Cognitive Rehabilitation in Psychogeriatrics
(老人精神科認知康復訓練)

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Outline of presentation
(演講概要)

- Community Psychogeriatric Service in Hong Kong Hospital Authority
- Cognitive rehabilitation
- Memory strategies
- Computer-assisted memory training
- Montessori Programme / Remotivation Therapy for dementia
- Conclusion

Community Psychogeriatric Service in HK Hospital Authority (HA)
香港醫院管理局的社區精神科服務

- Multi-discipilinary community psychogeriatric teams were established in 1993.
- Pioneer teams were first set up in Kwai Chung Hospital, Castle Peak Hospital & Prince Wales Hospital (& Shatin Hospital)
- More teams were set up gradually in Kowloon Hospital, Queen Mary Hospital, Pamela Youde Nethersole Eastern Hospital, United Christian Hospital.
- Psychogeriatric patients are mental patients of age 65 or above

Client-centred Care: Vision of OT
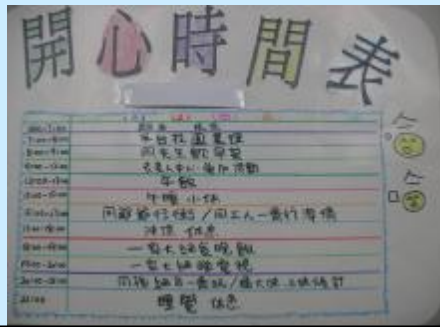## 職業治療的信念:

- **All our <u>clients</u> shall lead the <u>meaningful life</u> of their <u>choice</u>**
- 任何人均可選擇有意義的生活
  (OTCOC, HA, 1997)

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Client-centred Care: Mission of OT
職業治療的宗旨：

- We <u>empower our clients</u> to return to their <u>valued life roles</u> at <u>home</u>, work & <u>leisure</u> by making the best use of their <u>functional capabilities</u>

- 我們讓長者盡展所長，重新投入家庭、工作及生活的角色
  (OTCOC, HA, 1997)

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Community Psychogeriatric OT Service
(社區精神科職業治療服務)

- Assessment: Mental state/ mood & cognitive function, carer stress & QOL
- ADL assessment & training
- Cognitive rehabilitation
- Group Therapy
- Home assessment & modification
- Recommendation & provision of aids, gadgets & splints
- Outreaching service to subvented home and private OAH
- Community education service

Dementia(認知障礙症)

Dementia	Neurodegenerative disease, decline in cognitive function, affect mood, personality & social behaviour; progressive illness (Sadock & Sadock, 2005) High prevalence of behavioral and psychological symptoms of dementia (BPSD) (Gauthier, 2007; Herrmann, 2007)
Ageing population	Elderly population aged > 65 in HK: 2011: 13.3% ; 2041: 30.0% (HK Census & Statistics Dept, 2014)
Prevalence	Age > 60, 7.2 % ; Age > 70, 9.3 % (dementia) (Lam et al, 2008)
Types	Alzheimer's Disease : 65% Vascular Disease : 30% Dementia of other causes: 5% (Boustani et al., 2003; Chen et al,2012; Lam et al, 2008)

Cognitive rehabilitation (CR)
認知復度治療

- CR is a more individualized approach addressing the everyday manifestations of these impairment. It should be more focused to real-life, functional problems and associated mood and behavioural problems and it should involve clients, relatives and others in planning personal goals and implementation of cognitive rehabilitation program (Wislon, 2002)

Cognitive rehabilitation for dementia
認知障礙症的復康治療

- Cognition: process involved in knowing, understanding, learning, perceiving, remembering, judging and thinking (Wilson, 1997)

- Memory system is useful when it is effective in encoding, storage of information & retrieval of information when required

  (Wright & Limond, 2004)

– enhance their cognitive function to achieve optimal level of well being and reduce the functional disability (Clare, 2010; Wilson, 1997)

Cognitive Training （CT）
認知訓練

n CT involves guided practice on a set of standard tasks on particular cognitive domains such as memory, attention or problem solving ("executive function"; implemented individually, in the form of paper-and-pencil or computerized form or might be in simulation of activities of daily living and with a arrange of level of difficulties, to be selected appropriate to the level of function of clients (Clare & Woods, 2003)

Examples of
Cognitive Games/ training
認知訓導的例子

Mah-Jong study 麻雀訓練

- Research: 30 elderly residents of elderly home play mah jong
- Improvement shown in cognition, emotion and calculation ability. Stage of dementia improved from moderate stage to early stage (Chan A. & YU C.S., 2005)
- Research: 62 subjects
- Mah jong can be
  a treatment option on dementia
- Cheng, Sheung-Tak, Alfred Chan, and Edwin Yu. "An exploratory study of the effect of mahjong on the cognitive functioning of persons with dementia."*International journal of geriatric psychiatry* 21.7 (2006): 611-617.

Reminiscence training (Chung & Lee 2003)
懷緬治療

Cognitive games: i-pad/ tablet PC
認知遊戲：平板電腦

Resource from iPad
可用於平板電腦的資源

- **Hong Kong Alzheimer's Disease Association(HKADA) project**
  à 六藝

ProjectADA 六藝

Chinese Opera Intervention粵曲研究

- Reseach from Dept of Rehab Sciences, HK Polytechnic Univeristy & Yan Chai Hospital Group (Man, Yu & Lee, 2009)
- Implemented in 2006 - 2007 in 7 elderly homes
- 95 elderly home residents having mild to moderate dementia
- RCT :

  Intervention group 1: Singing Chinese Opera

  Intervention group 2: Appreciation of Chinese opera

  Control Group
- Intervention group on Singing Chinese opera showed better improvement on MMSE, auditory memory and body health than Chinese opera appreciation group and control group
- For improvement in IADL, Chinese opera singing group and appreciation group showed positive changes when compared with control group

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Goal-Oriented Cognitive Rehabilitation for people With Early-Stage Alzheimer Disease(針對早期阿爾茨海默症的目標為本認知復康治療): A Single-Blind RCT of Clinical Efficacy I

Objectives: *To provide evidence regarding the clinical efficacy of cognitive rehabilitation (CR) in early-stage Alzheimer disease (AD).*

Design: *Single-blind RCT comparing CR with relaxation therapy and no treatment.*

Intervention: *Eight weekly individual sessions of CR consisting of personalized interventions to address individually relevant goals supported by components addressing practical aids*

Participants: Sixty-nine individuals (41 women, 28 men; mean age 77.78 years, standard deviation 6.32, range = 56-89) with a diagnosis of AD or mixed AD and vascular dementia and a Mini-Mental State Examination score of 18 or above, and receiving a stable dose of acetylcholinesterase-inhibiting medication. Forty-four family carers also contributed.

Goal-Oriented Cognitive Rehabilitation for people With Early-Stage Alzheimer Disease(針對早期阿爾茨海默症的目標為本認知復康治療): A Single-Blind RCT of Clinical Efficacy II

Measurement: *The primary outcomes were goal performance and satisfaction, assessed using the Canadian Occupational Performance Measure. Questionnaires assessing mood, quality of life and career strain, and a brief neuropsychological test battery were also administered. A subset of participants underwent functional magnetic resonance imaging (fMRI).*
Results: *CR produced significant improvement in ratings of goal performance and satisfaction, whereas scores in the other two groups did not change. Behavioral changes in the CR group were supported by fMRI data for a subset of participants.*
Conclusion: *The findings support the clinical efficacy of CR in early-stage AD. CR offers a means of assisting people with early-stage AD and their families in managing the effects of the condition*

Clare, L., Linden, D. E., Woods, R. T., Whitaker, R., Evans, S. J., Parkinson, C. H., ... & Rugg, M. D. (2010). Goal-oriented cognitive rehabilitation for people with early-stage Alzheimer disease: a single-blind randomized controlled trial of clinical efficacy. *The American journal of geriatric psychiatry*, *18*(10), 928-939

OT Clinical Guideline for People with Dementia (2nd Ed., 2010; 3rd Ed. Revised, 2012)
認知障礙症的臨床職業治療指南
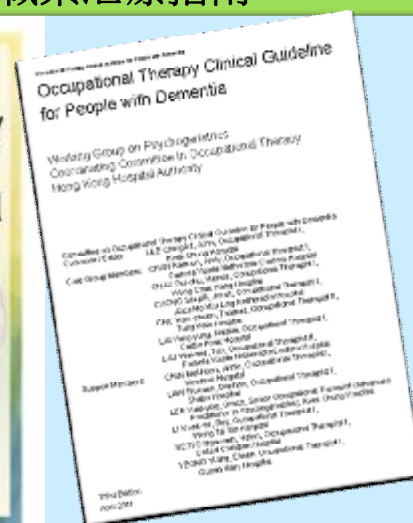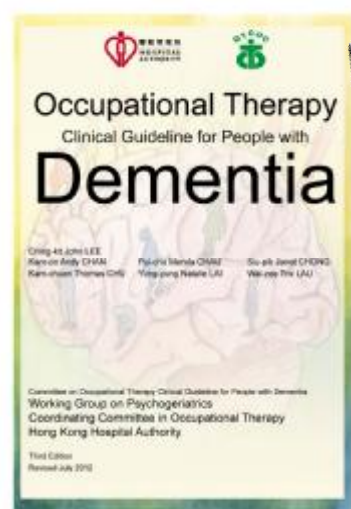
Community Mental Health Project For the Elderly
(「智醒之旅」遊戲及教材套**)**
(by OT Dept, Kwai Chung Hospital & Neighborhood Advice-Action Council)

Improve
cognition
& mood as
in
Case
Control
Study

Memory Training Kit
(Ray Li & PGOT colleagues, 2006;
OTCOC of HA, HK So for Rehab, HKADA, HKOTA)
"醒"腦提神- 助你更了解你的記憶力

Meta-analysis on Cognitive training on dementia
(認知障礙症認知訓練的Meta-分析)

n cognitive training was effective for restoration of learning, memory, executive functioning, ADL & general cognitive problems of AD patients (Sitzer, Twamley & Jeste, 2006); EL training improved memory function of patients with early dementia (Clare & Jones, 2008)

n EL Intervention groups showed significant cognitive gains when compared with conventional group or errorful training

(Clare & Jones, 2008; Dunn & Clare, 2007; Haslam et al., 2006; Haslam, Moss & Hodder, 2010; Kessels & Hensken, 2009)

Memory Strategies/ memory tips
(記憶攻略／小貼士)

Memory Training (記憶訓練)

- Memory training include memory strategies like attention, categorization, association & visual imagery; with exercises to practice the strategies (Olchik, Farina, Steibel, Teixeira & Yassuda, 2013)

- Techniques used in memory training include errorless learning, errorful learning, vanishing cues, spaced retrieval, memory aids etc. Memory training techniques might be used alone or together (Yu et al., 2009)

Computerized cognitive training for Older Adults
(長者認知電腦訓練)

- Systematic review to examine the efficacy of computer-based intervention for healthy older adults. Among 151 studies published in 1984-2011, 38 studies met inclusion criteria (55 years old or above, without AD or MCI).

- Result on pre-and-post training effect size: 0.06-6.32 for classic paper-and-pencil training task; 0.19-7.14 for neuropsychological software intervention and 0.09 – 1.7 for video game intervention.

- Conclusion: computerized training is an effective, less labour intensive training alternative (Kueider, Parisi, Gross & Rebok, 2014)

Computer training for dementia
(認知障礙症的電腦訓練)

n RCT study showed that computer training would delay the cognitive decline of subjects of MCI and dementia (Galante, Venturini & Fiaccadori, 2007); improve cognition after training (5 day/week; 20-25 minutes/day for 6 months (Miller, et al., 2013)

n Feasibility and efficacy of intensive cognitive training for 21 early AD patients in U.S. showed that training of 10 days over 2 weeks of 4 to 5 hours individualized cognitive training (computerized or paper-and-pencil task) each day, showed post-test improved outcomes on MMSE, letter fluency & Trail-making tests, maintained effect at 2- & 4-month follow up
(Kanaan, McDowd, Colgrove, Burns, Gajewski & Pohl, 2014)

Errorless Learning (EL)
(無錯誤學習法)

n A teaching technique through which people are prevented to make mistakes while learning new skills or acquire new information

n Active participation

n Might be used together with spaced retrieval and vanishing cues

n Effective strategies for training persons with memory problems especially AD patients

(Clare & Jones, 2008; Haslam, Hodder & Yates, 2011; Kessels & De Hann, 2003; Kessels & Hensken, 2009)

Integrated approach
(綜合理念)

Brain's plasticity

n improvement at any age

n brain reorganization to form new neural pathway and network (Berlucchi, 2011;Velligan et. al., 2006)

Computer-assisted memory EL training

n A few local computer-assisted / virtual reality training studies showed positive training results on memory function of dementia older adults, using errorless learning approach and building in enriched multi-sensory stimuli (Lee, Yip, Yu & Man, 2013; Man, Chung & Lee, 2012)

Virtual Reality Training for Questionable dementia (Man, Chung & Lee, 2012)
給予疑似認知障礙症患者的模擬現實訓練

RESEARCH ARTICLE

Geriatric Psychiatry

Evaluation of a virtual reality-based memory training programme for Hong Kong Chinese older adults with questionable dementia: a pilot study

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Background: Older adults with questionable dementia are at risk of progressing to dementia, and early intervention is considered important. The present study investigated the effectiveness of a virtual reality (VR)-based memory training for older adults with questionable dementia.

Methods: A pre-test and post-test design was adopted. Twenty and 24 older adults with questionable dementia were randomly assigned to a VR-based and a therapist-led memory training group, respectively. Primary outcome measures included the Multifactorial Memory Questionnaire and Rivermead Global Memory Evaluation.

Results: Both groups demonstrated positive training effects, with the VR group showing greater improvement in objective memory performance and the non-VR group showing better subjective

Pilot study published in 2013
(試點研究在2013發表)

Evaluation of a computer-assisted errorless learning-based memory training program for patients with early Alzheimer's disease in Hong Kong: a pilot study

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Background: Improving the situation in older adults with cognitive decline and evidence of cognitive rehabilitation is considered crucial in long-term care of the elderly. The objective of this study was to implement a computerized errorless learning-based memory training program (CELP) for persons with early Alzheimer's disease, and to compare the training outcomes of a CELP group with those of a therapist-led errorless learning program (TELP) group and a waiting-list control group.

Methods: A randomized controlled trial with a single-blind research design was used in the study. Chinese patients with early Alzheimer's disease screened by the Clinical Dementia Rating (score of 1) were recruited. The subjects were randomly assigned to CELP (n = 6), TELP (n = 6), and waiting-list control (n = 7) groups. Evaluation of subjects before and after testing, and at three-month follow-up was achieved using primary outcomes on the Chinese Mini-Mental State Examination, Chinese Dementia Rating Scale, Hong Kong List Learning Test, and the Brief Assessment of Prospective Memory-Short Form. Secondary outcomes were the Modified

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Development of Errorless Learning –based Memory Training for Computer-assisted errorless learning program (CELP) (Kern et al, 2005)
(無錯誤學習法的發展)

Rationales:

- Bypass errors & strengthen accurate association as patients have difficulty to self-correct errors

Four principles:

- Learned task broken into components
- Over-learning of components through repetition & practice
- Training from simple to complex
- Hierarchical training of gradation

Key features:

- Early success, positive feedback to reinforce learning
- Non-threatening with hints, incorporating Spaced Retrieval & Vanishing Cues strategies

Outcome Measures
(研究指標)

Pre-and-post & 3 month follow up assessment:

Primary outcome

- Chinese Mattis Dementia Rating Scale (CDRS)
  (Mattis, 1998; Chan et al., 2003)

Secondary Outcomes

- Chinese Mini Mental State Examination (CMMSE)
  (Chiu et al., 1994)
- HK List Learning Test (HKLLT) (Chan et al., 2003)

Results (結果)

- Early AD pt showed significant post-test score
  difference when compared with pre-test score:

  DRS total score (p=0.001)

  DRS memory subscore (p=0.012)

  HKLLT immediate recall (p=0.005)

Discussion - Clinical Implication
(討論-臨床意義)

- CELP is a cost-effective programme & will save more professional time to for therapists to train memory function of early AD patients

- TELP also showed significant improvement as it is a personalized and patient-centred EL based training and OT is more flexible and give immediate guidance, feedback and support patients in intervention programme (e.g. in literacy problems)

Conclusion of CELP research
(無錯誤電腦學習法研究之結論)

- Errorless learning memory training strategy can be an effective training strategy to enhance memory function of Chinese early AD patients in HK. Both CELP and TELP are better than CG
- CELP showed better training outcome in memory outcomes as reflected in CDRS, HKLLT. Further home programme might be added to maintain the training outcome
- OT might collaborate with rehabilitation team members/ experts to further develop brain health programme and plan further RCT cognitive training studies

Community Mental Health Project for Older Adults with Cognitive Impairment or Depressive Symptoms
(給予認知障礙症或抑鬱症長者的精神健康社區計劃)

- OT Dept of Kwai Chung Hospital collaborated with the Neighbourhood Advice-Action Council to provide early assessment for elderly clients on dementia and depression (for 1488 persons) and intervention programme of cognitive training group (for 58 persons) and depression group (for 130 persons)
- Cognitive training group showed improvement CMMSE (23.95 to 25.29) & AMT(8.26 to 8.57) score, p=0.000; GDS-SF score improved from 3.72 to 2.68, p=0.001, sig. better than control

Community education (社區教育)

- 700 participants attended the three community exhibition and three sessions of educational talk

Prof David Man (HKPU) /
Dr. Grace Lee & research team
- Computer-based errorless
Memory Training Programme
無錯誤電腦學習法

**Prof David Man(文偉光博士) (HKPU),
Dr. Grace Lee(李月英博士), and research
team: Be-smart project for older
adults with memory decline**
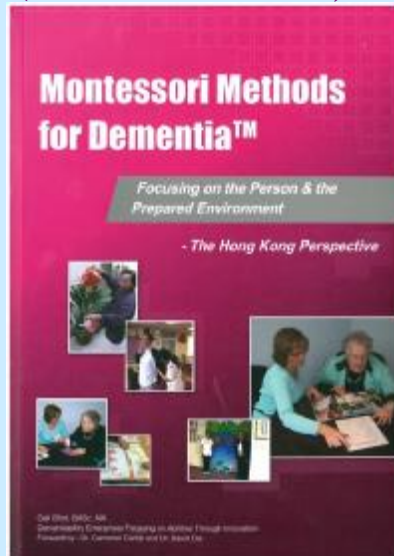

**Montessori Methods for
Dementia™** (蒙特梭利法)
A Focus on the Person &
the Prepared Environment

**Ms Gail Elliot, BASc, MA
Dementiability Enterprises Focusing on
Abilities Through Innovation**

Montessori Methods for Dementia™
(Gail M. Elliot et al., 2012; HKOTA)

Montessori Methods for Dementia

Written by: Gail M. Elliot (2012)

Foreward by:
Dr. Cameron Camp;
Dr. David Dai

Contributors:
Mr. Chan Chun Chung, Walter
Ms. Lee Yuet Ying, Grace
Mr. Yu Chiu Lun, Ernest

Remotivation Therapy for the older adults with dementia
(用於認知障礙症長者之 重燃動力治療)
- sharing of group experience

Conclusion(結論)

- Cognitive rehabilitation programme should be designed individually based on the interests, needs, ability of the psychogeriatric patients and one's living environment

- To enhance effective training outcome, it is important to collaborate with the carer on the intervention programme

Engage in cognitive challenge training to maintain your cognitive health

（認知訓練可維持你的認知健康）

Thank You!