# SUS+ PbR Reference Manual

## Implementation of National Tariff/Payment by Results (PbR) in the Secondary Uses Service (SUS)

# Contents


## Introduction 4

This Document 4
Secondary Uses Service (SUS) 4
National Tariff Payment System 4
Payment by Results (PbR) 4

## HRG Grouping 9

Grouper Processing 9
Unbundled HRGs 10
'Differences' between the SUS Grouper and Local Grouper 11
PbR Excluded Activity 11
Short Stay Emergency Admissions 13
Regular Attenders 13
Grouping Algorithm Version 13
Prescribed Specialised Services (PSS) 13

## Critical Care 15

Critical Care Extract 15
Validation of Submitted Data 18
Counting and Allocating Critical Care Days 18
Grouping 20
PbR Final Adjusted Length of Stay 21
PbR Critical Care Indicators 22

## Emergency Care Data Set (ECDS) 27

Submitting ECDS 27
SNOMED-CT 27
ECDS Extracts 27
Streaming 28

## Best Practice 29

## Evidence-Based Interventions 33

Categories 33
SUS+ Derivation 33

## Exclusions 34

Policy Exclusions 34
Data Quality Exclusions 35

**SUS+ Pricing Differences** 36

Hospital Provider Spell Number present but missing NHS Number and Date of Birth 36
Legally Restricted Records 36
Missing Discharge Date 36
Multi-Episode Day Cases 36
Duplicate Hospital Provider Spell Number 36
Missing Hospital Provider Spell Number 36
Spells Containing Multiple Episodes with Last Episode in Spell Indicator Set. 37
Critical Care 37
Mixed Admission Methods 37

**Glossary** 38

# Introduction

## This Document

This document provides consolidated historical National Tariff/PbR information guidance and is amended as required to provide coverage new, developing or previously uncovered areas. It is therefore a 'living' document which can be updated in response to feedback from the user community. New chapters can be produced, and existing chapters enhanced, based on these requests.

SUS users are therefore encouraged to provide feedback and suggestions for areas of improvement in existing guidance and new requirements for support materials. To provide feedback please email NHS Digital Enquiries and include '**SUS Documentation Feedback**' in the subject line.

## Secondary Uses Service (SUS)

The Secondary Uses Service (SUS) is the central repository which supports the flow of Commissioning Data Sets (CDS) between providers and commissioners.

When a patient or service user is treated or cared for, information is collected which supports their treatment. This information is also useful to commissioners and providers of NHS-funded care for 'secondary' purposes - purposes other than direct or 'primary' clinical care - such as:

- Healthcare planning
- Commissioning of services
- National Tariff reimbursement
- Development of national policy

## National Tariff Payment System

Following the handover of responsibility for the NHS Payment system from DH to NHS England and NHS improvements (formerly Monitor) in April 2013, PbR was effectively replaced by the National Tariff Payment System (NTPS) in April 2014. This new payment system currently retains the vast majority of PbR policy.

Due to the embedded terminology, data item and extract naming consistency, SUS continues to refer PbR in SUS and therefore the terms 'Payment by Results', 'PbR', 'National Tariff Payment System' and 'NTPS' should be considered interchangeable when using SUS or any SUS Guidance.

## Payment by Results (PbR)

Payment by Results (PbR) provides a transparent, rules-based national tariff system, used to determine the reimbursement of NHS funded care in England. PbR rewards efficiency, supports patient choice and diversity and encourages activity for sustainable waiting time reductions.

Payment is linked to activity and adjusted for casemix. This ensures a fair and consistent basis for hospital funding rather than being reliant principally on historic budgets and the negotiating skills of individual managers.

PbR is the payment system in England under which commissioners pay providers of NHS-funded healthcare for each patient seen or treated, considering the complexity of the patient's healthcare needs.

The two fundamental features of PbR are nationally determined currencies and tariffs. Currencies are the unit of healthcare for which a payment is made and can take a number of forms covering different time periods from an outpatient attendance or a stay in hospital, to a year

of care for a long-term condition. Tariffs are the set prices paid for each currency.

## Coverage

PbR currently covers most of the acute healthcare in hospitals, with national tariffs for admitted patient care, outpatient attendances and accident and emergency. This activity is submitted using Commissioning Data Sets (CDS). Current policy intends that the scope of PbR and national tariff will expand in future by introducing currencies and tariffs for mental health, community and other services.

## Coding and Submitting Patient Data

When a patient is discharged, a clinical coder translates their care into codes. Two classification systems, ICD-10 for diagnoses and OPCS-4 for procedures (interventions) are used. When a patient attends an outpatient clinic, their Treatment Function Code (TFC) is similarly recorded.

For some outpatients it is appropriate to record procedures performed as these will allocate an HRG that is priced under different rules to standard OP attendances. This information, together with other information about the patient such as age and length of stay, is sent to SUS via CDS. Extract reports produced by SUS allow commissioners to pay providers for the work they have done or to adjust any regular monthly payments for actual activity undertaken.

## Pricing

Tariff prices have traditionally been based on the average cost of services reported by NHS providers in the mandatory annual reference costs collection. In practice, various adjustments are made to the average of reference costs, so final tariff prices may not reflect published national averages. The reference costs from which the tariff is produced are three years in arrears. Therefore, an uplift is applied which reflects pay and price pressures in the NHS and includes an efficiency requirement. The introduction of best practice tariffs in 2010/11 began to introduce the policy concept that tariffs should be determined by best clinical practice rather than average cost.

The tariff received by the provider is multiplied by a nationally determined market forces factor (MFF). This is unique to each provider and reflects the fact that it is more expensive to provide services in some parts of the country than in others. There may also be other adjustments to the tariff for long or short stays, for specialised services, or to support particular policy goals.

## Currency

The currency for admitted patient care, outpatients and A&E is Healthcare Resource Groups (HRG). HRGs are clinically meaningful groupings of diagnoses and interventions that consume similar levels of NHS resources. Grouping the extensive and growing number of clinical codes into HRGs allows tariffs to be set at a sensible and workable level. For APC each HRG covers a spell of care, from admission to discharge.

## Non-Mandatory Prices

For years up to and including 2018/19 SUS and SUS+ only allocated Mandatory Prices. In 2019/20 it became necessary to mark prices for Maternity Activity as Non-Mandatory. These are identified in APC activity as Tariff Types DAYNM, ELENM, NONNM and in Outpatients as Tariff Type NONMAND. No other non-mandatory prices are assigned by SUS+.

## Impact of PbR

Before PbR, it was common practice for commissioners to have block contracts with hospitals where the amount of money received by the hospital was fixed irrespective of the number of patients treated. PbR was introduced to:

- **Support patient choice by allowing the money to follow the patient to different types of provider**
- **Reward efficiency and quality by allowing providers to retain the difference if they could provide the required standard of care at a lower cost than the national price**
- **Reduce waiting times by paying providers for the volume of work done**
- **Re-focus discussions between commissioner and provider away from price and towards quality and innovation**

PbR was introduced to support healthcare policy and the strategic aims of the NHS. As these have changed and developed over time, so has PbR. The tariff is now seen increasingly as a vital means of supporting quality outcomes for patients and delivering additional efficiency in the NHS.

PbR is not unique to England. Many other countries in Europe, North America and Australasia operate similar payment systems.

## SUS PbR View

SUS PbR is a collection of rules, processes support implementation National Tariff policy. Derivations, tariffs and business rules, agreed with NHS England and NHS Improvement, provide a common and consistent mechanism to support reconciliation of activity and payment between providers and commissioners.

Scheduled extracts of processed data are generated at two specified cut-off points known as **Reconciliation** (first reconciliation point) and **Post-Reconciliation** (final reconciliation point) points to produce static snapshots. The system also provides a '**current'** view which provides a view of the data held at that time. Scheduled and ad-hoc extracts can be configured and run via the **Portal**.

### Finished Spells

SUS PbR supports national tariff payment and therefore only contains data for finished Spells (where a patient has been discharged.) because reimbursement is made at spell-level. For example, an episode-level extract will *only* contain episodes for completed Spells.

## Standard Extract Mart (SEM) View

The SEM view reflects how data would have appeared in the legacy SUS Standard Extract Mart. SEM view data contains a limited number of additional derivations and is updated by each subsequent version of activity data submitted, it reflects the position within SUS at the time the extract is taken and thus provides a changing view over time.

Data extracted using SEM view reflects the same position as PbR but is not restricted to PbR completed Spells. Instead it contains *all* episode level information submitted to SUS up to the point at which the extract is run, regardless of whether the patient has been discharged and the Spell has been completed.

## PbR Data in SUS+

SUS+ supports two previous historical years plus the current financial year (currently 2015/16, 2016/17 and 2017/18).

2015/16 and 2016/17 data has been reprocessed by SUS+. Due to changes in processing (such as simplified spell creation) marginal differences in results obtained by SUS and SUS+ may occur.

## Multi Tariff Processing

Multi tariff processing allows the user to choose the financial year for a PbR extract. Both pricing reference data and the grouper for the selected year will be applied. The extract format and column structure will be the same as that for the

current financial year and users can construct their own extract.

## SUS+ Changes to Extracts

The structure of the SUS+ extracts is very similar to its legacy SUS predecessor in order to support established user routines and processes. Expect to see development of extracts as SUS+ continues to streamline and improve.

### Additional data items

New data items have been added to the appropriate extracts to support Prescribed Specialised Services (PSS) and National Programme of Care (NPoC).

### Obsolete Data Items

Certain data items have been identified as Obsolete. This means that they are either surplus to user requirements or are no longer required. In SUS+, obsolete data items continue to be available in the extract specification but will not be populated. Data items identified as Obsolete are expected to be removed in future.

### Format changes

A small number of minor format changes have been made to accommodate more efficient processing. These changes are not expected to impact on user routines and processes.

## HRG Grouping

Checks and exclusions are made based on:

- **'Illogical data'**

  Such as a day case that covers three days, invalid treatment function codes or diagnosis/procedure codes which are classified as other or unspecified

- **Data issues and missing data**

  Rather than rejecting data, it is either 'cleansed' or 'flagged' as containing issues. It then continues through the process and can lead to the derivation of a UZ01Z HRG (Data invalid for grouping) and assignment of a zero price.

## SUS Data Quality Dashboards

A number of dashboards have been developed by NHS Digital to support users in monitoring and driving improvements in the quality and completeness of SUS data.

The dashboards report on the coverage and quality of the APC, Outpatient and A&E CDS types, as well as focussing on other key areas for improvement of data quality such as Maternity and Critical Care.

There is no limit to the number of users within an organisation that can register for access to the SUS dashboards. More information about how to register can be found on the SUS Guidance webpage:

## Interchange Tracking

### Tracker Functionality

The status of a CDS interchange submission can be monitored using the **'Tracker'** functionality that can be accessed via the Portal. It shows the live status of interchanges submitted to SUS and whether they have been processed and made available for extract.

### Monthly Trust Statements

Tracker information is also provided in workbook format in the form of **Monthly Trust Statements**, available on the Operational Support webpage.

These weekly reports track the status of all data submissions up to the date displayed in the report heading. They allow the status of all submissions for a particular organisation to be checked. Senders are encouraged to use the Tracker reports to check that data has been successfully received by SUS. This is particularly useful after any organisational or system (PAS or XML) changes have been made.

### Monthly Database Counts

Reports are generated and published on a monthly basis to track the number of records submitted to SUS (by activity month) for the last 18 months. Activity is displayed for each CDS type on a separate worksheet and can be used to highlight where an organisation has peaks and troughs in activity submissions, has duplicated or deleted data or where an organisation has started or stopped submitting data.

### Interchange Notifications

Registered users will receive automatic email notifications when their Interchanges have been successfully received and processed. If you wish to receive interchange notifications, please contact National Service Desk.

### Interchange Data Quality Reports

Registered users will receive automatic reports when their Interchanges have been received and processed. If you wish to receive interchange data quality reports, please contact National Service Desk.

# HRG Grouping

## HRGs

Healthcare Resource Groups (HRGs) are the ‘currency’ of PbR for Admitted Patient Care, Outpatient procedures and A&E attendances. In the context of PbR ‘currency’ refers to the units of healthcare for which a payment is made.

HRGs are clinically meaningful groupings of patient activity derived from NHS patient records, primarily using procedure and diagnosis codes. They support PbR by providing a means of determining fair and equitable reimbursement for healthcare services by providing consistent 'units of currency', based on expected resource use.

## HRG Design

HRG design is developed and maintained by the National Casemix Office, driven by policy and assured nationally through Expert Working Group consultation.

The design for each version of the classification is represented by a definitive set of rules and reference data. It is implemented by an algorithm, delivered via a software application, which follows design rules to interrogate reference tables to determine whether criteria for candidate HRGs are met by the incoming patient record data. Using a process of elimination, the most appropriate HRG is determined and assigned to the activity.

## The Casemix ‘Local’ Grouper

The Casemix Local Grouper is the software application that aggregates patient-level coding information into HRGs.

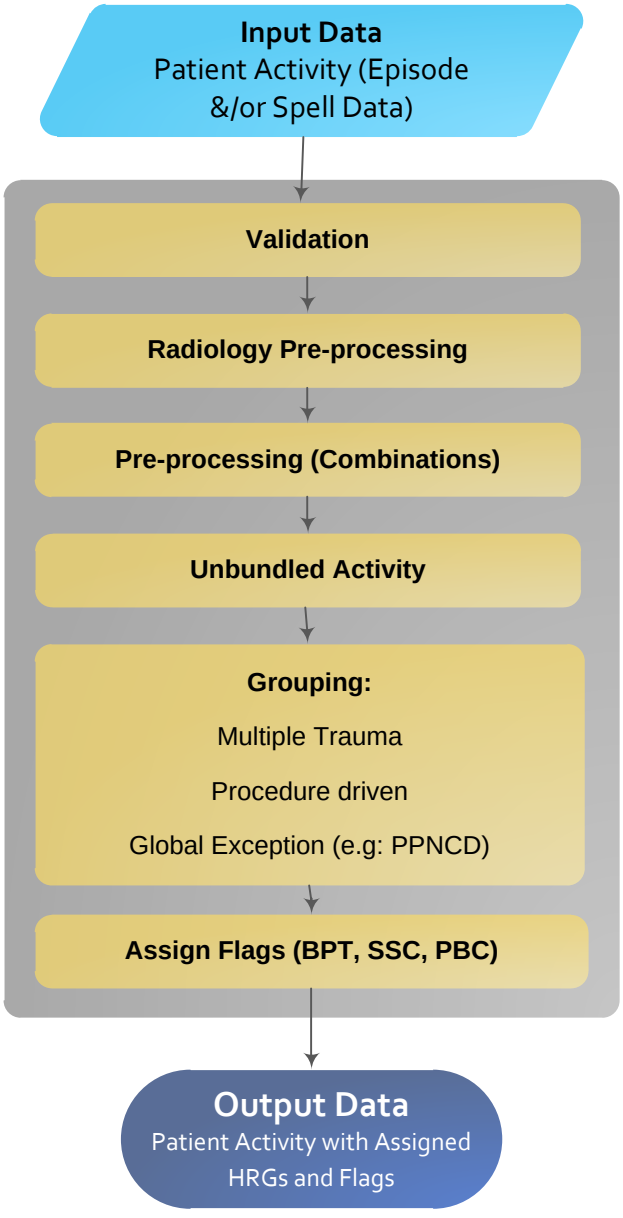
The local grouper performs validation checks before using a complex algorithm to assign HRGs to patient records and produces output files which contain the original input data along with the assigned HRGs. It also produces quality files that contain details of any errors or conflicts.

# Grouper Processing

Several validation and pre-processing stages take place before the actual grouping takes place whereby HRG codes are assigned to patient record data.

After grouping, Best Practice Tariff (BPT), Specialised Service Code (SSC) and Programme Budgeting Category (PBC) flags are assigned.

## Simplified Grouping Diagram



## Validation

Validation checks are built into the local payment grouper and are applied prior to the HRG code being assigned to a patient record. This checks the OPCS codes to ensure they are valid. Reasons why a code may not be seen as valid includes:

- Logical inconsistency (e.g. paediatric procedure being given to someone over 18 years old)
- An invalid or missing code has been assigned e.g. a Treatment Function Code that does not exist or clinically irrelevant for grouping e.g. family history of diabetes.
- If a deliberately ambiguous OPCS code is used (e.g. diagnosis/procedure 'unspecified')

## Radiology Pre-processing

Pre-processing occurs for **radiology** activity because it must be mapped to reference data before processing.

## Pre-processing:

Pre-processing involves creation of **combination** procedure codes, and logical deletes.

## Unbundled Activity:

Unbundled procedures are processed separately to derive unbundled HRGs (See **Unbundled HRGs**). The grouper then ignores these unbundled components when deriving the core HRG.

When all significant procedures in an admitted patient care episode or spell are unbundled, diagnosis is used to derive a core HRG for the episode. For outpatient care, if all procedures are unbundled the episode is allocated one of the eight relevant non-admitted care attendance HRGs as a core HRG.

There can be one or more 'unbundled' HRG codes assigned that can be used to identify the use of repeating resource use such as scans.

## Grouping

Grouping is the main stage of the process in which one HRG code is assigned to the Spell. This is referred to as the **core HRG**. Patient record data items, such as procedures, diagnoses, age and length of stay are used to determine the appropriate HRG code for the Spell.

## Assign Flags (BPT, SSC, PBC)

### Best Practice Tariff (BPT)

Most Best Practice Tariff flags are generated by OPCS and ICD10 codes. These may be required in combination and may also require qualification by other codes, for example site or approach codes.

Only certain HRGs can be flagged as best practice. In addition, age criteria and type of admission will determine whether activity can be flagged as best practice.

### Specialised Service Codes (SSC)

SSCs are assigned based on the record meeting predefined reference criteria.

### Programme Budgeting Categories (PBC)

The grouper maps the Primary Diagnosis of a patient record to a Programme Budgeting Category (PBC) which is then output by the grouper. There is no direct mapping of HRGs to PBCs. The programme budget category allows high level reporting on the amount of money being spent on specific treatments, such as cancer or heart disease.

# Unbundled HRGs

A pathway of care typically consists of a number of different service elements such as **diagnostic imaging**, **high cost drugs** and **rehabilitation**. Unbundled HRGs account for these consumable elements, allowing them to be commissioned, priced and paid for on an individual basis. PbR data contains the first 12 unbundled HRG codes generated for the activity.

Unbundled HRGs are generally only assigned non-mandatory tariffs as set out by PbR policy. SUS only applies mandatory tariffs to the PbR data and tariff information does not appear in the **Aggregate Unbundled Adjustment National** data item. They do however allow for this type of activity to be easily identified for further analysis.

## 'Differences' between the SUS Grouper and Local Grouper

The grouper is implemented as a standalone entity within SUS. This means that the SUS grouper is essentially the same as the Casemix local grouper and uses the same algorithm and design logic. Therefore, if the SUS grouper and the local grouper receive identical inputs, both groupers will produce identical outputs.

It is important to note, however, that SUS applies cleaning rules and therefore it is possible that in some cases the results produced by the SUS grouper differ from those produced by the Casemix Local Grouper when using the same baseline data. Otherwise the results of grouping the same data in SUS or in the corresponding local payment grouper are always the same. There is no difference in the grouping engine. Any apparent differences between SUS grouper and local grouper output data are likely to be caused by:

- Exclusions

Some episodes are excluded from spells according to PbR policy rules. Lack of such records in a spell can affect the spell-level grouping results. To get the same results it may be necessary to remove SUS excluded episodes from a local grouping run.

- Critical Care Days calculations

The SUS derivation of critical care days is more comprehensive than in guidance provided to support local grouping. It also includes several validation checks that may result in a slightly different number of critical care days being allocated which may affect grouping results.

- Spell Creation

The local grouper uses the **Provider Code** and **Hospital Provider Spell Number** data items to group episodes into spells. SUS derives its own spell identifier and uses it in place of the **Hospital Provider Spell Number**. This can mean that different sets of episodes are treated as part of a spell. In normal use this type of disparity is expected to be extremely rare.

In outpatient care the SUS grouper can produce two HRGs. This can occur when the derived HRG is not tariffed. An attendance HRG is calculated by a means equivalent to grouping after removal of all procedures except those starting with '**X62**'.

In emergency medicine the SUS grouper produces a 'dummy' HRG **DoA** (Dead on Arrival) from which a tariff is derived if the **A AND E PATIENT GROUP** data item contains value **70** (Brought in dead).

In local grouping, users are advised to group appropriate sub-sets of critical care data separately and treat their results as unbundled HRGs as a part of the parent episode/spell. This is necessary because of the difficulties expected for many users when dealing with more complex relational input. SUS groups the combination of Admitted Patient Care and Critical Care simultaneously.

## PbR Excluded Activity

PbR excluded activity is grouped but not priced. Excluded episodes or attendances do not have any tariff applied or financial adjustments made. (See also Exclusions)

### Excluded OP (Outpatient) Activity

Exclusions of **Outpatient** episodes are performed **after** HRG grouping has taken

place. This means that SUS derives the appropriate valid Core HRGs for all **Outpatient** attendances, regardless of whether that activity is later identified as being excluded from PbR (Note: prior to SUS R11 the Core HRG value of excluded OP attendances was set to N/A).

All records (PbR included and excluded) are output in the OP extracts with a populated HRG code. Where the Grouper has derived a **procedural HRG** and SUS has then derived an **attendance HRG** (i.e. WF), both HRGs are output, even if the episode is then excluded.

## Excluded EM (A&E) Activity

Exclusions of Emergency Medicine episodes are performed **after** HRG grouping has taken place. This means that SUS derives the appropriate valid **Core HRG**s for all EM attendances, regardless of whether that activity is later identified as being excluded from PbR.

All records (PbR included and excluded) are output in the EM extracts with a populated HRG code. Where SUS identifies a 'DOA' (dead on arrival), this value is used to populate the HRG data item.

CDS 011 ECDS contains streamed activity which is handled as excluded – see ECDS

## Excluded APC (Inpatient) Activity

**Submissions up to and including 2016/17:**

APC episode-level exclusions resulted in the creation **of Excluded Single Episode Spells**. These spells receive a **Spell in PbR/Not in PbR** indicator of **7** and were assigned new, unique **Spell ID**s. The original **Spell ID** became the **Parent Spell ID** which was used to link the **Excluded Single Episode Spell** to the original spell. A **Parent Spell** where all the constituent episodes were excluded (single or multi episode spells) received a **Spell in PbR/Not in PbR** indicator of **2** (All episodes in spell are excluded (prior to grouping)) and a **Spell Core HRG** of **N/A**.

The **APC Spells** extract incorporated **Excluded Single Episode Spells** as standard, regardless of whether;

- All episodes in the spell are excluded, or
- One or more (but not all) episodes are excluded.

The **APC Spells** extract was sorted so that **Excluded Single Episode Spells** were grouped with the corresponding Parent Spell. The **Parent Spell ID** and the **Spell ID** (child) of the newly created excluded spells were reported on both the episode and spell-level extracts.

**From 2017/18 onwards (SUS+):**

The practice of creating single episode excluded spells was discontinued.

All episodes in a spell will have the same SUS Spell ID.

All episodes and spells are grouped and assigned an HRG. As before, the PbR spell HRG used for tariff will only use data from included episodes. All episodes are clearly marked as included or excluded from PbR. Each spell carries an indicator to show if all, some or none of the constituent episodes are included.

(Note SUS+ also reprocessed data for years 2015/16 and 2016/17; spell data extracted from SUS+ for these years will not contain the excluded single episode spells that may be found in SUS extracts for the same period.)

## Provider Exclusions (Equals Sign)

The equals '=' sign is used by providers to exclude activity from PbR when intentionally included in COMMISSIONING SERIAL NUMBER. This locally priced activity identification method does not affect the grouping process.

# Short Stay Emergency Admissions

In some cases the combination of the **HRG** and the **Spell Length of Stay** mean a record qualifies for the **Short Stay Emergency** tariff. The tariff is reduced as the patient has stayed for less time than expected for the allocated HRG. The number of days for each HRG where this applies is the short stay trim point. This is compared to the PbR adjusted length of stay.

# Regular Attenders

A regular attender is identified as:

An **Elective Admission**

with

**Patient Classification 3** (regular day admission) with an **Episode Length of Stay** of **less than 1**

or

**Patient Classification 4** (regular night admission) with an **Episode Length of Stay** of **less than 2**

All records that qualify as regular attender (REG) form **single episode spells**. All episodes with a Patient Classification of 3 or 4 that do not meet the above identification criteria as regular attenders are excluded from SUS.

## Zero-priced Regular Attender Tariff

Renal dialysis for chronic kidney disease uses the national renal dataset which is outside of SUS, and mandatory tariffs for unbundled chemotherapy delivery and external beam radiotherapy activity have been introduced in a staged way. Therefore, SUS does not apply a mandatory tariff to this activity. The only mandatory tariffs assigned for regular attender activity are where the core HRG is one of the five zero priced (£0) HRGs. These are priced in SUS and are shown below.

- **LA08E**, Chronic Kidney Disease with length of stay 1 day or less associated with Renal Dialysis
- **PB03Z**, Healthy Baby
- **SB97Z**, Same Day Chemotherapy Admission or Attendance
- **SC97Z**, Same Day External Beam Radiotherapy Admission or Attendance
- **UZ01Z**, Data Invalid for Grouping

All other core HRG activity tariffs for regular day and night attenders are negotiated locally.

# Grouping Algorithm Version

The data item **Grouping Algorithm Version** identifies the version of the grouper used to group the submitted CDS data. The value refers to the HRG grouping logic identified in the reference data table **REF_PBR_GROUPER_INFO**.

A **Grouping Algorithm Version** of ‘1415’ refers to the 2014/15 Payment Grouper.

# Prescribed Specialised Services (PSS)

SUS+ integrates Prescribed Specialised Services (PSS) processing as developed by the National Casemix Office in partnership with NHS England. The same PSS data items as produced in the PSS Operational Tool are output in the following extracts:

## APC Full Online

**FCE NPOC:**

National Programme of Care (NPoC) code output by the PSS grouper at Episode level.

**FCE Service Line:**

Highest ranking Prescribed Service Line Code output by the PSS grouping process at Episode level.

**FCE Service Line List:**

List of Prescribed Service Line Codes produced as an output of the Prescribed Specialised Services grouping process.

**Spell NPOC:**

National Programme of Care (NPoC) code output by the PSS grouper at Spell level.

**Spell Service Line:**

Highest ranking Prescribed Service Line Code produced as an output of the PSS grouping process at Spell level.

## OP Full Online

**Spell NPOC:**

National Programme of Care (NPoC) code output by the Prescribed Specialised Services grouper at the Spell level.

**Spell Service Line:**

Highest ranking Prescribed Service Line Code produced as an output of the Prescribed Specialised Services grouping process at Spell level.

Specialised Service Codes (SSC) codes data items are present in the extracts for the purpose of supporting established local processing routines. These data items have been identified as Obsolete and will be removed in future. Prescribed Specialised Service (PSS) and (NPoC) codes will be output into new data items as detailed above.

For more information on the new codes, please refer to the Extract Specification on the SUS+ webpage.

For more information on the design of the PSS Operational Tool, please refer to the Casemix PSS webpage.

## 2019/20 – SUS+ PSS Exclusions Change

In 2019/20 a change was made to enable better identification of the Spell Level PSS codes. In previous years excluded activity was not used when determining spell level PSS attributes. In particular, specialised activity marked by providers with the equals-sign in the Commissioning Serial Number CDS item was not considered. From 2019/20 the logic to derive Spell PSS Code will be applied by SUS+ to all activity except that excluded as:

- Private patients
- Outpatient non-attenders
- Data quality exclusions

This change applies to PSS activity only.

The existing rules to determine reasons for exclusion will continue to be applied to all activity (see section Exclusions).

# Critical Care

Reimbursement for critical care activity is negotiated locally. This is because there is currently no national tariff for critical care. However, SUS supports local contract negotiation by:

- **Applying PbR processing rules to submitted critical care activity**
- **Calculating total critical care days**
- **Deriving and assigning HRGs**
- **Providing a dedicated PbR Critical Care Extract**

Where critical care activity is present in submitted patient data, the **Spell Length of Stay**, used in calculations, is adjusted to account for it. This adjustment enables correct derivation of HRGs and ensures that critical care activity is reimbursed **outside** of PbR/National Tariff Payment System.

# Critical Care Extract

SUS+ has raised the threshold for the number of critical care periods that can 'overlap' a single day from two to three. The effect is that slightly fewer spells are treated as having critical care errors in SUS+.

Rather than ignore all critical care processing, legacy SUS only ignored overlapping episodes. SUS+ ignores all critical care and more accurately reflects the processing requirement.

These two changes in processing can impact on prices for spells with critical care problems. Overall Spell Length of Stay can be adjusted down by critical care which can lead to an impact on excess bed-day calculations and HRGs resulting in higher average national pricing in SUS+. For more information, please refer to the SUS+ Pricing Differences.

A minor change has also been made in the handling of genuine duplicate critical care periods. Where duplicate Critical Care periods are present on the Critical Care record, the Critical Care extract will only output a single Critical Care Period in SUS+. In legacy SUS, the duplicate critical care Critical Care periods were output.

The **Critical Care Extract** provides a stable, defined snapshot of data containing the original submitted activity, along with additional derived and calculated data items, adjustments and grouping information.

A single Scheduled Extract, containing all types of critical care activity, is produced at **Reconciliation** and **Post-Reconciliation** points to provide a transparent view of:

- **Episode-level allocation of critical care days and HRGs**
- **Assigned PbR Critical Care Indicators (to describe validation failure)**
- **Spell and Episode IDs (to enable linkage with parent activity data)**

When accessing the Critical Care extract via the **Portal**, it should be remembered that it still uses the same snapshot as in the preceding reconciliation point. It does not provide a 'current view' of submitted critical care activity.

## CC Types and CC Periods

The **PbR Critical Care Extract** reports all **types** of critical care activity:

- **ACC (Adult Critical Care)**
- **NCC (Neonatal Critical Care)**
- **PCC (Paediatric Critical Care)**

**ACC** activity is recorded and submitted at **critical care period** level (consisting of one or more days) whereas **NCC** and **PCC** activity is recorded and submitted at **daily record** level.

**CCP (Critical Care Period)**

In order to allow period and daily record-level information to be displayed in a single extract, a system-generated **Critical Care Period** (**CCP**) row is produced for **NCC** and **PCC** only. This system generated **CCP** row contains **aggregated** daily record data and **derived** PbR related data items.

**CCP** records are based on **Critical Care Start** and **Critical Care Discharge Dates** from the CDS record for the Critical Care Period. The **CCP** row is directly followed by its associated daily records.

| CC_TYPE | SPELL_ID | GENERATED_RECORD_ID |
|---|---|---|
| ACC | 10001 | 11112 |
| ACC | 10002 | 11113 |
| **CPP** | **10003** | **11114** |
| **PCC** | **10003** | **11114** |
| **PCC** | **10003** | **11114** |
| **PCC** | **10003** | **11114** |
| ACC | 10004 | 20000 |
| ACC | 10005 | 20000 |

The example shows that in the extract the component PCC records appear directly under the aggregated CCP. Therefore values such as **Generated Record ID** are the same for all associated rows.

### ACC (Adult Critical Care)

An **ACC** period which lies entirely within a single episode's boundaries is represented as a single row against the **Episode ID**. Where an **ACC** period contains days allocated to two or more episodes (i.e. it spans episode boundary), the period is recorded separately for each episode.

### NCC and PCC (Neonatal Critical Care), (Paediatric Critical Care)

An **NCC** or **PCC** period has a single **CCP** level row which provides a summary line containing aggregated critical care information of the submitted daily records and derived PbR data items.

## Derived PbR Data Items

In addition to the submitted activity data, **derived** PbR related data items, which help support local negotiation and planning, are included in the **PbR Critical Care Extract**.

### CC Patient Type

**CC Patient Type** refers to the **age group** that the patient belongs to. A Value of **ADU**, **CHI** or **OTH** is assigned accordingly. Derivation logic uses the first episode in the spell (lowest Episode Number).

### CC Days for LoS

**CC days for LoS** (ACC/CCP level) is a count of **distinct** critical care days allocated to each episode from each critical care period. It is used for **Spell Length of Stay** adjustment.

This value is used to adjust the Spell LoS to ensure the correct HRG and tariff are assigned to that part of the spell (if any) that was delivered outside critical care.

### CC days for Tariff

**CC days for Tariff** is a count of **distinct calendar days spent in Critical Care**

For **ACC**, HRGs are generated at period rather than daily level, and so a **per diem multiplier** is applied to produce the equivalent of a daily HRG. This is the per diem multiplier value for ACC HRGs.

This value can also include 'error HRG' (UZ01Z) and therefore should be considered as a count of **all** HRGs, not just **valid** HRGs.

### PbR CC Indicator

**PbR Critical Care Indicators** identify why a record has failed validation. These are described in the following PbR Critical Care Indicators section.

### Excluded Reason

In the context of the critical care extract, **Excluded Reason** indicates why the record has been **excluded from critical**

**care processing**. It does not refer to PbR policy-based activity exclusions.

**CC Unbundled HRG**

The derived **Critical Care Unbundled HRG** based on Critical Care **Period** Data for **ACC** and **Daily** activity for **NCC** and **PCC**.

## Linkage to Episode/Spell Extracts

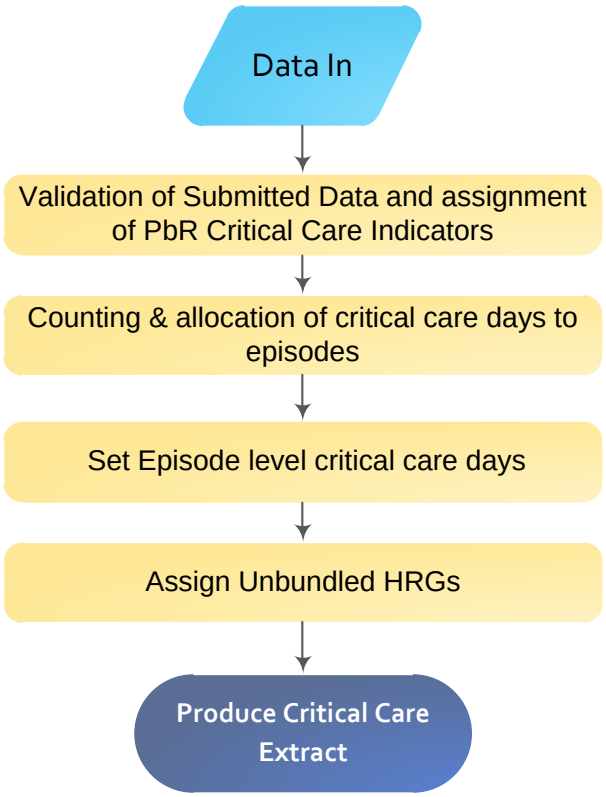
The **PbR Critical Care Extract** can be linked to the **PbR APC Spell** and **PbR APC Episodes** extracts using the corresponding unique record identifiers **Spell Identifier** and **Episode ID** (which contains the SUS Generated Record ID) that are output in each extract. This enables clearer analysis and reconciliation.

For more information on Critical Care extract data items, please refer to the Extract Specification.

# Validation of Submitted Data

## Critical Care Processing

SUS processes activity identified as critical care, regardless of whether the associated activity record is excluded from national tariff. The process is as follows:




***SUS Critical Care Processing Diagram***

In most cases, where critical care data fails validation, critical care processing stops.

However, the spell continues to be processed. Only critical care processing stops as a result of this type of validation failure and it is therefore possible for a spell **length of stay** to be output that has **not** been adjusted for critical care days.

### 'First strike' rule

Critical care validation operates on a 'first strike' basis. After failing one check, no further checks are performed for that record, irrespective of whether further validation failures may exist within it. Critical care processing stops at this point.

### PbR Critical Care Indicators

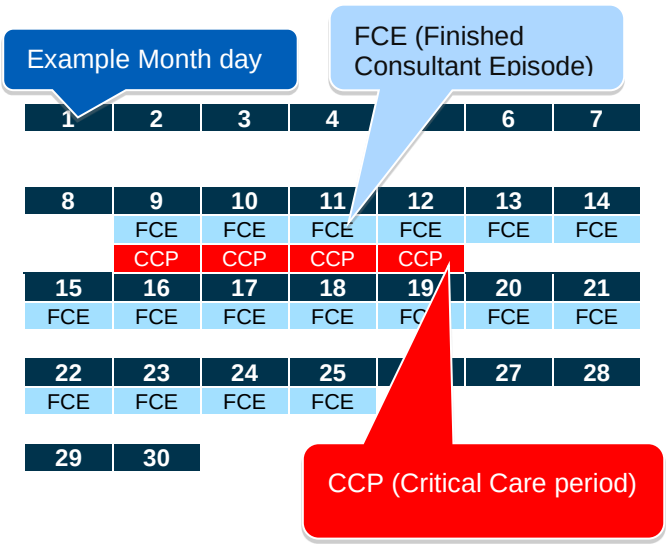
**PbR Critical Care Indicators** (assigned during processing and output in extracts) identify why submitted data has failed critical care validation checks. This helps users to address data quality issues, identify incomplete submissions and take the necessary corrective action to enable successful resubmission. Please refer to the PbR Critical Care Indicators section for further information.

# Counting and Allocating Critical Care Days

When allocating CC days to episodes for use with PbR adjustments, only **distinct CC days** should be counted. So, where multiple critical care periods occur on a single day *or* critical care periods are overlapped by more than one day, the critical care day is only counted **once**, even though multiple unbundled HRGs may be derived for that day.

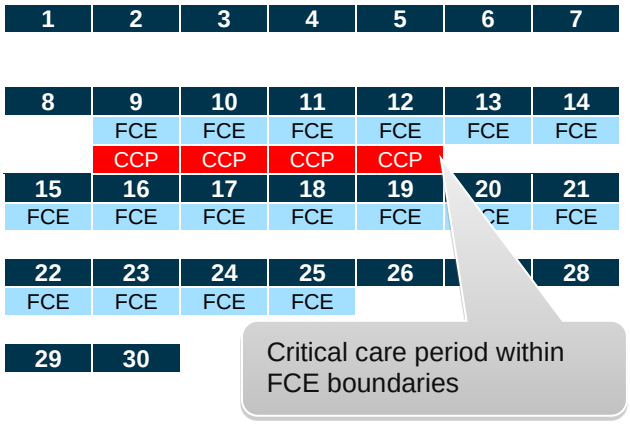
### Examples

The following examples illustrate data that can be received in SUS, including incorrect or incomplete data. Each grid represents a month containing 30 days. FCE and CCP information is recorded against the corresponding day.



## Allocation within Boundaries

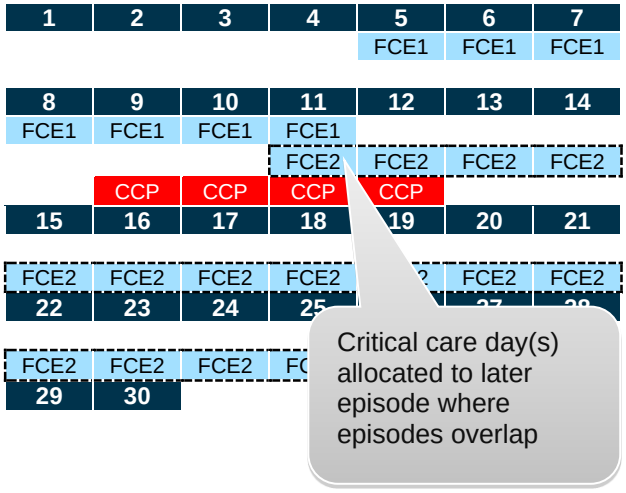
**Distinct** critical care days are only allocated to an episode where the **critical care start** and **discharge** dates are within the **spell start** and **end** dates.




A critical care period can *span* episodes but the allocation is only where both an episode and critical care period are present (see **Spanning 'Gaps'**). In the above example, **4** distinct critical care days are assigned.

## Spanning Multiple Episode Boundaries

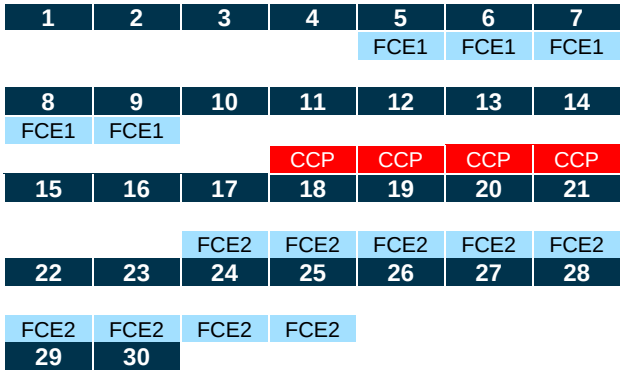
If a critical care period **spans** the boundary of two episodes, the **distinct** critical care day on the boundary is assigned to the later episode.




In the above example **2** distinct critical care days are assigned to **FCE 1** and **2** distinct critical care days are assigned to **FCE 2**.

## Outside Episode but within Spell

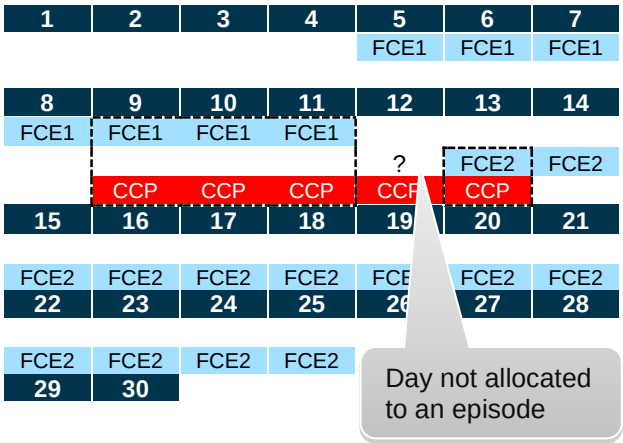
If the start and discharge dates for a critical care period lie within the **spell** boundaries, but outside the **episode** boundaries, critical care is not allocated. However, in such a case the spell will fail validation elsewhere because of **missing episodes**. The following is an illustrative example of incorrect or incomplete data submission.




For **NCC** and **PCC**, the **daily records** associated with the 'missing' episode will not be captured in the critical care extract. This is because there is no valid episode to associate them with and it is most likely that data for the 'missing' episode will be submitted at a later date, resulting in the creation of a new version of the spell. Upon resubmission, critical care days are re-evaluated based on the new spell version and assigned to the appropriate episode.

## Spanning 'Gaps'

Where critical care periods span episodes and there are 'gaps' between episodes (i.e. no episode information submitted) the critical care day(s) ***without*** an associated episode **are not processed**. The remaining critical care days ***with*** corresponding episodes **are processed** in association with them.



In the example above, the critical care period **spans FCE 1** and **FCE 2** as well as a day in between that does not have an associated episode. The critical care days associated with **FCE 1** and **FCE 2** (identified by the dashed line) are processed normally and, for **NCC** and **PCC,** the daily records will appear on the critical care extract. In this example, **3** days will be allocated to **FCE1** and **1** day allocated to **FCE2**. The critical care day not associated with either FCE is not allocated to either FCE and is not taken into consideration for PbR length of stay adjustments and therefore will not appear in the extract.

### Population of Critical Care Extract

Following allocation across all episodes, the number of critical care days is calculated by type (ACC, PCC, NCC) by counting **distinct** days. This value is also used to populate extract data item **Total Episode Level CC Days for LOS**.

The use of **distinct** critical care days in the PbR LoS adjustment calculation accounts for discrepancies that can exist between **Total Episode Level CC Days for LOS** and the number of PCC / NCC daily records.

# Grouping

Unbundled HRGs are the 'currency' for critical care reimbursement. They are generated based on the **critical care period** (CCP) in Adult Critical Care (ACC), and for **each recorded day** in Paediatric and Neonatal Critical Care (PCC/NCC).

All critical care specific HRGs are **unbundled**. An unbundled HRG is assigned to each instance of critical care received.

Critical Care unbundled HRGs are output, regardless of whether that activity is **excluded** from PbR.

## Grouping Logic

Critical care grouping logic works differently to Admitted Patient Care (APC) or Outpatient (OP) grouping and is based primarily on data items from the corresponding Critical Care data set (Neonatal, Paediatric and Adult). **Critical Care Activity Code** is the main 'driver' for NCC and PCC grouping, whereas ACC is based on the **number of supported organs**.

For detailed information about HRG Critical Care grouping logic, please refer to the Casemix local grouper documentation and the HRG Chapter Summaries on the Casemix Grouper webpages.

## NCC and PCC Daily Records

**NCC** and **PCC** activity is captured at daily record-level. Grouping produces an unbundled HRG for each day recorded in the critical care period.

## ACC 'Per Diem' Multiplier

When grouped, a single **ACC** period will produce only one HRG but this is replicated in SUS for each **distinct** day in the **ACC** period when calculating numbers of days.

## Overlapping in Grouping

Where two critical care periods overlap by one day (critical care period 1 discharge date = critical care period 2 start date) there is clear distinction between:

- counting *for* **PbR length of stay adjustment**

***and***

- counting *of* **critical care HRGs for payment**

When counting and allocating critical care days for **PbR length of stay adjustment**, the overlapping day is only counted ***once***.

For **payment** purposes the day is allocated to ***both*** critical care periods resulting in the allocation of two HRGs for the overlapping day.

# PbR Final Adjusted Length of Stay

**PbR Final Adjusted Length of Stay** is a spell-level *derived* data item containing the adjusted length of stay for use with PbR and grouping. **Distinct** counts of **critical care days**, as well as rehabilitation (RH) and specialist palliative care (SPC) days, are subtracted from the **Episode Duration**.

**PbR Final Adjusted Length of Stay** is found in the **PbR APC Spells** extract only. It is not output in the **PbR Critical Care** extract.

## Calculation

**PbR Final Adjusted Length of Stay** is calculated using **Episode Duration** and **Total CC Days** for each included episode.

SUM ((**Episode Duration – (Total Episode Level CC Days for LOS + RH + SPC)**) floor zero)

Where **Episode Duration = (Episode End date - Episode Start date)**

## Zero Floor Limit

Due to the way the calculation works, a negative value can occur if an entire episode is within critical care. A 'zero floor' limit is therefore used to ensure that negatives cannot be calculated. In the event of a negative being returned, it is replaced with a value of zero, meaning that no adjustment is made.

## PbR Adjustment

Spell LoS calculation is only done for **included** episodes based on critical days within those episodes. In the following situations, the PbR adjustment calculation is not made.

- Critical care processing stops due to **validation failure**.
- Critical care is allocated to episodes whose activity is ***excluded from PbR***.
- Critical care cannot be assigned to an episode due to **missing** or **incomplete data**.

## Overlapping Critical Care Periods

The rules used in spell length of stay adjustment for overlapping critical care periods are the same as those used in validation. Please refer to PbR CC Indicator 7 for further details.

Multiple critical care periods, submitted with the same **Start** and **Discharge Dates**, are considered a single critical care period for the purposes of LoS adjustment. Spell LoS is therefore adjusted by the number of **distinct** days on the latest critical care period. However, if a record **fails** overlapping critical care validation, (e.g. one day is covered by 3 distinct critical care periods) no LoS adjustments are made.

Where the critical care period **spans** two episodes, the overlapping day is used **only once** for allocation of critical care to episodes and **only once** in adjusting Spell LoS.

## Location in extracts

The derived data item **Episode Duration** is contained in the parent record in the Main APC extracts.
The **SPC Days** and **REHAB Days** CDS 6.2 data items have been incorporated into the **APC Episodes** and **APC Spells Managed Service Extracts** and **APC Full Online Service** extracts using the **Spare 1** and **Spare 2** data items

# PbR Critical Care Indicators

**PbR Critical Care Indicators** identify why a record has failed validation. They are assigned at the **point of failure** and output in the critical care extract. The seven indicators are as follows:

- **PbR Critical Care Indicator 1**
  Missing or additional daily PCC/NCC records
- **PbR Critical Care Indicator 2**
  Critical care period outside of spell boundaries
- **PbR Critical Care Indicator 3**
  CC start date IS NULL and CC discharge date IS NOT NULL
- **PbR Critical Care Indicator 4**
  Invalid critical care combinations
- **PbR Critical Care Indicator 5**
  NCC data group inconsistent with patient age
- **PbR Critical Care Indicator 6**
  NCC/PCC records outside critical care period
- **PbR Critical Care Indicator 7**
  Overlapping Critical Care periods
- **PbR Critical Care Indicator 8**
  Episode Start Date greater than Episode End Date
- **PbR Critical Care Indicator 9**
  CC Start Date NULL and CC Disc Date NULL
- **PbR Critical Care Indicator 10**
  CC Start Date IS NOT NULL and CC Disc Date NULL
- **PbR Critical Care Indicator 11**
  Critical Care Start Date greater than Critical Care Discharge Date

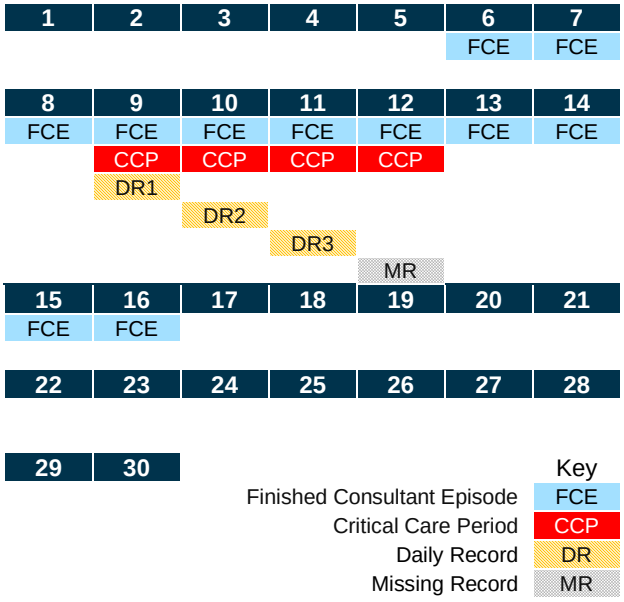
## PbR Critical Care Indicator 1

*Missing or additional daily PCC/NCC records*

The number of PCC/NCC daily records (DR) is validated against the number of critical care days in the critical care period.

Where the number of daily records is *fewer than* the number of critical care days, **PbR Critical Care Indicator 1** is assigned and the spell length of stay is adjusted by the number of days in the critical care period.

This will cause a mismatch to exist between the number of HRGs and the number of critical care days because HRGs are derived based on the number of daily records for NCC/PCC.




| CC days for LoS adjustment | | CC days for generating HRGs | | | |
|---|---|---|---|---|---|
| | | DR1 | DR2 | DR3 | - |
| Spell LoS | 10 | | | | |
| Adjusted Spell LoS | 6 | | | | |
| Epidur | 10 | | | | |
| Total CC Days | 4 | | | | |
| ACC Days | 0 | | | | |
| PCC Days | 0 | | | | |
| NCC Days | 4 | 1 | 1 | 1 | - |
| **Unbundled HRGs** | | **XA02Z** | **XA02Z** | **XA03Z** | **None** |

## PbR Critical Care Indicator 2

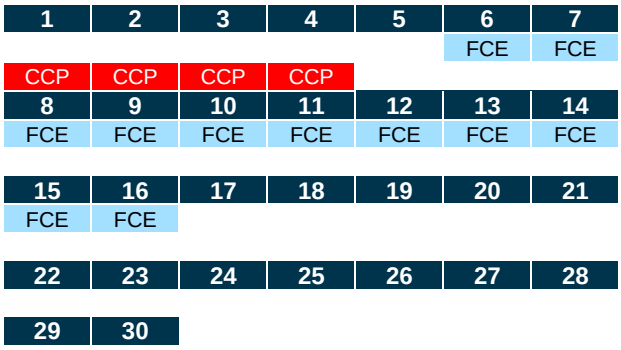
*Critical Care period outside of spell boundaries*

Critical care period start and discharge dates are validated against spell admission and discharge dates to ensure critical care periods lie within the spell boundary.

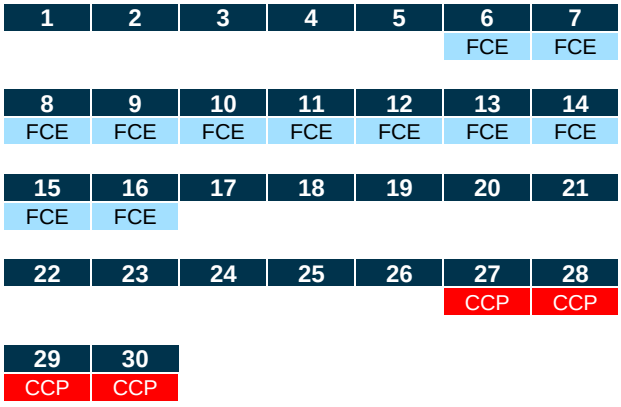
Where a critical care period lies outside the spell boundary, **PbR Critical Care Indicator 2** is assigned to the record and

critical care processing stops. The following examples fail validation:

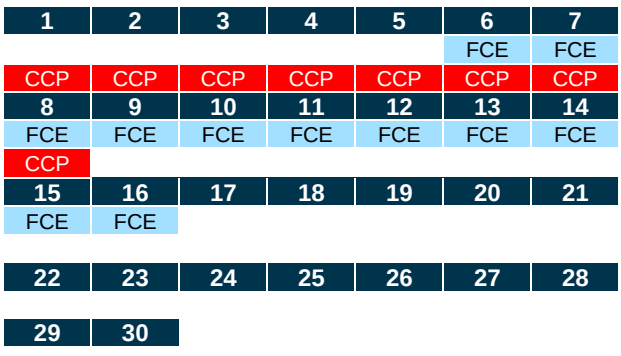
### 1) Critical care start AND discharge dates BOTH *less than* spell admission date



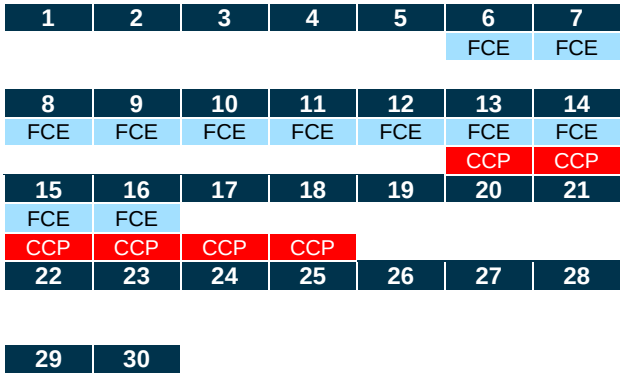

### 2) Critical care start AND discharge dates BOTH *greater* than spell discharge date




### 3) Critical care start date *less than* spell admission date, but critical care discharge date is within the spell



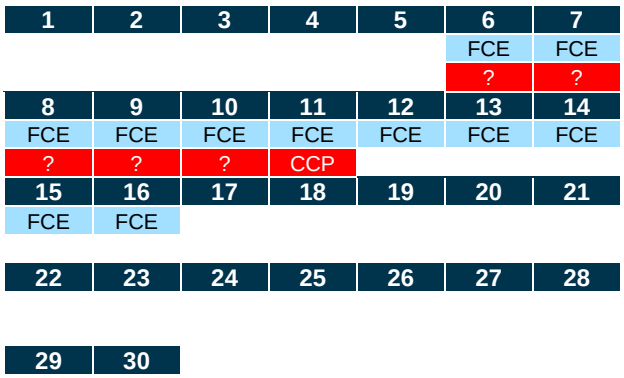

### 4) Critical care discharge date *greater than* spell discharge date, but critical care start date is within the spell




## PbR Critical Care Indicator 3

*Critical Care start date IS NULL and Critical Care discharge date IS NOT NULL*

NULL critical care start dates are invalid. If any critical care period in the spell contains a NULL start date, critical care processing stops and **PbR Critical Care Indicator 3** is assigned to the record.




Please refer to **PbR Critical Care Indicator 9** (CC Start Date NULL and CC Disc Date NULL) and **10** (CC Start Date IS NOT NULL and CC Disc Date NULL) for further rules regarding NULL date values.

## PbR Critical Care Indicator 4

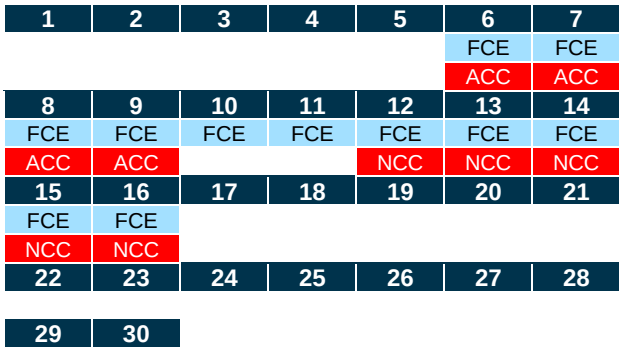
*Invalid Critical Care combinations*

Logical combination validation performs checks for consistency between critical care **type** and **patient age**.

A combination of Adult Critical Care (ACC) and Neonatal Critical Care (NCC) is not possible and therefore, where a spell contains a combination of ACC, PCC

and/or NCC, only valid combinations are processed.

*ACC+PCC* and *PCC+NCC* are valid but *ACC+NCC* (or *ACC+PCC+NCC*) are invalid. Critical care processing stops and **PbR Critical Care Indicator 4** is assigned to the record.




Where the derived patient type for a record is ERR (patient age between 131 and 998), critical care processing stops and **PbR Critical Care Indicator 4** is assigned.

The spell core HRG is UZ01Z, but because the record has failed validation and critical care processing has stopped unbundled critical care HRGs are not derived or assigned.

### PbR Critical Care Indicator 5

*NCC data group inconsistent with patient age*

Where records contain one or more NCC data groups, patient age is validated using the *derived* data item **CC Patient Type**, which identifies patient age group with a value of **ADU** (adult), **CHI** (child) or **OTH** (other). The episode with the lowest episode number in the spell is used to determine the age on admission and assign the correct value.

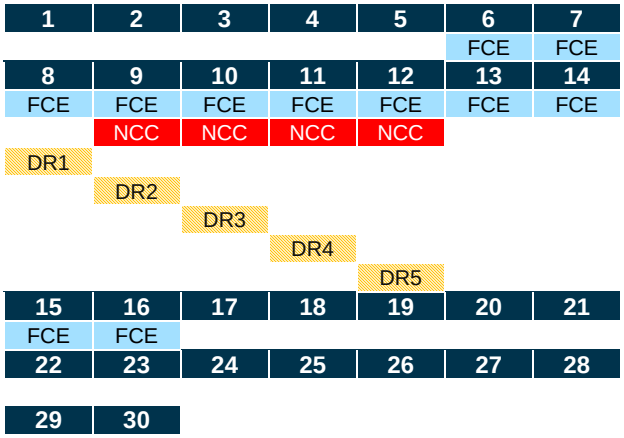
Any record containing NCC data that does not have **CC Patient Type** of **CHI** is assigned **PbR Critical Care Indicator 5**.

### PbR Critical Care Indicator 6

*NCC/PCC daily records outside Critical Care period*

All NCC/PCC daily records must lie within critical care period boundaries (i.e. between the critical care start and discharge dates). This validation is performed using *submitted* data item **Activity Date (Critical Care)**.

All daily records are processed, but where one or more daily NCC or PCC records lie outside of the boundaries, the HRG for that day is replaced with an 'error HRG'; UZ01Z and **PbR Critical Care Indicator 6** is assigned. However, HRGs *are* assigned in the normal way for records that are within the critical care period boundaries.




### PbR Critical Care Indicator 7

*Overlapping Critical Care periods*

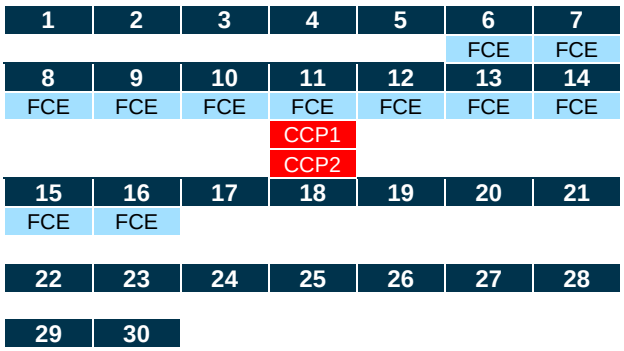
Depending on the submitted information, overlapping critical care periods may be considered valid or invalid.

## Valid

Where an overlap is considered valid, critical care processing continues and HRGs are assigned for each period.

#### 1) Two single day repeats

Two one-day critical care periods with the same start and discharge dates are considered valid. Unbundled HRGs are generated for each period.



### 2) Multi-day repeats

Multi-day ‘repeats’ are records containing **two or more** critical care periods with a duration **greater than one day**, all of which have the same start and discharge dates.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| | | | | | FCE | FCE |
| **8** | **9** | **10** | **11** | **12** | **13** | **14** |
| FCE | FCE | FCE | FCE | FCE | FCE | FCE |
| | | | CCP1 | CCP1 | | |
| | | | CCP2 | CCP2 | | |
| | | | CCP3 | CCP3 | | |
| **15** | **16** | **17** | **18** | **19** | **20** | **21** |
| FCE | FCE | | | | | |
| **22** | **23** | **24** | **25** | **26** | **27** | **28** |
| **29** | **30** | | | | | |

XML accepts up to a maximum of nine multi-day ‘repeats’ and therefore processing rules allow for this data to be *interpreted* rather than rejected. In these cases **only the latest submitted critical care period is processed**, resulting in the appropriate HRGs being assigned for that critical care period.

The remainder are considered duplicates because they are typically partially complete records that are superseded by more complete submissions. The preceding periods are therefore ignored in terms of processing but do not cause the record to fail validation.

## Not Valid

Where an overlap is not considered valid, critical care processing stops, **PbR Critical Care Indicator 7** is assigned and no unbundled HRGs are assigned. Spell processing continues but without critical care length of stay adjustments.

The following examples are not valid:

### 1) Three or more single day repeats

Three or more one day critical care periods submitted for the same day (same start and discharge dates).

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| | | | | | FCE | FCE |
| **8** | **9** | **10** | **11** | **12** | **13** | **14** |
| FCE | FCE | FCE | FCE | FCE | FCE | FCE |
| | | | CCP1 | | | |
| | | | CCP2 | | | |
| | | | CCP3 | | | |
| **15** | **16** | **17** | **18** | **19** | **20** | **21** |
| FCE | FCE | | | | | |
| **22** | **23** | **24** | **25** | **26** | **27** | **28** |
| **29** | **30** | | | | | |

### 2) Two or more non-repeats overlapping by more than one day

Two or more overlapping critical care periods with different start and discharge dates and a duration of more than one day, and an overlap of more than one day.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| | | | | | FCE | FCE |
| | | | | | | CCP1 |
| **8** | **9** | **10** | **11** | **12** | **13** | **14** |
| FCE | FCE | FCE | FCE | FCE | FCE | FCE |
| CCP1 | CCP1 | CCP1 | CCP1 | CCP1 | | |
| | | CCP2 | CCP2 | CCP2 | CCP2 | CCP2 |
| **15** | **16** | **17** | **18** | **19** | **20** | **21** |
| FCE | FCE | FCE | FCE | FCE | FCE | FCE |
| CCP2 | CCP2 | CCP2 | CCP2 | | | |
| **22** | **23** | **24** | **25** | **26** | **27** | **28** |
| FCE | FCE | FCE | FCE | | | |
| **29** | **30** | | | | | |

### 3) Single day covered by two or more periods of more than one day

A one-day critical care period covered by two or more critical care periods with different start and discharge dates.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| | | | | | FCE | FCE |
| **8** | **9** | **10** | **11** | **12** | **13** | **14** |
| FCE | FCE | FCE | FCE | FCE | FCE | FCE |
| CCP1 | CCP1 | CCP1 | CCP1 | | | |
| | | | CCP2 | | | |
| | | | CCP3 | CCP3 | CCP3 | CCP3 |
| **15** | **16** | **17** | **18** | **19** | **20** | **21** |
| FCE | FCE | FCE | FCE | FCE | FCE | FCE |
| **22** | **23** | **24** | **25** | **26** | **27** | **28** |
| FCE | FCE | FCE | FCE | | | |
| **29** | **30** | | | | | |

### Overlapping Daily Records

No validation exists to specifically identify **overlapping daily records**. Users are therefore encouraged not to submit more than one daily record per day of critical care. Doing so can have two effects:

**1)** Data item **CC Days for Tariff** will not be consistent with the critical care period because HRGs are assigned based on daily records for NCC and PCC.

**2)** Repeat daily records are often caused by the submission of partially completed records. An error HRG (UZ01Z) may therefore be assigned due to there being insufficient accompanying information within the record.

### PbR Critical Care Indicator 8

*Episode Start Date greater than Episode End Date*

Where episode start date is *later than* episode end date, processing stops and **PbR Critical Care Indicator 8** is assigned.

### PbR Critical Care Indicator 9

*Critical Care Start Date NULL and Critical Care Disc Date NULL*

If any critical care period has both a NULL critical care start date AND a NULL critical care discharge date, critical care processing stops, and **PbR Critical Care Indicator 9** is assigned.

### PbR Critical Care Indicator 10

*Critical Care Start Date IS NOT NULL and Critical Care Disc Date NULL*

Where critical care period has a NULL discharge date, but start date is NOT NULL, only that critical care period is ignored. **PbR Critical Care Indicator 10** is assigned to the record but other critical care periods in the spell are processed normally. This is an exception to the general rule where validation failure stops critical care processing for the spell.

### PbR Critical Care Indicator 11

*Critical Care Start Date greater than Critical Care Discharge Date*

Where Critical care start date is later than the critical care discharge date, critical care processing stops, and **PbR Critical Care Indicator 11** is assigned.

# Emergency Care Data Set (ECDS)

The Emergency Care Data Set began flowing to SUS+ in October 2017. It is the new CDS Type 011 introduced in CDS Version 6.2.1 and will eventually replace the existing CDS Type 010 – Accident and Emergency CDS.

Introduction of the CDS 6.2.1 Type 011 – ECDS brings with it changes to the submission frequency from monthly to weekly and eventually to daily:

- Providers are expected to start with weekly submissions, moving to daily submissions as their business process and systems allow
- Daily submissions are incentivised from 1st April 2018 via the ECDS CQUIN

There are a number of differences in the way ECDS is constructed and in the way it is received and processed by SUS+.

## Submitting ECDS

ECDS uses the MESH submission mechanism. This still requires end points to be set up (MESH mailbox ids) and registration of the flow using an SR1.

ECDS is an XML submission. MESH does not enforce a schema check at site to make sure an interchange is well-formed and therefore valid for submission. The XML is checked on landing at SUS and errors that do not conform to the XML schema will cause rejection of the file. It is therefore recommended that senders apply their own check to ensure compliance with the schema before submission.

## SNOMED-CT

ECDS introduces data items that follow the SNOMED-CT coding schema.

Clinical codes that previously used the Accident & Emergency specific schemas are now submitted in SNOMED-CT.

Deriving and assigning HRGs uses codes translated back to their equivalent A&E code from mappings supplied by the Royal College of Emergency Medicine. Submitted SNOMED-CT codes will be used when the grouper has been updated to consume them.

The Royal College has also specified an approved list of SNOMED-CT codes for each item that uses this schema. It is possible for EDs to submit codes outside the proscribed list, but these will be marked as errors by SUS+ and will not be output in user extracts in accordance with Royal College instructions. In these instances, the extract column for the code will be blank and a related "Is*ItemCode*Approved" column will carry the value "FALSE".

## ECDS Extracts

To offer consistency during the transition between A&E CDS Type 010 and ECDS Type 011 new extracts have been created to carry ECDS data.

- **Backward_Compatible_Main**
- **Backward_Compatible_ Supplementary**
- **CDS62_EC_Backward_ Compatible**
- **Backward_Compatible_Error**
- **CDS621_EC_Supplementary**
- **EC_Repeating_Supplementary**

The backward compatible extracts all retain the format and structure, including column names, of existing EM Extracts. Where an item has carried across from A&E to ECDS without change it is presented in the equivalent position without change and is handled by the same internal process by SUS+ in both existing and new extracts. Where an existing item is now submitted using

SNOMED-CT a mapping has been supplied by the Royal College and the new item is translated into the existing Type 010 value set. New items appear in the EC Supplementary extracts. Where a single value applies per attendance these items are in the CDS621_EC_Supplementary extract. New items in repeating groups appear in the EC_Repeating_Supplementary. Records in the repeating groups extract follow a generic “Group, Sequence, Code and Date” structure where this is applicable.

All derivations are common to EM and ECDS extracts and use the same functionality in SUS+. In some cases, it is necessary to facilitate this with translation from the submitted SNOMED-CT code.

(A backward compatible extract for SEM has also been created – this only contains those items where the direct equivalent item is found in CDS 010 and 011. As for PbR, derivations are applied in common with the A&E equivalent extract.)

## Streaming

A ‘streamed’ attendance has been triaged away from the ED following initial assessment as the patient should be treated in another more appropriate setting such as by their GP or a Pharmacist or by a service related to their condition. Streamed attendances do not qualify for payment under PbR and are treated as exclusions.

SUS+ checks the **Emergency Care Discharge Status** and if the patient was streamed

- A PbR exclusion reason of ‘STREAMED’ is added (in addition to any other exclusion reasons that may have been triggered)
- Grouping is bypassed – no HRG is assigned
- Pricing is bypassed

The SEM extract will have a blank HRG but will not contain any other indication that the attendance has been streamed.

# Best Practice

**Best Practice Tariffs** (BPTs) are national tariffs that have been structured and priced to incentivise and adequately reimburse care that is both high quality and cost effective.

Although Best Practice tariffs may be indicated within SUS+ what this actually identifies is candidate activity for best practice. SUS+ PbR does not indicate whether Best Practice has taken place, simply that the activity may qualify. Often the factors for deciding best practice are not submitted in the CDS so SUS+ can't apply additional logic to allocate a Best Practice Tariff. Such checks will often refer to other database systems in national use but some cases may require verification from discharge summaries or other clinical notes.

SUS+ will either:

- allocate the base national tariff, which applies to an HRG whether potential Best Practice is indicated or not

or

- allocate a Best Practice Tariff, which may be further adjusted with the addition of local knowledge, that is, evidence that best practice was followed

When originally implemented SUS created Best Practice tariffs by using an adjustment to the normal tariff as that type of functionality already existed. Over the years the scope of Best Practice was extended but without reviewing how this was applied in the system. The SUS+ build offered an opportunity to change and it now checks for and assigns a Best Practice Tariff where this applies, if not, the normal tariff is assigned.

Best Practice indicator codes are a grouper output. They are generally driven by clinical code combinations used together with other factors, such as age and length of stay, to differentiate Best Practice activity from base activity for the same HRG.

## Best Practice Tariffs in Extracts

Columns in the extracts to support Best Practice are:

- BPT Indicator 1-5
- BPT Indicator 1-5 Action
- BP Combination Indicator

Best Practice in SUS is identified by placing grouper output in a **Best Practice Tariff Indicator**, for example, code BP01 indicates a candidate for Fragility Hip Fracture best practice. As a result of historical processing there are places for up to five Best Practice Tariff Indicators in the extracts. Grouper processing has changed such that now only one is output.

In 2012/13 (R11), the following corresponding **BPT Indicator Actions** were introduced in a new column to identify if tariff adjustment was applied:

- **ADJ TARIFF**

  Activity has been allocated a BPT Indicator by the grouper and a tariff adjustment has been made. (This includes activity that has had a BPT Indicator derived by SUS *and* for which best practice tariff has been applied through an HRG tariff.)

- **No Tariff**

  Activity has been allocated a BPT Indicator by the grouper but SUS+ has not adjusted the tariff

- ***(INVALID***

  *No longer used and included for completeness.*

  *An ineligible combination of BP Indicators, which was "Invalid", was possible and this could not be used for tariff processing.)*

Action against a tariff for 2019/20 is shown below

| Best Practice Tariffs 2019/20 | SUS+ Action |
|---|---|
| Acute stroke care | Incudes unbundled tariff for Alteplase with defined Stroke HRGs - BP allocation not SUS |
| Adult renal dialysis | Not SUS BP |
| Day cases | Best Practice Tariff where BP Flag applies<br>(BP28, BP32, BP63, BP65, BP66, BP68, BP69, BP73, BP77, BP78, BP79, BP87, BP88, BP90, BP91, BP92, BP93) |
| Diabetic ketoacidosis and hypoglycaemia | Best Practice Tariff where BP Flag applies<br>(BP52) |
| Early inflammatory arthritis | Not SUS BP |
| Endoscopy procedures | SUS Applies national tariff - BP allocation not SUS |
| Fragility hip fracture | Best Practice Tariff where BP Flag applies<br>(BP01) |
| Major trauma | Not SUS BP (uses TARN ISS) |
| Outpatient procedures | SUS Applies national tariff - BP allocation not SUS |
| Paediatric diabetes year of care | Not SUS BP |
| Paediatric epilepsy | SUS Applies national tariff - BP allocation not SUS |
| Parkinson's disease | Not SUS BP |
| Pleural effusion | SUS Applies national tariff - BP allocation not SUS |
| Primary total hip and knee replacements | SUS Applies national tariff - BP allocation not SUS |
| Transient ischaemic attack | SUS Applies national tariff - BP allocation not SUS |
| Heart failure | SUS Applies national tariff - BP allocation not SUS |
| COPD exacerbation | SUS Applies national tariff - BP allocation not SUS |
| NSTEMI: Timely access to coronary angiography | SUS Applies non-best practice tariff (For BP50 only so not same as national tariff) - BP allocation not SUS |
| Emergency laparotomy | SUS Applies national tariff - BP allocation not SUS |

| | |
|---|---|
| Spinal surgery | SUS Applies national tariff for all HRGs (including HC64C) where BP Flag is used - BP allocation not SUS |

SUS+ has many approaches:

- In most cases SUS+ applies the national tariff.
- For day cases, diabetics and fragility hip fracture SUS+ will apply a Best Practice Tariff.
- For acute stroke care alteplase is added as an unbundled tariff
- For NSTEMI a non-best practice tariff that is different to the national tariff is applied
- Some lines are outside the scope of SUS+ - the data to identify Best Practice is not submitted.

The clinical codes on a record may indicate the activity could qualify for more than one BPT Indicator. Prior to SUS+ Reference data would assign one indicator from those assigned for use by tariffing. The **BP Combination Indicator** either showed the chosen indicator or that the combination was ineligible and could not be used for tariff processing. This indicator is no longer used by SUS+.

## Best Practice and Short Stay Emergency

In some cases, the combination of the **HRG** and the **Spell LoS** mean a record qualifies for the **Short Stay Emergency** tariff. The following shows whether a short-stay **Best Practice Tariff** is applied:

- If a record is valid for a Short Stay Emergency tariff and has a BPT flag the matching short-stay emergency best practice tariff will be applied if one exists.
- If a record is valid for a Short Stay Emergency tariff and has a BPT flag but no matching short-stay emergency best practice tariff exists, then the combination of HRG and BPT will be used to apply a best practice tariff. If no BPT tariff is applicable the short-stay emergency tariff for the HRG will apply
- If a record is valid for a Short Stay Emergency tariff and has no BPT indicator on the record the Short Stay Emergency tariff will be applied to the spell

## BPT and SSC Flags

Historically SUS used flag codes based on two numeric characters (n2) for both **Best Practice Tariffs** and **Specialised Service Codes**. This led to confusion, particularly as the number of possible outputs increased. The grouper now not only outputs **Specialised Service Codes** and **Best Practice Tariff** flags as separate data items but also distinguishes them by applying a revised code structure and length. The codes are prefixed and structured as follows:

| | |
|---|---|
| **Specialised Service Codes** | = **SSnn** |
| **Best Practice Tariff** | = **BPnn** |

# Evidence-Based Interventions

Extracted from the guidance "Evidence-Based Interventions: Guidance for CCGs":

**T**he programme as a whole, is guided by the following five goals:

- Reduce avoidable harm to patients. With surgical interventions, there is always a risk of complications. Weighing the risks and benefits of appropriate treatments should be co-produced with patients.
- Save precious professional time, when the NHS is severely short of staff, professionals should offer appropriate and effective treatment to patients.
- Help clinicians maintain their professional practice and keep up to date with the changing evidence base and best practice.
- Create headroom for innovation. If we want to accelerate the adoption of new, proven innovations, we need to reduce the number of inappropriate interventions. This allows innovation in healthcare, prescribing and technology to improve patients' ability to self-care and live with long term conditions.
- Maximise value and avoid waste. Inappropriate care is poor value for the taxpayer. Resources should be focused on effective and appropriate NHS services

## Categories

Seventeen interventions have been identified and placed into two groups:

- Four interventions that should not be routinely commissioned, with patients only able to access such treatments where they successfully make an individual funding request (Category 1 interventions)
    - Adult Snoring Surgery **(A_snoring)**
    - Dilation and curettage for heavy menstrual bleeding **(B_menstr_D&C)**
    - Knee arthroscopy with osteoarthritis **(C_knee_arth)**
    - Injections for nonspecific low back pain without sciatica **(D_low_back_pain_in)**
- Thirteen further interventions that should be commissioned or performed when specific criteria are met (Category 2 interventions). (The full list is found in "Evidence-Based Interventions: Guidance for CCGs")

## SUS+ Derivation

SUS+ will identify Category 1 **only** and will add two new columns to APC Spells and Full Online extracts (and their "plus" equivalents)

- Evidence Based Intervention Category
- Evidence Based Intervention Type
    - A_snoring
    - B_menstr_D&C
    - C_knee_arth
    - D_low_back_pain_inj

It is anticipated in future years these columns will be used to identify further categories. (Note in 2019/20 for "Evidence Based Intervention Category" only the value "1" will be used.)

Payment for Category 1 is dependent on Individual Funding Requests (which do not flow to SUS+). SUS+ will therefore continue to price this activity.

The clinical codes for the full algorithm used by SUS+ are found in the guidance "Evidence-Based Interventions: Guidance for CCGs".

# Exclusions

Excluded activity is activity that is not priced by SUS+.

There are two causes of exclusion, national policy and data quality.

It is important to note the difference between these two causes. Activity excluded by policy has no national price and the payment mechanism is agreed locally between providers and commissioners. Activity excluded for data quality reasons does not carry enough information to derive an HRG and is marked as with the ungrouped HRG "UZ01Z" which has zero price.

For Admitted Patient Care activity exclusions can be applied at the whole spell level or against individual component episodes. Where partial exclusion of a spell is found the included episodes will be considered together to give a single HRG and price for the included part of the spell. The spell PbR Qualified Indicator is set as appropriate:

- QUALIFIED = 0
- PARTIALLY_INCLUDED = 1
- ALL_EPISODES_EXCLUDED = 2

# Policy Exclusions

Activity that has no national price is marked as excluded by Payment by Results. SUS+ PbR processing is applied according to published policy and effectively handles all CDS submitted activity that is subject to policy exclusion. To effectively reconcile local systems with SUS+, providers and commissioners must account properly for this activity.

A complete list of the published exclusions for each financial year can be found in the National Tariff Payment System guidance located on the NHS Improvement website. The specific criteria for exclusion are contained in the tariff reference data.

The source documents can be found in Annex A - for past financial years at NHS England » Past national tariffs: documents and policies and for 1920 at: https://improvement.nhs.uk/resources/national-tariff/#h2-tariff-documents

(SUS+ applies the criteria published in the final approved version.)

**"Equals Sign" Exclusions** are identified by the provider before submission of CDS. Policy guidance allows for categories of activity to be marked as excluded by using an equals sign ("=") as the last significant character of the COMMISSIONING SERIAL NUMBER data item. This mechanism is required because in these cases it is not possible to distinguish the activity for exclusion by using other items within the CDS. This device should only be used when either.

- the activity is covered in the policy document and identified in tariff reference data as appropriate for use of the equals sign

or

- a specific local agreement is in place to vary from the national price

Policy exclusion reasons include:

- MAIN_SPECIALTY_CODE
- CORE_HRG_TFC_EXCLUSION
- PATIENT_CLASSIFICATION
- ADMINISTRATIVE_CATEGORY
- COMMISSIONING_SERIAL_NUMBER
- CORE_HRG_EXCLUSION

- FIRST_ATTENDANCE
- ATTENDANCE_STATUS_EXCLUSION

- AE_DEPARTMENT_TYPE_EXCLUSION
- STREAMED

# Data Quality Exclusions

Where data is of insufficient quality to derive an HRG it is effectively excluded from PbR and a zero price (£0) is applied. An exclusion reason will be provided:

- MISSING_EPISODE
- CROSS_CHECK_EXCLUSION
- OVERLAPPING_EPI_IN_SPELL
- MULTIPLE_LAST_EPISODES_IN_SPELL
- MULTIPLE_PATIENTS_IN_SPELL

Cross check exclusions are caused by:

- One or more episodes has an end date after spell discharge date
- Date of birth greater than spell discharge date
- Episode start date after episode end date
- Episode start date earlier than spell admission date
- Episode where admission method has valid unknown code
- Episode where patient classification incompatible with admission method
- Discharge ready date greater than spell discharge date
- Discharge date before spell admission date

# SUS+ Pricing Differences

Due to processing changes and the correction of historical issues, some known differences exist between SUS+ pricing and pricing in the legacy system.

In some cases the processing changes are affected by SUS+ replacing the legacy SUS concept of spell construction using 'Slab-logic' by creating spells using 'natural keys' (see Spell Creation).

## Hospital Provider Spell Number present but missing NHS Number and Date of Birth

Legacy SUS did not construct spells where NHS Number and Date of Birth were missing from the submitted data.

Where Hospital Provider Spell Number is present, SUS+ will form a spell and assign the appropriate price. It is therefore possible for SUS+ processing to result in a higher pricing because of greater coverage.

## Legally Restricted Records

Legacy SUS effectively treated all legally restricted records as single episode spells. Where multiple episodes exist within a spell, SUS+ links all the related episodes and treats the whole spell as legally restricted. As a result, certain records will attract a price in SUS+ that would not have received a price in legacy SUS.

SUS+ is therefore expected to have a higher total PbR tariff than SUS on average. Across all providers the difference is approximately 0.1%

## Missing Discharge Date

Where no discharge date has been populated for a single episode day case spell, but the Last Episode in Spell Indicator has been set, SUS+ will not price the spells. This is because they are not deemed finished and will therefore be populated in the Unfinished Spells extract.

## Multi-Episode Day Cases

Legacy SUS created single episode spells for all day cases.

Any provider can use multiple day case episodes and SUS+ therefore allows multi-episode day case spells. The same applies to regular day and night episodes.

The impact of this is that legacy SUS is likely to attract a higher average price due to all activity being treated as a single episode spell.

## Duplicate Hospital Provider Spell Number

Issues may be caused where the same Hospital Provider Spell Number has been used for more than one different spell within the same admission date. Legacy SUS relied mainly on NHS Number for spell construction and did not use Hospital Provider Spell Number.

SUS+ uses Hospital Provider Spell Number as a natural key meaning that, where a provider uses the same Hospital Provider Spell Number for two or more spells, the constituent episodes will be assigned to the same spell.

SUS+ implements checks for overlapping episodes and/or multiple NHS Numbers in spell along with checks to identify multiple patients in a single spell. A spell will not be priced where these checks are failed.

## Missing Hospital Provider Spell Number

SUS+ uses Hospital Provider Spell Number as part of a natural key. Episodes submitted without a Hospital Provider Spell

Number are therefore treated as single episode spells.

If the episode is part of a multi-episode spell the separated episodes may be incorrectly priced.

## Spells Containing Multiple Episodes with Last Episode in Spell Indicator Set.

This only applies to zero length of stay episodes in zero length of stay spells, where the Patient Classification is not 2 (Day case admission). Legacy SUS assigns all episodes with a Last Episode in Spell Indicator of 1 to individual spells. SUS+ will only create a single spell in this instance.

## Critical Care

### Single Day Overlap Threshold

SUS+ has raised the threshold for the number of critical care periods that can 'overlap' a single day from two to three. The effect is that slightly fewer spells are treated as having critical care errors in SUS+.

### Critical Care Period Overlap

Rather than ignore all critical care processing, legacy SUS only ignored overlapping episodes. SUS+ ignores all critical care and more accurately reflects the processing requirement.

Both of the above issues can impact on prices for spells with critical care problems. Overall Spell Length of Stay is adjusted down by critical care (unless it is ignored). This can lead to an impact on excess bed-day calculations and HRGs. The expected result would be higher average national pricing in SUS+.

This price difference should be noted when considering local adjustments to critical care payments which are not currently priced in legacy SUS or SUS+.

## Mixed Admission Methods

Where episodes in the same spell have different admission methods, the spell admission method used for national pricing in SUS and SUS+ may be different.

# Glossary

| Term | Definition |
|---|---|
| **A&E** | Accident and Emergency |
| **ACC** | Adult Critical Care |
| **APC** | Admitted Patient Care |
| **AQP** | Any Qualified Provider |
| **BP** | Best Practice |
| **CAG** | Confidentiality Advisory Group |
| **CC** | Critical Care |
| **CCG** | Clinical Commissioning Group |
| **CCP** | Critical Care Period |
| **CCUF** | Critical Care Unit Function |
| **CDS** | Commissioning Data Set |
| **CR** | Commissioning Region (of NHS England) |
| **CSU** | Commissioning Support Unit |
| **DH** | Department of Health |
| **DoB** | Date of Birth |
| **DPA** | Data Protection Act |
| **DQ** | Data Quality |
| **DRP** | Data Retention Policy |
| **DSCRO** | Data Services for Commissioners Regional Office |
| **EM** | Emergency Medicine |
| **FCE** | Finished Consultant Episode |
| **HES** | Hospital Episode Statistics |
| **HRG** | Healthcare Resource Group |
| **HSCIC** | Health and Social Care Information Centre |
| **ICD** | International Classification of Diseases |
| **IG** | Information Governance |
| **ISN** | Information Standard Notice |
| **LoS** | Length of Stay |
| **MHMDS** | Mental Health Minimum Data Set |
| **MSC** | Main Specialty Code |
| **N3** | National Broadband Network for the NHS |
| **NCC** | Neonatal Critical Care |
| **NHS** | National Health Service |
| **NHSE** | NHS England |
| **NIGB** | National Information Governance Board |
| **NSD** | National Service Desk |
| **NWCS** | NHS-Wide Clearing Service |
| **ODS** | Organisation Data Service |
| **OP** | Outpatient |
| **OPCS** | Office of Population Censuses and Surveys |
| **PbR** | Payment by Results |
| **PCC** | Paediatric Critical Care |
| **PDS** | Patient Demographics Service |
| **PPI** | Patient Pathway Identifier |

| | |
|---|---|
| **RA** | Registration Authority |
| **RAP** | Readmissions Pathway |
| **RBAC** | Role Based Access Control |
| **RTT** | Referral to Treatment |
| **SDDS** | Strategic Data Deletion Service |
| **SEM** | Standard Extract Mart |
| **SSC** | Specialised Service Code |
| **SUG** | SUS User Group |
| **SUS** | Secondary Uses Service |
| **TATD** | Tactical Authority to Deploy |
| **TFC** | Treatment Function Code |
| **TMS** | Transaction Messaging Service |
| **UUID** | Unique User Identity |
| **XML** | Extensible Mark-up Language (encoding) for information |