

# **A pilot study exploring the relationship between hand function and the ability to open medication containers in individuals aged 65-85 years**

- **Elizabeth Georgeson – Senior Clinical Pharmacist, Caulfield hospital**
- **Karen Roberts – Senior Clinician Occupational Therapist, Caulfield Hospital**

# Background

- Elderly
  - In Victoria, 70-84 age group estimated ↑ 59% by 2021
  - Prescribed more and more complex regime than other age groups
  - Non-adherence to medications 62-84%
  - Issues of non-adherence are complex
    - > Cognitive ability
    - > Reduced vision
    - > Poly pharmacy
    - > Literacy
    - > Decreased ability to open containers

# Background

- Assumptions
  - Lack of motivation
  - Failure to remember to take medications
- Memory aids
  - Reduce error but don't improve compliance
- Functional ability to open containers
  - Grip
  - Sensation
  - Dexterity

# Aim

- **To identify if a relationship exists**
  - between elderly persons performance on hand function assessments such as
    - > pinch strength, dexterity and friction discrimination
  - and their ability to open a range of medication containers

# Inclusion criteria

- Age – 65-85 years
- Inpatients at Caulfield Hospital
- MMSE score of 24 or >
  - Unless self-medicating prior to admission
- Deemed medically able to tolerate a 45 minute assessment session
- Able to give voluntary consent

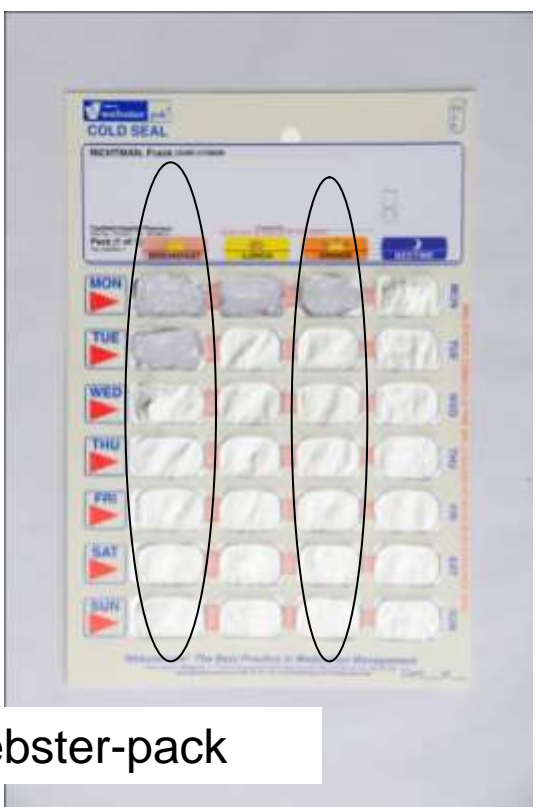
# Exclusion

- Reside in high-level care facility
- Major musculoskeletal or neurological conditions affecting the upper limb
- Inpatients of the Aged Psychiatry ward

# Method

- The participants were presented with four types of medication containers and asked to open each one.
  - Recorded as able/unable to open the containers
- The participants were then asked to complete three routine assessments of aspects of hand function
  - Pinch gauge assessment
  - Dexterity
    - > Sub-tests of the Jebsen Taylor hand Function Test (JTHFT)
  - Tactile discrimination

Safe-T-dose



Webster-pack

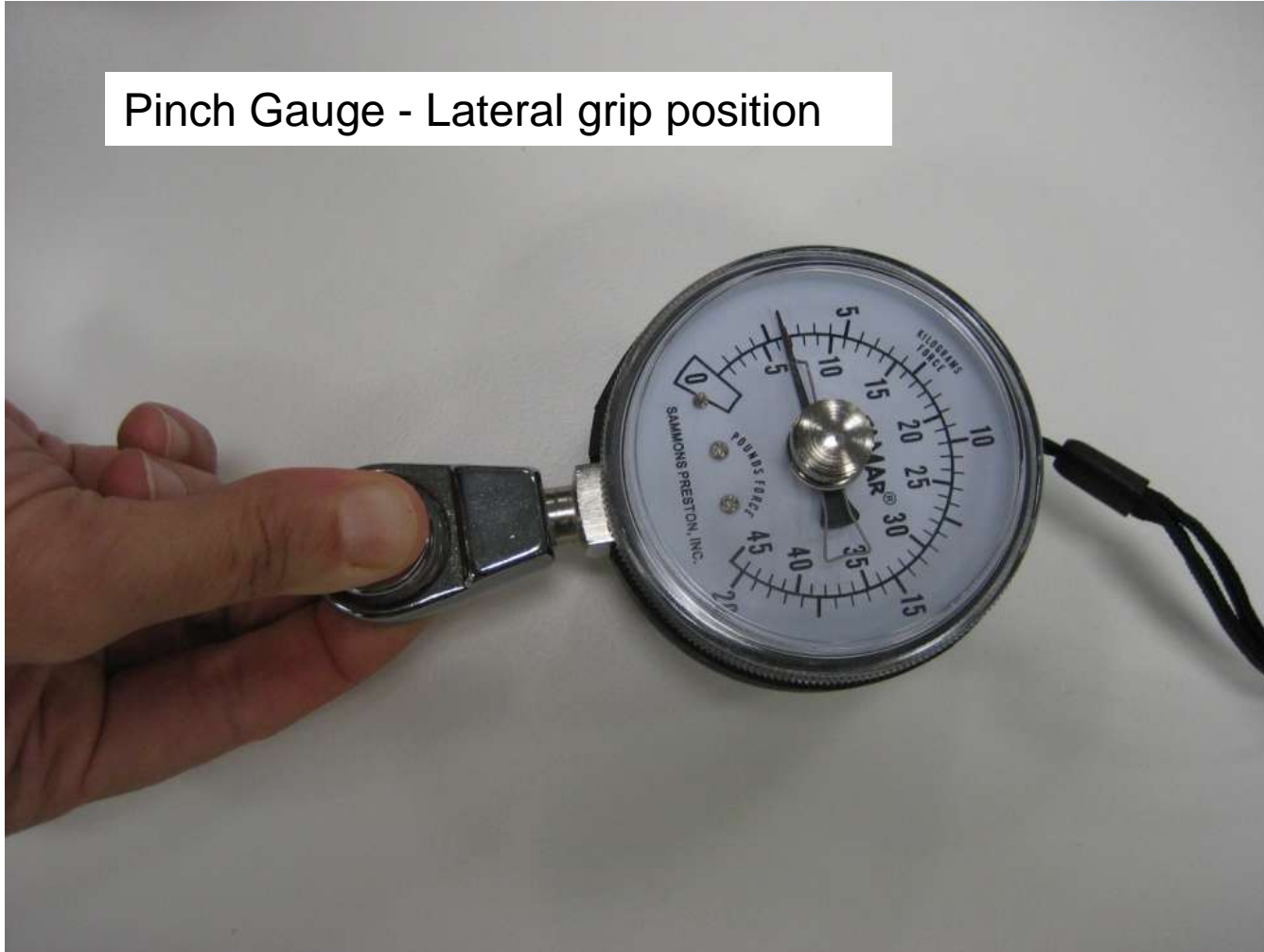
Med time planner



# Hand function Assessments

- **Pinch gauge** – using a Pinch Gauge Dynamometer
- The participant squeezes the pinch gauge to obtain a measure of pinch strength
  - Tested using
    - > lateral pinch grip
    - > tripod grip
  - These were carried out using dominant and non-dominant hand
  - Three trials of each

Pinch Gauge - Lateral grip position



# Hand function Assessments

- **Two subtests of the JTHFT**
  - **Stacking checkers**
    - > The time taken to turn over four checkers positioned in a standardised position is recorded
  - **Small objects**
    - > The time taken to pick up six small everyday objects positioned in a standardised position and then placed in a container was recorded
  - Carried out for dominant and non-dominant hand

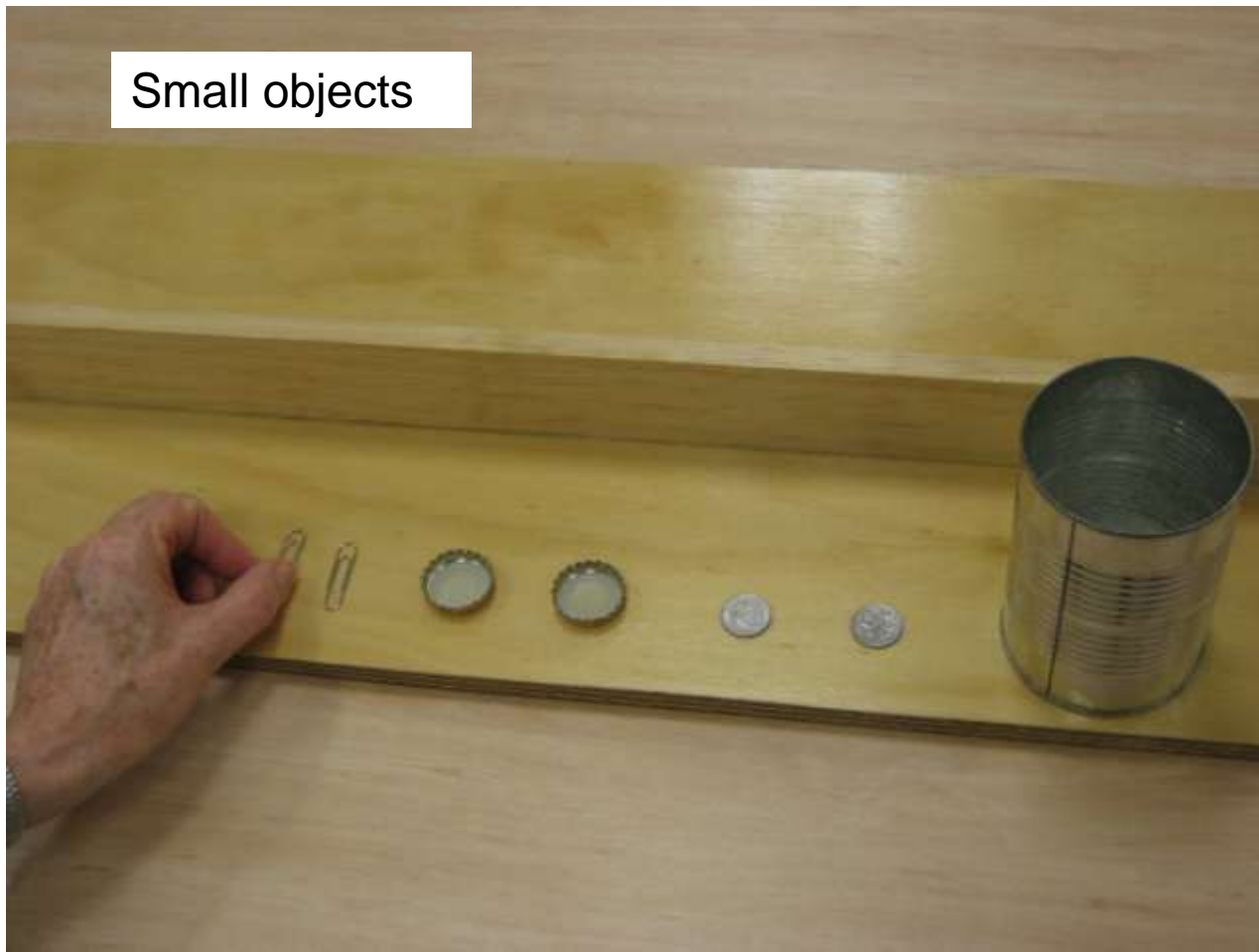


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Stacking checkers

Small objects

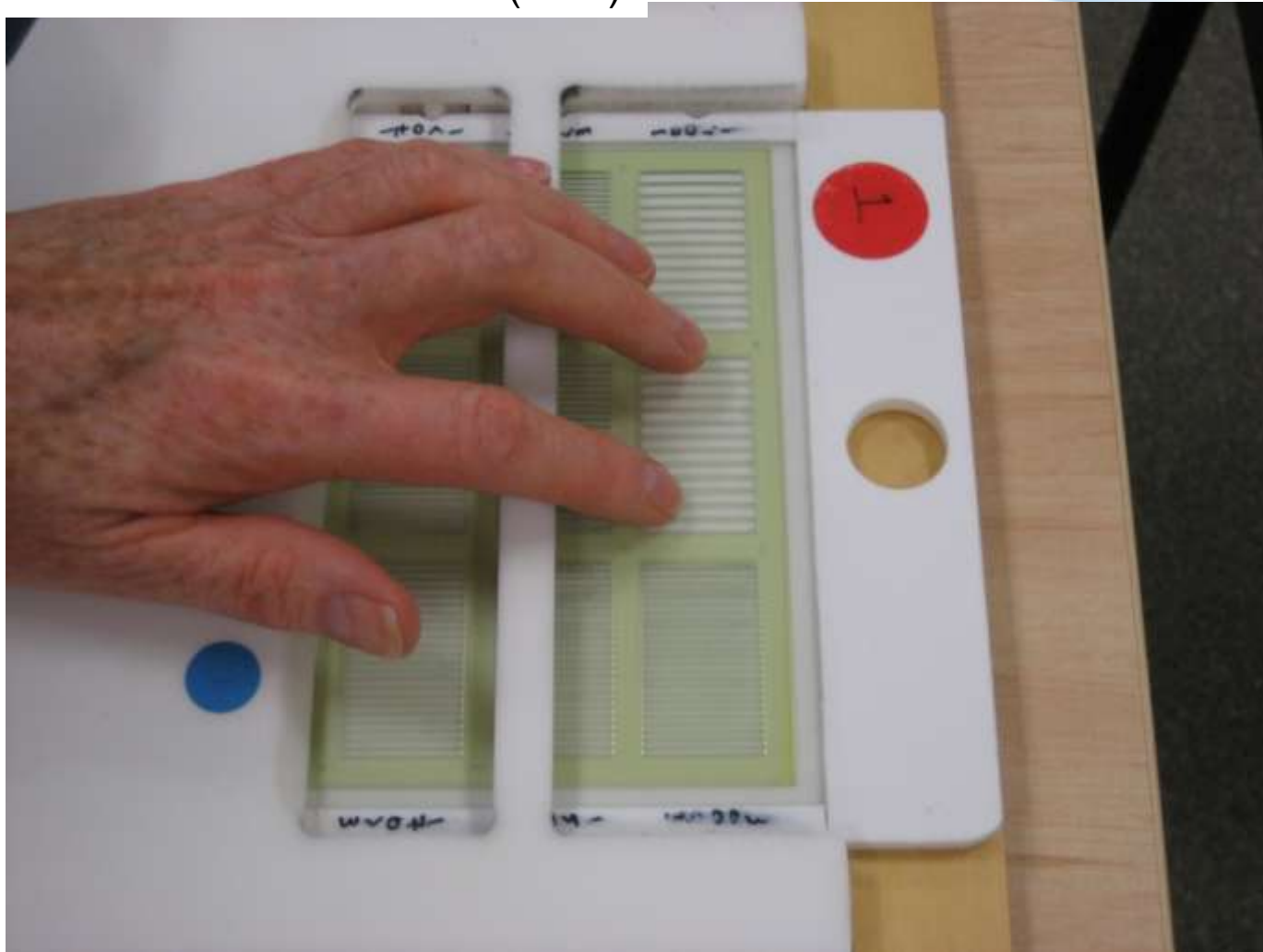


# Hand function Assessments

- **Tactile Discrimination test (TDT)**

- The participants were presented with 5 stimulus triplets on a rectangular plate, with their vision occluded by a screen
- They were asked to touch each triplet with their index finger and had to identify which of the three surfaces was different
- The results were recorded for the dominant and non-dominant hand

## Tactile Discrimination test (TDT)



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# Participants

- 34 participants
  - Age range 66 - 85
  - 13 males & 21 females
- Range of admitting diagnoses, education & past employment
- MMSE range 17 – 30
  - (6 participants scored <24 but are self-medicating at home)
- All right hand dominant
- Living arrangements
  - 18 alone
  - 1 in supported accommodation
- Majority use original containers

## Results: Opening containers

	COULD OPEN	COULD NOT OPEN	TOTAL
Original container (Screw top)	34	0	34
Safe-T-Dose	33	1	34
Medtime planner	33	1	34
Webster pack (breakfast)	34	0	34
Webster pack (dinner)	31	2	33*

\* Missing value

## Results: JTHFT sub-test - Small objects

	<b>Dominant (R)</b>  (seconds)	<b>Non-Dominant (L)</b>  (seconds)
<b>Male (n=13)</b>	Range: 8.06 – 20.19 $\mu = 12.49$	Range: 8.16 – 49.6 $\mu = 16.15$
<b>Female (n=21)</b>	Range: 7.19 – 20.13 $\mu = 10.95$	Range: 6.37 – 18.03 $\mu = 10.82$

## Results: JTHFT sub-test - Checkers

	<b>Dominant (R)</b>  (seconds)	<b>Non-Dominant (L)</b>  (seconds)
<b>Male (n=13)</b>	Range: 3.41 – 16.09 $\mu = 8.68$	Range: 3.62 – 24.06 $\mu = 9.29$
<b>Female (n=21)</b>	Range: 3.72 – 10.96 $\mu = 5.86$	Range: 4.25 – 10.12 $\mu = 6.66$

## Results: Pinch gauge (average of 3 trials)

	<b>LATERAL GRIP</b> (kg.)		<b>TRIPOD GRIP</b> (kg.)	
	Dominant	Non-dominant	Dominant	Non-Dominant
<b>Male (n=13)</b>	1.33 – 10.00 $\mu = 6.36$	2.33 – 8.33 $\mu = 5.81$	2.67- 8.67 $\mu = 5.65$	1.33 – 8.50 $\mu = 5.17$
<b>Female (n=21)</b>	0.50 – 5.83 $\mu = 4.06$	0.83 – 5.83 $\mu = 3.52$	0.67 – 5.83 $\mu = 3.25$	1.0 – 4.83 $\mu = 2.90$

# Discussion

- **Recruitment issues**
  - Research assistant
  - Selection criteria
    - > Age group
    - > Cognitive function
- **Can't assume at discharge that an older person can or can't physically manage their medication containers**

# Discussion

- **Implications for clinical practice**

- Interdisciplinary liaison
- Self medication trial prior to discharge
- Demonstration and trial of the various medication containers provided at discharge
- Provision of information

# Acknowledgements

- Research support by a grant from the Victorian Department of Health
- Special thank you to the OT staff at Caulfield Hospital who helped with data collection
- Special thank you to Karen who helped me put this presentation together