JADE and PEARL in Hong Kong: The Integration of Peer Support and Telehealth in Diabetes Management

Hairong Nan  MD PhD
On behalf of the PEARL Project team
Asia Diabetes Foundation (ADF)
Chinese University of Hong Kong (CUHK)

7th Aug 2010, Washington DC, USA
Peer Support, Empowerment And Remote Communication Linked by Information Technology (PEARL): A Multi-Component Program To Improve Community-Based Diabetes Care
People with diabetes receiving structured care through a web-based disease management, the Joint Asia Diabetes Evaluation (JADE) Program randomized to a motivational peer-support program augmented by telephone counselling will further improve in metabolic control, quality of life and self-management skills compared to those not receiving peer support.
Overall concept, implementation and evaluation of the PEARL Program

Train the Trainer Program led by expert team:
- Specialists/family doctors
- Diabetes educator
- Dietitian
- Exercise therapist
- Psychologist

Expert people with diabetes (PWD)

PWD Mentor (n=30)
- 10 PWD per mentor

Self Management Knowledge/Attitudes/Skills

Peer support

PWD

Structured care

Health Care Team

Peer Support N=300

No Peer Support n=300

Outcome (12 months)
- Quality of life
- Metabolic indexes
- Cognitive-Psychological-Behavioral changes

PEARL e-portal
- Registry
- Protocol
- Trends/charts
- Feedback
- Decision support

PEARL Program Manager
## Structured care received by all patients

<table>
<thead>
<tr>
<th>Week</th>
<th>0</th>
<th>6</th>
<th>12</th>
<th>18</th>
<th>24</th>
<th>30</th>
<th>36</th>
<th>42</th>
<th>52</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both groups (<em>built in within the JADE e-portal</em>)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual comprehensive assessment *</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Cognitive-psychological-behavioral questionnaires</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Medical follow-up visits*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Lab tests (2-4 weeks before review by doctor)*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Body weight/BP/blood glucose/Hba1c*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Self care (diet, exercise, hypo, SMBG) since last visit*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Changes in medications*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Events (Admissions or A/E visit) since last visit*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

**Group medical follow up visits**

Optional

**Group or individual education session by clinic**

Optional
Measurement outcomes (baseline & 1 year follow up)

- **Primary endpoint**
  - changes in A1c (A)
  - % of PWD achieving A1c <7% at 12 months

- **Secondary endpoint**
  - Changes in lipids, BP and BW
  - % of PWD who attained Rx goals
    - BP <130/80 mmHg (B)
    - LDL-C <2.6 mmol/L (C)

- **Use (or non use) of health care facilities**
  - e.g. clinic default rates, ER visits, hospitalizations, sick days

- **Quality of life**
- **Self management skills**
- **Cognitive-psychological-behavioral assessments**
- **Peer support as recorded by mentors**
  - e.g. contact initiated by PWD mentors & mentees
Joint Asia Diabetes Evaluation (JADE) Program

• A web-based electronic portal consisting of:
  – Validated risk equations
  – Templates for collection of data for regular comprehensive assessments and follow up visits

• Functions
  – diabetes registry
  – risk stratification
  – predefined protocols
  – decision support
  – feedback in trends/charts/figures on ABC targets

Ko G et al BMC Med Inform Decis Mak 2010
Chan JC et al Diab Med 2009
Joint Asia Diabetes Evaluation (JADE) Program

Please login to access the Joint Asia Diabetes Evaluation (JADE) Program

Username
Password

Submit

* Required

Version 1.3 [1.2.2.1]
JADE Risk Stratification Program

P<0.001

Risk stratification by risk factor, score and GFR
- High risk
- Low risk
- Medium risk
- Very high risk

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
</tr>
<tr>
<td>Age</td>
<td>54 years</td>
</tr>
<tr>
<td>Body Mass Index (BMI)</td>
<td>24 kg/m²</td>
</tr>
<tr>
<td>Urine Albumin/Creatinine ratio (ACR) (Lab value)</td>
<td>343 mg/mmol</td>
</tr>
<tr>
<td>HbA₁₀</td>
<td>7%</td>
</tr>
<tr>
<td>Hemoglobin (HB)</td>
<td>123 g/dL</td>
</tr>
<tr>
<td>Haematocrit (Hct)</td>
<td>138 L/L</td>
</tr>
<tr>
<td>All Heart Events (AHE)</td>
<td>Yes</td>
</tr>
<tr>
<td>Premature cardiovascular disease (CVD) affecting first degree relatives</td>
<td>Yes</td>
</tr>
<tr>
<td>PVD (diagnosis)</td>
<td>Yes</td>
</tr>
<tr>
<td>Diabetic Retinopathy (DMR)</td>
<td>No</td>
</tr>
</tbody>
</table>

### 5 Year Probability (%)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHD</td>
<td>39.43%</td>
</tr>
<tr>
<td>Stroke</td>
<td>11.31%</td>
</tr>
<tr>
<td>ESRD</td>
<td>0.00%</td>
</tr>
<tr>
<td>Heart Failure</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

### Probability Percentages

- **CHD**: 39.43%
- **Stroke**: 11.31%
- **ESRD**: 0.00%
- **Heart Failure**: 0.00%
HK-M-1953-09-11-4352

Doctor's Summary

Care Level as of 20-Sep-2007: 4

For details of care level, please refer to Risk Stratification.

Age: 54
Gender: Male
Occupation:
Ethnicity: Filipino

Date of the most recent contact: 26-Oct-2007

Getting the patient to target

HbA1c, %

- Suboptimal glycaemic control. Need to review the adequacy of anti-diabetic drugs.
- Check HbA1c once every 3 months

Systolic Blood Pressure, mmHg

- Very poor BP control. Diabetic patients

BP
Peer Leaders Accelerated Training INitiative to Unleash Potential of Mentorship (PLATINUM) Program: A feasibility study on a train-the-trainer course on peer support for people with diabetes

Project Leader
Rebecca Wong
Nurse Consultant
Prince of Wales Hospital
74 diabetic patients with good glycemic control invited by nurse specialists

4 interactive 8-hour workshops led by experts in nutrition, physical activity, psychology & interpersonal communication

Measurements at baseline (M0) & 6 months (M6)
- FPG, HbA1c, TC & LDL-C, BP
- Cognitive psycho-behavioral assessment
  - General Health Questionnaire (GHQ12)
  - Quality of life assessment (EQ5D).
59 patients [21 men, mean (SD) age, 55.6 (11.6)] completed the program. 31 agreed to become mentors & 28 declined (non-mentors).

<table>
<thead>
<tr>
<th></th>
<th>N=59</th>
<th>M 0</th>
<th>M 6</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPG, mmol/l</td>
<td>8.2±2.7</td>
<td>7.0±2.1</td>
<td>0.033</td>
<td></td>
</tr>
<tr>
<td>HbA1c, %</td>
<td>7.5±1.6</td>
<td>7.5±1.4%</td>
<td>NS</td>
<td></td>
</tr>
<tr>
<td>TC, mmol/l</td>
<td>4.7±0.9</td>
<td>4.3±1.0</td>
<td>0.010</td>
<td></td>
</tr>
<tr>
<td>LDL-C, mmol/l</td>
<td>2.6±0.8</td>
<td>2.4±0.9</td>
<td>0.041</td>
<td></td>
</tr>
<tr>
<td>BP, mmHg</td>
<td>124/69</td>
<td>124/72</td>
<td>NS</td>
<td></td>
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</table>
## PLATINUM

<table>
<thead>
<tr>
<th></th>
<th>Mentor (n=31)</th>
<th>Non-Mentor (n=28)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHQ score</td>
<td>0.27±0.63</td>
<td>1.18 ±2.11</td>
<td>0.005</td>
</tr>
<tr>
<td>EQ5D</td>
<td>84.6±7.7</td>
<td>74.5±14.2</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>At M 0</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GHQ score</td>
<td>0.23±0.68</td>
<td>1.72±2.67</td>
<td>0.012</td>
</tr>
<tr>
<td>EQ5D</td>
<td>88.1±8.9</td>
<td>76.1±15.2</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>At M 6</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adjusted for age and gender
Nurse briefing of mentors

- **Ice breaking and mini-lecture by nurse coordinator**
  - Recap of ABC control
  - Importance of peer support

- **PEARL Program**
  - Concept; timeline and activities involved

- **Responsibilities**
  - Sharing of knowledge
  - Reminder of compliance (Rx, FU, ...)
  - Practice tips
  - Reinforce positive habit change
  - Evaluation items of the PEARL program (log book)

- **How to know your group**
  - Sharing session, phone contact ...

- **Resources available**
  - Education VCD, magazines, pamphlets
  - Membership of patients groups e.g. Diabetes Hongkong
Ice breaking Games
Nurse-led mentor briefing session
Intervention

• **15-20 minute telephone (more often as needed)**
  – M0-M3: twice monthly
  – M4-M12: at least once monthly

• **Content**
  – review adherence
  – encourage self monitoring
  – give practice tips
  – provide psychological support for negative emotions
  – help solve problems

• **Document all contacts initiated by mentors or mentees and ad lib group activities**
PEARL diary for mentors

(cover page)

Mentee's name: [Blank]

### A mentor’s diary


<table>
<thead>
<tr>
<th>資料</th>
<th>與組員的談話內容 (以『正』字表示記錄的次數)</th>
<th>組員有遵循指示完成 (例如: 80% → 分數 8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[A1-01]</td>
<td>[自我護理 飲食控制 血糖測試 血壓 輔助 運動 情緒/心理支援 其他]</td>
<td>[控制飲食 ( ) 測試血糖 ( ) 進行運動 ( ) 覆診 ( ) 配合治療 ( ) 使用電話通話護理系統 ( )]</td>
</tr>
</tbody>
</table>

備註: 血糖過低, 入院治療, 需要家人支持.


<table>
<thead>
<tr>
<th>資料</th>
<th>與組員的談話內容 (以『正』字表示記錄的次數)</th>
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<tr>
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<td>[控制飲食 ( ) 測試血糖 ( ) 進行運動 ( ) 覆診 ( ) 配合治療 ( ) 使用電話通話護理系統 ( )]</td>
</tr>
</tbody>
</table>

備註: 預期入院, 10天后, 3月23日在醫院治療, 需要家人支持.
Mentor-Mentor Meeting

- Mentors can seek advice from nurse coordinators if needed
- Mentors will complete log books and return to nurse coordinator by mail every 16-week
- All mentors and nurse coordinators will meet 2 more times for sharing at month 4, 9
  - Problem shooting
  - Report of any ad lib group activities
  - Sharing of feedback from mentees
  - Sharing of mentoring experience with other mentors
## Baseline characteristics of mentees

<table>
<thead>
<tr>
<th></th>
<th>Peer support</th>
<th>Control</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number</strong></td>
<td>313</td>
<td>317</td>
<td>630</td>
</tr>
<tr>
<td><strong>Age, years</strong></td>
<td>54.4 ± 9.8</td>
<td>55.0 ± 8.5</td>
<td><strong>54.7 ± 9.2</strong></td>
</tr>
<tr>
<td><strong>DM duration, years</strong></td>
<td>9.2 ± 7.7</td>
<td>9.7 ± 7.8</td>
<td><strong>9.5 ± 7.8</strong></td>
</tr>
<tr>
<td><strong>Care level (JADE)</strong></td>
<td>3.1</td>
<td>3.1</td>
<td><strong>3.1</strong></td>
</tr>
<tr>
<td><strong>BMI, kg/m²</strong></td>
<td>26.6 ± 4.4</td>
<td>27.1 ± 4.7</td>
<td><strong>26.9 ± 4.6</strong></td>
</tr>
<tr>
<td><strong>Waistline, cm</strong></td>
<td>91.3 ± 10.9</td>
<td>92.1 ± 11.5</td>
<td><strong>91.7 ± 11.2</strong></td>
</tr>
<tr>
<td><strong>WHR</strong></td>
<td>0.93 ± 0.06</td>
<td>0.93 ± 0.07</td>
<td><strong>0.93 ± 0.07</strong></td>
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<tr>
<td><strong>SBP, mmHg</strong></td>
<td>136 ± 19</td>
<td>136 ± 19</td>
<td><strong>136 ± 19</strong></td>
</tr>
<tr>
<td><strong>DBP, mmHg</strong></td>
<td>80 ± 11</td>
<td>80 ± 11</td>
<td><strong>80 ± 11</strong></td>
</tr>
<tr>
<td><strong>HbA1c, %</strong></td>
<td>8.2 ± 1.7</td>
<td>8.2 ± 1.6</td>
<td><strong>8.2 ± 1.6</strong></td>
</tr>
<tr>
<td><strong>FPG, mM</strong></td>
<td>8.99 ± 3.0</td>
<td>8.78 ± 2.9</td>
<td><strong>8.87 ± 2.96</strong></td>
</tr>
<tr>
<td><strong>Total Cholesterol, mM</strong></td>
<td>4.89 ± 0.98</td>
<td>4.85 ± 1.16</td>
<td><strong>4.87 ± 1.07</strong></td>
</tr>
<tr>
<td><strong>LDL-C, mM</strong></td>
<td>2.92 ± 0.81</td>
<td>2.87 ± 0.82</td>
<td><strong>2.89 ± 0.81</strong></td>
</tr>
<tr>
<td><strong>eGFR</strong></td>
<td>109.3 ± 32.2</td>
<td>109.9 ± 36.3</td>
<td><strong>109.6 ± 34.2</strong></td>
</tr>
</tbody>
</table>
## Baseline characteristics of mentees

<table>
<thead>
<tr>
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<th>Control</th>
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<tbody>
<tr>
<td><strong>Number</strong></td>
<td>313</td>
<td>317</td>
<td>630</td>
</tr>
<tr>
<td><strong>EQ5-D</strong></td>
<td>72.1 ± 15.9</td>
<td>71.2 ± 16.4</td>
<td>71.6 ± 16.1</td>
</tr>
<tr>
<td><strong>PHQ-8 score</strong></td>
<td>3.99</td>
<td>4.25</td>
<td>4.12</td>
</tr>
<tr>
<td><strong>PHQ-9 score</strong></td>
<td>4.06</td>
<td>4.33</td>
<td>4.20</td>
</tr>
<tr>
<td><strong>None (0-4), %</strong></td>
<td>66.1</td>
<td>60.6</td>
<td>63.4</td>
</tr>
<tr>
<td><strong>Mild (5-9), %</strong></td>
<td>25.6</td>
<td>27.9</td>
<td>26.8</td>
</tr>
<tr>
<td><strong>Moderate (10-14), %</strong></td>
<td>5.4</td>
<td>8.6</td>
<td>7.0</td>
</tr>
<tr>
<td><strong>Moderately Severe (15-19), %</strong></td>
<td>2.2</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>Severe (20-27), %</strong></td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
</tr>
</tbody>
</table>
Example

- **Type 2 diabetic patient, female, aged 38, strong family history**
- **Newly diagnosed since 12/2009**
  - Already had background retinopathy
  - A1c: 11.4%
  - HDL-C / LDL-C /TG: 1.7 / 3.7 / 1.0 (mmol/l)
- **Not enough family support**
- **On combination of oral drug & insulin once daily**
- **Fear of self injection & finger prickling**
  - daily injections by nurses at GOPC
  - omits injection when Sundays & public holidays
- **On the day of mentor-mentee gathering**
  - she decided to learn self injection after hearing from peers’ sharing on self injection and diabetic complications
PEARL: Timeline updating

- Completion of recruitment of all 630 patients & randomization of peer support (n=313) and control group (n=317) by June 2010
- Started Intervention of 1 year follow up, on the first 3-month
- Last patient to complete 1 year study will be in June 2011

Sustainability

- We have set up a project (supported by a European grant) in collaboration with leading diabetologists from 6 cites in China to recruit 600 patients from each site during a 12-month period starting from August 2010.
- Further, each site will evaluate the psychological health using validated instruments in 500 patients to document the prevalence of depression in diabetes in Chinese.
Acknowledgements

- Prof. Juliana CN Chan (PI)
- Dr. Gary TC Ko (Co-PI)
- Prof. Brian Oldenburg (Co-PI)
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- Miss Rebecca YM Wong
- Maggie SW Lau
- Grace LH Lin
- Samsonly WM Chan
- Dr. Wingyee So
- Dr. Hairong Nan

on behalf of the PEARL Project team