Approved Costing Guidance

Minimum software requirements

The functional software requirements to implement the costing standards

Contents

1. Introduction

1. In this document we[1] set out the minimum requirements for the costing software needed to:

   - implement the healthcare costing standards for England[2]
   - produce the national cost collection and the other patient-level cost collections under development.

2. These are not mandatory technical requirements for costing software, nor do they provide a full system specification. They are functional requirements that we recommend providers use when procuring a costing software product or agreeing changes to their existing software, with a view to enabling providers to implement the standards and applicable cost collection guidance effectively. Acute trusts will be supported by an information standard notice (ISN) issued by NHS Digital. There will be ISNs for mental health, community and ambulance trusts. We are in the process of agreeing the timeline for the release of these documents.

3. The information standards guide the processing of costing information for the national cost collection. NHS providers will need to have regard to this information standard in accordance with Section 250 of the Health and Social Care Act 2012.

4. Appropriate costing software is essential for NHS providers to successfully implement the costing standards and produce the national cost collection. As set out in the *Approved Costing Guidance*, the standards will be mandatory for recording and collecting 2020/21 cost data relating to acute, ambulance and mental health services. The standards will also be used by those providers of community services that are participating in the early implementation programme. See the *Approved Costing Guidance* for details of the adoption and enforcement of the costing standards.

[1] In this document, 'we' (NHS Improvement) refers to Monitor exercising functions under Chapter 4 of Part 3 of the Health and Social Care Act 2012, unless otherwise stated.
[2] https://www.england.nhs.uk/approved-costing-guidance/

5. A glossary is no longer part of this document. Please refer to the *Costing glossary*.[3]

Audience

6. This document is aimed at software suppliers that currently provide healthcare costing software or may be interested in producing such software.

7. It is also aimed at costing practitioners and information managers so they can implement the appropriate software and ensure it meets the minimum requirements as outlined in this document and subsequent updates.

8. It should be used by procurement managers to support the procurement process for purchasing costing software.

9. We ask NHS providers that have built or intend to build in-house costing software to meet these requirements to contact the costing team at NHS England and NHS Improvement (costing@improvement.nhs.uk) to discuss their product.

Overview

10. The Costing Transformation Programme (CTP) focuses on patient-level costing to deliver a step change in the quality of the cost information produced by NHS providers.

11. Understanding the cost of patient care by guiding the transition from reference costs to patient-level information and costing systems (PLICS) will help improve service efficiency, both at local level through comparison with peers and at national level by – for example – setting prices that better reflect the resources consumed to deliver patient care.

12. Specifically, the CTP will enable providers to:

    - review their use of resources to ensure that frontline and support services are being provided as efficiently and effectively as possible

[3] https://www.england.nhs.uk/approved-costing-guidance/

- evaluate clinical practice – patient-level cost information combined with service quality and patient outcome information allows clinical teams and organisations to compare their performance with their peers
- support better ways of working – cost information is useful in assessing the impact of clinical initiatives and new patient-centred models of care that cross traditional organisational and geographical boundaries.

13. It will enable national bodies to:

    - support a sustainable healthcare system by providing a costing tool with which to identify best practice, as well as ineffective or inefficient practices that need to be addressed
    - improve the foundations of the payment system by providing flexible building blocks to inform payment currency development and allow setting of prices that more accurately reflect how resources are consumed to deliver patient care.

Costing software (minimum requirements)

14. The minimum requirements are the software functional requirements we have identified as necessary to support the implementation of the healthcare costing standards for providers of NHS services in England. The functions include the ability to:

    - import minimum datasets, as defined by the costing standards (eg episode type is a costing defined/required field in the admitted patient care feed)
    - apply cost allocation methods (defined by the costing standards)
    - output high quality patient-level cost data for local reporting and national cost collections.

Healthcare costing standards for England

15. Acute providers implemented the costing standards in 2019 to submit the first mandated collection of patient level costs, followed by mental health and ambulance providers in 2020. In addition, we ran an early implementer collection with community providers in 2020. Revised versions of the costing standards as part of the *Approved Costing Guidance* are being released in March 2021.

16. These standards give:

- information requirements – that is, the data that needs to be collected for costing, matching and collection purposes
- details of the costing processes and approaches to improve the costing of NHS services and procedures.

National cost collection

17. We have developed a central infrastructure to store and analyse patient-level cost data for comparison purposes and informing the national tariff. The *Approved Costing Guidance* outlines the requirements for the collection of aggregated cost and patient-level information for acute, ambulance, mental health and community services.

Context

18. We expect the patient-level costing process to deliver significant benefits to the NHS. If implemented correctly, this will support the improvement in quality and outcomes of NHS-funded patient care. Currently, there is inconsistency across providers in the costing processes used by costing practitioners, leading to inconsistent cost information nationally. Variation in the costing software used is one cause of this problem.

19. The minimum software requirements support:
    - **consistent** cost allocation, helping to reduce variation in costing systems
    - **transparency and traceability** in costing to trace the exact origin of patient-level costs in the costing software
    - **granular cost information** to identify exactly what resources have been allocated to patients, and their amount
    - **flexible systems** to keep up with changes to datasets, costing standards or national cost collections.

Costing software requirements timeline

20. We will revise and reissue the minimum software requirements annually (see Table 1). Any revisions will reflect changes to the costing process and user needs, to ensure the software continues to support the new costing standards and local requirements.

21. To allow appropriate time for suppliers and providers to implement the costing standards and minimum requirements, a transitional plan has been created.

    - For **acute** trusts: requirements for 2018 (Year 1) should have been implemented in the costing system for the 2019 collections – these requirements had a ‘must’ priority. In 2019 (Year 2), requirements that were a ‘should’ priority became ‘musts’ for 2020 collections. In 2020 (Year 3) there were no new ‘must’ requirements, but new ‘should’ requirements have become ‘must’ requirements for 2021 collections. In 2021 (Year 4) there are no new 'must’ or ‘should’ requirements for 2022 collections. See Section 2 for information on priorities.
    - For **ambulance** and **mental health** trusts: as above but Year 1 starts with 2019 and the following years should be amended accordingly.

22. In-year changes to the minimum software requirements may be necessary to support the implementation of the costing standards and the cost collection. We will notify suppliers and NHS providers by email of any such changes and the reasons for them. In addition, we will publish a revised minimum software requirements document on our website.

Table 1: Proposed timetable for standards implementation across the NHS in England and publication of updated minimum software requirements

Minimum software requirements publication date	Sectors	Standards expected to be mandatory or voluntary
February 2019	Acute	**Mandatory**
	Ambulance	**Voluntary**
	Community	**Voluntary**
	Mental health	**Voluntary**
January 2020	Acute	**Mandatory**
	Ambulance	**Mandatory**
	Mental health	**Mandatory**

	Community	**Voluntary**
March 2021	All	**Mandatory**

Scope

23. In this document we consider the software functional requirements only – that is, the software features relating to loading inputs, software behaviours (results of an action) and outputs.

24. In this document the term **'system'** does not assume a single application; the system may comprise separate components.

25. The minimum software requirements also describe the functionality to generate an output suitable for the national cost collection. There should also be the functionality to enable users to view outputs during processing stages – via simple windows into the costing system and with outputs from each designated stage available through CSV. The costing practitioner must be able to quality assure the final submission by viewing outputs at key processing stages, as defined through the procurement process and the system's ongoing development.

26. We do not describe the content of the National Cost Collection – this is covered in the *Approved Costing Guidance*.[4] Collection submission files and specification will be published on our website in March 2021. The costing process is covered in the costing standards CP1 to CP5. Only the functions necessary to enable such a process are outlined in Section 2.

27. The non-functional aspects of the software, such as quality or performance, are not covered in this document.

28. Other aspects we do not cover here include:

    - the software design – the minimum software requirements do not define how the software achieves the intended result; software suppliers determine the best approach
    - software attributes, ie security and reliability

[4] https://www.england.nhs.uk/approved-costing-guidance/

- verification that the costing software complies with the minimum software requirements – this will be done by the procurement framework process
- server capacity – providers should discuss this with their software supplier.

2. Functional requirements

Overview

29. This section describes the system's functional requirements, grouped according to area of functionality. These requirements are the system functions needed for the costing process as defined in the *Approved Costing guidance (standards)*.

30. The tables in this section list the functional requirements. The ID column links a particular requirement to a plan of the tests that need to be carried out to confirm the costing system meets that requirement.

31. To ensure the system covers the entire costing process and incorporates users' needs, each requirement has been given a priority ranking:

    - **MUST:** an absolute requirement of the system – software must demonstrate this capability in the publication year if it is to be effective in enabling a provider to implement the applicable standards and costing guidance.
    - **SHOULD:**[5] there may be valid reasons in particular circumstances for ignoring an item, but the implications must be understood and carefully weighed before choosing not to implement an item. All the 'should' requirements will become '**must**' requirements in the following year's publication of the minimum software requirements.

32. Future requirements are outlined in Section 3. These are the functionality requirements that will be expected of a costing system in 2022.

33. The rationale for each requirement is provided in Table 2. A cross-reference to the relevant costing standard or worksheet in the technical document is given where this is helpful. We also refer to the costing principles where relevant.[6]

[5] Please note, nothing qualifies as a 'should' this year.
[6] Details of the costing principles are available as part of the *Approved Costing Guidance*: https://www.england.nhs.uk/approved-costing-guidance/

34. Some requirements include examples to show what is expected of the costing software. Examples are also included in the appendices; but do not form part of the requirements.

System set-up

35. This section concerns the global system settings required to implement the costing process defined by the costing standards. The cost model contains the rules defining the costing process, such as allocation methods, matching rules, data import rules and validation rules.

36. We will publicise the release of published updates to the technical document on our website[7] and by direct contact with known stakeholders/costing software suppliers. This ensures that where challenges are resolved, the solutions are brought into the costing model as soon as possible.

37. A single technical document will be issued in 2021 in line with the integrated standards for acute, mental health and community services, which will streamline the number of updates to costing models required.

Table 2: System set-up requirements

ID	Requirement description	Priority	Rationale	Changes for 2021
SYS001	The system must allow multiple cost models to be set up (with no restrictions on the number), with the ability to copy reference data (the code structures, look-up tables) and allocation statistics of existing models to start new models.	MUST	Enables models to be created to test new data feeds and allocation methods, and also to support national and local cost collections where necessary.	None

[7] https://www.england.nhs.uk/approved-costing-guidance/

ID	Requirement description	Priority	Rationale	Changes for 2021
SYS002	The system must allow the user to choose between a year-to-date (YTD) cost model and a monthly cost model, and define the start and end periods for the model, where the system only processes activity and cost/income information that is within the parameters defined. A reconciliation report must be produced stating where activity and/or costs/income are outside the parameters, indicating which rows are excluded.	MUST	Standard CP2: Clearly identifying costs enables the quantum to be determined using YTD or in-month costs and income. **Data and Information Principle** Enables activity and cost/income that are excluded from the costing process to be identified and sense checked.	None
SYS003	The system must enable the user to lock a completed cost model, to prevent amendments after it has been signed off.	MUST	**Data and Information Principle** For audit, providers need to keep a copy of cost models that contain the rules underpinning cost outputs.	None
SYS004	The system must prepopulate cost models with the costing information and structures as listed in the standards.[8] It must include the relevant feeds and fields in the information requirements, from the relevant published version of the technical document. This must not be a definitive list, as the user must be allowed to add their own user-defined resources,[9] resource groups, matching rules,	MUST	**Data and Information Principle** Greater automation of data entry reduces the probability of human error.	None

[8] The resources, activities, collection resources, collection activities, matching rules and allocation methods where it is practical to update the information without major changes to the system.

[9] These local resources as defined in Standard CP2: Clearly identifying costs will then need to be mapped to the prescribed resources.

ID	Requirement description	Priority	Rationale	Changes for 2021
	cost groups (own-patient care (in scope and out of scope) and allocation methods, or to choose from the prepopulated options.			
SYS005	System changes must be tracked, and the user must be able to query the changes. Date and timestamps, triggers and user profile must be identified.	MUST	**Data and Information Principle** Where manual changes are required, there should be a clear log of where and when the changes were made.	None
SYS006	Updates to the published technical document should be uploaded (where applicable) to the costing system centrally by the costing software provider within a reasonable timeframe, or there should be functionality for the NHS organisation to upload the updates locally. The system should be updated to the published technical document each year for the relevant sector of the NHS organisation; and any in-year updates relevant to the costing collection also adopted.	MUST	To ensure consistency in cost allocation	None

Data import

38. Data import functions prepare the activity data for the costing process, with the aim of making the loading process transparent and flexible. These also ensure costing outputs can be traced back to the source data.

39. These requirements outline the functions required to support the import of the required information (Table 3), as outlined in the costing standards as well as providers' local data feeds.

Table 3: System data import requirements

ID	Requirement description	Priority	Rationale	Changes for 2021
DAT001	The system must allow transformational procedures to be recorded and performed on data feeds, creating a new version of the data feed while maintaining the unedited source files. The minimum required functions are: • date format changes • text trimming (truncation) to a user-defined number of characters • case setting for text • concatenation of columns • pruning of spaces and non-alphanumeric characters from text • updating data in columns, with users able to define the update values and select the rules • ability for users to set up their own procedures.	MUST	**Data and Information Principle** Data must be in the correct format for costing and reporting, in accordance with Costing extension: Managing information for costing[10].	None
DAT002	The system must be able to import data from a range of data sources, using appropriate mechanisms. Potential data sources include: • flat files • Excel • XML • ODBC.	MUST	**Data and Information Principle** Reduces manual data entry through automation and supports the loading of data feeds.	None

[10] Costing extensions can be found at https://www.england.nhs.uk/approved-costing-guidance/

ID	Requirement description	Priority	Rationale	Changes for 2021
DAT003	The system must allow the user to load any data feed in accordance with DAT002, including the general ledger (GL) and information requirements, and to select the fields required for cost allocation, statistic allocation tables[11] and reporting.	MUST	Supports the loading and costing of data feeds outside the scope of the costing standards.	None
DAT004	The system must allow datasets (auxiliary, master and standalone) to be loaded and then excluded from the costing process based on user criteria, and generate a report identifying the exclusions.	MUST	**Data and Information Principle** Provides transparency about how activity data has been used in the system.	None
DAT005	The system must allow data feeds to be loaded as a batch process or individually, depending on the user's preference.	MUST	Supports the loading of data feeds in Standard IR1: Collecting information for costing.	None
DAT006	The system must allow automated data importation to run at scheduled times as specified by the user.	MUST	**Data and Information Principle** Accuracy improves with greater automation and limitations on manual intervention.	None
DAT007	The system must allow whole or part data feeds to be added, appended, replaced or deleted from the system.	MUST	Supports the loading of data feeds in Standard IR1: Collecting information for costing.	None

[11] Relative weight values can be achieved through using statistical allocation tables.

ID	Requirement description	Priority	Rationale	Changes for 2021
DAT008	The system must allow look-up tables to be linked to any imported data using any column in a data feed, eg look-up test/ resource codes, actual cost or prices, service line codes, relative weight values.	MUST	Standard CP3: Allocating costs to activities. Supports the attachment of relative weight values to data feeds such as pathology and radiology, and the preparation of data for costing and reporting.	None
DAT009	The system must be able to cost incomplete cost objects (eg admitted patients not discharged and EC attendances that overlap the end of a costing period) in the same way as finished cost objects.	MUST	Acute, Mental health or Community standard CM3: Non-admitted patient care; Standard IR1: Collecting information for costing; Standard CM2: Incomplete patient events. Incomplete cost objects consume resources and need to be allocated costs similarly to finished cost objects.	None
DAT011	The system must contain a minimum length of 200 characters for text fields used as a description.	MUST	**Engagement Principle** Supports local and national reporting descriptions, to help stakeholders understand the composition of costs.	None

ID	Requirement description	Priority	Rationale	Changes for 2021
DAT012	The system must allow the user to load alphanumeric data where required.	MUST	**Data and Information Principles** Data format in the same field may change, eg patient IDs could contain alphabetic letters, numbers or both.	None
DAT013	The system must allow the user to define local activity groupings for all activity data feeds as well as grouping activity into cost groups (own-patient care – in scope and out of scope; research and development; education and training; other activities; reconciliation items) and sensitive/legally restricted data for the national cost collection.	MUST	Enables activity and costs to be grouped for national and local reporting.	Addition of sensitive/legally restricted data for the national cost collection.
DAT014	The system must allow the user to create proxy cost objects where cost objects do not exist, to allocate costs in the same way as cost objects (eg so ‘a patient’ can be costed instead of ‘the patient’ for services where patient-identifiable detail is not available).	MUST	Standard IR1: Collecting information for costing. Allows all costs to be allocated within the system, regardless of whether activity exists, eg standalone feeds.	None
DAT015	The system must highlight dependencies on reference data to the user before reference data can be deleted.	MUST	**Data and Information Principle** Raises issues that will arise in the model if data is deleted.	None
DAT016	The system should be able to derive fields from other data items (such as length of stay from start and end points). These data items can be nationally or locally defined.	MUST	To ensure system resilience and robustness.	None

Activity matching

40. Matching auxiliary feeds to the correct cost object is important in generating high quality cost information. The matching process is described in the costing standards, with matching rules defined for auxiliary feeds.

41. This section outlines the activity-matching functions required from the system (Table 4). It should also have in-built flexibility to allow users to create local rules to produce more accurate matches and to apply the rules outlined in the standards.

Table 4: System activity-matching requirements

ID	Requirement description	Priority	Rationale	Changes for 2021
MAT001	When activity data is matched outside the system, the system must allow a matching key and a matching rule ID to be included in the activity load. It must generate a report that states the number of records with and without a matching key as an absolute value and as a percentage.	MUST	**Data and Information Principle** Matching may take place outside costing systems, but it is imperative that the results are checked and understood by costing practitioners working in the system and as part of the costing process.	None
MAT002	The system must allow the user to create matching rules and automate the process of matching activities to cost objects, eg patient episode, programme or incident.	MUST	**Data and Information Principles** Minimises errors through automation.	None

ID	Requirement description	Priority	Rationale	Changes for 2021
MAT003	The system must allow the user to select any combination of columns from a data feed to determine a match to a cost object, eg cost object identifier, consultant, specialty, location and date. User-defined matching rules must not contain a matching rule ID that is similar to the matching rule IDs in the costing standards.	MUST	The costing standards do not cover all the data feeds that providers may use for costing. Users need to be able to set up their own matching rules for data feeds outside the scope of the standards.	None
MAT004	The system must allow a matching hierarchy to be set and amended by the user for each auxiliary feed, with no restrictions on the number of levels: eg set the activities to match to patients in the order of the dataset;[12] this should include master datasets from all sectors.	MUST	Standard CP4: Matching costed activities to patients. The matching hierarchy improves the chance of obtaining an accurate match by matching to the most appropriate feed first.	None
MAT005	The system must allow the user to alter the matching date range for each matching rule, ie number of days/hours either side of the activity date.	MUST	Supports the date formats in Spreadsheet IR1.2: Patient-level field requirements for costing in the costing standards technical document and allows the user to determine their own range.	None

[12] A&E, admitted patient care, non-admitted patient care and then other master datasets in the order they are shown on the matching hierarchy.

ID	Requirement description	Priority	Rationale	Changes for 2021
MAT006	The user must be able to change the combination and order of fields used for each matching rule: eg line 1 location, line 2 location and consultant, and line 3 consultant, requesting specialty and location.	MUST	Spreadsheet CP4.1: Matching rules in the costing standards technical document. Auxiliary feeds have different matching rules; the combination of fields differs for each rule.	None
MAT007	The system must be able to deal with unmatched activity by allowing the options: • separately cost from matched activity and apply user-defined allocation methods to allocate to cost objects • report costs as a reconciliation item either under the requesting department or the providing department (see **Appendix 1** for example) • allocate unmatched costs across matched activities only.	MUST	Supports the treatment of unmatched activities identified in Standard CP4: Matching costed activities to patients.	None
MAT008	The system must be able to create a matching rule ID for all activity records in auxiliary feeds.	MUST	**Data and Information Principle** Traces the matching process from the auxiliary feed to the cost object.	None

ID	Requirement description	Priority	Rationale	Changes for 2021
MAT009	The system must generate a summary report containing the rule ID, number of records matched and unmatched as a percentage of total number of records and absolute value for all auxiliary feeds.	MUST	**Data and Information Principle** Makes it possible to identify and validate matching results for auxiliary feeds.	None
MAT010	The system must allow the user to build unlikely matches into the matching rules.	MUST	Supports unlikely scenarios covered in Standard CP4: Matching costed activities to patients, to minimise the risk of activity matching incorrectly to cost objects.	None
MAT011	The system must allow the user to determine data feeds as master, auxiliary, supplementary or standalone feeds.	MUST	Determines which data feeds require matching rules and which contain cost objects, in accordance with Standard CP4: Matching costed activities to patients.	None
MAT012	The system must allow data feeds to be matched using data that has a start and finish date and time format, eg 'CCYY/MM/DD hh:mm'. The system must also allow time values to be used in allocation methods.	MUST	Supports the time and date formats in the Spreadsheet IR1.2: Field requirements in the costing standards technical document.	None
MAT013	The system must allow cost objects from auxiliary feeds to be allocated resources and activities as part of the costing process and matched to master feeds or other auxiliary feeds for reporting.	MUST	To support the critical care allocation method in the costing standards.	None

Import data validation

42. Data validations capture problems with data quality that can cause errors in the final outputs or processing issues in the cost model. The aim of the requirements in this section (Table 5) is to detect data-loading errors at the earliest opportunity and to feed them back to the providers of the source data for review before costs are distributed to final cost objects.

Data validation tool

43. Before submitting patient-level files for the national cost collection, it is vital that providers pass them through the data validation tool (DVT).

44. The DVT assesses the quality of the files before submission to NHS Digital to minimise the chance of submission failure and the need for resubmissions.

45. The tool checks the files are in the correct format for submission, mandatory fields are populated, and valid codes have been used in fields where applicable. It produces an output file setting out any discrepancies in the output to the file specification that need to be amended before submission.

46. Software suppliers and NHS providers may create CSV or XML files. Regardless of whether CSV or XML files are produced, providers should validate their files using the DVT before submission. The DVT will convert CSV files into XML, which is the file format NHS Digital requires for PLICS submissions.

47. For non-acute services, validation checks that would result in a submission failure are to be restricted to file structures, field formats, population of mandatory fields and ensuring that valid codes have been used where applicable. Blank fields will be accepted for non-mandatory fields. However, trusts should try to complete as many fields as possible.

Table 5: System data validation requirements

ID	Requirement description	Priority	Rationale	Changes for 2021
IMP001	The system must allow the user to set data validations on any activity data loaded. Validations required as a minimum:[13] • data missing from mandatory fields • incorrect data types in fields, eg text in a date column • negative quantities in the data • duplicate data • inconsistent values. See **Appendix 2** for examples of other data validations the user may need to set.	MUST	Facilitates the three-step quality check in Costing extension: Managing information for costing.	None
IMP002	The system must allow users to set the importance of data validations using three levels of severity: • import will fail – level 1 • system flags error as important but import will still load – level 2 • reports a minor error – level 3. See **Appendix 2** for examples.	MUST	Differentiates validation errors, so the system can still process if levels 2 or 3 are present: eg if a field is needed for reporting but not for the costing process, the data will still load.	None
IMP003	The system must produce data validation reports that state where and why errors are occurring, and these must be in formats that can be exported to the source departments for review before costs are allocated to activities.	MUST	Facilitates data cleansing as part of the three-step quality check in Costing extension: Managing information for costing.	None

[13] Please refer to the latest data validation tool: https://www.england.nhs.uk/approved-costing-guidance/

ID	Requirement description	Priority	Rationale	Changes for 2021
IMP004	The system must validate activity on loading and after any transformation by generating an error log.	MUST	Facilitates the three-step quality check in Costing extension: Managing information for costing.	None
IMP005	The system must generate a control report when data feeds are imported, stating the number of records present, the number of records excluded and the number of records loaded for the costing process. The system must also reconcile the records loaded to master feeds and standalone feeds to the number of cost objects reported in output tables.	MUST	**Data and Information Principle** Traces activity from source to cost objects.	None
IMP006	The system must generate a control report which allows the user to compare the count of records for all data feeds by day/week/month/quarter for a financial year.	MUST	Standard IR1: Collecting information for costing. Supports the sense checking of the activity load.	None
IMP007	The system must flag new cost centres and expense codes as part of the GL load.	MUST	**Data and Information Principle** Increases automation to minimise the risk of cost centres not being mapped to the correct resource activity and allocation method in the costing process.	None

Cost ledger

48. Method 2 general ledger to cost ledger (GL to CL) mapping allows the user to map costs to ensure they are all in the right starting position with the right label to begin the costing process. To implement our preferred method, Table 6 lists the system cost ledger requirements – to make cost categorisation consistent, and to give users the flexibility to refine, develop and add to the cost information in the cost model using either mapping method 1, method 2 or a combination of both.

49. The functions required to support the cost allocation methods outlined in the costing standards are also described. This section supports Standard CP1: Ensuring the correct cost quantum and Standard CP2: Clearly identifying costs. If your provider opts to facilitate method 2, see Appendix 3 for the costing process diagram extract from the costing standards.

Table 6: System cost ledger requirements

ID	Requirement description	Priority	Rationale	Changes for 2021
COS001	The system must apply the costing process as defined by the costing standards in four stages: • Stage 1 maps the costs in a provider's GL to the CL as defined in the *Costing glossary* in the *Approved Costing Guidance*.[14] • Stage 2 uses the CL to identify the prescribed resource codes to be used. • Stage 3 assigns resource costs to the activities that use those particular resources, using Step 1 of the cost allocation method process (see Spreadsheet CP3.3). • Stage 4 matches activities to the cost objects they relate to, using Step 2 of the cost allocation	MUST	Facilitates the costing approach outlined in Standard CP2: Clearly identifying costs and Standard CP3: Allocating costs to activities.	None

[14] https://www.england.nhs.uk/approved-costing-guidance/

ID	Requirement description	Priority	Rationale	Changes for 2021
	method process (see Spreadsheet CP3.3).			
COS002	The system must be able to classify the costs in the GL into: • patient-facing resources and resource groups (including collection resources) • overheads a minimum of five user-defined groups.	MUST	Enables the mapping of expense codes to the classifications outlined in the costing standards, as well as supporting local cost groupings.	Type 2 support cost classification has been removed from the costing standards.
COS003	The system must be able to disaggregate expense codes where there are several cost items on one line that should map to different resources in the CL, as they have different allocation methods or require different information sources.	MUST	Supports the disaggregation of costs outlined in Standard CP2: Clearly identifying costs.	None
COS004	The system must allow costs to be transferred between both cost centres and expense codes, with the option to use information from statistic allocation tables[15] (such as headcount) and other relative weight values with percentages and absolute values as the basis for this.	MUST	Ensures costs are in the correct starting position for costing: costs may need to be transferred as outlined in Standard CP2: Clearly identifiable costs.	None
COS005	The system must include fields for • GL cost centre • GL expense code • CL cost centre • CL expense code • amount (cost value) • period (ie month)	MUST	Standard CP1: Ensuring the correct cost quantum and Standard CP2: Clearly identifying costs. Supports the loading of the GL into the CL and its processing.	None

[15] Relative weight values can be achieved through using statistical allocation tables.

ID	Requirement description	Priority	Rationale	Changes for 2021
	• patient-facing/support cost classification • patient-facing/support resource code • patient-facing/support resource description • overheads code • overheads description • resource group (collection resource) code • cost classification (fixed/semi-fixed/variable, marked as F/SF/V in accordance with Spreadsheet CP2.1 in the costing standards technical document.			
COS006	The system must be able to aggregate expense codes to produce a new division of costs.	MUST	Supports the aggregation of costs outlined in Standard CP2: Clearly identifying costs.	None
COS007	The system must allocate overheads using a reciprocal allocation method; see Standard CP2: Clearly identifiable costs for more information.	MUST	Achieves the overheads allocation method in Standard CP2: Clearly identifying costs.	None
COS008	The system must allow the user to exclude GL lines from the costing process, eg to allow internal recharges that net off to be removed from the cost process.	MUST	Supports the treatment of recharges outlined in Standard CP1: Ensuring the correct cost quantum and Standard CP2: Clearly identifying costs.	None

ID	Requirement description	Priority	Rationale	Changes for 2021
COS009	The system must allow the reconciliation codes from the technical document to be input, enabling the user to create the costing quantum from the annual accounts to the final audited accounts.	MUST	This is to support the construction of the collection reconciliation.	None
COS010	The system must allow the user to view their complete CL, which will have been created through their mapping of the GL to the standardised CL in Spreadsheet CP2.1 in the costing standards technical document. This will include the values resulting from the mapping of the standardised cost centres and expense codes to resources as well as any new codes that result from disaggregating costs in the costing system. The standardised CL codes should form part of the system set-up in requirement **SYS004**.	MUST	Standard CP2: Clearly identifying costs. This is to support the cost classification process in the costing standards.	None
COS011	The system must be able to classify costs as per the CL into: • fixed • semi-fixed • variable	MUST	Enables the mapping of expense codes to the cost classifications outlined in the costing standards.	None

Statistic allocation tables,[16] relative weight values and allocation methods

50. This section describes the requirements that ensure the costing system can apply the cost allocation methods defined in the costing standards and support a consistent approach to costing across organisations (Table 7).

[16] Relative weight values can be achieved through using statistical allocation tables.

Table 7: Required statistic allocation tables and allocation methods

ID	Requirement description	Priority	Rationale	Changes for 2021
ALL001	The system must allow the user to create automated allocation methods from data feeds, using any field in the data feed and user-defined data filters, which link the activity to individual cost objects.	MUST	Supports the allocation of resources to activities using the prescribed methods and the setting-up of local allocation rules.	None
ALL002	For apportionment of overheads, the system must create automated statistic allocation tables and other relative weight values based on GL values and feed data/cost objects, and allow the user to select the records to be used: eg create statistic tables such as budgeted headcount or actual costs by specific cost centres and periods.	MUST	Supports the allocation of overheads through statistic allocation tables as outlined in Standard CP2: Clearly identifying costs.	None
ALL003	The system must allocate overheads – once all costs have been disaggregated from the GL to the CL – to cost centres (that are directly attributable to cost objects), classified as patient-facing. This should be done using statistic allocation tables (and other relative weight values) and reciprocal costing.	MUST	Supports the allocation of overheads through statistic allocation tables as outlined in Standard CP2: Clearly identifying costs.	None
ALL004	The system should allow overheads within patient-facing cost centres to be allocated to any resource or expense code (directly attributable to cost objects) classified as patient-facing using the allocation methods in CP2.2 of the technical document.	MUST	Supports the allocation of overheads to create fully absorbed resources.	None

ID	Requirement description	Priority	Rationale	Changes for 2021
ALL005	The system must allow multiple activity trim points to be used to determine the days that are inlier and outlier, and associate income and costs.	MUST	Supports the local calculation of excess bed days for reference costs and the comparison of activity and cost before and after trim points.	None
ALL006	The user must be able to use actual cost or income as a weighting to allocate resources or income.	MUST	Supports the allocation of traceable costs in Standard CP3: Allocating costs to activities.	None
ALL007	Where actual cost or income is used as a weighting to allocate resources or income, the user must be able to report the actual cost/income and any variance from the associated ledger value separately in a report.	MUST	Supports the allocation of traceable costs in Standard CP3: Allocating costs to activities.	None
ALL008	The system must allow the user to select any field from a data feed or look-up table to include in the allocation of income/costs to cost objects.	MUST	Facilitates Standard CP3: Allocating costs to activities.	None
ALL011	The system must allow used/unused minutes to be determined from data feeds and used to generate allocation methods, eg the allocation of unused time in theatres.	MUST	Supports the costing of unused time.	None
ALL012	The system must allocate all costs using a minimum of four decimal places.	MUST	Supports the consistent allocation of costs.	None

ID	Requirement description	Priority	Rationale	Changes for 2021
ALL013	The system must automate the allocation of resources to activities by using data feeds and other information sources to create the percentages/ weightings.	MUST	Supports the allocation of resources to activities as outlined in Standard CP3: Allocating costs to activities.	None
ALL014	The system must allow users to allocate patient-facing and support resources (either fully absorbed with overheads or not) to activities using the prescribed methods in Spreadsheet CP3.3 in the technical document.	MUST	Supports the allocation of costs as outlined in Standard CP2: Clearly identifying costs and Standard CP3: Allocating costs to activities.	None
ALL015	The system must allow users to match costed activities to patients using the prescribed allocation methods in the Spreadsheet CP3.3 in the technical document.	MUST	Supports the allocation of activities to patients as outlined in Standard CP3: Allocating costs to activities.	None
ALL016	The system must allow users to allocate costs using data feeds, either weighted using actual time or cost, or relative weight values determined by the user.	MUST	Supports the allocation of costs to activities in Standard CP3: Allocating costs to activities and matching of those activities or actual costs to the correct patient.	None
ALL017	The system must allow users to allocate costs to cost objects using a combination of allocation rules and matching rules from data feeds.	MUST	Supports the allocation of costs to patients in Standard CP4: Matching costed activities to patients.	None

ID	Requirement description	Priority	Rationale	Changes for 2021
ALL018	The system must be able to use derived fields (as in **DAT016**) to allocate cost.	MUST	To ensure system resilience and robustness.	None

Cost validation

51. This section includes requirements that ensure the information in the costing system is fully reconcilable with the organisation's financial performance as reported in the GL and financial statements (Table 8). The validations are also essential if costing practitioners are to see where and why the cost model does not reconcile, or where costs are allocated incorrectly.

52. Each of the system cost validation requirements below should be exportable as a report. They should be easy to interrogate and pose no need to cross-reference (eg by VLOOKUP) to evaluate the underlying data.

Table 8: System cost validation requirements

ID	Requirement description	Priority	Rationale	Changes for 2021
VAL001	The system must produce a reconciliation between the GL (cost centre and expense code) and the fully absorbed cost objects. The reconciliation must show clearly which GL lines have been absorbed by the cost objects. See Standard CP5: Reconciliation.	MUST	Supports the production of a full cost reconciliation as outlined in Standard CP5: Reconciliation.	None

ID	Requirement description	Priority	Rationale	Changes for 2021
VAL002	The system must produce a report identifying CL lines that have no basis for allocation and are a reconciling item, before resources are allocated to activities.	MUST	Ensures all ledger lines have been mapped to a cost object.	None
VAL003	The system must generate a validation report showing allocation methods that contain no activity records, before costs are allocated to activities.	MUST	Identifies allocation methods with no records, linked to income and cost values, before processing as there will be no cost objects to allocate the values to.	None
VAL004	The system must contain a report identifying the record count and the volume amounts for each allocation method.	MUST	Enables costs and activity to be traced to final cost object.	None
VAL005	The system must validate the data to be submitted to the national collection using the validation rules included in the NHS Improvement DVT; highlighting any collection validation issues.	MUST	Supports the national patient-level collection.	None
VAL006	The system must allow the National Cost Collection (PLICS and aggregated data) to be produced using the same cost model.	MUST	Supports the reconciliation of patient-level costs and aggregated costs for the national cost collection.	None

ID	Requirement description	Priority	Rationale	Changes for 2021
VAL007	The system must allow validation of patient records that are proxy cost objects (as in **DAT014**) for the anonymised records held within the system, where either no patient record was available or where the information governance regulations prevented a patient record being used in the costing system.	MUST	Standard IR1: Collecting information for costing.	None

System reports and transparency

53. Transparency applies to all aspects of the costing system, from imported activity data to the traceability of cost allocations and cost adjustments. It is an essential aspect of the system as it assures the user that the intended result of an action has occurred. This section covers the requirements that give the costing process its necessary transparency, focusing mainly on reports that should be available after calculation of the costing model (Table 9).

Table 9: System reports[17] and transparency requirements

ID	Requirement description	Priority	Rationale	Changes for 2021
REP001	The system must allow the user to trace the costing process from both the GL (cost centre and expense code) and the cost object. To be actioned in conjunction with **REP028**, whereas the costing system must allow 'windows' into the system with capability to export results into easily interrogated formats such as Excel/CSV.	MUST	**Data and Information Principle** Allows the costing process to be followed from either the start point (GL) or end point (cost object).	None
REP002	The user must be able to select any fields associated with master, standalone and auxiliary feeds to create reports that present the income, costs and count of cost objects in different ways, eg by clinic code, date, site, consultant, service, location, local activity groupings.	MUST	Supports local reporting and data validation.	None
REP003	The system must allow the fully absorbed cost objects to be compared to previous years' currency averages (mean, median and mode) for sense checking and outlier identification. It must be possible to adjust the previous year's currency using the provider's market forces factor and/or the inflation rate.	MUST	Supports local comparison with peers and data validation.	None
REP004	The system must show how each cost centre and expense code combination is allocated in the model.	MUST	**Data and Information Principle** Traces costs from the GL.	None

[17] See Standard CP5: Reconciliation for a full list of system reports.

ID	Requirement description	Priority	Rationale	Changes for 2021
REP005	The system must show how costs have moved from their starting position in the GL to the CL.	MUST	**Data and Information Principle** Traces costs from the GL to the CL.	None
REP006	The system must enable the user to view all fields from a data feed and select records to be viewed.	MUST	Supports local reporting and data validation.	None
REP007	The system must allow overheads to be traced from the originating cost centre to the cost object, and from the cost object to the originating cost centre. The system must be able to show all the cost centres that the overheads have been allocated to, giving the amount and the allocation method used to allocate the costs to cost objects.	MUST	**Data and Information Principle** Traces support cost to the final cost object.	None
REP008	The system must produce a report of cost objects' income and costs by cost groups (own-patient care; own-patient care out of scope; research; education and training; other activities; reconciliation).	MUST	**Data and Information Principle** Allows the total reported costs to be reconciled to the audited accounts or board report.	None
REP009	The system must allow the user to view the cost/income values, activity counts and descriptions of each individual resource and activity assigned to a cost object.	MUST	Supports local reporting and data validation.	None

ID	Requirement description	Priority	Rationale	Changes for 2021
REP010	The system must allow the user to isolate a cost at any stage in the system and identify where it has come from or been allocated to.	MUST	**Data and Information Principle** Identifies how costs have been allocated in the model.	None
REP011	The system must allow the user to produce reports using cost object attributes (eg currency, clinic code and consultant), stating the average (mean, median and mode) unit costs/income for each combination of resource and activity, as well as the averages at a resource group and an activity group level.	MUST	Supports local reporting and data validation.	None
REP012	The system must allow the CL and income ledgers in any two costing models within the same software system to be compared, to identify the percentage change in costs and income by cost centre and expense code.	MUST	Supports local reporting and data validation.	None
REP013	The system must allow users to report and compare cost objects across a minimum of three financial years where data is available.[18]	MUST	Supports local reporting and data validation.	None
REP014	The system must produce a report outlining the allocated costs/income and relative weight values for activity data.	MUST	Supports local reporting and data validation.	None

[18] For example, where a new supplier has been adopted using different methods, or the CTP is run for the first time, we understand comparable data will not be available.

ID	Requirement description	Priority	Rationale	Changes for 2021
REP015	Revised data feeds and costed outputs must be accessible in one of the following formats for local reporting solutions: • flat files • Excel • ODBC • XML.	MUST	Supports local reporting.	None
REP016	The system must produce the national cost collection outputs in CSV or XML format in accordance with the cost collection guidance for the year and sector of the collection. See the *Approved Costing Guidance* for details of the field values used.	MUST	Supports the CTP cost collection process.	None
REP017	The system must produce a report of all reconciling items created, reporting the description, activity count and cost/income value.	MUST	**Data and Information Principle** Validates reconciling items that are created.	None
REP018	The system must produce output tables for national mandatory cost collections.	MUST	Supports the production of mandatory cost collections.	None
REP019	The system must report cost objects by originating cost centre, expense code, patient-facing resources, organisation or department support resources and amount (cost or income).	MUST	**Data and Information Principle** Traces costs from the GL to the cost object.	None

ID	Requirement description	Priority	Rationale	Changes for 2021
REP020	The system must allow the user to filter an activity and see a breakdown of costs by all the associated resources and cost objects.	MUST	**Data and Information Principle** Traces costs from the activity back to resources and cost objects.	None
REP021	The system must allow the user to filter a resource and see a breakdown of costs by all the associated activities and cost objects.	MUST	**Data and Information Principle** Traces costs from the resource to activity and cost objects.	None
REP022	Where monthly cost models are created, the system must be able to group cost models together for YTD reporting.	MUST	YTD and monthly costing are covered in Standard CP2: Clearly identifying costs. Therefore, the system must facilitate both.	None
REP023	The system must allow the prescribed patient-facing and support resources to be reported at the cost object level, both: • including the overheads absorbed by the resources • excluding the overheads absorbed by the resources	MUST	Supports the local and national reporting of patient-facing and support costs.	None
REP024	The system must produce a reconciliation report between the collection output files and the calculated cost model.	MUST	Collection reconciliation.	None

ID	Requirement description	Priority	Rationale	Changes for 2021
REP025	The system must produce reports that contain the valid values and format required for the population of the costing assessment tool (CAT) supplementary sheets. See the CAT[19] for report format.	MUST	Facilitates the completion of the CAT.	None
REP026	The system must allow collection outputs to be reviewed by cost object, specialty, data feed, activity count and total costs as a minimum, with the ability to export the report for review and sign-off.	MUST	To support the executive sign-off of the cost collection extracts.	None
REP027	The system must allow the reporting of incomplete episodes across cost periods in accordance with the national cost collection guidance and the costing standards.	MUST	To support the cost and reporting of incomplete episodes. Standard CM2: Incomplete patient events.	None
REP028	The system must allow 'windows' into the system at several points in the costing process and export into easily interrogated formats such as Excel/CSV. This should include reports at GL, CL, resources after allocation, activities after matching, and cost object (patient)-level costs. The patient-level report may be aggregated.	MUST	To support the continuous interrogation and executive sign-off of the cost collection extracts.	None

Income ledger

54. The income ledger allows users to move income to the correct starting position for the income allocation process. The aim of the requirements in this section (Table 10) is to ensure consistency of the treatment of income

[19] https://improvement.nhs.uk/resources/costing-assurance-programme/

information and give users the flexibility to refine, develop and add to the income information reported in the costing model. These requirements are a must priority to facilitate the local reporting of income and costs required by end users.

Table 10: Income ledger requirements

ID	Requirement description	Priority	Rationale	Changes for 2021
INC001	The system must allow patient-facing or total costs per cost object to be used in user-defined allocation methods to allocate income to the appropriate cost objects, eg allocate income to all admitted patient care episodes using total costs as a weight.	MUST	Facilitates income allocations	None
INC002	The system must be able to disaggregate records in the income feed where there are several income types on one line and to apply different user-defined cost drivers and income classifications.	MUST	Supports the allocation of income using an income feed; the income may need to be broken down further before it can be allocated.	None
INC003	All the requirements outlined in Table 5, except **COS007**, must also apply to the income ledger: the term 'cost' is replaced by 'income' and the term 'resource' is replaced by 'income classification'.	MUST	Income needs to be allocated to cost objects in a similar way to costs. See Standard CM35: E&T Transitional method for netting off E&T income for the national cost collection.	None
INC004	The system must allow income to be mapped to resources to enable it to be netted off against costs, eg: • clinical excellence awards income • when income is received for part of a clinician's salary for treating patients at another provider • education and training income • other operating income.	MUST	Supports the treatment of external recharges in Standard CP2: Clearly identifying costs.	None

Education and training

55. The aim of the requirements in this section (Table 11 below) is to give consistency to the treatment of education and training (E&T) cost and income in the costing process. This will also support the integration of E&T into a patient-level costs collection process.

56. All requirements in the preceding sections apply when costing E&T cost objects. However, the requirements outlined in this section only apply to the costing of E&T activity within the costing system.

Table 11: E&T requirements

ID	Requirement description	Priority	Rationale	Changes for 2021
E&T001	The system must allocate within one costing model the costs to cost objects of: • patient care • E&T.	MUST	Facilitates the integration of E&T costing into the costing system.	None
E&T002	The system must allow the user to split patient-facing (staff) resources into patient care and E&T activities.	MUST	Facilitates the integration of E&T costing into the costing system.	None

ID	Requirement description	Priority	Rationale	Changes for 2021
E&T003	The system must allow users to choose between removing E&T costs from cost centre/expense codes and netting off E&T income from cost centre/expense codes. The user should be able to apply the same weightings for both methods.	MUST	This is to support the development of a flexible E&T allocation process which can either net E&T income off patient care costs or remove E&T costs. See Standard CM35: E&T: Transitional method for the treatment of income and expenditure.	None

3. Future requirements

57. The 2022 version of the minimum software requirements will include requirements to support the single integrated cost collection. This is where acute, ambulance, mental health and community patient-level cost collections are integrated to produce one single cost collection submission process for providers of these services where a PLICS XML feed exists.

58. It may include elements to integrate the collection of education and training costs in the document.

59. It may include elements to increase the frequency of the collections after the process for understanding if quarterly collections are feasible. The process will include a full discovery phrase including all stakeholders which will then be followed by a full consultation and mandating process.

4. Test plan

60. The test plan[20] gives software suppliers and providers of NHS services a means to assess their system's ability to support the costing process and the requirements.

61. The plan includes numerous test scenarios to assess the functionality of the costing software.

[20] Available to download at https://www.england.nhs.uk/approved-costing-guidance/

Appendix 1: Unmatched activity

There will inevitably be activities that do not match to cost objects because of, for example, timing differences or data quality issues. If, for example, a pathology test in an acute service does not match to a patient episode, the system needs to treat the data as follows:

- If the specialty that ordered the test is known but it cannot be matched to the patient, the system must allow the cost to be reported under the requesting specialty and labelled as a reconciling item.
- If the specialty that ordered the test cannot be identified, the system must allow the cost to be reported under the pathology department and labelled as a reconciling item.
- If additional information available to the costing practitioner can be used to allocate the cost to specific groups of patients – eg all patients with the same location or consultant – the system must enable this.

Appendix 2: Data validation scenarios

The scenarios below are not an exhaustive list – they merely give an indication of the many validations we would expect to take place to ensure data quality.

Data validations should be classified according to these levels of severity:

- level 1 – import into the costing system will fail
- level 2 – system flags the error as important, but the import will still load
- level 3 – reports a minor error.

Table A2.1: System data validation examples[21]

Severity	Field name	Rule name
1	Anonymised local patient ID	Patient ID column value is blank
1	Anonymised local patient ID	Patient ID column value exceeds the threshold for the number of permitted special characters (eg ! £ & *), which is three
1	Spell ID	Spell ID column value is blank
1	Spell ID	Spell ID column value exceeds the threshold for the number of permitted special characters (eg ! £ & *), which is three
1	Spell ID	Unique spell ID has been recorded for each episode Ensure that spells are reported correctly
1	Episode ID	Episode ID column value is blank
1	Episode ID	Episode ID column value exceeds the threshold for the number of permitted special characters (eg ! £ & *), which is three
1	Episode ID	Episode ID column contains duplicate values
1	Episode type	Episode type contains blanks or values other than numeric 01, 02, 03, 04
2	Episode start date and time	Episode start date and time column value is blank

[21] Sector-specific data validations are available on the specifications page of our website: https://www.england.nhs.uk/approved-costing-guidance/

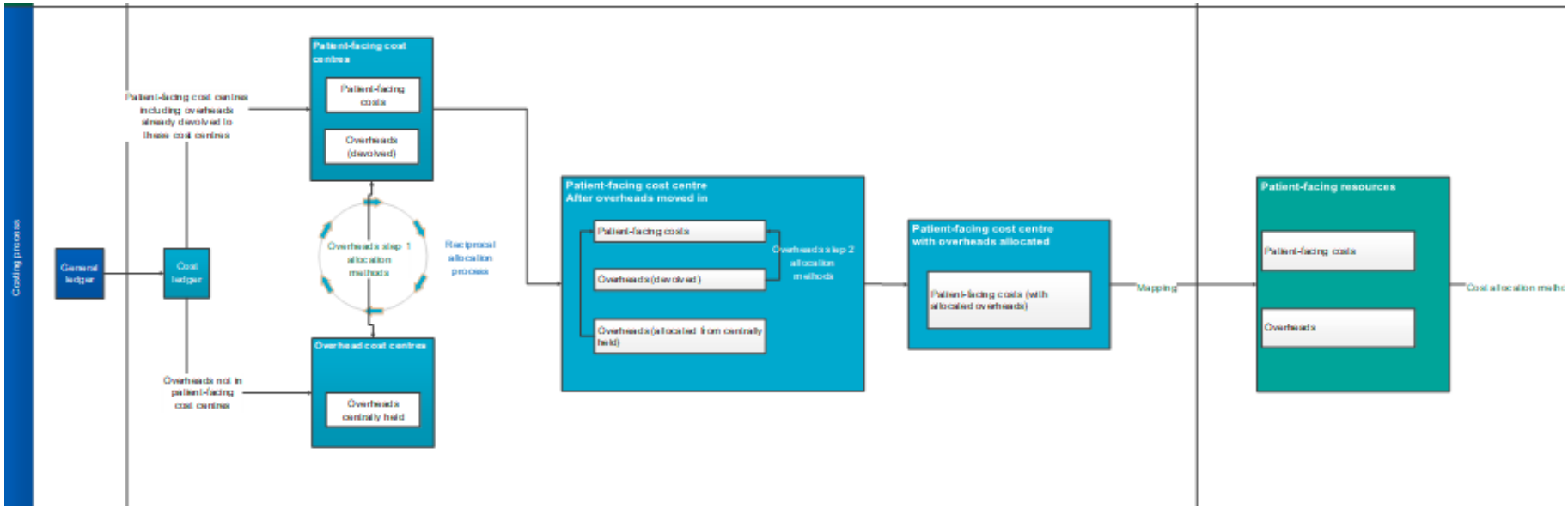
Severity	Field name	Rule name
2	Episode start date and time	Episode start date and time column value is not reported in correct format, within range Follow ‘CCYY-MM-DD hh:mm’ format Enter a date/time between 2020-05-01 00:00 and 2020-09-01 23:59
2	Episode end date and time	Episode end date and time column value is blank
2	Episode end date and time	Episode end date and time column value is not reported in correct format, within range Follow ‘CCYY-MM-DD hh:mm’ format Enter a date/time between 2020-05-01 00:00 and 2020-09-01 23:59
2	Episode start date and time, episode end date and time	Episode end date is before episode start date
2	Admission date and time	Admission date and time column value is blank
2	Admission date and time	Admission date and time column value is not reported in correct format, within range Follow ‘CCYY-MM-DD hh:mm’ format Enter a date/time between 2020-05-01 00:00 and 2020-09-01 23:59
2	Admission date and time, episode start date and time	Admission date and time column is on or after 01/04/2021 and does not match the first episode's start date within the spell
2	Discharge date and time	Discharge date and time column value is blank
2	Discharge date and time	Discharge date and time column value is not reported in correct format, within range Follow ‘CCYY-MM-DD hh:mm’ format Enter a date/time between 2020-05-01 00:00 and 2020-09-01 23:59
2	Admission date and time, discharge date and time	Discharge date and time is before admission date and time column
2	Discharge date and time, episode end date and time	Discharge date and time does not match the last episode’s end date within the spell

Severity	Field name	Rule name
2	Admission method code	Admission method code column value is blank
2	Admission method code	Invalid value(s) entered in admission method code column
2	Discharge method code	Discharge method code column value is blank
2	Discharge method code	Invalid value(s) entered in discharge method code column
3	Discharge destination code	Discharge destination code column value is blank
3	Discharge destination code	Invalid value(s) entered in discharge destination code column
3	Patient gender	Patient gender column value is blank
3	Patient gender	Invalid value(s) entered in patient gender column
2	Treatment function code	Treatment function code column value is blank
2	Treatment function code	Invalid value(s) entered in treatment function code column
2	Patient classification	Patient classification column value is blank
2	Patient classification	Invalid value(s) entered in patient classification column
2	FCE HRG (RC)	FCE HRG (RC) column value is blank
2	FCE HRG (RC)	Invalid value(s) entered in FCE HRG (RC) column
2	Spell HRG (RC)	Spell HRG (RC) column value is blank
2	Spell HRG (RC)	Invalid value(s) entered in Spell HRG (RC) column
3	Patient age	Patient age column value is blank
3	Patient age	Invalid value(s) entered in patient age column
2	OPCS 1	Invalid value(s) entered in OPCS 1 column
2	OPCS 2	Invalid value(s) entered in OPCS 2 column
2	OPCS 3	Invalid value(s) entered in OPCS 3 column
2	OPCS 4	Invalid value(s) entered in OPCS 4 column
2	OPCS 5	Invalid value(s) entered in OPCS 5 column
2	OPCS 6	Invalid value(s) entered in OPCS 6 column
2	OPCS 7	Invalid value(s) entered in OPCS 7 column
2	OPCS 8	Invalid value(s) entered in OPCS 8 column
2	OPCS 9	Invalid value(s) entered in OPCS 9 column

Severity	Field name	Rule name
2	OPCS 10	Invalid value(s) entered in OPCS 10 column
2	OPCS 11	Invalid value(s) entered in OPCS 11 column
2	OPCS 12	Invalid value(s) entered in OPCS 12 column
2	ICD10 1	ICD10 1 column value is blank
2	ICD10 1	Invalid value(s) entered in ICD10 1 column
2	ICD10 2	Invalid value(s) entered in ICD10 2 column
2	ICD10 3	Invalid value(s) entered in ICD10 3 column
2	ICD10 4	Invalid value(s) entered in ICD10 4 column
2	ICD10 5	Invalid value(s) entered in ICD10 5 column
2	ICD10 6	Invalid value(s) entered in ICD10 6 column
2	ICD10 7	Invalid value(s) entered in ICD10 7 column
2	ICD10 8	Invalid value(s) entered in ICD10 8 column
2	ICD10 9	Invalid value(s) entered in ICD10 9 column
2	ICD10 10	Invalid value(s) entered in ICD10 10 column
2	ICD10 11	Invalid value(s) entered in ICD10 11 column
2	ICD10 12	Invalid value(s) entered in ICD10 12 column
2	ICD10 13	Invalid value(s) entered in ICD10 13 column
2	Consultant code	Consultant code is blank

Appendix 3: Costing process diagram*

Review in conjunction with the stages in COS001.



* Extract from the costing process diagram which can be found at https://www.england.nhs.uk/approved-costing-guidance/

Contact us:

costing@improvement.nhs.uk

NHS England and NHS Improvement
Skipton House
80 London Road
London
SE1 6LH

This publication can be made available in a number of other formats on request.

Publication approval reference: PAR344