Learning Objectives

1. Describe the existing evidence of geriatric patient care by US pharmacists in healthcare teams
2. Discuss the benefit of practice-based research in generating such evidence
3. Formulate strategies to enhance research and scholarship by geriatric pharmacists
Disclosure

Nothing to disclose
POLL Question

True or False:

Rarely does someone over the age of 60 produce a great work of art, science, or scholarship.
Sixties (age not decade) are the most productive years for historians, botanists, inventors, philosophers, and writers.
Aging Population

• Everyday in the US 10,000 people celebrate their 65th birthday

• More older patients
  – Multiple chronic diseases
  – Geriatric syndromes
  – Polypharmacy

• Pharmacists can make a difference!
Southern Arizona VA Health Care System

Home-Based Primary Care

- Interprofessional Practice
- Medical Home Model
- Geriatrics Rotation
  - Residents and students
  - Patient care plan meetings
  - Home visits
  - Interprofessional education
UAMC - University Campus
IP Geriatrics Clinic

• Interprofessional Practice Team
  – Geriatricians
  – Geriatric fellow
  – Nursing staff
  – PharmD students
  – Medical students
  – PGY2 Amb Care PharmD residents

• Collaborative Practice on Chronic Disease and Polypharmacy Management
Pharmacist Impact

Effects of US pharmacists’ interventions on health-related patient outcomes

- First systematic review and meta-analyses on topic
- 2010 Medical Care

- 56,573 citations screened, 298 studies included
  - Distinguishable pharmacist interventions
  - Patient-based health outcomes

Pharmacist Impact

Effects of US pharmacists’ interventions on health-related patient outcomes

• Favorable outcomes found
  – Therapeutics (HgbA1c, LDL-cholesterol, BP)
  – Safety (Adverse drug events)
  – Humanistic (Medication adherence, Patient knowledge, QOL)

Incorporating pharmacists as health care team members in direct patient care is a viable solution to help improve US health care.
Learning Objectives

1. Describe the existing evidence of geriatric patient care by US pharmacists in healthcare teams
Geriatric Pharmacist Impact

Effects of US pharmacists’ interventions on geriatric patient outcomes

- First systematic review and meta-analyses on topic
- 2013 Journal of American Geriatrics Society

• 152 citations screened, 20 studies included
  - Distinguishable pharmacist interventions
  - Patient-based health outcomes

Included full text from Chisholm-Burns et al. (n=334)

Extracted full text with intervention in Older Adult Patient Population (n=25)

25 Abstracts/full text were subjected to inclusion/exclusion assessment using Meta-analysis Inclusion Tool

25 Abstracts/full text were subjected to inclusion/exclusion assessment using Meta-analysis Inclusion Tool

Total Studies Assessed = 152

Excluded full text (n=132)
- No data to use in meta-analysis
- Included patients ≤65 years
- Economic outcomes only
- Not patient-level outcome (hospital-level)

Total Studies in Meta-analyses = 20 (7 from updated literature search)
Geriatric Pharmacist Impact

Effects of US pharmacists’ interventions on geriatric patient outcomes

• Study characteristics
  – Subjects: ≥ 65 years
  – Study n: 36 to 4,218
  – Settings: Ambulatory care clinics (6), inpatient (5), skilled nursing facilities (2), community pharmacy, rehab center, home.

Results

Effects of US pharmacists’ interventions on geriatric patient outcomes

• Study design varied
  – 6 randomized controlled trials
  – 5 prospective cohort studies
  – 4 pre-post studies
  – 2 before-and-after studies
  – 3 retrospective cohort studies
Results

Effects of US pharmacists’ interventions on geriatric patient outcomes

• Patient Characteristics
  – Majority male subjects in VA and DoD
  – Majority female subjects in other settings
  – Presence and types of supplemental insurance varied

Results

Effects of US pharmacists’ interventions on geriatric patient outcomes

• Pharmacist activities varied widely
• Distinguishable pharmacist interventions
  – Technical (18)
    • Therapeutic change, medication reconciliation
  – Educational interventions (10)
    • Medication/disease education
  – Behavioral intervention (2)
    • Adherence cues and aids
  – Combination/multimodal (8)

Results

• Favorable effects on outcomes:
  – Therapeutic – BP, therapeutic INR, death
  – Safety – Adverse drug events, # of unnecessary medications, falls
  – Hospitalization – Hospitalization rate, length of stay, readmission
  – Adherence – Medication adherence

Clear evidence of pharmacist impact on patient outcomes in geriatric care teams

Geriatric Patient Care by U.S. Pharmacists in Healthcare Teams: Systematic Review and Meta-Analyses

Jeannie K. Lee, PharmD,* Marion K. Slack, PhD, * Jennifer Martin, MA, † Clara Ehrman, BS,* and Marie Chisholm-Burns, PharmD, MPH ‡

OBJECTIVES: To conduct a systematic review and meta-analyses to examine the effects of pharmacists’ care on geriatric patient-oriented health outcomes in the United States (U.S.).

DESIGN: Studies examining U.S. pharmacists’ patient care services from inception of the databases through July 2012 were searched. The databases searched include PubMed/MEDLINE, Ovid/EMBASE, Health Business Fulltext Elite, Academic Search Complete, International Pharmaceutical Abstracts, PsycINFO, Cochrane Database, and ClinicalTrials.gov. Studies reporting pharmacists’ care for older adults were included.

RESULTS: One hundred fifty-two articles were reviewed, with 20 resulting studies included in the final meta-analyses. Study sample size ranged from 36 to 4,218, with mean age of subjects being 65 and older. The studies were most frequently conducted in ambulatory care clinics, followed by inpatient settings; the majority focused on multiple diseases and conditions. Pharmacist activities varied widely, with technical interventions used most often. Favorable results were found in all outcome categories, and meta-analyses conducted for therapeutic, safety, hospitalization, and adherence were significant (P < .001), favoring pharmacist care over comparison. Some identifiable variability existed between included studies.


Key words: pharmacists; older adults; direct patient care; systematic review; meta-analysis

Pharmacists should be involved in team-based care of older adults.
Retooling for Aging America

• Response to IOM Report
  – “Successful models of comprehensive care for older adults with chronic conditions”
    • Interprofessional team care
    • Beyond primary care
    • Inclusion of pharmacists
  – Call for payment reform
    • Interprofessional providers
  – Make these models mainstay

POLL Question

In which patient outcome area do geriatric pharmacists make a positive impact?

a) Therapeutics
b) Safety
c) Humanistic
d) Economic
It's QUESTION TIME!!
Learning Objectives

1. Describe the existing evidence of geriatric patient care by US pharmacists in healthcare teams
2. Discuss the benefit of practice-based research in generating such evidence
Research Questions

• Practice-based
  – Solutions to patient care issues
    • Promote aging research
    • Interprofessional team care
    • Generate evidence

• Educational
  – Curriculum development
  – Student research
  – Interprofessional education
Practice-based Research

• Clinical question
  – Retrospective chart review
    • Older adults with HTN, HLD
    • Complex regimen
    • Educational needs
    • Poor medication adherence

• Interventional study (FAME)
  – Comprehensive pharmacy care program
  – Randomized Controlled Trial
FAME Study

• Intervention
  1. Clinical pharmacist evaluation and education
  2. Convenience aide
     • Custom blister-packed medications
  3. Follow-up every 2 months

• Results
  – Sustained medication adherence (61% to ≥ 95%)
  – Reductions in BP and LDL-C
Effect of a Pharmacy Care Program on Medication Adherence and Persistence, Blood Pressure, and Low-Density Lipoprotein Cholesterol
A Randomized Controlled Trial

Jeannie K. Lee, PharmD
Karen A. Grace, PharmD
Allen J. Taylor, MD

A CHRONIC PHARMACOTHERAPIES IS poor, leading to worsening disease severity and increased costs associated with higher hospital admission rates. Barriers to medication adherence are numerous, but include the prescription of complex medication regimens, treatment of

**Context** Poor medication adherence diminishes the health benefits of pharmacotherapies. Elderly patients with coronary risk factors frequently require treatment with multiple medications, placing them at increased risk for nonadherence.

**Objective** To test the efficacy of a comprehensive pharmacy care program to improve medication adherence and its associated effects on blood pressure (BP) and low-density lipoprotein cholesterol (LDL-C).

**Design, Setting, and Patients** A multiphase, prospective study with an observational phase and a randomized controlled trial conducted at the Walter Reed Army Medical Center of 200 community-based patients aged 65 years or older taking at least 4 chronic medications. The study was conducted from June 2004 to August 2006.

**Intervention** After a 2-month run-in phase (measurement of baseline adherence, BP, and LDL-C), patients entered a 6-month intervention phase (standardized medication education, pharmacy follow-up by pharmacists, and medications decreased to have

A pharmacy care program led to increase in medication adherence, medication persistence and clinically meaningful reductions in BP.
Walter Reed
Interprofessional patient care services

- Pharmacy Discharge Counseling Service
- Anticoagulation Management Service
- Comprehensive Cardiology Clinic (3-C)
- Pharmacy Outcomes Clinic
  - Clinical trials
  - Adherence research
- Geriatric Pharmacy Clinic
- Fall Prevention Home Visits
- Drivers’ Clinic
- Shared Appt Fall Prevention Clinic
- High Risk Discharge Home Visits
Southern Arizona VA Health Care System

Home-Based Primary Care

- Interprofessional Team
  - Geriatrician
  - Pharmacist
  - Nurse practitioners
  - Nurses
  - Dieticians
  - Social workers
  - Occupational therapists
  - Psychologist
Practice-based Research

• Research question
  – Does team-based primary care make a difference in patient outcomes?
    • Team-care components
    • Targeted conditions
    • Outcome measures

• Scoping review
  – Impact of interprofessional teams in primary care

• Building the evidence-base
Research Questions

• Practice-based
  – Solutions to patient care issues
    • Promote aging research
    • Interprofessional team care
    • Generate evidence
  – Educational
    • Curriculum development
    • Student research
    • Interprofessional education
According to the 2008 IOM report, which profession is ready for Aging America?

a) Medicine
b) Pharmacy
c) Nursing
d) None
Perspectives in Geriatrics

Interprofessional team perspectives
• 6 PharmDs (3 CGPs)
• 3 Older adults from the community
• 2 Geriatricians (including Mindy Fain)
• 2 PhD, MSW
• 2 OTs
• 1 Dietician, CDE
• 1 MD (Barry Weiss)
• 1 NP, MPH
• 1 MPH

Highly interactive course
Educational Research

• Research question
  – Does participating in a geriatrics elective course make a difference in students?
    • Knowledge of geriatric care
    • Attitudes toward geriatric training
    • Perceptions of aging

• Survey studies
  – Compared students who participated in the course vs. who did not
Student pharmacists who took a geriatrics-focused course had stronger knowledge of geriatrics and more positive attitudes regarding geriatric care training.
A Comparison of Pharmacy Students’ and Active Older Adults’ Perceptions Regarding Geriatric Quality of Life

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Submitted June 20, 2013; accepted August 14, 2013; published February 12, 2014.

Objectives. To measure perceptions of quality of life (QOL) in an active geriatric population and compare their responses with pharmacy students’ perceptions of older adult QOL.

Methods. Pharmacy students and active older adults completed the modified and standard version of associated with higher student scores on the physical component portion of the survey.

Conclusion. Stronger emphasis on geriatric QOL within pharmacy curricula may improve pharmacy students’ perceptions regarding outcomes related to healthy older adults.

Keywords: geriatrics, geriatric education, quality of life, student perceptions
An interactive educational program on the safe use of OTC medications was helpful and generated positive intentions regarding behavior change in OTC use among older adults.
Arizona Center on Aging

- Arizona Geriatric Education Center (AzGEC) - HRSA-funded
- Interprofessional practitioners
  - Workforce training
  - Elder Care
    http://aging.arizona.edu/education_training/programs/elder_care
- Interprofessional students
  - Interprofessional Senior Mentor Program (IPSMP)
  - St. Luke’s Home Monthly Clinic
POLL Question

What is the value of practice-based research?

a) Finding cure for a disease
b) Building the evidence for practice
c) Finding solutions for patient care
d) Building bridges among practitioners
It's QUESTION TIME!!
Learning Objectives

1. Describe the existing evidence of geriatric patient care by US pharmacists in healthcare teams
2. Discuss the benefit of practice-based research in generating such evidence
3. Formulate strategies to enhance research and scholarship by geriatric pharmacists
Geriatric Pharmacist Impact

Effects of US pharmacists’ interventions on geriatric patient outcomes

• 152 citations screened, 20 studies included
• Need to frame research/studies to contribute to evidence building
• How do we get our study included in systematic reviews and meta-analyses?

**Study Designs**

- **Evidence level**
  - Randomized controlled trial
  - Prospective cohort study
  - Pre-post study
  - Before and after study
  - Retrospective cohort study

- **Systematic Review**

- **Meta-analysis**

Inclusion – Exclusion Criteria

• Age
  – 55 years vs. 65 years vs. 75 years…
  – Include oldest old if possible
• Gender, race & ethnicity, education
• Socioeconomic status
• Health status
  – Healthy vs. Diseased
  – Comorbidities
• Polypharmacy
Intervention Type

• Educational: Provide knowledge on disease, lifestyle modifications or medications

• Behavioral: Use of cues, reminders, reinforcement to modify patient behavior

• Technical: Address medication regimen (therapeutic change, dosing alterations, use of tools such as pillbox)

• Multimodal: Describe combination

• Affective: Targets patient perception/emotion and help them accept or modify troublesome feelings
Outcomes Measured

- **Therapeutic**
  - BP, HgbA1c, LDL-cholesterol

- **Safety**
  - Adverse drug event, hospitalization

- **Humanistic**
  - QOL, Medication adherence, patient knowledge

- **Economic**
  - Cost-effectiveness, cost-utility
Hierarchy of Outcomes

1. Clinical and Quality of life outcomes
   • Mortality, adverse events, QOL

2. Surrogate outcomes
   • BP, HgbA1c, LDL-cholesterol

3. Measurable outcomes with indirect connection
   • Medication adherence, medication knowledge

4. Other relevant variables, but not direct outcome
   • Patient satisfaction, potential adverse event

Reporting Results

Be comprehensive

• Study n: total n and n in analysis
  – Note intention-to-treat analysis
• Age: mean ± SD, range
• Gender: #s and % male or % female
• Race & ethnicity: be specific
• Study setting: urban vs. rural, private hospital vs. university medical center
Reporting Results

Be comprehensive

• Education level: census category
• Income level: census category
• Insurance type: category and uninsured
• Disease type: HTN, DM, COPD, Depression
• Team structure: members and processes
• Intervention: who, what, where, when, how often
  – Note attention control
Bias Assessment

- **RCT**: Jadad Scale (yes = 1, no = 0), modified versions
  - Study described as randomized?
  - Study described as double-blind?
  - Adequate description of randomization process?
  - Adequate description of double-blinding?
  - Withdrawals/dropouts described?

- **Non-RCT**: SIGN Criteria
  1 = RCT, 2 = prospective cohort studies, 3 = pre-post studies, 4 = before-and-after studies, 5 = retrospective cohort

www.sign.ac.uk/guidelines/fulltext/50/section6.html.
Meta-analysis

• Primary outcome measure = standardized mean difference (SMD)
• SMD calculation requires:
  1. If RCT, randomization at the patient level
  2. # in intervention group and # in comparison group used in analysis
  3. Outcomes reported as means and standard deviations or proportions
Disseminating Findings

• Publish in peer-reviewed journal
  – Consider non-pharmacy journals
  – Impact factor

• Present findings in national meetings
  – Consider non-pharmacy meetings
  – Promote pharmacy profession

• Publicity helps
  – Interviews
  – Journal club request
POLL Question

Which journal has the lowest impact factor?

a) New England Journal of Medicine
b) Lancet
c) JAMA
d) Pharmacotherapy
Disseminating Findings
Peer-reviewed Journal Publication

Consider non-pharmacy journals

• Impact factor
  – New Engl J Med – 52
  – Lancet – 39
  – JAMA – 30
  – Ann Intern Med – 16
  – JAGS – 4.2
  – J Clin Psychopharm – 3.76
  – Pharmacotherapy, Annals of Pharmacotherapy, AJHP – 2+
Funding Your Research

- Federal: NIH, NSF, HRSA
- Foundation: Aging, pharmacy, university
- Service contracts: Managed care, private organizations
- Interprofessional collaboration
  - Broader research scope
  - Opportunities for center grant
  - Expand scholarship
RxHL: Medication Adherence, Health Literacy and Cultural Health Beliefs in a Massachusetts Community Health Center

The RxHL study investigates medication adherence among people with low health literacy in the wake of cost control measures associated with health care reform. Health literacy is a patient’s ability to understand and act on a doctor’s instructions. It plays a pivotal role in management of chronic diseases like diabetes and high cholesterol. The Affordable Care Act will invest billions of dollars in community health centers over the next decade, and will enroll tens of millions of individuals in insurance coverage. Cost control measures such as changes in covered medications and increasing copays, which may profoundly shape patients’ relationships with their medications, will become increasingly common.

Dr. Shaw, co-investigator Jeannie K. Lee and a 13-member multidisciplinary research team are partnering with Caring Health Center in Springfield Massachusetts. The unique constellation of conditions in Massachusetts—of near-universal insurance coverage coupled with stringent cost control measures as the state struggles to balance its budget—serves as a critical bellwether for coming changes facing other states with the implementation of the Affordable Care Act. The diverse population of patients served by Caring Health Center provides an excellent opportunity to explore the effects of these policy changes as they intersect with culturally variable health beliefs to shape medication adherence among urban, minority and low-income patients. The study, with statistical support from the UA Southwest Institute for Research on Women, relies on both ethnographic and quantitative data to explore how medication adherence is influenced by both increasing patient costs and by cultural health beliefs among patients from five ethnic groups (Vietnamese and Russian immigrants, African-American, Hispanic, and white). This research is a follow up to Shaw’s Culture and Health Literacy study, also conducted at CHC and funded by NIH from 2006-2011.
Welcome to NCIPH

The Arizona Center for Integrative Medicine (AzCIM) and the Academic Consortium for Integrative Medicine & Health (The Consortium) in cooperation with the Health Resources and Services Administration (HRSA)\(^1\) created the National Center for Integrative Primary Healthcare (NCIPH).

The purpose of the NCIPH is to advance the incorporation of competency- and evidence-based integrative health (IH) curricula and best practices into primary care education and practice. The most important gap filled by this 3-year project will be the development of a set of competencies and educational materials relevant to and appropriate for use across the entire interprofessional spectrum of primary care practitioners.
POLL Question

Which is NOT a strategy to enhance research by geriatric pharmacists?

a) Use rigorous study design
b) State specifics of the intervention
c) Include detailed description of study subjects
d) Report positive outcomes only
It's QUESTION TIME!!
AACP Geriatrics SIG

Scholarships Sub-Committee

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Geriatric Patient Care by US Pharmacists: Generating Evidence through Research

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