Researching the Role of Pharmacists in Chronic Disease Management

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The Need for Pharmacy Practice Research

- Threat: With the advent of automation and regulated pharmacy technicians, pharmacy practice must shift away from dispensing to patient-centered care
- Opportunity: to carve out an important role for pharmacists
  - Accessible, public health approach
  - Systematic, proactive
  - Drug therapy expertise
  - Infrastructure already there

BLUEPRINT FOR PHARMACY
Designing the Future Together

VISION FOR PHARMACY

Optimal drug therapy outcomes for Canadians through patient-centred care

In our Vision for Pharmacy

Pharmacists and pharmacy technicians

- practice to the full extent of their knowledge and skills, and are integral to emerging health care models.
- protect the safety, security and integrity of the drug distribution system through the enhanced role of regulated pharmacy technicians and greater automation of dispensing.
- lead the development of and participate in medication safety and quality improvement initiatives.

Pharmacists

- manage drug therapy in collaboration with patients, caregivers and other health care providers.
- identify medication use issues, take responsibility for drug therapy decisions and monitor outcomes.
- initiate, modify and continue drug therapy (e.g., through collaborative agreements, delegated or prescriptive authority), and order tests.
- access and document relevant patient care information in health records, including test results and treatment indications (e.g., in electronic health records).
- empower patients in decision-making about their health, and play a prominent role in health promotion, disease prevention and chronic disease management.
- conduct practice research and contribute to evidence-based health care policy and best practices in patient care.

Pharmacists' services

- are compensated in a manner that relates to expertise and complexity of care.

To realize the Vision, strategic action is needed in five key areas:

www.pharmacists.ca

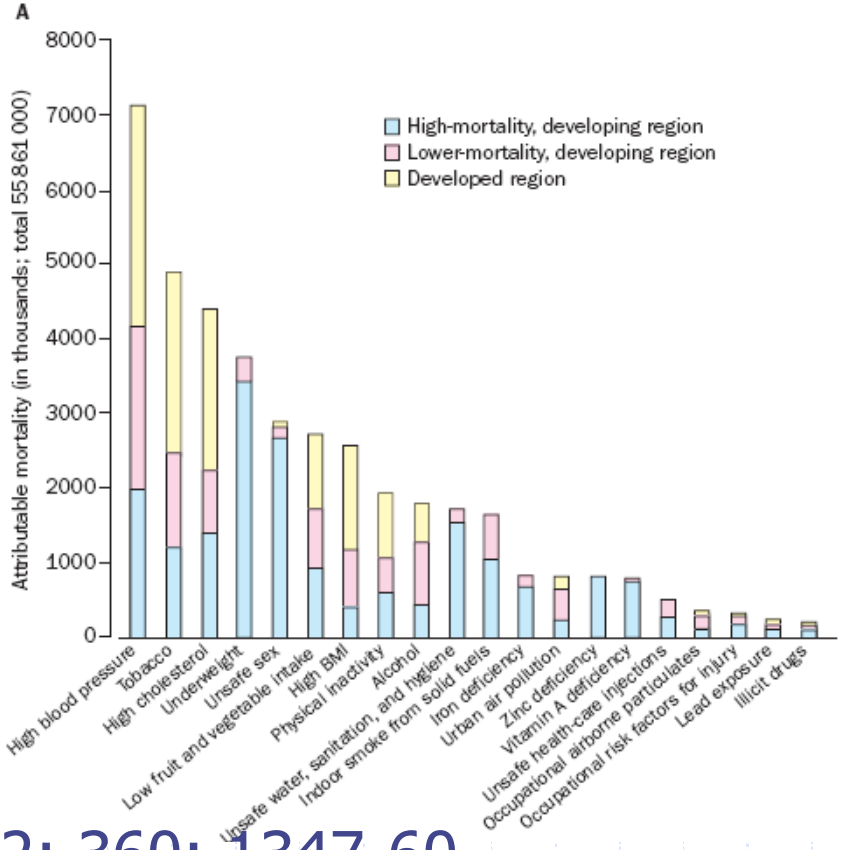
Outline

The Role of Pharmacists in Chronic Disease Management

- Hypertension as a model
- Key success factors
- Unresolved issues and challenges

Hypertension

- Hypertension is the most important avoidable risk factor for death (WHO):
  - 2/3 of strokes
  - ½ of coronary disease



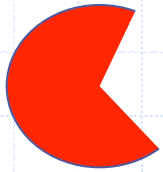
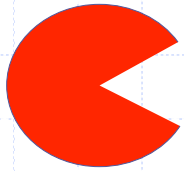
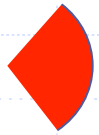
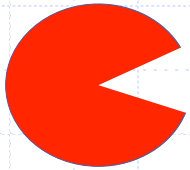
Ezzati M, et al. Lancet 2002; 360: 1347-60

Hypertension

- Prevalence: about 25%
  - 90% will develop hypertension over their lifetime
- Effects of blood pressure lowering:
  - 35-40% reduction in stroke
  - 20-25% reduction in myocardial infarction
  - 50% reduction in heart failure
  - Benefits in just 2-3 years
- Treatment and control are very poor

BP Lowering Treatment Trialists. Lancet 2000: 356: 1955-64.
McMahon S. J Hypertens 1996; 14(Suppl.6): S39-S46.

Treatment and BP Control in Patients with Diabetes and Hypertension – Systematic Review

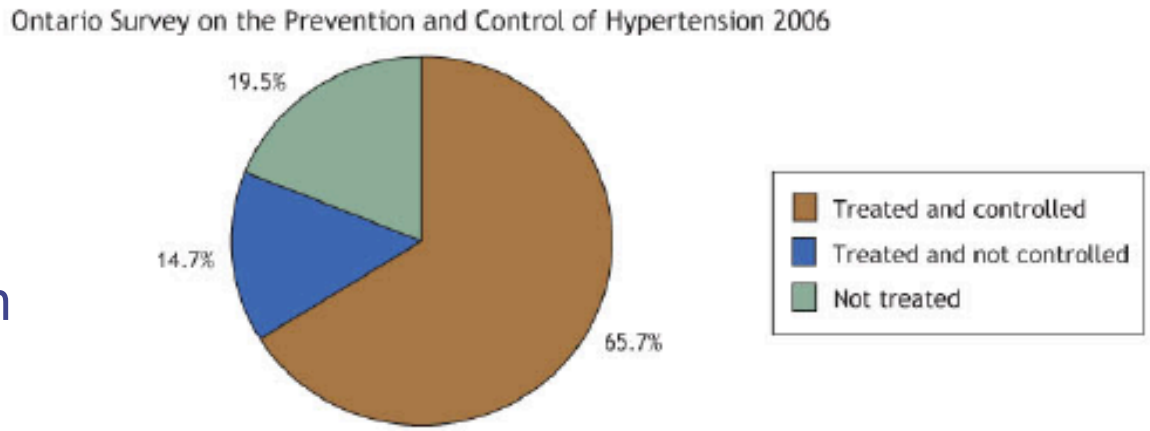
Definition of "Controlled BP"	Treated *	Controlled *
≤ 160/90 5 studies n = 11,339	 **68%** (range 53 -97%)	**37%** (range 31 -60%)
≤ 140/90 26 studies n = 66,833	 **83%** (range 32 -100%)	 **29%** (range 5 -59%)
≤ 130/85 24 studies n = 49,420	 **87%** (range 53 -100%)	**12%** (range 6 -30%)

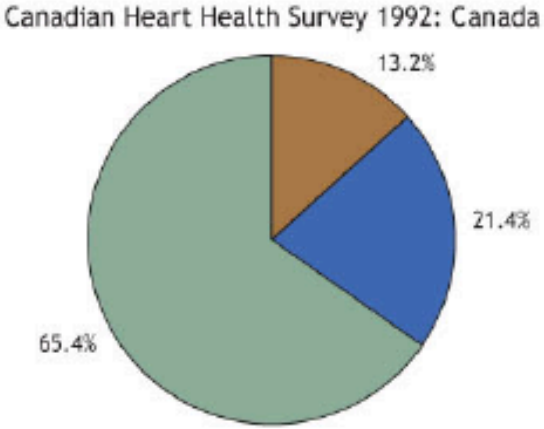
McLean *et al.*, *Can J Cardiol* 2006;22:855-860.

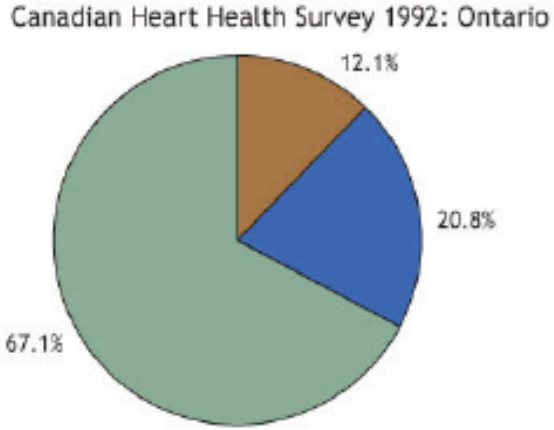
*Weighted average of all subjects with diabetes and hypertension

Current Rates of Treatment and Control of Hypertension

- random survey of 2551 participants in Ontario







- 65% with diabetes were uncontrolled

Leenen FHH et al. CMAJ 2008; 178(11): 1441—9.

Hypertension Challenges

- Finding those with, or at risk of hypertension
- Treatment to target
- Keeping on target

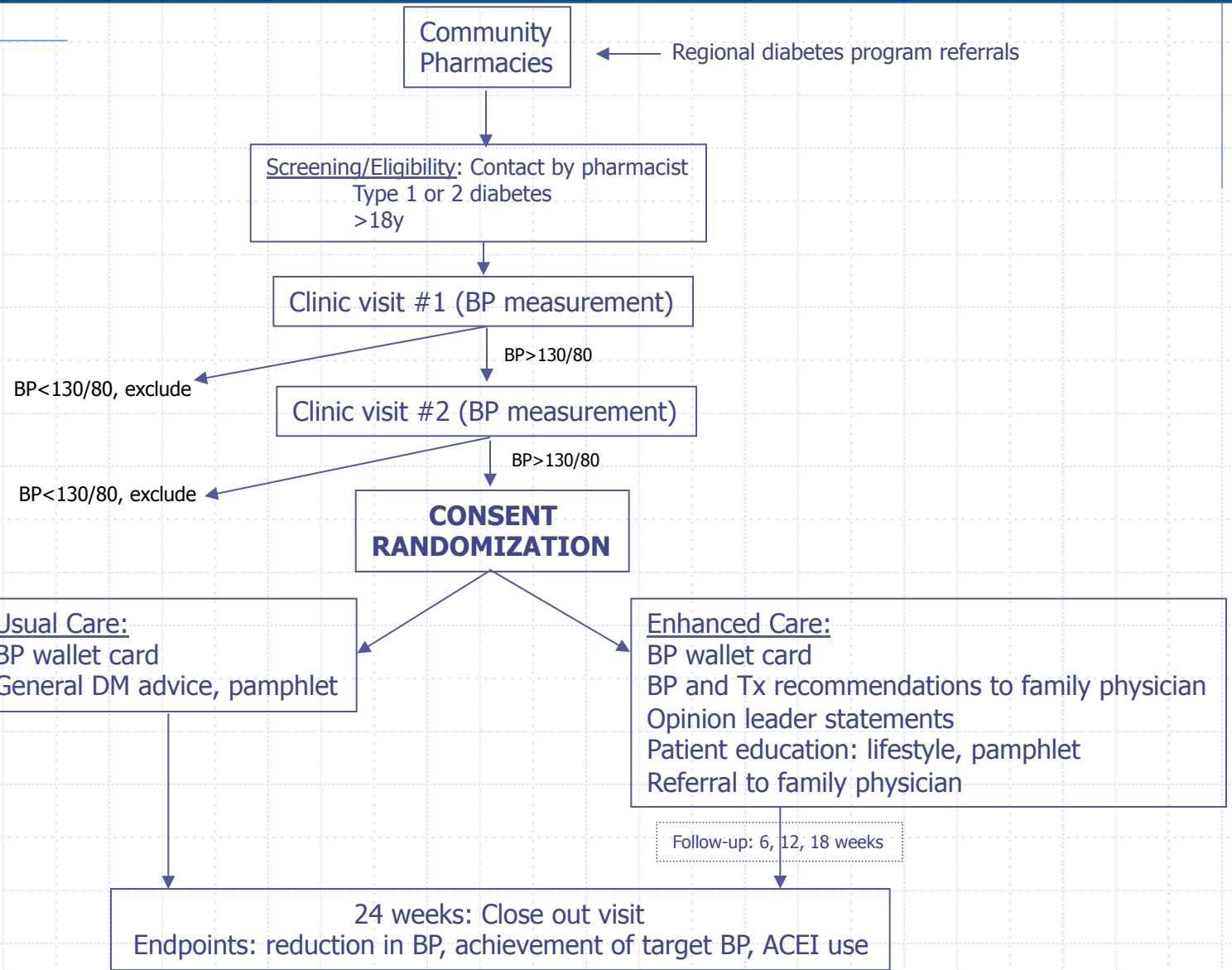
- Opportunity for pharmacists(!)

Improving Blood Pressure Management in Patients with Diabetes

- Objective: To determine the effect of a community-based, interdisciplinary care program of identification, assessment, physician referral, and follow-up on blood pressure lowering in patients with diabetes and elevated blood pressure
- Methods:
  - 227 patients with diabetes and not at target BP, identified by community pharmacists
  - Randomized to interdisciplinary* care (BP measurement, patient education, physician referral, regular follow-up by a nurse and pharmacist team) for 6 months) or usual care

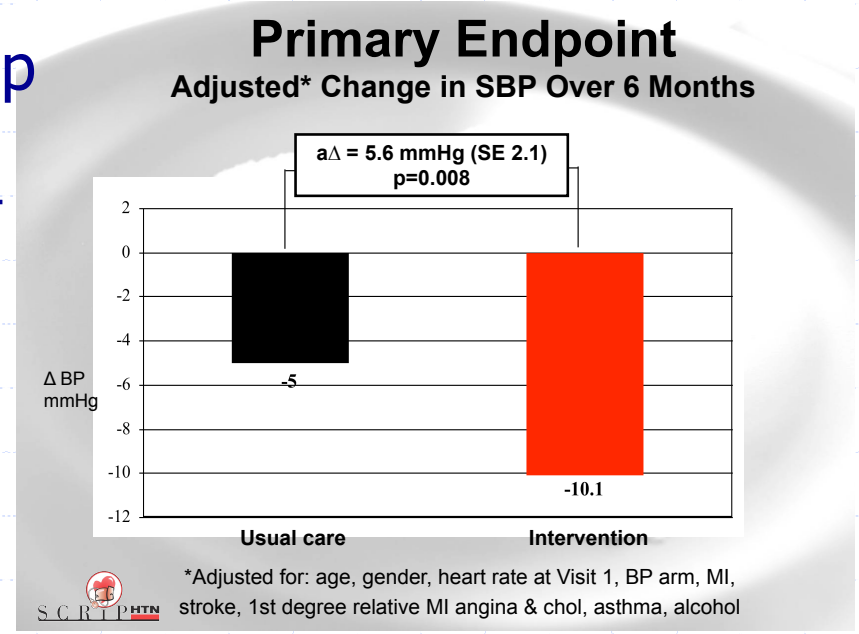
*interdisciplinary means: nurses and pharmacists acting as a team, utilizing their complementary and synergistic skills, working with the patient and family physician to achieve improved outcomes

McLean DL, *et al.* Arch Intern Med 2008 168(21): 2355-2361


Community Pharmacies
Regional diabetes program referrals
Screening/Eligibility: Contact by pharmacist
Type 1 or 2 diabetes
>18y
Clinic visit #1 (BP measurement)
BP>130/80
BP<130/80, exclude
Clinic visit #2 (BP measurement)
BP>130/80
BP<130/80, exclude
CONSENT
RANDOMIZATION
Usual Care:
BP wallet card
General DM advice, pamphlet
Enhanced Care:
BP wallet card
BP and Tx recommendations to family physician
Opinion leader statements
Patient education: lifestyle, pamphlet
Referral to family physician
Follow-up: 6, 12, 18 weeks
24 weeks: Close out visit
Endpoints: reduction in BP, achievement of target BP, ACEI use

Effect of Pharmacist and Nurse Intervention in Hypertension Management

- BP reduced 5.6 mm Hg further in intervention group (p=0.008)
  - BP reduced by 24 mmHg further in those with baseline SBP>160 mmHg
- Extrapolates to a reduction in stroke of 30%, in CHD events by 23%, and in mortality by 13%



McLean DL, *et al.* Arch Intern Med 2008 168(21): 2355-2361

SCRIP-*HTN* Limitations

- No improvement in antihypertensive medication use
- No improvement in ACEI/ARB use in diabetics
- Only 47% achieved target in intervention group (33% in control)
- Could BP reduction have been greater?
- Role of clinical inertia?
- Is there a ceiling effect to pharmacist recommendations?

Next Steps…

- In Alberta, pharmacists have opportunity to further improve management of hypertensive patients by obtaining additional prescribing authority
- Need for a remuneration system to allow patients to access pharmacist care services

rural RxACTION ("reaction")

Alberta Clinical Trial In Optimizing hypertensioN

- ***Primary Objective:*** To evaluate the effect of enhanced pharmacist care* on systolic BP reduction in patients with poorly controlled hypertension

- ***Secondary Objective:*** To evaluate the effect of a performance-based remuneration model, compared to a fee for service model on systolic BP reduction

*taking responsibility for hypertension care, including independent prescribing, follow-up visits and laboratory monitoring

Identify patients through pharmacy records (See Appendix 2)

First screening visit

- SBP≥180 or DBP≥110 mmHg in pt. wihthout TOD
- SBP≥140 or DBP≥90 in pt. with TOD
- SBP≥140 (≥130 with DM or CKD) or DBP≥90 (≥80 with DM or CKD) in pt. with diagnosed HTN

Second screening visit

Consent

Randomized

Enhanced care n=250

Usual care n=90

Randomized

Fee for visit (Figure 2) n=125

Payment for performance (Figure 2) n=125

Follow-up at 12 weeks

Follow up q4weeks until target then q3months

Final Visit – 24 weeks

Final Visit – 24 weeks

Intervention

- Assess patients with regards to cardiovascular risk reduction including
  - reviewing BP control, treatment goals and determining lifestyle modifications
- Review the patient's current hypertensive therapy regimen
  - options for improvement of BP control (lifestyle modification, increase dose, additional BP medications), and implementation (prescribing) of these strategies
- Encourage adherence to BP medications
- Education

Intervention: Follow-up

- Patients will be seen q4weeks until they reach BP target, then q3months until end of study
- Routine laboratory assessment
- Final visit at 24 weeks

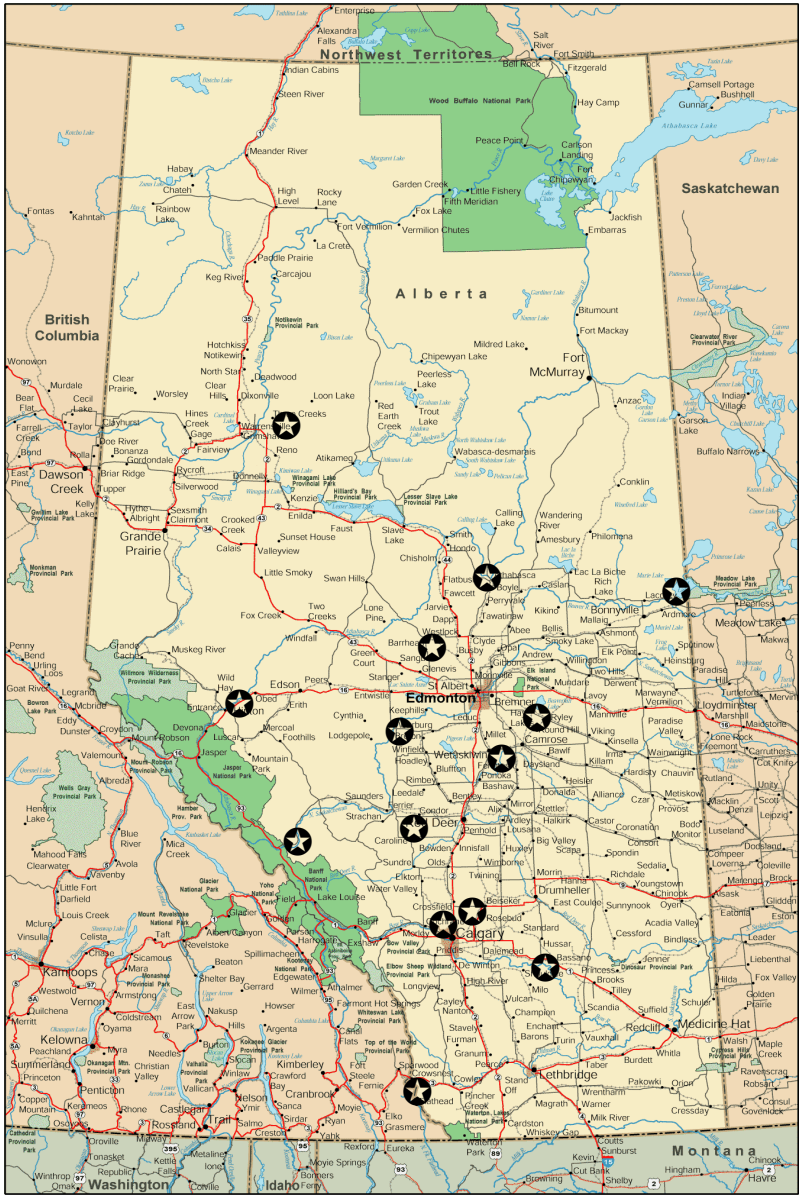
Control Group

- Usual care by pharmacist and physician
- Wallet card for BP readings, pamphlet on BP
- Follow-up at 12 and 24 weeks for BP measurement

Outcomes

- Primary: difference in change in blood pressure between intervention and usual care
- Secondary:
  - Impact of payment for performance on magnitude of BP change
  - Patient satisfaction
  - Health economics

Study Sites


Northwest Territories
Saskatchewan
Alberta
British Columbia
Montana
Idaho
Washington
Edmonton
Calgary
Fort McMurray
Grande Prairie
Dawson Creek
Lethbridge
Medicine Hat
Red Deer
Kamloops
Kelowna
Kimberley
Cranbrook
Trail
Castlegar
Penticton
Vernon
Fort Vermilion
Peace Point
Hay Camp
Fort Chipewyan
Fort Smith
Fitzgerald
Bell Rock
Salt River
Indian Cabins
Steen River
Meander River
Habay
Chateh
Rainbow Lake
High Level
Rocky Lane
Garden Creek
Little Fishery
Fifth Meridian
Fox Lake
Vermilion Chutes
Embarras
Jackfish
La Crete
Paddle Prairie
Carcajou
Keg River
Bitumount
Fort Mackay
Mildred Lake
Chipewyan Lake
Peerless Lake
Trout Lake
Red Earth Creek
Wabasca-desmarais
Conklin
Anzac
Garson Lake
Buffalo Narrows
Calling Lake
Wandering River
Amesbury
Philomena
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Slave Lake
Smith
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Swan Hills
Little Smoky
Valleyview
Sunset House
Faust
Calais
Crooked Creek
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Donnelly
Watino
Reno
Atikameg
Loon Lake
Clear Hills
Oklonville
Deadwood
North Star
Worsley
Clear Prairie
Hotchkiss
Notikewin
Notikewin Provincial Park
Hines Creek
Fairview
Bonanza
Gordondale
Doe River
Rycroft
Silverwood
Briar Ridge
Tupper
Hythe
Albright
Sexsmith
Clairmont
Kelly Lake
Grande Cache
Muskeg River
Wild Hay
Edson
Obed
Entwistle
Peers
Stanger
Sangudo
Barrhead
Glenevis
Green Court
Westlock
Clyde
Busby
Dapp
Jarvie
Tawatinaw
Kikino
Abee
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Smoky Lake
Elk Point
Ashmont
Bonnyville
Ardmore
Meadow Lake
Lac La Biche
Rich Lake
Caslan
Boyle
Flatbush
Fawcett
Perryvale
Two Creeks
Fox Creek
Windfall
Lone Pine
Muskeg River
Penny Bond
Goat River
Legrand
Mcbride
Eddy
Dunster
Croyden
Valemount
Mount Robson
Mount Robson Provincial Park
Jasper
Jasper National Park
Mountain Park
Devona
Lucerne
Mercoal
Foothills
Lodgepole
Cynthia
Keephills
Leduc
Beaumont
Millet
Camrose
Bawlf
Daysland
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Viking
Kinsella
Irma
Wainwright
Edgerton
Lloydminster
Marshall
Paradise Valley
Vermilion
Marwayne
Mannville
Provost
Alliance
Czar
Metiskow
Macklin
Denzil
Lashburn
Maidstone
Turtleford
Mervin
Meadow Lake
Makwa
Loon Rock
Cold Lake
Cold Lake Provincial Park
Grand Centre
Primrose Lake Air Weapons Range
Primrose Lake
Cadotte Lake
Peerless Lake
Wabasca
Calling Lake
Athabasca
Lac La Biche
Meadow Lake Provincial Park
Wildmere Wilderness Provincial Park
Wells Gray Provincial Park
Mount Robson Provincial Park
Jasper National Park
Banff National Park
Yoho National Park
Glacier National Park
Mount Revelstoke National Park
Kootenay National Park
Waterton Lakes National Park
Cypress Hills Provincial Park
Dinosaur Provincial Park
Writing-on-Stone Provincial Park
Elbow Sheep Wildland Provincial Park
Whitewater Lake Provincial Park
Top of the World Provincial Park
Kokanee Glacier Provincial Park
Okanagan Mtn. Provincial Park
Monashee Provincial Park
Cathedral Provincial Park
Monkman Provincial Park
Gwillim Lake Provincial Park
Hamber Prov. Park
Kakwa Provincial Park
Willmore Wilderness Provincial Park
Hilliard's Bay Provincial Park
Lesser Slave Lake Provincial Park
Notikewin Provincial Park
Clearwater River Provincial Park
Lakeland Provincial Park
Whitney Lake Provincial Park
Wanham
Beaverlodge
Hythe
Dawson Creek
Fort St. John
Taylor
Chetwynd
Hudson's Hope
Tumbler Ridge
Mackenzie
Prince George
Quesnel
Williams Lake
Clinton
Cache Creek
Ashcroft
Merritt
Princeton
Hope
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Boston Bar
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Harrison Hot Springs
Harrison Lake
Fraser River
Thompson River
Nicola Lake
Okanagan Lake
Shuswap Lake
Mara Lake
Sicamous
Salmon Arm
Revelstoke
Golden
Field
Lake Louise
Banff
Canmore
Kananaskis
Bragg Creek
Turner Valley
Okotoks
High River
Longview
Nanton
Vulcan
Champion
Stavely
Claresholm
Fort Macleod
Pincher Creek
Crowsnest Pass
Blairmore
Coleman
Frank
Waterton Park
Cardston
Magrath
Raymond
Stirling
Milk River
Warner
Coutts
Sweetgrass
Whitlash
Shelby
Cut Bank
Browning
Kevin
Sunburst
Chester
Havre
Chinook
Hingham
Malta
Glasgow
Wolf Point
Scobey
Plentywood
Culbertson
Sidney
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Rugby
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Pembina
Crookston
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International Peace Garden
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rural RxACTION

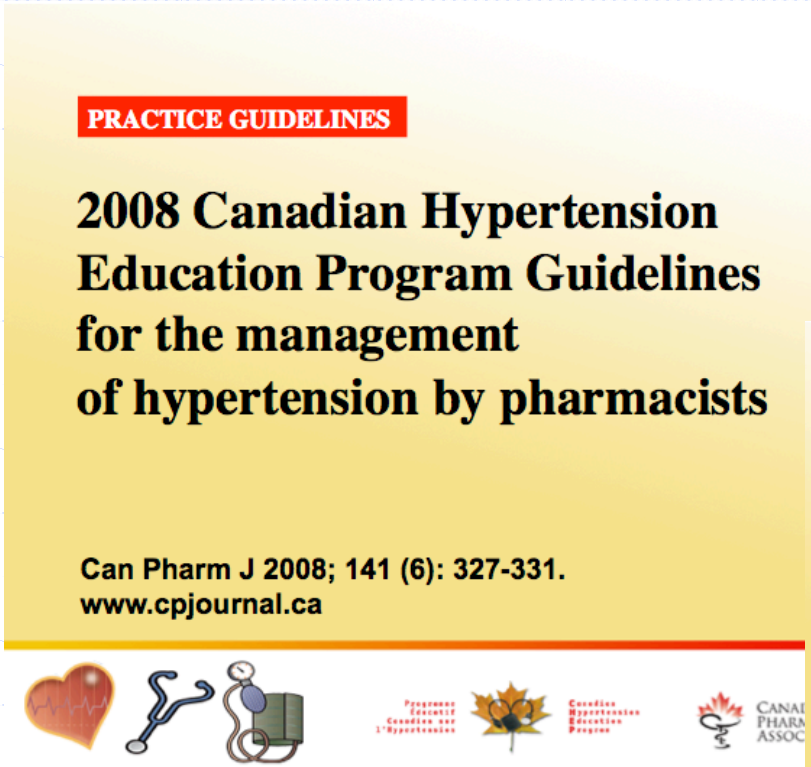
- First randomized trial of pharmacist prescribing
- Important health policy implications:
  - Advancing pharmacy practice
  - Advancing patient care
  - Remuneration model evaluation
- Rural, at risk patients
- Improves access
- Improved quality of care?

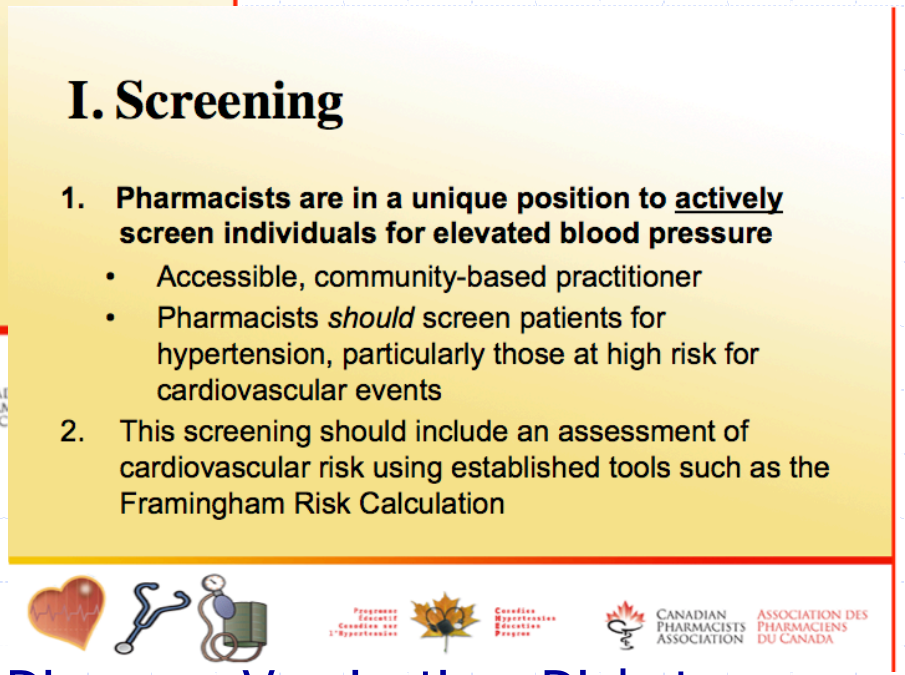
Key Features

- Pharmacist-initiated, in the community, not dependent upon referral from a GP
  - Yet, interdisciplinary (brings the GP "into the loop")
- Proactive case-finding
- Intervention is based upon the Canadian Hypertension Education Program (CHEP) guidelines
  - CHEP-CPhA guidelines for pharmacists

www.hypertension.ca

Canadian Pharmacy Practice Guidelines (www.cpjournal.ca)





Also: Heart Failure, Respiratory Diseases, Vaccination, Diabetes, Dyslipidemia, Gastroesophageal Reflux

Key Features

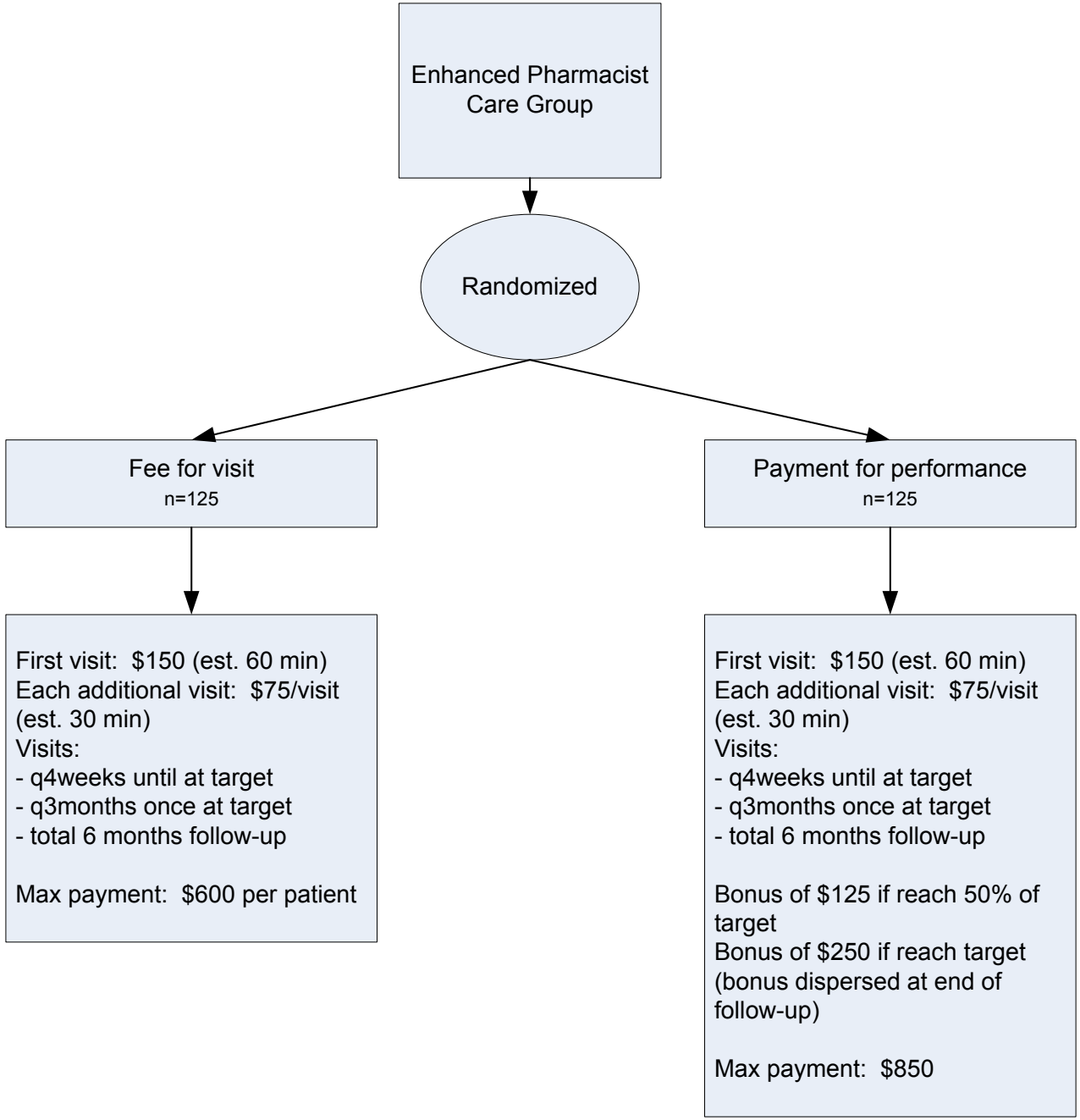
- Broad-based Steering Committee:
  - includes clinical experts (opinion leaders) and health policymakers

Study Team/Partnerships

- Dr. Ross Tsuyuki
- Dr. Finlay McAlister
- Dr. Richard Lewanczuk
- Dr. Mike Kolber
- Dr. Norm Campbell
- Dale Cooney
- Meagen Rosenthal
- Sherilyn Houle
- Teri Charrois
- Endorsed by the Alberta College of Pharmacists, Alberta Health and Wellness, Alberta Medical Association, Alberta Health Services

Key Features

- Remuneration included:
  - RCT of payment for performance vs fee for service


Enhanced Pharmacist Care Group
Randomized
Fee for visit
n=125
Payment for performance
n=125
First visit: $150 (est. 60 min)
Each additional visit: $75/visit (est. 30 min)
Visits:
- q4weeks until at target
- q3months once at target
- total 6 months follow-up
Max payment: $600 per patient
First visit: $150 (est. 60 min)
Each additional visit: $75/visit (est. 30 min)
Visits:
- q4weeks until at target
- q3months once at target
- total 6 months follow-up
Bonus of $125 if reach 50% of target
Bonus of $250 if reach target (bonus dispersed at end of follow-up)
Max payment: $850

Unresolved Issues

- Current state of practice
- Do pharmacists want to change?
- Professional organizations as a barrier
- Funding

What should a reasonable pharmacist do in the following scenario?

A 50 year old new patient approaches you with the following question:

“I took my blood pressure last night at my friend’s place and it was 150/100. What does that mean?”

Community Pharmacists' Practices in Hypertension Management

- Objective: To determine current practices of community pharmacists in the management of hypertension
- Cross-sectional observational design using unannounced standardized patients
- Random, stratified sample of 101 community pharmacies in Edmonton
- Scenario: 50y male concerned about BP of 150/100mmHg.

Sponsor/Partner: Alberta College of Pharmacists

Community Pharmacists' Practices in Hypertension Management

- Knowledge of current BP targets: Although 70% stated a BP target, only 14% asked enough clinical information to determine the target
- Review of past medical history: 7% asked medical history, 16% asked medication history, ~20% asked family history, previous HTN dx
- Accuracy of BP reading: ~50% inquired about conditions under which BP was taken, many offered to retake BP themselves
- Education/Lifestyle: 75% discussed how HTN is diagnosed, half described proper conditions for BP measurement, one third gave educational materials
- Referral: 83% referred to physician
- Standardized patients impressed with pharmacist's empathy and caring

McLean DL, *et al.* Can Pharm J 2006; 139: 38-44.

Why do we need to understand pharmacist's psyche and culture?

- Barriers to practice change: lack of time, remuneration, patient/physician/ pharmacy manager support, need for education
- Premise: Previous strategies to remove these barriers to the implementation of patient-centered care have been largely unsuccessful
- "Culture eats strategy for breakfast"

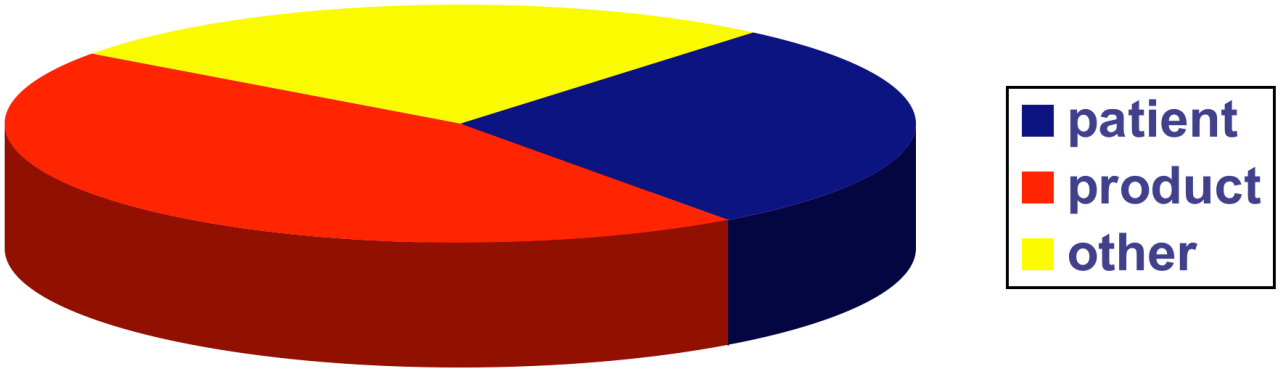
Pharmacist's Professional Psyche

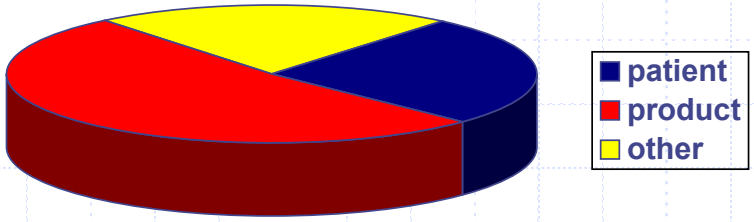
- Passive
- Lack confidence/professional identity
- Fear of new responsibilities
- Risk aversion
- Paralysis in the face of ambiguity
- Need for approval, desire to please

Rosenthal M, Austin Z, Tsuyuki RT. Can Pharm J 2010; 143(1): 37-42

"What does a pharmacist do?"

(a) Overall responses, n = 287

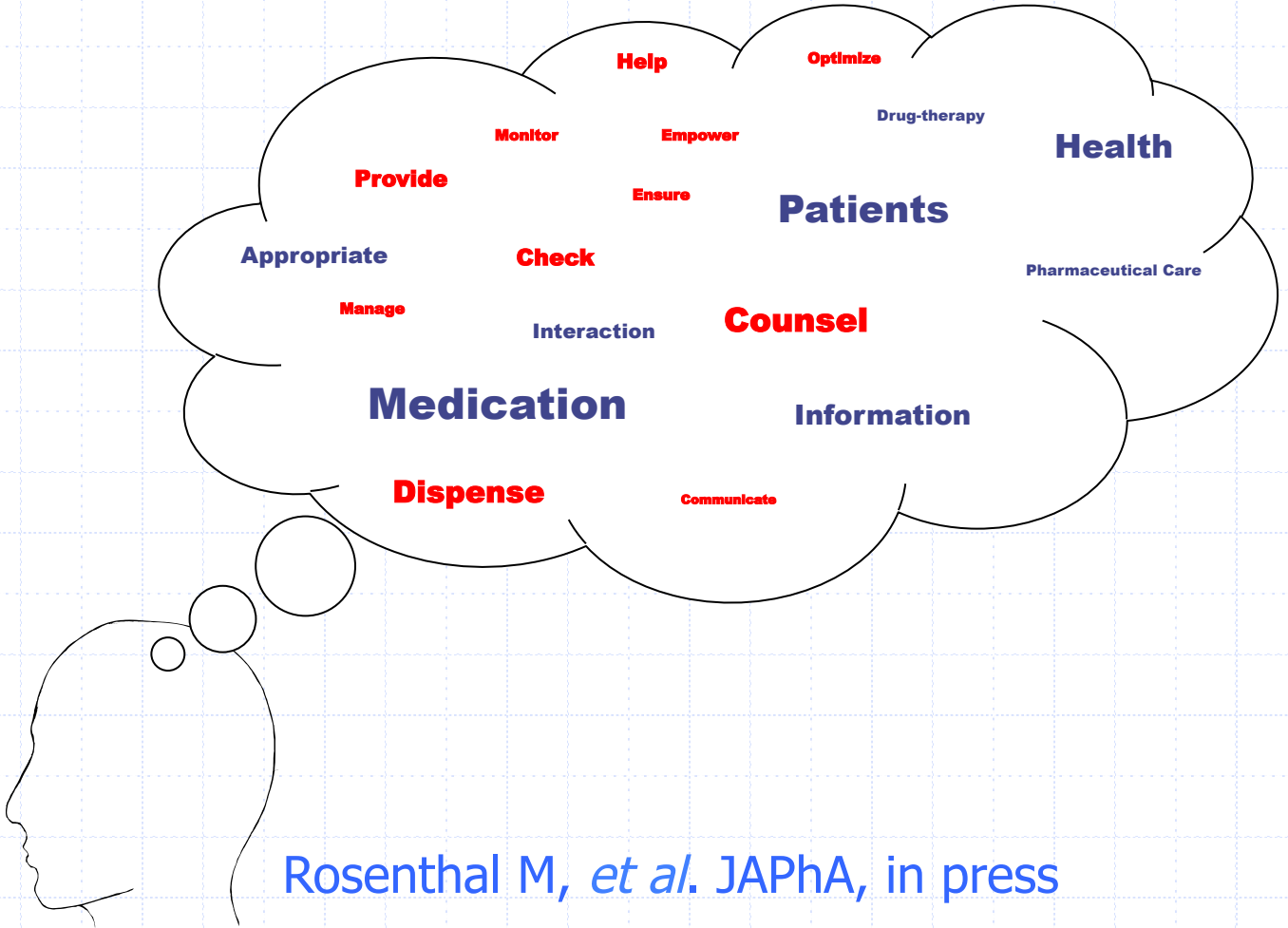




(b) First response, n = 100

Rosenthal M, *et al*. JAPhA, in press

Word-Cloud



Rosenthal M, *et al*. JAPhA, in press

Knowledge Translation and Advocacy for Pharmacy Practice Research

- Background: Practice change requires knowledge translation and advocacy by pharmacy professional organizations
- Objective: To determine the knowledge translation and advocacy activities of Canadian pharmacy professional organizations in relation to a major pharmacy practice study
- Methods:
  - A letter summarizing the findings of a recently published trial, SCRIP-*HTN* (Arch Intern Med Nov 2008) was sent to all pharmacy professional organizations on December 2008
  - We followed up 6 months later to determine activities arising from the publication and letter

Truong K, Rosenthal M, Tsuyuki RT. Can Pharm J 2010; 143: 78-81.

Knowledge Translation and Advocacy for Pharmacy Practice Research

Results:

- Of 22 organizations, 3 performed some KT activities (no advocacy)
- Major reasons cited:
  - Regulatory bodies: “not my job”
  - Advocacy bodies: “not a priority”, “lack of time, resources”, “political issues”

Truong K, Rosenthal M, Tsuyuki RT. Can Pharm J 2010: 154: 78-81

Pharmacillin?

- Highly efficacious in controlled clinical trials
- Poor efficacy in real world:
  - Under utilized
  - Subtherapeutic doses often used
- Poorly marketed

Pharmacists As *Public Health* Professionals

Key ingredients:

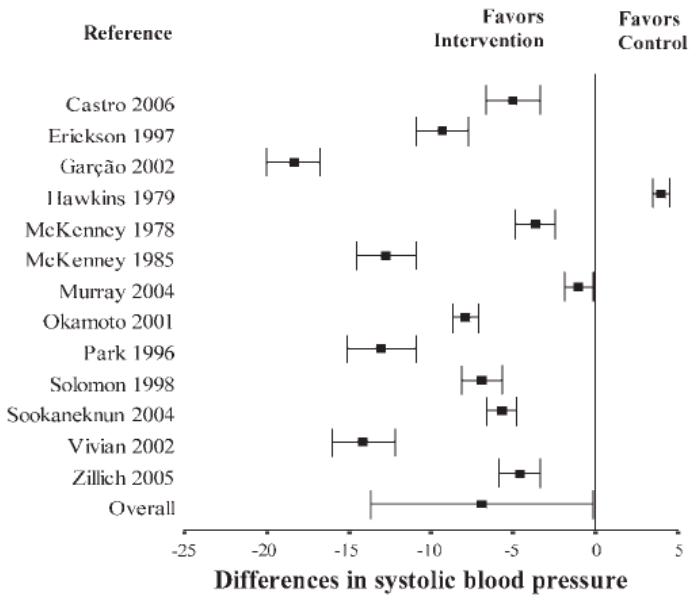
- Highly accessible *in the community*
- Contact with patients more frequently
- Drug therapy experts
- Consistent with our training
- Increasing public demand for services
- Trusted by the public
- Infrastructure already there

Mechanism of action:

- Proactive identification of patients at risk
- Interventions (care) (education, medication adjustments, adherence evaluation, involvement of other healthcare professionals such as physicians, regular follow-up, etc)
- Taking responsibility for patient outcomes

Pharmacist Care in Hypertension: Systematic Review

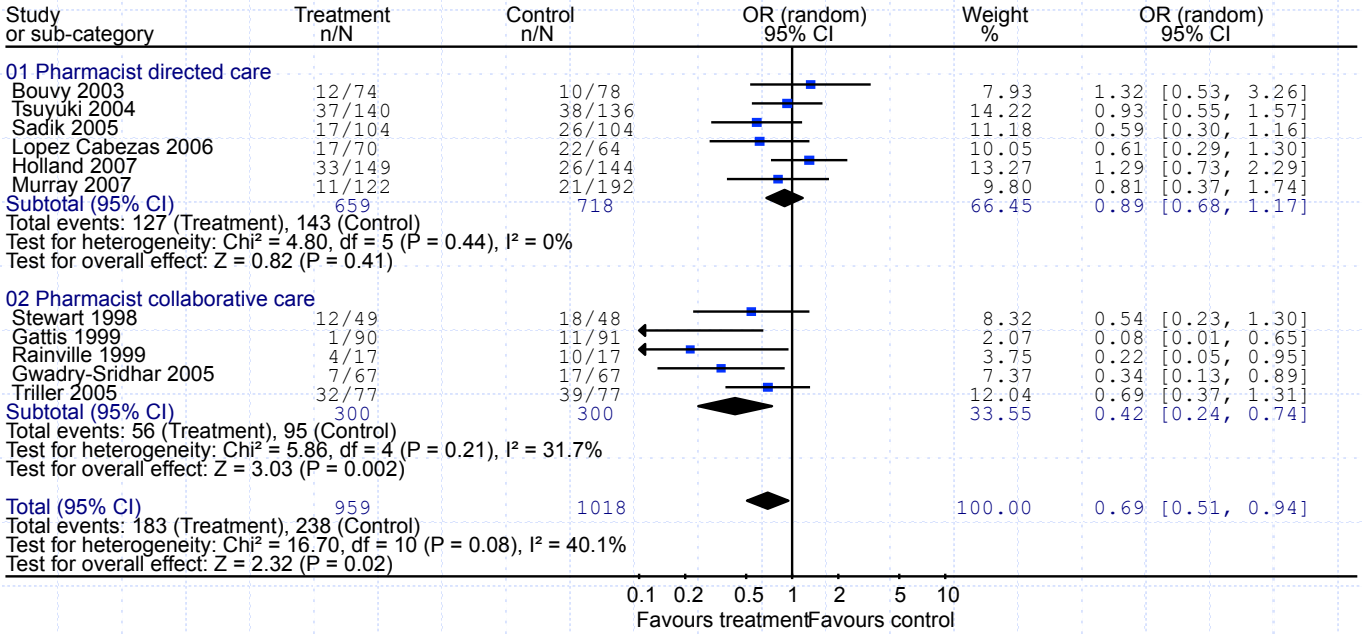
- Meta analysis of 13 controlled trials of pharmacist interventions
- N= 2246
- Reduction of systolic BP of 10.7 ± 11.6mmHg, p=0.002.



Machado M et al. Ann Pharmacother 2007; 41: 1770-81.

Proactive Pharmacist Involvement Improves Outcomes in Patients With Heart Failure: A Systematic Review

- Systematic review of pharmacist care in addition to usual clinic care
- Pharmacists provided drug therapy review, recommendations to physician, patient education on medications/self care and follow-up
- 12 studies, 2060 patients

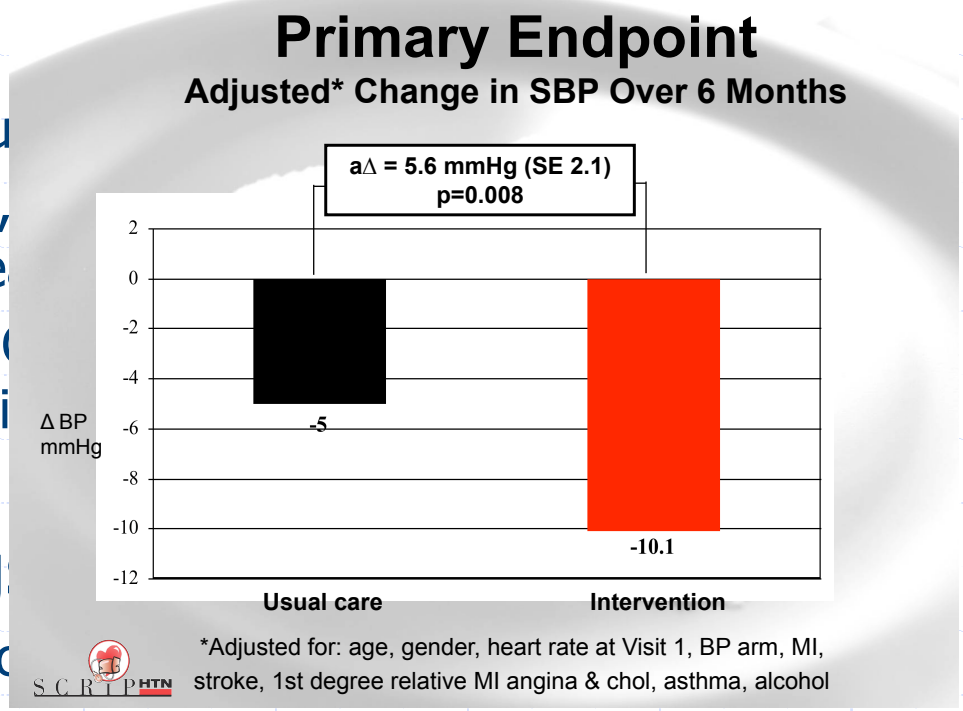


- Significance: 2nd most common reason for hospitalization, 75% of HF costs

Koshman SL, *et al.* Arch Intern Med 2008: 16(7): 687-94.

SCRIP-*HTN* Economic Substudy

- Objective: To develop and economic model based upon SCRIP-*HTN* to predict costs and health resource savings
- Methods:
  - Economic model based u
  - Included physician visits, myocardial infarction, he
  - Data sources: Canadian Alberta Schedule of Medi Collaboration
- Results: Cost saving
  - Extrapolated to ¼ of unc



Houle S, Chuck A, McAlister FA, Tsuyuki RT
Can J Cardiol 2010; 26(Suppl D): 125D (abs)

Conclusions

- The evidence for enhanced pharmacist care and improved patient outcomes is strong
  - Opportunity is there (if we want it…)
- The evidence for usual (“traditional”) pharmacist care and outcomes does not exist and likely has no impact
- The future:
  - Continue building the evidence
  - Continue to study how to apply this evidence
  - Leadership needed