Parkinson’s disease (PD)

- PD is ↑ at a rate of 2-3% per year in Australia, by 2030 it is estimated there will be 115,000 people with Parkinson’s (PwP). (Deloitte Access Economics 2011)

- 80% of PwP > 65 y/o, ~ 30% less active. (Van Nimwegen et al 2011)

- 45 to 68% of PwP fall each year, 2/3 fall more than once. (Wood et al 2002, Allen et al 2013, Latt et al 2009, Paul et al 2013, Ashburn et al 2001)

- PwP fall rates double the elderly population. (Hey et al 2008)

- Up to 65% of falls in PwP → injury. (Wielinski et al 2005)

- Hip # are 4X that of the elderly population. (Bhattacharya et al 2012)

- Falls risk ↑ as the disease progresses.
Consequences of falls in PwP

- Falls ↑ PHYSICAL, SOCIAL & FINANCIAL burden of PD and may result in:
  - # (NOF, NOH, pelvis) + other injuries → ↑ FOF. (Grimbergen & Bloem 2004)
  - Immobilisation/inactivity → mm atrophy, OP, ↑ constipation, insomnia, ↓ CV fitness, isolation, impaired communication skills.
  - Depression, cognitive decline → ↑ disease progression, ↓ QoL, carer stress.
  - ↑ risk of nursing home admission → ↑ health system costs.
Factors associated with falls in PwP

- ~80% of falls occur indoors, most during walking and while dual tasking. (Ashburn et al 2008)

- Associated factors include:
  - Freezing
  - Reduced step height (shuffling gait)
  - Bradykinesia
  - Rigidity
  - Impaired postural reflexes
  - Medications
  - Urinary incontinence/urgency
  - Posture
  - Vision
  - Cognition
  - Fatigue
  - Diet

- MOTOR
  - Tremor
  - Rigidity
  - Slowness
  - Falls

- NON-MOTOR
  - REM sleep disorder
  - Depression
  - Anxiety
  - Apathy
  - Attention deficits
  - Impaired memory
  - Urgency/Nocturia
  - Sweating
  - Hypotension
  - Constipation
  - Impaired heart rate regulation
  - Sexual dysfunction
  - Pain
  - Anosmia
  - Impaired body awareness
Aim = ↑ wellbeing of PwP and ↓ falls through:
- Education – what, how & why
- Exercise – daily
- Empowerment - ↑ self efficacy
- Support – collaboration

Achieved through timely, proactive intervention rather than delayed reactive management to:
- MAXIMISE health, fitness and mobility
- COMPENSATE for the disease symptoms
- PREVENT inactivity related changes

Parkinson’s disease! I don’t have any problems now I’m on medication.
Screening for falls

- In managing falls in PwP we focus on:
  - Disease stage and type
  - Medication dose & frequency
  - Cognition
  - Previous falls history
  - Freezing of gait
  - Fatigue levels
  - Balance
  - Leg strength
  - Gait velocity
  - Diet, Vit D levels and weight
Screening for falls continued...

- Posture
- Pull test
- Exercise history
- Vision
- Postural BP test
- Bladder & bowel function screen
- 4 step square test
- Gait and aid used
- Depression, anxiety, stress score
- 3 step prediction tool

I didn’t fall, the floor needed a hug!
Strategies used to manage falls

- Early intervention

  - Referral & Diagnosis

  - Exercise
  - Behaviour modification
  - Lifestyle change
  - Education
  - Collaboration

  - 1
  - 2
  - 3
  - 4
  - 5

  - EARLY
  - Disease Severity H&Y
  - LATE

- Education – 10 sessions on:

  - What is PD? • Feelings at diagnosis • Why is exercise important? • Motivation & goal setting
  
  - Nutrition & medications • Communication, speech & swallowing • Sleep & fatigue
  
  - Falls, freezing & posture • Stress management • Where to now? – lifestyle planning

- Exercise –

  - Parkincise

    Maximise Compensate Prevent

  - Parkinson’s disease Wellbeing program

  - Calvary Health Care Kogarah
The wellbeing program exercise session consists of 6 activities:

1) Aerobic exercise (bike or treadmill) - 20 min
2) Stepping and weighted bar exercises - 10 min
3) Ball exercises (soft/slam/medicine) – 10 min
4) Agility exercises (hurdles/ladder/trampoline) – 10 min
5) Core strengthening exercises –10 min
6) Stretching –10 min

All exercises are adapted to meet client needs, preferences and ability.
Why is group exercise important?

- The benefits of group exercise are:
  - More intense & stimulating
  - Motivating/engaging
  - Develops a sense of belonging and participating → social support
  - Cost effective
  - Practice communication skills
  - Allows ongoing monitoring
  - Increased adherence

- PHYSICAL, MENTAL and SOCIAL stimulation.
Community programs

- PD specific community exercise programs are needed to help:
  - Reintegrate PwP into the community.
  - Enable continuity of care & monitoring.
  - Prevent inactivity related decline.
  - Encourages long-term ↑ activity levels.
  - Support exercise adherence.
  - Maintain QoL longer.
  - Targeted, specific exercise for PWP.
Results – 106 clients (May 2014-April 2015)

- No client has fallen while at the hospital participating in the program, however at initial Ax:
  - 68% have fallen in the previous 12 months
  - 48% had multiple falls.
  - 12% of clients fell at home in the 6 week period they attended the program.

- Physical measures- average score

<table>
<thead>
<tr>
<th>Test</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berg balance</td>
<td>47/56</td>
<td>52/56</td>
</tr>
<tr>
<td>2 min walk</td>
<td>129m</td>
<td>150m</td>
</tr>
<tr>
<td>10m walk velocity</td>
<td>1.49m/s</td>
<td>1.71m/s</td>
</tr>
<tr>
<td>Timed up and go</td>
<td>10 sec</td>
<td>7 sec</td>
</tr>
<tr>
<td>30 sec sit to stand</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Grip strength</td>
<td>R-27kg L-25kg</td>
<td>R-31kg L-29kg</td>
</tr>
</tbody>
</table>
Psychosocial measures:

<table>
<thead>
<tr>
<th>Test</th>
<th>Pre</th>
<th>Post</th>
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<tbody>
<tr>
<td>PDQ-39</td>
<td>34/156</td>
<td>29/156</td>
</tr>
<tr>
<td>PFS-16</td>
<td>29/64</td>
<td>25/64</td>
</tr>
<tr>
<td>DASS-21</td>
<td>D-5 A-4 S-4</td>
<td>D-4 A-3 S-3</td>
</tr>
<tr>
<td>MMSE/RUDAS</td>
<td>27/30</td>
<td>-</td>
</tr>
<tr>
<td>PD knowledge</td>
<td>9/20</td>
<td>15/20</td>
</tr>
</tbody>
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General information

- Average age 70 years old, 69% male, 31% female.
- 56% of clients did no form of exercise prior to the program.
- 33% of clients did <150 min of exercise a week.
- 11% of clients did the recommended minimum 150+ min a week of exercise.
- 100% of clients report they will do regular, planned, purposeful exercise in the discharge survey.
- 100% of clients with a MMSE/RUDAS ≤26 have fallen in the past 12 months.
Summary

- Can we fall proof PwP?
  - No, but we can reduce falls risk **early** in the disease. (Morris et al 2015, Canning et al 2014, Allen et al 2010)

- To minimise falls, the wellbeing program aims to:
  - **STIMULATE** – get PwP engaged early, be proactive: PHYSICALLY, MENTALLY & SOCIA LLY.
  - **ACTIVATE** – get moving, take exercise daily, just like their medicine.
  - **FORMULATE** – get a lifestyle plan, daily routine, set SMART goals, involve family & friends.
  - **EDUCATE** – get informed about PD, educate family/friends/community and learn to self manage.

- Minimising cognitive decline through early intervention (education & exercise) is central to improving QoL and ↓ falls risk.
  - PD specific community programs
  - Regular follow up/monitoring
Questions?

Life with Parkinson’s disease is like riding a bike.
You have to keep moving to maintain your balance!
References


References


