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Australian Medicines Terminology (AMT) Benefits Analysis 2014/15

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1   Executive Summary

Australian Medicines Terminology (AMT) is a key element of the national eHealth foundations. It was developed and is managed by NEHTA; and since its release is providing a range of benefits to healthcare providers and users. AMT v3 has been downloaded 280 times by 116 different organisations or individuals since the June 2014 release.

AMT is an enabling solution that overcomes fragmentation of medicine documentation through common clinical terminology. It has been deployed as a component of Electronic Medications Management (eMM) systems at hospitals in Victoria, Tasmania, and at Sydney Adventist Hospital.

Early data from these eMM implementations show AMT has enabled or resulted in;

- **Decrease in transcription errors,**

- **50% reduction in pharmacist interventions,**

- **Decreased time to dispense prescriptions,**

- **Increased coded allergy documentation from 10% to 60%, and**

- **Efficiency gains for hospital pharmacists with more time to undertake clinical tasks over administrative tasks.**

This data validates the assumptions on which clinical terminology benefits are based - closed loop decision support, administration and process efficiencies, and a reduction in errors.

AMT has also been downloaded by Australian universities for use in research. The common AMT language allows the university to convert exported medicine information from any system, (pharmacy database or otherwise) into a central system which can be used to generate more sophisticated reports than previously possible.

Private healthcare providers and organisations have downloaded AMT for use in existing and future projects. The use of AMT provides businesses a pre-emptive advantage of including a national standardised terminology into their work practice and saves the cost of implementing and maintaining their own clinical terminology.

The benefits associated with AMT increase exponentially with the number of systems with incorporated AMT. The aforementioned benefits attributable to AMT implementation will directly assist each jurisdiction meet their respective health strategic objectives. As such, a priority for jurisdictions should focus on using AMT implementations as an enabler to overcome fragmentation of existing silos of clinical information.

As AMT continues to be adopted, ongoing evaluation and research is necessary to quantify the financial and health outcome benefits attributable to AMT.

2 Background

Australian Medicines Terminology (AMT) is providing benefits to various types of users throughout Australia. This document highlights the rationale for implementing AMT as a solution to overcome documentation fragmentation and the resulting effects on healthcare by describing some of the realised benefits attributable to the enabling effect of AMT as an eHealth solution.

1   Currently, the fragmented documentation of medicine and allergy information exposes patients to potentially harmful adverse events, and providers and healthcare organisations to increased liability. A recent audit of two Sydney teaching hospitals found 12,567 prescribing errors for 3,291 patients.[1]

2   Australian Medicines Terminology (AMT) is a key building block for Electronic Medications Management (EMM) solutions. It is an enabler for improving processes and systems which delivers a way to minimise patient risk and reduce liability through standardised medicine and allergy documentation language.

3   AMT consists of two components; a descriptive medicine names and a unique identifying numerical code. The AMT numerical codes allow different computer systems to understand variations in medicine information. When used across systems, AMT is an enabler for decision support.

4   On behalf of Council of Australian Governments (COAG), NEHTA has been responsible for managing, developing and releasing AMT for implementation in jurisdiction health services and healthcare organisations.

5   AMT v3 releases have been downloaded 280 times by 116 different organisations or individuals since the June 2014 release. This includes, but is not limited to, jurisdictional health departments, software vendors, pharmaceutical companies and academic institutions.

2.1 Evidence of a problem

Adverse Drug Events (ADE) are a primary cause of morbidity and mortality worldwide.[2] Medication errors are errors in the prescribing (including dose calculations), supply (dispensing), or administration of medicines. Common dispensing errors found in community and hospital pharmacies are dispensing the wrong drug, strength, form or quantity, and labelling medications with the incorrect directions.[3]

An examination of 842 electronic prescriptions in one NSW hospital found 13.3% of prescriptions contained medication errors. The common reason for error was manual transcription across disconnected information systems. An estimated 45% of ADEs occurring within the hospital setting could be avoided with the implementation of eHealth.[4] These ADEs are placing significant financial and workforce strains on public hospital resources. A research study conducted by the University of New South Wales found that ePrescribing systems for hospital

[1] Westbrook, J., Li, L., Lehnbom, E., Baysari, M., Braithwaite, J., Burkes, R., Conn, C., & Day, R. What are incident reports telling us? A comparative study at two Australian hospitals of medication errors identified at audit, detected by staff and reported to an incident system, *International Journal for Quality in Health Care*, 2015, 1–9.
[2] Francesch,i M., Scarcelli, C., Niro, V., Seripa, D., Pazienza, A.M., Pepe, G., Colusso, A.M., Pacilli, L. & Pilotto, A. 'Prevalence, Prevalence, clinical features and avoidability of adverse drug reactions as cause of admission to a geriatric unit: a prospective study of 1756 patients', *Drug Safety*, 2008: 31(6):545-56.
[3] James KL et al. Incidence, type and causes of dispensing errors: a reviewof the literature. *International Journal of Pharmacy Practice* 2009; 17: 9-30.
[4] Runciman, W.B., Roughead, E.E., Semple, S.J., & Adams, R.J 'Adverse drug events and medication errors in Australia', *International Journal for Quality in Health Care*, 2003: 15(1).

inpatients were associated with a reduction in total prescribing error rates of over 55%.[5]

Similarly, costly and preventable allergic reactions recur due to inadequate or inefficient allergy documentation in medical records and computerised physician order entry systems (CPOES).[6] The allergy field within an electronic medical record (EMR) is used to capture both true allergic reactions (those involving an immunological response) and other adverse reactions such as intolerances and side effects, e.g. food, environmental and drug.[7] However, within and between organisations, allergy information often has to be manually transcribed into different systems. Manual transcription increases the risk of transcription errors and the potential for providers to miss critical allergy information.

Lack of consistency in medicine terminology reduces the extent to which different computer systems and devices can exchange data and interpret shared data (interoperability). This lack of interoperability prevents the growth of eHealth solutions and hinders the full realisation of the benefits to be delivered by eHealth.

2.2   Where is the problem?

Paper prescriptions and paper documentation facilitate errors. Legibility and drug name confusion have historically been linked to ADEs.[8] A paper inpatient medication chart is often generated on admission by junior doctors and interns, who may use the following sources for collating the medication chart;

- Previous discharge summaries,

- Patient recall,

- Family recall,

- Referral letters, and/or

- Dosing bottles.

In order to finalise inpatient medication charts, a pharmacist may conduct admission medication reconciliations within their pharmacy database. This highlights a disconnect, or siloing of information, a paper medication chart and an electronic pharmacy database. This siloing is also prevalent when an organisations EMR and pharmacy database are not interoperable.

There exist numerous computer systems each with their own way for providers to prescribe and pharmacists to dispense medicines. Each computer system understands its own language or vocabulary of data. A prescription is broken up into drug name, dose, medication form, route of administration, frequency and indication (prescription data). Put together they form a complete prescription.

Maxolon (metoclopramide) 10mg tablet orally every 8 hours as needed for nausea

Providers enter prescription data into a computer as the prescribing computer system fields allow. There is variability between systems thus a number of ways for the same prescription to be entered into different computer systems (Table 1).

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[5] Westbrook, J., Reckmann, M., Li, L., Runciman, W.B., Burke, R., Lo, C., Baysari, M.T., Braithwaite, J. & ODay, R. 'Effects of two commercial electronic prescribing systems on prescribing error rates in hospital in patients: A before and after study, *PloS Medicine*, 2012: 9(1):1-11.

[6] Paul, L., Robinson, K., Capture and documentation fo coded data on Adverse Drug Reactions: an overview, *Health Information Management Journal*, Vol 41 No 3 2012 ISSN 1833-3583.

[7] Sydney South West Area Health Service, NSW Health, Policy Directive, Allergies and Adverse Drug Reactions: Recording Allergies and Adverse Reactions in the eMR (electronic Medical Record) July 2009.

[8] Brodell, R. et al., Prescription errors: legibility and drug name confusion, *Arch Fam Med.* 1997;6:296-298.

Table 1 Example variations in data capture fields in computer systems for the same prescription

Software Variations	Drug	Dose	Form	Route	Frequency	Indication
1	Maxolon	10mg	Tablet	Orally	Every 8hrs	Nausea[9]
2	Maxolon 10mg		Tablet	Orally	Every 8hrs	Nausea[10]
3	Maxolon	10mg	Tablet orally		Every 8hrs	Nausea
4	Maxolon 10mg		Tablet orally		Every 8hrs	Nausea
5	Maxolon 10mg tablet orally every 8hrs as needed[11]					
6	metoclopramide	10mg	Tab	Orally	Every 8hrs	Nausea
7	metoclopramide 10mg		Tab	Orally	Every 8hrs	Nausea
8	metoclopramide 10mg tab orally every 8hrs as needed					

The hospital pharmacists dispensing computer system will have its own way of understanding prescription data. Traditionally, because of differences, there is no way for the pharmacists dispensing computer to understand exactly what the prescribing doctor has entered into their prescribing computer system.

The pharmacist must translate the prescription, and any known patient allergies, into their dispensing computer. This adds burden to pharmacists, increases the risk of transcription errors, and results in two computers capturing a single prescription in two different ways which creates two silos of data.

Silos of data are particularly problematic when a pharmacist corrects an error or modifies a prescription. Research conducted by Monash University at five different hospitals suggests a patient's hospital medical record, pharmacy record and discharge summaries are not always accurate and complete. This is due to the silos of information within hospitals.[12]

It is not uncommon for hospitals to have numerous systems operating in parallel with no information exchange. A hospital discharge summary, shared to GPs or the national eHealth record (PCEHR), is often generated from the hospital EMR. There is an onus on hospital pharmacists to communicate medication changes documented in the pharmacy database to prescribing providers. The provider assumes the burden to document the pharmacist medication change within the EMR. Two junior doctors reported they did not always receive communication from a pharmacist when a change to a medication occurred.

In the acute setting it is not uncommon for the intern or registrar to manage the patient's medication regimen documentation while the consultant remains accountable for the patient's overall care. In the absence of a mechanism to ensure interoperability between an EMR and a pharmacy database the resulting discharge summary is not a guaranteed reflection of a patient's actual dispensed medication regimen. A patient has an increased risk of an ADE, and the consultant doctor, healthcare organisation and health service to increased liability with inaccurate documentation. A mechanism to minimise pharmacist interventions will reduce manual corrective actions, increase accuracy of documentation and mitigate risk.

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[9] Each piece of data is separate
[10] Drug name and dose are merged as a single piece of data
[11] Common for free text or handwritten prescriptions
[12] Paper pending publication

2.3   How AMT helps

AMT is an enabler. When implemented into computer software systems AMT helps allow the flow-on benefits of an eMM project to be realised.

AMT, through a unique code, is designed to enable communication between different computer software systems. Automatic transfer of medication information between systems is an efficient way to exchange information and can reduce medication errors by eliminating the silos and the manual translation process. Because the different systems speak different languages, AMT allows for the data entered into different systems to be translated into a single language, vocabulary or 'clinical terminology'. The AMT code ensures systems are able to understand with certainty an authoring provider's intent. AMT eliminates information silos of different systems, reduces the amount of time for pharmacists to translate and correct prescriptions, reduces the risk of errors, and can increases the completeness and accuracy of information.

AMT provides a consistent and safe approach to the identification and naming of both branded and generic medicines[13] and thus supports jurisdiction eMM Programmes to improve the quality and availability of medications and allergy related information. These jurisdictional programmes are paramount in supporting strategic health system safety, quality and efficiency goals.

Currently, a wealth of clinical data is locked-away in non-standardised clinical language. AMT allows for more reliable and sophisticated reporting. AMT reporting enables better understanding of healthcare utilisation, disease progression, and patient care trends. AMT helps enable improved reporting which allows for better planning of the allocation of resources and funding by health services. Optimising communication between systems could expedite the assumed value achievable though medication management with the use of the PCEHR.

Research shows lack of consistency in medicine terminology reduces overall interoperability between information systems and prohibits IT and health system development.[14] Standardisation of medicine terminology through AMT is critical to realising the expected benefits of EMM systems and eHealth.

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[13] This includes all medications listed on the Pharmaceutical Benefits Scheme (PBS), and Repatriation Pharmaceutical Benefits Scheme (RPBS), along with most of the Therapeutic Good Administration (TGA) AUSTR and a range of AUSTL items. Hanse, DP, et al, Developing a national emergency department data reference set based on SNOMED CT. Medical Journal of Australia, 2011, 194(4): p S8-10.
[14] Ibid

3 Jurisdictional AMT implementations

3.1 AMT is easy to use – Victoria

The Use of the Australian Medicines Terminology (AMT) at Eastern Health, Melbourne, Victoria

Eastern Health hospitals have adopted the Australian standard for medicine terminology, AMT, within their EMR (clinical system) and pharmacy dispensing systems. AMT is a foundation for prescriptions, which are generated electronically and printed for dispensing in the hospital or community pharmacy. AMT also supports inpatient prescribing, which is used to replace the paper drug chart and is integrated with the pharmacy system for dispensing and stock control. AMT facilitates the translation, interoperability and display of medication details for a pharmacist from the prescribing to the dispensing system.

Medication orders (prescriptions) are managed within the clinical information system (Cerner Millennium) and dispensing is performed within the pharmacy system (Merlin). At discharge a provider, typically a registrar, intern or junior doctor, utilises the search features within the ordering clinical system to select the desired medication and dosing using a standardised catalogue.

AMT, as a facilitator of data quality, plays a significant role in minimizing the number of pharmacist interventions for dosing, Pharmaceutical Benefits Scheme (PBS) documentation compliance and controlled drug ordering.

The benefits of using AMT in this way are illustrated in the below:

At Eastern Health, the ability to prescribe medications as free text items exists, however one intern indicated this only occurred on the rare occasion as most medicine terms, including newly released medicines, are available using the search functionality. Although providers interviewed are not aware that they are using coded AMT in their prescribing, they are still benefiting from AMT functioning seamlessly in the background.

Box Hill Hospital recorded the impact of electronic discharge prescriptions with the following findings:

- 25% reduction in pharmacist interventions to correct missing or incorrect doses or clarifications of orders

- 22% reduction in pharmacist interventions to correcting/annotating quantities for PBS compliance

- 50% reduction in pharmacist interventions to ensure appropriate controlled drug documentation

At Peter James Centre and Wantirna Health, where electronic medication management (eMM) has been implemented, an audit has found that 100% of patients have their allergy status recorded. With the improved allergy recording patient safety is enhanced as electronic decision support for drug-allergy checking is utilised. Plans to implement eMM into the redeveloped Box Hill Hospital which opened in September 2014 are well underway to continue to provide the proven patient safety benefits from eMM.

Eastern Health experienced the following benefits after electronic prescribing implementation;

- Elimination of prescribing of multiple routes for a single order

- Increase legibility of prescription orders with clear drug names

- Improved patient safety due to drug – drug interaction checking

As Eastern Health is currently sending discharge summaries to the Personally Controlled Electronic Health Record (or MyHealth Record), the overall effect of electronic prescribing implementation with AMT has resulted in high quality information that is interoperable and can be utilised in other national initiatives.

3.2 AMT providing pharmacists benefits - Victoria

Peninsula and Austin Health Services in Victoria were the first in Australia to implement AMT and pilot e-prescribing in an acute setting. Both the Austin and Peninsula Health Services have implemented AMT with inpatient prescribing at all sites. This has allowed interoperability between Cerner as the prescribing system and Merlin and iPharmacy, each hospitals respective dispensing system.

The implementations have eliminated the need for hand written prescriptions, allowed clinicians access to electronic patient information at the bedside, addressed issues surrounding legibility, duplication and accessibility to patient allergy and medicine information.[15]

As a result of AMT both hospitals have experienced;

- Decreased transcription errors, and
- Decreased time to dispense prescriptions (improved workflow).

At Frankston Hospital an extract of the medications dispensed to a ward as ward stock is obtained from iPharmacy. A second report is generated from Cerner which identifies individual patient medication orders against the ward stock of medications. These reports are fed into a custom Microsoft Access database which when analysed identifies medicines needed for supply. AMT has helped in the build of products to support this process. This results in much more efficient supply of medications to patients as the process is proactive and succinct.

Quantifiable benefits to Austin Health

Austin Health conducted a post Clinical Information System Implementation Benefits Realisation Report following the implementation of Cerner (AMT enabled) across the Austin Hospital. This was produced for the Austin Health Board dated 30 June 2014.

AMT enables interoperability between Cerner with the pharmacy dispensing system Merlin. The changes attributable to AMT in the electronic prescribing, dispensing, and administration produced the following benefits:

1. **Elimination of manual pharmacist entry** - Dispensing does not require manual entry and avoids potential for transcription error.

2. **Increased efficiency for pharmacists** – More time for pharmacists to perform clinical tasks over administrative tasks.

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[15] http://www.health.vic.gov.au/healthvictoria/dec12/electronic.htm

4   National uptake of AMT

NEHTA's management of AMT eliminates the burden on individual organisations to maintain their own terminology. As the Australian release centre, NEHTA releases monthly new terms, concepts and accompanying codes. The number of new terms added in each release is generally related to the number of new drugs in monthly PBS releases.

Since 'go live' in June 2014, AMT v3 has been downloaded 280 times by 116 different organisations or individuals. This included downloads from jurisdictional health departments, software vendors, consultancy firms, pharmaceutical companies and academic institutions amongst others (*Figure 1*).
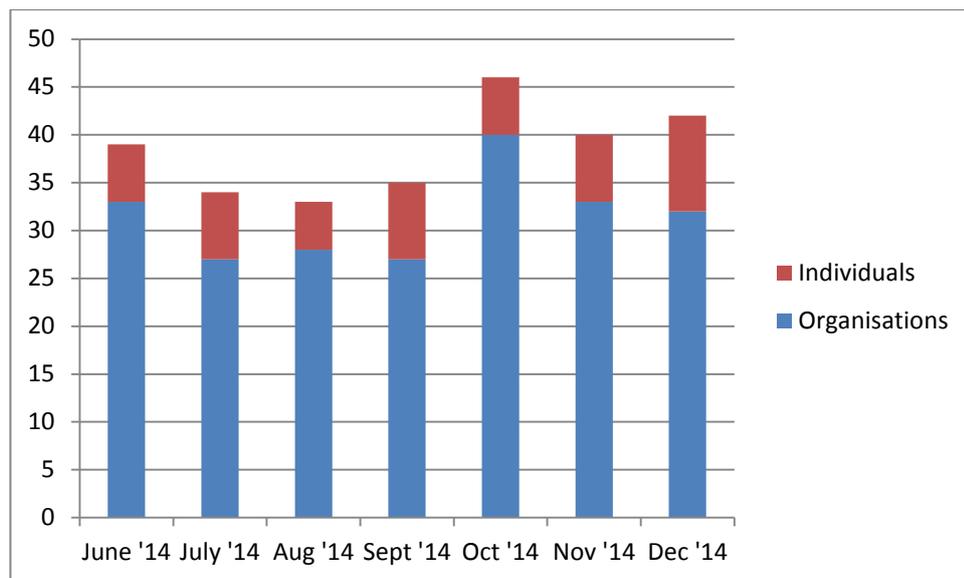

Figure 1 Count of AMT v3 Monthly Release Downloads

4.1   Clinical terminology making a difference at Sydney Adventist Hospital

Sydney Adventist Hospital (SAH) has implemented AMT (native), as well as NEHTA managed SNOMED CT-AU clinical terminologies into comorbidity and allergy documentation within the hospital's SanCare electronic medical record (EMR). SAH chose to implement clinical terminologies to begin coding inefficient predominantly free text documentation. Within two years of implementation, coded allergy information increased from 10% to over 60% of all documented allergies. SAH has conducted a number of audits of coding prevalence and has seen marked increases in their coding, Figure 2.

Year of Audit	Coded Allergy Compliance	Coded Comorbidity Compliance	Annualised Total entries (coded & non-coded)
2010	15%	9%	23,250
2011	53%	84%	24,815
2013	76%	91%	43,455

Figure 2 SAH coding prevalence

Patient allergy documentation in SanCare is deemed a patient's allergy source of truth. Providers enter allergy information directly into SanCare. Patients may enter allergy information into an online preadmission form via an eAdmissions web platform. Both SanCare and eAdmissions are AMT and SNOMED CT-AU coded with a free text option. Clinical terminology in SanCare is able to be integrated with both the hospital dietetics system CBOARD and the ICU MetaVision system.

The experience at SAH validates the assumptions on which clinical terminologies are based. Due to resource constraints there has not been a post implementation project to examine the effects of coded allergy information within the ICU MetaVision system. However, the dietetics and nutrition department conducted a quality assurance project which identified; SNOMED CT-AU has reduced the incidence of food allergy events, increased efficiency of consultations, increased the accuracy of documented information, increased the capability for research and reporting, all of which saw a reduction in the number of Riskman reports. More resources are required to understand the effects of AMT coded allergy information within the MetaVision system for ICU patients.

4.2   AMT is advancing commercial eHealth technologies

A number of organisations have downloaded AMT for commercial use. The use of AMT commercially provides businesses a pre-emptive advantage of including a national standardised terminology into their work practice to be used in existing and future projects.

A pharmacy vendor has created dispensing software which has connectivity to the HI Service and PCEHR while utilising natively implemented AMT as the basis for embedding clinical decision support. The AMT codes allow for relationships between medicines to be more accurately identifiable. The software has the capability to warn pharmacists of potential multiple drug-drug interactions by drawing medicine information directly from a consumer's PCEHR. Native AMT was chosen to avoid manual mapping and maintenance to existing drug reference sets. It is believed this is the first pharmacy vendor to implement native AMT based clinical decision support with PCEHR content, there exists opportunities to further explore health outcome and pharmacy efficiencies directly attributable to the products capabilities.

A health informatics consulting firm (Om SAI Care (OSC)) is building an eHealth solution which will allow Psychiatrists and Psychologists to connect to Medisecure via an ePrescription gateway to prescribe patient medications. AMT has been chosen as the preferred terminology in the prescribing of medicines. OSC preferred AMT because of easy to use implementation documents and support from NEHTA. AMT is preferred as it is open source and regularly maintained by NEHTA. The consultancy group aims to *develop new software packages in response to new and developing needs in the industry by enabling clinical staff to provide ultimate patient care, regardless of location and without compromising workflow.* AMT provides a mechanism to allow this group to meet the needs of their clients.

A sole entrepreneur has developed a cloud based medication review application for use by pharmacists. The application will utilise AMT in the documentation of medication reconciliations, medication reviews and GP recommendation reports. AMT was chosen due to its sophisticated reporting abilities and alignment with national strategies for a single medication coding system.

4.3   AMT in academic research

As of February 2015, seven Australian universities have downloaded AMT v3.

A study, published by the Australian e-Health Research Centre, CSIRO ICT Centre, found using AMT to standardise medication names addressed numerous data quality issues and greatly simplified the analysis of data sets.[16]

Academic researchers are using AMT as a coding mechanism for capturing clinical research data. Prior to AMT, researchers were required to undergo a timely manual mapping of medicine information within their research databases. The use of AMT as a single standardised code has reduced the likelihood of data misinterpretation by eliminating a manual mapping of concepts and terms and sped up the ability to capture and report clinical data.

AMT provides researchers a single standard to which medicines data can be compared across different data sources (systems or organisations). Historically, data captured in different formats for different studies was not able to readily be re-used. With the use of AMT, de-identified data can be stored and reused in comparison studies. AMT allows advanced research capabilities with the ability to examine medicines information across larger patient populations spanning numerous research studies and trials.

Universities often do not have the resources to maintain their own drug database. One university has stated they rely on NEHTA's monthly AMT releases so they do not have to maintain concepts and terms themselves. The effect of AMT in coding research data increases the integrity and reliability of research findings. These benefits are currently being realised in a number of projects across Australia.

University of Tasmania

The University of Tasmania Pharmacy Department is using AMT in research databases for a number of clinical trials. To date, AMT has been used by 4 PhD students in the capture of clinical data for their projects. The common AMT language allows the university to convert exported medicine information from any system, (pharmacy database or otherwise) into a central system which they then can use to generate more sophisticated reports than previously possible.

The Reducing Use of Sedatives (RedUSe) project, funded by the Australian Government Department of Social Services under the Aged Care Service Improvement and Healthy Ageing Grant Fund, uses AMT in the data collection database. The aim of the study is to promote the quality use of antipsychotic and benzodiazepine medication in residential aged care facilitates.[17] Data collection for this study involves extracting participant medicine information from four pharmacy software systems. Once extracted into a central server housed by the university, the medicine data is automatically mapped and converted into AMT. The AMT data is then further mapped to the World Health Organisation's Anatomical Therapeutic Chemical (ATC) classification system. This data mapping process is necessary for reporting to determine the effect of interventions on participant groups. Preliminary findings, reportable because of AMT, suggest a reduction in sedative use.

One University of Tasmania researcher is using AMT substance strengths in various products to calculate the amount of calcium and vitamin D consumed in over 2000

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[16] McBride, S., Lawley, M., Leroux, H., Gibson, S., Using Australian Medicines Terminology (AMT) and SNOMED CT-AU to better support clinical research, *Stud Health Technol Inform*. 2012;178:144-9.
[17] https://www.pharm.utas.edu.au/reduse/

aged care residents. The study aims to understand current levels of vitamin D and calcium supplementation in practice. This is necessary as costs associated from osteoporotic fractures were nearly $2 billion in 2012.[18]

Another University of Tasmania researcher is using AMT in data collection to predict the likelihood of Adverse Drug Reactions (ADRs) in elderly patients admitted to hospital. The study outcomes will provide a practical, efficient and simple means for primary health care professionals to identify community dwelling elderly patients at high risk of ADRs; therefore, informing targeted strategies that reduce ADR risk.

The University of Tasmania's Pharmacy Department has described the use of AMT into their clinical trials databases as laying the foundation for future research and has clear benefits in increasing the ability to store and report trial data.

There exists a business case for developers to create a clinical research tool for researchers to capture clinical trial participant medication and allergy information. AMT in a clinical trial databases eliminates the need for manual mapping of medicine information and reduces researcher effort while increasing the quality of captured medicines information and enable sophisticated clinical trial data analysis.

AMT is used an enabler for reducing errors in data and contributing high quality data to an Australian evidence base. An emerging evidence base is necessary in the development of informed jurisdictional health strategies and priorities.

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[18] Osteoporosis costing all Australians: A new burden of disease analysis 2012 to 2022. Available from: http://www.osteoporosis.org.au/statistics-burden-disease.

5 AMT into the future

The health system benefits attributable to AMT increase exponentially with the number of systems with AMT implementation. Currently, NEHTA is working with general practice, community pharmacy, and jurisdictional hospital vendors to expand the incorporation of AMT into existing software.

5.1 Using AMT in predictive modelling

A health economist from the Victoria University is using AMT in predictive modelling associated with changes to PBS medicine listings. AMT is used as a tool to accurately identify medications that have previously been and are currently PBS listed medicines. Accurate identification of medicine terms is a necessary prerequisite for predictive health economic modelling. Modelling is performed to identify and predict the impact of current or future changes to the PBS. As such, AMT is a tool and an enabler in the 'Identification' methodology for more accurate health economic modelling (Figure 3).
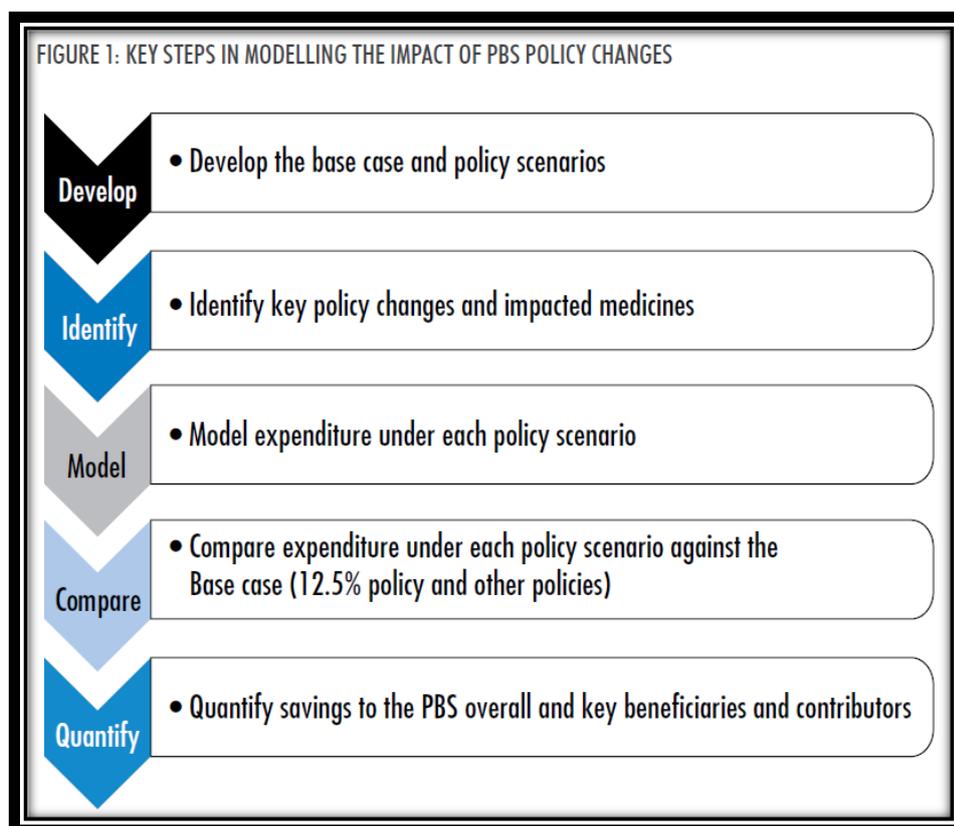

Figure 3 AMT used to identify medications in health economic modelling methodology[19]

5.2 AMT to assist in jurisdictional health strategies

The aforementioned benefits attributable to AMT implementation will directly assist each jurisdiction to meet their respective Health strategic objectives. Initial and further AMT implementation in;

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[19] The Impact of Further PBS Reforms, Report to Medicines Australia, Victoria University Centre for Strategic Economic Studies, May 2013.

ACT will support *implementing e-health initiatives to strengthen decision support*, and *improve continuity and coordination of care especially for people with chronic conditions* (Corporate Plan 2012-17, ACT Primary Health Strategy 2011-2014).

NSW will the *capture of information in a legible way that's capable of being shared with others simultaneously* through *improved digital connectivity for a smart, networked health system in hospital* (NSW State Health Plan : Towards 2021, Blueprint for eHealth in NSW)

NT will support *the effective collection and use of information by using innovation to transform the way Territorians work to improve service quality and safety.* (Strategic Information Plan 2009-2012 – Strategies 1 & 2)

QLD will support QLD's *investing, innovating and planning for the future.* (Blueprint for Better Healthcare)

SA will support SA to *Improving Information Technology* (SA's healthcare plan 2007-2016)

TAS will support TAS to *establish a single view of patient health information, support the delivery of health care services and interactions with external service providers, and the adoption of eHealth services. (*Tasmania *Government ICT Strategy December 2011)*

WA will support WA Health's Mission to *get the best out of new technology*. (WA Health Clinical Service Framework 2010-2020)

6 Priorities for AMT

The following priorities are necessary to expedite the value and benefits associated with AMT implementations.

1. Expedite AMT implementation into all existing electronic prescribing and dispensing systems

2. Incorporate pre/post implementation evaluations to measure the effects of AMT implementation – **necessary to evaluate the health outcome and health service utilisation impact of AMT**

3. Implement electronic prescribing in all areas of the health system which will eliminate paper prescribing (priority on inpatient prescribing)

4. Implement electronic documentation in all areas of the health system which will eliminate paper documentation (priority on hospital documentation)

5. Ensure interoperability of prescribing and dispensing systems

6. Provide widespread communication collateral on the capabilities and benefits attributable to AMT implementations for broader use throughout Australia