



明愛醫院  
CARITAS MEDICAL CENTRE

職業治療部  
DEPARTMENT OF OCCUPATIONAL THERAPY

# Peritonitis risk reduction and cost saving through **Occupational Therapy** Pre-dialysis Program : a pilot study

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Ms Florence Leung, DM (OCCT)  
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# Increased Peritonitis Risk

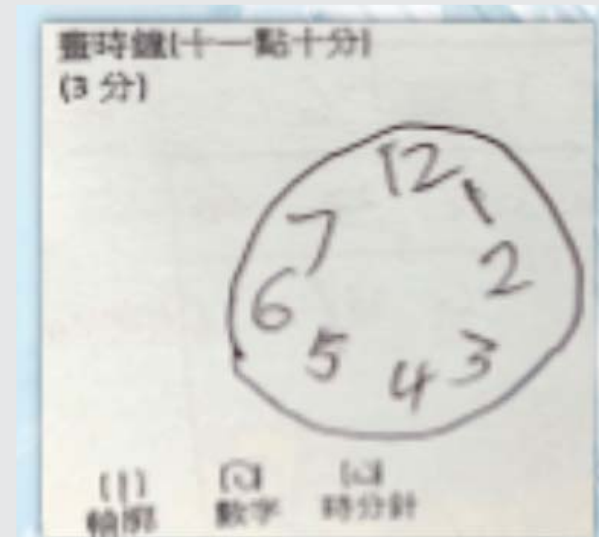
PD technique  
incompetence

Fine motor skill  
deterioration

Poor vision

Cognitive  
Impairment

Our previous CQI projects



F/72 with episode of peritonitis  
MoCA >16<sup>th</sup> percentile  
MBI 98/100

*EF*

*Memory  
recall*

Patients struggled with CAPD performance  
**despite being ADL-independent with high  
HK-MoCA scores**

# Increased Peritonitis Risk

PD technique  
incompetence

The diagram illustrates the factors contributing to an increased risk of peritonitis. At the top, the title 'Increased Peritonitis Risk' is centered. A large dark teal arrow points from the title to a pink rectangular box labeled 'PD technique incompetence'. Below this box, three speech bubble-shaped boxes are arranged horizontally: a blue one on the left labeled 'Fine motor skill deterioration', a green one in the middle labeled 'Poor vision', and an orange one on the right labeled 'Cognitive Impairment'. Three curved dark teal arrows point from each of these three boxes up towards the 'PD technique incompetence' box. To the right of the main diagram, another dark teal arrow points from the title to a separate section titled 'Our Service Gaps', which is enclosed in a dark teal border and contains a bulleted list of two items. Above this section, a small illustration shows two hands holding a red triangular warning sign with a white exclamation mark.

Fine motor skill  
deterioration

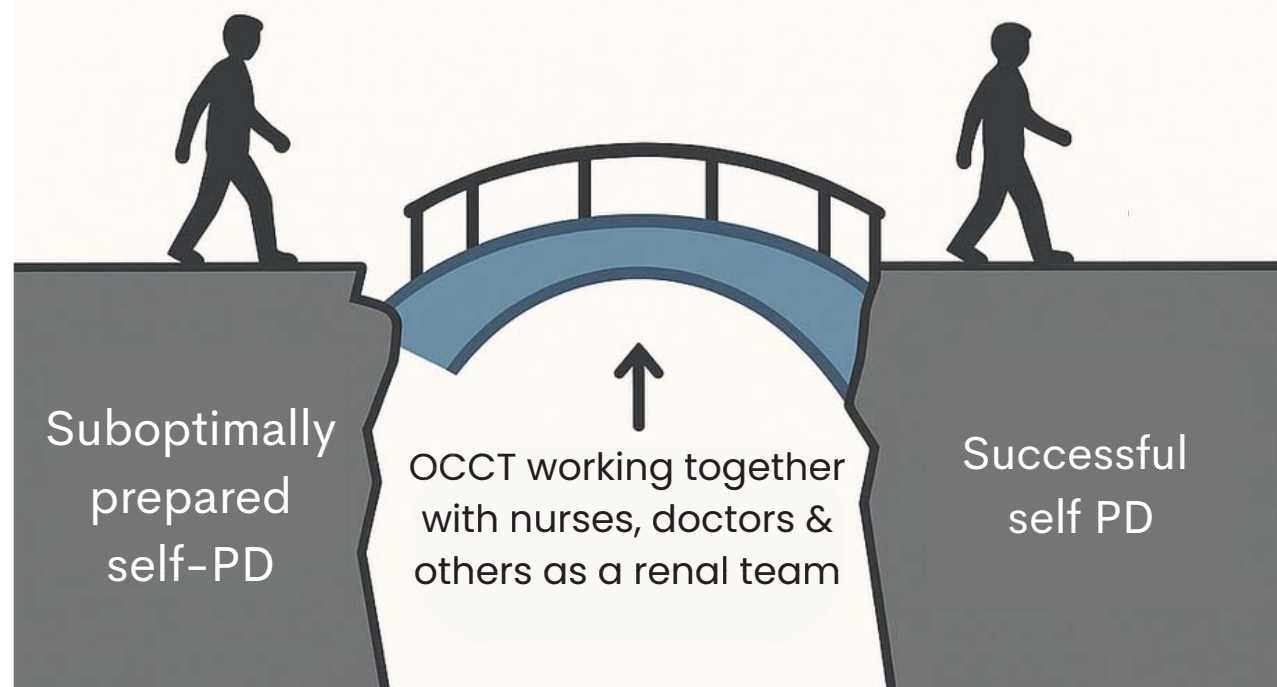
Poor vision

Cognitive  
Impairment

## Our Service Gaps

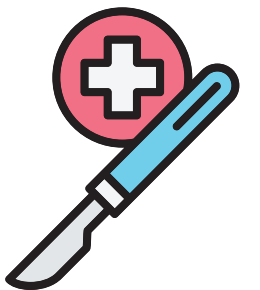
- Inadequate service to **pull-up** anticipated substandard PD performance
- Lack of **timely** assessment to detect borderline cases & support care planning

## Bridge the gap: With OCCT as part of renal team



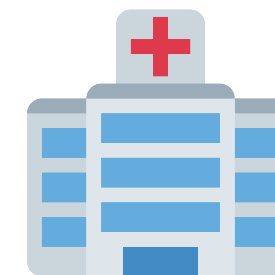
### 1. Timely assessment on patient capacity

- Support clinical decision making
- Reduce institutionalization
- Avoid unnecessary Tenckhoff insertion and healthcare costs



### 2. PD skills-enhancing intervention

- Reduce burden of care
- **Lower peritonitis rate**
- **Fewer hospitalization & reduce treatment cost**



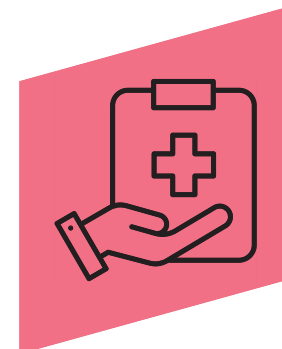
# Aims of our Pilot Program

**Reduce risk of peritonitis**



Conduct comprehensive assessments to **identify barrier** to effective self-PD

Strengthen PD technique to enhance independency & safety



Provide **targeted intervention** to address barriers and optimize self-PD capability

Being part of the renal team to **support clinical decision-making** & care planning



Facilitate lifestyle adaptation & successful self-management

# From April 2023 to March 2024

**April 2023**   
Pilot Program  
**introduced** at CMC

**25 patients** identified as  
**borderline performance** and were  
invited to participate in the  
personalized intervention session



**82 patients** with ESRD referred from Renal team and  
underwent comprehensive Pre-dialysis assessment

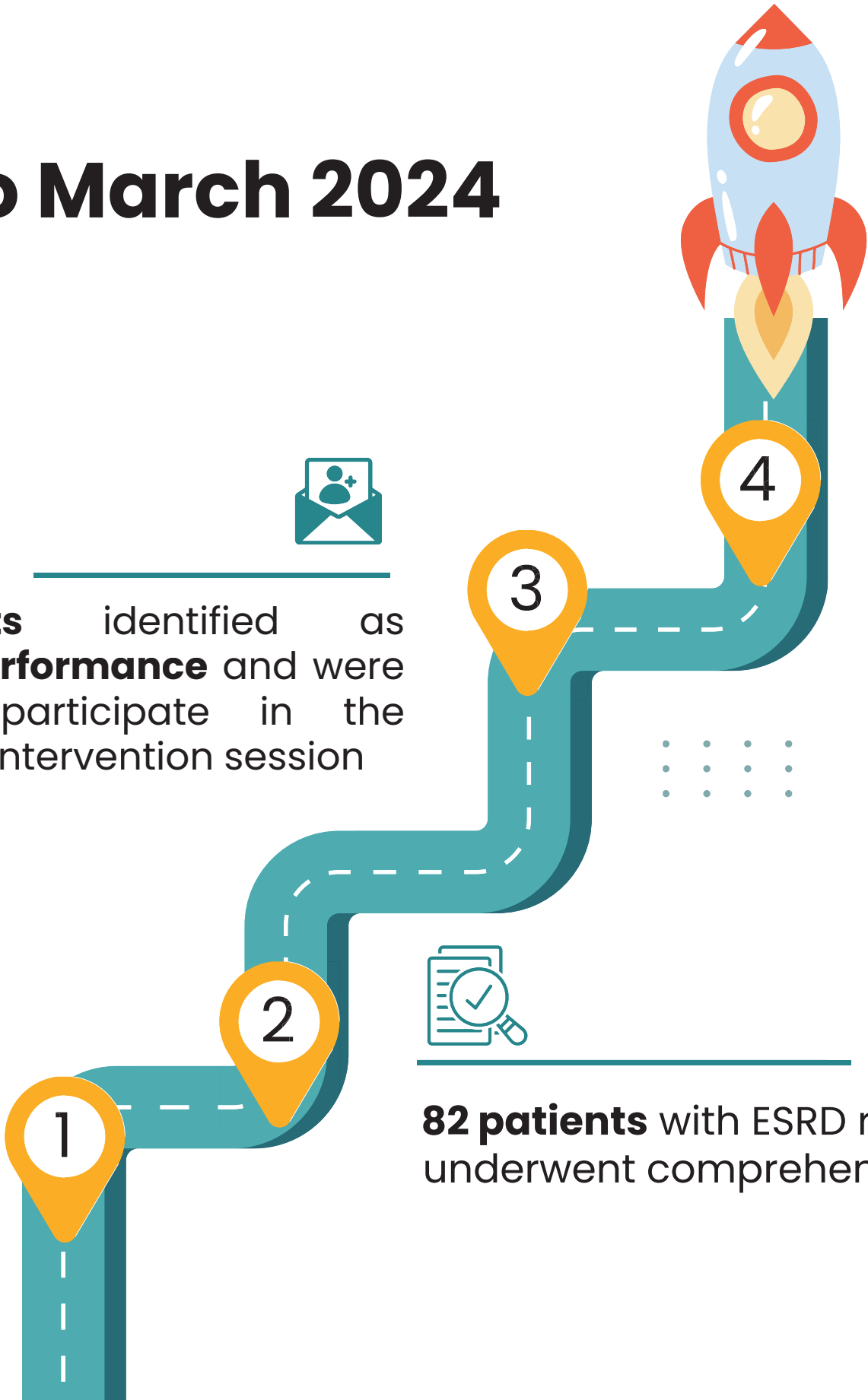
3

4



**March 2024**

**20 patients** completed the  
intervention sessions



# Structured Assessments



Cognition



Vision



Sensation



Hand function



Simulated PD assessment

Activity analysis to identify underlying problems and provide intervention accordingly



Home environment exploration

Assess functional environmental setup & potential hazards and fall risks

Through structured assessment by OCCT,

- Grasp a deep understanding of patients' capabilities
- Make informed decisions on kidney replacement therapy

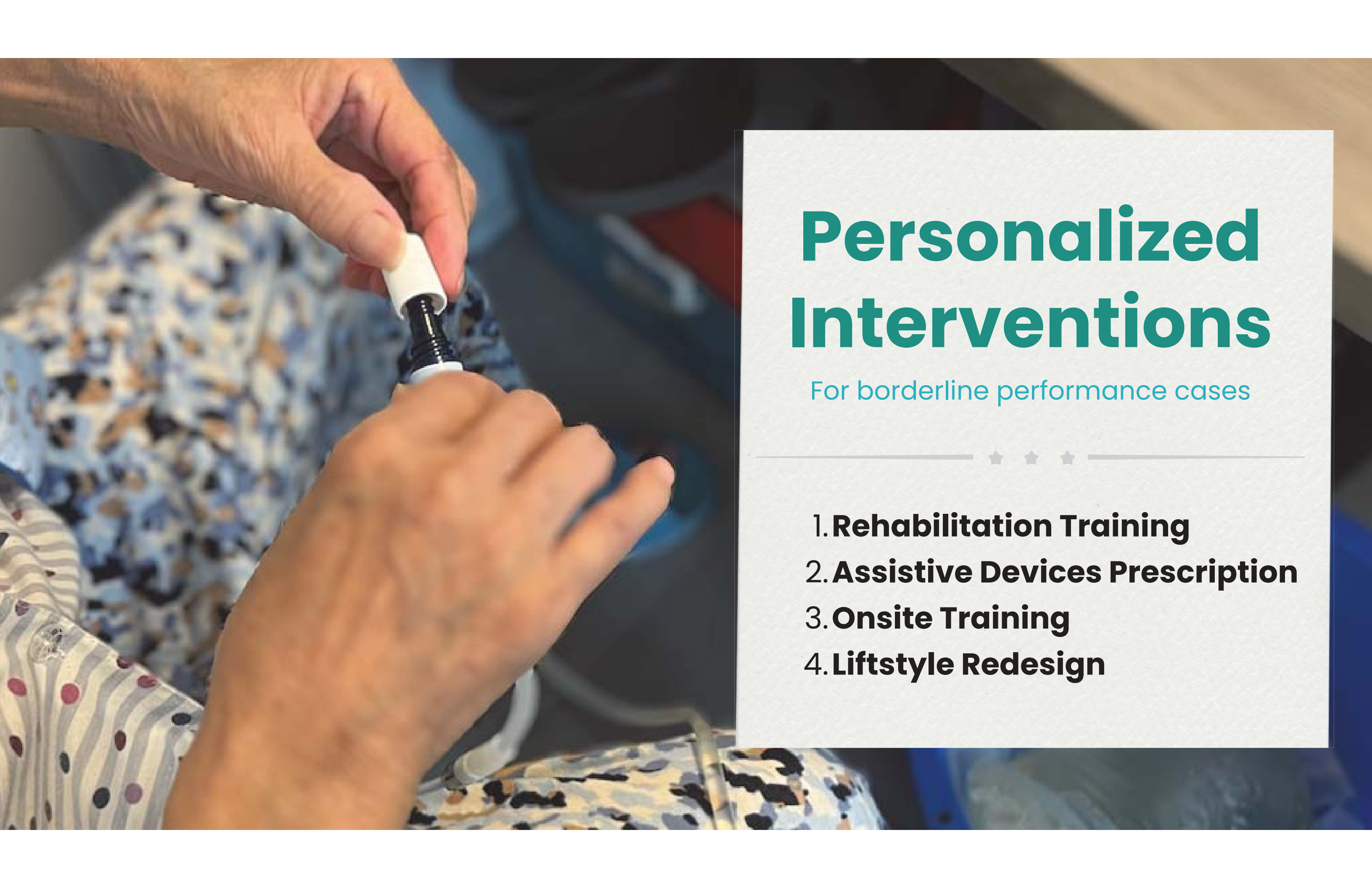


4 patients failing the assessment opted out of PD



Avoid **unnecessary Tenckhoff insertion** & its related **medical costs**





# Personalized Interventions

For borderline performance cases



- 1. Rehabilitation Training**
- 2. Assistive Devices Prescription**
- 3. Onsite Training**
- 4. Lifestyle Redesign**



# 1) Rehabilitation Training

Targeted at hand function impairment



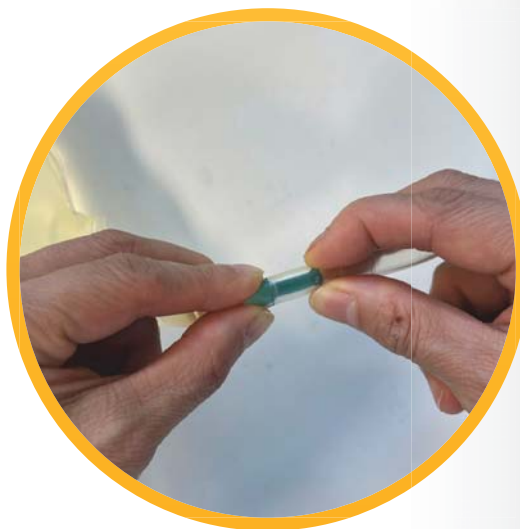
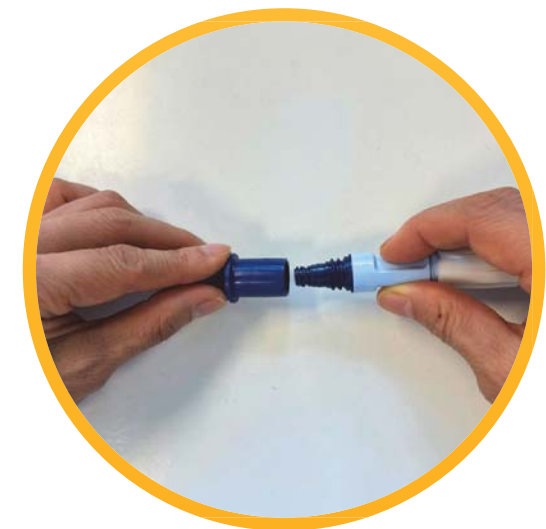
Mr. N



PMHx: **Peripheral Neuropathy**

➡ Hand muscle atrophy+

➡ Difficulty in some steps during dialysis





# 1) Rehabilitation Training

Targeted at cognitive impairment

Computerized  
cognitive training

Home Program

HA GO COGNITIVE REHAB



# 2) Assistive device prescription

Compensating for hand function deficiencies

## Insufficient strength to break green seal



Poor Pinch Strength /  
fingertips sensation etc.



# 2) Assistive device prescription

Compensating for hand function deficiencies

Our design for Sham Shui Po patients  
>>>> **Small/no working surface** <<<<

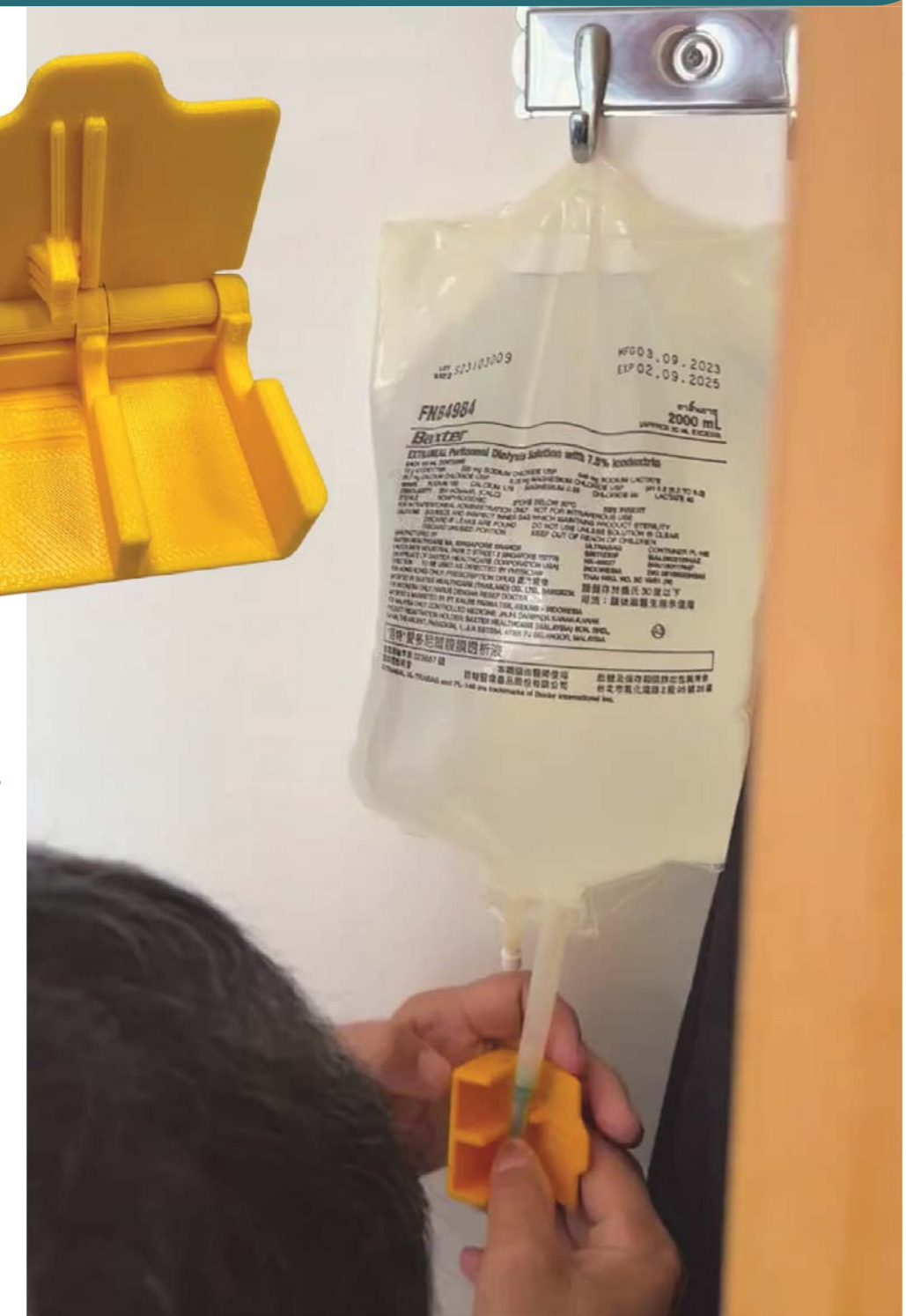
3D-printed green seal breaker



Design according patient's individual needs



Using 3D Printing technology





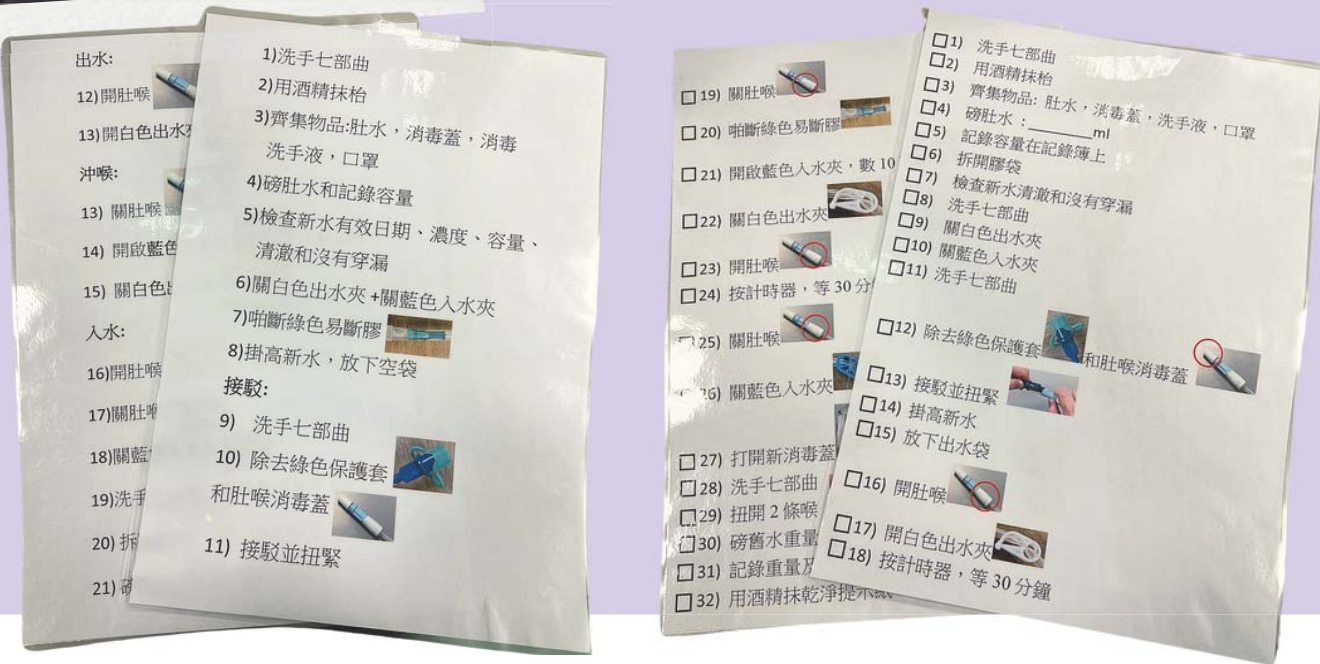
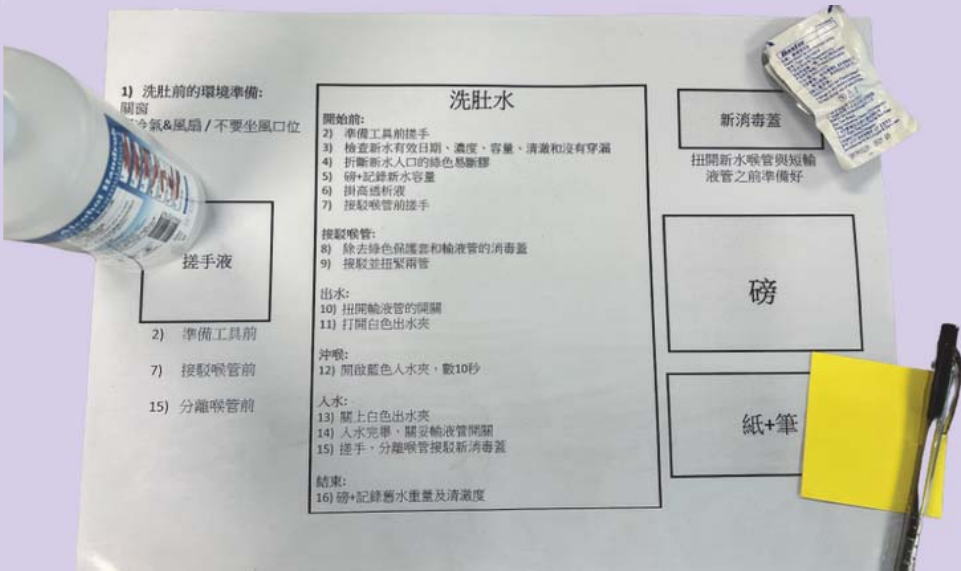
# 2) Assistive device prescription

Compensating for visual / cognitive deficiencies

## Hand free Magnifier



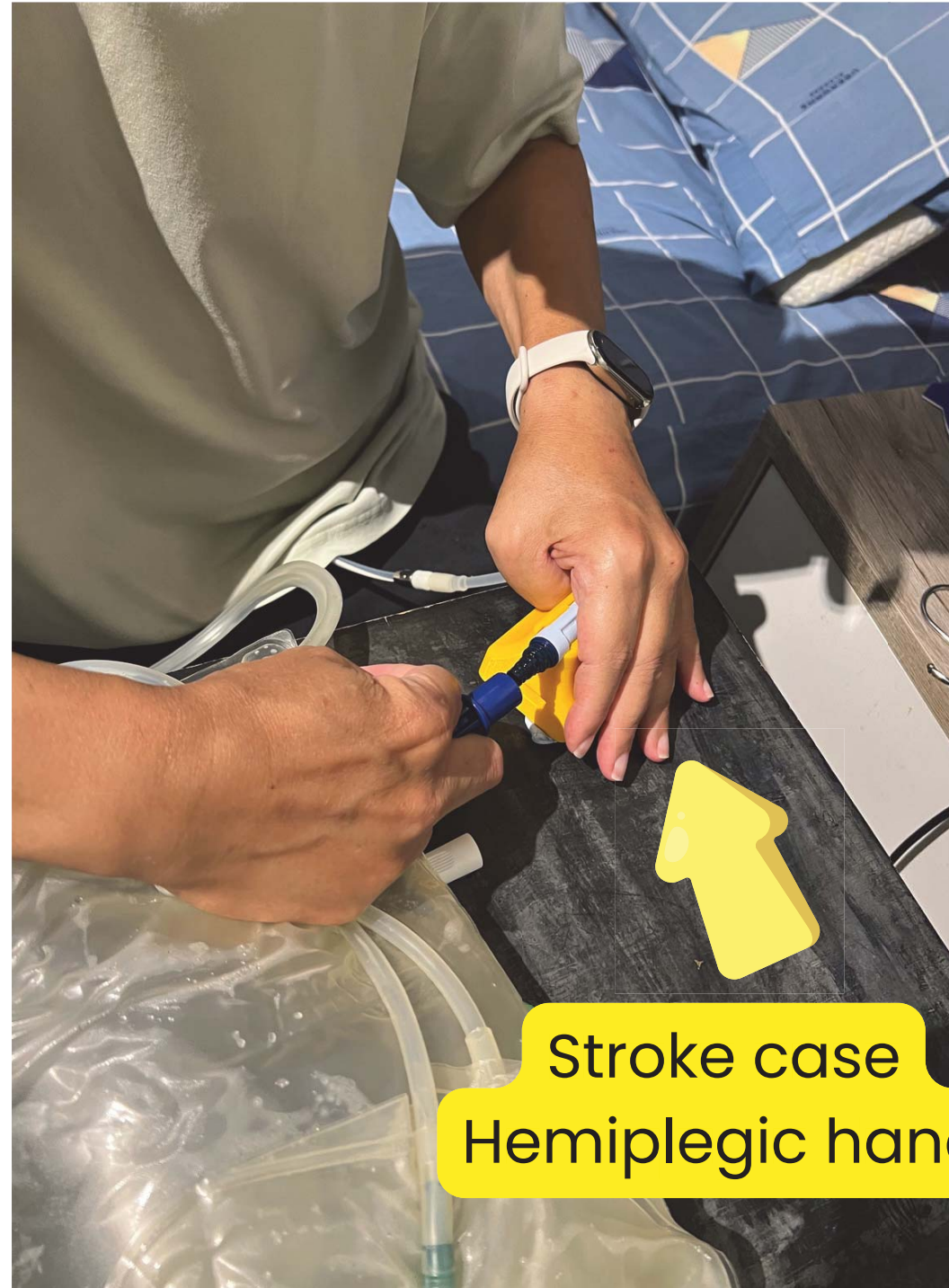
## Customized Memory Aids





# 3. Onsite Training

Assist in generalizing the adapted skills effectively into real-life situation





### 3. Onsite Training

Assist in generalizing the adapted skills effectively into real-life situation

- Real-life situation might be incompatible with hospital based training
- Requiring **real-time adaptation**

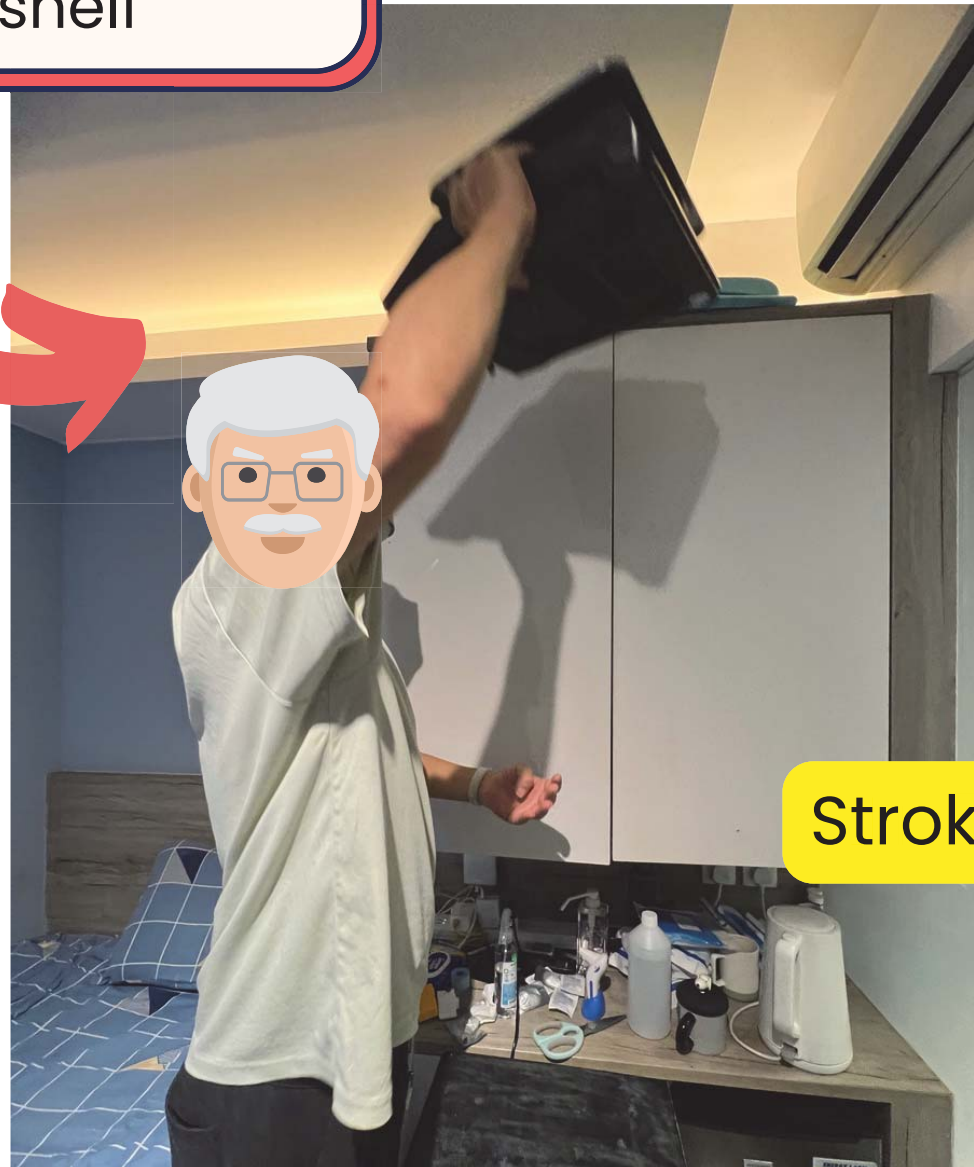




# 3. Onsite Training

Assess risk of fall and provide recommendations

One-handed lifting of heavy electronic scale to overhead shelf



Stroke case

Catheter tangling on the floor, posing a tripping hazard



# 3. Onsite Training

Assess risk of fall and provide recommendations



## Safety issue identified:

Patient using walking frame needed to move through confined space for accessing living room

## WHAT CAN WE DO?

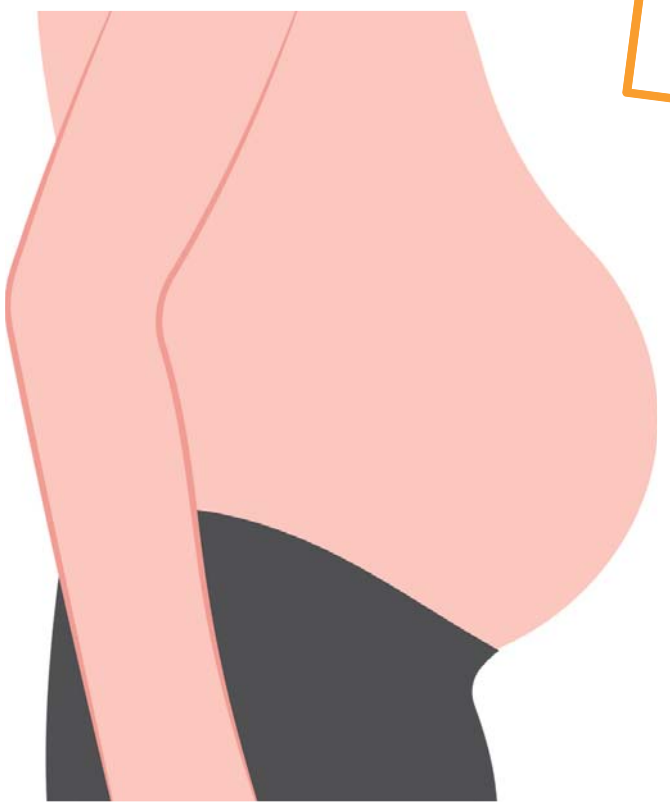
- Consider **home modification** as an alternative option
- Bring it to the attention of the clinical team





# 4. Lifestyle Redesign

First impression:  
PD disrupt current  
lifestyle, affect daily  
routine




明愛醫院  
職業治療部

姓名

時間表

2023 年 6 月 11 日 星期 四

天氣: 

07:00	煮早餐比呀女食, 餵魚
08:00	食早餐, 洗碗
09:00	家務 (洗碗, 拖地...)
10:30	休息, 睇下電視 (新聞)
12:00	落飯食晏就
13:00	行下商場, 買下餸
16:00	返屋企休息下, 沖涼
17:00	煮晚飯
19:00	食晚飯
20:30	洗碗
21:00	睇下電視
22:30	睡覺



Reduce resistance to PD

Successfully transition to  
new lifestyle

Improve successful PD  
completion rate

# Pilot Program from April 2023 to March 2024

Covered

**~80%**

of Pre-dialysis patients

**98%**

referral answered before  
patient's PD training

**~16 DAYS**

between ACP and  
assessment date

## Incorporation into Renal team

**MORE  
COVERAGE**



**FASTER**

# Study Outcomes

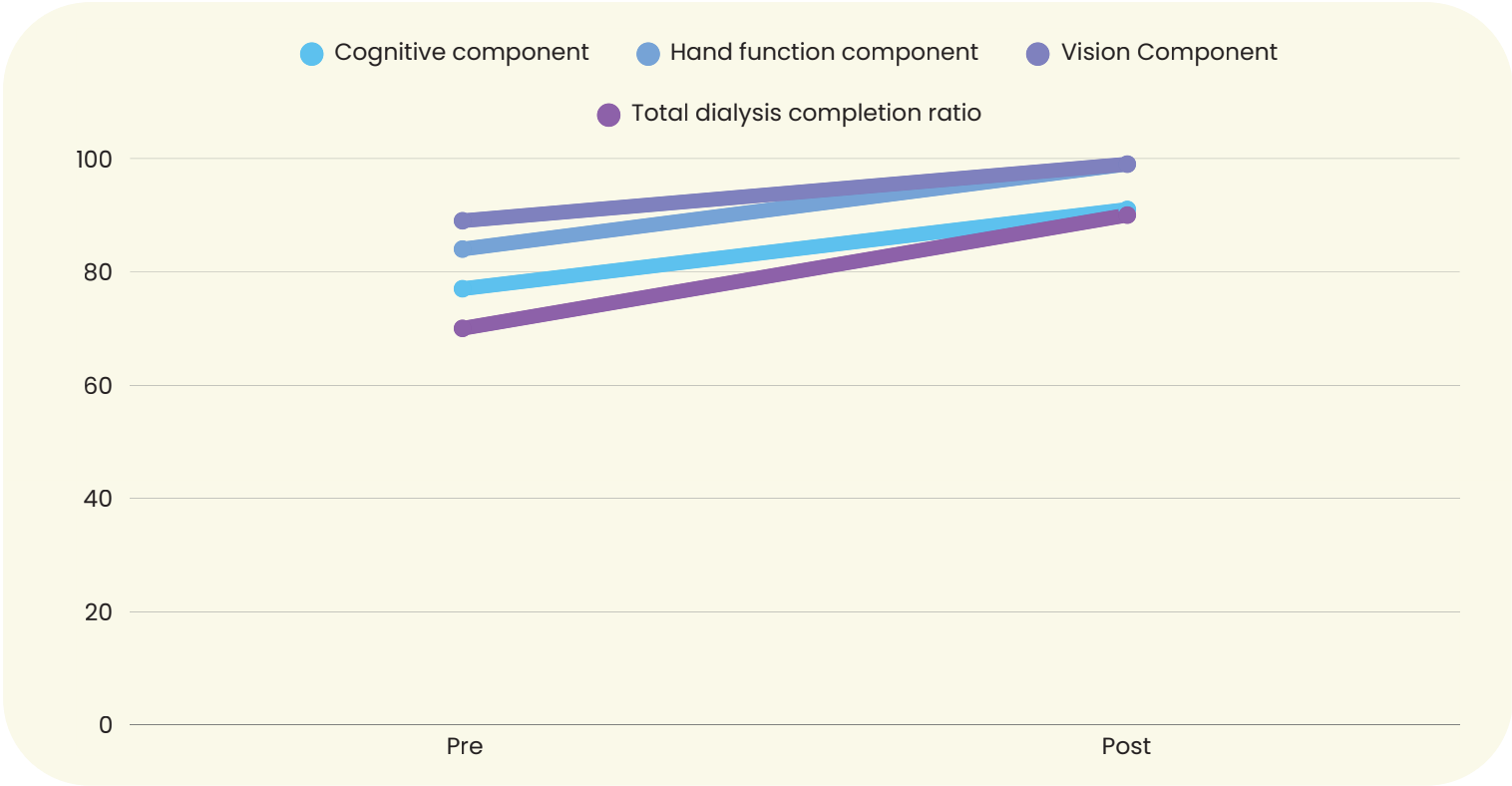


- 20 borderline performance patients completed intervention program
- Achieved **significant improvements** in **both disinfection & dialysis procedures**

Table 1. Comparison of Pre- and Post- Pre-dialysis Program Results

Wilcoxon signed-rank Test		
	Z	p
Disinfection accuracy ratio*	-2.994	.003
Dialysis completion ratio*	-2.959	.003
- Cognition component	-2.355	.019
- Hand function component	-2.836	.005
- Vision component	-1.820	.049

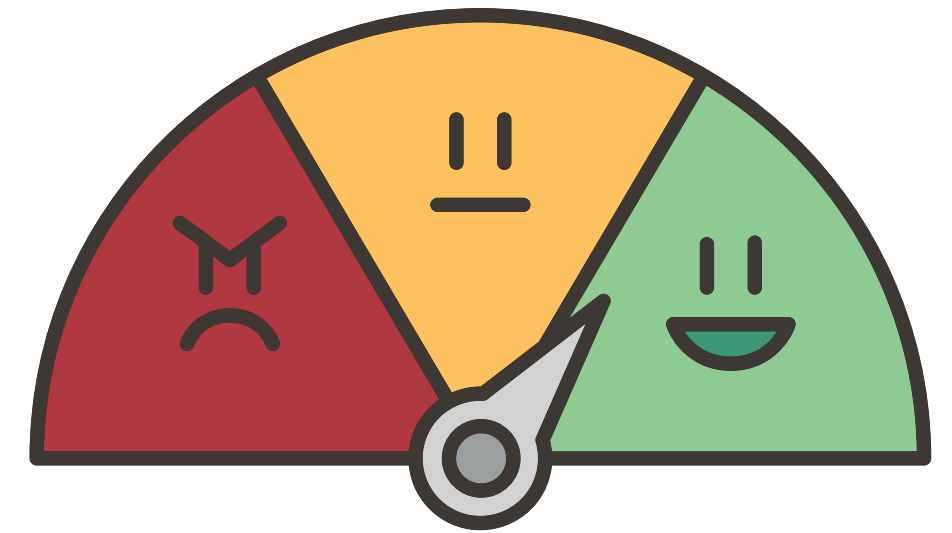
\*Disinfection accuracy ratio / Dialysis completion ratio refers to the proportion of successfully completed steps as per the standard disinfection / peritoneal dialysis exchange procedure checklist, specific to the brand/system used.



Improved patients' PD techniques



# Study Outcomes

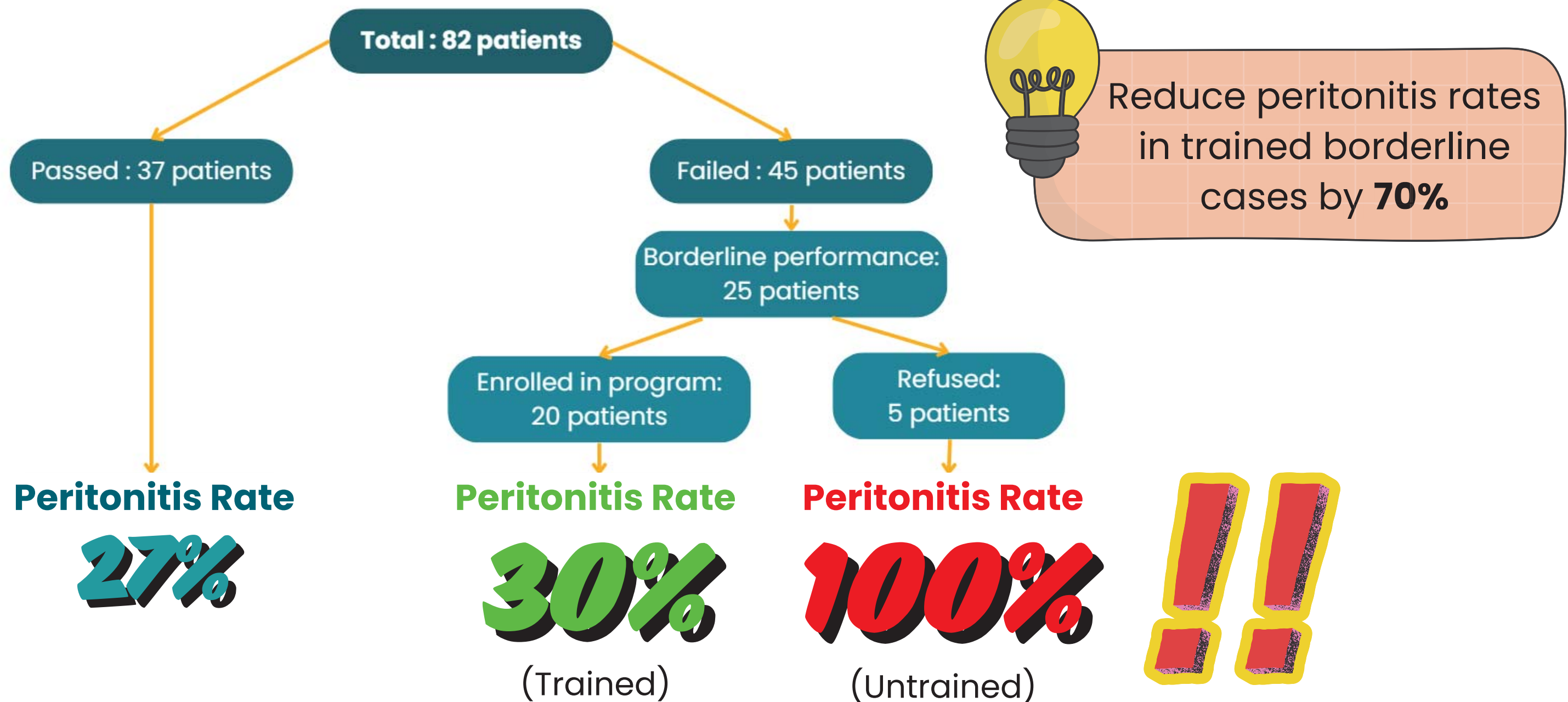


All patients were satisfied with the program and their holistic improvement

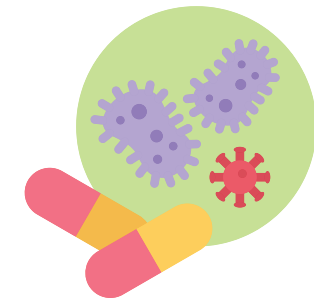
# Study Outcomes

## Assessment Outcomes and **Crude Peritonitis Rates**

Reviewed date on 7/11/2024



# Financial Impacts

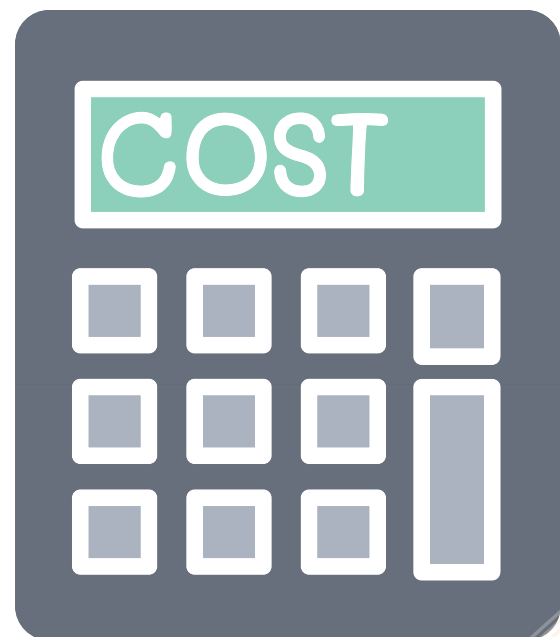


Multiple **antibiotics** used for treatment

Avoidable Tenckhoff insertion and operation sessions

Temporary **HD services** due to recurrent peritonitis

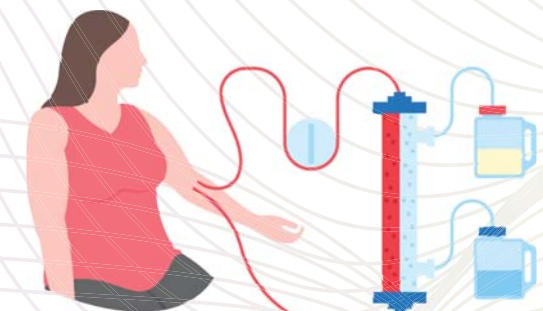
(CMC 22/23 data)



=

**Peritonitis** associated admissions:  
estimated **over \$7M**

+



# Financial Impacts



## Our pilot program

- Reduce peritonitis rates in trained borderline cases by 70%
- Extrapolating cost-saving analyses
  - Reduced **280 bed days**
  - **Annual savings of over \$1M** in peritonitis-related hospitalizations and treatment
  - Further reduce cost through early identification of failed cases to avoid Tenckhoff insertion operations

# Way forward



- Recommend **establishing pre-PD referral pathways to Occupational Therapy in KWC** for improving patient safety and clinical outcomes
- Strengthen **rehabilitation element** of optimizing patient's capacity in PD through OT interventions
- Review peritonitis cases to identify risk factors & guide service planning
- Sustain close team collaboration to support quality clinical planning





Thank You



## Acknowledgement



Special thanks to

- Dr. S K Yuen, CMC Hospital Coordinator (Q&S) / CON (MG)
- Ms Queenie Cheong, CMC WM (MG)
- Ms Cecilia Leung, KWC & CMC ANC (MG)
- Members of CMC Renal Team