The Effect of Community Pharmacist Prescribing and Care on Cardiovascular Risk Reduction: The R_xEACH Multicentre Randomized Controlled Trial

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Cardiovascular diseases are one of the leading causes of death

- Most are caused by modifiable risk factors and yet their identification and control is still suboptimal

Pharmacists are accessible, frontline primary health care providers who see patients with, or at risk for, cardiovascular events frequently

- In Alberta, Canada, pharmacists can independently prescribe and order laboratory tests

Numerous trials have demonstrated the benefit of pharmacist care on individual risk factors, but not “all together” in a comprehensive, province-wide program
Primary objective:

- To evaluate the effect of a community pharmacy-based case finding and intervention in patients at high risk for cardiovascular events on reduction in estimated risk for major cardiovascular events.
Methods

- **Design:** Multicenter randomized controlled trial with patients as the unit of randomization

- **Setting:** 56 community pharmacies across Alberta for recruitment and follow-up
Inclusion Criteria

- Adults at high risk for cardiovascular events, including patients with:
  - Diabetes
  - Chronic Kidney Disease (CKD)
  - Established atherosclerotic vascular disease
  - Multiple risk factors and Framingham risk score > 20%

- Patients were eligible if they had at least one uncontrolled risk factor (blood pressure, LDL-cholesterol, HbA1c, or current smoking)
Exclusion Criteria

- Patients were excluded if they were
  - Unwilling to participate/sign consent form
  - Unwilling or unable to participate in regular follow-up visits
  - Pregnant
Figure 1: RxEACH Study Overview

Setting: Community Pharmacies
Design: Per patient randomized controlled trial

PATIENTS (All high CV risk)

DM
CKD
VASC. DIS.
PRIM. PREV. (FRS4 > 20%)

INTERVENTION
- Comprehensive Annual Care Plan3:
  - Pt. Education/Activation
  - Recommendations/Adaptation/Prescribing

CONTROL
- Usual care

Follow-up monthly x 3 mo3
Cross over to intervention at 3 mo
(no follow-up)

OUTCOMES
- 1°: Δ CV Risk4
- 2°: Δ Individual Risk Factors

1. PRIM. PREV. = Primary Prevention; FRS = Framingham Risk Score
2. Risk of CV events calculated using most appropriate risk engine (i.e., UKPDS, International, or Framingham)
4. Difference in change in CV risk (from risk engine used at baseline) between intervention and control groups.
A standard Medication Therapy Management consultation:

- Patient assessment (BP, waist circumference, weight and height measurements)
- Lab assessment of HbA1c, lipids and kidney function
- Individualized CVD risk calculation and education about this risk (web-based graphic CV risk calc.)
- Treatment recommendations, prescription adaptation, and prescribing as appropriate to meet treatment targets as per latest Canadian practice guidelines
- Regular follow-up every 3-4 weeks for 3 months
Usual Care

- Usual pharmacy/physician care with no specific interventions or follow-up for 3 months

- At the end of follow-up, patients crossed over to receive intervention
Outcomes

Primary outcome:

- Difference in estimated risk for cardiovascular events between intervention and usual care groups
  - Risk for future cardiovascular events was calculated using validated risk engines (UKPDS, International, Framingham)

- Secondary outcomes: change in individual risk factors
Results

913 Patients screened

827 Patients were eligible

723 Patients provided informed consent and enrolled

370 were randomized to advanced care

351 completed the study

19 early withdrawals
- 9 lost to follow up, 7 no longer wish to participate, 2 moved out of the province, 1 worsened dementia

353 were randomized to usual care

343 completed the study

10 early withdrawals
- 7 lost to follow up, 2 no longer wish to participate, 1 diagnosed with colon cancer
Results: Demographics

Age: 62y (SD12)
Male: 58%

Study Qualification:
• 79% uncontrolled HbA1c
• 72% uncontrolled BP
• 58% uncontrolled LDL
• 27% current smokers
Primary Outcome: Change in Risk of Cardiovascular Events

All differences adjusted for baseline values using ANCOVA

21% RRR
(Absolute RR -5.37; 95% CI -6.56 to -4.17, p<0.001)
Secondary Outcomes: Individual Risk Factors

- **Systolic BP (mmHg)**
  - **-9.37 mmHg** (95% CI -11.07, -7.67, p<0.001)

- **LDL-c (mmol/L)**
  - **-0.2 mmol/L** (95% CI -0.31, -0.08, p=0.001)

- **Diastolic BP (mmHg)**
  - **-2.92 mmHg** (95% CI -4.21, -1.62, p<0.001)

- **HbA1c (%)**
  - **-0.92 %** (95% CI -1.12, -0.72, p<0.001)
Secondary Outcomes: Individual Risk Factors

20.2% (95% CI 9.9, 30.4, p<0.001)
Conclusions

• A community pharmacist case-finding and intervention program reduced the estimated risk for cardiovascular events by 21% in 3 months
  – Improvements in all major risk factors

• A new paradigm for community-based CV risk reduction
  – Complementary to, and in collaboration with, physician care
  – High patient satisfaction
  – Could have an additional 450,000 accessible primary care providers

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