

Appropriate use of medicine: the role of dose information on dispensed prescription medicine labels

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Background

- Suboptimal communication of dosage instructions via dispensed prescription medicine labels can result in misunderstanding and medication errors.
- There is a need for optimal expression of dosage instructions on labels.
- User testing¹ pre-empts and resolves written information-related problems, through engaging people's functional health literacy.²
- Further research is needed to better understand how people apply dosage information from a medicine label.

Objective

To determine how dosage information on dispensed prescription medicine labels impacts medicine-taking intentions.

Methods

Step 1: User testing of 12 dispensed prescription medicine labels

- Demographically matched cohorts of 10 consumers evaluated 3 unique labels for varying dosage forms (total n=40)
- 4/12 labels were for solid oral dosage forms (tablets / capsules); dosage expression was varied between the labels (Table 1)
- Each participant evaluated 1 of these 4 labels, and another 2

Step 2: Participant interviews

Participants were asked about:

- **Dosage for the medicine**
- **Action to be taken in pain scenario³**
 - "Say you had back pain at 9 am, what times in the day would you take it if you had constant back pain?"
- **Planning of dosing schedule scenario**
 - Hypothetically taking 3 medicines (X, Y, Z), plus a new fictitious medicine
 - Asked to tabulate complete dosing schedule for all 4 medicines for 1 day

Step 3: Data analysis

- Responses were audio recorded, transcribed verbatim, and content analysed
- Two pharmacists coded all dosing schedule-related responses using a coding framework developed *a priori*

Table 1: Dosage expression variation on solid oral dosage form labels

Label	Dosage expression	Dosage specified								
1	Frequency of doses per day	"Take 1 capsule four times a day"								
3	Approximate times of day for dosing	"Take 2 tablets in the morning 2 tablets at midday 2 tablets in the evening 2 tablets at night"								
4	Tabulated dose schedule with explicit times	"Take ONE capsule four times a day" <table border="1"> <thead> <tr> <th>Morning (7 to 9am)</th> <th>Midday (12 to 1pm)</th> <th>Evening (4 to 6pm)</th> <th>Bedtime (9 to 11pm)</th> </tr> </thead> <tbody> <tr> <td>1 capsule</td> <td>1 capsule</td> <td>1 capsule</td> <td>1 capsule</td> </tr> </tbody> </table>	Morning (7 to 9am)	Midday (12 to 1pm)	Evening (4 to 6pm)	Bedtime (9 to 11pm)	1 capsule	1 capsule	1 capsule	1 capsule
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1 capsule	1 capsule	1 capsule	1 capsule							
8	Explicit dosing interval	"Take 2 tablets every 6 hours, when needed for knee pain Do not take more than 8 tablets in 24 hours"								

For more detail on user testing of dispensed prescription medicine labels, please see poster: **Evidence for a standardised approach to naming medicines on dispensed labelling**

References

- ¹Raynor DK, Knapp P, Silcock J, Parkinson B, Feeney K. "User-testing" as a method for testing the fitness-for-purpose of written medicine information. *Patient Educ Couns*. 2011;83:404-410
- ²Parker RM, Baker DW, Williams MV, Nurss JR. The test of functional health literacy in adults: a new instrument for measuring patients' literacy skills. *J Gen Intern Med*. 1995;10:537-541
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- ⁴Roundtable Nov 2013 recommendations www.safetyandquality.gov.au/wp-content/uploads/2013/11/Pharmacy-Dispensing-Label-Workshop-25-Nov-2013-report.pdf
- ⁵Health literacy. Taking action to improve safety and quality www.safetyandquality.gov.au/wp-content/uploads/2014/08/Health-Literacy-Taking-action-to-improve-safety-and-quality.pdf

Results

Pain scenario responses

- Planned dosing intervals varied (1.5 to 7 hours) for labels where explicit intervals or times were not provided (Labels 1 and 3)
- More participants indicated that they would evenly space dosing intervals for Label 1 (n=6) than Label 3 (n=3)

Dosing schedule planning

- 28/40 participants appropriately scheduled the medicines (Table 2)
- Of the participants who designated inappropriate schedules (n=12), 3/12 had issues with scheduling the new fictitious medicine

Table 2: Summary of key findings for dosing scenario questions (n=10 per label)

Label	Pain scenario		Dosing schedule planning
	Appropriate dosing intervals	Inappropriate dosing interval(s)	Appropriate dosing schedule
1	7	3	7
3	3	7	8
4*	<ul style="list-style-type: none"> • 7 participants cited dosing times as per the dosing table on the label (when the information was located initially) • 3 participants were asked the pain scenario question, with proposed dosing times in line with the table 		7
8	9	1	6

* As Label 4 contained the table with specific times at which the doses were to be taken, the pain scenario question was only asked if the participant did not already specify times they would take the medicine

Conclusion

- Explicitly stated dosing intervals led to more appropriate dose spacing.
- Shortened dosing intervals reflect pragmatic constraints which may influence medicine-taking intentions.
- A dosing table may assist consumers taking multiple medicines with scheduling their medicines appropriately.

Subsequent evaluation and future directions

A second round of user testing revealed clear principles for dosage on dispensed medicine labels. Label prototypes stemming from this research will be evaluated quantitatively with labelled placebo products.

Consistent and standardised presentation of medicines information should help consumers of varying health literacy identify their medicine and understand how to use it^{4,5}. The results will inform a national dispensed medicine label standard.

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