

An investigation into health professionals' use of medication information resources: results of a health library survey

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Acknowledgements: The authors would like to thank the other members of the project team – Amali Ford and Michelle Ramos as well as Trudi Maly, Director of Library Services, for her guidance and support throughout the project.

Conflict of Interest: The authors declares no conflict of interest in submission of this article.

Funding sources: No external funding has been received for this project.

Abstract

Introduction

Accurate and timely medication information is crucial for health professionals working in a hospital environment. This article focuses on the findings of a medication information resources survey undertaken in a northern Australian health service.

Objectives

To examine health professionals' usage and satisfaction of medication information resources available to them.

Methods

An online survey of staff was undertaken in May 2021.

Results

There were 206 responses to the survey. Eighty-eight percent of respondents were either nurses, pharmacists or doctors. The four most popular resources were: Australian Medicines Handbook, Therapeutic Guidelines, MIMS Online and Australian Injectable Drugs Handbook. Fifty-three percent of respondents use the resources daily or more than once per day. Doctors are more likely to use the app version and the Health Library's website is where the majority access the resource from. Eighty-one percent felt that it was extremely or moderately easy to access resources.

Discussion

Responses from the open-ended question indicate that there is a lack of awareness of a number of resources which supports the need for strategic promotion and education.

Conclusion

The results of this study have shown that health libraries subscribing to key medication information resources supports patient care and best practice.

Keywords

medication, information resources, health libraries, health professionals, Australia

Introduction

Accurate and timely medication information is crucial for health professionals working in the hospital environment. With the emphasis on evidence-based healthcare along with vast quantities of information available on the internet, it is important for clinicians to utilise high quality, reliable information resources to guide their day-to-day practice. In addition to this, given the pressure that health professionals are under they also need resources that are accessible and easy to use (Brennan et al, 2014). Examples of these include Australian Medicines Handbook and Therapeutic Guidelines. These are designed so that doctors, nurses and pharmacists can make the best decisions for patient care (Chang et al, 2016).

Hospital or health libraries and the resources they subscribe to can provide the support for correct prescribing, dispensing and administering of medications (Ndosi and Newell, 2010). Many do provide access to medication information resources but find they are a significant financial commitment (Chang et al, 2016). Health libraries not only provide access to this best available evidence, they have a key role and responsibility in the acquisition and management of information resources in financial climates that are scrutinised at the executive management level. It is important that libraries provide evidence to departmental executives for subscription renewal in addition to statistical usage data for securing and continuing funding (Addison et al, 2013).

In addition to this, these libraries are fundamental to providing resources needed for reducing the risk of medication errors. In Australia, this is in line with the National Safety and Quality Health Service (NSQHS) Standard 4 - Medication Safety (Australian Commission on Safety and Quality in Health Care, 2019). Health librarians are also always looking for ways to promote the availability of their electronic resources to staff who may be unaware of their existence.

Northern Territory (NT) Health Library Services expends a significant amount of their budget each year on medication information resources that includes MIMS Online and Australian Injectable Drugs Handbook. In addition to evaluating and

recommending resources, library staff also manage the procurement, licence agreements, payments, authentication and access. These resources are then highlighted on the library's website and a number of them are made available as mobile apps. Since a substantial portion of staff time and budget is allocated to providing this information, understanding how and why these resources are accessed is important in justifying their renewal.

This article reports on the findings of a recent workplace project targeting health professionals across the health department, known locally as NT Health. The purpose of the project was to determine which medication information resources staff find most useful, to gauge whether they meet the information needs of health professionals and whether there are any other resources the library could consider in its provision of evidence based medication information. This project has also been an opportunity to further promote the resources that are available via the Health Library's website.

The library serves a population of over 8000 staff (5000 are health professionals) who work across six hospitals and 50 other locations, including community clinics. With users in geographically remote places as well as hospital-settings it is essential for the library to facilitate access to online information resources (Younger, 2010). In 2020, resources containing medicines information were the most highly used on the library's website. All of these resources can be accessed via the Health Library's A to Z databases webpage as well as being promoted on a Medication Information page: <https://library.health.nt.gov.au/libraryservices/medicinesinformation>. A number of them are also listed on the homepage under "Popular Resources". The resources that are available as apps are: MIMS Online, Therapeutic Guidelines, Australian Medicines Handbook (AMH), AMH Children's Dosing Companion, Micromedex and UpToDate.

Two librarians worked on this project with a pharmacist and registered nurse from the Medication Safety team, based at Royal Darwin Hospital (RDH). This team was developed from the acknowledgement of the importance of medication safety in a fast-paced and challenging modern healthcare system (Adhikari et al, 2014). It provides guidance and support to hospital staff on medication safety and quality use of medicines, including education and training programs, audits and quality improvements. They also provide advice and evidence of compliance with the national medication safety standard to the health service executives.

Objectives

The aim of this study was to examine health professionals' usage and satisfaction of medication information resources available to them that support the safety and quality of clinical care. Other objectives were: to raise awareness and thereby increase usage of the medication information resources subscribed to by the library

and to assist the library's selection of electronic resources to best meet the needs of departmental staff

Methods

The medication information resources survey was developed using Survey Monkey to write the questionnaire. There were 14 questions; the majority were closed design with one open-ended question asking respondents if they had any comments or recommendations for alternative resources. A final optional question asked staff to submit their email address if they wanted library staff or the Medication Safety team to contact them with a response to their comments or suggestions. The survey is provided as an Appendix.

Approval to conduct this study was granted by the Human Research Ethics Committee of the Northern Territory Department of Health and the Menzies School of Health Research. The survey was piloted with a small group consisting of library staff and health professionals. Minimal changes were needed post-pilot. It was then open for four weeks in May 2021. A communication plan was developed for the marketing of the survey which identified key strategies for promotion and dissemination of results. These strategies included promoting the survey via the library's homepage, the staff intranet news feed and email lists. Posters were distributed throughout the health service at locations such as staff tea rooms, meeting rooms and lifts, with QR codes directly linking to the survey for ease of completion on mobile devices. Once closed, results were exported to excel to create charts and tables and cross-tabulation was used for analysis.

Results

Demographics

The number of respondents to the survey was 206. This exceeded initial expectation of 100 responses. The three main groups who responded to the survey were nurses/midwives (n=112, 54%), doctors (n=40, 19%) and pharmacists (n=33, 16%) (Table 1).

Which category best describes you?		
Answer Choices	Respondent Percent	Response Count (n)
Nurse	52%	108
Pharmacist	16%	33
Senior Doctor	12%	25
Junior Doctor	7%	15
Other	7%	14
Allied Health	3%	7
Midwife	2%	4
Total	100%	206

Table 1. Job Category of survey respondents

Staff responding to the survey were located across the NT with the largest group from Darwin (n=130, 63%) and the second largest from Alice Springs (n=52, 25%). This is reflective of where the majority of NT Health staff are located. The remainder were nine (4%) from Katherine, four (2%) from Gove/Nhulunbuy and two from Tennant Creek. Nine of the respondents were from other remote community locations.

Resources usage

Two questions were asked pertaining to the medication information resources used both in the past year and in the past four weeks. For both time periods, Australian Medicine Handbook was the number one used resource, then Therapeutic Guidelines, MIMS Online and Australian Injectable Drugs Handbook. See Table 2 for resources used in the past four weeks. A breakdown of the three most popular resources used by profession is seen in Table 3. There are a number of features utilised when accessing medication information resources. Respondents were able to select more than one feature. The most popular being drug administration information (n=180), drug interactions (n=158) and consumer information (n=81).

Which of the following medication information resources have you used in the past 4 weeks (please tick all that apply)?	
Answer Choices	Responses
Australian Medicines Handbook	138
Therapeutic Guidelines	112
MIMS Online	112
Australian Injectable Drugs Handbook	98
UpToDate	61
AMH Children's Dosing Companion	44
Renal Drug Database	40
Pregnancy and Breastfeeding Medicines Guide	37
Australian Immunisation Handbook	37
Other (please specify)	28
Paediatric Injectable Guidelines	27
Top End AntiMicrobial Stewardship	27
Micromedex	25
TOXINZ Poisons Information	12
Natural Medicines	9
Access Medicine - Drug Monographs	5
Answered	206

Table 2 Resources used in past four weeks

	Nurses/Midwives (n=112)	Pharmacists (n=33)	Doctors (n=40)
1	Australian Injectable Drugs Handbook (n=82)	Therapeutic Guidelines (n=33)	Therapeutic Guidelines (n=38)
2	MIMS Online (n=79)	Australian Medicines Handbook (n=33)	Australian Medicines Handbook (n=37)
3	Australian Medicines Handbook (n=77)	MIMS Online (n=32)	MIMS Online (n=19)

Table 3. Popular resources by profession

How often used

When asked how often respondents used the medication information resources, 53% (n=109) use them daily or more than once every day. Another 18% use these resources several times each week (Figure 1).

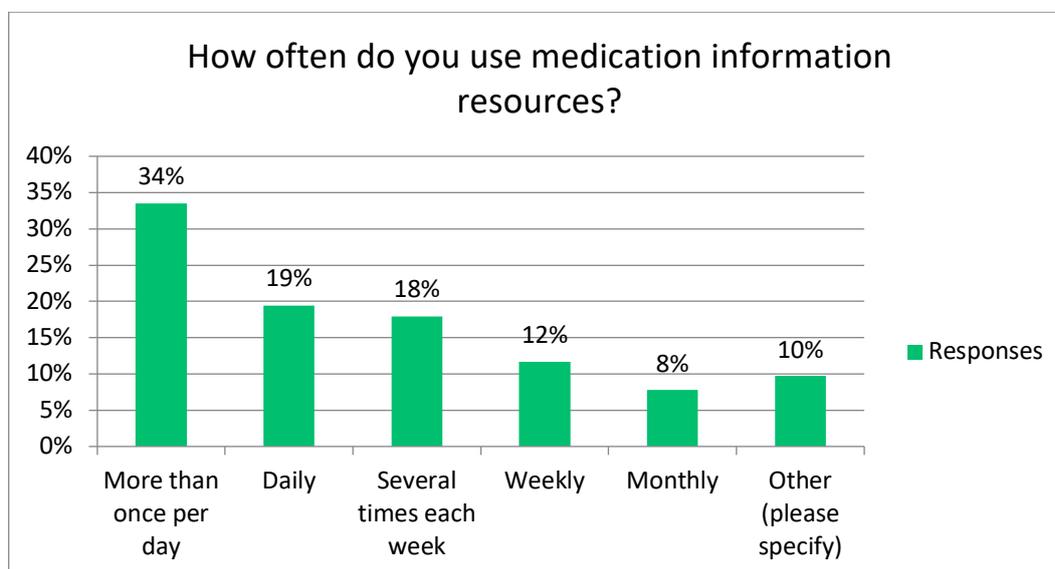


Figure 1. How often resources are used

Over 50% of respondents access these resources via the library’s website, 20% via the intranet platform ‘RefViewer’ and 10% from a mobile device (Figure 2).

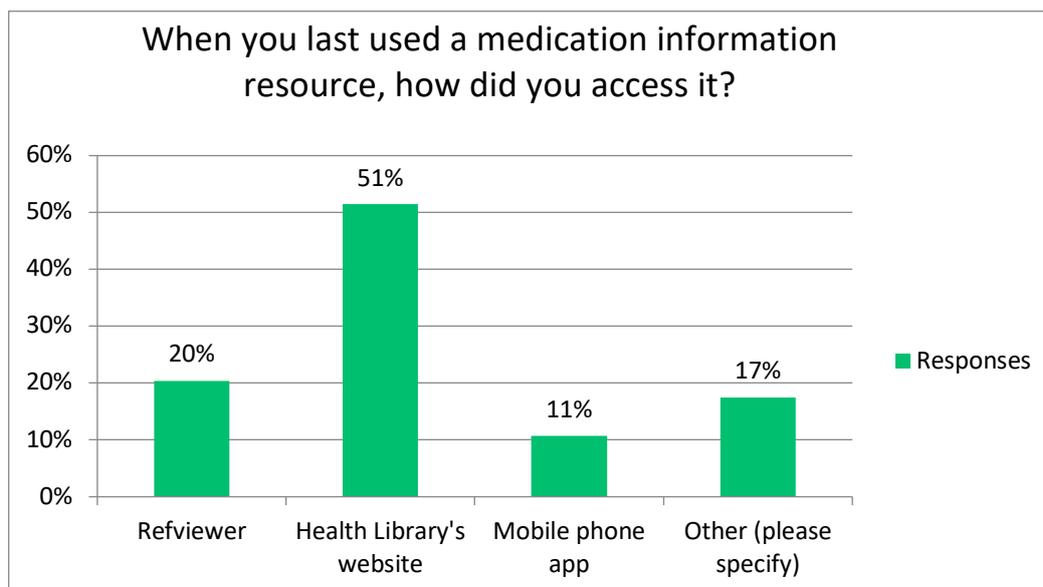


Figure 2. How resources are accessed

When asked whether they used any of the medication information resources as an app or viewed them on a mobile device 39% of respondents said “Yes”. The three most popular resources used as an app were: Therapeutic Guidelines, Australian Medicines Handbook and MIMS Online.

When cross-tabulating app usage by profession, doctors were more likely to have used this method for access in comparison with nurses and pharmacists. Out of 40 doctors, 27 (68%) of them have used the resources as an app, 13(39%) of the 33 pharmacists have done this and 32 (29%) of 112 nurses/midwives have used an app to obtain medication information.

Why information was needed

The most popular reason for accessing medication resources was for direct patient and client care followed by updating knowledge (Table 4).

Table 4. Why information was needed

What have you used this information for (please tick all that apply)?	
Answer Choices	Responses (n)
For direct patient/client care	173
To update my knowledge	133
To provide consumer information	68
To find evidence to support a change in current practice	67
To develop a procedure or guideline	47
For research or project work	37
Other (please specify)	11
Answered	206

Satisfaction

When asked whether the medication information resources provided an answer to a query the last time the respondent used one, 65% (n=133) said it completely answered their query and 26% (n=54) said moderately.

When asked about ease of access, 167 respondents (81%) felt that it was extremely or moderately easy to access resources.

Open-ended responses

There were 64 responses received for comments or suggestions about the medication information resources. When grouped into themes, there were positive responses that did not require follow-up and others that did require a follow-up. These were broken down further to determine whether the responsibility to follow-up was with the librarians, the medication safety nurse or the pharmacist.

The following is a selection of the responses:

- *Fabulous resources. Have never felt so informed.*
- *I think this is a great survey. I have learnt what other medication resources are out there.*
- *Thank you for making these available*
- *Thank you for providing access to such wonderful resources*
- *Thank you for supporting clinicians with access to TG / AMH etc - this is very valuable*
- *The medication resources are the most useful in all the library- please keep all access*
- *I use this on a daily basis and is essential especially Micromedex despite its cost*
- *Keep up the good work*

Discussion

A total of 206 out of 5130 health professionals who work for NT Health (Northern Territory Government, 2019) responded to the survey resulting in a response rate of 4%. Therefore, this survey has provided a snapshot of the needs of health professionals involved in the prescribing, dispensing and administering of medications, their usage and satisfaction with the resources.

The three main groups who responded to the survey were nurses/midwives (n=112, 54%), doctors (n=40, 19%) and pharmacists (n=33, 16%). There have been other studies on access to general information tools in the literature (Barnes et al, 2020). However, there appears to have been no other published research exploring the use of medication information resources by these three major groups of health professionals. Staff responding to the survey were located across the NT with the

largest group from Darwin (n=130) and the second largest from Alice Springs (n=52) which is where the majority of NT Health staff are located.

The survey results suggest there are four key resources that staff use regularly. Australian Medicines Handbook was number one, then Therapeutic Guidelines, MIMS Online and Australian Injectable Drugs Handbook. UpToDate was the fifth most popular resource used, however it needs to be noted that UpToDate is also used for other clinical purposes, not just for medicines information. These results are similar to a previous Australian study of nurse practitioners that found in the four weeks prior to undertaking the survey the three most frequently used resources were: Australian Medicines Handbook, MIMS and Therapeutic Guidelines (Buckley et al, 2015). A result of note in the survey is that Therapeutic Guidelines was not in the top three results of nurses. This may be because this resource is aimed at prescribers so appears to be more popular with doctors.

Apps use was significant amongst the doctors who responded to the survey, but not in the other professions. This may be because at ward level in the NT hospitals there is at least one dedicated electronic medication management laptop and tablet on a trolley as well as computers at each nurses' station to access information.

The least popular resources from this survey will be examined further for possible deselection. These were: Access Medicine – Drug Monographs and Natural Medicines Database. These less popular resources contain specialised information that may not be easily accessible elsewhere so could be an area for future research to evaluate their value.

Unsurprisingly, medication information is used by staff to ensure patient care is as safe and effective as possible with 173 respondents (84%) recording usage for this purpose. Resources are also highly used as a method of increasing knowledge (n=133), providing information to consumers (n=68), for supporting changes to clinical practice (n=67), implementing procedures and guidelines (n=47) and for research and project work (n=37). These responses indicate that the department has a culture of continual improvement and innovation and medication resources provide the support and evidence required to facilitate the activities being undertaken by staff.

The survey found a high percentage of respondents discover the information they are searching for when using a medication information resource. Sixty-five percent (n=133) said it completely answered their query and 26% (n=54) said moderately. Responses from the survey also showed the majority (81%) find these resources extremely or moderately easy to access. However, this means that 1 in 5 respondents are having difficulty finding what they need which provides the rationale for future staff development and training via promotion and outreach activities.

Librarians are aware of the important need for outreach within their organisation in order to raise awareness of available resources (Clark, 2021). Within NT Health, library staff send out a monthly news alert to email distribution lists that reaches everyone. The team also makes use of the internal intranet page, and targets work units with tailored training. Since undertaking the survey, a communication plan has been developed to address gaps where some staff don't seem to know what the library can provide to them.

The communication plan will include liaison with stakeholders to provide additional training opportunities, improve visibility of the library with pop up stands at intervals to promote resources and to provide success stories from users in order to generate interest and acknowledgement of the library. A positive finding from this study and a recurring theme in the literature is ease of information access and its impact on the quality of clinical decision-making (Barnes et al, 2020). Nowadays, a large proportion of hospitalised patients have co-morbidities, so the number of medications and the information needed to dispense them safely and effectively is becoming difficult. Some of the potential risks due to gaps in knowledge include: preventable harm, sub-optimal therapeutic outcomes and the corresponding economic burden to the health system (Campbell et al, 2016).

In acknowledgment of the open-ended responses received, the library has implemented a number of positive changes that facilitate easier access to some resources. The Medication Safety team are addressing issues concerning IT access from the 'RefViewer' intranet platform.

The library is aiming to improve relationships with pharmacy managers and work more closely with them to ensure continued access to the most useful and appropriate resources. A number of additional resources were suggested in response to the open-ended question. Free resources were added to the medication information page on the library website. There were also resources suggested that the library already subscribes to. These will be promoted. The library has arranged trials for other suggested resources such as AusDi (an Australian medicines information resource) in order to gather insight into whether staff would use alternatives if they were made available. Trials are still in progress at this time. An infographic was created and displayed in the monthly news alert and on the library's homepage to highlight the results of the survey to staff across the Territory.

Limitations

The medication information resources survey has provided a snapshot of opinions and has thereby assisted the Health Library staff and the Medication Safety team to know who is using these resources and whether they are satisfied with them.

The great distances between health service locations, and the location of the project team all being within the major RDH campus may have been a reason for the low number of responses from regional locations.

Another limitation was the low response rate from non-nursing professions that could have influenced the outcomes noted in the survey overall. A balanced number of respondents across the professions would have given a more accurate picture.

Additionally, the experience level of individual staff was not explored, so it is difficult to tell from survey responses whether those who experienced any difficulty in using medication resources was a result of professional inexperience, user error or limited searching skills.

Further questions that could have been asked are whether staff have their own subscription or purchased an app to any medication information resources. This would have provided insight into any additional tools in use. Within the answer options for information resources, it may have been useful to include expert opinion such as 'consulting the pharmacist' or a colleague. This would have highlighted the reliance on other people in contrast to paid medication resource subscriptions. Additionally, having an open ended question asking how a resource may have failed to provide the required answer would have given useful information into any barriers or deficiencies users encountered when using a resource.

Conclusion

Health professionals have demanding jobs so require quick and easy access to medication information resources that can assist them in undertaking their day-to-day work and to ensure patient safety. The results of this survey have indicated that the library is subscribing to the key resources that enable pharmacists, nurses and doctors to keep up to date with latest medication information for a variety of purposes including direct patient care. The survey has also provided valuable information to help inform future renewals as well as the opportunity to plan for training and promotion activities.

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Appendix - Survey Questions

NT Health Library Medication Resources Survey

The Health Library and the Medication Safety team would appreciate your input about medication information resources to guide the future of the Library's online collection and to support the information needs of NT Health staff across the Territory.

By completing this survey you are consenting to information being used for the above purposes. Participant responses will remain anonymous.

The researchers may use some of the information to write a journal article for publication.

The following survey will take only a few minutes of your time.

1. Which category best describes you?

Nurse

Midwife

Senior Doctor

Junior Doctor

Pharmacist

Allied Health

Other (please specify)

2. Where are you located?

Darwin/Palmerston

Katherine

Alice Springs

Gove/Nhulunbuy

Tennant Creek

Other (please specify)

3. How often do you use medication information resources?

More than once per day

Daily

Several times each week

Weekly

Monthly

Other (please specify)

4. Which of the following medication information resources have you used in the past year (please tick all that apply)?

Therapeutic Guidelines

Australian Medicines Handbook
MIMS Online
Renal Drug Database
AMH Children's Dosing Companion
Australian Injectable Drugs Handbook
Pregnancy and Breastfeeding Medicines Guide
Micromedex
TOXINZ Poisons Information
Paediatric Injectable Guidelines
Natural Medicines
Australian Immunisation Handbook
Access Medicine - Drug Monographs
UpToDate
Top End Anti Microbial Stewardship
Other (please specify)

5. *Which of the following medication information resources have you used in the past 4 weeks (please tick all that apply)?*

Therapeutic Guidelines
Australian Medicines Handbook
MIMS Online
Renal Drug Database
AMH Children's Dosing Companion
Australian Injectable Drugs Handbook
Pregnancy and Breastfeeding Medicines Guide
Micromedex
TOXINZ Poisons Information
Paediatric Injectable Guidelines
Natural Medicines
Australian Immunisation Handbook
Access Medicine - Drug Monographs
UpToDate
Top End Anti Microbial Stewardship
Other (please specify)

6. *What have you used this information for (please tick all that apply)?*

For direct patient/client care
To update my knowledge
To find information to support or change practice
To develop or update a procedure or guideline
For research or project work
To provide consumer information

7. *When you last used a medication information resource did the information you accessed answer your query?*

- Completely
- Moderately
- Somewhat
- Slightly
- Not at all

8. *When you last used a medication information resource, how did you access it?*

- Refviewer
- Health Library's website
- Mobile phone app
- Other (please specify)

9. *Have you used any of the medication information resources as an app or viewed on a mobile device?*

- Yes
- No

10. *If you answered yes to the previous question, which of the following have you used on a mobile device (please tick all that apply)?*

- Therapeutic Guidelines
- Australian Medicines Handbook
- MIMS Online
- Renal Drug Database
- AMH Children's Dosing Companion
- Australian Injectable Drugs Handbook
- Pregnancy and Breastfeeding Medicines Guide
- Micromedex
- TOXINZ Poisons Information
- Paediatric Injectable Guidelines
- Natural Medicines
- Australian Immunisation Handbook
- Access Medicine - Drug Monographs
- UpToDate
- Top End Anti Microbial Stewardship
- Other (please specify)

11. *When accessing the medication information resources which features have you used (please tick all that apply)?*

- Drug administration information
- Drug interactions
- Drug calculators

Pill identification
Crushing/alternative dose form
Paediatric dose adjustment
Storage information
Consumer information
Other (please specify)

12. How easy is it to access medication information resources at NT Health

Extremely
Moderately
Somewhat
Slightly
Not at all

13. Do you have any other comments or recommendations for alternative resources so the Health Library team and the Medication Safety team can continue to support your patient care?

14. If you would like Health Library staff or the Medication Safety team to contact you please provide your name and email address (optional)

Name
Email Address