How ‘soft touch’ is ‘high tech?''

Brian Oldenburg
Professor of International Public Health
&
Associate Dean International
Monash University
brian.oldenburg@monash.edu
Key challenges for improving diabetes management

- The need for service delivery, resources and supports that are more person-focused VERSUS being hospital/health service-focused for acute illness.

- To develop programs/approaches that are more feasible for ‘real world’ implementation – ‘scaleability’

- To extend the global reach of these to ‘resource poor’ countries, where the burden is substantial – ‘knowledge transfer and exchange’

- How to do this?
Patient journey through the health system

1. Theme
   - Primary care
   - Speciality care
   - Acute hospital and outpatient care
   - Age care facility
   - Home care
   - Preventive interventions

2. Theme
   - Low symptom chronic
   - Subacute chronic
   - Dependent chronic
   - Chronic maintenance
   - New cases

- Social risk
- Social and behavioural determinants

- Demand for care
- Care delivery improvements
- Deaths
- Births
- Population size and age mix
8,766 = 24 \times 365.25

6 hours a year in the doctor’s office or with dietitian or other health professional.

8,760 hours “on your own”

- Healthy diet
- Physical activity
- Monitor blood sugar
- Take medications, insulin
- Manage sick days
- Manage stress – Healthy Coping

(Courtesy of Prof Ed Fisher)
Additional challenge of Lifestyle Change and Psychosocial Management

- The importance of ongoing program exposure and support as a critical feature in sustained behavior change and good quality of life.
Complementary approaches to lifestyle change and QOL

e.g. Healthy eating
Healthy activity
Healthy weight

Individual Behaviour Change

Environmental & Policy Change
Need new approaches to CDSM that are more focused on the needs of the ‘patient’ vs the health system:

* Use of automated telephone-linked care

* Peer support and other ‘soft touch’ approaches
ICT for self management of chronic conditions: A real “solution”…..or just a ‘good idea’?

- ICT options and possibilities...web, smartphone etc
- Accessible any time – 24/7
- As often as required
- (Usually) offer consistency of program delivery
- Potential for low cost when “scaled up”
- Complements role of health professionals
Telephone Linked Care System: TLC

• Developed by Medical Information Systems Unit, Boston Medical Centre, Boston University
• 1 PC with speech recognition and database connected to phone lines
• Converses over the phone using pre-recorded messages and questions
• Listens to answers and records them in the database to provide tailored feedback to each user

• Acts as monitor, educator and coach
Australian TLC Diabetes

• To promote and support self-management of Type 2 diabetes

• Targeting essential diabetes self-care behaviors:
  ▪ Blood glucose testing
  ▪ Nutrition
  ▪ Physical activity
  ▪ Medication taking
  ▪ Foot care
TLC Diabetes model of delivery

**TLC system** Educates, monitors, supports and produces alerts and reports

**Self-Monitoring:** e.g. Blood Glucose testing, symptoms monitoring

**Coordinator:** Supports access and use of program and other resources, responds to alerts, liaises with health practitioner

**Health Provider:** Provides treatment, information, resources, receives TLC reports

**Adult with T2DM**
New device to upload BG readings - AliveConnect
TLC Diabetes Conversation Content: example of TLC promoting self-monitoring

• “It’s very important that you try to check your blood glucose more often. You set a goal with your doctor to test your blood glucose at least …

• … Individualised goal …

… times per week. If that sounds like a lot, you could try working up to it in smaller steps. For starters, you might try testing once a day varying the time: before breakfast, lunch and dinner. Once you’re used to that, you can start doing it twice a day. If you build up gradually, you’ll reach your target in no time. But even if you don’t, testing a few times a week is still better than no testing at all. Now, let’s go on to the next part of the call.”
“Let’s talk about some of the reasons why you may not be testing your blood glucose as often as you should. I am going to list 14 common reasons why people have trouble checking their blood glucose regularly. This will help me to suggest some strategies that will help you to test more regularly. After each statement please tell me how much it applies to you. You can say Often, Sometimes, Hardly Ever, or Not Sure. Or say Repeat if you want to hear it again. OK, here is the first statement.”
Evaluation: RCT of Australian TLC Diabetes

- Research Questions:
  - Compared to Usual Care Group, the TLC Diabetes Group (TLC + Usual Medical Care) will show significant improvements in:
    - Glycemic control
    - Quality of life
    - Key self-care behaviours
  - TLC intervention will be more cost-effective
TLC program

• Continue to receive usual medical care
• Upload BG levels before TLC call
• Call TLC Diabetes weekly for 6 months
• Receive call from TLC Case Manager at week 1, 2, 6, 12 & 20
• Receive newsletter on general health topics
## Results: primary outcomes

<table>
<thead>
<tr>
<th>HbA1C (%)</th>
<th>TLC Median (inter-quartile range)</th>
<th>Usual Care Median (inter-quartile range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>8.8 (8.0-9.2)</td>
<td>9.0 (7.9-9.5)</td>
</tr>
<tr>
<td>6 months</td>
<td>8.0 (7.2-8.5)</td>
<td>8.8 (7.4-9.9)</td>
</tr>
<tr>
<td>Difference</td>
<td>0.8</td>
<td>0.2</td>
</tr>
<tr>
<td>$p$ value</td>
<td></td>
<td>0.002</td>
</tr>
</tbody>
</table>
Results: primary outcomes

<table>
<thead>
<tr>
<th>SF36 Mental Health Scale</th>
<th>TLC Mean (95% CI)</th>
<th>Usual Care Mean (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>49.8 (47.5-52.0)</td>
<td>49.5 (47.1-50.3)</td>
</tr>
<tr>
<td>6 months</td>
<td>51.7 (50.2-53.3)</td>
<td>48.7 (47.1-50.3)</td>
</tr>
<tr>
<td>Difference</td>
<td>-1.9</td>
<td>0.8</td>
</tr>
<tr>
<td>p value</td>
<td></td>
<td>0.007</td>
</tr>
</tbody>
</table>
### RESULTS: TLC users’ (n=57) usage data

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (SD)</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of completed calls</td>
<td>17.82 (6.1)</td>
<td>2-27</td>
</tr>
<tr>
<td>% calls/expected</td>
<td>75.9 (21.7)</td>
<td>19-100</td>
</tr>
<tr>
<td>Average duration of call (minutes)</td>
<td>10.82 (.99)</td>
<td>8.7-14</td>
</tr>
</tbody>
</table>
RESULTS: 6 months satisfaction questionnaire

• **Satisfaction**: *Overall, I was satisfied with the TLC system:*
  – 73.6 % strongly agree
  – 18.9 % slightly agree

• **Ease of use**: *I found the TLC system easy to use*
  – 62.3% strongly agree
  – 26.4% slightly agree
RESULTS: 6-month evaluation questionnaire

• **Confidence:** The TLC system gave me confidence that I could better manage my diabetes
  – 79.2% strongly agree
  – 15.1% slightly agree

• **Motivating:** It motivated me to monitor my diabetes
  – 52.8% strongly agree
  – 28.3% slightly agree
**RESULTS: Testimonials**

Christopher, 55

- “It is good to know “someone” is keeping an eye (on my management). It is making me dot my i’s and cross my t’s because I don’t know what it is going to ask me next.”

Mary, 48

- “Speaking with a computer is good because it reminds you that you are managing diabetes for yourself.”
Providing the program to rural locations

- Funded by Queensland Health Department
- Adults with type 2 diabetes
  - Aged 18 to 75
  - Living on mainland Queensland outside South-East corner
- All receive TLC Diabetes program
- Feasibility/acceptability trial
Summary

• “High tech” can be “soft touch”
  – Still a role for Peer Support etc.

• ‘Scaleability’ of programs – population-wide implementation & system sustainability (role of Diabetes Australia)

• Adaptation and exchange of programs with ‘resource poor’ countries, where the burden is greatest e.g. use of smartphones.
Future model of ICT supports for Chronic Disease Self-Management

ICT Coordinator & Case Manager

Mobile Applications

Web Applications

Automated telephone system

Person with Chronic condition

Health Provider

Self-Monitoring e.g. Blood Glucose testing, weight, BP, etc.
Acknowledgements

• Funders: NHMRC, HCF, Qld Health

• Research team from multiple organisations (Universities & CSIRO E-Health Research Centre)

• Australian Diabetes Educators Association

• Roche Diagnostics

• Diabetes Australia

• Alive Technologies Pty Ltd
THANK YOU

www.tlcdiabetes.monash.org.au