Improving Prescription Medication Labels for Older Adults in Singapore: Why and How?

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CARE Experts Webinar
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Contents

• WHY - Identifying the problem
  ➢ Prescription medication labels
  ➢ Prescription medication labels and the elderly (in Singapore)

• HOW - Identifying and testing two solutions
  ➢ Bilingual text
  ➢ Pictograms

• HOW – Addressing what did not work, and identifying more solutions
  ➢ Prescription Medication Label Improvement for Singaporean Elderly (PROMISE)
    ▪ Findings till date, and next steps

• Questions (and Answers)
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• Questions (and Answers)
Public and private clinics and hospitals dispense prescription medications with a pharmacy generated label that provide medication-related information and instructions for patients.
Actual PMLs from public and private providers

Key medication information (and patient and clinic details)

- drug name, dose, quantity dispensed
- dosage and route
- indications
- precautions and side-effects (if any)

- Variable format and presentation
- English is the commonly used language
WHY? – From a personal perspective
Understanding of PMLs is important – especially among the Elderly

- Essential for proper medication adherence and patient safety

- Incorrect understanding ~ related to increased healthcare utilization (outpatient)

- Increased healthcare utilization with age = Elderly are more likely to receive prescription medications (vs younger)

- Elderly are more likely to interpret medication labels incorrectly

- Ensuring understanding of prescription medication labels:
  - Empowers the elderly for self-care
  - Enables the elderly to take responsibility for own medication, supporting higher-level functioning (i.e., an Instrumental Activity of Daily Living)

Brown MT et al., 2011; Williams CM, 2002; Davis TC, 2006; Ministry of Health Singapore, 2006; Jeetu G et al., 2011; Davis TC, 2006; Morrell RW et al., 1989; Moisan J et al., 2002; Tsai TI et al., 2014; Barer ML et al., 1998; Wiener JM et al., 2002; Lubitz J et al., 2001; Williams CM, 2002
PMLs are the principal source of medication information for the elderly (in Singapore)

Key adjunct to medication counselling

Increasing proportion of elderly living alone (Singapore included)

Do they actually use the internet to access medication information?
PMLs of elderly Singaporeans on regular prescription medications

SAFE-PHASE examined 1,167 PMLs
99.7% used the English language (with or without any other language)

Language used in medication instructions

- English ONLY (81.15%)
- English with another language (18.85%)

n=947
n=216
Many Singaporeans aged 65 years and older are unable to read English

- Unable to read, 61%
- Able to read, 39%

Self-reported ability to read with understanding an English newspaper

Possible challenges in understanding PMLs in English
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Some strategies for improving understanding of PMLs

**Multilingual instructions**
- Adults with limited English proficiency
- Benefit for care provider and patients
- Effective communication of product use information
- Improved product knowledge
- Improved mean scores for ease of use

**Pictograms**
- Low literate and elderly populations
- Use in combination with written text
- Requires proper cultural adaptation and validation in the target population

Can these strategies help the elderly Singaporeans in understanding PMLs?

Mohan A et al., 2013; Sansgiry S et al., 2007; Bailey SC et al., 2015; Bailey Sc et al., 2012; Berthenet M et al., 2016; Ng AWY et al., 2016; Barros IM et al., 2014; Katz M et al., 2006
Aim

To compare the understanding* of PMLs among elderly Singaporeans randomized to 1 of 4 prototype labels, which contain the same medication information and instructions but vary in their use of an additional language along with English and/or pictograms

*Based on the response to a standard set of questions

<table>
<thead>
<tr>
<th>Prototype</th>
<th>Three PMLs (Augmentin, Metformin and Phenytoin) with the same information and instructions provided in:</th>
</tr>
</thead>
<tbody>
<tr>
<td>ET label</td>
<td>English Text</td>
</tr>
<tr>
<td>ETP label</td>
<td>English Text with FIP Pictograms</td>
</tr>
<tr>
<td>BLT label</td>
<td>Bi-Lingual Text (i.e., English with Chinese or Malay or Tamil)</td>
</tr>
<tr>
<td>BLTP label</td>
<td>Bi-Lingual Text (i.e., English with Chinese or Malay or Tamil) with FIP* Pictograms</td>
</tr>
</tbody>
</table>

*FIP, International Pharmaceutical Federation
Assume that your doctor prescribed a medication for you that you received in a packet with this label.

<table>
<thead>
<tr>
<th>Q1</th>
<th>How many times a day do you have to take this medication?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>__________ times / Don’t know / Not sure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q2</th>
<th>How many tablets do you have to take each time you take this medication?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>__________ tablets / Don’t know / Not sure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q3</th>
<th>If you were to take this medication correctly as prescribed by the doctor, how many days will your medication last?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>__________ days / Don’t know / Not sure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q4</th>
<th>Assume that you took the first dose of this medication at 8 o’clock this morning. About what time, or when, should you take the next dose?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>____________________________________________________________________ / Don’t know / Not sure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q5</th>
<th>For which specific side effect of this medication should you consult a doctor?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>______________________________________________________________________ / Don’t know / Not sure</td>
</tr>
</tbody>
</table>
Proportions of elderly with complete understanding and any understanding, by label

- **Complete understanding**
  - English-text label: 17.9%
  - English-text-with-pictogram label: 50.4%
  - Bilingual-text label: 75.9%
  - Bilingual-text-with-pictogram label: 76.5%

- **Any understanding**
  - English-text label: 50.4%
  - English-text-with-pictogram label: 62.6%
  - Bilingual-text label: 36.9%
  - Bilingual-text-with-pictogram label: 40.1%
Proportions of elderly with complete understanding and any understanding, by label and English-reading ability

Elderly who are able to read English

- English-text label: 99.1%
- English-text-with-pictogram label: 99.1%
- Bilingual-text label: 95.1%
- Bilingual-text-with-pictogram label: 95.0%

Elderly who are unable to read English

- English-text label: 48.7%
- English-text-with-pictogram label: 53.7%
- Bilingual-text label: 54.6%
- Bilingual-text-with-pictogram label: 59.5%

Proportions of elderly with complete understanding and any understanding, by label and English-reading ability.
ACKNOWLEDGEMENT: This research was supported by the Singapore Ministry of Health’s National Medical Research Council under its Clinician Scientist – Individual Research Grant – New Investigator Grant (NMRC-CNIG-1124-2014). This work was also supported by the Duke-NUS Geriatric Research Fund.
Conclusion

- Adding a **preferred official second language** and/or **pictograms** to ‘regular’ purely English text PMLs will **enhance PML understanding** among elderly Singaporeans.

- Low proportions (<50%) with **complete understanding** across all prototypes ~ more careful assessment of **other issues related to label design and content**.

- Pictograms helped?
  - **BLTP label** had the **highest proportion** of elderly with **complete** and **any understanding**, similar to the BLT label and much higher than the ETP label.
  - **Local adaptation of the FIP pictograms**.
Recent prescription medication packets in Singapore

<table>
<thead>
<tr>
<th>Time</th>
<th>Tablet/s</th>
<th>Biji</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Afternoon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evening</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Night</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Caution!** Do not exceed the stated dose.
Keep medicines away from children.
Keep medicines away from heat and light.
Challenges that remain

Bilingual PMLs
- Finding equivalent terms
- Maintaining similar reading levels
- Accounting for dialects and regional differences

Pictograms
- Cultural adaptation
- Pre-testing

Standardization across providers and settings

Administrative and Financial (and Environmental)

Bailey et al., 2012
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Prescription Medication Label Improvement for Singaporean Elderly (PROMISE)

Further investigation on prescription medication labels for elderly Singaporeans – ONGOING

Funding: Ministry of Health, Singapore sub-award through Centre for Ageing Research and Education (CARE), Duke-NUS Medical School, Singapore (PI: Rahul Malhotra)

PROMISE (Prescription Medication Label Improvement for Singaporean Elderly) study group (listed alphabetically, after the Principal Investigator):

Rahul Malhotra (Principal Investigator; Centre for Ageing Research and Education, Duke-NUS Medical School, Singapore and Health Services and Systems Research, Duke-NUS Medical School, Singapore); John Carson Allen (Centre for Quantitative Medicine, Duke-NUS Medical School, Singapore); Ang Wee Ping (Clinic Pharmacy, SingHealth Polyclinics, Singapore); Bek Siew Joo Esther (National Healthcare Group Pharmacy, Singapore); Chan Alexandre (Department of Pharmacy, Faculty of Science. National University of Singapore, Singapore and Department of Pharmacy, National Cancer Centre, Singapore); Chew Lita Siu Tjien (Department of Pharmacy, Faculty of Science. National University of Singapore, Singapore and Department of Pharmacy, National Cancer Centre, Singapore); Koh Choon-Huat Gerald (School of Public Health, Saw Swee Hock School of Public Health, National University of Singapore, Singapore); Lee Ting Yee (Clinic Pharmacy, SingHealth Polyclinics, Singapore); Ng Wai Chong (Tsao Foundation, Singapore); Sumithra Suppiah (Centre for Ageing Research and Education, Duke-NUS Medical School, Singapore); Tan Ngiap Chuan (Department of Research, SingHealth Polyclinics, Singapore); Tan Shu Ying Valerie (National Healthcare Group Pharmacy, Singapore); Tan Yi Wen (Centre for Ageing Research and Education, Duke-NUS Medical School, Singapore); Tang Imel (Clinic Pharmacy, SingHealth Polyclinics, Singapore); Tang Wern Ee (National Healthcare Group Polyclinics, Singapore); Tay Siew Cheng Sarah (Clinic Pharmacy, SingHealth Polyclinics, Singapore); Régis Vaillancourt (Department of Pharmacy, Children’s Hospital of Eastern Ontario, Canada); Csilla Weninger (National Institute of Education, Nanyang Technological University, Singapore).
PROMISE

GOAL: To provide the evidence-base for developing and implementing easily understood, context- and culturally-appropriate PMLs for elderly Singaporeans

AIM 1: Document the experience of elderly patients, family caregivers of the elderly, and healthcare providers (pharmacists/pharmacy technicians in public polyclinics) with PMLs from primary healthcare clinics in Singapore

AIM 2: Assess the validity of the FIP pictograms among elderly Singaporeans, and if needed, adapt the FIP pictograms (or develop new pictograms) to the Singapore context

AIM 3: Assess the validity of the ‘re-designed’ FIP pictograms (or new pictograms) among elderly Singaporeans

AIM 4: Quantify the preferences of elderly Singaporeans for the content and format of PMLs

AIM 5: Enable the implementation of improved PMLs
**AIM 1: Interviews with elderly, family caregivers & pharmacy staff**

<table>
<thead>
<tr>
<th>Elderly</th>
<th>Family Caregivers</th>
<th>Pharmacy Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 20 in-depth interviews</td>
<td>• 10 in-depth interviews</td>
<td>• 10 in-depth interviews</td>
</tr>
<tr>
<td>• 10 with elderly who <strong>could read</strong> in English &amp; 10 with elderly who <strong>cannot read</strong> in English.</td>
<td>• Singaporeans/Permanent Residents aged ≥21 years.</td>
<td>• Across 6 polyclinics in Singapore.</td>
</tr>
<tr>
<td>• Singaporeans/Permanent Residents aged ≥60 years.</td>
<td>• Involved in the management of medications of a Singaporean/ Permanent Resident who is aged ≥60 years.</td>
<td>• Polyclinic pharmacists and pharmacist technicians who dispense prescription medications <strong>AND</strong> provide medication counselling to elderly patients.</td>
</tr>
<tr>
<td>• Taken prescription medications dispensed from polyclinics/GP clinics in the past 3 months.</td>
<td>• Elderly’s medication must be dispensed from polyclinics/GP clinics in the past 3 months.</td>
<td></td>
</tr>
<tr>
<td>• Not cognitively impaired, deaf or blind.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Illiteracy and Limited English Proficiency

Elderly’s perspectives

“Sometimes it is not clear. Because some… words are very complex. Because our English is not very good what. But for your Mandarin ones, we can read very well.”

“Much better if they write (in) Malay and English language… ’Two’ in number is better. No need to put in words anymore lah.”

“If you have animation, pictures, you know? Like those… little icon things ah, like taken with food…”

Pharmacy staff’s solutions

- Re-write in patients’ preferred language
- Re-write numbers as numerals
- Sketch pictures
### Elderly’s perspectives

“But this one is too small, far too small... Ya, especially this line. For me, sometimes I can’t see, I take the magnifying glass to read.”

“I have to... wear glasses and slowly, slowly read every writing... You see these (words) are stuck together hor? It is stuck together, you must be very careful mah. Like there is space here then ok la.”

### Pharmacy Staff’s Solution

- Re-write instructions in a larger handwriting either in English or another preferred language
- Use of bold point markers
Elderly’s perspectives

“I think that’s important. Because, I mean, if I were to take medication, I want to know what is it for. I just can’t take it blindly.”

“Ya, sometimes I have to look (for expiry date) here (at the medicine foil), it’s so difficult to look, you know?”

“More details, one in the morning, one at night. That’s the best. Ah, we want to know… when it finishes.”

Pharmacy Staff’s Solution

- Write indication of medication either in English or preferred language
- Sketch pictures to represent frequency
AIM 1: Conclusion

- **Strong need to improve current PMLs**
  - Older Singaporeans (and their caregivers) experience difficulties reading and obtaining desired medication information from PMLs
  - “Ad-hoc” solutions by pharmacy staff

- **Older Singaporeans, and their caregivers, voiced several PML improvements**
  - **Format:** Larger font; Dose in numeric (vs text); Tabular presentation of dose and frequency; Presentation of dose and frequency in context of **time of the day** (than times per day); List / Better **spacing** instead of a lump of text
  - **Content:** Simpler language; Bilingual text; Pictograms; Indication; Expiry date; Food instructions; Missed dose instructions
AIM 2: Elderly feedback on pharmaceutical pictograms

A total of 54 pictograms (52 from FIP) and 3 storyboards tested among 250 elderly (≥60 years) unable to read English who attended NHGP and SHP polyclinics (Mar – Aug 19)
**AIM 2: Elderly feedback on pharmaceutical pictograms**

**(Methodology)**

**Transparency**

If you see this picture on a medicine label, what do you think it means?

Any response other than “don’t know”/ “not sure”

1. How do you know?
2. Tell me everything you see in this picture.

**Translucency**

Inject under the skin

1. On a medicine label, this picture means, inject under the skin. How can we make the picture better?
2. Do you have any other suggestions to make this picture more appropriate for the elderly?
3. How well does this picture represent the intended meaning “Inject under the skin”? Please rate on a scale of 1 to 7, where 1 is Does not represent and 7 is Completely represents.

- Each pictogram / storyboard was shown to at least 50 respondents
- Each respondent was shown 11 pictograms and 1 storyboard
A pictogram is valid if:

✓ it has **high transparency**, i.e., ≥66.7% (ISO 9186) of respondents have a “correct” response in the assessment of transparency **and**

✓ it has **high translucency**, i.e., ≥85% of respondents reply that the pictogram is strongly related to its referent (i.e., translucency score of ≥5).

**AIM 2: Elderly feedback on pharmaceutical pictograms**
## AIM 2: Elderly feedback on pharmaceutical pictograms

High Transparency AND High Translucency = 14 FIP pictograms

<table>
<thead>
<tr>
<th>PICTOGRAM</th>
<th>% Consolidated transparency scores [Ref.: ≥66.7%]</th>
<th>% Consolidated translucency scores that are ≥5 [Ref.: ≥85%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1 drop in the left ear</td>
<td>100.0</td>
<td>88.2</td>
</tr>
<tr>
<td>2 1 drop in the right eye</td>
<td>98.0</td>
<td>90.2</td>
</tr>
<tr>
<td>3 Inject under the skin</td>
<td>98.0</td>
<td>92.2</td>
</tr>
<tr>
<td>4 Headache</td>
<td>98.0</td>
<td>92.0</td>
</tr>
<tr>
<td>5 High blood pressure</td>
<td>98.0</td>
<td>94.1</td>
</tr>
<tr>
<td>6 Back pain</td>
<td>96.1</td>
<td>90.2</td>
</tr>
<tr>
<td>7 Cough</td>
<td>94.1</td>
<td>92.2</td>
</tr>
<tr>
<td>8 Dissolve 1 sachet in water</td>
<td>90.2</td>
<td>90.2</td>
</tr>
<tr>
<td>9 Morning</td>
<td>86.3</td>
<td>88.2</td>
</tr>
<tr>
<td>10 Inhale</td>
<td>84.3</td>
<td>92.2</td>
</tr>
<tr>
<td>11 Vomiting</td>
<td>82.4</td>
<td>86.3</td>
</tr>
<tr>
<td>12 Morning, Noon, Evening, Night</td>
<td>80.4</td>
<td>98.0</td>
</tr>
<tr>
<td>13 Do not drink alcohol</td>
<td>76.5</td>
<td>86.3</td>
</tr>
<tr>
<td>14 Keep in the fridge</td>
<td>70.6</td>
<td>86.3</td>
</tr>
</tbody>
</table>

Validated! – Not be re-designed or re-tested
### AIM 2: Elderly feedback on pharmaceutical pictograms

High Transparency AND Low Translucency = 6 FIP pictograms

<table>
<thead>
<tr>
<th>PICTOGRAM</th>
<th>% Consolidated transparency scores [Ref.: ≥66.7%]</th>
<th>% Consolidated translucency scores that are ≥5 [Ref.: ≥85%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Night</td>
<td>94.1</td>
<td>82.4</td>
</tr>
<tr>
<td>2 2 tablets</td>
<td>92.0</td>
<td>80.0</td>
</tr>
<tr>
<td>3 1 tablet</td>
<td>88.0</td>
<td>78.0</td>
</tr>
<tr>
<td>4 1 tablet</td>
<td>86.0</td>
<td>76.0</td>
</tr>
<tr>
<td>5 Rash</td>
<td>80.4</td>
<td>80.4</td>
</tr>
<tr>
<td>6 8 mL</td>
<td>70.6</td>
<td>82.4</td>
</tr>
</tbody>
</table>

**Partially Validated - Not be re-designed or re-tested**
(as the transparency scores are above the threshold)
## AIM 2: Elderly feedback on pharmaceutical pictograms

Low Transparency AND Low Translucency = 30 FIP pictograms

<table>
<thead>
<tr>
<th>PICTOGRAM</th>
<th>% Consolidated transparency scores [Ref.: ≥66.7%]</th>
<th>% Consolidated translucency scores that are 25 [Ref.: ≥85%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Insert 1 suppository</td>
<td>60.8</td>
<td>82.4</td>
</tr>
<tr>
<td>2 Noon</td>
<td>58.8</td>
<td>74.5</td>
</tr>
<tr>
<td>3 Fever</td>
<td>51.0</td>
<td>72.5</td>
</tr>
<tr>
<td>4 Evening</td>
<td>49.0</td>
<td>74.5</td>
</tr>
<tr>
<td>5 Shake</td>
<td>43.1</td>
<td>68.6</td>
</tr>
<tr>
<td>6 Keep out of reach of children</td>
<td>43.1</td>
<td>68.6</td>
</tr>
<tr>
<td>7 Diarrhea</td>
<td>41.2</td>
<td>62.7</td>
</tr>
<tr>
<td>8 Fatigue</td>
<td>41.2</td>
<td>60.8</td>
</tr>
<tr>
<td>9 Muscular pain</td>
<td>41.2</td>
<td>72.0</td>
</tr>
<tr>
<td>10 Drowsiness</td>
<td>40.0</td>
<td>68.6</td>
</tr>
<tr>
<td>11 Weight gain</td>
<td>39.2</td>
<td>78.4</td>
</tr>
<tr>
<td>12 Constipation</td>
<td>39.2</td>
<td>80.4</td>
</tr>
<tr>
<td>13 Do not crush</td>
<td>36.0</td>
<td>72.5</td>
</tr>
<tr>
<td>14 Half a tablet</td>
<td>35.3</td>
<td>74.5</td>
</tr>
<tr>
<td>15 Giddy when getting up</td>
<td>33.3</td>
<td>76.5</td>
</tr>
<tr>
<td>16 Nausea or Feeling of wanting to vomit</td>
<td>31.4</td>
<td>78.4</td>
</tr>
<tr>
<td>17 Blurred vision</td>
<td>29.4</td>
<td>54.9</td>
</tr>
<tr>
<td>18 Do not drive</td>
<td>26.0</td>
<td>74.0</td>
</tr>
<tr>
<td>19 Do not eat grapefruit or drink grapefruit juice</td>
<td>23.5</td>
<td>74.5</td>
</tr>
<tr>
<td>20 Seek medical advice</td>
<td>21.6</td>
<td>72.5</td>
</tr>
<tr>
<td>21 Sensitive to sunlight</td>
<td>19.6</td>
<td>66.7</td>
</tr>
<tr>
<td>22 Gastric or Reflux</td>
<td>17.6</td>
<td>52.9</td>
</tr>
<tr>
<td>23 Ringing in ears</td>
<td>17.6</td>
<td>66.7</td>
</tr>
<tr>
<td>24 Difficulty in breathing</td>
<td>17.3</td>
<td>48.1</td>
</tr>
<tr>
<td>25 Apply to affected area</td>
<td>15.7</td>
<td>64.7</td>
</tr>
<tr>
<td>26 Tremors or Shaky hands</td>
<td>13.7</td>
<td>43.1</td>
</tr>
<tr>
<td>27 Take on empty stomach</td>
<td>9.8</td>
<td>58.0</td>
</tr>
<tr>
<td>28 Confusion</td>
<td>7.8</td>
<td>54.9</td>
</tr>
<tr>
<td>29 Difficulty in sleeping</td>
<td>3.9</td>
<td>54.9</td>
</tr>
<tr>
<td>30 Take until finished</td>
<td>0.0</td>
<td>51.0</td>
</tr>
</tbody>
</table>

Not valid for use locally!

26 of the 30 pictograms will be re-designed, resulting in Singapore-specific pictograms.
AIM 2: Elderly feedback on pharmaceutical pictograms

Low Transparency AND High Translucency = 4 pictograms

<table>
<thead>
<tr>
<th>PICTOGRAM</th>
<th>% Consolidated transparency scores [Ref.: ≥66.7%]</th>
<th>% Consolidated translucency scores that are ≥5 [Ref.: ≥85%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Morning, Noon, Evening, Night</td>
<td>54.9</td>
<td>90.2</td>
</tr>
<tr>
<td>2 Morning, Noon, Evening, Night</td>
<td>49.0</td>
<td>98.0</td>
</tr>
<tr>
<td>3 Take with food</td>
<td>41.2</td>
<td>90.2</td>
</tr>
<tr>
<td>4 Inhale with spacer</td>
<td>0.0</td>
<td>92.2</td>
</tr>
</tbody>
</table>

Data does not support Validity
- Only 1 will be re-designed and re-tested
AIM 2: Conclusion

- Majority of the tested FIP pictograms (61.5%) did not achieve validity (≥66.7% comprehensibility), highlighting the need for contextual validation of pharmaceutical pictograms prior to use.

- Pictograms that did not achieve comprehensibility are being modified based on participant feedback and will be re-tested in AIM 3.
FIP Original Pictogram 40

Fever

 développé

挞巴热

NEW redesigned pictograms:

Option 1

Option 2

Option 3
FIP Original Pictogram 29
Take with food
与食物一同服用
Ambil bersama makanan
உணவுடன் எடுக்கவும்

NEW redesigned pictograms:

Option 1
Option 2
Option 3
AIM 4: Eliciting PML format preferences from elderly using Discrete Choice Experiment (DCE)

What is a Discrete Choice Experiment (DCE) and how is it applied to PROMISE?

- Quantitative technique used to elicit preferences
- Will be used to elicit preferences for format of PMLs in PROMISE.
- Individuals will be shown 2 hypothetical prototype labels each time (task) and asked to choose their preferred medication label.
- Each label design varies in several format attributes (e.g. Font size, spacing, etc).
- There will be 6 tasks per person. Each task requires individuals to trade-off less of one attribute for more of another when selecting their preferred label.
- Responses will eventually reflect the relative importance of these attributes on PMLs.
AIM 4: Eliciting PML *format* preferences from elderly using DCE – Sample DCE Task

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Design A</th>
<th>Design B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Font size</td>
<td>Small font</td>
<td>Large font</td>
</tr>
<tr>
<td>Spacing between letters</td>
<td>Increased spacing</td>
<td>Regular spacing</td>
</tr>
<tr>
<td>Format of dose and frequency instructions</td>
<td>“TAKE 2 TABLETS IN THE MORNING. TAKE 2 TABLETS IN THE EVENING”</td>
<td>“TAKE TWO TABLETS TWO TIMES A DAY”</td>
</tr>
<tr>
<td>Format of dose</td>
<td>Numeral</td>
<td>Word</td>
</tr>
<tr>
<td>Format of precautionary statement</td>
<td>Bullet points</td>
<td>Prose</td>
</tr>
<tr>
<td>Colour of precautionary statement</td>
<td>Black</td>
<td>Red</td>
</tr>
</tbody>
</table>

```
KEEP AWAY FROM CHILDREN

20 TABS
METFORMIN 850MG TAB
TAKE 2 TABLETS IN THE MORNING
TAKE 2 TABLETS IN THE EVENING
• Take with or after food.
• Warning - avoid alcoholic drinks.
• DO NOT take this medication on the morning before the fasting blood test.

xxxxx134T MARY 20/01/2020 DUKE-031294
DUKE-NUS PHARMACY 8 College Road, S (169857) Tel: 66015976

KEEP AWAY FROM CHILDREN

20 TABS
METFORMIN 850MG TAB
TAKE TWO TABLETS TWO TIMES A DAY

Take with or after food. Warning - avoid alcoholic drinks. DO NOT take this medication on the morning before the fasting blood test.

xxxxx134T MARY 20/01/2020 DUKE-031294
DUKE-NUS PHARMACY 8 College Road, S (169857) Tel: 66015976
```
**AIM 4: Eliciting PML format preferences from elderly using DCE – Sample DCE Task**

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Design A</th>
<th>Design B</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Font size</td>
<td>Large font</td>
<td>Small font</td>
</tr>
<tr>
<td>• Spacing between letters</td>
<td>Regular spacing</td>
<td>Increased spacing</td>
</tr>
<tr>
<td>• Format of dose and frequency instructions</td>
<td>“TAKE 2 TABLETS IN THE MORNING AND EVENING”</td>
<td>Table format</td>
</tr>
<tr>
<td>• Format of dose</td>
<td>Numeral</td>
<td>Word</td>
</tr>
<tr>
<td>• Format of precautionary statement</td>
<td>Bullet points</td>
<td>Prose</td>
</tr>
<tr>
<td>• Colour of precautionary statement</td>
<td>Black</td>
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</tr>
</tbody>
</table>

- **KEEP AWAY FROM CHILDREN**

20 TABS METFORMIN 850MG TAB

TAKE 2 TABLETS IN THE MORNING AND EVENING

• Take with or after food.
• Warning - avoid alcoholic drinks.
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- **KEEP AWAY FROM CHILDREN**

20 TABS METFORMIN 850MG TAB

<table>
<thead>
<tr>
<th>Morning</th>
<th>Afternoon</th>
<th>Evening</th>
<th>Night</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two tablets</td>
<td>X</td>
<td>Two tablets</td>
<td>X</td>
</tr>
</tbody>
</table>

Take with or after food. Warning - avoid alcoholic drinks. DO NOT take this medication on the morning before the fasting blood test.

xxxxxx134T MARY 20/01/2020 DUKE-031294
DUKE-NUS PHARMACY 8 College Road, S (169857) Tel: 66015976
AIM 4: Eliciting PML content preferences from elderly using Best-Worst Scaling (BWS)

What is Best-Worst Scaling (BWS) and how is it applied to PROMISE?

• BWS is another form of preference elicitation technique.
• BWS involves less cognitive burden for respondents.
• From an initial list of 10 types of desired medicines information (informed through Component 1 in-depth interviews), 3 attributes are shown to the respondents at each time.
• Individuals are required to complete 5 tasks of choosing the most and least important features.
• Each task requires individuals to trade-off less of one attribute for more of another when selecting their preferred medicines information.
AIM 4: Eliciting PML *content* preferences from elderly using **BWS**

*List of 10 medicines information attributes to be randomized:*

1. Indication
2. Expiry date
3. Pictures
4. Food instructions
5. Precautionary statement
6. Side effect
7. Interaction/ Paired medicines
8. Missed dose action
9. Bilingual text
10. Quick response code (*directing to a website with additional information about your medicines*)
**AIM 4: Eliciting PML content preferences from elderly using BWS – Sample BWS Task**

What do you think is the **most important** feature and the **least important** feature for you on a medicine label?

<table>
<thead>
<tr>
<th>Most Important</th>
<th>Feature</th>
<th>Least Important</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>QR Code</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Expiry date</td>
<td></td>
</tr>
</tbody>
</table>

### Feature and Example

- **Quick Response (QR) Code:** Refers to a barcode that can be scanned using a smartphone. You will be directed to a website which may contain additional information about your medicines.

  ![QR Code](#)

  *Example:*

- **Indication:** Refers to what the medicine is for.

  *Example:*

  - Diabetes, hypertension

- **Expiry date:** Refers to when you should discard your medicine.

  *Example:*

  - Discard 1 month after opening
**AIM 4: Eliciting PML content preferences from elderly using BWS – Sample BWS Task**

What do you think is the **most important** feature and the **least important** feature for you on a medicine label?

<table>
<thead>
<tr>
<th>Most Important</th>
<th>Feature</th>
<th>Least Important</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bilingual text</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Side effect</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Food instructions</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feature</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bilingual text</strong>: Refers to medicine instructions in English and another official language (Malay or Chinese or Tamil)</td>
<td>![Example of bilingual text]</td>
</tr>
<tr>
<td><strong>Side effect</strong>: Refers to unintended effects which occur when taking or using a medicine.</td>
<td>Example: May cause drowsiness. May discolour urine or stools.</td>
</tr>
<tr>
<td><strong>Food instructions</strong>: Refers to when you should take your medicines in relation to food.</td>
<td>Example: Take half to one hour before food, May be taken with or without food</td>
</tr>
</tbody>
</table>
Summary

• Need to improve current PMLs

• Adding another *preferred official language* and/or pictograms to ‘usual practice’ purely English PMLs will enhance their understanding among elderly Singaporeans

• Need for contextual validation of pictograms prior to use

• Other label format and content features - have to be considered

• Opportune time - National Pharmacy Strategy (redesigned, standardized labels?)
Thank You!

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