8 Multiple Trauma

This grouping mechanism has been defined to identify high resource, complex treatments associated with admissions for multiple trauma cases, i.e. simultaneous traumatic injuries involving more than one body site. Body sites have been defined, each containing a table of non-superficial trauma procedures relating to a specific body site. The body sites are:

- Abdominal
- Chest
- Head
- Kidney
- Lower Limb
- Upper Limb
- Pelvis or Spine
- Urinary
- Other

If a patient is recorded as requiring treatment for two or more different body sites, this will generate a Multiple Trauma HRG for that episode of care. Multiple Trauma is differentiated from Major Trauma within the HRG design, as Major Trauma may be specific to a single body site, rather than the minimum of two different body sites required for Multiple Trauma HRG derivation.

Once a patient is determined as being a Multiple Trauma patient in HRG design terms, the concepts of primary diagnosis and dominant procedure are no longer relevant. The HRG design effectively acknowledges all diagnoses and all procedures as being relevant to the resource impact of the healthcare provided, and HRGs are assigned via a matrix scoring system that reflects the breadth of what is clinically wrong with the patient, and the range of procedures undertaken on that patient.

4.9 Unbundling

To improve the performance of HRGs and better represent activity and costs, some significant elements of cost and activity are identified separately, or “unbundled” from the core HRGs that reflect the primary reason for a patient admission or treatment. These unbundled HRGs therefore better describe the elements of care that comprise the patient pathway within a hospital admission or outpatient attendance.

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In previous versions of HRGs (i.e. up to HRG v3.5), each episode of care would derive a single HRG. In HRG4, some significant elements of cost and activity have been “unbundled” from core HRGs. The impact of this is that a single patient record will be assigned more than one HRG if it includes any “unbundled” elements. The “unbundled component” becomes an HRG in its own right as an addition to a core HRG for the episode or spell of care. Unbundled HRGs may be event-based, and thus derived from the presence of a specific OPCS-4 code in the patient record, or duration-based, the latter being generated on a per diem basis.

Unbundled HRGs have been developed for:

- Chemotherapy – Regimen Procurement and Delivery
- Radiotherapy – Planning and Treatment
- Diagnostic Imaging (e.g. MRI/CT)
- Rehabilitation
- Renal Dialysis for Acute Kidney Injury
- Critical Care – Adult, Paediatric and Neonatal
- Specialist Palliative Care
- High Cost Drugs

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5 Introduction to HRG4+

The latest iteration of the HRG classification, HRG4+, was approved by NHS England, NHS Improvement and the Department of Health to form the basis of the National Reference Costs Collection from the 2012/13 financial year onwards and will be used as the basis of the National Tariff System (NTS) from the 2017/18 financial year onwards.

The national reimbursement system which will be effective from April 2017 will be based on costs collected in 2014/15 by the Department of Health using the HRG4+ Reference Costs 2014/15 design (Phase 3).

HRG4+ has been developed to support NHS England and NHS improvement's national tariff policy, by providing a classification that remains representative of current clinical practice. It supports service planning, costing and national and local commissioning by providing reliable and consistent activity data to support patient choice and service planning analysis.

HRG4+ supports requirements outlined within the Health and Social Care Act 2012, by allowing for specialised services, provided in tertiary centres and NHS Centres of Excellence, to be distinctly identified and appropriately costed and funded. This enables more effective planning and service redesign within local health economies.

HRG4+ is a significant enhancement to HRG4, and employs a number of new and improved mechanisms to enable differentiation between levels of care complexity.

The enhancements offered as part of the HRG4+ Casemix classification have been developed in partnership with the clinical community, as represented and endorsed by the Royal Colleges, Associations and Professional Bodies.

The key developments and enhancements introduced into the HRG4+ design are identified below.

5.1 A Greater Number of HRGs

There is an increase in the number of HRGs from 1,673 in the HRG4 2016/17 Payment Grouper (based on HRG4 Reference Costs 2011/12) to 2,782 in the HRG4+ 2017/18 Payment Grouper, in order to offer greater granularity in the classification and support the improved identification of specialist services which are often high cost in nature.

5.2 Interactive Complication and Comorbidity (CC) splits

Standard complication and comorbidity splits have been replaced with new Interactive complication and comorbidity splits in the majority of HRG4+ subchapters. Interactive CCs are based on summed scores and more appropriately reflect the expected additional resource use of treating patients with multiple comorbidities. The HRG is determined by the summed 'score' of all unique secondary diagnoses which appear on the subchapter-specific CC list. As per Design Framework requirements, major CCs have a nominal value of two and all other CCs have a nominal value of one.

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5.3 Procedure Hierarchy Changes

Procedure hierarchy (PH) scores were expanded as part of HRG4+ and reassigned to OPCS-4 codes to more appropriately reflect the expected resource use of procedures across all subchapters, particularly when differentiating between low-cost high-volume procedures. A logarithmic hierarchy range runs from 3 to 40, with a lower resource difference expected between the bands at the lower end than those at the higher.

Procedure hierarchies were also amended to eliminate overlap between HRG 'categories'. Where multiple procedures are recorded, the procedure with the first highest hierarchy value will drive grouping to the appropriate highest expected resource HRG, unless the HRG design accommodates multiple procedure activity.

5.4 Diagnosis Hierarchy Changes

Diagnosis hierarchy (DH) scores were expanded in HRG4+ and reassigned to ICD-10 codes to better reflect the expected resource use of diagnoses across all subchapters. Diagnosis hierarchies are used to determine the primary diagnosis of a multi-episode spell with multiple different primary diagnoses across the episodes. The logarithmic DH range runs from 5 to 26, with a lower resource difference expected between the bands at the lower end than those at the higher. This review also provides improved foundations on which to implement Interactive CC logics.

5.5 Changes made to accommodate ICD-10 5th Edition

Changes to the primary diagnosis classification ICD-10, implemented from 1st April 2016, have been incorporated within the HRG4+ design. Where a new code has been added, Expert Working Group advice was sought to determine the most appropriate HRG(s) to map to, and to confirm whether new codes should be a member of specific lists, such as CC lists.

With regard to ICD-10 code deletions from the ICD-10 5th Edition, the grouper implements the ICD-10 classifications as detailed by the National Classifications Service within NHS Digital. Therefore, ICD-10 codes that are not present in ICD-10 5th Edition are not valid for use, from April 2016 onwards. If used, these will cause the episode (and spell) to generate HRG **UZ01Z Data Invalid for Grouping**.

5.6 Intervention splits have been added to HRGs

Intervention splits have been created for a number of diagnosis-driven HRGs in various subchapters. This split acknowledges that 'minor interventions' have been undertaken during a patient admission. The benefit of this approach is two-fold; these HRGs will not only include the additional cost/resources associated with performing these relatively minor procedures, but may also provide an indication that the patient's condition was more severe, often resulting in more resource-intensive treatment.

This includes "with Multiple Interventions" and "with Single Intervention" splits to more appropriately capture the additional resource use of patients who have multiple minor interventions during their episode or spell.

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5.7 Inclusion of Specialised Activity

HRG4+ includes the creation of HRGs specific to specialised activity, such as those for Congenital Cardiac Surgery. HRG4+ also sees the extension of age splits within the child population to reflect the significant resource differentiation that can occur when treating infants rather than children, for example. A significant number of HRGs continue to have a Paediatric (18 years and under)/Adult (19 years and over) age split to recognise the significant resource difference than can occur when treating children rather than adults.

5.8 Data Quality

Quality improvement changes in HRG4+ include cross-chapter “Interventions” list updates and the alignment of HRGs to updated coding rules and guidance. For example, subchapter CA, Ear, Nose, Mouth, Throat and Neck Procedures has been redesigned to align more closely with clinical practice and resource usage, and to include more appropriate paediatric age splits. Other codes have been remapped and logic amended to more appropriately reflect expected resource use within several subchapters. Full details are provided in the Chapter Summaries that form part of the standard documentation suite that accompanies each Grouper release.

Checks for maximum length of stay have been added to the majority of minor procedure HRGs across all subchapters, such that where length of stay is longer than the set maximum, the primary diagnosis will be used to derive the HRG, rather than the minor procedure. This approach is intended to ensure that HRG grouping accurately reflects the primary reason for the patients’ admission, and reduces the likelihood that procedure-driven HRGs will be derived for patients with long lengths of stay undergoing a relatively minor procedure during that admission, when the length of stay is more reflective of the treatment for their condition.

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6 Grouping Logic

6.1 Groupers

A ‘Grouper’ is a software application that performs validation checks against data input and uses a complex algorithm to determine HRGs for patient records. Grouper output files contain the original input data plus derived HRGs. Grouper output also includes quality files that contain details of any errors or conflicts during the grouping process. For more information about using the grouper application for local grouping, please refer to the Grouper User Manual.

As mentioned previously in this document, HRG4 has been used for Payment by Results (PbR) funding since April 2009 (for financial year 2009/10 onwards), with the tariff for 2009/10 being calculated using the data gathered from the Reference Costs 2006/2007 exercise. Typically, there is a three year time lag between collecting costs and publishing a tariff in order to adequately test the impact of changes to the funding structure. The 2017/18 tariff has been based on the HRG4+ 2014/15 Reference Costs.

6.2 Procedure Hierarchies

Procedure Hierarchies provide a comparison mechanism which reflects the relative complexity of procedures across HRG chapters (see **section 4.5** for further information). If a single procedure is recorded for a patient and its hierarchy value is equal to or greater than 3 (5 for admitted patient care), it will be used for grouping. If multiple procedures are recorded, the dominant procedure is identified based on the procedure hierarchy value. In principle, unbundled HRGs have a hierarchy value of 2, and are output based on each instance of an OPCS-4 code being recorded. Where hierarchy values are equal, the earliest recorded of the highest ranking procedures is used to drive grouping. In the absence of any procedures, or where the only procedure(s) has a hierarchy value of 0, 1 or 2, the grouper will switch to using the primary diagnosis to determine the HRG.

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How Procedure Hierarchies work in the HRG4+ Payment 2017/18 Grouper

Each procedure has an associated value reflecting relative expected resource use. Values 0 - 4 identify procedures which cannot be used for grouping or are only used for grouping in specific circumstances. Values 5 - 40 provide a scale of expected relative resource use, where 5 represents the least and 40 represents the most resource intensive procedures:

Value	Description
0	OPCS codes not valid for grouping (such as approach codes and site of operation codes in the primary position)
1	Non-operative procedures with minimal resource (such as fitting a sling or administering an injection)
2	Procedures that will generate unbundled HRG(s) Procedure hierarchies are not used to determine unbundled HRGs so every instance of a procedure generates an unbundled HRG. This hierarchy value is thus used only for completeness
3,4	Procedures relating to subchapter WF, Non-admitted Consultations (uni-professional/disciplinary and multi-professional/disciplinary)
5-40	Scale of relative resource use. 5 represents the least and 40 represents the most resource intensive procedures

6.3 Diagnosis Hierarchies

Primary Diagnosis is used to drive grouping when there are no significant procedures in the patient record suitable to drive grouping. Every FCE requires a primary diagnosis. Each diagnosis code that is valid in the primary position has a diagnosis hierarchical value associated with its expected resource impact, based on length of stay analysis (see **section 4.6** for further information). Once the primary diagnosis of the spell has been established, it can be used to determine the spell HRG.

If a multi-episode spell contains multiple primary diagnoses, and no significant procedures, the primary diagnosis with the highest ranking hierarchy value becomes the spell primary diagnosis and is used to drive spell-level grouping. Where hierarchy values are equal, the earliest recorded of the highest ranking diagnoses is used to drive grouping.

How Diagnosis Hierarchies work in the HRG4+ Payment 2017/18 Grouper

There are 22 bands which run from 5 to 26 where 5 represents the lowest and 26 represents the most resource intensive primary diagnoses:

Value	Description
0	ICD-10 code not valid for grouping
5-26	Scale of relative resource use in which 5 represents the lowest and 26 represents the most resource intensive primary diagnoses

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6.4 Table of Coding Equivalence (TOCE)

Upon introduction of a new primary classification, such as a new version of OPCS-4 or an ICD-10 update, the HRG design must accommodate new codes within a Local Payment grouper that did not exist in the costing grouper on which that Payment grouper is based. Following the TOCE preparation methodology, the new codes are accommodated within the HRG design.

TOCE Preparation Methodology

- The Clinical Classification Service provides TOCE mappings used, if appropriate, as a proposed base
- The National Casemix Office then seeks clinical input for the suitability of a proposed HRG mapping for the new primary classification codes
- If the Clinical Classification Service mapping was considered unsuitable for HRG grouping purposes, or the new codes map to multiple codes, a 'best fit' HRG root is identified
- Appropriate flags and logic will be checked in the Grouper to ensure correct derivation of the HRG. This may include adding new codes onto CC lists, intervention lists, etc.
- Finally, coding guidance is evaluated against the created mappings to ensure compliance with nationally published clinical coding guidance.

6.5 Complication and Comorbidity (CC) Splits

Complication and comorbidity splits are derived from all unique secondary diagnoses within an episode or spell, with the exception of unspecified four-digit ICD-10 codes where the same three-digit ICD-10 code has been determined as the primary diagnosis of the episode or spell. For example, ICD-10 code **A029 Salmonella infection, unspecified**, cannot be considered as a CC on a primary diagnosis of **A020, Salmonella enteritis**, although the converse is not true. Hence **A020 Salmonella enteritis** can rightly be considered as a CC on a primary diagnosis of **A029 Salmonella Infection** as A020 provides greater clinical specificity.

CCs therefore provide a method of incorporating and recognising varying levels of severity and complexity within HRG design (see **section 4.7** and **section 5.2** for further information).

It is important to remember that diagnosis is not a mandatory item in the Outpatient Commissioning Data Set. The grouping process does not, therefore, use diagnosis for Non-Admitted Consultation treatments even where present in the outpatient record; hence CC splits are not currently applicable for outpatient-based care.

6.6 Multi-Episode Spells

In a multi-episode spell, all diagnoses are evaluated as potential complications and comorbidities, with the exception of the spell primary diagnosis, determined as either the primary diagnosis of the episode containing the dominant procedure or the primary diagnosis with the first highest diagnosis hierarchy where no dominant procedure is recorded. Duplicate diagnoses within a spell and four-digit ICD-10 codes that end in .9 (unspecified)

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where the same three-digit ICD-10 code has been determined as the primary diagnosis of the spell do not contribute towards CC scoring at either the spell or episode level.

It is important to note that the spell HRG may be different to any of the FCE HRGs within the spell, due to the above processing of spell activity. For example, ALL valid secondary diagnoses of the spell, including primary diagnoses of episodes that are not determined as the primary diagnosis of the spell, are "summed" to generate Complication and Comorbidity splits. Also, the length of stay for the Spell will be different (longer) than each individual FCE length of stay.

For example, in the HRG4+ design:

The following Spell has two Finished Consultant Episodes:

The first Episode has two diagnosis codes within the FCE and groups to **HRG EC14C (Intermediate Procedures for Congenital Heart Disease with CC Score 0-3**).

However, the second Episode has a significant number of ICD-10 codes and groups to HRG **FZ13C (Minor Therapeutic or Diagnostic, General Abdominal Procedures, 19 years and over)**

The Spell HRG takes into consideration all of the diagnosis codes in the Spell and groups to HRG **EC14A (Intermediate Procedures for Congenital Heart Disease with CC Score 9+)**

6.7 Accommodating Multiple Procedures

In the majority of cases the dominant procedure, as determined by the procedure hierarchy, is used to derive the HRG. However certain subchapters contain specific multiple procedure logic, designed to determine the HRG using more than one procedure.

Where there are a relatively small number of procedures that can be performed in combination with one another, flags may be used to derive the HRG, dependent on what other procedures are recorded with the dominant procedure.

For example, in the HRG4+ design:

If **P23.2 Anterior colporrhaphy NEC** is recorded with no other procedures present, and no secondary diagnoses are recorded, then HRG **MA04D Intermediate Open Lower Genital Tract Procedures with CC Score 0-2** will be generated.

If **M53.3 Introduction of tension-free vaginal tape** is recorded with no other procedures present and no secondary diagnoses are recorded, then HRG **LB51B Vaginal Tape Operations for Urinary Incontinence, with CC Score 0-1** will be generated.

However, if these procedures are both performed and recorded and either is the dominant procedure, with no secondary diagnoses, then the HRG generated will be **MA03D Major Open Lower Genital Tract Procedures with CC Score 0-2**.

Both procedures have an associated flag attached which requires the grouper to reference a list containing the other procedure. Where both procedures are identified within the record an HRG is generated which considers both significant procedures, in order to appropriately reflect the additional resource use of undertaking both procedures at the same time.

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Escalator logic can drive grouping to a higher HRG to reflect additional complexity. If a procedure is performed in conjunction with another procedure from a specified list, an HRG will be derived representing higher resource use than for either procedure on its own.

For example:

If **W47.1 Primary prosthetic replacement of head of femur not using cement** is recorded as the dominant procedure with no other procedures present, then HRG **HN12F Very Major Hip Procedures for Non-Trauma with CC Score 0-1** will be assigned.

However, if a procedure from any other HN 'Very Major' Category HRG is also recorded such as **W04.2 Triple fusion of joints of hindfoot** (which as a dominant procedure would map to **HN32C Very Major Foot Procedures for Non-Trauma with CC Score 0-1**) then this is escalated to the 'Complex' category HRG, in this case **HN81E Complex, Hip or Knee Procedures for Non-Trauma, with CC Score 0-1**.

6.8 Subsidiary procedure-qualified HRGs

Some of the procedure-based HRGs require a subsidiary code qualifier. This means that the OPCS-4 code detailed in the patient record requires an additional OPCS-4 subsidiary code denoting the method of operation. The list of OPCS-4 subsidiary codes are designed to enhance codes from the individual body system procedure codes in the main OPCS-4 classification and includes (but are not limited to) approach codes, staged and minimal access procedures.

6.9 Diagnosis-qualified HRGs

Some of the procedure-based HRGs have an ICD-10 diagnosis qualifier. This means that the ICD-10 code reported against the record will influence the procedure-based HRG that is derived. This concept ensures that the HRG captures the additional expected resource associated with the patient's diagnosis, where is deemed to be a clinically important resource factor.

6.10 Unbundling

Unbundling is the first step in the grouping process, following data validation. Unbundled procedures are processed separately to derive unbundled HRGs. The grouper then (usually) ignores these unbundled components when deriving the core HRG for an episode or spell.

When all significant procedures in an admitted patient care record are unbundled, the primary diagnosis is used to derive a core HRG for the episode. For non-admitted care, if all procedures are unbundled the attendance is allocated one of the eight relevant non-admitted care attendance HRGs as a core HRG (see **section 4.9** for further information).

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7 Design Concepts – Worked Examples

This section includes worked examples for all of the design concepts mentioned throughout the document. The examples relate to the HRG4+ design specific to the 2017/18 Payment grouper.

7.1 Interactive Complications/Comorbidities

Cases A to **D** illustrate how CC summation works within the non-malignant disorder HRG roots to map to four different levels of CC split based on the summed value of all the CCs recorded:

Case	Age	Length of Stay (days)	Primary Diagnosis (ICD-10)	Secondary Diagnoses (ICD-10)	HRG4+
A	45	2	B17.1 Acute hepatitis C	R18.X Ascites *(CC value = 1)*	GC17K Non-Malignant, Hepatobiliary or Pancreatic Disorders, without Interventions, with CC Score 0-1
B	45	5	B17.1 Acute hepatitis C	R18.X Ascites *(CC value = 1)* A41.9 Septicaemia, unspecified *(CC value = 2)*	GC17J Non-Malignant, Hepatobiliary or Pancreatic Disorders, without Interventions, with CC Score 2-4
C	45	8	B17.1 Acute hepatitis C	R18.X Ascites *(CC value = 1)* A41.9 Septicaemia, unspecified *(CC value = 2)* F03.X Unspecified dementia *(CC value =1)* E87.7 Fluid overload *(CC value = 1)*	GC17H Non-Malignant, Hepatobiliary or Pancreatic Disorders, without Interventions, with CC Score 5-7
D	45	15	B17.1 Acute hepatitis C	R18.X Ascites *(CC value = 1)* A41.9 Septicaemia, unspecified *(CC value = 2)* F03.X Unspecified dementia *(CC value =1)* E87.7 Fluid overload *(CC value = 1)* J18.9 Pneumonia, unspecified *(CC value = 2)* I20.0 Unstable Angina *(CC value = 2)*	GC17G Non-Malignant, Hepatobiliary or Pancreatic Disorders, without Interventions, with CC Score 8+

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7.2 Multiple Procedure Logic

Cases A to **D** illustrate how the multiple procedure logic works within a subchapter, mapping activity to different HRGs depending on the secondary procedures recorded in addition to the dominant procedure.

Case E illustrates the effect of a subsidiary code indicating the procedure was bilateral.

Case	Age	Length of Stay (days)	Primary Diagnosis (ICD-10)	Dominant Procedure (OPCS-4)	Secondary Procedures (OPCS-4)	HRG4+
A	45	5	N20.0 Calculus of kidney	M10.2 Endoscopic pyeloplasty		LB65E Major Endoscopic, Kidney or Ureter Procedures, 19 years and over, with CC Score 0-2
B	45	5	N20.0 Calculus of kidney	M10.2 Endoscopic pyeloplasty	M28.1 Endoscopic laser fragmentation of calculus of ureter NEC *(from list LB_Major_End)*	LB64E Complex Endoscopic, Kidney or Ureter Procedures, 19 years and over, with CC Score 0-1
C	45	5	N20.0 Calculus of kidney	M10.2 Endoscopic pyeloplasty	M13.1 Percutaneous needle biopsy of lesion of kidney (from list LB_Int_Open)	LB65E Major Endoscopic, Kidney or Ureter Procedures, 19 years and over, with CC Score 0-2
D	45	5	N20.0 Calculus of kidney	M10.2 Endoscopic pyeloplasty	M29.4 Endoscopic dilation of ureter + M67.3 Endoscopic drainage of prostate (both from list LB_Int_End)	LB64E Complex Endoscopic, Kidney or Ureter Procedures, 19 years and over, with CC Score 0-1
E	45	5	N20.0 Calculus of kidney	M10.2 Endoscopic pyeloplasty	Z94.1 Bilateral operation	LB64E Complex Endoscopic, Kidney or Ureter Procedures, 19 years and over, with CC Score 0-1

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7.3 Intervention Splits

Cases A and **B** illustrate how minor "interventions" are taken into account within the HRG root **GC01 Liver Failure Disorders**:

Case	Age	Length of Stay (days)	Primary Diagnosis (ICD-10)	Procedure (OPCS-4)	HRG4+
A	45	3	K70.4 Alcoholic hepatic failure		GC01F Liver Failure Disorders without Interventions, with CC Score 0-4
B	45	5	K70.4 Alcoholic hepatic failure	L91.2 Insertion of central venous catheter NEC	GC01D Liver Failure Disorders with Single Intervention

7.4 Age Splits

Cases A and **B** highlight the different HRGs generated for patients with the same primary diagnosis, and procedure but for patients of different ages:

Case	Age	Length of Stay (days)	Primary Diagnosis (ICD-10)	Procedure (OPCS-4)	HRG4+
A	25	3	G41.1 Petit mal status epilepticus	A84.1 Electroencephalography NEC	AA26H Muscular, Balance, Cranial or Peripheral Nerve Disorders, Epilepsy or Head Injury, with CC Score 0-2
B	14	3	G41.1 Petit mal status epilepticus	A84.1 Electroencephalography NEC	PR02C Paediatric Epilepsy Syndrome with CC Score 0

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7.5 Length of Stay Splits

Cases A and **B** illustrate the effect of length of stay on HRG derivation, in this example for chronic kidney disease:

Case	Age	Length of Stay (days)	Primary Diagnosis (ICD-10)	Secondary Diagnoses (ICD-10)	Dominant Procedure (OPCS-4)	HRG4+
A	62	3	Z75.5 Holiday relief care			WH20C Respite Care with length of stay 4 days or less
B	62	9	Z75.5 Holiday relief care			WH20A Respite Care with length of stay 9 days or more

7.6 Diagnosis Qualified

Cases A and **B** highlight the different HRGs generated for patients with the same dominant procedure, but different primary diagnoses:

Case	Age	Length of Stay (days)	Primary Diagnosis (ICD-10)	Dominant Procedure (OPCS-4)	HRG4+
A	32	15	K59.0 **Constipation**	A48.3 Insertion of neurostimulator adjacent to spinal cord	FZ96Z Insertion of Neurostimulator for Treatment of Faecal Incontinence
B	45	10	R33X **Retention of urine**	A48.3 Insertion of neurostimulator adjacent to spinal cord	LB79Z Insertion of Neurostimulator for Treatment of Urinary Incontinence

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7.7 Subsidiary Procedure Qualified

Cases A and **B** highlight the value of recording a subsidiary procedure code i.e. indicating approach or site (including laterality), where appropriate:

Case	Age	Length of Stay (days)	Primary Diagnosis (ICD-10)	Dominant Procedure (OPCS-4)	Secondary Procedures (OPCS-4)	HRG4+
A	45	0	H18.6 Keratoconus	C46.3 Penetrating graft to cornea	Z94.2 Right sided operation	BZ61B Complex, Cornea or Sclera Procedures, with CC Score 0-1
B	45	0	H18.6 Keratoconus	C46.3 Penetrating graft to cornea	Z94.1 Bilateral operation	BZ60B Very Complex, Cornea or Sclera Procedures, with CC Score 0-1

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8 Stakeholder Engagement

Casemix classification design is underpinned by a wealth of clinical input and development. The National Casemix Office is committed to an iterative process of stakeholder consultation. Each subchapter has at least one Expert Working Group (EWG), who advises on current and developmental classifications. Expert Reference Panels and Steering Groups provide a cross-chapter interface in areas such as rehabilitation and high cost drugs. These groups provide invaluable medical, financial and allied health professional guidance, all of which are essential in ensuring continued classification transparency, accuracy and credibility.

Casemix classifications are updated annually to ensure continued clinical relevance and design accuracy. The key role played by EWGs and other advisory bodies continues through on-going maintenance and development, by reviewing and where necessary revising design parameters, and assessing HRG performance. The National Casemix Office gratefully acknowledges the support of the following organisations whose representation through EWGs is central to ensuring clinical accuracy and reflection of current working practice.

- Association of British Neurologists
- Society of British Neurological Surgeons
- Royal College of Anaesthetists
- British Pain Society
- Royal College of Ophthalmologists
- British Association of Otorhinolaryngologists, Head and Neck Surgeons
- Royal College of Surgeons of England - Faculty of Dental Surgery
- British Thoracic Society
- Society of Cardiothoracic Surgeons
- British Cardiovascular Society
- Royal College of Surgeons
- British Society of Gastroenterology
- British Association of Rheumatology
- British Geriatrics Society
- British Orthopaedic Association
- Association of Breast Surgery
- British Association of Surgical Oncologists
- British Burns Association
- British Association of Plastic Surgeons
- British Association of Dermatologists
- British Society of Allergy and Clinical Immunology
- Association of Genito-urinary Medicine
- Diabetes UK
- British Diabetic Association
- British Association of Urological Surgeons
- Renal Association
- Royal College of Obstetricians and Gynaecologists
- Royal College of Paediatrics and Child Health
- The Clinical Genetics Society

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- British Association for Emergency Medicine
- British Society for Rehabilitation Medicine
- British Association for Sexual Health and HIV
- British Association of Perinatal Medicine
- Vascular Society
- Royal College of Radiologists
- British Nuclear Medicine Society
- British Society of Haematologists
- Faculty of Clinical Oncology
- Joint Collegiate Committee of Oncology

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9 Further Information

NHS Digital https://digital.nhs.uk/services/national-casemix-office

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Email: enquiries@nhsdigital.nhs.uk

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OPCS: https://isd.digital.nhs.uk/trud3/user/guest/group/0/pack/10

The clinical classification OPCS-4 is mandatory for Admitted Patient Care Commissioning Data Sets (CDS) and wherever there is a national requirement to support secondary uses. The classification may also be used locally for operational uses.

World Health Organisation www.who.int/en/

WHO is the directing and coordinating authority for health within the United Nations system. It is responsible for providing leadership on global health matters, shaping the health research agenda, setting norms and standards, articulating evidence-based policy options, providing technical support to countries and monitoring and assessing health trends.

ICD-10 www.who.int/classifications/icd

The International Classification of Diseases (ICD) is the standard diagnostic tool for epidemiology, health management and clinical purposes, including analysis of the general health of population groups and monitoring diseases and other health problems.

NHS Improvement improvement.nhs.uk/

NHS England england.nhs.uk/

NHS Improvement and NHS England are working together to design a comprehensive NHS payment system that will deliver better quality services for patients at a cost that is sustainable

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10 The Design Matrix for Payment 2017/18

The Design Matrix shows the type of HRG splits and the number of HRGs in each subchapter. "Total HRGs" includes those HRGs not driven by Diagnosis or Procedure codes

Subchapter	Split									Counts			
	Age	CC	Interactive CC	Other Diagnosis	Length of Stay	Discharge	Procedure	None	Other	Total HRGs	Procedure Only Driven	Diagnosis Only Driven	Procedure or Diagnosis-Driven
AA	X		X							98	49	49	0
AB								X		13	13	0	0
BZ	X		X				X			94	90	4	0
CA	X		X							120	120	0	0
CB			X				X			12	0	12	0
CD	X									23	23	0	0
DZ	X		X		X	X	X			176	46	130	0
EB			X							48	0	48	0
EC			X							21	21	0	0
ED	X		X							46	46	0	0
EY			X							65	65	0	0
FZ	X		X	X			X			202	148	54	0
GA	X		X						Approach	26	26	0	0
GB			X							14	14	0	0
GC			X				X			24	0	24	0
HC	X		X				X			74	39	35	0
HD			X							35	0	35	0
HE			X				X			84	0	84	0
HN	X		X							110	110	0	0
HT	X		X							87	87	0	0
JA			X				X			35	24	11	0
JB							X			12	0	11	1
JC	X									12	12	0	0
JD			X				X			10	0	10	0
KA			X							18	7	11	0

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Subchapter	Split									Counts			
	Age	CC	Interactive CC	Other Diagnosis	Length of Stay	Discharge	Procedure	None	Other	Total HRGs	Procedure Only Driven	Diagnosis Only Driven	Procedure or Diagnosis Driven
KB			X							12	1	11	0
KC			X				X			9	0	9	0
LA	X		X				X			48	14	34	0
LB	X		X				X			149	93	56	0
LD	X									26	0	0	0
LE	X									4	4	0	0
MA			X						Approach	48	46	0	2
MB			X				X			17	0	17	0
MC								X		10	10	0	0
NZ			X							56	44	12	0
PB			X				X			20	0	20	0
PC			X							4	0	4	0
PD			X							24	0	24	0
PE			X							12	0	12	0
PF			X							17	0	17	0
PG			X							3	0	3	0
PH			X							4	0	4	0
PJ			X							7	0	7	0
PK			X							11	0	11	0
PL			X							10	0	10	0
PM			X	X						14	0	14	0
PN			X							9	0	7	2
PP			X							2	0	2	0
PQ			X							2	0	2	0
PR			X							22	0	22	0
PT			X							4	0	4	0
PV			X							7	0	7	0
PW			X							15	0	15	0

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Subchapter	Split									Counts			
	Age	CC	Interactive CC	Other Diagnosis	Length of Stay	Discharge	Procedure	None	Other	Total HRGs	Procedure Only Driven	Diagnosis Only Driven	Procedure or Diagnosis Driven
PX			X							46	0	46	0
RD	X									46	46	0	0
RN	X									68	68	0	0
SA	X		X							99	27	71	1
SB								X		18	18	0	0
SC								X		30	30	0	0
SD	X									10	0	0	0
UZ								X		1	0	0	1
VA				X						24	20	4	0
VB								X		12	0	0	0
VC								X		23	23	0	0
WD								X		3	0	3	0
WF									FirstAtt	8	8	0	0
WH			X		X		X			64	2	62	0
WJ			X				X			40	0	40	0
XA								X		6	0	0	0
XB								X		9	0	0	0
XC								X		7	0	0	0
XD								X		58	58	0	0
YA			X							10	10	0	0
YD								X		5	5	0	0
YF	X		X							8	8	0	0
YG	X		X							16	16	0	0
YH								X		8	8	0	0
YJ								X		12	12	0	0
YL	X									8	8	0	0
YQ			X							60	49	11	0
YR	X		X							58	58	0	0

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11 History of Subchapters and HRG Design

The table below gives the timeline of HRG Subchapters and their inclusion into Grouper releases:

LP = Local Payment

RC = Reference Cost

							*Subchapter LE brought forward in the design				HRG 4+ Phase1	HRG 4+ Phase2	HRG 4+ Phase3	Latest LP Grouper	Latest Ref Cost Grouper
Subchapter Name and History (Bold are current)	**Core or Unbundled**	**LP 10/11**	**LP 11/12**	**LP 12/13**	**RC HRG4 10/11**	**LP 13/14**	**LP 14/15**	**RC HRG4 11/12**	**LP 15/16**	**LP 16/17**	**RC HRG4+ 12/13**	**RC HRG 4+ 13//14**	**RC HRG4+ 14/15**	**LP 17/18**	**RC HRG 4+ 15/16**
Based on Reference Costs Design		**RC 07/08**	**RC 08/09**	**RC 09/10**		**RC 10/11**	**RC 10/11**		**RC 11/12**	**RC 11/12**				**RC 11/12**	
AA_Nervous System Procedures and Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
AB_Pain Management	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
BZ_Eyes and Periorbita Procedures and Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
CZ_Mouth Head Neck and Ears Procedures and Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
CA_Ear, Nose, Mouth, Throat and Neck Procedures	*Core*											Yes	Yes	Yes	**Yes**
CB_Ear, Nose, Mouth, Throat and Neck Disorders	*Core*											Yes	Yes	Yes	**Yes**
CD_Dental and Orthodontic Procedures	*Core*											Yes	Yes	Yes	**Yes**
DZ_Thoracic Procedures and Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
DZ_Respiratory System Procedures and Disorders	*Core*												Yes	Yes	**Yes**
EA_Cardiac Procedures	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
EB_Cardiac Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
EC_Congenital Cardiac Surgery	*Core*										Yes	Yes			

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Based on Reference Costs Design		**RC 07/08**	**RC 08/09**	**RC 09/10**		**RC 10/11**	**RC 10/11**		**RC 11/12**	**RC 11/12**				**RC 11/12**	
EC_Open and Interventional Procedures for Congenital Heart Disease	*Core*												Yes	Yes	**Yes**
ED_Open Cardiac Procedures for Acquired Conditions	*Core*												Yes	Yes	**Yes**
EY_Interventional Cardiology for Acquired Conditions	*Core*												Yes	Yes	**Yes**
FZ_Digestive System Procedures and Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
GA_Hepatobiliary and Pancreatic System Surgery	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
GA_Hepatobiliary and Pancreatic System Open Procedures	*Core*												Yes	Yes	**Yes**
GB_Hepatobiliary and Pancreatic System Endoscopies and Radiological Procedures	*Core*	Yes	Yes	Yes	Yes	Yes	Yes								
GB_Hepatobiliary and Pancreatic System Endoscopic and Percutaneous Procedures	*Core*							Yes	Yes	Yes	Yes	Yes			
GB_Hepatobiliary and Pancreatic System Endoscopic Procedures	*Core*												Yes	Yes	**Yes**
GC_Hepatobiliary and Pancreatic System Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
HC_Spinal Surgery and Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
HC_Spinal Procedures and Disorders	*Core*												Yes	Yes	**Yes**
HD_Musculoskeletal Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
HD_Musculoskeletal and Rheumatological Disorders	*Core*												Yes	Yes	**Yes**

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Based on Reference Costs Design		**RC 07/08**	**RC 08/09**	**RC 09/10**		**RC 10/11**	**RC 10/11**		**RC 11/12**	**RC 11/12**				**RC 11/12**	
HE_Orthopaedic Disorders	*Core*												Yes	Yes	**Yes**
HB_Orthopaedic Non-Trauma Procedures	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
HN_Orthopaedic Non-Trauma Procedures	*Core*												Yes	Yes	**Yes**
HR_Orthopaedic Reconstruction Procedures	*Core*		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
HA_Orthopaedic Trauma Procedures	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
HT_Orthopaedic Trauma Procedures	*Core*												Yes	Yes	**Yes**
JA_Breast Procedures and Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
JB_Burns Procedures and Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
JC_Skin Surgery	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
JC_Skin Procedures	*Core*												Yes	Yes	**Yes**
JD_Skin Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
KA_Endocrine System Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
KB_Diabetic Medicine	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
KC_Metabolic Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
LA_Renal Procedures and Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
LB_Urological and Male Reproductive System Procedures and Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
LC_Renal Dialysis	*Not Used*	Yes													
LD_Renal Dialysis for Chronic Kidney Disease	*NRD*		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**

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							*Subchapter LE brought forward in the design				HRG 4+ Phase1	HRG 4+ Phase2	HRG 4+ Phase3	Latest LP Grouper	Latest Ref Cost Grouper
Subchapter Name and History (Bold are current)	**Core or Unbundled**	**LP 10/11**	**LP 11/12**	**LP 12/13**	**RC HRG4 10/11**	**LP 13/14**	**LP 14/15**	**RC HRG4 11/12**	**LP 15/16**	**LP 16/17**	**RC HRG4+ 12/13**	**RC HRG 4+ 13//14**	**RC HRG4+ 14/15**	**LP 17/18**	**RC HRG 4+ 15/16**
Based on Reference Costs Design		**RC 07/08**	**RC 08/09**	**RC 09/10**		**RC 10/11**	**RC 10/11**		**RC 11/12**	**RC 11/12**				**RC 11/12**	
LE_Renal Dialysis for Acute Kidney Injury	*Unbundled*						Yes*		Yes*	Yes*	Yes	Yes	Yes	Yes	**Yes**
MA_Female Reproductive System Procedures	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
MB_Female Reproductive System Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
MC_Assisted Reproduction Medicine	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
NZ_Obstetric Medicine	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
PA_Paediatric Medicine	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
PB_Neonatal Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
PC_Paediatric Ear Nose and Throat Disorders	*Core*											Yes	Yes	Yes	**Yes**
PD_Paediatric Respiratory Disorders	*Core*											Yes	Yes	Yes	**Yes**
PE_Paediatric Cardiology Disorders	*Core*											Yes	Yes	Yes	**Yes**
PF_Paediatric Gastroenterology Disorders	*Core*											Yes	Yes	Yes	**Yes**
PG_Paediatric Hepatobiliary Disorders	*Core*											Yes	Yes	Yes	**Yes**
PH_Paediatric Rheumatology Disorders	*Core*											Yes	Yes	Yes	**Yes**
PJ_Paediatric Dermatology Disorders	*Core*											Yes	Yes	Yes	**Yes**
PK_Paediatric Diabetology, Endocrinology and Metabolic Disorders	*Core*											Yes	Yes	Yes	**Yes**
PL_Paediatric Renal Disorders	*Core*											Yes	Yes	Yes	**Yes**
PM_Paediatric Haematological-Oncology Disorders	*Core*											Yes	Yes	Yes	**Yes**

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Based on Reference Costs Design		**RC 07/08**	**RC 08/09**	**RC 09/10**		**RC 10/11**	**RC 10/11**		**RC 11/12**	**RC 11/12**				**RC 11/12**	
PN_Paediatric Non-Malignant Haematological Disorders	*Core*											Yes	Yes	Yes	**Yes**
PP_Paediatric Ophthalmic Disorders	*Core*											Yes	Yes	Yes	**Yes**
PQ_Paediatric Immune System Disorders	*Core*												Yes	Yes	**Yes**
PR_Paediatric Nervous System Disorders	*Core*												Yes	Yes	**Yes**
PR_Paediatric Neurosciences Disorders	*Core*											Yes			
PT_Paediatric Mental Health Disorders	*Core*											Yes	Yes	Yes	**Yes**
PV_Paediatric Trauma Medicine	*Core*											Yes	Yes	Yes	**Yes**
PW_Paediatric Infectious Diseases	*Core*											Yes	Yes	Yes	**Yes**
PX_Paediatric Medicine	*Core*											Yes	Yes	Yes	**Yes**
QZ_Vascular Procedures and Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
RA_Diagnostic Imaging Procedures	*Unbundled*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
RC_Interventional Radiology	*Core*		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
RD_Diagnostic Imaging Procedures	*Unbundled*												Yes	Yes	**Yes**
RN_Nuclear Medicine Procedures	*Unbundled*												Yes	Yes	**Yes**
SA_Haematological Procedures and Disorders	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
SB_Chemotherapy	*Unb / Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
SC_Radiotherapy	*Unb / Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
SD_Specialist Palliative Care	*Unbundled*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**

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Based on Reference Costs Design		**RC 07/08**	**RC 08/09**	**RC 09/10**		**RC 10/11**	**RC 10/11**		**RC 11/12**	**RC 11/12**				**RC 11/12**	
UZ_Undefined Groups	*Unb / Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
VA_Multiple Trauma	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
VB_Emergency Medicine	*EM*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
VC_Rehabilitation	*Unbundled*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
VD_Accident and Emergency HRG version 3.2	*EM*	Yes													
WA_Immunology, Infectious Diseases, Poisoning, Shock, Special Examinations, Screening and Other Healthcare Contacts	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
WD_Treatment of Mental Health Patients by Non-Mental Health Service Providers	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
WE_Genito-Urinary Medicine	*Not Used*	Yes													
WF_Non-admitted Consultations	*Core*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
WG_Pathology	*Not Used*	Yes													
WH_Poisoning, Toxic Effects, Special Examinations, Screening and Other Healthcare Contacts	*Core*												Yes	Yes	**Yes**
WJ_Infectious Diseases and Immune System Disorders	*Unbundled*												Yes	Yes	**Yes**
XA_Neonatal Critical Care	*Unbundled*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
XB_Paediatric Critical Care	*Unbundled*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
XC_Adult Critical Care	*Unbundled*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**

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XD_High Cost Drugs	*Unbundled*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	**Yes**
YA_Neurological Imaging Interventions	*Core*												Yes	Yes	**Yes**
YD_Thoracic Imaging Interventions	*Core*												Yes	Yes	**Yes**
YF_Gastrointestinal Imaging Interventions	*Core*												Yes	Yes	**Yes**
YG_Hepatobiliary and Pancreatic Imaging Interventions	*Core*												Yes	Yes	**Yes**
YH_Musculoskeletal Imaging Interventions	*Core*												Yes	Yes	**Yes**
YJ_Breast Imaging Interventions	*Core*												Yes	Yes	**Yes**
YL_Urological Imaging Interventions	*Core*												Yes	Yes	**Yes**
YQ_Vascular Open Procedures and Disorders	*Core*											Yes	Yes	Yes	**Yes**
YR_Vascular Imaging Interventions	*Core*											Yes	Yes	Yes	**Yes**
YZ_Other Imaging Interventions	*Core*											Yes			

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12 The Documentation Suite - Payment

Below is a list of the various documents which are available to download from the National Casemix Office website https://digital.nhs.uk/services/national-casemix-office/downloads-groupers-and-tools.
This documentation suite provides a comprehensive resource to enable users to understand design concepts and logic, as well as practical use of the Grouper.

- The **Casemix Companion** is a starting point and general reference guide for anyone interested in learning about the casemix classification system used by the NHS in England The document provides an introduction to HRGs, groupers, HRG4+ design concepts and grouping logic, and it contains links to additional resources
- The **Grouper User Manual** provides instructions on how to prepare and group data using the Grouper software application Sample data with expected results is provided This document is updated with every grouper release
- The **Summary of Changes** document provides an overview of the main differences between the current grouper design and its relevant predecessor
- The **Chapter Summaries** document provides an overview of the scope, composition and relevant grouping logic of individual HRG subchapters, and it highlights significant changes to the latest HRG design
- The **Code to Group Workbook** is a spreadsheet that embodies the casemix design It provides details of the constituent elements that contribute to HRG grouping, and it contains reference data such as the ICD-10 and OPCS-4 codes utilised in the design, the procedure and diagnosis hierarchies pertinent to a specific design, and the Complication and Comorbidities lists for HRG subchapters The spreadsheet also includes information on Programme Budgeting Category (PBC) mapping, as well as a comprehensive list of HRG codes and labels
- The **Code to Group User Manual** explains how to make best use of the information found in the Code to Group Workbook Specifically, the manual clarifies the grouping logic found in the workbook's Code to Group tab
- The **Specialised Service Identification Code Sets** is a spreadsheet that contains details about how the grouper allocates specific identification flags relating to specialised services that previously attracted a tariff top-up. It is included for reference since the Grouper still outputs SSC codes for benchmarking purposes. Please note that PSS identification flags are now the basis for attracting a tariff top-up
- The **Best Practice Guide** is a spreadsheet that contains details about how the grouper allocates specific identification flags relating to best practice. Best Practice Flags usually result in an adjustment to the tariff. The spreadsheet also provides details of these specific tariff adjustments

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- The **OPCS-4.8 Update** outlines the changes to the HRG4+ 2017/18 Payment Grouper made as a result of the version 4.8 update to the OPCS-4 Classification of Interventions and Procedures, which is effective from 1 April 2017

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