aroc

Australasian Rehabilitation Outcomes Centre

AROC TECHNICAL GUIDELINES FOR IT DEVELOPERS

AMBULATORY V4.1 DATASET (IMPLEMENTED JULY 2017)

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WHAT IS AROC?

The Australasian Rehabilitation Outcomes Centre (AROC) is a joint initiative of the Australian rehabilitation sector (providers, funders, regulators and consumers). It commenced operation on 1 July 2002. With the support of its industry partners, AROC has been established by the Australasian Faculty of Rehabilitation Medicine (AFRM) of the Royal Australasian College of Physicians (RACP). A business plan for AROC to run as a not-for-profit self-funding organisation was developed by an AROC Planning Group, consisting of representatives from across the sector.

The purpose and aims of AROC were established as, and continue to be:
Develop a national benchmarking system to improve clinical rehabilitation outcomes in both the public and private sectors.
Produce information on the efficacy of interventions through the systematic collection of outcomes information in both the inpatient and ambulatory settings.
Develop clinical and management information reports based on functional outcomes, impairment groupings and other relevant variables that meet the needs of providers, payers, consumers, the States/Commonwealth and other stakeholders in both the public and private rehabilitation sectors.
Provide and coordinate ongoing education, training and certification in the use of the FIM and other outcome measures.
Provide annual reports that summarise the Australasian data.
Develop research proposals to refine the selected outcome measures over time.

The development of the AROC Version 4.1 data set has evolved after consultation with rehabilitation providers and representatives of peak organisations from across Australia. Where possible, National Health Data Dictionary definitions have been used. Rehabilitation services participating in AROC routinely collect data and submitted to the AROC Database.

AROC is funded by a combination of a Subscription model and a User Pays model. Members of AROC pay an annual subscription fee for which they receive a number of core services. AROC also provides additional services on a User Pays basis.

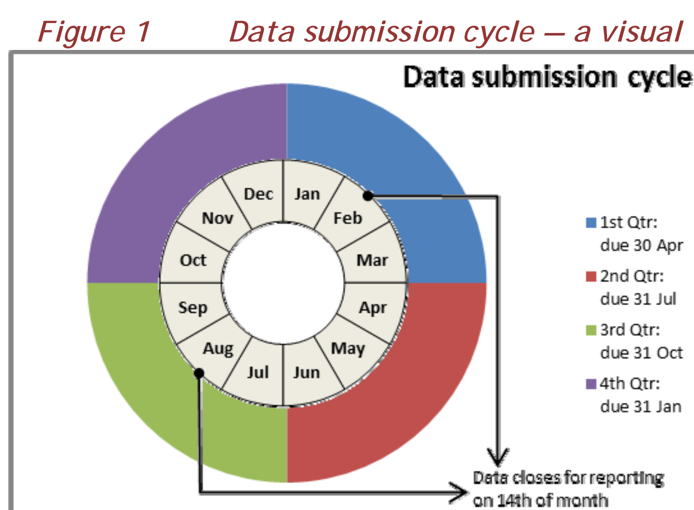
DATA SUBMISSION AND REPORTING CYCLE

Data is expected to be submitted quarterly to AROC, however many services submit their data monthly to stay on top of their data quality and to use the online data reporting facilities available through AROC Online Services (AOS). Data may be submitted to AROC by direct data entry into AOS or via an upload to AOS of data extracted from the services own data entry system.

Services using AOS Data Entry are given error checks at the point of data entry, and can print the individual patients audit report and/or summary page for case meetings.

For services uploading data to AROC the process is iterative. First services create an AROC data extract using their data entry system based on episode discharge dates. Then upon uploading their data extract into AOS they receive a data audit, and are given the opportunity to amend their data, if required. Once corrected the data are again extracted and uploaded to AROC, to undergo the same process. This process of error checking may be required to happen multiple times until the data are free of errors or the service determines that any remaining errors cannot be fixed.

Figure 1 Data submission cycle – a visual



Following data submission AROC runs benchmark reports twice a year:

- Calendar year for the most recent Jan 01 - Dec 31 period (Reporting data closes Feb 14)
- Financial year for the most recent Jul 01 - Jun 30 period (Reporting data closes Aug 14)

After the closing date for the reporting data, AROC makes a copy of the live data and commences the reporting process. As part of the reporting process inpatient data are concatenated, data items for reporting are calculated (e.g. AN-SNAP class, length of stay, age on admission, FIM total scores) and then individualised benchmark reports are generated for participating services.

For more information on AROC visit ahsri.uow.edu.au/aroc

The AROC Version 4.1 Dataset Structure

As with previous versions of the AROC dataset, Version 4.1 consists of Patient and Episode level data submitted in one flat file. The Version 4.1 dataset has only one care pathway:

- Pathway 4 – Adult: Ambulatory rehabilitation

Patient level data

Conceptually, the items collected at the patient level should not change, such as Unique Record Number (URN), Date of Birth (DOB) and Sex.

Episode level data

For the purposes of AROC, an episode of care is defined as a continuous period of care for a patient in one setting. In the Version 4.1 Dataset this setting is ambulatory rehabilitation.

To clarify this, an episode of Rehabilitation care begins on the day the patient is admitted to the Rehabilitation care provider.

The way an episode of Rehabilitation care ends depends on the setting in which the care is being provided. In the ambulatory setting, an episode ends if the patient:

- Is discharged from the care of the service
- Is admitted/transferred to hospital as an overnight patient (inpatient)
- Dies
- Patient discharges at own risk

Under this definition, a patient receiving rehabilitation care can have more than one episode of care.

Conceptually, the information collected at the episode level reflects the circumstances at the beginning and end of the particular episode. This information may be different in subsequent episodes.

MINIMUM IT SYSTEM FUNCTIONALITY

An IT system incorporating the AROC Version 4.1 dataset should, at a minimum, allow users to:

- Create linked Patient and Episode records
- Enter all required AROC data items, as per the data rules specified by AROC, for the pathway(s) being collected
- Extract data from the system in the format required by AROC
- Search for records in order to complete, update or correct entered data

The IT system should also incorporate the business rules outlined by AROC, to ensure that data entry errors are minimised.

The structure of AROC data at the Patient and Episode level determines the processes for data entry. Users will create one flat file combining information from both Patient and Episode data:

Table 1 The Patient and Episode Data Relationship

Record	Unique Identifier	Linked to	Linked by
Patient	Unique Record Number (URN)		
Episode	Episode end date	Patient	URN

Developers can choose the structure in which they wish to store AROC data. However the linking between Patient and Episode records must be considered, along with the data item and extract requirements (Specifications 1 and 2 in this document).

A typical data entry procedure where the rehabilitation was completed within the one episode would be:

1 A new Patient Record is created and the information is entered into the system

2 The patient's *first* Episode Record is created and **episode start** information is entered

3 The **episode end** information is entered in the Episode Record.

4 If a patient were to have a subsequent episode of care a user would search for the Patient Record and begin at step 2 with the *next* episode.

A user may also use the system to view and amend data. Users should be able to search for records using:

- A combination of Patient and Episode Identifiers, depending on the type of record
- Service and Team Identifiers
- Episode Start Date and End Dates

Items that do not change (e.g. service in most cases) or are system generated (e.g. new patient identifier) should not be editable by the user.

SUMMARY OF CHANGES BETWEEN THE AROC VERSION 4.0 AND VERSION 4.1 AMBULATORY DATASET ITEMS

This section provides a broad overview of the new data items and changes to existing items between AROC Version 4.0 and Version 4.1 Ambulatory datasets. To summarise the main changes are:

At Patient Level:

- No patient level items have been added, modified or removed

At Episode Level:

- New items added are:
  - **NDIS status** (Australia only)
  - **Did the patient have any cognitive impairment which impacted on their ability to participate in rehabilitation?**
  - **Was the patient able to return to pre-impairment leisure and recreational activities?**
  - **Was rehabilitation aimed at Upper limb function** (Stroke only)
  - **Motor Assessment Scale - Upper Limb** — at episode begin and end (Stroke only)
  - **Was rehabilitation aimed at Gait training** (Stroke only)
  - **10 metre walk test** — at episode begin and end (Stroke and Orthopaedic)
  - **Was rehabilitation aimed at Aphasia**
  - **Mayo Portland Adaptability Index 4 (MPAI-4)** — at episode begin and end (Brain only)
  - **De Morton Mobility Index (DEMMI)** — at episode begin and end (Reconditioning only)
  - **Goal Attainment Scale** — at episode begin and end (Optional - all impairments)

- The following items have been modified:
  - **Path** has a reduced code set (only one care path collected in V4.1)
  - **Date of relevant inpatient episode** used to be called *Date of relevant acute episode* (contents of this item unchanged)
  - **Type of accommodation prior to this impairment** has a reduced code set
  - **Final destination** has a reduced code set
  - **Mode of episode end** has a reduced code set

- The following items are no longer collected:
  - Assessment date
  - Date clinically ready for rehab
  - Was there a delay in episode start + reasons
  - Were any services being received within the month prior to this impairment + services
  - Were any services being received during this ambulatory episode + services
  - Date clinically ready for discharge
  - Was there a delay in discharge + reasons
  - Will discharge plan be available to patient prior to discharge
  - Interim accommodation post episode end
  - Will any services be received post discharge + services
  - Level of SCI at episode end
  - Ventilator dependent at episode end
  - Rockwood frailty score (pre-morbid)
  - Has patient fallen in the last 12 months?
  - Has patient lost >10% of their body weight in the last 12 months?

Refer to SPECIFICATION 3: MAPPING FROM VERSION 4.0 TO VERSION 4.1 AMBULATORY DATASET for explicit details on the modified code sets.

SPECIFICATION 1: AROC VERSION 4.1 AMBULATORY DATA DICTIONARIES

The AROC Version 4.1 Ambulatory Dataset Data Dictionaries are designed with different audiences in mind:

Clinician Data Dictionary (AU and NZ versions)

This dictionary provides a clinical perspective of the AROC dataset through clinical guidelines and justifications for why each item is included for anyone involved in the collection of AROC data (e.g. rehabilitation clinicians, allied health staff, rehabilitation service managers) and/or data entry. Separate guidelines specific to the ambulatory outcome measures used in the dataset are also available from the AROC website: https://ahsri.uow.edu.au/aroc/ambulatorydataset

Data Analysts Data Dictionary

This dictionary provides researchers with an understanding of the AROC dataset for the purpose of analysis and includes the definitions and value ranges of all items in the AROC dataset, including calculated fields generated at the point of benchmark reporting.

Developers Data Dictionary (AU and NZ versions)

This dictionary provides full technical details required by IT developers to modify IT systems to collect the AROC Version 4.1 ambulatory dataset, including business rules and dependencies. The technical guidelines are not prescriptive in how applications should be created but specify the required clinical inputs and data extract format that AROC requires in order for data to be accepted into the AROC database.

The data dictionaries are available from the AROC website at:

https://apps.ahsri.uow.edu.au/confluence/display/AD/AROC+Data+Dictionaries

SPECIFICATION 2: AROC VERSION 4.1 AMBULATORY DATA EXTRACTION

Rehabilitation services participating in AROC submit data for reporting a minimum of four times a year. As a result, users will require an interface that allows them to:

1. Specify a "date range" for the data to be extracted
2. Extract their data in the predefined format specified by AROC
3. Save the extracts in a predefined file type to a local drive

File Type

The AROC Database requires the V4.1 data extract to be submitted in a TAB delimited file format. The extract can contain more than one services' data, however, adult ambulatory data (pathway 4) needs to be submitted in a separate extract file to adult inpatient pathways (1-3).

In the AROC 4.1 extract:

- There should be no header row
- There should be one, and only one, row for each episode of rehabilitation
- Each data item should begin at the begin tab position & end at the end tab position as per the Developers Data Dictionary in Specification 1
- Each row should be 217 tab characters wide
- All codesets are numeric
- Where there is no value (i.e. conditional rules mean this data item is not relevant to this episode of rehabilitation) the column should be left blank.
- Alphanumeric and date data are left justified, and numeric data are right justified.
    - Always use zeros in dates where the value is less than 10 (i.e. 7th is 07 not just 7).
    - Unless otherwise specified in the data dictionary alphanumeric items should be limited to the 26 alphabetic characters (upper or lower case), 10 numerals and standard punctuation marks, such as - – —. , : ; ( ) / '
    - DO NOT USE carriage returns, tabs or double quotes in alphanumeric items.

Extract File Naming Convention

AROC data extract files should conform to the following naming convention:

Adult Ambulatory 4.1 extract: AROCServiceNameYYYYMMDDV4.1.TXT

Where:

- **ServiceName**: The name of the service submitting the data (if submitting for multiple services this could be the service group name)
- **YYYYMMDD**: The date the extract was created - four digit year, two digit month, two digit day eg. 13 August 2016 would be represented as 20160813
- **V4.1**: The version of the AROC ambulatory data set being submitted.

Time period of data to be submitted to AROC

When creating the AROC extract data, it is recommended it include the most recent 12 months of completed episodes. For example, if your service is submitting data on 13 August 2017 and the most recent entered episode ended on 15 July 2017, your extract would include all episodes ending between 16/07/2016 and 15/07/2017 (inclusive). This ensures AROC always has the most up to date and accurate data possible.

Some services prefer to submit their data monthly sending one month at a time – if this is the case it is imperative that updated data is resubmitted and no month is forgotten. In this situation services will need to be able to enter an end of episode date range to select their data. Services can log in to AROC Online Services (AOS) to see where their data is up to at any time by clicking DATA…Data Summary.

Specification 3: Mapping from Version 4.0 to Version 4.1 Ambulatory Dataset

This section is useful for IT providers that already collect the ambulatory 4.0 dataset (pathways 4, 5, 6)

- ***Path (Item PATH – Pathway 4)***

In the Version 4.1 dataset there is only one care pathway so all ambulatory episodes will be submitted as pathway 4.

Mapping table:

Version 4.0 – Item Code	Version 4.1 Mapped Code	AU	NZ	Comment
4. Ambulatory direct care	4. Ambulatory rehabilitation	☑	☑	No change
5. Ambulatory shared care	4. Ambulatory rehabilitation	☑	☑	Code changed
6. Ambulatory assessment only	NO MAPPING AVAILABLE	☑	☑	NO MAPPING AVAILABLE

Mapping logic:

if [V3_ Path] = 4 then [V4_ Path] = [V3_ Path]

else if [V3_ Path] = 5 then [V4_ Path] = 4

else if [V3_ Path] = 6 then [V4_ Path] = -1

else [V4_ Path] = -2

Please note: The -1 and -2 codes are not in the permissible code set to be used by clinicians. They are flags used by AROC to indicate missing data – invalid code and not supplied.

- ***Type of accommodation prior to this impairment (Item E11 – Pathway 4)***

In the Version 4.1 dataset this item has had the options reduced. Missing data is not permitted for this item.

Mapping table:

Version 4.0 – Item Code	Version 4.1 Mapped Code	AU	NZ	Comment
1. Private residence	1. Private residence	☑	☑	No change
2. Residential aged care (low level)	2. Residential aged care	☑	☒	No change
2. Rest home	2. Rest home and 24hr nursing	☒	☑	No change
3. Residential aged care (high level	2. Residential aged care	☑	☒	Code changed
3. 24hr nursing care	2. Rest home and 24hr nursing	☒	☑	Code changed
4. Community group home	3. Supported living	☑	☑	Code changed
5. Boarding house	8. Other	☑	☑	Code changed
6. Transitional living	3. Supported living	☑	☑	Code changed
8. Other	8. Other	☑	☑	No change

Mapping logic:

if [V3_ AccomPrior] in (1, 2, 8) then [V4_ AccomPrior] = [V3_ AccomPrior]

else if [V3_ AccomPrior] = 3 then [V4_ AccomPrior] = 2

else if [V3_ AccomPrior] in (4, 6) then [V4_ AccomPrior] = 3

else if [V3_ AccomPrior] = 5 then [V4_ AccomPrior] = 8

else [V4_ AccomPrior] = -2

Please note: The -2 code is not in the permissible code set to be used by clinicians. It is a flag used by AROC to indicate missing data – not supplied.

- ***Date of relevant inpatient episode (Item E28 – Pathway 4)***

In the Version 4.0 dataset this item was called ***Date of relevant acute episode***. The item has been renamed to have an ambulatory-specific name. The content of this data item is unchanged: The date of discharge from an acute inpatient admission or inpatient rehabilitation episode relevant to the current episode of ambulatory rehabilitation.

• *Mode of episode end (Item E114 – Pathway 4)*

In the Version 4.1 dataset this item has had the options reduced. Missing data is not permitted for this item.

Mapping table:

Version 3 - Item 31 Code	Version 4 Mapped Code	AU	NZ	Comment
1. Discharged to final accommodation	1. Discharged to final accommodation	☑	☑	No change
2. Discharged to interim destination	2. Discharged to interim destination	☑	☑	No change
3. Death	3. Death	☑	☑	No change
4. Admitted to hospital as sub acute/non-acute inpatient	4. Admitted to hospital as sub acute/non-acute inpatient	☑	☑	No change
5. Admitted to hospital as acute inpatient	5. Admitted to hospital as acute inpatient	☑	☑	No change
7. Change of care type within sub-acute/non-acute care	4. Admitted to hospital as sub acute/non-acute inpatient	☑	☑	Code changed
8. Discharge at own risk	8. Discharge at own risk	☑	☑	No change
9. Other and unspecified	9. Other and unspecified	☑	☑	No change

Mapping logic:

if [V3_ EndMode] in (1, 2, 3, 4, 5, 8, 9) then [V4_ EndMode] = [V3_ EndMode]

else if [V3_ EndMode] = 7 then [V4_ EndMode] = 4

else [V4_ EndMode] = -2

Please note: The -2 code is not in the permissible code set to be used by clinicians. It is a flag used by AROC to indicate missing data – not supplied.

• *Final destination (Item E116 – Pathway 4)*

In the Version 4.1 dataset this item has had the options reduced. Missing data is not permitted for this item.

Mapping table:

Version 4.0 – Item Code	Version 4.1 Mapped Code	AU	NZ	Comment
1. Private residence	1. Private residence	☑	☑	No change
2. Residential aged care (low level)	2. Residential aged care	☑	☒	No change
2. Rest home level care	2. Rest home level care / Hospital level care (requires 24hrs nursing)	☒	☑	No change
3. Residential aged care (high level	2. Residential aged care	☑	☒	Code changed
3. Hospital level care (requires 24hr nursing)	2. Rest home level care / Hospital level care (requires 24hrs nursing)	☒	☑	Code changed
4. Community group home	3. Supported living	☑	☑	Code changed
5. Boarding house	8. Other	☑	☑	Code changed
6. Transitional living	3. Supported living	☑	☑	Code changed
8. Other	8. Other	☑	☑	No change
9. Unknown	9. Unknown	☑	☑	No change

Mapping logic:

if [V3_ FinalDestination] in (1, 2, 8, 9) then [V4_ FinalDestination] = [V3_ FinalDestination]

else if [V3_ FinalDestination] = 3 then [V4_ FinalDestination] = 2

else if [V3_ FinalDestination] in (4, 6) then [V4_ FinalDestination] = 3

else if [V3_ FinalDestination] = 5 then [V4_ FinalDestination] = 8

else [V4_ FinalDestination] = -2

Please note: The -2 code is not in the permissible code set to be used by clinicians. It is a flag used by AROC to indicate missing data – not supplied.

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If developers have any technical queries regarding this document, or require more information, please contact:

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