NHS Improvement

Healthcare costing standards for England

Acute: Information requirements

For data being collected in 2020 for financial year 2019/20

Final

collaboration trust respect innovation courage compassion

	Mandatory (Acute)
Publication status	Final
Publication date	27 February 2019
Relates to financial year data	2019/20
Collection year	2020

We support providers to give patients safe, high quality, compassionate care within local health systems that are financially sustainable.

Contents

Introduction

This integrated version 1 of the *Healthcare costing standards for England – acute* should be applied to 2019/20 data and used for all national cost collections. It supersedes all earlier versions. All paragraphs have equal importance.

These standards have been through three development cycles involving engagement, consultation and implementation. Future amendments and additions to the standards may be required but will be made as part of business as usual maintenance. We would like to thank all those who have contributed to the development of these standards.

The main audience for the standards is costing professionals but they have been written with secondary audiences in mind, such as clinicians and informatics and finance colleagues.

There are four types of standards: information requirements, costing processes, costing methods and costing approaches.

- **Information requirements** describe the information you need to collect for costing.
- **Costing processes** describe the costing process you should follow.

These first two sets of standards make up the main costing process. They should be implemented in **numerical order**, before the other two types of standards.

- **Costing methods** focus on high volume and high value services or departments. These should be implemented after the information requirements and costing processes, and prioritised based on the value and volume of the service for your organisation.
- **Costing approaches** focus on high volume or high value procedures and procedures that can be difficult to cost well. These should be implemented after the costing methods and prioritised by volume and value of the activity for your organisation.

Acute information requirements

All the standards are published on NHS Improvement's website.[1] An accompanying **technical document** contains the information required to implement the standards, which is presented in Excel. Cross-references to spreadsheets (eg Spreadsheet CP3.3) refer to the technical document.

We have ordered the standards linearly but, as aspects of the costing process can happen simultaneously, where helpful we have cross-referenced to information in later standards.

We have also cross-referenced to relevant costing principles. These principles should underpin all costing activity.[2]

We have produced a number of tools and templates to support you in implementing the standards. These are available to download from: https://improvement.nhs.uk/resources/approved-costing-guidance-2019

You can also download an evidence pro forma if you would like to give us feedback on the standards. Please send completed forms to costing@improvement.nhs.uk

[1] See https://improvement.nhs.uk/resources/approved-costing-guidance/
[2] For details see *The costing principles*, https://improvement.nhs.uk/resources/approved-costing-2019/

IR1: Collecting information for costing

Purpose: To set out the minimum information requirements for patient-level costing.

Objectives

1. To ensure providers collect the same information for costing, comparison with their peers and collection purposes.

2. To support the costing process of allocating the correct quantum of costs to the correct activity using the prescribed cost allocation method.

3. To support accurate matching of costed activities to the correct patient episode, attendance or contact.

4. To support local reporting of cost information by activity in the organisation's dashboards for business intelligence.

Scope

5. This standard specifies the minimum requirement for the patient-level[3] activity feeds as prescribed in the *Healthcare costing standards for England – acute*.

Overview

6. The standards describe two main information sources for costing:

[3] Not all feeds are at the patient level. This is a generic description for the collection of feeds required for the costing process. The actual level of the information is specified in the detail below: for example, the pathology feed is at test level.

- patient-level feeds
- relative weight values.

7. Any costs not covered in the prescribed patient-level feeds need relative weight values or other local information sources to allocate the costs.

8. One way to store relative weight values in a costing system is to use statistic allocation tables where the standards prescribe using a relative weight[4] to allocate costs.

9. You may be using additional sources of information for costing. If so, continue to use these and document it in your integrated costing assurance log (ICAL).[5]

10. The information described in the standards provides the following required for costing:

    - activities which have occurred – for example, the pathology feed will itemise all tests performed, and this information tells the costing system which activities to include in the costing process; not every pathology test will be performed in every cost period
    - the cost driver to use to allocate costs – for example, theatre minutes
    - the information to use to weight costs – for example, the drug cost included in the medicines dispensed feed
    - information about the clinical care pathway – for example procedure codes that are used to allocate specific costs in the costing process.

11. Integrated providers should identify the services they provide for different sectors and build feeds to include all these sectors – see Standard CM11: Integrated providers.

12. Column C in Spreadsheet IR1.1 lists the patient-level activity feeds required for costing.

13. You should use national definitions of activity from the relevant dataset. However, if you use local definitions for activity not included in national

[4] See Integrated standard CP3: Appropriate cost allocation methods for more information on relative weight values.
[5] This was called the costing manual in previous versions of the standards.

datasets, or during transition, you should record these in your ICAL worksheet 3: Local activity definitions.

14. Three types of feed support the matching process. The feeds are classified in column F in Spreadsheet IR1.1:

    - **master feeds:** the core patient-level activity feeds that the other feeds are matched to, eg the admitted patient care (APC), non-admitted patient care (NAPC) and A&E feeds[6]
    - **auxiliary feeds:** the patient-level activity feeds that are matched to the master feeds, eg the diagnostic imaging and pathology feeds
    - **standalone feeds:** the patient-level activity feeds that are not matched to any episode of care but are reported at service-line level in the organisation's reporting process, eg the clinical multidisciplinary team (MDT) meeting feed.

15. Columns D and E in Spreadsheet IR1.2 describe the data fields required for each feed.

16. You are not required to collect an activity feed if your organisation does not provide that activity, eg a provider with no emergency department is not required to collect the A&E attendances feed.

17. You are not required to collect duplicate information in the individual feeds unless this is needed for costing, matching or collection purposes. The reason each field is included in a feed is given in columns K to N in Spreadsheet IR1.2.

18. Your informatics department is best placed to obtain the data required from the most appropriate source, but to help you know what information is already being collected by your organisation use Spreadsheet IR2.1.

19. The standards prescribe the information to be collected, but not how it is collected. So, if you collect several of the specified feeds in one data source, you should continue to do so as long as the information required is captured.

[6] Although critical care is an auxiliary feed, other auxiliary feeds such as pathology can be matched to it. This improves the quality of the costing of critical care stays.

Acute information requirements

20. The prescribed matching rules for all the patient-level feeds are given in Spreadsheet CP4.1.

21. If you have activity in your data feeds where the costs are reported in another provider's accounts, you need to report this activity under 'cost and activity reconciliation items' as described in Table CP5.1 in Integrated standard CP5: Reconciliation. This is so your own patient costs are not allocated to this activity, deflating the cost of your own patients.

What you need to implement this standard

- Costing principle 5: Good costing should focus on materiality[7]
- Spreadsheet IR1.1: Patient-level activity feeds required for costing
- Spreadsheet IR1.2: Patient-level field requirements for costing
- Spreadsheet IR1.3: Supporting contacts feed
- Spreadsheet IR2.1: Data sources available as part of national collection

Approach

Patient-level information for the costing process

22. This section describes each feed, explaining:

- relevant costing standard
- collection source
- feed scope.

Feed 1a: Admitted patient care (APC)

Relevant costing standard

- Integrated standard CM2: Incomplete patient events
- Spreadsheet IR2.1: Data sources available as part of national collection – row 6

[7] See *The costing principles*, https://improvement.nhs.uk/resources/approved-costing-2019/

Acute information requirements

Collection source

23. This data may come from the nationally collected APC Commissioning Data Set (APCCDS).

Feed scope

24. All admitted patient episodes within the costing period, including all patients discharged in the costing period and patients still in bed at midnight on the last day of the costing period. This includes regular day or night attenders.

25. Use the patient discharged flag in column D in Spreadsheet IR1.2 to identify if a patient has been discharged or not.

26. Including patients who have not been discharged reduces the amount of unmatched activity and ensures that discharged patients are not allocated costs that relate to patients who have yet to be discharged. We recognise that much patient-level information, such as procedure codes which are used in the costing process, is not available until after a patient is discharged. But information regarding ward stays and named healthcare professionals will be available and can be used in the costing process.

27. The APC feed is a master feed that auxiliary feeds such as theatres and pathology, which contain all the patient-level activity that has taken place in a month, can be matched to.

28. The patient's administrative category code in column D in Spreadsheet IR1.2 may change during an episode or spell. For example, the patient may opt to change from NHS to private healthcare. In this case, the start and end dates for each new administrative category period should be recorded in the start and end date fields in column D in Spreadsheet IR1.2. This will mean all activity for private patients, overseas visitors, non-NHS patients and patients funded by the Ministry of Defence can be correctly identified and costed accurately.

Acute information requirements

Feed 2: A&E attendances (A&E)[8]

Relevant costing standards

- Acute standard CM4: Emergency department attendances (including A&E and minor injury unit)
- Integrated standard CM2: Incomplete patient events
- Spreadsheet IR2.1: Data sources available as part of national collection – row 7

Collection source

29. This data may come from the nationally collected Emergency Care Data Set (ECDS).

Feed scope

30. All A&E and minor injury unit attendances within the costing period, including all patients discharged in the costing period and patients still in bed at midnight on the last day of the costing period.

31. The A&E feed is a master feed that auxiliary feeds such as pathology, which contain all the patient-level activity that has taken place in a month, can be matched to.

32. Use the patient discharged flag in column D in Spreadsheet IR1.2 to identify if a patient has been discharged or not.

Feed 3a: Non-admitted patient care (NAPC)

Relevant costing standard

- Acute standard CM3: Non-admitted patient care
- Spreadsheet IR2.1: Data sources available as part of national collection – row 8

[8] We have decided to retain A&E attendances as the name for this feed for this year, but from next year it will become the urgent care feed.

Acute information requirements

Collection source

33. This data may come from the nationally collected Outpatient CDS.

Feed scope

34. All patients who had an attendance or contact within the costing period.

35. This feed is designed to be a 'catch all' activity feed. It captures activity recorded on the patient administration system (PAS) but not reported in the other master feeds, including:

    - outpatient attendances
    - outpatient procedures
    - telemedicine consultation[9]
    - non-admitted patient contacts in the community, including contacts in the patient's residence
    - ward attenders.

36. Work with your informatics department and other departments providing data to understand the different types of activity in this feed and ensure costs are allocated correctly to activity, and that activity is reported correctly in your patient-level reporting dashboard.

37. The NAPC feed is a master feed that auxiliary feeds such as pathology, which contain all the patient-level activity that has taken place in a month, can be matched to.

38. We recognise that not all NAPC activity is captured in the PAS. You need to work with your informatics department and the department responsible for the data to get the relevant activity information.

Feed 4: Ward stay (WS)

Relevant costing standards

- Integrated standard CM2: Incomplete patient events
- Integrated standard CP3: Appropriate cost allocation methods

[9] www.datadictionary.nhs.uk/data_dictionary/attributes/c/cons/consultation_medium_used

- Spreadsheet CP3.8: Ward round data specification
- Spreadsheet IR2.1: Data sources available as part of national collection – row 9

Collection source

39. This data may come from the nationally collected APCCDS.

Feed scope

40. All patients admitted within the costing period, both those discharged and patients still in bed at midnight on the last day of the costing period.

41. This includes but is not limited to patients on:

    - general wards
    - A&E observation wards
    - clinical decisions wards
    - minor injuries units.

42. Use the patient discharged flag in column D in Spreadsheet IR1.2 to identify if a patient has been discharged or not.

43. Although this feed contains more detailed information than the APC feed, the two should match 100%.

44. The WS feed captures the costs known to be incurred by those patients who have not been discharged, allowing you to allocate the ward costs and ward round costs of the named healthcare professional.

45. Most providers produce the WS feed from their PAS, which means it will contain the episode ID and this should be used as the default matching criterion. If it does not, you need to use the prescribed matching rules in Spreadsheet CP4.1 for the WS feed.

46. As you will collect critical care patient-level information in a separate feed, you need to exclude the critical care ward-stay information from the WS feed to avoid costing critical care twice.

Acute information requirements

Feed 5: Non-admitted patient care – did not attend (DNA)

Relevant costing standard

- Acute standard CM3: Non-admitted patient care
- Spreadsheet IR2.1: Data sources available as part of national collection – row 10

Collection source

47. This data may come from the nationally collected Outpatient CDS.

Feed scope

48. All patients who did not attend or, in the case of children or vulnerable adults, were not brought to their outpatient appointment within the costing period.

49. This feed is for guidance and should be used only if you are costing ‘did not attends’ for local business intelligence.

50. This standalone feed is **not** matched to patient episodes, attendances or contacts.

Feeds 6a, 6b, 6c: Adult, paediatric and neonatal critical care

Relevant costing standard

- Integrated standard CM6: Critical care
- Spreadsheet IR2.1: Data sources available as part of national collection – rows 11 to 13

Collection source

51. This data may come from the nationally collected:

- Critical Care Minimum Data Set (CCMDS)
- Paediatric Critical Care Minimum Data Set (PCCMDS)
- Neonatal Critical Care Minimum Data Set (NCCMDS).

Acute information requirements

52. We know that some providers open a new episode of care when a patient is transferred to a critical care unit, whereas others do not. The standards do not advocate one approach over the other. Whichever approach your provider uses, you need to ensure the costed critical care stay is matched to the correct critical care episode, not the core non-critical care. This may mean that, where a separate episode of care is not created for the critical care stay, a dummy episode needs to be created in your APC feed for costing.

53. You need to ensure that critical care information is not duplicated on the WS feed.

Feed scope

54. All patients who had a critical care stay within the costing period, including patients still in a critical care bed at midnight on the last day of the costing period.

55. This includes but is not limited to patients on:

- intensive care units
- specialist care units
- high dependency units
- general wards, in high dependency beds and critical care beds.

56. Spreadsheet CP4.1 contains prescribed matching rules for these feeds.

Feeds 6d: Critical care transport

Relevant costing standard

- Integrated standard CM6: Critical care

Collection source

57. This data needs to be collected locally.

Feed scope

58. All patients who are conveyed by critical care transport.

59. Spreadsheet CP4.1 contains prescribed matching rules for this feed.

Feed 7: Supporting contacts

Collection source

60. This data needs to be collected locally.

Feed scope

61. All patients who had contacts from anyone other than the principal healthcare professional within the costing period.

62. A patient often receives multi-professional services during their episode, attendance or contact. The supporting contacts feed is designed to reflect the multi-professional nature of the patient's pathway and costs associated with it: for example, physiotherapists working with burns patients on a ward.

63. There will likely be multiple feeds for the different types of supporting contact activities in the organisation. For example, physiotherapist supporting contacts will be on a different feed from the critical care outreach team contacts.

64. The detail and accuracy of the final patient cost are improved by including these activities in the costing process.

65. Staff who may perform supporting contacts are listed in column A in Spreadsheet IR1.3, but this is not an exhaustive list.

66. Spreadsheet CP4.1 contains prescribed matching rules for this feed.

Feed 8: Pathology

Relevant costing standard

- Integrated standard CP4: Matching costed activities to patients
- Integrated standard CP3: Appropriate cost allocation methods
- Spreadsheet CP3.6: Relative weight value specification – pathology

Acute information requirements

Collection source

67. This data needs to be collected locally.

Feed scope

68. All types of pathology tests undertaken by the organisation within the costing period.

69. Spreadsheet CP4.1 contains prescribed matching rules for this feed.

Feed 9: Blood products

Collection source

70. This data needs to be collected locally.

Feed scope

71. Units of blood and blood components used in transfusion (red cells, white cells, platelets and plasma). Excludes both recombinant and plasma-derived Factor VIII or IX used in factor replacement therapy.

72. Spreadsheet CP4.1 contains prescribed matching rules for this feed.

Feed 10: Medicines dispensed

Relevant costing standard

- Acute standard CM10: Pharmacy and medicines
- Integrated standard CP4: Matching costed activities to patients
- Spreadsheet IR2.1: Data sources available as part of national collection – row 14

Collection source

73. This data needs to be collected locally and supplemented by the mandated devices and drugs taxonomy and monthly dataset specifications for NHS

England's specialised commissioning on high-cost drugs.[10] The latter covers about 70% of high-cost drugs, which may be extended by including locally commissioned high-cost drugs.

Feed scope

74. All medicines dispensed on a ward, both those attributable to individual patients (likely to include controlled drugs, medicine gases and discharge items) and non-attributable to individual patients, within the costing period.

75. All medicines dispensed in locations other than wards, including in theatres and during preoperative assessments.

76. All medicines dispensed during outpatient and A&E attendances.

77. FP10s are out of scope of the medicines dispensed feed.

78. Spreadsheet CP4.1 contains prescribed matching rules for this feed.

Feed 11: Clinical photography

Collection source

79. This data needs to be collected locally.

Feed scope

80. All clinical photography performed within the costing period.

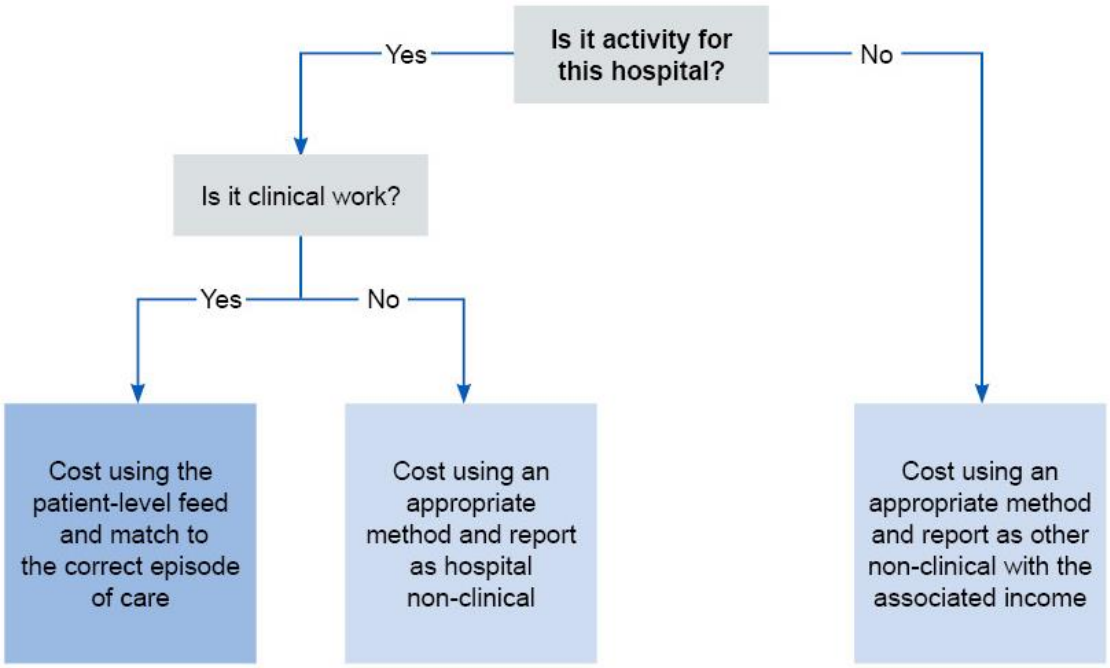
81. Clinical photography services can be used to chart a patient's progress during treatment, eg for cleft palate, and to document evidence in the case of suspected non-accidental injury to a child. They may also provide non-clinical medical illustration services for providers and external parties.

82. This feed is a good example of how the different types of services provided by one department need to be treated differently in the costing process. Follow

[10] www.england.nhs.uk/publication/devices-and-drugs-taxonomy-and-monthly-dataset-specifications/

Figure IR1.1 when applying costs for departments that provide different types of services.

Figure IR1.1: Costing services with different service users



83. Spreadsheet CP4.1 contains prescribed matching rules for this feed.

Feed 12: Diagnostic imaging

Relevant costing standard

- Standard CP4: Matching costed activities to patients
- Spreadsheet CP3.7: Relative weight value specification – diagnostic imaging
- Spreadsheet IR2.1: Data sources available as part of national collection – row 15

Collection source

84. This data needs to be collected locally.

Feed scope

85. All diagnostic imaging performed within the costing period.

86. Spreadsheet CP4.1 contains prescribed matching rules for this feed.

Feed 13: Theatres

Relevant costing standard

- Standard CP4: Matching costed activities to patients
- Standard CM5: Theatres

Collection source

87. This data needs to be collected locally.

Feed scope

88. All procedures performed in theatres within the costing period.

89. This feed should be at procedure level, not operation level, to capture activity performed by different surgeons, possibly from different specialties, during a patient's single trip to theatre.

90. This feed should also include session information.

91. Spreadsheet CP4.1 contains prescribed matching rules for this feed.

Feed 14: Clinical multidisciplinary team meetings

Relevant costing standard

- Acute standard CM9: Clinical MDT meetings
- Spreadsheet IR2.1: Data sources available as part of national collection – rows 16 to 18

Collection source

92. This data needs to be collected locally. See rows 16 to 18 in Spreadsheet IR2.1 for sources of information for clinical MDT meetings.

Feed scope

93. All clinical MDT meetings held within the costing period.

94. This feed does not have to be at patient level as the costs for MDTs are reported at specialty level, not patient level.

95. This standalone feed is **not** matched to patient episodes, attendances or contacts.

Feed 15: Prostheses and other high-cost devices

Relevant costing standards

- Integrated standard CP4: Matching costed activities to patients
- Integrated standard CM5: Theatres
- Acute standard CA2: Cochlear implant surgery
- Acute standard CA6: Cataracts
- Acute standard CA7: Orthopaedics
- Spreadsheet CP2.3: Expected costs
- Spreadsheet IR2.1: Data sources available as part of national collection – row 19

Collection source

96. This data needs to be collected locally.

97. National programmes such as Scan4Safety are useful sources of patient-level information for prostheses, devices and implants.

98. The National Joint Registry may be a good initial source of information for orthopaedic prostheses used in elective patients.

Feed scope

99. All prostheses, devices and implants provided to patients within the costing period.

100. The definition of a prosthesis, device or implant is something that is left behind – for example, after surgery.[11]

[11] As defined by NHS England's orthopaedic expert working group in work with NHS Improvement's group advising on pricing and improvement.

Acute information requirements

101. This is an organisation-wide feed to cover all prostheses, devices and implants, not just those used in theatres.

102. Spreadsheet CP4.1 contains prescribed matching rules for this feed.

Additional patient-level activity feeds and fields

103. If your organisation collects additional patient-level and other information feeds, continue to collect these and use them in the costing process. Record these additional feeds in ICAL worksheet 2: Additional information sources.

104. If you use fields additional to those specified for local reporting or more detailed costing, continue to use these and log them in your ICAL worksheet 2: Additional information sources.

Identifying hidden activity

105. Take care to identify any ‘hidden’ activity in your organisation. This is activity that takes place in your organisation but is not recorded on any of your organisation’s main systems such as PAS.

106. In some organisations, teams report only part of their activity on PAS. For example, a department may report its APC activity on PAS but not its community activity. If this is the case, you should work with the informatics department and the department responsible for the data to obtain a feed containing 100% of the activity undertaken by the department.

107. Capturing ‘hidden’ activity is important to ensure that:

- any costs incurred for this hidden activity are not incorrectly allocated to recorded activity, thus inflating its reported cost
- costs incurred are allocated over all activity, not just activity reported on the provider’s main system such as PAS
- income received is allocated to the correct activities.

Contracted-in activity

Relevant costing standard

- Integrated standard CM8: Other activities, paragraphs 8 to 15

Acute information requirements

108. If your organisation receives income for services delivered to another provider, such as pathology, this should not be used to offset costs. The activity should be costed exactly as for own-patient activity but the costs identified as relating to external work and not matched to your organisation's own activity.

109. Use the contracted-in indicator in the column D of Spreadsheet IR1.2 to identify this activity.

110. Ensure this activity is **not** incorrectly matched to patient episodes, attendances or contacts by using the prescribed matching rules in Spreadsheet CP4.1. These identify direct access pathology and diagnostic imaging in the conditional rules in column H for feeds 8 and 12 respectively. You need to report this activity with the corresponding income under 'other activities'.

Direct access activity

Relevant costing standard

- Integrated standard CM8: Other activities, paragraphs 22 to 24

111. Use the direct access flag field in column D of Spreadsheet IR1.2 to identify the direct access activity in the pathology, diagnostics and NAPC (if your organisation provides direct access to therapies) patient-level feeds.

112. Ensure this activity is **not** incorrectly matched to patient episodes, attendances or contacts by using the prescribed matching rules in Spreadsheet CP4.1 which identify direct access in the conditional rules in column H for the pathology and diagnostic imaging feeds. You need to report this activity with the corresponding income under 'other activities'.

Other data considerations

113. Information from specific fields of the patient-level feeds is required to enable costs to be allocated, as specified in Spreadsheets CP3.3 and CP3.4 for the two-step allocation methods for patient-facing costs and type 2 support costs respectively These fields are flagged with a 'Y' in column K in Spreadsheet IR1.2.

Acute information requirements

114. The required patient-level feeds do not contain any income information. You may decide to include this information at patient level in the feeds to enhance the value of your organisation's reporting dashboard. The standards do refer to income where this makes it easier to understand both the costs and income for a particular service for local reporting and business intelligence.

115. The feeds do not include description fields, eg there is a ward code field but not a ward code description field. You may ask for feeds to include description fields; otherwise you will need to maintain code and description look-up tables for each feed so you can understand the cost data supplied. There should be a process for mapping and a rolling programme for revalidating the codes and descriptions with each service.

116. You may use locally generated specialty codes to report specialist activity locally. For example, epidermolysis bullosa will be reported under the dermatology treatment function code (TFC), but your provider may decide to assign it a local specialty code so this specialist activity is clearly reported.

117. If local specialty codes are used, they should be included in the patient-level feeds and in the costing process. The costs and income attributed to these specialist areas need to be allocated correctly. You need to maintain a table mapping the local specialty codes to the TFCs. This table needs to be consistent with the information submitted nationally to ensure activity can be reconciled.

PLICS collection requirements

118. The master feeds (APC, NAPC and A&E) form the basis of the cost collection. See Sections 7 and 20 of the *National cost collection guidance 2019*[12] for the scope of the collection.

[12] https://improvement.nhs.uk/resources/approved-costing-guidance-2019

IR2: Managing information for costing (integrated)

Purpose: To assess, manage and improve the availability and quality of the information specified in Acute standard IR1: Collecting information for costing.

Objectives

1. To explain how to use information in costing.
2. To explain how to support your organisation in improving data quality in information used for costing.
3. To explain how to manage data quality issues in information used for costing in the short term.
4. To explain what to do when information is not available for costing.

Scope

5. All information required for the costing process.

Overview

6. Costing practitioners are not responsible for the quality and coverage of information. That responsibility rests with your organisation; however, you are ideally placed to raise data quality issues within your organisation.
7. This standard provides guidance on how you can mitigate the impact of poor quality information when producing cost information. These are short-term measures that allow you to produce reasonable cost information in line with

the costing principles while your organisation continues to work on the quality and coverage of its information as a whole.

8. This standard does not provide guidance on complying with information governance, including confidentiality, data protection and data security. You should consult your organisation on information governance, policies and procedures.

9. Most of the required information should be held in your organisation's information systems, but its availability will vary due to different information management practices and your IT server capacity.

10. Use NHS Improvement's information gap analysis template (IGAT)[13] and work with your informatics colleagues and relevant services to assess data availability for costing. Use Spreadsheet IR2.1 to inform these discussions.

11. Information availability for your organisation can be grouped as:

    - **available as part of national data collections** – for patient-level feeds where national data collections capture all or some of the data. Information relating to these national data collections is given in Spreadsheet IR2.1, eg the Admitted Patient Care Commissioning Data Set (APCCDS)
    - **available in department-specific systems** – you should obtain all or some of the data from the informatics department or direct from the department or specialty for these feeds, eg the medicines dispensed feed
    - **unavailable at patient level** – depending on your organisation's patient-level data collection arrangements, data may not be available.

12. Providers' departmental systems can be accessed to collect the information required for some patient-level feeds, eg pharmacy, pathology and theatres.

13. You may be able to obtain these feeds from informatics or direct from the department. If these services are outsourced, you need to obtain patient-level information from the supplier.

14. Agree with informatics colleagues the format of information, frequency of patient-level activity feeds and any specific data quality checks for costing.

[13] See Tools and templates to help implement the standards, https://improvement.nhs.uk/resources/approved-costing-guidance-2019

Use the information to populate the patient-level feeds log in your integrated costing assurance log (ICAL) worksheet 1: Patient-level activity feeds.

15. Access locally held information for allocating type 1 support costs, such as information on budgeted headcount for allocating HR costs.

16. Work with informatics colleagues and relevant services to streamline the extraction of the information required for costing.

What you need to implement this standard

- Costing principle 1: Good costing should be based on high quality data that supports confidence in the results[14]
- Spreadsheet IR2.1: Data sources available as part of national collection
- Information gap analysis template (IGAT)[15]
- Integrated costing assurance log (ICAL) template – shows you how to record and monitor your patient-level activity feed set up, progress and regular feeds

Approach

Using information in costing

17. Costing is a continuous process, not a one-off exercise for a national collection.

18. If your organisation has its own cost data for local reporting and business intelligence that is available quarterly or monthly, you may only need to run our patient-level costing once a year for the national collections.

19. If your organisation has no other form of cost data, run our patient-level costing process quarterly as a minimum, although we recommend running it monthly.[16]

20. The benefits of frequent calculation of costs are:

[14] See *The costing principles*, https://improvement.nhs.uk/resources/approved-costing-guidance/
[15] See Tools and templates to help implement the standards, https://improvement.nhs.uk/resources/approved-costing-guidance-2019
[16] The benefits of real-time data can be found at: www.gov.uk/government/publications/nhs-e-procurement-strategy

- effects of changes in practice or demand are seen and you can respond to them while they are still relevant
- internal reporting remains up to date
- mistakes can be identified and rectified early.

21. A first cut of the patient-level activity feeds (that is, those that can be obtained from the national data collections) will generally be available from the patient administration system (PAS) by the fifth day of each month (referred to as day 5 in Table IR2.1).

22. Some organisations will also have updates to this first cut of feeds – for example, by the 20th day of each month (referred to as day 20 in Table IR2.1). You should assess whether the data for costing is materially changed in any update; if it is, include the update in the costing process.

23. Depending on the costing software and by agreement with the informatics team, you can load these patient-level feeds into your costing system:

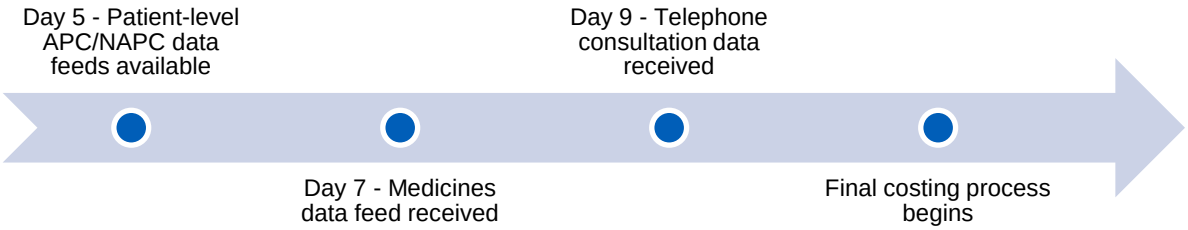
- the following month or
- to a locally agreed in-month timetable.

24. Any loaded update should add new records, amend existing records and remove erroneous records from the PLICS, to reflect changes to the PAS data. he method chosen should be documented in your ICAL worksheet 4: Timing of activity feeds. You should also record how much data is loaded each time so you can reconcile activity inputs and outputs. ICAL worksheet 5: Activity load record gives structure for doing this.

25. All other patient-level feeds should be submitted once a month to the costing team according to a locally agreed timetable so the costing process can begin promptly. You may need to be flexible about when some departments provide their patient-level feed – but late submission should be the exception rather than the rule. This should be agreed with the service and informatics departments, and clearly documented to support good governance.

26. You may find it useful to represent agreed dates for the monthly cycle of data receipts in a timeline diagram (see Figure IR2.1 below).

Figure IR2.1: Example timeline diagram showing when data should be available in the monthly cycle



Note: In this example, some parts of the costing cycle may start on Day 5, depending on the software used; some feeds are updated later.

In-month or year-to-date feeds

27. You should consider carefully the period for which data is loaded – in-month or cumulative year-to-date, basing your decision on the approach and frequency of the costing process and your organisation's reporting requirements. Loading data monthly is easier as the number of records is much smaller.

28. The costing system must be configured to recognise whether a load is in-month or year-to-date, or it may not load some of the activity.

29. Organisations providing mental health or community services should ensure that you understand whether your PLICS requires special characters or not. This will depend on whether your submitted main datasets – for example, MHSDS or CSDS – have special characters in them. See also Mental health standard IR1: Collecting information for costing, paragraph 27 and Community standard IR1: Collecting information for costing.[17]

30. To ensure the costing system is loading everything, you should follow the guidance in Integrated standard CP5: Reconciliation and use the patient event activity reconciliation report as described in Spreadsheet CP5.2. You can use this to check the number of patient records in the feed against the number of lines loaded into the costing system.

[17] The community costing standards will be published April 2019.

Descriptions and codes used in the feeds

31. Bespoke databases use the descriptions and codes provided when they were set up. Over time these descriptions and codes may change, become obsolete or be added to. For example, feed A may record a specialty as psychology and feed B as clinical psychology; if these are the same department, this needs to be identified and recorded in a mapping table, so they are treated as one item in the costing process.

Logging patient-level activity feeds

32. Use ICAL worksheet 1: Patient-level activity feeds to keep a record of patient-level activity feeds. Table IR2.1 below shows an example log of patient-level feeds.

Refreshing the patient-level feeds

33. Note the difference between a refresh and a year-to-date feed. A **year-to-date feed** is an accumulation of in-month reports (unless the informatics team has specified otherwise). A **refresh** is a rerun of queries or reports by the providing department to pick up any late inputs. The refreshed dataset includes all the original data records plus late entries.

34. You need to refresh the data because services will continue to record activity on systems after the official closing dates. Although these entries may be too late for payment purposes, they still need to be costed. The refreshed information picks up these late entries, which may be material in quantity.

35. Get a refresh of all the patient-level activity from the relevant department/team or the informatics department to an agreed timetable:

    - six-monthly – refresh all the data feeds for the previous six months (April to September)
    - annually – after the informatics department has finished refreshing the annual Hospital Episode Statistics (HES), usually in May, refresh all the data feeds for the previous financial year (April to March).

Table IR2.1: Example of a patient-level feeds log

Feed number	Feed	In-month/ year-to date	Data source	Department	Named person/ deputy	Format	Time period	Working day data received	Number of records received
1a	Admitted patient care – day 5	In-month	PAS informatics department	Informatics	XXX/XXX	CSV	In-month activity	5	XXX
1a	Admitted patient care – day 20	In-month	PAS informatics department	Informatics	XXX/XXX	CSV	In-month activity	20	XXX
3a	Non-admitted patient care – day 5	In-month	PAS informatics department	Informatics	XXX/XXX	CSV	In-month activity	5	XXX
3a	Non-admitted patient care – day 20	In-month	PAS informatics department	Informatics	XXX/XXX	CSV	In-month activity	20	XXX
10	Medicines dispensed	In-month	XXX	Pharmacy	XXX/XXX	CSV	In-month activity	5	XXX

Acute information requirements

36. You need to specify in the costing system whether values in the patient-level feeds can be used for calculations. If inconsistent measures are used across the records – for example, number of tablets, number of boxes or millilitres dispensed for different records in the medicines dispensed feed's 'quantity' column records – the costing system will need to ignore these quantities in the feed.

Information used in the costing system for calculations.

37. If the costing system uses information from a feed to calculate durations – for example, length of stay in hours, it needs to know which columns to use in the calculation. If the durations have already been calculated and included in the feed, the costing system needs to know which column to use in allocating costs.

38. Some patient-level feeds – such as the medicines dispensed feed – include the cost in the feed. The standards call this a traceable cost. You need to instruct the costing system to use this actual cost as a relative weight value in the costing process.[18]

39. Keep a record of the calculation method you decide to use for each patient-level feed. The template for recording important details of the patient-level activity feeds can be found in ICAL worksheet 1: Patient-level activity feeds, and an example completed log is shown in Table IR2.2 below.

[18] See Integrated standard CP3: Appropriate cost allocation methods for more details on relative value units.

Table IR2.2: Example ICAL worksheet 1 showing how the costing system uses patient-level activity feeds

Feed number	Feed	Detail	Column to use in costing
1a	Admitted patient care	1line = 1 discrete stay on a specific ward	Duration of stay in hours
3a	Non-admitted patient care	1 line = 1 attendance	Duration in minutes
10	Medicines dispensed	1 line = 1 issue	Total drug cost

Supporting your organisation in improving data quality for costing and managing data quality issues in the short term

Data quality checks for information to be used in costing

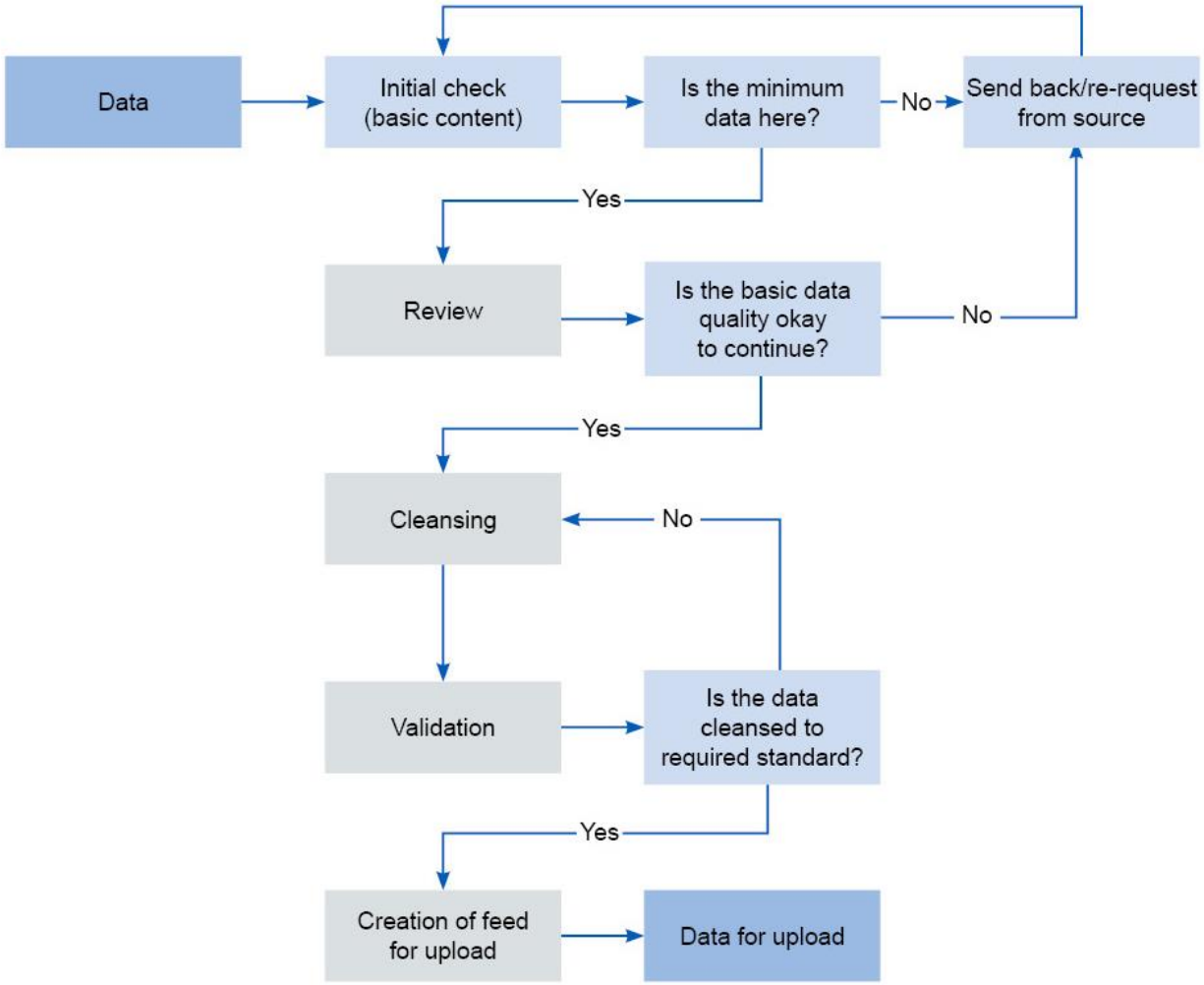
40. You need to quality check information that is to be used for the costing process by following a three-step process:

    1. **Review the source data:** identify any deficiencies in the feed, including file format, incomplete data, missing values, incorrect values, insufficient detail, inconsistent values, outliers and duplicates.
    2. **Cleanse the source data:** remedy/fix the identified deficiencies. Take care when cleansing data to follow consistent rules and log your alterations. Create a ‘before’ and ‘after’ copy of the data feed. Applying the duration caps is part of this step. Always report data quality issues to the department supplying the source data so they can be addressed for future refreshes. Keep data amendments to the minimum, only making them when fully justified and documenting them clearly on ICAL worksheet 7: Activity data cleansing.
    3. **Validate the source data:** you need a system that checks that the cleansed and correct data is suitable for loading into the costing system. This may be part of the costing system itself. Check that the cleansing measures have resolved or minimised the data quality issues identified in step 1; if they have not, either repeat step 2 or request higher quality data from the informatics team.

41. Consider automating the quality check to reduce human errors and varied formats. Automatic validation – either via an ETL (extract, transform and load) function of the costing software or self-built processes – can save time. But take care that the process tolerates differences in input data and if not, that this data is consistent. Without this precaution you risk spending disproportionate time fixing the automation.

42. Your organisation should be able to demonstrate an iterative improvement in data quality for audit purposes. You should request changes to the data feeds via the source department or informatics team, then review the revised data again for areas to improve. Set up a formal process to guide these data quality improvement measures and ensure those most useful to the costing process are prioritised. Figure IR2.1 shows the process.

Figure IR2.1: Establishing data quality improvement measures



43. Record the actions taken to improve data quality in your ICAL worksheet 6: Activity data quality checks, and any data cleansing processes established in ICAL worksheet 7: Activity data cleansing.

Use of duration caps

44. A duration cap rounds outlier values up or down to bring them within accepted perimeters. Review the feeds to decide where to apply duration caps and build them into the costing system.

45. You can apply a cap to reduce outliers, eg an appointment/contact in a non-admitted patient care (NAPC) setting that has not been closed. Doing so removes the distraction of unreasonable unit costs when sharing costing information.

46. Capped data needs to be reported as part of the data quality check. The caps need to be clinically appropriate and signed off by the relevant service.

47. While caps moderate or even remove outlier values, studying these outliers is informative from a quality assurance point of view (ie unexpected deviations). You should record the caps used and work with the informatics department and the department responsible for the data feed to improve the data quality and reduce the need for duration caps over time.

48. Table IR2.3 shows examples of duration caps that should be used as a default in the absence of better local assumptions.

Table IR2.3: Examples of duration caps

Feed number	Feed name	Duration in minutes	Replace with (minutes)
1a	Admitted patient care	≤4	5
3a	Non-admitted patient care	≤4	5
3a	Non-admitted patient care	>180	180

Recalled items on patient-level activity feeds

49. Take care with patient-level activity feeds in case they contain negative values due to products being returned to the department, eg the medicines dispensed feed[19] can contain both the dispensed and the returned drugs for a patient. These dispensations and returns are not always netted off within the department's database, so both will appear in the feed. If this is the case, you need to net off the quantities and costs to ensure only what is used is costed.

Unavailable data

50. Where patient demographic information is not available for governance or confidentiality reasons, costs should still be allocated to a patient, not necessarily the patient, by following the costing process. The costing software may require a proxy patient record and anonymous patient number to provide the base for the costs to be attached to. In this case, the process for managing these records should be recorded in ICAL worksheet 16: Proxy records.

51. Information for costing may not be available because:

- it is not collected at an individual patient level
- data is not given to the costing team
- data is not in a usable format for costing
- data is not loaded into the costing system and included in the costing processes
- your organisation may not collect information for auxiliary data feeds, eg if medicines are dispensed by a private pharmacy.

Making data available

52. If any of the required data fields in Spreadsheet IR1.2 are empty, follow the steps in Figure IR2.2 to make the data available for costing.

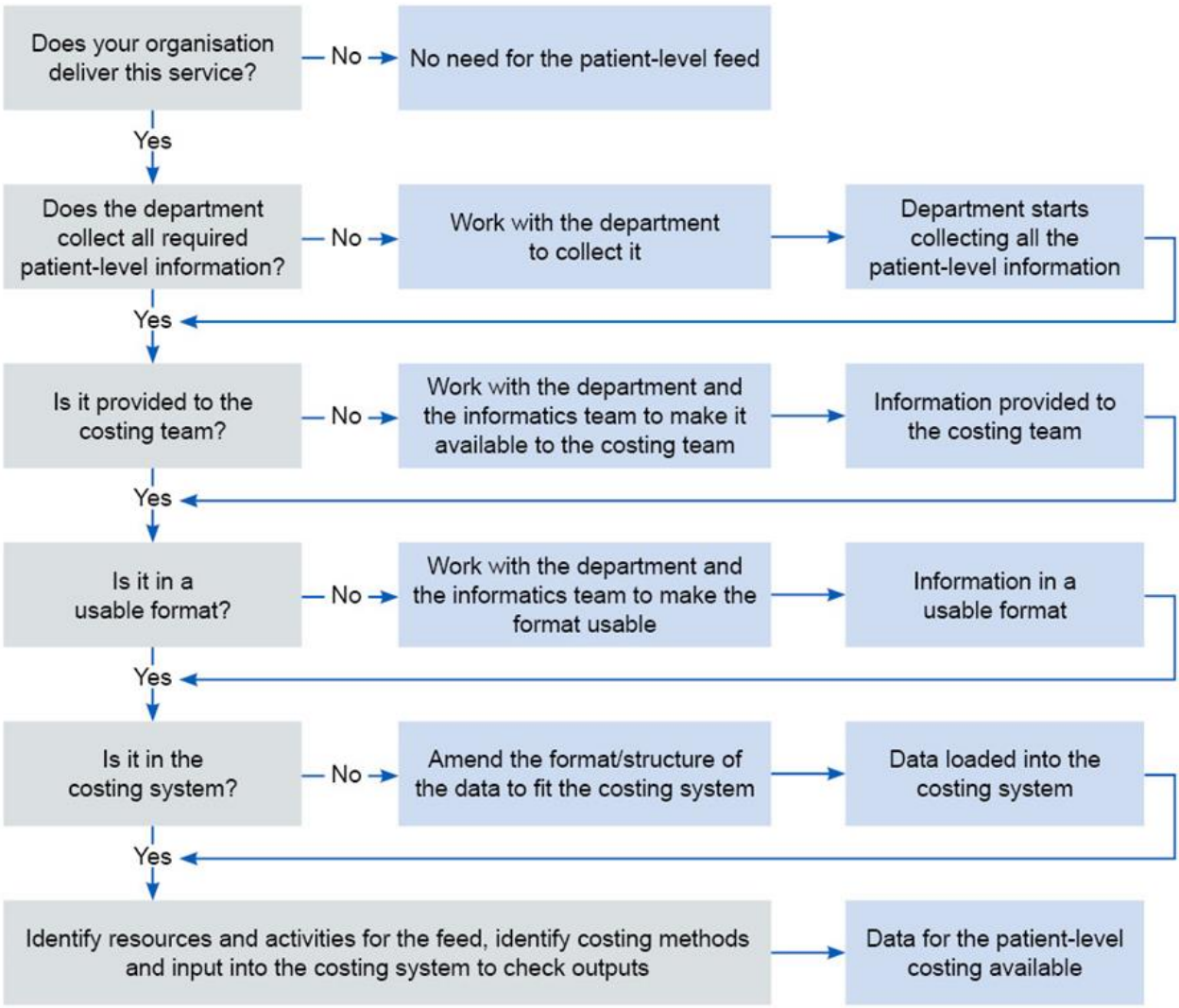
53. Figure IR2.2 helps you identify why patient-level activity information may not be available and the action you will need to take to make it available.

[19] For further guidance on ensuring the quality of the medicines dispensed feed, see Acute standard CM10: Pharmacy and medicines.

Acute information requirements

54. Until the data becomes available, you will need to use an alternative costing method to allocate costs, eg relative weight values.[20]

Figure IR2.2: Making data available for costing



[20] See Integrated standard CP3: Appropriate cost allocation methods for further information on relative weight values.

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 Publication code: CG 13/19