HAPPY Program

HAemodialysis Patient Physical Exercise program

--- Pilot Physiotherapy exercise training program for Haemodialysis patients in Tseung Kwan O Hospital

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Hong Kong Situation

- About 8000 End Stage Renal Disease patients requiring renal replacement therapies in year 2012
- Incidence ~1000 yearly

Prevalence: 1,192 pmp
Incidence rate: 157 pmp

USRDS Annual Report (2014)
Hong Kong Renal Registry (2013)
Problems of Chronic Kidney Disease

- ↓ Exercise capacity
  (60%-70% of healthy age-matched individuals)

- ↓ Physical strength

- ↑ Risk of fall

- ↑ Cardiovascular morbidity & mortality

- ↓ Quality of life (QOL)

ACSM (2014); Neil et al (2011)
Exercise for Haemodialysis Patients

Physical Improvements

• Better control of BP, DM & lipid profile
• ↑ Exercise capacity
• ↓ Muscle wasting
• ↑ QOL
• ↓ Risk of falls
• ↑ Efficiency of dialysis

Benefits of Exercise On HD Patients

Psychological Improvements

- Reduced Depression
- Reduced subjective fatigue symptoms
- Reduced Anxiety
- Improved Perception of general health

Motedayen et al (2014)
The effect of exercise during haemodialysis on solute removal


• During haemodialysis, patients pedal on bike 5-20 mins followed by rest to achieve 60 mins

• Plasma level of urea, creatinine and potassium levels were measures pre / post / 30 mins post-dialysis

Results: Rebound of solutes were sign. ↓ after exercise
Evidence-Based Practice

- Combining *aerobic and resistance training* delivered on non-dialysis days for *at least 6 months* offers greatest change in *peak VO2*


- *Uptake and adherence* of exercise may be *maximised by presence of physiotherapist* during each dialysis session

Aim of HAPPY Program

- Provide a **one stop service** for exercise program for HD patients
- Establish **home exercise** plan & promote active lifestyle
- Improve **clinical outcomes & self-esteem**
Patients recruited into HAPPY program by Nephrologists

Physiotherapist Initial Assessment

Intra-Dialytic Exercise + Home Exercise Program

PT 3 months Re-Ax

PT 6 months Re-Ax

Refer NAHC Fall Prevention clinic for fall risk pt
Exercise Training Regime

1. Intra-dialytic exercise
   - Weekly aerobic or resistance exercise with gradual progression
   - Individualized target depends on previous assessment
   - Progression depends on RPE level

Cycling exercise

Sandbag exercise
To avoid hypotensive episodes, intra-dialytic exercise is done during **initial first 2 hours** of HD

- Pre and Post **vital signs** checking
- **Continuous monitoring** vitals and RPE level

2. Home exercise program

- Both aerobic training and resistance exercise
- Exercise recommendations according to ACSM guideline
Special Considerations on Exercise

- Start with light intensity & shorter duration (10-15mins)
- Exercise progression
  - Initially ↑ duration
  - Then ↑ intensity
- Intermittent exercise with rest
- Monitor RPE
- No exercise immediately post HD

ACSM (2014)

<table>
<thead>
<tr>
<th>Rate of Perceived Exertion</th>
<th>6</th>
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Rate of Perceived Exertion (Borg GAV 1982)
Outcome Measures

Exercise Capacity
- Six Minute Walk Test

Mobility & Balance
- Time Up and Go Test

QOL
- Short-Form Health Survey (SF-36)

Self Efficacy on Exercise
- 0-10 Point Scale

Patient Satisfaction
- Satisfaction Questionnaire
## Results

From Jan 2014 – March 2015:

<table>
<thead>
<tr>
<th>Test</th>
<th>Baseline</th>
<th>6 Months</th>
<th>% Change</th>
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</thead>
<tbody>
<tr>
<td>6 Minute Walk Test</td>
<td>275 meters</td>
<td>307.3 meters</td>
<td>↑11.75%</td>
</tr>
<tr>
<td>Time Up and Go Test</td>
<td>18 seconds</td>
<td>12.6 seconds</td>
<td>↓30%</td>
</tr>
<tr>
<td>Total SF-36</td>
<td>49</td>
<td>59.5</td>
<td>↑21.4%</td>
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<tr>
<td>SF-36: Physical Health</td>
<td>44.5</td>
<td>58.5</td>
<td>↑31.5%</td>
</tr>
<tr>
<td>SF-36: Mental Health</td>
<td>47.5</td>
<td>55.8</td>
<td>↑17.5%</td>
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<tr>
<td>Self Efficacy</td>
<td>4.8</td>
<td>6.5</td>
<td>↑35.4%</td>
</tr>
</tbody>
</table>
After 6 Months of training: ↑11.75%
Time Up And Go Test

After 6 Months of training: ↓30%

* <10 Seconds: Freely Independent in mobility
Total score of Short-Form Health Survey

After 6 Months of training: ↑21.4%
Short-Form Health Survey

After 6 Months of training:

- **Physical Health**: ↑31.5%
  - Baseline: 44.5
  - 3 Months: 48.8
  - 6 Months: 58.5

- **Mental Health**: ↑17.5%
  - Baseline: 47.5
  - 3 Months: 50.5
  - 6 Months: 55.8

Physical and Mental Health score approaching HK Norm: 50
Self Efficacy On Exercise (0-10)

After 6 Months of training: ↑35.4%
Patients’ Subjective Improvements

Health Condition
- Agree: 67%
- Neutral: 33%

Balance
- Strongly agree: 17%
- Agree: 50%
- Neutral: 33%
Conclusion

A 6 months exercise program for CKD pt with HD treatment is effective to

1. ↑ Exercise capacity
2. ↑ Mobility & Balance
3. ↑ Quality of life
Future Planning

• Recruit more patients in HAPPY program

• Continuity of exercise

• Build up patients’ regular exercise habit
Dr Elaine Ho, AC. TKOH

Dr Yeung Shing, AC. TKOH

Mr Tony Au, DM of IRS. TKOH

Ms Catherine Cheung, SPT. TKOH

Ms Tammy Fung, SPT. TKOH

Ms Winnie Choi, PTI. TKOH

Thanks!