Self-Reported Medications

Age Cohort	1921-26 (Older), 1946-51 (Mid), 1973-78 (Young)
Surveys	4 (OLD cohort), 5 (Young and Mid), 6 (Young and Mid), 7 (Young cohort), 8 (Young Cohort)
Datasets	Old4medications, Mid5medications, Mid6medications, Yng5medications, Yng6medications, Yng7medications, Yng8medications,
Variable	OriginalName, (not in the Old4medications dataset)
Definition	Actual text written
Source Items	
Statistical form	Character Variable
Derived Variables	Name, or DrugName
Definition	Generic name for a medication
Statistical form	Character variable
Derived Variable	ATCcode1, ATCcode2, ATCcode3, ATCcode4
Definition	ATC codes related to any medication
Statistical form	Character variable
Derived Variable	PBScode (Not in Old4medications, and Mid5medications)
Definition	The PBS code for the medication
Statistical form	Character
Derived Variable	Y7med
Definition	'Cleaned', edited form of written medication
Statistical form	Character variable
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Variables

IDalias	
Drugcount	The order of the drugs/medications as the respondent wrote them
OriginalName	The exact original wording/ spelling of the medications
O4Med - Y8Med	The medication name after cleaning to get the correct medication/spelling
ATCcode1	ATC code
ATCcode2 - 4	Extra ATC codes. Note: these extra ATC codes are not necessarily complete
PBScode	PBS code from ATC code1

Brandname	From the PBS codes and ATCcode file from the PBS website.

Source Items

(From Survey 4 of the 1921-26 cohort)

Q69 Please write down the names of all your medications prescribed by a doctor. Where possible, copy names from the packets, or obtain a list from your regular pharmacist and return it with your survey.

The wording changes slightly as is shown in the table.
Participants recorded medications in open-ended text format.

Cohort	Survey	Question	Wording
1921-26	4	Q69	Please write down the names of all your medications prescribed by a doctor. Where possible, copy names from the packets, or obtain a list from your regular pharmacist and return it with your survey.
1946-51	5	Q43	Please write down the names of all your medications, vitamins, supplements or herbal therapies. Where possible, copy names from the packets.
1946-51	6	Q43	Please write down the names of all your medications, vitamins, supplements or herbal therapies taken in the in the PAST FOUR WEEKS. Where possible, copy names from the packets.
1973-78	5	Q19	Please write down the names of all your medications, vitamins, supplements or herbal therapies that you have taken in the last 4 weeks. Where possible, copy names from packets.
1973-78	6	Q17	Please write down the names of all your medications, vitamins, supplements or herbal therapies that you have taken in the last 4 weeks. Where possible, copy names from packets.
1973-78	7	Q23	Please write down the names of all your medications, vitamins, supplements or herbal therapies that you have taken in the last 4 weeks. Where possible, copy names from packets.
1973-78	8	Q23	Please write down the names of all your over the counter and non-prescription medications, vitamins, supplements or herbal therapies that you have taken in the *last 4 weeks*. Where possible, copy names from packets.

The questions began asking for medications only and later asked for medications, vitamins, supplements or herbal therapies. In this document the term ‘medications’ is used as shorthand to cover all the products asked about.

The majority of participants reported more than one medication and many reported non-prescription items as well as those prescribed by doctors. These non-prescription items included over-the-counter mediations, herbal medications and non-medical products.

Process for Editing and Assigning ATC Codes

We assigned an Anatomical Therapeutic Chemical (ATC) code or codes to the written medication where possible. Please note because of irregular spellings and irregular descriptions of medications the ATC code may not be assigned. The original text for each medication is put on the data so researchers can search the text. There were two editing steps, described below, and after each step the mediations were compared with the concordance file connecting common written responses and correct medication names. Some medications did not have direct ATC codes, in these cases the active drug ingredients were obtained where possible and matched to the ATC

codes. Some medications do not have ATC codes at all the in these cases the ATC codes were left blank.

1. **Assigning an ATC Code with the concordance file**

The written medication was compared with the drug name on the ATC code concordance file and if it matched the ATC code was assigned. The concordance file was downloaded from the PBS website (at the time of writing the latest file was 'drug_20170401.txt').

To account for the unusual spellings the written medication was also matched against any items on the 'stack' file. The stack file is a stack of previous misspellings and superfluous-word medications that have successfully been linked to a standard drug name and an ATC code. It is updated every time this process is completed.

If no ATC code could be assigned with the concordance or the stack file then the written medication was considered for editing.

2. **Editing the Written Medications**

For the first round of edits each medication was edited using software code which stripped away any superfluous words and numbers. The edited medication was compared with the concordance and stack file for an ATC code. If no ATC code was found then a second round of editing was carried out.

For the second edit the written medications were reviewed in a spreadsheet and any obvious misspellings corrected and superfluous words removed. This was based on the Data Management staff's knowledge of medications and common misspellings and unnecessary text. Then the medications were compared once more to match an ATC code or codes. If the editing produced an ATC code match then the original text and ATC code were added to the Stack file.

3. **Extra ATC codes were added**

There was often more than one ATC code for a medication, and so a downloadable file from the PBS website (at the time of writing the file was 'atc_20170401.txt') was used to get all the ATC codes that corresponded to the medication's drug name.

The downloadable files were from here:
https://www.pbs.gov.au/browse/downloads

ATC Codes

The WHO Collaborating Centre for Drug Statistics[2] has developed and now maintains the ATC/DDD (Defined Daily Dose) system. Data users are encouraged to consult the web site for further details.

The ATC code itself is a structured, 7-digit, alpha-numeric code with 5 levels.

1. Anatomical main group: the organ or system on which the drug acts; there are 14 such groups.
2. Therapeutic main group
3. Therapeutic subgroup
4. Chemical subgroup
5. Chemical substance

The 14 anatomical main groups and their codes are:

A	Alimentary tract and metabolism
B	Blood and blood forming organs
C	Cardiovascular system
D	Dermatologicals
G	Genitourinary system and sex hormones
H	Systemic hormonal preparations, excluding sex hormones
J	General anti-infectives for systemic use
L	Anti-neoplastic and immunomodulating agents
M	Musculo-skeletal system
N	Nervous system
P	Anti-parasitic products, insecticides and repellents
R	Respiratory system
S	Sensory organs
V	Various

The complete classification of metformin (below) illustrates the structure.

Level	**Description**	**Description for Metformin**	**ATC code**
1st level	Anatomical main group	Alimentary tract and metabolism	A
2nd level	Therapeutic subgroup	Drugs used in diabetes	A10
3rd level	Pharmacological subgroup	Oral blood glucose lowering drugs	A10B
4th level	Chemical subgroup	Biguanides	A10BA
5th level	Chemical substance	Metformin	A10BA02

The principles for classification with the ATC system are described by WHO as:

> "Medicinal products are classified according to the main therapeutic use of the main active ingredient, on the basic principle of only one ATC code for each pharmaceutical formulation (i.e. similar ingredients, strength and pharmaceutical form).
>
> A medicinal product can be given more than one ATC code if it is available in two or more strengths or formulations with clearly different therapeutic uses.
> A medicinal product may be used for two or more equally important indications, and the main therapeutic use of a drug may differ from one country to another. This will often give several classification alternatives. Such drugs are usually only given one code, the main indication being decided on the basis of the available literature. Problems are discussed in the WHO International Working Group for Drug Statistics Methodology where the final classification is decided. Cross-references will be given in the guidelines to indicate the various uses of such drugs.
>
> The ATC system is not strictly a therapeutic classification system. At all ATC levels, ATC codes can be assigned according to the pharmacology of the product. Subdivision on the mechanism of action will, however, often be rather broad, since a too detailed classification according to mode of action often will result in having one substance per subgroup which as far as possible is avoided. Some ATC groups are subdivided in both chemical and pharmacological groups. If a new substance fits in both a chemical and pharmacological 4th level, the pharmacological group should normally be chosen.

Substances classified in the same ATC 4th level cannot be considered pharmaco-therapeutically equivalent since their mode of action, therapeutic effect, drug interactions and adverse drug reaction profile may differ."

An example of coded data for one participant in the ALSWH, as it appears in the Survey 7 of the 1973-78 Medications file is:

Originalname	y7med	drugname	atccode1	atccode2	pbscode
MEGA MAGNESIUM - ETHICAL NUTRIENTS	MAGNESIUM	Magnesium compounds	A02AA		
MUSHROOM 6	MUSHROOM				
VALIUM 2.5MG	VALIUM 2.5MG	diazepam	N05BA01		5356X

References

1. Australian Statistics on Medicines 2001-2002 available at: http://www.health.gov.au/internet/wcms/publishing.nsf/Content/health-pbs-general-pubs-asm.htm

2. The ATC/DDD system, available at http://www.whocc.no/atcddd/

3. ATC and drug name concordance files : http://www.pbs.gov.au/browse/downloads