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HRG4 Full Operational Information Standard			
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Healthcare Resource Groups 4 (HRG4)
Full Operational Information Standard

Table of Contents

1. Standard Demographics 4
1.1. Name of Standard 4
1.2. Sponsors 4
1.3. Developers 4
1.4. Commercial Issues 5
1.5. Customer Need 5
2. Requirement Stage Update 5
2.1. Response to ISB feedback from Requirement submission 5
2.2. Restated Purpose and Scope 6
2.3. Changes to Requirement submission 7
3. Draft Stage 7
3.1. Response to ISB feedback from Draft submission 7
3.2. Changes to Draft submission 8
4. Full Stage 9
4.1. Implementation Architecture 9
4.2. Standard Specification 12
4.3. Governance 18
4.4. Consultation and Support 19
5. Implementation 21
5.1. Summary of Approach to Implementation 21
5.2. Implementation Evaluation Report 22
5.3. Implementation Roll Out Plans 23
5.4. Migration Plans 24
5.5. Human Behavioural, Organisational and Technical User Implementation Guidance 24
5.6. Safety 25
5.7. Maintenance and Update Process Plans 25
5.8. Conformance Tests Specification 27

Table of Appendices

Appendix A	**Statements of Support**
Appendix B	**HRG Design Concepts**
Appendix C	**HRG4 Design Changes**
Appendix D	**Outcome of ISB Review**
Appendix E	**HRG4 Design Framework**
Appendix F	**HRG4 Labels**
Appendix G	**Code to Group Table**
Appendix H	**HRG Consultation**
Appendix I	**Stakeholder Engagement Chart**
Appendix J	**HRG4 Readiness for Service**
Appendix K	**HRG4 Reference Cost Grouper Test Strategy**
Appendix L	**HRG4 Reference Cost Grouper Test Plan**
Appendix M	**GrouT Plan**
Appendix N	**An Introduction to HRG4**
Appendix O	**Risk Log 080626**

NHS INFORMATION STANDARDS BOARD

Full Operational Information Standard
Submission Toolkit for Standard Developers

An Operational standard is a detailed and precisely defined standard for operational use within a specific area of the NHS. The bulk of the standards considered by ISB are Operational standards.

The purpose of a Full Standard submission is to set out appropriate evidence that the Full Operational Information Standard in question is fit for purpose and implementable.

Please refer to the document, "ISB Submission Guidance Notes for Operational Information Standards - v1.0 - 13 February 2007" for information on how to complete this form.

1. Standard Demographics

1.1. Name of Standard

Healthcare Resource Groups 4 (HRG4).

1.2. Sponsors

The sponsor for this Standards Submission is:

Chris Watson, Deputy Director of NHS Finance, Department of Health, acting for the DH Financial Reform Policy Initiative.

The Standard will be "an order or command" for which the NHS has no option but to comply.

Statement of Support from sponsor: attached as appendix A.

1.3. Developers

The NHS Information Centre for health and social care (IC) have been commissioned by the Department of Health to develop HRG4.The IC (formerly the NHS Information Authority) is a recognised standards development organisation and has a long history of successful development of Casemix groupings for use in Great Britain working in close association with clinicians.

The Standard has been developed by the Casemix Service of the IC:

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1.4. Commercial Issues

There are no commercial licensing issues, Intellectual Property Rights issues or other relevant undertakings which impact on the intended standard being used within the NHS as the standard has been created from within the NHS.

1.5. Customer Need

To quote from the statement of support from DH Payment by Results:

‘‘Payment by Results (PbR) is the one of the key planks of Health Reform. The DH and the NHS have identified the need to strengthen the building blocks, on which the PbR tariff is built. The building blocks include diagnosis, procedure and casemix classifications and the costing methodologies.

Since 2003, HRG v3.5 has been used to categorise similar groups of patients requiring similar resource use. Through the passage of time, some of these HRGs have now become obsolete or the underlying codes do not accurately reflect current clinical activity. In recognition of this, the NHS Information Centre for Health and Social Care (NHS IC) was commissioned by the Department of Health to develop a new version of HRGs, version 4 (HRG4) to accurately reflect the way in which care is currently delivered.

Additional beneficiaries/customers of HRG4 include local commissioners, trust clinicians and audit staff.

2. Requirement Stage Update

2.1. Response to ISB feedback from Requirement submission

The Requirement stage for HRG4 was passed by ISB on 17 August 2005.

The points below were addressed at the draft stage of the ISB Submission.

Provide migration plans for each operational area.

Transition plans are provided in section 5.

Confirm status of exclusions.

There are a variety of services that remain out of the scope of HRG4 the status of which are defined by PbR. These include, but are not limited to Mental Health and learning disability services, NHS ambulance services, community services & care for long term conditions. PbR will determine the future implementation of such services in line with policy requirement.

Provide evidence from testing that HRG4 deals with the problems of existing HRG v3.5

HRG4 was used for collecting 2006/07 and 2007/08 reference cost data. HRG4 is now embedded as part of year end NHS processes. Further details of the 2006/07 reference cost collection have been published and can be found at:

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/publicationspolicyandguidance/DH_082571

DH guidance for the 2007/08 reference cost collection can be found at:

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/publicationspolicyandguidance/DH_082746

Provide explicit timescale detail including dependencies for each functional area.

The timescales for each area of HRG4 are discussed under section 5.

Provide relevant funding detail for each functional area.

The funding for HRG4 is through the Department of Health as an integral part of achieving its Financial Reform Agenda, as defined in the 2002 consultation document "Reforming NHS Financial Flows".

There are no changes to the purpose as stated at the Requirement Stage.
HRG4 will be used to calculate standard reference costs and tariffs as required by the Department of Health.

2.2. Restated Purpose and Scope

HRGs are groupings which are expected to consume similar amounts of healthcare resources and are clinically meaningful. Grouping allows Aggregation by common criteria and to study the mix of cases and the pattern of care delivery for different types of cases. In their most basic form HRGs are groups of ICD-10 diagnoses and OPCS procedures that have similar resource implications.

The DH commissioned the NHSIA and, subsequently, The NHS Information Centre to undertake the enhancement of HRGs.

It was recognised that HRGs version 3.5 were an interim measure pending HRG4 development.

Accordingly, HRG4 is a complete revision extending both depth and breadth of HRG coverage.

HRG4 has been developed to:

- reflect changes in clinical practice and costs;
- increase coverage by introducing HRGs to new clinical areas;
- introduce the concept of 'setting independence';
- increase the statistical performance of HRGs by introducing elements such as unbundling and improved complication and co morbidity splits;
- incorporate the improved identification and classification of procedures using updated OPCS codes;
- enable more accurate analysis of healthcare needs within the service.

Revision Goals

The revision goals for HRG4 were as follows;

- Resolve weaknesses in existing HRGs.
- More accurate measures of complications and co-morbidities.
- Move to SPELL basis as far as possible.
- Reduce cost variability.
- Provide setting independence.
- Encourage HRG unbundling.
- Extend HRGs coverage.
- Recognise Specialised Services.
- Update existing HRGs to reflect recent advances in clinical practice.
- Clinician ownership and NHS-wide engagement.

These points are all addressed in detail within the HRG Design Concepts document which can be found in appendix B

Draft Stage Scope:

HRG	Scope of Revision
Emergency Medicine	Revision of A&E HRGs currently based on the disposal method. Development of HRGs describing type 1, 2 and 3 emergency attendances, walk in centres and review clinics.
Admitted Patient Care	Development of HRGs describing interventions / services across a range of different settings e.g. inpatient, day case, outpatients, rehabilitation and high cost exceptions.
Chemotherapy Solid Tumours & Haematological Cancers	Development of HRGs describing blocks of chemotherapy treatment of haematological cancers based on diagnosis. Revision of HRGs currently based on prescribed programmes of chemotherapy treatment based on diagnosis. Development of HRGs describing cycles of treatment within a programme of chemotherapy treatment based on diagnosis.
Specialist Palliative Care	Development of HRGs describing adult and paediatric care for cancer and non-cancer patients for specialist palliative inpatient and community care
Radiology	Development of HRGs describing radiological examinations (e.g. CT, MRI, ultrasound, fluoroscopy and plain-film examinations). Development of HRGs describing radioactive treatment that is used as a tracer for diagnosis in nuclear medicine.
Radiotherapy	Revision of Radiotherapy HRGs to reflect changes in teletherapy and brachiotherapy treatments.
Critical Care	Development of Neonatal and Paediatric Critical Care HRGs where these differ materially from specific Adult Critical care HRGs.

2.3. Changes to Requirement submission

Changes have been made to the HRGs collected for the 2006/07 financial year, in line with EWG requirements, error amendments and logic bug fixes. The vast majority of these have therefore been instigated by the NHS. **Full details are published on the Standards & Classifications website and attached as appendix C**.

The amended HRGs will be collected as part of the 2007/08 RC collection in August 2008.

3. Draft Stage

3.1. Response to ISB feedback from Draft submission

No actions were identified within the outcome of the ISB review. **This is confirmed in the outcome of ISB review document attached as appendix D.**

HRG4 has been further developed since the draft submission in 2007. Changes from the draft stage are identified in this section.

3.2. Changes to Draft submission

Since the HRG4 draft information standards board submission was approved and in line with DH requirements the scope of HRG4 has evolved. The current scope is confirmed in the table below:

HRG	Scope of Revision
Emergency and Urgent Care	Revision of A&E HRGs currently based on the disposal method. Development of HRGs describing type 1, 2 and 3 emergency attendances, walk in centres and review clinics.
Acute Activity	Development of HRGs describing interventions / services across a range of different settings e.g. inpatient, day case, outpatients and treatment centres, provided the nature of the activity is equivalent across settings, to include rehabilitation and high cost exceptions.
Chemotherapy Solid Tumours & Haematological Cancers	Development of HRGs describing blocks of chemotherapy treatment of haematological cancers based on diagnosis. Revision of HRGs currently based on prescribed programmes (regimens) of chemotherapy treatment based on diagnosis. Development of HRGs describing cycles of treatment within a programme of chemotherapy treatment based on diagnosis.
Specialist Palliative Care	Development of HRGs describing adult and paediatric care for cancer and non-cancer patients for specialist palliative inpatient and community care (including intensive nursing support at home e.g. the Marie Curie nursing service) and hospital support services.
Diagnostic Imaging & Interventional Radiology	Development of HRGs describing radiological examinations (e.g. CT, MRI, ultrasound and fluoroscopy). Development of HRGs describing radioactive treatment that is used as a tracer for diagnosis in nuclear medicine. Development of HRGs to reflect the additional resource use with procedures undertaken via radiological control.

HRG	Scope of Revision
Radiotherapy	Revision of Radiotherapy HRGs to reflect changes in teletherapy and brachiotherapy treatments.
Critical Care Services for Adults, Children and Neonates	Development of HRGs that reflect the additional resource use and complexity of intensive care provided to patients
Out of Scope	There are a variety of services that remain out of the scope of HRG4. These include, but are not limited to Mental Health and learning disability services, NHS ambulance services, community services & care for long term conditions. PbR will determine the future implementation of such services in line with policy requirement.

Changes have been made to the HRGs as collected for the 2006/07 financial year in line with EWG requirements, error amendments and logic bug fixes. The vast majority of these have therefore been instigated by the NHS. **Full details are published on the Standards & Classifications website and available in appendix C**.

The amended HRGs are currently being collected as part of the 2007/08 Reference Costs running until August 2008.

4. Full Stage

There are no changes to the purpose as stated at the Draft and requirement Stages.

HRG4 will be used to calculate standard reference costs and tariffs as required by the Department of Health.

An Introduction to HRG4 is attached at appendix N.

4.1. Implementation Architecture

Data sources used

A design steering group decision was that healthcare resource groups should only be derived from readily available data sources and information that is routinely collected. This ensures that the classification is cost effective and will not place a disproportionate burden on users.

The principal data sources from which HRG4 groupings are derived are:

- Admitted Patient Care Commissioning Data Set (CDS).
- Outpatient Attendance CDS.
- Accident and Emergency CDS (for Emergency and Urgent Care HRGs).

This data are already recorded in the existing Patient Administration System (PAS).

OPCS 4.4, released by Connecting for Health (CfH) for use in the service, is used within the definition of a large number of HRGs.

Further information on OPCS4.4 can be found at:

http://www.connectingforhealth.nhs.uk/interventionclassification.

ICD-10 (World Health Organisations International Classification of Diseases version 10) is also used within the definition of a large number of HRGs.
Further information on ICD-10 can be found at:

http://www.who.int/classifications/icd/en/

Strategic Fit:

The Department of Health's White Paper, The NHS Plan (2000) sets out a major programme of investment, expansion and reform for the NHS over a ten-year period. The vision of the NHS Plan is to offer prompt, convenient, high quality services.

In October 2002, the DH published Reforming NHS Financial Flows, setting out plans to introduce Payment by Results – a new funding system for care provided to NHS patients in England. At the heart of the proposals lay a move from providers being funded on a block basis to being paid for the volume and complexity of services actually delivered – Payment by Results. The measure of volume varies dependent upon the care setting – in the case of patients admitted to an acute provider it is per provider spell (admission to discharge). Complexity is measured by casemix classifications called Healthcare Resource Groups.

Payment by Results aims to support the NHS reform agenda by paying hospitals for the work they do, rewarding efficiency and quality. It does this by paying a nationally set price or tariff for similar groups of patients, classified by HRGs, based on the national average cost of treating patients within a HRG group.

The NHS Information Centres Standards & Classifications team is central to Payment by Results and HRGs are used as the basis of activity units as the DH believes them to be the most readily available and comprehensive tool in England for classifying health services

HRGs are standard groupings of clinically similar patients that consume similar levels of healthcare resource. They are used to support the production of the National Schedule of Reference Costs (based on a full national cost collection in which providers must report the unit cost of their services, largely on the basis of HRGs).

Previous versions of HRGs have mainly been developed to support costing and benchmarking and were not developed principally for the purpose of reimbursement and also did not cover the full range of services expected to be included in PbR.

Further development and revision of HRGs is therefore a crucial component of the Payment by Results government initiative.

The delivery of HRG4 will be used by the Secondary Uses Service (SUS) for PbR purposes, though local grouper products will be available to support the NHS in local planning and performance management requirements.

Operational Fit:

Healthcare Resource Groups (HRGs) are standard groupings of clinically similar treatments which use comparable levels of healthcare resource.

In their most basic form HRGs are groups of ICD-10 diagnoses and OPCS procedures that have similar resource implications.

HRGs offer organisations the ability to understand their activity in terms of the types of patients they care for, and the treatments they undertake. They enable the comparison of activity within and between different organisations and provide an opportunity to benchmark treatments and services to support trend analysis over time.

HRGs are currently used as a means of determining fair and equitable reimbursement for care services delivered by providers. These consistent 'units of currency' support standardised healthcare commissioning across the service.

The current version of HRGs (v3.5) has been in use since October 2003. It is used for reimbursement under Payment by Results (PbR) policy. The Casemix Service's completed major revision, HRG4, has been used by the NHS in England to produce the annual Reference Costs exercise since the 2006/07 financial year.

HRG4 supports PbR policy by providing a classification framework that represents current clinical practice.

In addition, HRG4 supports service planning, costing and commissioning between PCTs and Trusts by providing reliable and consistent presentation of activity data to:

- Encourage a focus on patient-centred care, to enable patient choice.
- Support the analysis of healthcare needs and monitoring of service provision, to inform service planning.

Data collected through HRG4 allows commissioners to develop transparent service level agreements with trusts and other service providers.

HRG4 is the newly revised and updated version of Healthcare Resource Groups.

It is a major revision increasing the number of groupings from 650 under HRG v3.5 to more than 1,400 and will deliver:

- A portfolio of new and updated HRG groupings that accurately record patient treatment to reflect current practice and anticipated trends in healthcare
- Additional specialty and service coverage, including:
    - Chemotherapy
    - Radiotherapy
    - Specialist Palliative Care
    - Critical Care
    - Interventional Radiology
    - High cost drugs
    - Diagnostic Imaging
    - Rehabilitation
    - Multiple Trauma
- Setting independence to accurately reflect care given, regardless of where it is delivered
- Improved complexity and complication splits to better reflect variations in severity
- 'Unbundling' of elements of care that can be identified as additional, exceptional, high-cost or non-routine treatments. Unbundled HRGs have been developed for:
    - Chemotherapy – regimen and delivery

- Radiotherapy – planning and treatment
- Interventional Radiology
- Diagnostic Imaging (e.g. MRIs/ CT)
- Rehabilitation
- Renal Dialysis
- Critical Care
- Specialist Palliative Care
- High cost drugs

- Spell based HRGs that will cover a patient's whole stay from admission to discharge.

HRG4 will be fully documented allowing commissioners and providers to understand the rules by which grouping has performed on SUS submitted data.

Documentation of decisions made in devising HRG4 groupings is available for users. However the impact of poor data quality is outside the scope of this requirement.

A full range of support information has been provided by the Casemix Service including HRG documentation and software and is available at:

http://www.ic.nhs.uk/our-services/standards-and-classifications/casemix/hrg4/prepare-for-hrg4

Regardless of any local practice or agreement between commissioners and providers the PbR data mart of SUS will be the accepted repository of information for operation of all aspects of the policy including reimbursement.

A statement of support from Jeremy Thorpe is attached at appendix A.

4.2. Standard Specification

The full design framework for HRG4 is attached at appendix E.

The HRG4 Design Team was formed in September 2003 and created a Design Framework to provide guidance and standards for HRG4 development.

The group consisted of representatives from the DH Payment by Results team and from the clinical professions, Connecting for Health, the Independent Sector, the Academic Sector, Hospital Chief Executives and key members of the Casemix Programme.

The conclusion of the work was a proposed set of twenty one mandatory Design Rules, covering overall quality criteria and constraints. These rules were signed off by the Design Team in December 2003.

These rules steered the development of HRG4 to a standard design which allows comparisons across the whole system. The rules were intended to be sufficiently transparent to enable the understanding of those participating in the design process as well as users within the NHS.

In summary these design rules were that:-

- the data used to define the HRGs should ideally be routinely available;
- there should be a manageable number of HRG groupings which encompass all patients;
- each HRG should contain activity with a similar pattern of resource intensity, and be clinically meaningful;

- the HRG should be designed to encourage patient choice and the provision of care in different settings.

Coverage

A full list of the HRG Labels can be found at appendix F.

HRG4 is organised into clinically relevant chapters and sub-chapters and substantially follows the pattern used in previous versions.

Some of the major differences at chapter level between HRG v3.5 and HRG4 are that:

- In HRG v3.5 Chemotherapy would be coded to the chapter of the cancer site. Radiotherapy planning and treatment and Specialist Palliative Care were not specifically identified.
- In HRG4, Chemotherapy, Radiotherapy and Specialist Palliative Care have been better identified and consolidated into one chapter (chapter S Haematology, Chemotherapy, Radiotherapy and Specialist Palliative Care)
- Spinal surgery and primary spinal condition had their own chapter in HRG v3.5 (chapter R) but are now included within chapter H – musculoskeletal systems.
- Neonatal Critical Care has been moved from chapter N (with obstetrics) to chapter P (with diseases of childhood)
- There is a new chapter to cover diagnostic imaging and interventional radiology. In particular, interventional radiology includes relatively new procedures that were not covered at all in HRG v3.5
- There is a new chapter which covers Emergency and Urgent Care, Rehabilitation and critical care – Chapter V
- There is a new sub-chapter to cover high cost drugs – sub-chapter XD
- Chapter W picks up clinical areas that are not covered by other chapters including many of those that were previously in HRG v3.5 chapter S
- In HRG v3.5 Mental Health HRGs were covered in chapter T. These HRGs have been updated and are now covered in chapter WD. These HRGs reflect activity undertaken by non-specialist MH NHS Trusts and are not iso-resource in nature. The HRGs are intended to complete the classification and are not expected to be used for reimbursement under PbR. Work is currently ongoing to develop currencies that better reflect the complex nature of specialist MH services.

HRG4 Chapters

Chapter	Description	Sub-chapter	Description
A	Nervous System	AA	Nervous System Procedures and Disorders
		AB	Pain Management
B	Eyes and Periorbita	BZ	Eyes and Periorbita Procedures and Disorders
C	Mouth Head Neck and Ears	CZ	Mouth Head Neck and Ears Procedures and Disorders
DZ	Respiratory System	DZ	Thoracic Procedures and disorders
E	Cardiac Surgery and Primary Cardiac Condition	EA	Cardiac Procedures
		EB	Cardiac Disorders
F	Digestive System	FA	Digestive System Surgery

Chapter	Description	Sub-chapter	Description
		FB	Digestive System Endoscopies
		FC	Gastroenterology Medicine
G	Hepatobiliary and Pancreatic System	GA	Hepatobiliary and Pancreatic System Surgery
		GB	Hepatobiliary and Pancreatic System Endoscopies and Radiological Procedures
		GC	Hepatobiliary and Pancreatic System Disorders
H	Musculoskeletal System	HA	Orthopaedic Trauma Procedures & Reconstruction
		HB	Orthopaedic Non-Trauma Procedures
		HC	Spinal Surgery and Disorders
		HD	Musculoskeletal Disorders
J	Skin, Breast and Burns	JA	Breast Procedures and Disorders
		JB	Burns Procedures and Disorders
		JC	Skin Surgery
		JD	Skin Disorders
K	Endocrine and Metabolic System	KA	Endocrine System Disorders
		KB	Diabetic Medicine
		KC	Metabolic Disorders
L	Urinary Tract and Male Reproductive System	LA	Renal Procedures and Disorders
		LB	Urological Procedures and Disorders
M	Female Reproductive System and Assisted Reproduction	MA	Female Reproductive System Procedures
		MB	Female Reproductive System Disorders
		MC	Assisted Reproduction Medicine
N	Obstetrics	NZ	Obstetric Medicine
P	Diseases of Childhood and Neonates	PA	Paediatric Medicine
		PB	Neonatal Disorders
Q	Vascular System	QZ	Vascular Procedures and Disorders
R	Imaging and Interventional Radiology	RA	Imaging Procedures
		RB	Interventional Radiological Procedures
S	Haematology, Chemotherapy, Radiotherapy and Specialist Palliative Care	SA	Haematological Disorders
		SB	Chemotherapy
		SC	Radiotherapy
		SD	Specialist Palliative Care
T	*No longer used*		
U	Unclassified Groups	UZ	Data Invalid for Grouping
V	Multiple Trauma, Emergency and Urgent Care and	VA	Multiple Trauma

Chapter	Description	Sub-chapter	Description
	Rehabilitation	VB	Emergency and Urgent Care
		VC	Rehabilitation
W	Immunology, Infectious Diseases and other contacts with health services	WA	Immunology, infectious diseases, poisoning, shock, special examinations, screening and other healthcare contacts
		WD	Treatment of Mental Health patients by non Mental Health providers
		WE	Genito-Urinary Medicine
		WF	Non-admitted consultations
		WG	Reserved for Pathology
X	Critical Care, High Cost Drugs and Devices	XA	Reserved for Neonatal Critical Care
		XB	Paediatric Critical Care
		XC	Adult Critical Care
		XD	High cost drugs
Z	Unbundled	ZZ	Unbundling HRG

Analytical approach

Following the development of the Design Framework, extensive preparatory analysis was carried out on various data sets to inform the development of HRGs.

Multiple axes of analyses, not limited to the basis of an existing individual HRG, and not restricted to only Diagnosis/Procedure, were explored for statistical strength as potential HRG split criteria.
Initial analyses were based on national Admitted Patient Care CDS data on a length of stay basis. The analysis included:

- Baseline analysis of existing v3.5 HRGs by length of stay, giving finished consultant episode count, age distribution, contribution to unexplained variation, and identifying those failing HRG4 Design Framework rules
- HRGs pick list highlighting potential ways to improve those that had poor baseline statistical distribution.

Other data sources used to inform HRG4 include:

- The National Schedule of Reference costs
- Data from Expert Reference Panels (ERPs)
- Other pilot data from Trust and department systems (Theatre, Pathology etc)
- Data from outpatient studies.

NHS National Reference Cost data were collected from a large number of trusts who could supply this data at the patient or procedure level. This data was analysed and used to inform HRG development, ensuring varying costs were taken into account for HRG development and not just those relating to length of stay.

The role of Expert Working Groups (see Section 4.4 consultation and support) was to:

- Identify flaws in admitted patient care HRGs (using initial analyses) and specify further analyses to explore potential improvements;
- Draft new HRGs;
- Amend satisfactory HRGs to become non-setting specific, and, if appropriate, “unbundled”;
- Draft new day case and outpatient HRGs;
- Iteratively suggest and test refinements to unsatisfactory HRGs;
- Define chapter/sub-chapter specific CC lists and decide which HRGs should have a CC split applied based on statistical analysis.

Statistical Methods Used

A variety of statistical techniques were employed to assist in the optimal redesign of groupings and to measure HRG quality and statistical coherence.

The most common of these were:

1. **Basic summary statistics -** Mean, mode, minimum, maximum, inter-quartile range.
2. **Measurements of Variability** including the Coefficient of Variation (or CV which equals the standard deviation/mean). The aim with HRGs is to minimise the cost variation within a HRG, so minimise the CV.
3. **Reduction in Variance (RIV)** – a measure of how much variation is explained by the HRGs. The aim of HRGs is to maximise the RIV.
4. **Classification and Regression Trees (CART)** – an analysis technique used to suggest possible HRGs. Essentially, given a resource variable (for example Total Episode Cost), CART will identify groupings that best differentiate between high and low cost cases.

There will always be differences in cost that cannot, and should not, be accounted for by HRGs. There will be variations between trusts in, for example, length of stay, nursing input intensity, hotel costs, and management overheads, that result in different actual costs.

Code Structure for HRG4

Version 3.5 uses 3 digit codes to represent HRGs. In HRG4, the code length has been increased to allow more information to be conveyed and to facilitate analysis.

HRG4 uses a 5 character code structure (AANNA). The first two characters represent the chapter / sub chapter (e.g. LA = Renal). The next two numeric characters represent the HRG number within the chapter. The final character signifies the ‘split’ level applicable to the episode, e.g. an age split.
The new code structure is presented and explained below.

HRG Chapter	HRG No.	Split
AA	NN	A

<u>HRG Chapter</u>

- A two character alpha/numeric code. This retains the current HRG chapters with the addition of a chapter dedicated to generic (i.e. cross-chapter) groupings. By making this code two character it allows for sub-chapter splits, e.g. Renal (LA), Urology (LB), and Renal Dialysis (LC) within chapter L.

<u>HRG No.</u>

- A two numeric code which identifies the HRG within the Chapter.

<u>Split</u>

- A single character alpha numeric code is an indication of the presence of splits such as age, LoS or Complications.
- The character will have no information associated with its value. For example, it is not the case that a value of 'A' always represents an age split.
- The actual basis of the split and the value associated with a particular HRG definition will be included in the HRG definition itself
- 'No split' is indicated by 'Z' in this field
- Separating these from the main sequence of codes would allow an analyst to simply count the number of hip replacements (for example) regardless of Complications or other splits.

For example:
LA03A = Kidney Transplant from Live donor, 19 years and over

HRG Chapter	HRG No.	Split
LA	03	A

Procedure Hierarchy

Where a patient has more than one procedure performed during an episode or spell and therefore has more than one procedure code recorded, the dominant (highest cost) procedure will be used to assign the HRG.

Each procedure has been assigned a hierarchical level associated with its resource consequences. These hierarchical rankings reflect the relative costs of procedures.

When a number of procedures are recorded, a procedure hierarchy list is used to decide which procedure is dominant and so which one should be used to assign the HRG. The use of a procedure hierarchy list is not a new concept, but the list used within version 3.5 has been extensively updated for HRG4.

If the patient does not have any significant procedures within the episode or spell, then an HRG will be assigned by using the primary diagnosis.

Diagnosis Hierarchy

For multi-episode activity where no significant procedure has occurred, but where different primary diagnoses have been recorded for at least two of the episodes in the spell, a diagnosis hierarchy list is used to decide which of the episode primary diagnoses should be deemed to be the primary diagnosis of the spell. The primary diagnosis of the spell will be used to assign the spell HRG. The use of a diagnosis hierarchy list is a new concept introduced in the second iteration of HRG4, released to the NHS in January 2008. In the original HRG4 release, the primary diagnosis of the spell was that of the first episode within that spell.

Methodology

In HRG4, cost data and clinical knowledge has been used to apply a ranking to every OPCS procedure code that is valid in the primary position i.e. is valid to drive an HRG.

This method gives a comparator mechanism that ranks all procedures and considers the relative complexities of different procedures across all HRG chapters.

For example, a procedure with a rank of seven in the Eyes and Periorbita chapter group is equivalent to a procedure with a rank of 7 in any other chapter, e.g. the Digestive System groupings.

Eleven bands have been established (running from 2 to 12 inclusive) with band 2 representing the lowest resource use and band 12 representing the most resource intensive procedures.

Band 0 is used to identify OPCS codes for procedures which are not valid in the primary position and as such are invalid for grouping; e.g. approach codes and site of operation (Z prefixed) codes.

Band 1 represents those procedures whose resource use is minimal and where diagnosis should therefore be used as the prime driver in grouping to an HRG. These are generally non-operative procedures, for instance fitting a sling for a fractured arm or administering an injection.

The definitions for procedure hierarchies of 0 and 1 are essentially unchanged from version 3.5 HRGs.

It should be noted that the method used to derive these bandings in HRG4 differs from the banding methodology used in version 3.5. Under the 3.5 methodology, all procedures within an HRG carried the same hierarchy. This is not the case in HRG4. For this reason, the bandings created under these two methodologies cannot be directly compared.

Application of the Hierarchy in Grouping

- If only one procedure is recorded for a patient and this procedure has a hierarchy value of 2 or more, this procedure will be used for grouping. If more than one procedure is recorded, all will be examined.
- If more than one procedure has been recorded, the grouper will select the dominant procedure by reference to the hierarchical ranking of each procedure. The dominant procedure will used to drive the grouping process.
- In the case of a tie, the first recorded of the tied procedures is used to assign the HRG.
- In the absence of any procedure or where a procedure is invalid for grouping, the diagnosis will drive the HRG.

Code to Group tables

The Code to Group Tables are attached as appendix G.

Information on Multiple Trauma, Complications and Co morbidities, Unbundling, setting Independence and Spell based HRGs can be found in the HRG Design concepts document attached at Appendix B

4.3. Governance

Security and confidentiality (e.g. Section 60 Health and Social Care Act 2001)

HRG4 does not require any additional data flow. It will simply group existing data.

1. Connecting for Health has a contract with BT for the provision of managed services for operating SUS which meets Security and confidentiality requirements. In the short term, i.e. until Local Service Providers acute services are available, the data are acquired from Trusts through secure forwarding of datasets. The SUS Team have specified confidentiality requirements relating to secondary use data for BT to implement - e.g. pseudonymisation, Role Based Access Controls (RBAC) - and for specifying the service management arrangements to support SUS, such as basic data quality checking.

Therefore the SUS Team are responsible for the data flowing into SUS from Trusts.

2. The pseudonymisation of data is within the SUS secure environment to which the SUS Team has no access. On presentation to end users, the pseudonymised form of the patient identifiers is itself encrypted. Access to any data held in SUS is controlled via RBAC; registration of users for access is through the Registration Authorities based in local NHS organisations and the SUS Team do not have access to a Registration Authority. Access to clear data (i.e. un or de-

pseudonymised) will be restricted to those users with legitimate reasons for that access and as registered through their local registration authority.

Thus, the SUS Team do not hold the key for unlocking patient id.

4.4. Consultation and Support

HRG4 was designed and developed in consultation with the Service and depends on stakeholder engagement groups (Expert Working Groups and Expert Reference Panels) for clinically meaningful outcomes.

This engagement, with around two hundred and eighty four Healthcare professionals via the thirty three Expert Working Groups covering all clinical areas, not only drives the HRGs, but also provides valuable input to the software development work of the HRG Grouper.

The process of engagement was that:

- Royal Colleges / Professional Bodies were invited to nominate a Senior Consultant representation for each clinical area (generally a single HRG chapter).
- the nominated Senior Consultant led an Expert Working Group (EWG) for their particular specialism (in total thirty three EWGs).
- each EWG Senior Consultant extended membership to include representation to cover all group activity.
- NHS Pilot Sites were recruited at appropriate stages throughout the development programme. The pilot sites generally collected costed activity data at patient level that was analysed to support the development of HRGs.

There were also four Expert Reference Panels (ERPs):

- Paediatrics;
- Cancer Services;
- Chronic Disabling Diseases;
- Specialised Services.

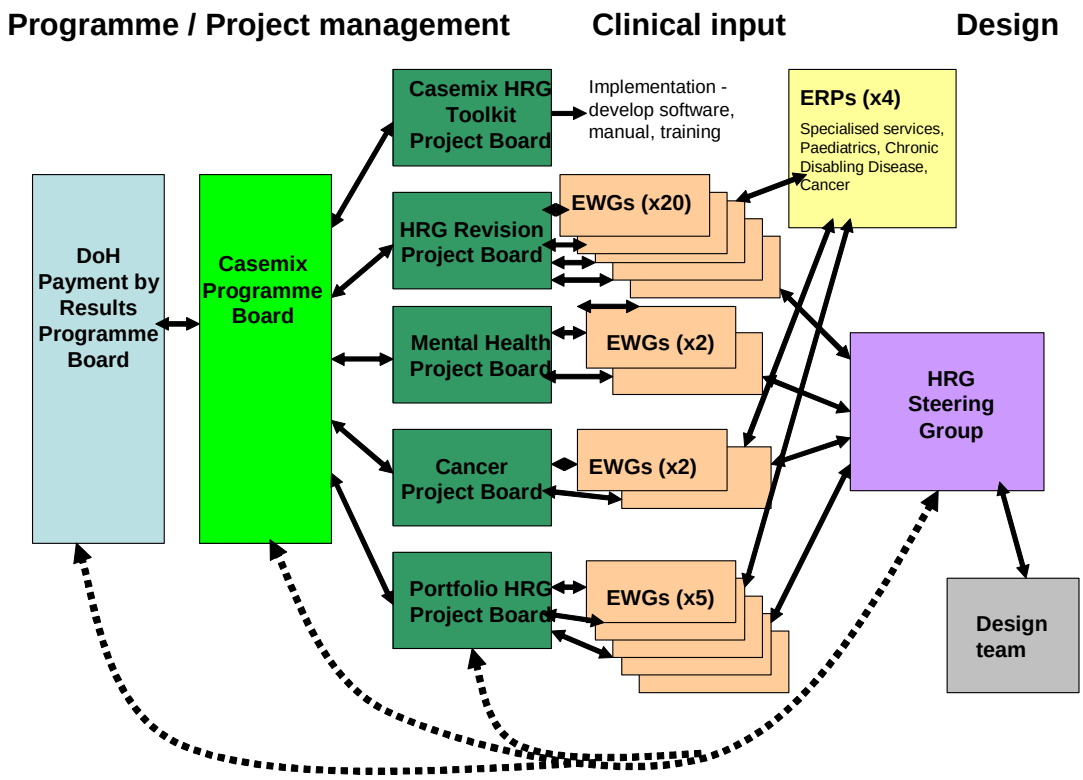
These panels considered generic design issues affecting one or more EWGs, to achieve a uniform and consistent approach across the portfolio.

The Expert Working Groups (EWGs) provide medical, financial and allied health professional guidance for the development and design of HRGs.

The Expert Reference Panels (ERPs) consider generic design issues affecting one or more expert working group to achieve a uniform and consistent approach across the HRG portfolio.

This engagement via EWGs and ERPs included some seventy eight NHS Trusts; Clinical Representatives from fifty one Royal Colleges and Professional Bodies; thirty eight NHS finance representatives and twenty nine Specialised Services Representatives.

The following diagram shows the various project structures and groups involved in the development of HRG4 and how they related to each other:



The full set of HRGs went out to NHS wide consultation in June 2006. This was publicised on both the IC and PbR websites. Letters were also sent to all members of the 33 EWGs that had been involved in their development from The NHS Information Centre. There has been significant consultation with clinicians from the EWG involved with overseeing the HRG development work and endorsement from the Royal Colleges to ensure the HRGs do meet with the approval of the end user.

All the HRGs have already been approved by PbR in the Department of Health with full endorsement from their EWGs.

In brief, from the consultation there were ninety five people that commented via the PbR spreadsheet and a further eleven that commented via either letter or email. The returns per sector were as follows:

- Charities: 2%
- Healthcare Networks/Associations: 2%
- NHS Trusts: 47%
- Primary Care Trusts: 5%
- Private Sector/Manufacturing (Industry): 17%
- Royal Colleges: 7%
- Strategic Health Authorities: 1%
- Societies/Healthcare Alliances: 7%
- Unknown: 8%

A full breakdown of the results of the consultation is attached as Appendix H.

In addition, to support The NHS IC vision and mission statements, the Casemix Management Team (CMT) built a Quality Assurance Group (QAG), in order to co-ordinate the Quality Assurance (QA) arrangements for the Casemix Service.

The objectives of the QAG are to: -

- Provide advice and assurance for product and service design;
- Review technical products produced in Casemix;
- Provide co-ordination and a focal point for quality and assurance;
- Provide a formal interface between the Casemix Management Team/Programme Board and other stakeholders involved in quality issues;
- Provide a formal interface (on quality issues) with the DH/PbR Programme, Coders, Grouper Users and other Customer representatives.

The following roles are present on the full scale QAG: -

- CfH: OPCS, SNOMED and SUS;
- DH: PbR Programme;
- Casemix Technical, Project Management and Service staff;
- IC: SUS and Datasets;
- NHS: Clinicians, Coders, Information staff, Finance Managers and PCT Commissioners;
- Subcontractor (Toolkit Software Development).

In pursuance of the objectives stated above, QAG activities may include -

- Co-ordinating all QA activities including, but not limited to, Quality Reviews of technical products, applicable quality requirements, associated procedures and progressing Quality Review corrective actions;
- Evaluating and making recommendations regarding the projects' documented Quality Plans and agreeing the responsibilities and timescales for QA activities;
- Establishing a communication strategy for QA issues, updating stakeholders on project and service issues, establishing a common understanding;
- Providing feedback as required by the Programme Manager and CMT, maintaining records of proceedings and actions, identifying new risks and recommending QA activities to mitigate project and service risks.

The Stakeholder Engagement Chart is attached as appendix I.

5. Implementation

5.1. Summary of Approach to Implementation

In order to support the 2006/07 Reference Cost exercise, the NHS Information Centre conducted an education, awareness and training project. A series of 10 national Roadshows were held and attended by 771 NHS informatics, clinical and finance professionals. The Roadshows had representation from 89% of acute trusts and 74% of primary care trusts. A robust helpdesk process was instigated to ensure all HRG4 questions could be answered as appropriate and in a timely manor.

HRG4 was first introduced to the service for use in the 2006/07 Reference Cost collection and subsequently for the 2007/08 Reference Cost collection. Its next release will be in autumn 2008 when a road test grouper is implemented. The road test grouper will be a release of the proposed 2009/10

payment grouper, and released alongside the DH prospective tariff to allow NHS providers to plan for 2009/10. A local payment grouper will be released on 01/04/2009 to support NHS providers in grouping HRG4 data for reimbursement. Actual reimbursement of PbR and HRG4 will be done through SUS as of the 01/04/2009.

5.2. Implementation Evaluation Report

As part of the fitness for purpose, a readiness for service analysis was carried out on HRG4 and this is attached as appendix J.

The design phase of HRG4 included a number of guidelines to ensure that quality parameters were stipulated and measured throughout the process. In addition, clinical endorsement of each of the chapters and sub-chapters serves to assure users of the appropriateness of design. The 2006/07 reference cost analysis, published by DH on 01/02/2008 reflects HRG4 fitness for purpose. This analysis can be found at:

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/publicationspolicyandguidance/DH_082571

HRG4 has been deemed fit for purpose for use in tariff terms. This decision was made by the Department of Health.

A joint planning mechanism with CfH and PbR to identify and plan dependencies between Groupers, HRGs, underlying classifications, and datasets is followed. In addition, there is shared representation on respective governance structures. For example, the Casemix Programme Manager sits on the CfH OPCS Editorial Board and CfH are represented on the Casemix Programme Board, as is DH.

The HRG4 design approach recognises the requirement to absorb changes in other classifications. For the first time, the HRG design is stored in a single database, separate from the Grouper. This means that changes can be made to the design database and plug a new database into the Grouper quicker than was possible in HRG v3.5.

During 2008 it is planned to extend the design database into a Casemix Design Environment so that the impact of any classification changes can be identified and traced through all the required changes following, for example, the introduction of new OPCS codes. The CDE will be our configuration management tool enabling us to make and track controlled changes to HRGs, and to manage versions of all the configuration items.

The HRG4 Reference Cost Grouper was delivered in April 2007 and defined the next stage in the evolution of HRG software.

This software represented a key component of the mechanism to allow PbR, the tariffs, and ICD10 and OPCS4 codes to work together as part of the payment system between purchaser and supplier in the NHS. It was used to support users within hospital trusts, PCTs and other interested parties within the health arena to develop the Reference Costs from June 2007.

Woodward Associates have been contracted in the development and testing of the HRG4 Reference Cost Grouper application software.

The NHS IC manage the development of the HRG4 reference groupings database which represents a major revision of existing v3.5 tables to include new clinical areas and other mapping data.

The software will use the HRG4 reference groupings database to convert Spells (a record of patient care from admission to discharge) and Finished Consultant Episodes (FCEs) into HRGs as a means to determine fair and equitable reimbursements to trusts, and other providers, for the patient care they provide.

The original HRG4 Reference Cost Grouper development consisted of the following key stages:

- Development of a prototype which provided early visibility of the revised look and feel, screen navigation and output files to the IC and key NHS users ensuring that the work was heading in the right direction at an early stage in the development lifecycle;
- Development of the core Grouper Logic and a separately developed Test File Generator which was used to prove the grouper logic. The Test File Generator reverse engineered input datasets from the IC provided grouper definition files, and fed through the grouper logic ensuring that the expected results matched;
- Development of the Report Module allowed the IC to approve the report layouts and to prove the embedded logic within the reports themselves;
- User Acceptance Testing ensured the overall solution met the NHS end user requirements prior to it entering production for supporting the 2007 costing cycle. Key activities undertaken during this stage of the work was interfaces to the user's internal systems and data e.g. PAS systems, ensuring that the inputs, outputs, reports to and from the HRG4 Reference Cost Grouper met the agreed user requirements.

The full test strategy can be found in the HRG4 Reference Cost Grouper Testing attached as appendix K.

The test plan can be found in the HRG4 Reference Cost Grouper Prototype Testing Plan attached as appendix L.

There are no changes to the purpose as stated at the Draft and requirement Stages and no changes to the standard specification in section 4.2.

HRG4 will be used to calculate standard reference costs and tariffs as required by the Department of Health.

The Department of Health and The Information Centre for Health and Social Care hosted six joint events from March 2008 to April 2008, with a specific focus on HRG4 for payment.

These events concentrated on the strategic impact of the implementation of HRG4 for funding, and the consequential impact on costing and performance management, at an organisational level. They were aimed at all providers and commissioners of healthcare in England. Colleagues responsible for financial and performance management, including commissioning, reaped significant benefits from attending.

The sixth event had a greater emphasis on clinical aspects of the uses of HRG4.

All presentations from the Roadshows are available at:

http://www.ic.nhs.uk/our-services/standards-and-classifications/casemix/hrg4/prepare-for-hrg4

5.3. Implementation Roll Out Plans

The NHS IC and the Casemix team are responsible for and own intellectual property rights to HRG4. The NHS IC also has responsibility to provide local groupers to all NHS service providers. Reimbursement against HRG4 will be made using SUS as the recognised source of definitive data.

All releases of a local grouper are released on the Casemix service website at:

http://www.ic.nhs.uk/our-services/standards-and-classifications/casemix/hrg4/prepare-for-hrg4

Additionally users are encouraged to sign up for electronic updates and any HRG4 updates or local grouper releases are also notified by this distribution list. Users can register for updates using the following link:

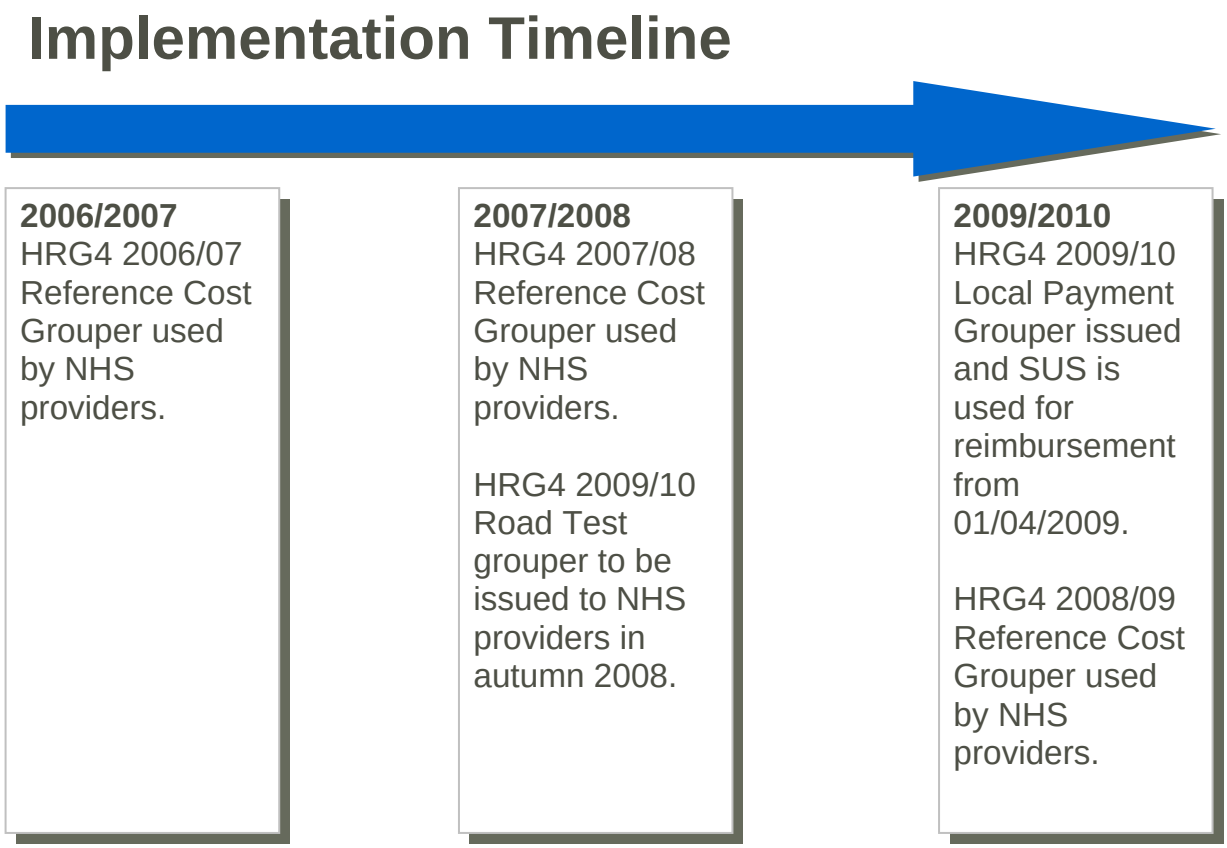
http://www.ic.nhs.uk/our-services/classification-and-standards/casemix/whats-new-/-updates/register-for-hrg-updates

As identified in the implementation timeline attached below HRG4 is to be used for reimbursement from 01/04/2009.

For a detailed plan of local grouper requirement, development and implementation plans please refer to appendix M.

NHS service providers were invited to the HRG4 for Payment Roadshows held early 2008 detailed in section 5.2 above. These Roadshows were aimed at raising awareness and educating HRG users.

The review date for the HRG4 change of information standard should be annual. It is recommended the first review is 01/11/2009.



5.4. Migration Plans

From 01/04/2009 HRG4 is to be used for reimbursement. SUS will be the definitive source of data and be the tool used to reimburse NHS providers. From this date HRG v3.5 will no longer be recognised by DH for reference cost collection, planning or reimbursement purposes.

A decision not to flow HRG4 local data nationally through an updated CDS has been made in line with The NHS IC, CfH and PbR governance.

5.5. Human Behavioural, Organisational and Technical User Implementation Guidance

To supplement the delivery of HRG4, specifically the delivery of HRG4 Reference Cost Groupers (on a yearly basis) the Casemix Service releases a comprehensive suite of user documentation covering a multitude of purposes, components and aspects – objectives of the revision, user guidance, explanations of logic, worked examples, and documentation featuring the construct of the HRGs themselves. All supporting documentation is available on the Casemix Service web pages and can be downloaded from the following URL:

http://www.ic.nhs.uk/our-services/standards-and-classifications/casemix/hrg4/prepare-for-hrg4

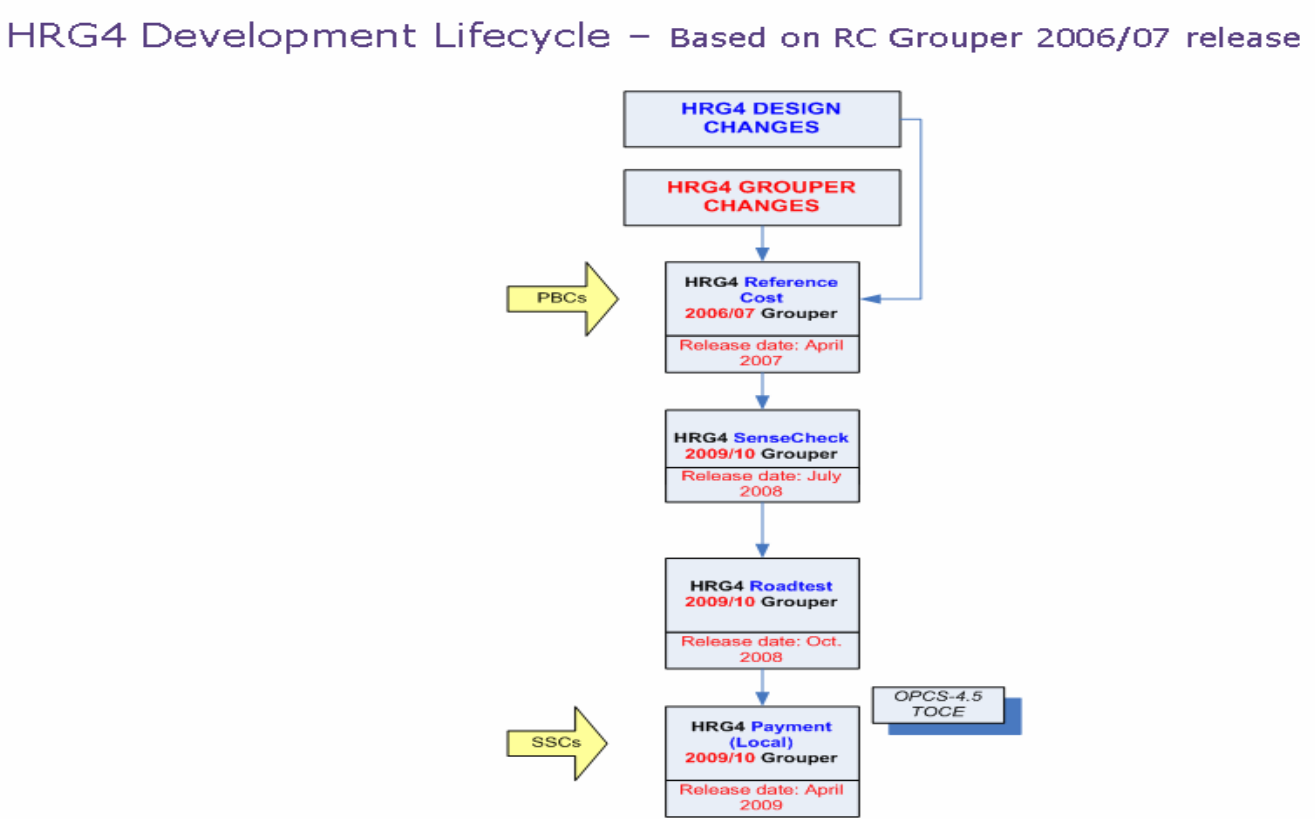
5.6. Safety

HRG4 has no direct impact on safety but may influence planning decisions that could potentially impact on safety.

5.7. Maintenance and Update Process Plans

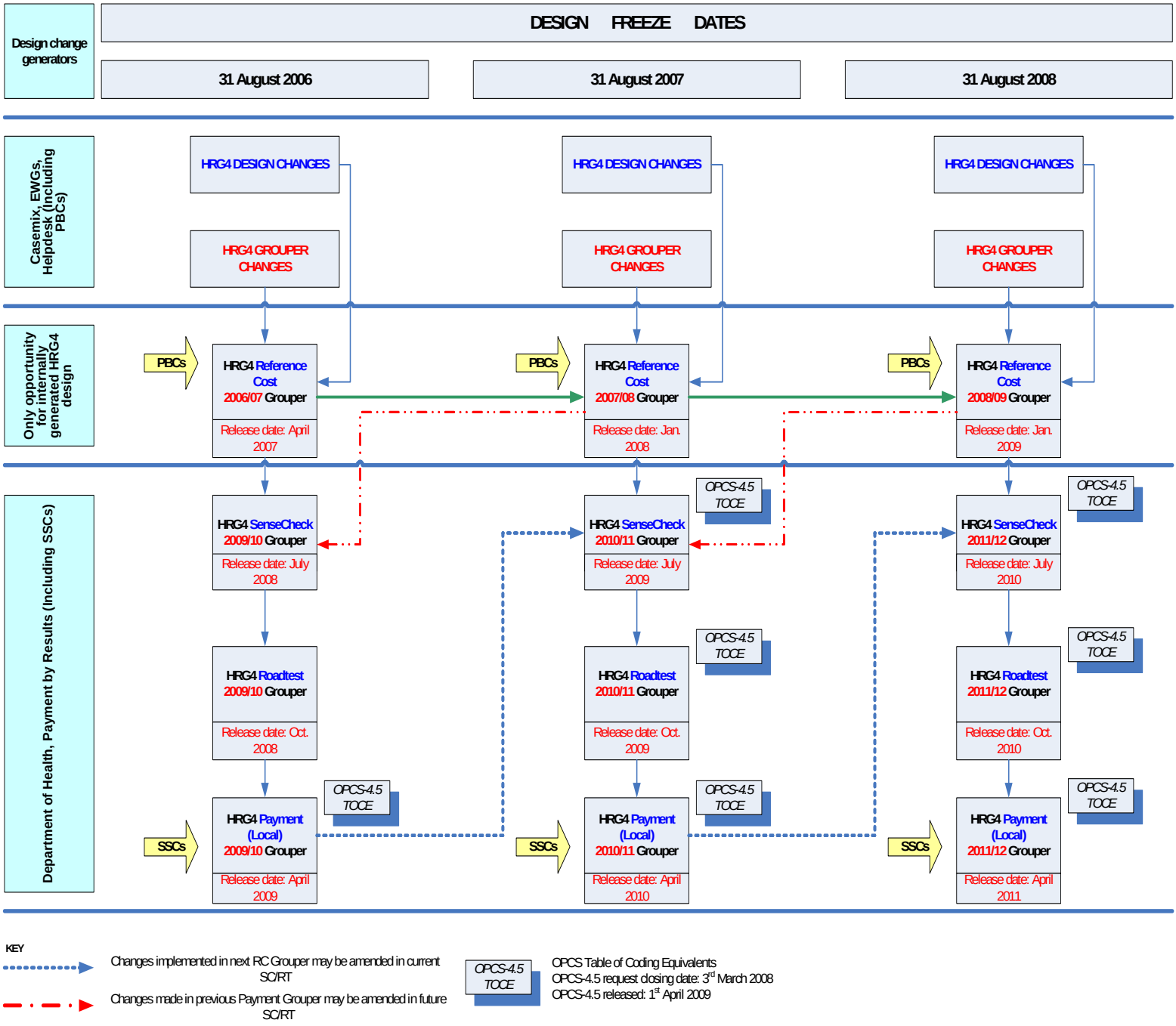
HRG4 once approved will be further developed to suit the needs of the NHS and PbR. Changes are likely to be made in line with EWG requirements, error amendments and logic bug fixes. The vast majority of change will be instigated by the NHS. Full details of these changes will be published on the Casemix website and the changes will be released in the appropriate HRG4 grouper.

The diagram below shows the typical development and release cycle of a HRG4 design from its initial intention to be used for reference cost collection through it's lifecycle to the point where the design is used for reimbursement:



The diagram below shows the typical development and release cycle of a HRG4 design from its initial intention to be used for reference cost collection through it's lifecycle to the point where the design is used for reimbursement over a three year period:

3 Year Grouper Release Schedule



5.8. Conformance Tests Specification

As the use of HRG4 for PbR reimbursement will be mandated from 01/04/2009 all users need to adhere in order to be reimbursed for activity. Failure to do so will result in NHS providers not been reimbursed for activity that has taken place.

Each release of a HRG4 grouper will be published on the Casemix service website with release notes confirming the intention of the grouper (Reference cost collection, Road Test or local payment) and will be reference to a version number to ensure users are using the correct version for the intended use. The local groupers also have a simple naming convention consisting of HRG version, data to be used and purpose. For example the HRG4 reference cost grouper for 2007/08 data is called the HRG4 2007/08 Reference Cost Grouper. This naming is also visible on the title bar and desktop shortcut options.