National Integrated Health Service Information Analysis Asset (NIHSI AA) version 1.0

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Identifying and definitional attributes

Metadata item type: Data Quality Statement

METEOR identifier: 766334

Registration status: AIHW Data Quality Statements, Superseded 21/03/2024

Data quality

Data quality statement summary:

Summary

- The NIHSI AA v 1.0 is an enduring linked data asset that brings together state/territory hospitals data with national health administrative datasets including Medical Benefits Schedule (MBS) and Pharmaceutical Benefits Scheme (PBS), residential aged care and the National Death Index.
- The NIHSI AA can be used to inform health service planning, for monitoring and evaluation purposes and policy development.
- The NISHI AA v 1.0 can only be used for purposes approved by AIHW Ethics Committee. The NIHSI AA (the Asset) is not to be used for administrative and/or compliance purposes and cannot be used for national performance indicator reporting.
- Participation in and contribution to the NIHSI AA by jurisdictions is voluntary. The Asset v 1.0 does not include data from Western Australia and the Northern Territory. The Australian Institute of Health and Welfare (AIHW) will continue to negotiate with Western Australia and the Northern Territory to enable their hospitals data to be included in the NIHSI AA in the future. In particular, the Northern Territory is supportive of the inclusion of their data and the AIHW is exploring avenues to secure approvals for data sharing.
- The scope of admitted patient private hospitals records is incomplete and varies across participating states and territories. The AIHW will continue to work with jurisdictions to provide more complete hospitals data.
- The NIHSI AA can be accessed by Commonwealth and state/territory health departments, health portfolio agencies and the AIHW for approved projects. The NIHSI AA v 1.0 can be accessed by named analysts on approved projects from these organisations.
- The NISI AA v 1.0 was available for analysis approximately 2 years after the end of the reference period for data included.
- The Asset is a service-based dataset and is a very challenging asset for analysis due to its size and complexity. It includes records of services provided to people who are usual residents of Australia. It may capture some people who live in Australia but are not eligible for Medicare (e.g., international students, visitors to Australia from countries with reciprocal healthcare agreements). As such, both under coverage and over coverage of different groups within the Australian resident population need to be considered in the analysis and interpretation of the NIHSI AA.
- Analysts must not attempt to link other collections or any other available dataset to the NIHSI AA v 1.0.

Description

The NIHSI AA v 1.0 is an enduring linked data asset that brings together the following datasets:

Data Collection	States/territories included	Timeframe
National Hospital Morbidity Database (NHMD) – public hospitals	NSW, Vic., Qld., SA, Tas., ACT	2010–11 to 2018–19

NHMD – private hospitals	Qld., ACT, Vic.	2010–11 to 2018–19 2010–11 to 2016–17
National Non-Admitted Patient Emergency Department Care Database (NNAPEDCD)	NSW, Vic., Qld., SA, Tas., ACT	2010–11 to 2018–19
National Non-Admitted Patient episode-level Databases (NNAP(el)D)	Tas., ACT, Vic., NSW, Qld.	2013–14 to 2018–19 2016–17 to 2018–19 2017–18 to 2018–19
National Death Index (NDI)	National (all states/territories)	1 July 2010 to 31 December 2019
Residential Aged Care Services Data from the National Aged Care Data Clearinghouse (NACDC) EC2013/1/2	National (all states/territories)	2010–11 to 2018–19 episode entry before 30 June 2019 and/or a date of exit after July 2010
Medicare Benefits Schedule (MBS) EO2015/4/221–223	National (all states/territories)	1 July 2010 to 30 June 2019
Pharmaceutical Benefits Scheme (PBS) and Repatriation Pharmaceutical Benefits Scheme (RPBS)	National (all states/territories)	1 July 2010 to 30 June 2019

Data on Indigenous status are sourced from the national hospitals data collections. The inclusion of the Voluntary Indigenous Identifier has not yet been agreed.

The NIHSI AA can be accessed through the AIHW Research Only Network (RON) for internal AIHW staff and in the Enterprise Data Warehouse (EDW) for state/territory and Commonwealth health department staff.

Institutional environment: The Australian Institute of Health and Welfare (AIHW) is an independent corporate Commonwealth entity under the *Australian Institute of Health and Welfare Act 1987* (AIHW Act), governed by a management Board and accountable to the Australian Parliament through the Health portfolio.

The AIHW is a nationally recognised information management agency. Its purpose is to create authoritative and accessible information and statistics that inform decisions and improve the health and welfare of all Australians.

Compliance with the confidentiality requirements in the AIHW Act, the Privacy Principles in the *Privacy Act 1988* (Cth) and AIHW's data governance arrangements ensures that the AIHW is well positioned to release information for public benefit while protecting the identity of individuals and organisations.

For further information see the AIHW website www.aihw.gov.au/about-us, which includes details about the AIHW's governance (www.aihw.gov.au/about-us/our-governance and vision and strategic goals (www.aihw.gov.au/about-us/our-vision-and-strategic-goals).

The NIHSI AA was approved by the Australian Health Ministers Advisory Council and is owned by the AIHW, the Commonwealth Department of Health and state and territory health authorities. It is managed under the custodianship of the AIHW, in consultation with representatives from state/territory health departments, and the Commonwealth Department of Health and Aged Care.

Timeliness: The NIHSI AA v 1.0 dataset was completed in June 2021 and made available to AIHW analysts, and in December 2021 it was loaded to the EDW and made available to government departments. The NIHSI AA v 1.0 holds data from 1 July 2010 to 30 June 2019. Therefore, the timing of the data asset release was approximately two years after the end of the reference period.

Accessibility:

NIHSI AA v 1.0 is available for access by Commonwealth and state/territory health departments, health portfolio agencies and the AIHW. The NIHSI AA v 1.0 can be accessed by named analysts on approved projects from these organisations.

Projects proposed from the above organisations are assessed to be consistent with the AIHW Ethics Committee approval and the governance protocols by the Head of the AIHW Ethics, Privacy and Legal Unit and the AIHW Data Custodian to access NIHSI AA. Project proposals are then sent to the NIHSI advisory committee for approval. Project proposals will name the analysts undertaking the project. Only named analysts for approved projects can access the NIHSI AA.

Projects using the NIHSI AA have access to all data from participating jurisdiction, with the exception of projects that propose to use Queensland hospitals data and can only access that data upon receipt of explicit approval from the Queensland data custodian(s).

The NIHSI AA can be accessed through the AIHW Research Only Network (RON) for internal AIHW staff and in the Enterprise Data Warehouse (EDW) for state/territory and Commonwealth health department staff. Access in both host environments is managed by the AIHW data custodian and in accordance with the governance protocols for NIHSI AA v 1.0.

A number of reports are available that have drawn upon data held in the NIHSI AA. All AIHW reports, publications and products satisfying output requirements and approval processes will be published and accessible from the AIHW website (www.aihw.gov.au).

Work is in progress to develop governance arrangements for access to the NIHSI AA by non-government researchers as well as making information about NIHSI AA publicly available including to external researchers and other stakeholders.

Interpretability:

Information on the linked data sources for NIHSI AA v. 1.0 is available on the AIHW website. Metadata information for each source collection are published in the AIHW's online metadata registry – METEOR, and the National Health Data Dictionary.

METEOR and the National health data dictionary can be accessed on the AIHW website: METEOR home (aihw.gov.au).

National Health Data Dictionary version 15, Table of contents – Australian Institute of Health and Welfare (aihw.gov.au)

The National Death Index (NDI) is maintained by AIHW in the National Mortality Database (NMD). The data quality statements underpinning the AIHW NMD can be found in the Australian Bureau of Statistics (ABS publications):
Deaths, Australia (ABS cat. no. 3302.0) and
Causes of death, Australia (ABS cat. no. 3303).

Further information can be found on the AIHW website on the National Mortality Database and National Death Index.

Public hospital admitted patient episode data in the NIHSI AA are drawn from the National Hospital Morbidity Database (NHMD). The 2018–19 Admitted Patient Care National Minimum Data Set (NMDS) data items can be found under METEOR ID 676382. Please refer to METEOR for other years.

Non-admitted patient emergency department care are patients registered for care in emergency departments. For further information, see Non-admitted patient emergency care NMDS 2018–19 in METEOR.

Information on Medicare Benefits Schedule (MBS) data collection and Pharmaceutical Benefits Scheme (PBS) can be found on the AIHW website.

Data quality information for the AIHW National Aged Care Data Clearinghouse and Aged Care Funding Instrument can be found on METEOR.

Relevance:

The NIHSI AA is a linked person-level national information asset about the services provided by Australia's hospitals, medical and other services through the MBS, PBS, including RPBS, and residential aged care, linked to the National Death Index. The NIHSI AA v 1.0 holds data between 1 July 2010 and 30 June 2019, and can be used to produce outputs to inform medical research and health policy development, and the planning, monitoring and evaluation of health and aged care service delivery.

NIHSI AA v 1.0 does not include Western Australia and Northern Territory hospitals data. The AIHW is continuing to negotiate with Western Australia and the Northern Territory to enable their hospitals data to be included in the NIHSI AA in the future.

Coverage of admitted patient private hospitals data in the NIHSI AA is limited with only Victoria, Queensland and the Australian Capital Territory having any private hospitals data included (see table in the Quality Statement Summary for details of which years are included), and subject to identifiers available to states and territories as provided to the AIHW. As such, the scope of admitted patient private hospitals records is underrepresented and varies across participating states and territories.

Data on Indigenous status are sourced from the national hospitals data collections. Only records for persons with a linked hospital record will have an Indigenous identifier reported. Work is underway to assess the quality of other sources of Indigenous information for inclusion in future iterations of the NIHSI AA, such as the Voluntary Indigenous Identifier. Further engagement with stakeholders is also required to progress this issue.

Data on a person's usual residence varies across collections held in the NIHSI AA, with the minimum geography available at the postcode level and either Statistical Area Level 2 (based on the ABS Australian Statistical Geography Standard) or Statistical Local Area (based on the ABS Australian Standard Geography Classification) for earlier years. Hospital data are reported based on state of service and not state of usual residence. Therefore, it may be difficult to identify cross-border service provision when analysing patient pathways.

Accuracy:

Data included in the NIHSI AA v 1.0 is sourced from AIHW data holdings for MBS, PBS, hospitals, residential aged care, and national deaths data. The data collection and cleaning processes varies across these collections, and the quality of the NIHSI AA v 1.0 will be subject to the quality of the data held in these source collections.

Some admitted patients may not be enrolled in or are not eligible for Medicare but will still be included in the NHMD such as international students or some overseas visitors who were admitted to public hospitals. For example, overseas visitors from New Zealand, Ireland, the United Kingdom, the Netherlands, Sweden, Finland, Norway, Italy, Malta, Belgium and Slovenia may receive public hospital care because Australia has Reciprocal Health Care Agreements with these countries. Over coverage in these cases may occur due to a lack of information or when the individuals leave Australia and are no longer considered as usual residents. This may mean that individuals may continue to be counted in the analysis after these individuals are no longer residents in Australia unless methods are applied to adjust for this over coverage. As such, under-coverage or over coverage of different groups within the Australian resident population need to be considered in the analysis and interpretation of NIHSI AA data.

Quality of linkage depends on the coverage and quality of identifiers available for each collection, and consistency with information held in the integrating spine (i.e., Medicare Consumer Directory (MCD) and National Death Index (NDI) were first linked to create the NIHSI AA linkage spine).

Data linkage was undertaken using probabilistic linkage, involving creation of record pairs by combining records from one data set with records from another data set based on similarities in characteristics such as last name, first name(s), date of birth, sex, and address of residence. Matches are evaluated based on the level of similarities between the characteristics. A higher level of similarity suggests that a given record pair is more likely to be the same person and treated as a true link.

For NIHSI AA v 1.0, the link accuracy was a high priority, and a high cut-off was used to achieve the estimated link accuracy of 98.5% or higher. This means that more than 98% of NDI records were linked to the MCD data. The NDI records that were not linked to MCD data were not included in the integrating spine to ensure consistent data quality.

The following table shows the linkage accuracy for the other administrative datasets

that were linked to the MCD spine for the NIHSI AA v1.0.

Linkage results to AIHW National Linkage Spine (estimated linkage accuracy 98.5% or higher)

Data Set	Pre-linked	Number of Individuals / Records	Number of "linkable" individuals / records	Number of linked individuals / records	% linked of all individuals / records (c)	% linked of "good"(b) individuals/ records(c)
New South Wales hospitals	No	19,582,714	19,485,012	18,694,925	95.47%	95.95%
Victorian hospitals	Yes(a)	5,730,207	5,275,938	4,971,205	86.75%	94.22%
Queensland hospitals	Yes	5,239,718	5,237,911	5,048,964	96.36%	96.39%
South Australian hospitals	Yes	1,325,445	1,303,657	1,268,243	95.68%	97.28%
Tasmanian hospitals	Yes	502,538	502,538	488,758	97.26%	97.26%
ACT hospitals	Yes	547,352	547,352	522,860	95.53%	95.53%
Residential Aged Care	Yes	792,918	792,918	790,693	99.72%	99.72%

a. Only Admitted Patients and ED presentations from Victoria were pre-linked. Non-admitted 2016-19 patients' identifiers were supplied separately and were not pre-linked. A significant proportion of these records (661,543) did not have names   only 44.4% of records in this group were linked.

b. Records containing either valid dates of birth or names or both. It was possible in some cases to link records without names using additional information on date of death, addresses, etc.

c. Percentage of all individuals or of all individuals with the identifiers in that dataset that were linked to the National Map

The AIHW conducted a program of testing and validation to ensure the integrity and quality of the asset, e.g., checks on completeness of records and alignment of broad aggregates between the NISHI AA and the source dataset. The AIHW formed a testing group of experienced analysts to undertake this validation and testing.

Coherence: Data held in the NIHSI AA v 1.0 are based on data held in the relevant AIHW national data collections. Differences in scope with the NIHSI AA v 1.0 should be considered when comparing outputs with other sources.

Demographic data, such as usual residence and/or indigenous status, held in the NIHSI AA v 1.0 may vary across source data collections. Work is underway to understand the differences in the reporting of demographics within the Asset to be able to advise analysts.

In particular, due to confidentialisations applied to prevent recalculation of exact event dates, there is some inaccuracy in age group allocations around the margins of those groupings. This may affect direct comparison of results from the NIHSI AA with results from other linked data assets to the underlying source datasets

Data products

Implementation start date: 23/09/2022

Source and reference attributes

Submitting organisation: Australian Institute of Health and Welfare

Origin: Australian Institute of Health and Welfare

Relational attributes

Related metadata references:

Has been superseded by National Integrated Health Service Information (NIHSI) version 2.0
AIHW Data Quality Statements, Standard 21/03/2024

See also COVID-19 linked data set; Quality Statement
AIHW Data Quality Statements, Superseded 17/08/2023

See also COVID-19 Register; Quality Statement
AIHW Data Quality Statements, Superseded 07/03/2024

See also COVID-19 Register; Quality Statement
AIHW Data Quality Statements, Standard 07/03/2024