The Cardiovascular Health Awareness Program (CHAP) Journey

Séminaire de l'IRSPUM
Le lundi 23 février 2015

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The problem

• Widespread and growing epidemics of obesity, hypertension, diabetes, heart disease and stroke

• Aging population/fewer resources: prevalence of risk factors increases with age

• One-quarter of all deaths from heart disease and stroke are preventable
What community program could be put in place to improve cardiovascular health?

- How to shift the distribution of risk at the population level?
- How to combine individual and population level strategies?
- How to better integrate and coordinate existing resources and programs?
- Program must be inexpensive, quick & easy to implement in any community
- Program must overcome poor/selective uptake & improve follow-up (“closing the loop”)
- Program must be rigorously evaluated
Rationale for population-based approach
Guiding principles

• How to develop an effective, sustainable and scalable solution?
  – An **effective** program is more likely to be **sustained**
  – A **sustainable** program is more likely to be **scaled-up**
Cardiovascular Health Awareness Program (CHAP): the early days

• It all started in 2000 while I was at McMaster University in Hamilton:
  – Larry Chambers (epidemiologist)
  – Cheryl Levitt (family physician)
  – Tina Karwalajtys (health services researcher)
  – Bea McDonough (public health nurse)
  – Myself (sociologist)

• Weekly meetings to brainstorm around potential solutions

• Over time our team got much larger
BMC Family Practice

Research article
A randomized trial of mail vs. telephone invitation to a community-based cardiovascular health awareness program for older family practice patients [ISRCTN61739603]
Tina Karwalajtys1, Janusz Kaczorowski1,2, Larry W Chambers2,3,4, Cheryl Levitt1, Lisa Dolovich1,2,5, Bea McDonough3, Christopher Patterson6 and James E Williams1

BMC Medical Research Methodology

Research article
Comparison of Bayesian and classical methods in the analysis of cluster randomized controlled trials with a binary outcome: The Community Hypertension Assessment Trial (CHAT)
Jinhui Ma1, Lehana Thabane1, Janusz Kaczorowski2, Larry Chambers3, Lisa Dolovich4, Tina Karwalajtys4 and Cheryl Levitt4

J Community Health (2009) 34:336-345
DOI 10.1007/s10900-009-9149-5

ORIGINAL PAPER

Development of the Volunteer Peer Educator Role in a Community Cardiovascular Health Awareness Program (CHAP): A Process Evaluation in Two Communities
Tina Karwalajtys · Beatrice McDonough · Heather Hall · Manal Gulguis-Younger · Larry W. Chambers · Janusz Kaczerowski · Lynne Lohfeld · Brian Hutchison

HEALTH OUTCOMES/PUBLIC POLICY

Enhancing hypertension awareness and management in the elderly: Lessons learned from the Airdrie Community Hypertension Awareness and Management Program (A-CHAMP)
Charlotte Jones PhD MD1, Scot H Simpson PharmD MSc1, Diana Mitchell BN CDE1, Susan Haggarty BSc1, Norman Campbell MD1, Karen Then PhD1, Richard Z Lewanczuk PhD MD2, Rolf J Sebalda MD CM FRCPC3, Barbara Farrell PharmD1, Lisa Dolovich PharmD MSc1, Janusz Kaczorowski PhD1, Larry W Chambers PhD FACE FPHI Hon (UK)
EDITORIALS

Blood pressure self-monitoring in pharmacies
Building on existing resources

Larry W. Chambers, PhD, FACE, FFPHM  Janusz Kacporowski, PhD  Cheryl Levitt, MB BCH, CCFP, FCFP
Tina Karwalajtys, MA  Bea McDonough, MSCN, MSC  Jacqueline Lewis, MD, MSC, CCFP, FCFP
Cardiovascular Health Awareness Program (CHAP) development

- Proof of concept pilot with one family practice—Dundas (Ontario)
Cardiovascular Health Awareness Program (CHAP) development

- Proof of concept pilot with one pharmacy -- Ottawa

Promoting cardiovascular health among older adults: a pilot study with community pharmacists

Pharmacists contributed to the design of a multidisciplinary approach to conducting blood pressure sessions in community pharmacies

Virginia V. Pora, BScPhm; Barbara Farrell, PharmD; Lisa Dolovich, MSc, PharmD; Janusz Kaczorowski, PhD; Larry Chambers, PhD, FACE, HonFFPH (UK); on behalf of the CHAP working group
Cardiovascular Health Awareness Program (CHAP) development

- Randomized Controlled Trial of 28 family practices in Hamilton and Ottawa (CHAT)

BMC Medical Research Methodology

Research article
Comparison of Bayesian and classical methods in the analysis of cluster randomized controlled trials with a binary outcome: The Community Hypertension Assessment Trial (CHAT)
Jinhui Ma¹, Lehana Thabane*¹, Janusz Kaczorowski², Larry Chambers³, Lisa Dolovich⁴, Tina Karwalajtys⁴ and Cheryl Levitt⁴
Cardiovascular Health Awareness Program (CHAP) development

• Community-wide demonstration projects:
  – Grimsby & Brockville, ON

PUBLIC HEALTH IN ACTION

A Community-based Program for Cardiovascular Health Awareness

Larry W. Chambers, PhD, FACE, FFPH(UK)\(^1-4,5\)
Janusz Kaczorowski, PhD\(^5-7\)
Lisa Dolovich, PharmD\(^5,7\)
Tina Karwalajtys, MA\(^5\)
Heather L. Hall, MSc\(^1\)
Beatrice McDonough, MSc\(^8\)
William Hogg, MD\(^1,3,9,10\)
Barbara Farrell, PharmD\(^1,11\)
Alexandra Hendriks, PhD\(^1\)
Cheryl Levitt, MD\(^5\)
Cardiovascular Health Awareness Program (CHAP) development

• Community-wide demonstration projects:
  – Grimsby & Brockville, ON
Cardiovascular Health Awareness Program (CHAP) development

• Community-wide demonstration projects:
  – Airdrie, AB

HEALTH OUTCOMES/PUBLIC POLICY

Enhancing hypertension awareness and management in the elderly: Lessons learned from the Airdrie Community Hypertension Awareness and Management Program (A-CHAMP)

Charlotte Jones PhD MD¹, Scot H Simpson PharmD MSc¹, Diana Mitchell BN CDE², Susan Haggarty BSc¹, Norman Campbell MD¹, Karen Then PhD², Richard Z Lewanczuk PhD MD², Rolf J Sebaldt MD CM FRCPAC¹, Barbara Farrell PharmD³, Lisa Dolovich PharmD MSc³, Janusz Kaczorowski PhD⁴, Larry W Chambers PhD FACE FFPH(Hons) (UK)⁵
Cardiovascular Health Awareness Program (CHAP) development

• 39 community cluster RCT
CHAP intervention

- Community-wide promotion of CHAP sessions (letters from FPs, referrals and local media campaigns)
- Trained peer volunteers help participants to measure and record BP with accurate, automated device (BPTru™) and fill out standardized CVD and stroke risk profile
- BP and risk factor information captured via fax-to-database technology and shared with family physicians, pharmacists and participants
- Participants receive education materials and links to local/provincial/national resources targeted to specific modifiable risk factors
- Community health nurse and pharmacist available to assess participants with high BP
CHAP intervention (Wagner: Chronic Care Model)

**Comprehensive Environmental Scan**

- **Community**
  - Locally available community resources
  - Local lead/host organization
  - Locally recruited and trained volunteers

- **Health System**
  - Local health professional opinion leaders
  - Linkages with appropriate primary care health professionals (FPs, pharmacists, community nurses)

**Patient-Centered**

- Global CV risk factor assessment and education

**CHAP sessions**

- **Accessible**
  - Free of charge for participants
  - Delivered in accessible locations/settings on a weekly basis

- **Coordinated**
  - Use of new technologies for data collection / management
  - Closing the loop – action-oriented feedback of results for FPs and pharmacists

**Evidence-Based & Safe**

- Validated and accurate BP measuring device
- CHAP protocol for referral / follow-up

**Productive Interactions**

- Increase awareness of CV health and community resources available
- Encourage and support lifestyle changes
- Optimize participants’ drug regimens

**Informed, Empowered Participants**

**Prepared, Proactive Healthcare Professionals**
C-CHAP trial objective

• To evaluate the effectiveness of CHAP in reducing stroke/CVD morbidity at the community level.

• **Primary outcome measure**: hospital admissions for acute myocardial infarction, congestive heart failure, and stroke (composite end-point) among residents aged ≥65 years

• **Design**: community cluster RCT

• **Data sources**: routinely-collected, population-based administrative health data (ICES)

Inclusion/exclusion criteria

• Inclusion criteria:
  – Community size: 10,000 – 60,000
  – Number of family physicians: 5+
  – Number of pharmacies: 2+
  – Total community-dwelling population: 65+

• Exclusion criteria:
  – Immediately adjacent to metro area (e.g. Dundas)
  – Rural /dispersed (e.g. townships & native reserves)
  – Participated in CHAP demonstration project (e.g. Grimsby & Brockville)
39 eligible Ontario towns/cities
(population from 10,000 - 60,000)

Baseline data assessed 12 months before CHAP implementation
(assessed retrospectively)

Community cluster randomization stratified by size of population 65+ and geographic location
(7 strata)

Intervention (20 communities)
CHAP sessions in each local pharmacy at least 1 x per week for 10 weeks

Control (19 communities)
CHAP not offered

Community-level primary outcome assessed 12 months post CHAP
(mean change in annual rate of hospital admissions for MI, CHF and stroke)

Community-level primary outcome assessed 12 months post CHAP
(mean change in annual rate of hospital admissions for MI, CHF and stroke)
At CHAP sessions
The CHAP Implementation Guide has been put together with the end-user in mind. It contains the information and resources needed to successfully implement CHAP in any community.

All of the required documents referred to throughout the Guide can be downloaded and edited to best suit an individual community's needs.

This Implementation Guide builds on the tools and processes developed, the feedback received, and the successes experienced since CHAP was initiated in 2000. The goal of this Guide is to provide a “road map” for communities interested in implementing CHAP.
Community profiles

- Local data on socio demographic factors and cardiovascular health status of each community, comprehensive list of local resources
- Completed for all 39 communities
- Profiles were translated into French if communities with ≥10% francophone population
Blood Pressure Measurement & Cardiovascular and Stroke Risk Assessment For Seniors (65+)

Stratford

Session Schedule
September 11 to November 17, 2006 (except holidays)

<table>
<thead>
<tr>
<th>MONDAYS</th>
<th>TUESDAYS</th>
<th>WEDNESDAYS</th>
<th>THURSDAYS</th>
<th>FRIDAYS</th>
</tr>
</thead>
</table>
| Medical Pharmacy in Jenny Trout  
  342 Erie Street  
  9:30am – 12:30pm | Shoppers Drug Mart  
  211 Ontario Street  
  9:00am – 12:00pm | Drug Basics  
  925 Ontario Street  
  9:00am – 12:00pm | Zehrs Food Plus Pharmacy  
  865 Ontario Street  
  8:00am – 12:00pm | Pharmacy within Giant Tiger  
  477 Huron Street  
  9:30am – 12:30pm |
| Zellers Pharmacy  
  925 Ontario Street  
  9:30am – 12:30pm | Sinclair Pharmacy  
  12 Wellington Street  
  9:00am – 12:00pm |                     | Pharma Plus Pharmacy  
  1067 Ontario Street  
  10:00am – 1:00pm |

You can attend the sessions that are most convenient for you. Please plan to attend at least 2 sessions!

You do not need to make an appointment to attend a session.

If you have questions about the program, please call the Local Coordinator for Stratford, Melanie Higgins, at 519-271-2217 or 519-271-7800 Ext 277.
Fax-to-database risk profile form
### CHAP Blood Pressure Sessions

Report to: Dr Doe, John

#### Aggregate Physician Practice Summary

**List of Attendees NOT KNOWN to Have Hypertension and Identifying You as Their Physician**

(i.e. attendees reporting to take anti-hypertensive meds or a diagnosis by a physician)

(listed in order of decreasing SBP at most recent session)

<table>
<thead>
<tr>
<th>Last BP &amp; Date</th>
<th>2nd Last &amp; Date</th>
<th>Avg (n)</th>
<th>Diabetes</th>
<th>DOB</th>
<th>Sex</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>144/88 Oct 15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>139/72 Nov 12</td>
<td>129/72 Nov 2</td>
<td>140/83 (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>119/73 Nov 8</td>
<td>114/75 Oct 15</td>
<td>140/78 (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>114/74 Nov 1</td>
<td>128/69 Oct 21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>114/74 Oct 11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>112/70 Oct 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>96/55 Sep 19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**List of Attendees KNOWN to Have Hypertension and Identifying You as Their Physician**

(i.e. attendees reporting to take anti-hypertensive meds or a diagnosis by a physician)

(listed in order of decreasing SBP at most recent session)

<table>
<thead>
<tr>
<th>Last BP &amp; Date</th>
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<th>Avg (n)</th>
<th>Diabetes</th>
<th>DOB</th>
<th>Sex</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>125/66 Nov 2</td>
<td>123/64 Oct 3</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>119/71 Sep 19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>108/57 Sep 21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### ATTENDANCE SUMMARY - Attendees Identifying you as their Physician

<table>
<thead>
<tr>
<th>Number</th>
<th>Count</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>Number who attended at least ONE session</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>Number who attended TWO or more sessions</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>Number who attended THREE or more sessions</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>Number who refused consent to report</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

#### RECOMMENDATIONS SUMMARY - Attendees w/ Consent only (N = 10)

- Attend another CHAP session for reassessment: 7 (70)
- Make appointment with family physician: 1 (10)
- See regular pharmacist: 1 (10)

#### ACTIONS SUMMARY - Attendees w/ Consent only (N = 10)

- Nurse alerted for assessment and follow-up: 2 (20)
- Session pharmacist alerted: 0 (0)
Comparative feedback @ 6 month
CHAP implementation

- All 20 randomly selected communities successfully launched CHAP
- 214/341 physicians ‘actively participated’
- 24,196 personalized invitation letters from FPs mailed
- 129/145 pharmacies participated
- 577 volunteers recruited & trained
- 1,265 sessions held
- 27,358 assessments (15,889 unique participants)
- ~25% of older adults in CHAP communities attended at least one CHAP pharmacy session
C-CHAP community cluster RCT

Improving cardiovascular health at population level: 39 community cluster randomised trial of Cardiovascular Health Awareness Program (CHAP)

Janusz Kaczorowski, professor, Larry W Chambers, president and chief scientist, Lisa Dolovich, associate professor, J Michael Paterson, scientist, Tina Karwalajtys, assistant professor, Tracy Gierman, director, Barbara Farrell, scientist, Beatrice McDonough, public health nurse, Lehana Thabane, associate professor, Karen Tu, scientist, Brandon Zagorski, analyst, Ron Goeree, associate professor, Cheryl A Levitt, professor, William Hogg, professor, Stephanie Laryea, research assistant, Megan Ann Carter, research associate, Dana Cross, acting director, Rolf J Sabaldt, associate clinical professor
Baseline characteristics

<table>
<thead>
<tr>
<th>Measure</th>
<th>Control (n=19)</th>
<th>CHAP (n=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of residents aged 65+</td>
<td>3 829.89 ± 2 176.44</td>
<td>3 393.70 ± 1 831.59</td>
</tr>
<tr>
<td>Age (in years)</td>
<td>74.79 ± 0.43</td>
<td>74.82 ± 0.62</td>
</tr>
<tr>
<td>% Male</td>
<td>42.65 ± 1.19</td>
<td>42.92 ± 2.16</td>
</tr>
<tr>
<td>Rurality Index</td>
<td>28.96 ± 13.60</td>
<td>31.63 ± 14.09</td>
</tr>
<tr>
<td>% Low income status</td>
<td>16.95 ± 8.55</td>
<td>18.57 ± 11.33</td>
</tr>
<tr>
<td>No. of prescription drugs</td>
<td>7.25 ± 0.49</td>
<td>6.98 ± 0.54</td>
</tr>
<tr>
<td>No. of Comorbidity Groups</td>
<td>7.31 ± 0.30</td>
<td>7.17 ± 0.50</td>
</tr>
<tr>
<td>Charlson Comorbidity Index</td>
<td>0.57 ± 0.09</td>
<td>0.58 ± 0.11</td>
</tr>
<tr>
<td>% with diabetes</td>
<td>22.16 ± 2.34</td>
<td>21.20 ± 2.79</td>
</tr>
<tr>
<td>% with history of CHF</td>
<td>12.19 ± 1.91</td>
<td>12.45 ± 2.34</td>
</tr>
<tr>
<td>Death rate per 100</td>
<td>3.45 ± 0.40</td>
<td>3.55 ± 0.57</td>
</tr>
</tbody>
</table>

Kaczorowski et al, *BMJ* 2011
# Hospital admission rates per 1,000

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Before CHAP n=67 874</th>
<th>Before Control n=72 768</th>
<th>After CHAP n=69 942</th>
<th>After Control n=75 499</th>
<th>Rate Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composite</td>
<td>30.15</td>
<td>29.36</td>
<td>27.90</td>
<td>30.13</td>
<td>0.91 (0.86-0.97) p&lt;0.01*</td>
</tr>
<tr>
<td>AMI</td>
<td>10.24</td>
<td>10.26</td>
<td>9.54</td>
<td>10.81</td>
<td>0.87 (0.79-0.97) p&lt;0.01</td>
</tr>
<tr>
<td>CHF</td>
<td>11.19</td>
<td>11.11</td>
<td>10.51</td>
<td>12.22</td>
<td>0.90 (0.81-0.99) p=0.03</td>
</tr>
<tr>
<td>Stroke</td>
<td>8.71</td>
<td>7.99</td>
<td>7.86</td>
<td>7.10</td>
<td>0.99 (0.88-1.12) p=0.89</td>
</tr>
</tbody>
</table>

*3.02 fewer annual hospital admissions for CVD per 1000 people aged 65+*
### Secondary outcomes: rates per 1,000

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Before CHAP n=67 874</th>
<th>Before Control n=72 768</th>
<th>After CHAP n=69 942</th>
<th>After Control n=75 499</th>
<th>Rate Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-hospital death</td>
<td>4.35</td>
<td>4.46</td>
<td>3.88</td>
<td>4.66</td>
<td>0.86 (0.73-1.01) p=0.06</td>
</tr>
<tr>
<td>All-cause mortality</td>
<td>35.45</td>
<td>33.13</td>
<td>33.98</td>
<td>34.55</td>
<td>0.98 (0.92-1.03) p=0.38</td>
</tr>
<tr>
<td>Initiation of HTN therapy</td>
<td>14.66</td>
<td>14.16</td>
<td>16.35</td>
<td>15.31</td>
<td>1.10 (1.02-1.20) p=0.02</td>
</tr>
</tbody>
</table>
Economic Appraisal of a Community-Wide Cardiovascular Health Awareness Program

Ron Goeree, MA\textsuperscript{1,2,3,*}, Camilla von Keyserlingk, MA\textsuperscript{1,2}, Natasha Burke, MA\textsuperscript{1,2}, Jing He\textsuperscript{1,2}, Janusz Kaczorowski, PhD\textsuperscript{4,5,6}, Larry Chambers, PhD\textsuperscript{2,7,8}, Lisa Dolovich, BScPhM, PharmD, MSc\textsuperscript{2,3,5}, J. Michael Paterson, MSc\textsuperscript{3,5,8,9}, Brandon Zagorski, MS\textsuperscript{8}

\textsuperscript{1}Programs for Assessment of Technology in Health Research Institute, St. Joseph's Healthcare Hamilton, Hamilton, Ontario, Canada; \textsuperscript{2}Department of Clinical Epidemiology and Biostatistics, McMaster University, Hamilton, Ontario, Canada; \textsuperscript{3}Centre for Evaluation of Medicines, St. Joseph's Healthcare Hamilton, Hamilton, Ontario, Canada; \textsuperscript{4}Department of Family and Emergency Medicine, University of Montreal, Quebec, Quebec, Canada; \textsuperscript{5}Department of Family Medicine, McMaster University, Hamilton, Ontario, Canada; \textsuperscript{6}Research Centre of the University of Montreal Hospital Centre (CRCHUM), Montreal, Quebec, Canada; \textsuperscript{7}Institut de recherche Élisabeth-Bruyère Research Institute, Bruyère Continuing Care and Department of Epidemiology and Community Medicine, University of Ottawa, Ottawa, Ontario, Canada; \textsuperscript{8}Institute for Clinical Evaluative Sciences, Toronto, Ontario, Canada; \textsuperscript{9}Institute of Health Policy, Management and Evaluation, University of Toronto, Ontario, Canada
## Mean annual healthcare and interventions costs, by study arm and study time period (in $)

<table>
<thead>
<tr>
<th>Resource Item</th>
<th>Pre-CHAP (n=67,874)</th>
<th>Pre-Control n= 72 768</th>
<th>Post-CHAP n= 69 942</th>
<th>Post-Control n= 75 499</th>
<th>CHAP minus Control Cost Difference (95% CI); p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CHAP hospitalizations only</strong></td>
<td>282</td>
<td>269</td>
<td>269</td>
<td>303</td>
<td>-39.72 (-77.80, -1.64); 0.041</td>
</tr>
<tr>
<td>All hospitalizations</td>
<td>2,164</td>
<td>2,110</td>
<td>2,160</td>
<td>2,129</td>
<td>-18.67 (-157.09, 119.76); 0.786</td>
</tr>
<tr>
<td>Visits to ER departments</td>
<td>259</td>
<td>255</td>
<td>265</td>
<td>265</td>
<td>-4.27 (-16.10, 7.57); 0.470</td>
</tr>
<tr>
<td>Family physician visits</td>
<td>191</td>
<td>200</td>
<td>174</td>
<td>184</td>
<td>-1.93 (-10.16, 6.31); 0.638</td>
</tr>
<tr>
<td>Specialist visits</td>
<td>137</td>
<td>141</td>
<td>141</td>
<td>143</td>
<td>1.45 (-3.62, 6.51); 0.566</td>
</tr>
<tr>
<td>Prescription drug claims</td>
<td>1,382</td>
<td>1,422</td>
<td>1,437</td>
<td>1,474</td>
<td>0.42 (-30.87, 31.70); 0.979</td>
</tr>
<tr>
<td>Intervention costs</td>
<td>-</td>
<td>-</td>
<td>20.202</td>
<td>-</td>
<td>20.203; n/a</td>
</tr>
<tr>
<td>Total healthcare &amp; intervention costs</td>
<td>4,132</td>
<td>4,128</td>
<td>4,198</td>
<td>4,196</td>
<td>-1.69 (-155.76, 152.39); 0.982</td>
</tr>
</tbody>
</table>

Goeree et al, *Value in Health* 2013
Interpreting RR = 0.91

- Extrapolating these results to the population 65+ in Ontario, UK and USA would result in approximately 5 000, 30 000, and 120 000 fewer annual CVD hospital admissions, respectively.
- On par with the benefits of population-wide reductions in dietary salt (2g/day reduction), tobacco use (elimination of 40% of use of or exposure to tobacco), or obesity (5% BMI reduction in obese individuals) on annual number of CVD events.
Limitations and new questions

- Not possible to know which specific components of CHAP were responsible for the observed reductions in CVD hospital admissions
- Our findings may not hold for larger urban centers (including ethno-cultural minorities)
- What is the long-term effect of CHAP?
- Can CHAP be implemented on a wide-scale and sustained as an on-going program?
Developing a theoretical framework

Developing a Theoretical Framework for Complex Community-Based Interventions

Ricardo N. Angeles, MD, MPH, MHPEd, PhD
Lisa Dolovich, PharmD, MSc\textsuperscript{,1,2}
Janusz Kaczorowski, PhD\textsuperscript{3}
Lehana Thabane, BSc, MSc, PhD\textsuperscript{,1,2}
From CHAP to C-ChAMP to CHAPP

• Adapt, evaluate, and compare the CHAP model in different settings (urban areas and ethnic communities)
• Foster greater family physician, pharmacist, and public health involvement around prevention and management of chronic disease risk
• Conduct a comprehensive evaluation of long-term sustainability of the program, including economic analysis;
• Select, tailor, implement, and evaluate knowledge translation approaches directed at new knowledge users to foster the scalability and sustainability of CHAP
CHAP Laval

- Pilot project involving two GMFs (Jan-Feb 2015)
- 15 volunteers recruited and trained
- Weekly sessions (invitation letters from GPs) targeting patients 40+
  - BP assessment
  - Diabetes risk assessment (CANRISK)
  - Screening for Atrial fibrillation
  - BMI and waist circumference
**CHAP**

**Original Program**
- CVD and stroke health promotion and prevention program:
  - Targeted at older adults (65+)
  - Implemented in small to mid-size communities
  - Implemented in Ontario and Alberta
  - Linking participants with community resources providers
  - Delivered by trained volunteers

**Measured Outcomes**
- Demonstrated implementability acceptability and ability to:
  - Reduce participants' BP
  - Encourage and support lifestyle changes
  - Optimize participants' drug regimens
- Associated with:
  - Reduction in hospital admissions for stroke, acute myocardial infarction and congestive heart failure among people 65+
  - Reduction of CVD-related hospitalization costs

**Scaling up CHAP into C-ChAMP**

**C-ChAMP**

**Programmatic Research Approach**
- Younger populations
- Ethnic minority groups
- French-speaking community
- Urban and suburban settings
- Greater use of new technologies
- Further integration and enhancement of roles played by key participants
- Adaptation of volunteer involvement

**Expected Outcomes**
- Social and Economic Benefits
- Improved Population Health
- Capacity Development
- Advancing Knowledge
Going global…
Community Health Assessment Program Philippines (CHAPP)

• Primary research question: What is the effect of CHAPP on diabetes awareness, detection and management in rural communities in Zamboanga Peninsula, Philippines?

• 5-year program carried out sequentially as an embedded mixed methods research project

• International Advisory Committee: to plan for the next phase of evaluation and expansion of CHAPP to other LMICs
Conclusions

• Developing a successful program
  – It takes time and resources
  – It requires a vision
  – It requires a multi-disciplinary team
  – It is not all about evidence
    • Pragmatism & opportunism
    • Partnerships and coalitions
Publications (1)

- Chambers LW, Kaczorowski J, O’Rielly S, Ignagni S, Hearps SJC. Comparison of blood pressure measurements using an automated blood pressure device in community pharmacies and family physicians’ offices: a randomized controlled trial. CMAJ Open 2013.DOI:10.9778/cmajo.20130005
Publications (2)

- Karwalajtys T, Kaczorowski J, Chambers LW, Levitt C, Dolovich L, McDonough B, Patterson C, Williams JE. A randomized trial of mail vs. telephone invitation to a community-based cardiovascular health awareness program for older family practice patients. BMC Family Practice 2005, 6:35. PMID: 16111487
Awards and distinctions

- CIHR-CMAJ Top Canadian Achievements in Health Research Awards for 2012. For co-development of the Cardiovascular Health Awareness Program (CHAP), 2013
- American Heart Association, Council on Epidemiology and Prevention, Top Advances in Epidemiology and Prevention for 2011 (#1). Improving cardiovascular health at population level: 39 community cluster randomised trial of Cardiovascular Health Awareness Program (CHAP). 2012
- Improving Cardiovascular Health At The Population Level: A 39 Community Cluster-randomised Trial of The Cardiovascular Health Awareness Program (CHAP). Society for Academic Primary Care annual conference, NAPCRG/SAPC joint travel prize July 6-8, 2011, Bristol, UK
- Certificate of Excellence awarded to C-CHAP project from Blood Pressure Canada for the Community Cardiovascular Health Awareness Program, 2006 [Co-PI]
- Certificate of Excellence warded to A-CHAMP project from Blood Pressure Canada for the Airdrie Community Hypertension Awareness and Management Program, 2006 [Co-investigator]
More information

• CHAP program:
  www.CHAPprogram.ca

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