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FAMILY MEDICINE

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A Case for Innovating Prescription Medication Labels in Singapore

Rahul Malhotra, MBBS, MD, MPH
Head of Research, Centre for Ageing Research and Education
Assistant Professor, Health Services and Systems Research
Duke-NUS Medical School, Singapore

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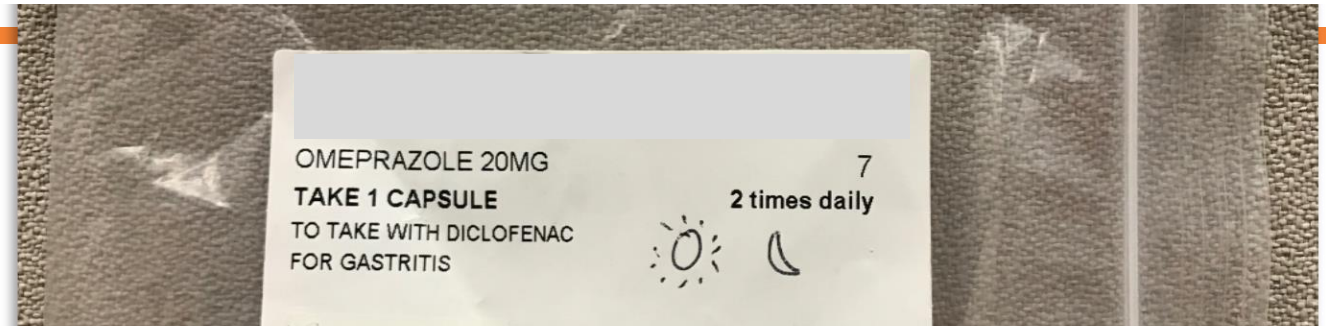
PATIENTS. AT THE HEART OF ALL WE DO.®

Contents

- **Why improve our prescription medication labels?**
- **How to improve our prescription medication labels?**
  - Bilingual text
  - Pictograms
- **Going beyond bilingual text and pictograms**
  - Prescription Medication Label Improvement for Singaporean Elderly (PROMISE)

Prescription medication labels (PMLs) in Singapore



Public and private clinics and hospitals dispense prescription medications with **pharmacy generated labels** that provide medication-related information and instructions for patients

Pharmacist

Clinic Assistant

Frontier Healthcare; Mediacorp (images)

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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**

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Understanding of PMLs is important – especially among older persons

- Essential for proper medication adherence and patient safety
- Incorrect understanding ~ related to increased healthcare utilization (outpatient)
- Increased healthcare utilization with age = **Older persons** are more likely to receive prescription medications (vs younger)
- **Older persons** are more likely to interpret medication labels incorrectly
- Ensuring understanding of prescription medication labels:
  - Empowers **older persons** for self-care
  - Enables **older persons** to take responsibility for own medication, supporting higher-level functioning (i.e., an Instrumental Activity of Daily Living)

PMLs are the principal source of medication information for older persons (in Singapore)

Key adjunct to medication counselling

Increasing proportion of older persons living alone

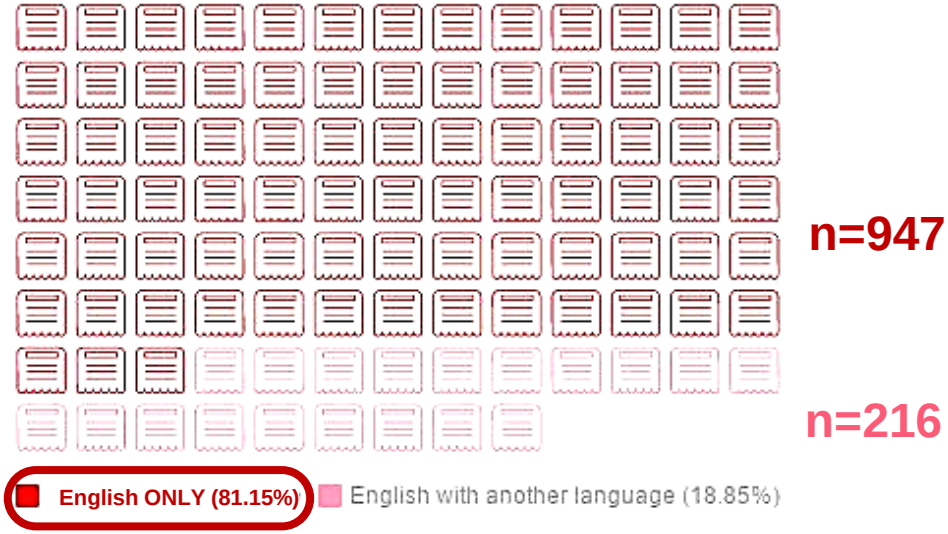
Do they use the internet to access medication information?

PMLs of older Singaporeans on regular prescription medications

SAFE-PHASE examined 1,167 prescription medication labels

99.7% used the English language (with or without any other language)

Language used in medication instructions



SAFE-PHASE, Singapore Assessment for Frailty in Elderly - Building upon the Panel on Health and Aging of Singaporean Elderly | Created with **Piktochart**

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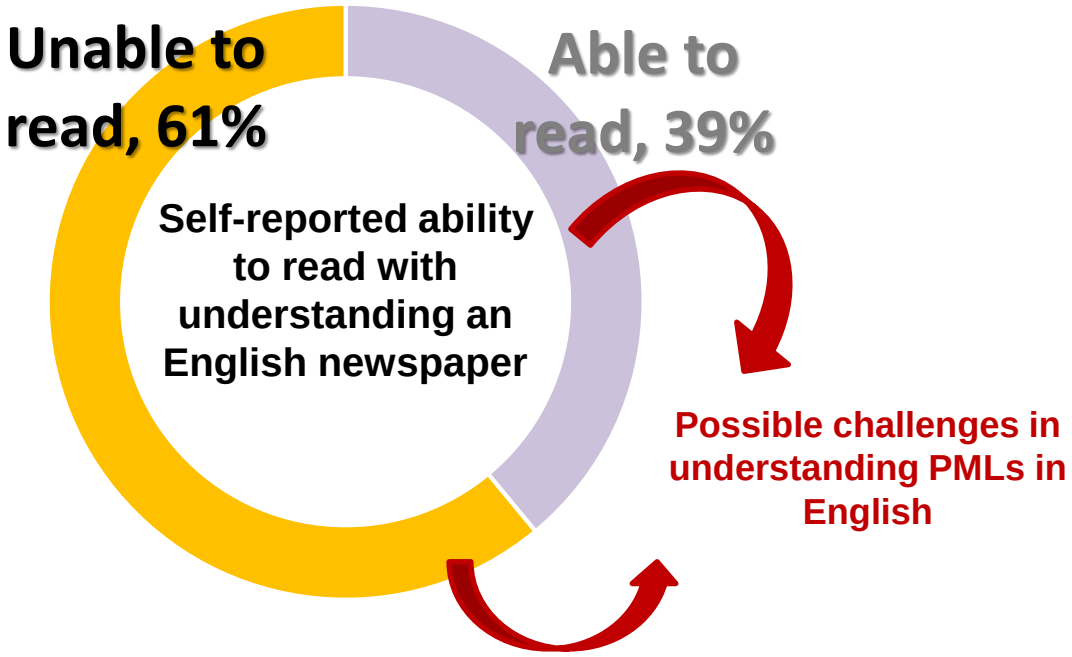
Many Singaporeans aged 65 years and older are unable to read English



Does difficulty in understanding written information on PMLs matter?

Proceedings of Singapore Healthcare
2020, Vol. 29(1) 25–32
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SAGE

Mediators of the association of limited English health literacy with medication non-adherence among Singaporean elderly

Sumithra Suppiah[1], Yi Wen Tan[1], Grand H-L Cheng[2], Wern Ee Tang[3] and Rahul Malhotra[1,4]

https://doi.org/10.1177/2010105819899126

Uncertainty in taking medications correctly because of difficulty in understanding information on PMLs	% (N=1167)
Always	25.8
Often	7.0
Sometimes	13.8
Occasionally	5.1
Never	48.2

Uncertainty in taking medications correctly because of difficulty in understanding information on PMLs ***led to*** medication non-adherence

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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 older Singaporeans in understanding PMLs?

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Aim

To compare the understanding* of PMLs among older 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

Prototype	Three medication labels (Augmentin, Metformin and Phenytoin) with the same information and instructions provided in:
ET label	English Text
ETP label	English Text with FIP Pictograms
BLT label	Bi-Lingual Text (i.e., English with Chinese or Malay or Tamil)
BLTP label	Bi-Lingual Text (i.e., English with Chinese or Malay or Tamil) with FIP* Pictograms

FIP, International Pharmaceutical Federation

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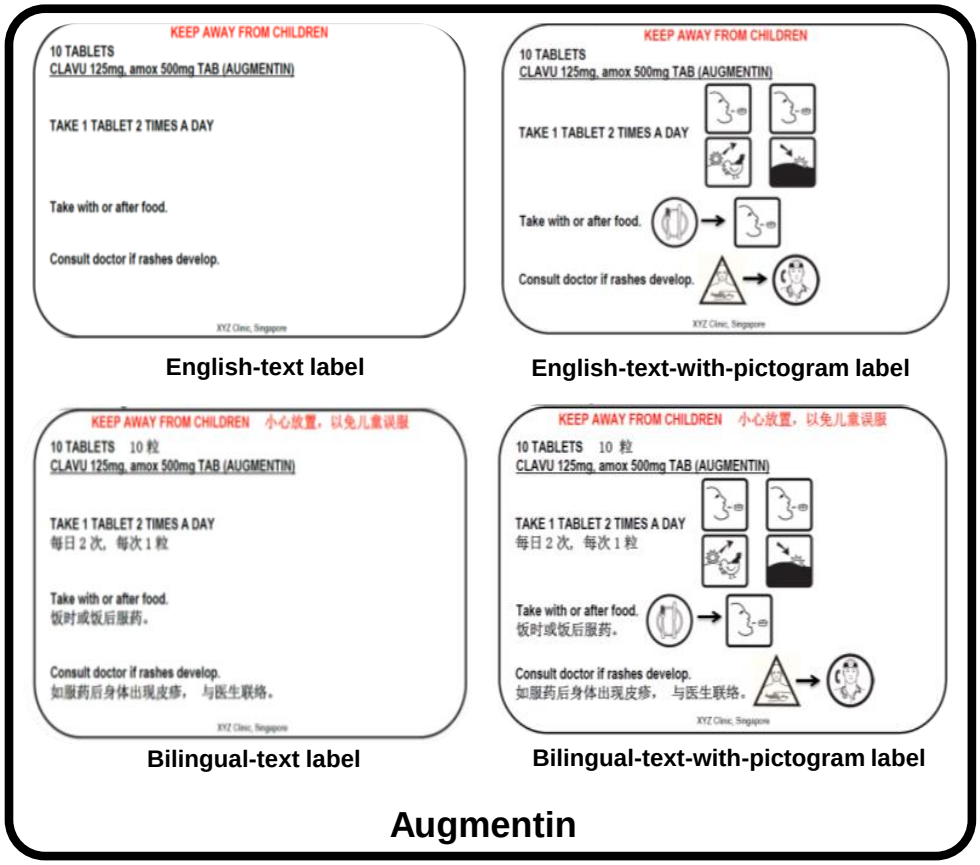
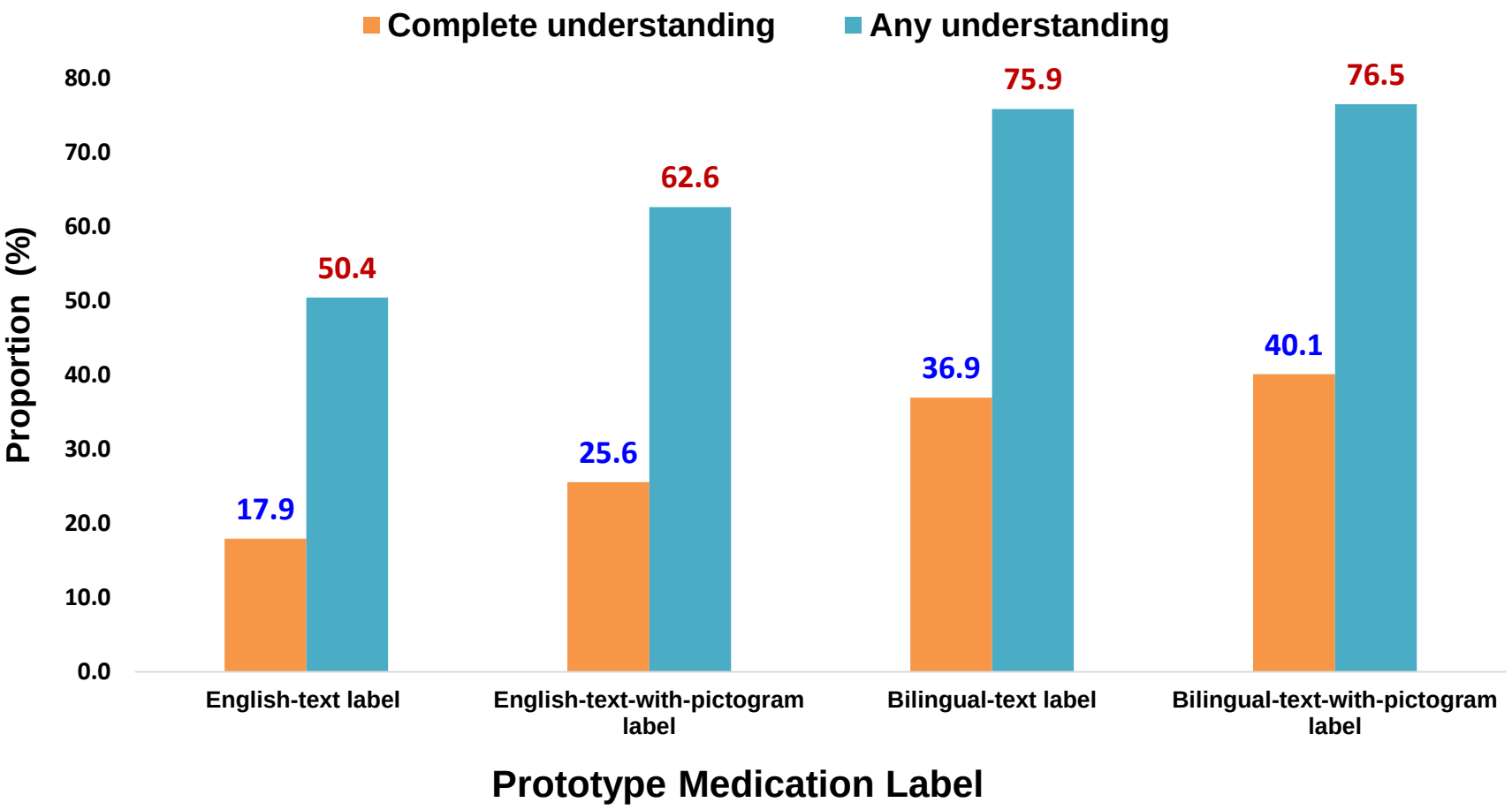
Label 1: AUGMENTIN, and questions



	Assume that your doctor prescribed a medication for you that you received in a packet with this label.
Q1	**How many times a day do you have to take this medication?** _____ times / Don't know / Not sure
Q2	**How many tablets do you have to take each time you take this medication?** _____ tablets / Don't know / Not sure
Q3	**If you were to take this medication correctly as prescribed by the doctor, how many days will your medication last?** _____ days / Don't know / Not sure
Q4	**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?** _____ / Don't know / Not sure
Q5	**For which specific side effect of this medication should you consult a doctor?** _____ / Don't know / Not sure

Proportions of older persons with *complete understanding* and *any understanding*, by label



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The Gerontologist

19 November 2017

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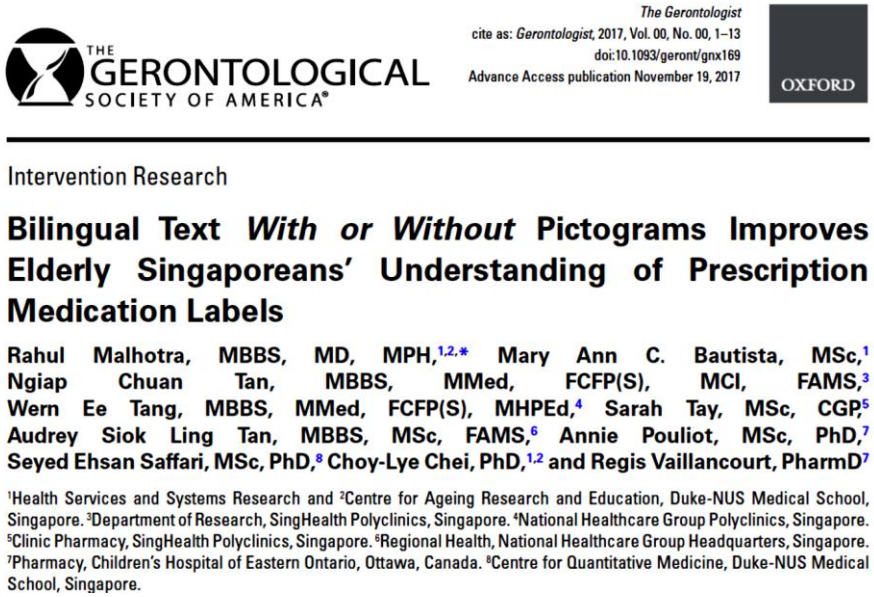

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OXFORD

Intervention Research

Bilingual Text *With or Without* Pictograms Improves Elderly Singaporeans' Understanding of Prescription Medication Labels

Rahul Malhotra, MBBS, MD, MPH,[1,2,*] Mary Ann C. Bautista, MSc,[1] Ngiap Chuan Tan, MBBS, MMed, FCFP(S), MCI, FAMS,[3] Wern Ee Tang, MBBS, MMed, FCFP(S), MHPEd,[4] Sarah Tay, MSc, CGP,[5] Audrey Siok Ling Tan, MBBS, MSc, FAMS,[6] Annie Pouliot, MSc, PhD,[7] Seyed Ehsan Saffari, MSc, PhD,[8] Choy-Lye Chei, PhD,[1,2] and Regis Vaillancourt, PharmD[7]

[1]Health Services and Systems Research and [2]Centre for Ageing Research and Education, Duke-NUS Medical School, Singapore. [3]Department of Research, SingHealth Polyclinics, Singapore. [4]National Healthcare Group Polyclinics, Singapore. [5]Clinic Pharmacy, SingHealth Polyclinics, Singapore. [6]Regional Health, National Healthcare Group Headquarters, Singapore. [7]Pharmacy, Children's Hospital of Eastern Ontario, Ottawa, Canada. [8]Centre for Quantitative Medicine, Duke-NUS Medical School, Singapore.

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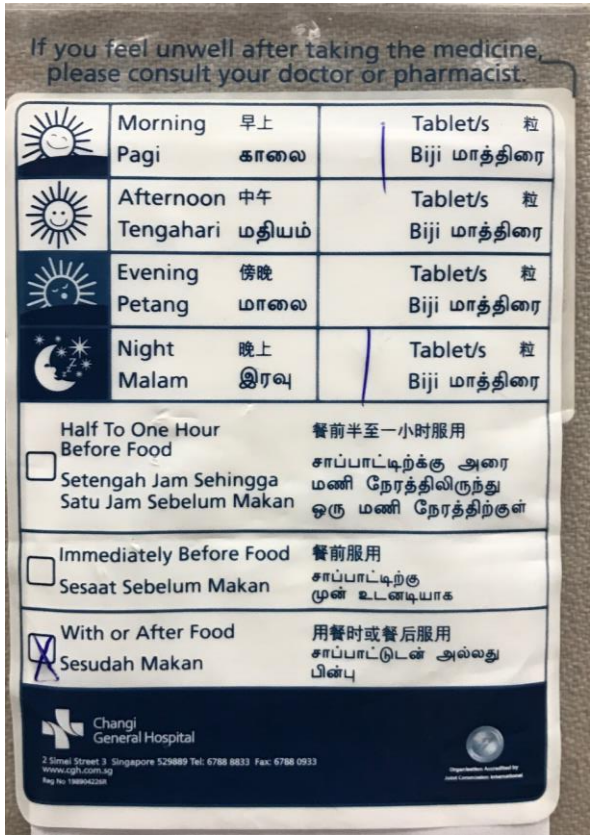
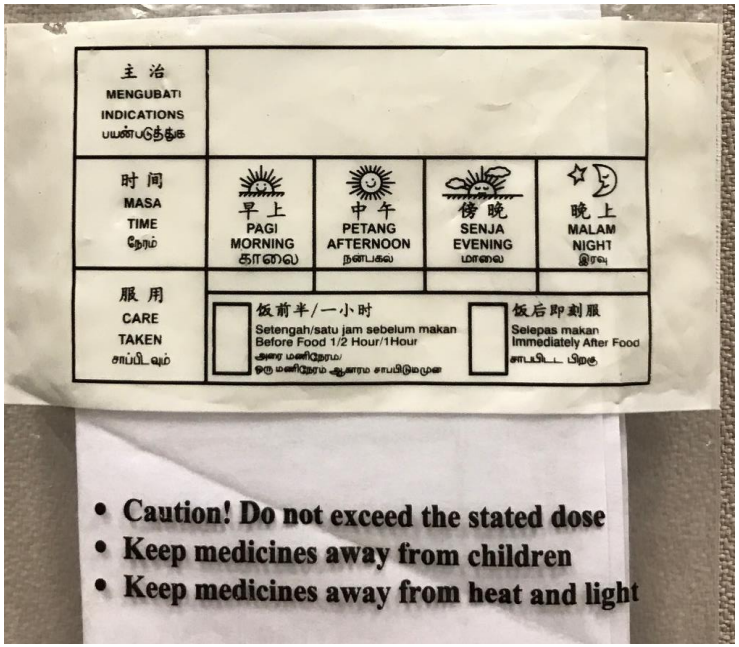
Conclusion

- Adding another **preferred official language** and/or **pictograms** to 'usual practice' purely English text PMLs will **enhance** their **understanding** among elderly Singaporeans

Recent prescription medication packets in Singapore





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Conclusion

- Adding another **preferred official language** and/or **pictograms** to 'usual practice' purely English text PMLs will **enhance** their **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?
  - **"Bilingual Text and Pictogram" label** had the **highest proportion** of elderly with ***complete*** and ***any*** **understanding**, *but* it was similar to that for the "Bilingual Text" label and much higher than the "English Text and Pictogram".
  - **Local adaptation of the FIP pictograms**

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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 for S$ 814,816 (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); **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)

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PROMISE

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

AIM 1: Document the experience of older patients, their family caregivers, 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 older 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 older Singaporeans

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

AIM 5: Enable the implementation of improved PMLs

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PROMISE *AIM 1*: Experience with PMLs - 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; Bilingual text; **Pictograms**
  - **Content:** Simpler language; Indication; Expiry date; Food instructions; Missed dose instructions

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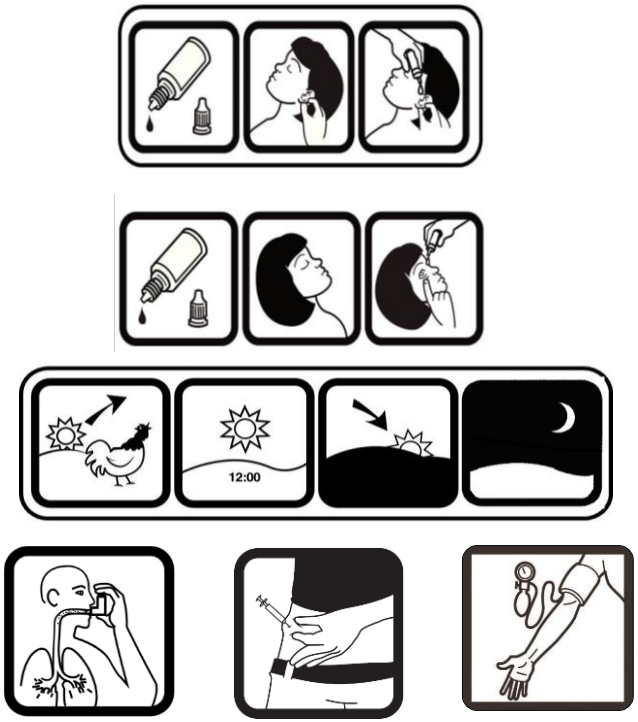
PROMISE *AIM 2* : Pictogram validation - Results

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



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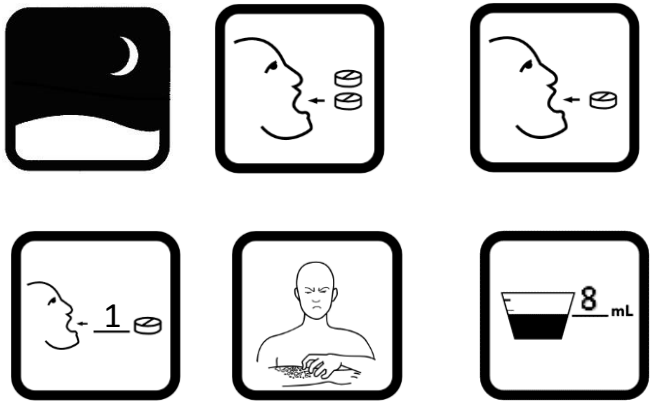
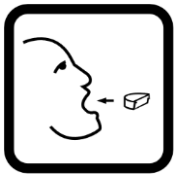
PROMISE *AIM 2* : Pictogram validation - Results

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



PROMISE *AIM 2* : Pictogram validation - Results

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



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26 of the 30 pictograms for **re-design,** resulting in

Singapore-specific pictograms.

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PROMISE *AIM 2* : Pictogram validation - 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**.

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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!

Centre for Ageing Research and Education (CARE)
Duke-NUS Medical School
8 College Road, Singapore 169857
CARE 💻: www.duke-nus.edu.sg/care/
CARE ✉: care@duke-nus.edu.sg

Rahul Malhotra ✉: rahul.malhotra@duke-nus.edu.sg
PROMISE ✉: PROMISE@duke-nus.edu.sg

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