

## What We Know

- In many areas within the VA system, there are exemplary pharmacist-led chronic disease management services
- Variation in availability of Clinical Pharmacy Specialist (CPS) services exists across VA
- By 2020, there is a projected shortage of 20,400 primary care physicians nationwide\*
- Spreading the strong CPS practices will work to fulfill urgent needs in access to high quality care for our country's Veterans

\*HRSA Health Workforce – Projecting the Supply & Demand for Primary Care Practitioners Through 2020

# Pharmacist-led Chronic Disease Management: A Systematic Review of Effectiveness and Harms Compared to Usual Care

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# Acknowledgements

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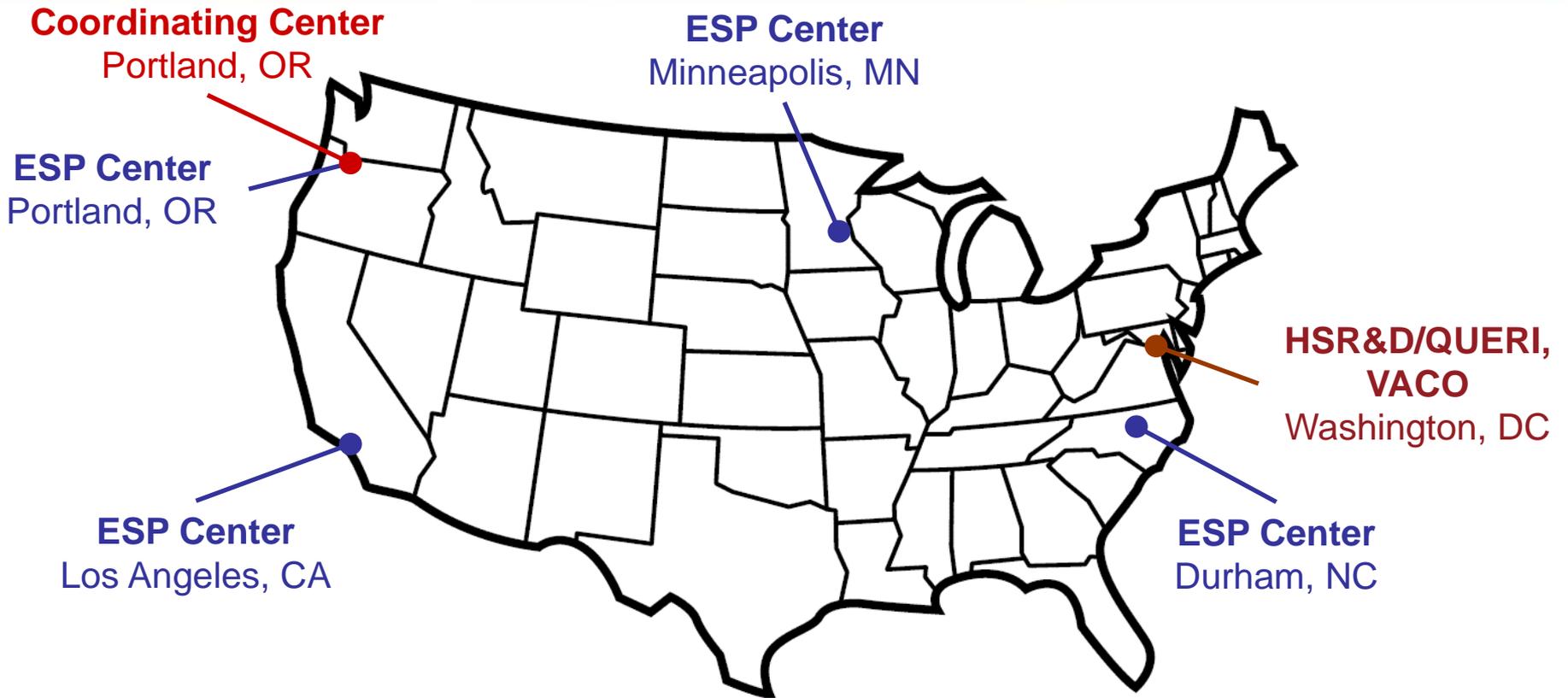
# Disclosure

This report is based on research conducted by the Evidence-based Synthesis Program (ESP) Center located at the Minneapolis VA Medical Center, Minneapolis, MN, funded by the Department of Veterans Affairs, Veterans Health Administration, Office of Research and Development, Quality Enhancement Research Initiative. The findings and conclusions in this document are those of the author(s) who are responsible for its contents; the findings and conclusions do not necessarily represent the views of the Department of Veterans Affairs or the United States government. Therefore, no statement in this article should be construed as an official position of the Department of Veterans Affairs. No investigators have any affiliations or financial involvement (*eg*, employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties) that conflict with material presented in the report.

# VA Evidence-based Synthesis Program (ESP) Overview

- Sponsored by VA Office of Research and Development and the Quality Enhancement Research Initiative (QUERI)
- Established to provide timely and accurate syntheses/reviews of healthcare topics identified by VA clinicians, managers, and policy-makers, as they work to improve the health and healthcare of Veterans.
- Reports conducted by internationally recognized VA clinician methodologists
- Builds on staff and expertise already in place at the Evidence-based Practice Centers (EPC) designated by AHRQ. Four of these EPCs are also ESP Centers, as shown on the following map.

# ESP Center Locations



# VA Evidence-based Synthesis Program (ESP) Overview

- Provides evidence syntheses on important clinical practice topics relevant to Veterans. These reports help:
  - develop clinical policies informed by evidence;
  - the implementation of effective services to improve patient outcomes and to support VA clinical practice guidelines and performance measures; and
  - guide the direction of future research to address gaps in clinical knowledge.
- Broad topic nomination process – *eg*, VACO, VISNs, field staff – facilitated by the ESP Coordinating Center (Portland) through an online process:

<http://www.hsrd.research.va.gov/publications/esp/TopicNominationForm.pdf>

# Current report

## PHARMACIST-LED CHRONIC DISEASE MANAGEMENT: A SYSTEMATIC REVIEW OF EFFECTIVENESS AND HARMS COMPARED TO USUAL CARE

(October 2015)

Full-length report available on ESP website:

<http://www.hsrd.research.va.gov/publications/esp/reports.cfm>

# Background

- Increased involvement of pharmacists in patient care may:
  - increase access to primary care services
  - improve health care for patients
  - reduce inappropriate medication use
- Department of Veterans Affairs – allows expanded scope of practice for Clinical Pharmacy Specialists (CPS) to include:
  - independent prescribing privileges
  - comprehensive medication management
  - disease state management
  - patient medication counseling
  - respond to drug information questions

# Key Question/PICOTS

*What are the effectiveness and harms of pharmacist-led chronic disease management compared to usual care?*

## PICOTS

**Population:** Adults (age 18 or older)

**Intervention:** Chronic disease management; pharmacist takes responsibility for some component of the management or prevention of one or more chronic diseases

**Comparator:** Usual care without services provided by pharmacists to intervention group

# Key Question/PICOTS

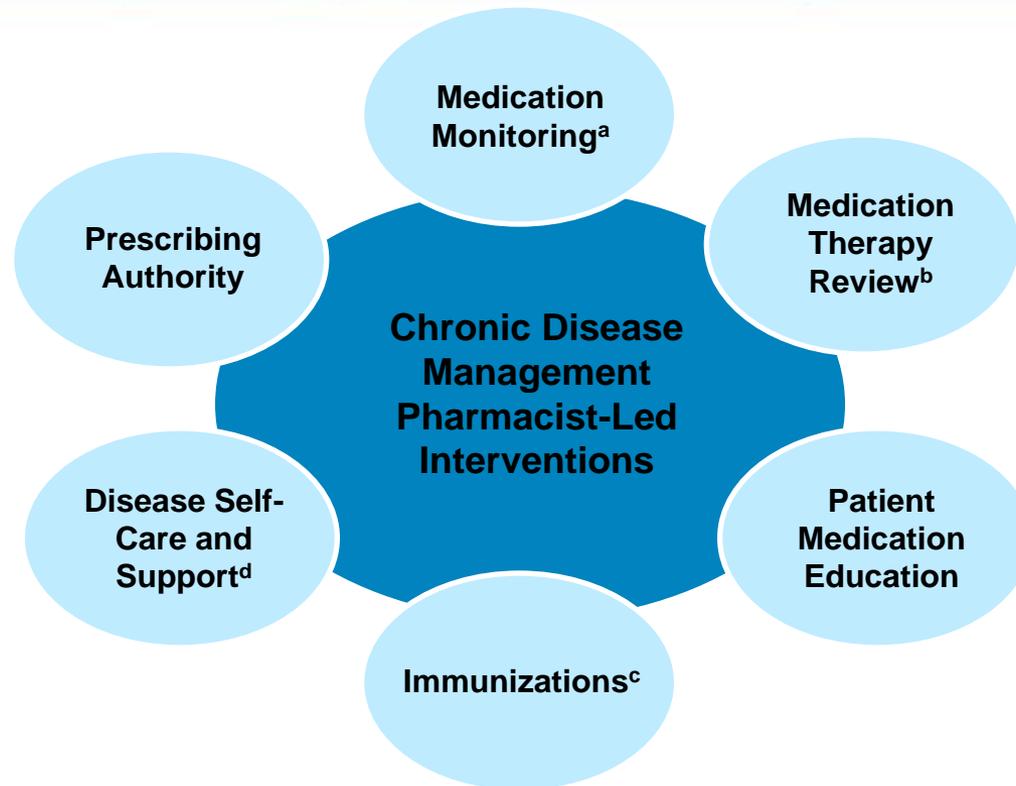
## Outcomes:

- *Clinical Outcomes*: clinical events (*ie*, severe hypoglycemia or hypotension requiring intervention), depression, mortality, health related quality of life, patient satisfaction, disease specific intermediate goal attainment (*ie*, glucose, blood pressure, and lipid levels)
- *Resource Use*: office and urgent care/emergency room visits, hospitalizations, access to care, costs
- *Medications*: appropriate medications and dosages, drug interactions, (non)adherence, other

**Timing:** No minimum follow up required

**Setting:** United States, pharmacists based in healthcare facilities (*ie*, retail pharmacies excluded)

# Components of Pharmacist-Led Chronic Disease Management



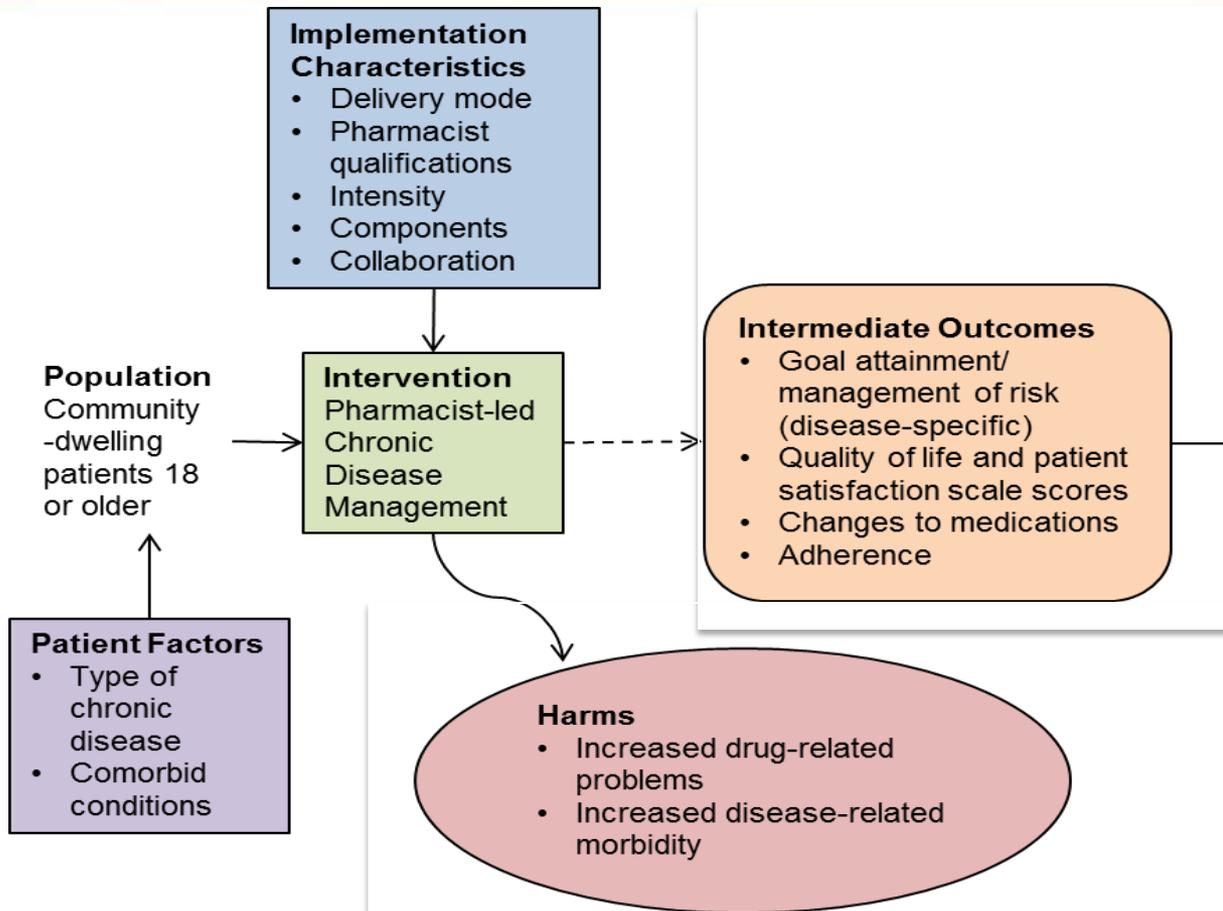
<sup>a</sup>Medication Monitoring: follow-up after prescription for medication effectiveness and safety, drug-related problems

<sup>b</sup>Medication Therapy Review: includes medication reconciliation

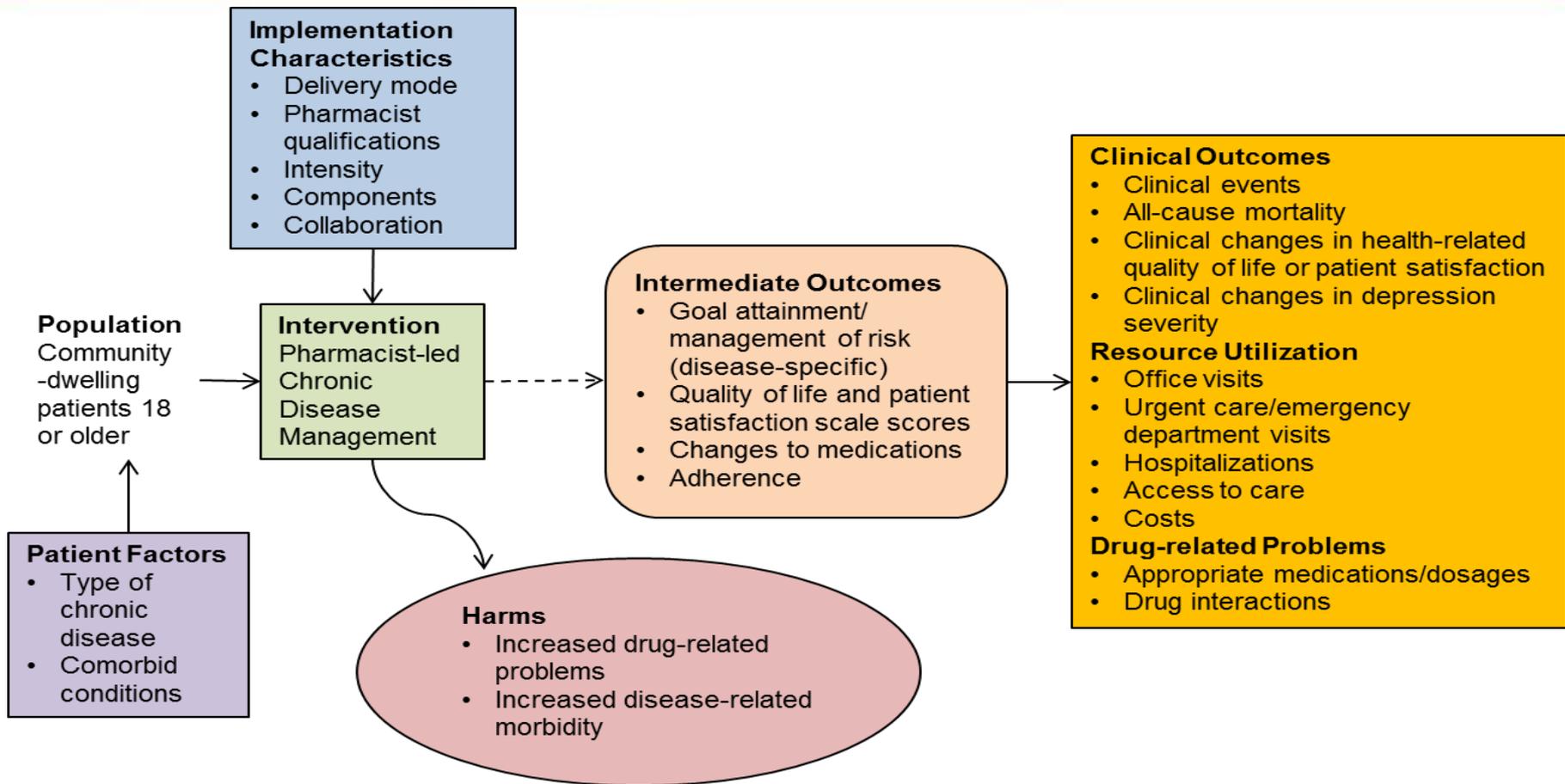
<sup>c</sup>Immunizations: pharmacist provides immunization; immunization was not an outcome of interest

<sup>d</sup>Disease Self-Care and Support: facilitate access to other health care professionals; education about disease, lifestyle changes

# Analytic Framework



# Analytic Framework



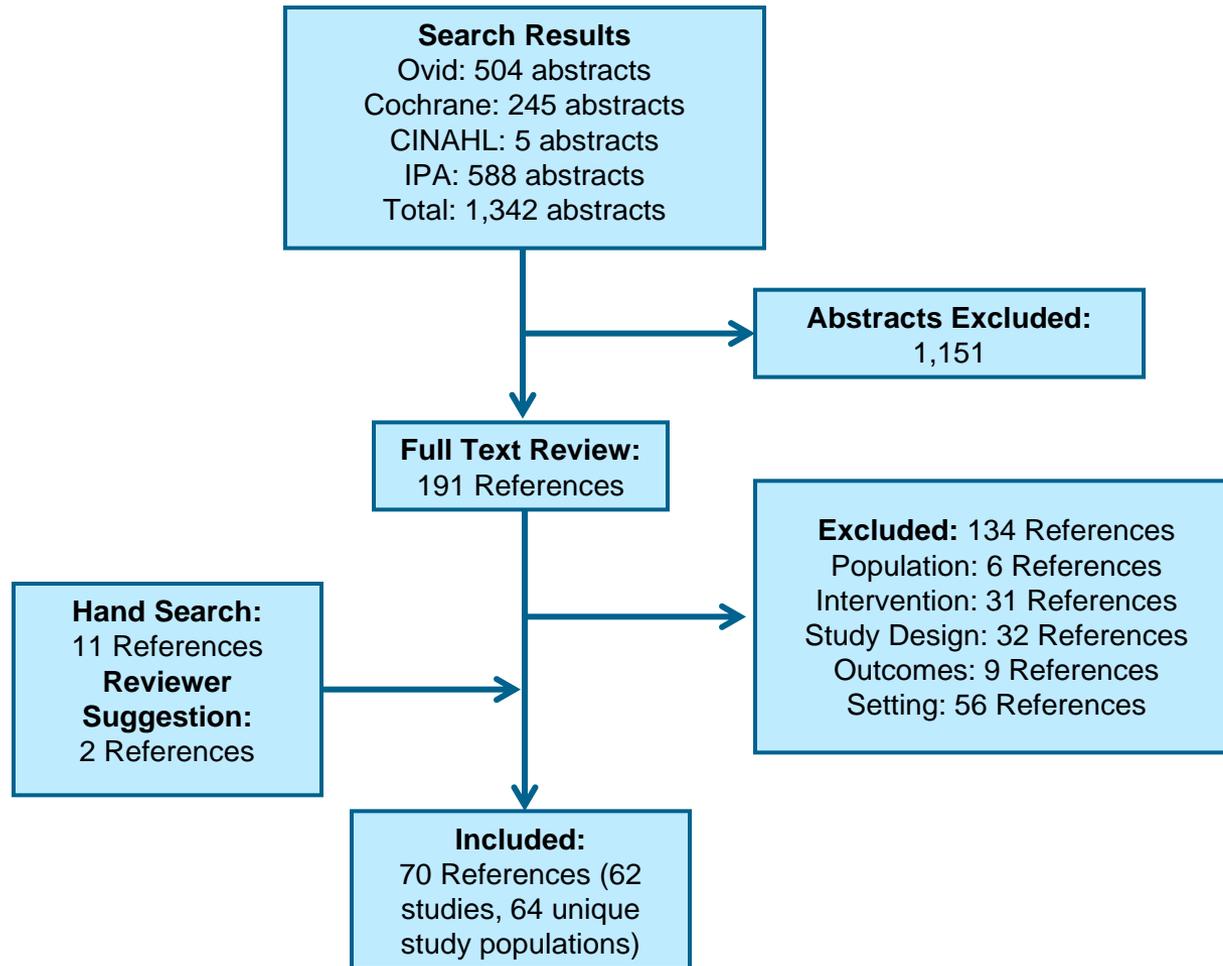
# Methods

- **Data Sources:** MEDLINE, CINAHL, Cochrane Library, International Pharmaceutical Abstracts; 1995 through June 2015
- **Study Selection:**
  - English language
  - Any study design if included comparator group
  - Outpatient adults with or at risk for a chronic disease
  - Pharmacist-led intervention (*ie*, pharmacist responsible for a component of patient care and, if part of collaborative team, pharmacist contribution could be distinguished from other team members)
  - Excluded anticoagulation clinics (pharmacist management is standard care)

# Methods

- **Data Extraction and Synthesis:**
  - Evidence tables organized by disease state of study population
  - Extracted study characteristics and outcomes
  - Rated risk of bias (low, medium, high)
  - Pooled results where feasible
  - Rated strength of evidence for clinical events, patient satisfaction, target goal attainment, urgent care/emergency department visits and hospitalizations, and medication adherence

# LITERATURE FLOW



Study Characteristics	(Risk of) Cardiovascular Disease	Chronic Kidney Disease	Chronic Obstructive Pulmonary Disease	Depression	Diabetes Mellitus	Dyslipidemia	Hypertension	Polypharmacy/High Risk	Total
Number of Studies									
Total Patients									
<b>Design</b>									
RCT									
Other									
<b>Setting</b>									
VA									
Non VA									
<b>Intervention</b>									
Medication Monitoring									
Medication Tx Review									
Pt Medication Education									
Prescribing Authority									
Disease Self Care Support									
Immunizations									

Study Characteristics	(Risk of) Cardiovascular Disease	Chronic Kidney Disease	Chronic Obstructive Pulmonary Disease	Depression	Diabetes Mellitus	Dyslipidemia	Hypertension	Polypharmacy/High Risk	Total
<b>Delivery Mode</b>									
Remote									
In Person									
Mixed									
<b>Intervention Frequency</b>									
One time									
Multiple									
<b>Risk of Bias</b>									
Low									
Medium									
High									

# Outcomes Reported (Study Defined 1<sup>o</sup> Outcome)

	Clinical	Resource Use	Medication
TOTAL (64 unique study populations)			

Most frequently reported outcomes

Rarely reported outcomes

Outcomes for Strength of Evidence Assessment

## NOTES:

- 1) some studies didn't have one of our outcomes as their primary outcome and some had more than one primary outcome
- 2) access to care assessed as patient satisfaction (reaching someone in an emergency, availability of advice) or patient perceptions (communication with the care team and problems getting care)

# Outcomes Reported (Study Defined 1<sup>o</sup> Outcome)

	Clinical					Resource Use					Medication						
	Clinical Events	Depression	All-Cause Mortality	Health-Related Quality of Life	Patient Satisfaction	Goal Attainment	Office Visits	Urgent Care/Emergency Room Visits	Hospitalizations	Access to Care	Costs	Inappropriate Dosage/ Prescription	Ineffectiveness	Drug Interactions	(Non)-adherence	Number/Dose of Appropriate Medications	Other
<b>TOTAL (64 unique study populations)</b>	15	2 (2)	8 (1)	18 (4)	19 (3)	44 (25)	26 (2)	19 (4)	21 (4)	4	17 (1)	7 (1)	1	3	25 (6)	48 (1)	4

Most frequently reported outcomes

Rarely reported outcomes

Outcomes for Strength of Evidence Assessment

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# Results

## Across all Disease Conditions

- Pharmacist-led care *similar* to usual care for
  - Clinical events (k=15)
  - Mortality (k=8)
  - Office (k=26), urgent care/emergency department (k=19) visits, hospitalizations (k=21)
  - Medication adherence (k=25)
  - Costs (k=17)
- Pharmacist-led care *improved* study-selected goal attainment (k=44)
- Pharmacist-led care *increased* number or dose of medications (k=48)

# Results

## Across all Disease Conditions

- Limited or inconsistent reporting of
  - Patient satisfaction (k=19)
  - Quality of life (k=18)
  - Access to care (k=4)
  - Drug interactions or other drug-related problems (k=0 for comparison of pharmacist-led care and usual care)

# Results – Strength of Evidence

Outcome	Strength of Evidence	Direction	Number of RCTs (N)	Summary
Disease-specific clinical events	Low	Similar	12 (3,355)	<ul style="list-style-type: none"><li>-Pharmacist-led care and usual care similar in most trials.</li><li>-Outcomes sporadically and inconsistently reported.</li><li>-Overall risk of bias moderate.</li></ul>

# Results – Strength of Evidence

Outcome	Strength of Evidence	Direction	Number of RCTs (N)	Summary
Non adherence to medications	Low	Similar	17 (5,933 )	<ul style="list-style-type: none"><li>-Pharmacist-led care and usual care similar in most trials.</li><li>-Pooled results from 7 (n=1479): RR 0.58 [95%CI 0.33, 1.01]; I<sup>2</sup> = 82%</li><li>-Findings were imprecise, not significant, and had substantial heterogeneity.</li><li>-Overall risk of bias moderate.</li></ul>

# Discussion

- Interventions varied in
  - Composition
  - Delivery mode
  - Intensity
- We were unable to determine whether any particular intervention strategy was most effective overall or whether strategies were more effective in one disease condition versus another.
- Available evidence:
  - Short term (12 months or less) studies
  - Small sample size
  - Designed to assess intermediate outcomes such as blood pressure, cholesterol and/or glucose goal attainment; outcomes of interest for our review were not typically the study-defined primary endpoint

# Discussion

- Few studies reported clinical or resource use outcomes
- No study reported typical measures of access to care
- Limited reporting of harms or other drug-related problems
- Patients in pharmacist-led care groups generally received a greater number or dose of medications:
  - Difficult to evaluate whether increase reflects better care quality

# Future Research Needs

- Reporting of clinical outcomes, access to care, HRQOL, and satisfaction
  - Longer follow-up
  - Adequate sample size
  - Appropriate measures of access to care
  - Validated reporting of clinically important differences for HRQOL and satisfaction
- Consistent definition of office visits
  - Distinguish study-related visits, unplanned visits, and regularly scheduled visits
- Increased reporting of drug-related problems:
  - Drug interactions, inappropriate medications, and/or dosages
- Consistent reporting of cost outcomes
- Careful selection of physiologic goals to be attained:
  - Assess if goal attainment improved patient outcomes with acceptable harms and costs

# Conclusions

- Pharmacist-led chronic disease management increases goal attainment for blood pressure, cholesterol, and blood glucose compared to usual care. (Moderate SOE)
- Pharmacist-led chronic disease management is similar to usual care for urgent care/ER visits or hospitalizations. (Moderate SOE)
- Pharmacist-led chronic disease management is similar to usual care for clinical events and medication adherence. (Low SOE)
- Insufficient evidence for patient satisfaction.
- Mixed and limited information on cost
- Further research is needed to determine if pharmacist-led care improves clinical outcomes

## Topics Not Covered in Report

- The report found little reporting of:
  - Access
  - Patient satisfaction
  - Drug-related problems
- Pharmacist coordination of care
  - Veterans Access, Choice and Accountability Act of 2014

## Future Research Studies and Implementation Projects

- Need for more robust methods in health services research globally
- Link intermediate laboratory and physiologic goals to improved patient outcomes (including clinical events), satisfaction, access, hospitalizations, costs, medication adherence, and drug-related problems
- Goal is to use results to focus and allocate financial and personnel resources in support of high quality, cost-effective care

# Questions?

If you have further questions, please feel free to contact:

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Full-length report and cyberseminar available on ESP website:

<http://www.hsrd.research.va.gov/publications/esp/>