NHS WALES INFORMATICS SERVICE

CRITICAL CARE DATA SET

DATA QUALITY STANDARDS

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Document History

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Approvals

This document requires the following approvals:

Name	Date of Approval	Version
Pam Hall – Head of Information, NHS Wales Informatics Service	16/02/2012	3

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Distribution

This document has been distributed to:

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Eluned Cousins – Operations Manager, NHS Wales Informatics Service		
Tim O'Sullivan – Business Intelligence Manager, NHS Wales Informatics Service	17/02/2012	3
Heidi Rosenberg – Information Change Lead, NHS Wales Informatics Service		
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Wales Cancer Surveillance and Intelligence Unit		
WG – Head of Information Standards		
WG – Health Statistics and Analysis Unit		
WG – Resources Directorate		
WG – Performance and Operations		

Contents

1.   PURPOSE

1.1   The purpose of this document is to outline the data validity and consistency standards for patient level activity data submitted to the critical care national database via the Critical Care Minimum Data Set (CCMDS). The aim is to ensure that the indicators themselves, and the means by which performance against them is reported, are consistent with those that have already been developed for Admitted Patient Care (APC), outpatient activity and Emergency Department Data Set (EDDS) activity and Outpatient Referral (OPR) data.

1.2   For the purposes of this document and associated recommendations, data validity can be defined as being concerned with whether submitted data is provided in the agreed format and is populated with a nationally-agreed value, as defined in the NHS Wales Data Dictionary. Data consistency can be defined as being concerned with whether *related* data items within CCMDS are consistent with one another. For example, a record that indicates a CCMDS record where the critical care discharge ready date is later than the critical care discharge date can be considered to be inconsistent and would require investigation and correction.

2.   BACKGROUND

2.1   One of the objectives of the NHS Wales Informatics Service (NWIS) is to improve confidence in information, leading to it being actively used to inform service improvement. An essential component of this aim is the quality of the data that is being used to support decision making within the service.

2.2   The CCMDS was mandated via Welsh Health Circular (WHC), effective from 16th February 2007[1]. LHBs are required to submit monthly extracts detailing critical care activity to the national database, through the NHS Wales Informatics Service (NWIS) via the NHS Wales Data Switching Service (NWDSS). The data set was initially designed to meet the relevant information needs of the all-Wales Critical Care Development Group of the (then) Welsh Assembly Government (AWCCDG), for which there was an absence of high quality data. A sub group of AWCCDG was established to focus on these information gaps. The sub group concluded that the absence of high quality routine data would jeopardise progress in Wales and would handicap the development of sound government policy, service provision and future planning in respect of the delivery of high quality critical care services.

2.3   Since 2007, the Corporate Health Information Programme (CHIP), now part of NWIS, has developed a revised approach to tackling data quality. The general approach is described in the document *"Admitted Patient Care National Database – Data Validity Standards"[2].* Six 'dimensions' of data quality were identified, and the need to address each was highlighted if the service is to understand how good (or bad) its data is. To this end, a set of data validity standards were developed for APC activity data[3], which aimed to address the dimensions of timeliness and validity. In April 2009, a set of data consistency standards were also mandated for APC activity data[4]. Similarly, data validity standards have also since been developed for

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[1] WHC(2007)006
[2] http://howis.wales.nhs.uk/sites3/Documents/460/APC%5FNational%5FDatabase%5FData%5FValidity%5FStandards.pdf
[3] WHC (2008) 007
[4] EH/ML/005/09

outpatient activity[5], OPR [6] and EDDS data[7]. A range of data consistency standards have recently been approved in respect of OPR data, whilst similar standards are also in the process of being developed for outpatient activity and EDDS data.

2.4   This document aims to identify and evaluate any current data quality checking processes or national programmes in relation to critical care data. This includes the evaluation of any such processes currently in place in other UK countries. It goes on to outline a proposed set of data validity and consistency standards for critical care data based on these comparisons and from feedback on the proposals from the NHS in Wales.

3.   THE APPROACH

3.1   It is essential that data being used for corporate purposes is deemed "*fit for purpose*". This fact is applicable to any data that is utilised by the service for secondary analysis purposes.

3.2   Using the principles outlined in the document *"Admitted Patient Care National Database – Data Validity Standards"*, it was deemed necessary to develop a set of data validity and consistency standards for critical care data. These will be used as one of the measures of the quality of submitted critical care data being used for corporate uses.

3.3   As with the work carried out in developing the APC, outpatient activity, OPR and EDDS data validity standards, research was undertaken to compare any data quality reports and documentation currently available to the service to determine what data items were being monitored for validity and consistency, how they were being monitored and to whom this information was being reported. This research included a comparison with any similar data quality standards in place in both NHS England and NHS Scotland.

3.4   Once identified, a rationale was sought aiming to identify why each data item should be monitored. The all-Wales and regional Critical Care Networks have been consulted in order to understand how critical care data are currently being used to inform critical care planning, performance monitoring and service delivery. Where it appeared that new data quality indicators had been developed, clarification was sought as to how these changes were agreed and by whom.

3.5   The proposed data quality standards were also compared with the checks found within the Validation at Source Service (VASS)[8] with a view to determining the levels of commonality between the two quality assurance processes.

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[5] PMW/THOMAS/BS/OP
[6] PMW/THOMAS/BS/OPR
[7] PMW/THOMAS/BS/EDDS
[8] http://nwdss.hsw.wales.nhs.uk/NwdssMerge/VASS/

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4. FINDINGS

4.1 SUMMARY OF FINDINGS

4.1.1 The CCMDS is a relatively new information standard, which has been developed in order to facilitate the capture of more extensive and rich data in relation critical care, so as to support the information needs of the all-Wales Critical Care Development Group of the Welsh Government.

4.1.2 The data set is designed so as to ensure that appropriate data are collected and submitted for each new critical care episode.

4.1.3 A copy of the CCMDS is shown in **Appendix 1** for information.

4.1.4 The Welsh Information Standards Boards (WISB) made it a requirement of the data set developer that appropriate data quality checking mechanisms should be introduced for the data set. Upon its introduction, a range of data quality checks were implemented into VASS, which enables LHBs / Trusts to review and, where appropriate, correct invalid data at the time of submission. These checks are further described below (see 4.1.12). In introducing the Critical Care data validity and consistency standards proposed in this document, the logic underpinning these checks will need to be reviewed.

4.1.5 To support the implementation of the CCMDS prior to the introduction of these standards, NWIS has been producing an interim critical care data validity report, which is produced on a monthly basis following the submission and processing of LHB extracts of CC data. This report also included one check which could be classified as a data consistency check (see 4.1.15). The report was designed to enable the developer and Data Quality Team in NWIS to be able to focus on any areas that require improvement within each LHB.

4.1.6 A draft copy of the interim critical care data validity report is shown in **Appendix 2** for information.

4.1.7 Across the APC, outpatient activity and EDDS data sets, there are currently two reporting outputs summarising the validity of submitted LHB data. These are:

- APC, outpatient activity, outpatient referrals and EDDS Data Validity Performance Monitoring Reports[9] - Microsoft Excel spreadsheets summarising data validity performance for the financial year-to-date;

- e-WebIndicators[10] - an online portal maintained by NWIS and accessible to anyone who can access the Health of Wales Information Service (HOWIS). It presents a range of information, including data quality reports that incorporate the data validity indicators for APC and outpatient activity data only.

4.1.8 In England, there are a suite of data quality 'dashboards' used to provide NHS Trusts, commissioners, stakeholders and other interested parties with information pertaining to the validity of APC, outpatient, A&E and maternity activity data[11]. The dashboards summarise performance at both a Strategic Health Authority (SHA) and

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[9] http://howis.wales.nhs.uk/sites3/page.cfm?orgid=527&pid=23755
[10] http://eproducts.wales.nhs.uk/Webindicators/
[11] http://nww.connectingforhealth.nhs.uk/reporting-services/data-quality

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NHS Trust level, enabling comparisons to be made across geographical and organisational boundaries.

4.1.9   In England, NHS Trusts submit data for critical care, which is used to derive Health Care Resource Groups (HRGs) to support payment by results. There are separate data sets for Neonatal Critical Care and Paediatric Critical Care.

4.1.10 Within NHS Scotland, Critical Care activity can be recorded using the data item 'Significant Facility' within the Scottish Morbidity Record (SMR) used for costing purposes. NHS Scotland does not routinely collect any other data associated with critical care.

4.1.11 Whilst the NHS England Information Governance (IG) Toolkit has an explicit requirement (#507) for Acute Hospital Trusts to ensure they have passed completeness and validity checks for activity data, at present this only relates to APC and outpatient activity data. There are no specific standards within the IG Toolkit in relation to critical care data.

4.1.12 VASS is an online facility that enables LHBs to validate their dataset extracts prior to their submission to the NHS Wales Data Switching Service (NWDSS). When CCMDS went live, five load checks[12] were introduced on specific data items. These were as follows:

- Invalid Record ID
- Invalid Provider Code
- Invalid CRN
- Invalid CCare Local Identifier
- Invalid Start Date

4.1.13 In addition to these checks on specific data items, a further ten load checks were developed to ensure the data integrity of the critical care national database was maintained. These were as follows:

- Duplicate Record
- No Record to Amend
- Record Being Deleted does not Exist
- Provider Code Not Active
- More than one bulk delete record
- Invalid start date in bulk header delete
- Invalid end date in bulk delete header
- End date before start date in bulk header delete
- Invalid account code in bulk header delete
- Bulk header delete not first record

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[12] A load check is a distinct VASS check that detects key data integrity errors in submitted activity. The presence of a load error on a submitted record results in the rejection of the whole record from the data upload.

4.1.14 There are currently 21 data validity checks within VASS for critical care data. These are as follows:

- Invalid NHS Number
- Invalid or Inactive Postcodes
- Invalid Sex Code
- Invalid Site Code of Treatment
- Invalid Treatment Function Code
- Invalid Admission Source
- Invalid Source Location
- Invalid Admission Type
- Invalid / Inactive GP Practice Code
- Invalid Spell ID
- Invalid Unit Function Code
- Invalid Unit Bed Configuration
- Invalid Discharge Date
- Invalid Discharge Ready Date
- Invalid Discharge Status
- Invalid Discharge Destination
- Invalid Discharge Location
- Invalid Level 2 days
- Invalid Level 3 Days
- Invalid Deaths and Discharge Data
- Invalid Date of Birth

4.1.15 There is one check by definition that is a data consistency check:

- Invalid Deaths and Discharge Data

4.2   SUMMARY OF SERVICE FEEDBACK

4.2.1 The consultation was completed on Thursday 22nd March 2012. A total of 8 individual responses had been received. A summary of the organisations from which a response was received is shown below:

- Abertawe Bro Morgannwg ULHB;
- Aneurin Bevan LHB;
- Betsi Cadwaladr ULHB;
- Hywel Dda LHB;
- South Wales Critical Care Network;
- Welsh Cancer Intelligence & Surveillance Unit;
- Welsh Government.

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4.2.2   Of the feedback that was received, there was all-round support for the introduction of the data quality checks for critical care activity data.

4.2.3   A few significant issues, however, were raised. These were as follows:

4.2.3.1   A query was raised asking whether it was possible to resubmit corrected critical care data through NWDSS. This was confirmed by the NWIS Data Acquisitions team.

4.2.3.2   It was suggested that the reports produced as a result of these checks should become standing agenda items for the Heads of Information Group and appropriate subgroups, and should also be shared with the Critical Care Network (CCN) Managers. It is proposed that the reports resulting from these checks will be used to monitor the quality of the data on a monthly basis and issues will be fed back to LHBs directly and flagged up via the Data Definitions and Compliance Subgroup (DDCSG). These reports will also be made available to LHBs and CCNs online.

4.2.3.3   The wording of the logic used for the checks was questioned. This formulaic form of expressing the logic has been adopted across all new standards documents. It is hoped that this consistent approach will become more recognisable and easy to read over time. The final, published measures (visualised via the Validation At Source Service website) describe the checks in more "normal" terms.

5.   CONCLUSIONS

5.1   To ensure the ongoing quality of the CCMDS, so that it can be used for reasons for which it has been developed, it is considered appropriate to review and update the data quality checking and assurance measures to assess whether it can be considered safe and of sufficient quality to use. This requirement of the developer has been made by the Welsh Information Standards Board (WISB) following initial consideration of the implementation plan.

5.2   The proposal is that a revised set of data quality standards are adopted for submitted critical care data. These indicators will be for validity and consistency and will be applied to all data loaded into the critical care national database by LHBs. The proposed set of indicators has been developed based on indicators that were put in place when the data set was initially developed and discussions and investigations into which data items within the CCMDS are of real corporate value to the service and/or are being used (or could be used) for performance monitoring purposes.

5.2.1   **The full list of data validity indicators for submitted critical care data is shown in Appendix 4.**

5.2.2   **The full list of data consistency indicators for submitted critical care data is shown in Appendix 5.**

5.3   There is a need for LHBs to be able to identify errors in their data against the proposed standards at the point of submission to the NWDSS.

5.4   It is accepted that any set of indicators for critical care data may not be an exhaustive list and are subject to change. It is likely that, as a dataset develops and

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new healthcare initiatives are introduced, it may be necessary to add (or remove) data quality checks to ensure all data items that are of corporate use to the service are fully represented by any data quality performance monitoring, since the corporate/service need is one that is not set in stone, but continually changing.

5.5   It is recommended that all the indicators proposed in **Appendices 4** and **5** have targets associated with them. These will state the required tolerance levels for each data quality indicator, with which LHBs must comply. Wherever possible, these should mirror those established for similar data items as per the APC and other data validity and consistency standards, thus ensuring uniformity in terms of the data items being monitored across data sets and in the targets themselves.

5.6   A standardised set of reports to report data quality performance for critical care data, available via a single, online data quality "portal" on the Health of Wales Information Service (HOWIS), is recommended.

5.7   LHB performance against the new standards should be referenced in any national reports where data quality is escalated to a senior authority for further investigation and corrective action.

6.   RECOMMENDATIONS

In summation the following recommendations are made, and timescales around the implementation of these recommendations are included within **Appendix 6**:

6.1   A revised set of data quality indicators *for validity** should be adopted for submitted Critical Care activity data. These are detailed in Appendix 4.

* A data validity indicator will check whether submitted data is provided in the agreed format and is populated with a nationally-agreed value, as defined in the NHS Wales Data Dictionary.

6.1   A single, standardised set of data quality indicators *for consistency** be adopted for CCMDS activity data. These are detailed in Appendix 5.

* A data consistency indicator will check whether related data items within CCMDS are consistent with one another.

6.2   The reporting of performance against these targets should be standardised via the use of an online reporting tool and a data validity performance monitoring report, to be updated and published monthly. All the data quality reports should be accessible via a single data quality "portal", thus ensuring access to the necessary reports is made easier for interested parties.

6.3   The Validation at Source Service (VASS) should be developed to ensure users are able to identify data validity and consistency errors in their critical care activity data. A further programme of redevelopment will be undertaken to support the future implementation of the data consistency standards.

6.4   Performance against the new standards will be incorporated into appropriate national reports relating to data quality to ensure the Service is held accountable for the data quality of their organisation.

APPENDIX 1

NHS WALES CRITICAL CARE DATA SET

Data Item	Format/Length
Record ID	an1
CONTRACT DETAILS	
Organisation Code (code of Provider)	an5
PATIENT DETAILS	
NHS Number	an10
Case Record Number	an10
Critical Care Local Identifier	An8
Patient's Name	an70 or structured name with 2 an35 elements
Patient's Usual Address	an175 (5 lines each an35)
Postcode of Usual Address	an8
Sex	n1
Date of Birth	ccyymmdd
Code of Registered GP Practice	an6
Ethnic Group	an2
CRITICAL CARE PERIOD DETAILS	
Hospital Provider Spell Number	an12
Administrative Category	N2
Treatment Function Code	N3
Site Code (of Treatment)	An5
Critical Care Start Date	ccyymmdd
Critical Care Start Time	hh.mm.ss
Critical care Unit Function	an2
Unit Bed Configuration	an2
Critical Care Admission Source	an2
Critical Care Source Location	an2
Critical Care Admission Type	an2
Advanced Respiratory Support Days	n3
Basic Respiratory Support Days	n3
Advanced Cardiovascular Support Days	n3
Basic Cardiovascular Support days	n3
Renal Support days	n3
Neurological Support Days	n3
Gastro-Intestinal Support Days	n3
Dermatological support days	n3
Liver support days	n3
Organ Support Maximum	an2
Critical Care Level 2 days	n3
Critical Care Level 3 days	n3
Critical Care Discharge Status	an2
Critical Care Discharge Destination	n2
Critical Care Discharge Location	an2

Critical Care Discharge Ready Date	ccyymmdd
Critical Care Discharge Ready Time	hh.mm.ss
Critical Care Discharge Date	ccyymmdd
Critical Care Discharge Time	hh.mm.ss

Format / Length Code Key

Code	Description
n	Numeric Field
an	Alphanumeric Field
ccyymmdd	Date Field (e.g. 31st March 2007 = 20070331)

APPENDIX 2

INTERIM CRITICAL CARE DATA VALIDITY REPORT

Data Loaded During: Nov 2011
Report Generated: 15 Nov 2011

Summary & Load Errors

Summary					Load Errors								
Trust	Records Submitted	Records Loaded	Records Rejected	Records Deleted	Invalid Record ID	Invalid Provider Unit Code	Missing Case Record Number	Missing Critical Care Local Identifier	Invalid Critical Care Start Date	No Record to Amend	Duplicate Record	Record to be deleted does not exist	Provider code not active
ABM ULHB - Morriston Hospital	576	576	0	0	0	0	0	0	0	0	0	0	0
ABM ULHB - Princess of Wales	274	274	0	0	0	0	0	0	0	0	0	0	0
ABM ULHB - Singleton Hospital	212	212	0	0	0	0	0	0	0	0	0	0	0
Aneurin Bevan LHB - Nevill Hall	38	38	0	0	0	0	0	0	0	0	0	0	0
Aneurin Bevan LHB - Royal Gwent	67	67	0	0	0	0	0	0	0	0	0	0	0
Betsi Cadwaladr ULHB - Central Area	47	47	0	0	0	0	0	0	0	0	0	0	0
Betsi Cadwaladr ULHB - East Area	59	59	0	0	0	0	0	0	0	0	0	0	0
Betsi Cadwaladr ULHB - West Area	39	39	0	0	0	0	0	0	0	0	0	0	0
Cardiff & Vale ULHB	885	885	0	0	0	0	0	0	0	0	0	0	0
Cwm Taf LHB - Prince Charles	26	26	0	0	0	0	0	0	0	0	0	0	0
Cwm Taf LHB - Royal Glamorgan	48	48	0	0	0	0	0	0	0	0	0	0	0
Hywel Dda LHB - Ceredigion	25	25	0	0	0	0	0	0	0	0	0	0	0
Hywel Dda LHB - Prince Phillip	10	10	0	0	0	0	0	0	0	0	0	0	0
Hywel Dda LHB - West Wales General	78	78	0	0	0	0	0	0	0	0	0	0	0
Hywel Dda LHB - Withybush Hospital	35	35	0	0	0	0	0	0	0	0	0	0	0
Grand Total	2419	2419	0	0	0	0	0	0	0	0	0	0	0

Loaded Records VAS Errors - Phase 1

Summary		Phase 1 Data Items											
Trust	Records Loaded	Valid NHS Number		Valid Postcode		Valid Sex Code		Valid Date of Birth		Valid Site Code of Treatment		Valid Treatment Function Code	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
ABM ULHB - Morriston Hospital	576	573	99	574	100	576	100	576	100	576	100	573	99
ABM ULHB - Princess of Wales	274	274	100	274	100	274	100	274	100	274	100	273	100
ABM ULHB - Singleton Hospital	212	212	100	212	100	212	100	212	100	212	100	212	100
Aneurin Bevan LHB - Nevill Hall	38	38	100	38	100	38	100	38	100	38	100	38	100
Aneurin Bevan LHB - Royal Gwent	67	67	100	67	100	67	100	67	100	67	100	67	100
Betsi Cadwaladr ULHB - Central Area	47	47	100	47	100	47	100	47	100	47	100	46	98
Betsi Cadwaladr ULHB - East Area	59	59	100	59	100	59	100	59	100	59	100	59	100
Betsi Cadwaladr ULHB - West Area	39	37	95	39	100	39	100	39	100	39	100	39	100
Cardiff & Vale ULHB	885	788	89	876	99	885	100	885	100	885	100	885	100
Cwm Taf LHB - Prince Charles	26	25	96	26	100	26	100	26	100	26	100	25	96
Cwm Taf LHB - Royal Glamorgan	48	48	100	47	98	48	100	48	100	48	100	48	100
Hywel Dda LHB - Ceredigion	25	19	76	20	80	25	100	25	100	25	100	19	76
Hywel Dda LHB - Prince Phillip	10	10	100	10	100	10	100	10	100	10	100	10	100
Hywel Dda LHB - West Wales General	78	74	95	72	92	78	100	78	100	78	100	77	99
Hywel Dda LHB - Withybush Hospital	35	34	97	35	100	35	100	35	100	35	100	35	100
Grand Total	2419	2305	95	2396	99	2419	100	2419	100	2419	100	2406	99

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Data Loaded During: Nov 2011
Report Generated: 15 Nov 2011

Loaded Records VAS Errors - Phase 2 Data Items Always Present

Summary		Phase 2 Data Items - Always Present													
Trust	Records Loaded	Valid Spell Number		Valid Unit Function Code		Valid Unit Bed Configuration		Valid Admission Source		Valid Source Location		Valid Admission Type		Valid GP Practice Code	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
ABM ULHB - Morriston Hospital	576	572	99	576	100	576	100	576	100	576	100	576	100	575	100
ABM ULHB - Princess of Wales	274	272	99	274	100	274	100	274	100	274	100	273	100	273	100
ABM ULHB - Singleton Hospital	212	209	99	212	100	212	100	212	100	212	100	212	100	211	100
Aneurin Bevan LHB - Nevill Hall	38	38	100	38	100	38	100	38	100	38	100	38	100	38	100
Aneurin Bevan LHB - Royal Gwent	67	67	100	67	100	67	100	67	100	67	100	67	100	67	100
Betsi Cadwaladr ULHB - Central Area	47	47	100	47	100	47	100	47	100	47	100	47	100	47	100
Betsi Cadwaladr ULHB - East Area	59	39	66	59	100	59	100	59	100	59	100	59	100	59	100
Betsi Cadwaladr ULHB - West Area	39	39	100	39	100	39	100	39	100	39	100	39	100	39	100
Cardiff & Vale ULHB	885	885	100	885	100	885	100	885	100	885	100	881	100	884	100
Cwm Taf LHB - Prince Charles	26	0	0	26	100	26	100	26	100	26	100	24	92	11	42
Cwm Taf LHB - Royal Glamorgan	48	0	0	48	100	48	100	48	100	48	100	48	100	46	96
Hywel Dda LHB - Ceredigion	25	0	0	25	100	25	100	20	80	20	80	19	76	20	80
Hywel Dda LHB - Prince Phillip	10	0	0	10	100	10	100	10	100	10	100	10	100	10	100
Hywel Dda LHB - West Wales General	78	0	0	78	100	78	100	78	100	78	100	78	100	78	100
Hywel Dda LHB - Withybush Hospital	35	0	0	35	100	35	100	35	100	35	100	35	100	34	97
Grand Total	2419	2168	90	2419	100	2419	100	2414	100	2414	100	2406	99	2392	99

Loaded Records VAS Errors - Phase 2 Data Items Relating to Discharge

Summary		Phase 2 Data Items - Relating to Discharge															
Trust	Records Loaded	No. of Discharge Date Records	Valid Discharge Date		No. of Discharge Ready Date Records	Valid Discharge Ready Date		No. of Discharge Records	Valid Level 2 Days		Valid Level 3 Days		Valid Discharge Status		Valid Discharge Destination		Valid Discharge Location	
			No.	%		No.	%		No.	%	No.	%	No.	%	No.	%	No.	%
ABM ULHB - Morriston Hospital	576	576	576	100	446	446	100	576	576	100	576	100	576	100	576	100	576	100
ABM ULHB - Princess of Wales	274	274	274	100	224	224	100	274	274	100	274	100	274	100	273	100	274	100
ABM ULHB - Singleton Hospital	212	212	212	100	178	178	100	212	212	100	212	100	212	100	212	100	212	100
Aneurin Bevan LHB - Nevill Hall	38	38	38	100	31	31	100	38	38	100	38	100	38	100	38	100	38	100
Aneurin Bevan LHB - Royal Gwent	67	67	67	100	57	57	100	67	67	100	67	100	67	100	67	100	67	100
Betsi Cadwaladr ULHB - Central Area	47	47	47	100	40	40	100	47	47	100	47	100	47	100	47	100	47	100
Betsi Cadwaladr ULHB - East Area	59	59	59	100	52	52	100	59	59	100	59	100	59	100	59	100	59	100
Betsi Cadwaladr ULHB - West Area	39	39	39	100	34	34	100	39	39	100	39	100	39	100	39	100	39	100
Cardiff & Vale ULHB	885	885	885	100	697	697	100	885	885	100	885	100	885	100	885	100	885	100
Cwm Taf LHB - Prince Charles	26	26	26	100	23	23	100	26	26	100	26	100	26	100	26	100	26	100
Cwm Taf LHB - Royal Glamorgan	48	48	48	100	41	41	100	48	48	100	48	100	48	100	48	100	48	100
Hywel Dda LHB - Ceredigion	25	25	22	88	17	17	100	22	22	100	22	100	20	91	20	91	20	91
Hywel Dda LHB - Prince Phillip	10	10	10	100	7	7	100	10	10	100	10	100	10	100	10	100	10	100
Hywel Dda LHB - West Wales General	78	78	78	100	69	69	100	78	78	100	78	100	78	100	78	100	78	100
Hywel Dda LHB - Withybush Hospital	35	35	35	100	30	30	100	35	35	100	35	100	35	100	35	100	35	100
Grand Total	2419	2419	2416	100	1946	1946	100	2416	2416	100	2416	100	2414	100	2413	100	2414	100

As Critical Care MDS allows for unfinished periods of care to be recorded, VAS checks for data items relating to discharge are only applied under certain circumstances.

No. of Discharge Date Records — Number of records where either a discharge date has been submitted or any of discharge destination, discharge location or discharge status have been submitted.
No. of Discharge Ready Date Records — Number of records where a discharge ready date has been submitted.
No. of Discharge Records — Number of records where a discharge date has been submitted that is a real date.

These totals are used to calculate the percentage of valid records for the relevant data item to ensure consistency with the Critical Care VAS rules.

Note: Carmarthen unable to submit some Spell Numbers due to timings between extracts from Myrddyn and Medicus

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APPENDIX 3

CONSULTATION FEEDBACK

#	Name	Organisation	Date of Email	Feedback	Action	Comments	Completed?
1	Richard Bowen	WG	20/02/2012	Helpful thanks	None		N/A
2	Anthony Tracey	Hywel Dda LHB	24/02/2012	I can confirm that Hywel Dda is happy with the proposed checks contained within the document. Could you confirm that we are able to supply resubmission if necessary?	Check with the Acquisitions Team and respond to Anthony	Confirmation received from the Acquisitions Team that resubmissions are permitted.	Yes
3	Dilwyn Bull	Aneurin Bevan LHB	09/03/2012	We are happy with the proposed data quality indicators, they are all logical and seem eminently sensible.	None		N/A

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| 4 | Terry Gill | WG | 09/03/2012 | I am sure these 2 pieces of the 'data quality jigsaw' will add some value and generally we support their introduction. However, our view is that it falls considerably short in terms of providing the necessary assurance that the data being used for analysis - i.e. for benchmarking, performance monitoring - is both comparable across (and within) organisations and fit for purpose.
Our main concerns are about ensuring;
1. organisations capture all CCMDS activity consistently according to the broad definition to ensure the basic activity (CC episodes, CC DToCs, etc) count is accurate; and 2. consistent/complete capture of critical business data items such as start/discharge times, CC levels, discharge status, etc according to the definitions provided. I appreciate the type of data 'policing' work required to address and monitor the situation as described above is time consuming and difficult and does not lend itself to the automated process approach used for data validity indicators and the data consistency indicators proposed here. However, our contention is that it is the foundation on which the EDDS is built and until these fundamental issues are addressed such indicators have a limited value and in most cases do not provide a true reflection of data quality.
We are also concerned that a 98% compliance is proposed across the validity and consistency standards and query why this is not 100%. What is the rationale behind this and why is this different to the EDDS (data consistency) standards which are100%? | Response required | | Yes |
| 5 | Shelagh Reynolds | Welsh Cancer Intelligence & Surveillance Unit | 12/03/2012 | Rather than a Nil return I thought I'd reply that this will be not applicable to WCISU. | None | | N/A |

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6	Deborah Usher	ABM ULHB	12/03/2012	Having read through the proposed checks, it is in line with other dataset validity checks and the suggested consistency checks are logical.	None		N/A
7	Geraint Parry	BCULHB	14/03/2012	BCU Health Board is supportive of all these checks and does not wish to propose any further checks. We welcome the availability of the proposed online reporting tool, and would like the ability to drill down into the detail of our own organisation's data, whilst also being able to view summary data for other Health Boards in Wales. If not already planned we would recommend that the national reports on these become standing agenda items for Heads of Information and appropriate sub-groups. These reports should also be shared with the Critical Care Networks – important to note is that the Information Department acts as a conduit for submitting this dataset but has very little involvement. Whilst there may be a role in supporting the consistency of this data, the ownership lays elsewhere. Therefore engagement with the network is crucial.	None		N/A
8	Zoe Goodacre	South Wales Critical Care Network	22/03/2012	On the whole, we're supportive of the standards and particularly welcome the use of an online portal through which we, as interested parties, can access the data validity reports. We also support the revised quality indicators and think that these will help to assure users of the validity of the data. In particular, the consistency measures are helpful, although the way in which these are expressed is not very clear and it took us sometime to work out what was meant. We are assuming that, for example, the date of birth cannot be after the date of admission to critical care, but we are still not entirely clear. Finding a way to express	Response required Incorporate Response into document text Amend document to improve clarity		Yes

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					that in plain English would be very helpful.			
					It was unclear from the document whether the Critical Care Data Validity Standards were intended to replace the VASS reports or supplement them. They are both referred to throughout the document but they seem in some places to be used interchangeably.			
					Throughout the document, there are several references to data being linked to targets, but we are not clear what is meant by a target in this context.			
					We don't know what the data item "site code (of treatment)" is. We thought initially that it might refer to the unit identifier or the organisation identifier or maybe even the type of support days but it's not any of these. I'd be grateful if you could clarify what this refers to.			
					With respect to the name of the document and the way the dataset is referenced throughout, we would rather it be changed to Critical Care Minimum Dataset (CCMDS) is in line with DSCN (2006) 14.			

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APPENDIX 4

PROPOSED CRITICAL CARE DATA VALIDITY STANDARDS

Data Item / Quality Indicator	Why monitor this data item for quality?	Target (% Valid)
Record ID	To ensure record id is correctly recorded	[L]
Organisation Code (code of Provider)	Enables Corporate analysis of activity by provider	[L]
NHS Number	If incorrect, activity may be assigned to the wrong health record. Central to the Informing Healthcare (IHC) and Individual Health Record (IHR) projects.	95%
Case Record Number	This data item must be present	[L]
Critical Care Local Identifier	To identify a critical care period, there may be differing periods for different patients which must be uniquely coded.	[L]
Postcode of Usual Address	Essential for epidemiology studies and resource allocation investigation. Provides detailed information as to the geographical distribution of patients attending for outpatient appointments,	98%
Sex	Used for epidemiology studies and also used in the tracing and verification of the NHS number.	98%
Birth Date	Essential for calculating age-based indicators. Used in studies looking at activity rates within various age groups and can also be used to look at casemix by age. Also used in the tracing and validation of the NHS number.	98%
Code of Registered GP Practice	Ensures that communication is sent to the correct GP. Also enables corporate analysis of admitted patient activity at GP practice level. Important for epidemiology and cross-border commissioning.	98%
Ethnic Group	Important for clinicians epidemiology studies. Enables service and healthcare planning within ethnic groups.	98%
Hospital Provider Spell Number	If incorrect the hospital provider spell will be unidentifiable (no linkage to APC possible)	98%
Administrative Category	Enables corporate analysis of activity by patient type – NHS patient, private patient etc.	98%
Treatment Function Code	Monitoring activity, if incorrect activity will be omitted from specialty based analysis	98%
Site Code (of Treatment)	Enables corporate analysis of activity by hospital site If incorrect, the activity will be omitted. Given that individual critical care units do not have their own (nationally-recognised) site code, the hospital site codes are used as a proxy.	98%
Critical Care Start Date	Used for monitoring average length of stay, delayed transfers of care	[L]
Critical Care Start Time	Used for monitoring average length of stay, delayed transfers of care	98%
Critical Care Unit Function	Used for monitoring activity, planning, performance	98%
Unit Bed Configuration	Understanding unit function and activity	98%
Critical Care Admission Source	Used for monitoring activity, planning, performance	98%
Critical Care Source Location	Used for monitoring activity, planning, performance	98%

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Data Item / Quality Indicator	Why monitor this data item for quality?	Target (% Valid)
Critical Care Admission Type	Used for monitoring activity, planning, performance	98%
Advanced Respiratory Support Days	Used for monitoring activity, planning, performance	98%
Basic Respiratory Support Days	Used for monitoring activity, planning, performance	98%
Renal Support Days	Used for monitoring activity, planning, performance	98%
Neurological Support Days	Used for monitoring activity, planning, performance	98%
Gastro-Intestinal Support Days	Used for monitoring activity, planning, performance	98%
Dermatological Support Days	Used for monitoring activity, planning, performance	98%
Liver Support Days	Used for monitoring activity, planning, performance	98%
Organ Support Maximum	Used for monitoring activity, planning, performance	98%
Critical Care Level 2 Days	Used for monitoring activity, planning, performance	98%
Critical Care Level 3 Days	Used for monitoring activity, planning, performance	98%
Critical Care Discharge Status	Used for monitoring activity, planning, performance	98%
Critical Care Discharge Destination	Used for monitoring activity, planning, performance	98%
Critical Care Discharge Location	Used for monitoring activity, planning, performance	98%
Critical Care Discharge Ready Date	Used for monitoring activity, planning, performance, delayed transfers of care	98%
Critical Care Discharge Ready Time	Used for monitoring activity, planning, performance. delayed transfers of care	98%
Critical Care Discharge Date	Used for monitoring activity, planning, performance, delayed transfers of care	98%
Critical Care Discharge Time	Used for monitoring activity, planning, performance, delayed transfers of care	98%

A data validity indicator will check whether submitted data is provided in the agreed format and is populated with a nationally-agreed value, as defined in the NHS Wales Data Dictionary.

* The target refers to the percentage of patient records on the critical care national database that should be correctly populated with an acceptable value for the associated data item at any point in time.

[L] Indicates that the data item will also be classed as a Load Error within VASS. A Load Error is a distinct VASS check that detects key data integrity errors in submitted activity. The presence of a load error on a submitted record results in the rejection of the whole record from the data upload.

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PROPOSED DATA CONSISTENCY INDICATORS FOR CCMDS ACTIVITY DATA

The following table outlines the proposed data consistency indicators. The logic outlines the general reasoning as to the use of such a check and should not be regarded as a complete description of the check itself.

#	Data Item 1	Data Item 2	Data Item 3	Logic	Target (% Consistent)
Date/time checks					
1	Date of Birth	Critical Care Start Date		Date of Birth <= Critical Care Start Date	98%
2	Date of Birth	Critical Care Discharge Date		Date of Birth <= Critical Care Discharge Date	98%
3	Date of Birth	Critical care Discharge Ready Date		Date of Birth <= Critical Care Discharge Ready Date	98%
4	Critical Care Start Date/Time	Critical Care Discharge Date/Time		Critical Care Start Date/Time <= Critical Care Discharge Date/Time	98%
5	Critical Care Start Date / Time	Critical Care Discharge Ready Date/ Time		Critical Care Start Date/Time <= Critical Care Discharge Ready Date/Time	98%
6	Critical Care Discharge Ready Date/Time	Critical Care Discharge Date/Time		Critical Care Discharge Ready Date/Time <= Critical Care Discharge Date/Time	98%
Other Checks					
4	Discharge Location	Critical Care Discharge Status	Discharge Destination	If the patient **died** the values should be as follows: **Discharge Location** - 06 **Discharge Destination** - 06 **Discharge Status** - 08, 09, 10 If the patient was discharged **alive** the values should be: **Discharge Location** - 01, 02, 03, 04, 05, 07, 08, 09, 10 **Discharge Destination** - 01, 03, 04, 05, 51, 52 **Discharge Status** - 01, 02, 03, 04, 05, 06, 07	98%

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#	Data Item 1	Data Item 2	Data Item 3	Logic	Target (% Consistent)
5	Postcode	Local Health Board of Residence		Check to ensure that the submitted 'Postcode' lies within the boundaries of the submitted 'Local Health Board of Residence'.	98%

A data consistency indicator will check whether related data items within the same dataset are consistent with one another.

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<div align="right">**APPENDIX 6**</div>

PROPOSED IMPLEMENTATION PLAN

Recommendation Number	Finding	Recommendation	Timescales*
6.1	It is considered appropriate to introduce data quality checking and assurance measures to assess whether it can be considered safe and of sufficient quality to use.	A single, standardised set of data quality indicators *for validity** and consistency should be adopted for submitted critical care activity data. These are detailed in Appendix 4 and 5.	2012/13
6.2	A standardised set of reports to report data quality performance for critical care data, available via a single, online data quality "portal" on the Health of Wales Information Service (HOWIS), is recommended.	The reporting of performance against these targets should be standardised via the use of an online reporting tool and a data validity and consistency performance monitoring report, to be updated and published monthly. All the data quality reports should be accessible via a single data quality "portal", thus ensuring access to the necessary reports is made easier for interested parties.	2012/13
6.3	There is a need for Trusts/LHBs to be able to identify errors in their data against the proposed standards at the point of submission to the NWDSS.	Validation at Source (VASS) should be developed to ensure users are able to identify data validity and consistency errors in their critical care activity data.	2012/13
6.4	Trust/LHB performance against the new standards should be referenced in any national reports where data quality is escalated to a senior authority for further investigation and corrective action.	Performance against the new standards will be incorporated into appropriate national reports relating to data quality to ensure the Service is held accountable for the data quality of their organisation.	2012/13

* The timescales stated are subject to change depending on agreement being reached between Welsh Government and NWIS as to the authorisation and prioritisation of the development work required to support the introduction of the critical care data validity and consistency standards and their associated reporting and monitoring tools (e.g. VASS).

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