Assessing Pharmacist-Led Interventions in Sustaining Diabetes Control >1 Year

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Disclosure statement

- Katherine Newman
  - –
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- Proprietary information or results of ongoing research may be subject to different interpretations.
- Speaker's presentation is educational in nature and indicates agreement to abide by the non-commercialism guidelines provided.

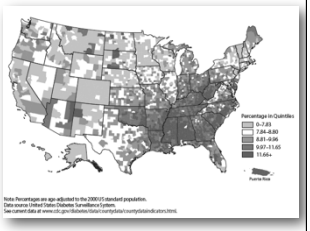
Learning objectives

1. State the length of time in which current literature describes the effect of a pharmacist on diabetes outcomes
2. Recall the legislation that provides pharmacists the ability to work under collaborative practice agreements in Oklahoma.

1. Introduction

Impact of Type 2 Diabetes

- 7th leading cause of death in the United States
- 10.7% of Oklahomans older than 18 have a type 2 diabetes diagnosis
- Accounted for $245 billion in direct and indirect healthcare costs in 2012



This map was created by the Centers for Disease Control and Prevention and published in the 2017 Diabetes Report Card

Centers for Disease Control and Prevention. *National Diabetes Statistics Report, 2017*. Atlanta, GA: Centers for Disease Control and Prevention, US Dept of Health and Human Services; 2017.

Collaborative Practice in Oklahoma

535:10-9-5. Agreements
(a) Agreements will be allowed between Oklahoma licensed pharmacists and physicians licensed by the Oklahoma Board of Medical Licensure or the Oklahoma Board of Osteopathic Examiners.
(b) A copy of the agreement shall be filed in the pharmacy and be available for review by the Board.
(c) The agreement shall not violate any state or federal law.
[Source: Reserved at 14 Ok Reg 3020, eff 7-11-97; Added at 20 Ok Reg 2476, eff 7-11-03]

CPA=Collaborative Practice Agreement

1. Oklahoma State Pharmacy Law Book

Literature Review

- Primary Objective: determine whether pharmacist interventions in the outpatient setting improve diabetes control, as measured by hemoglobin A1c

Characteristics of 21 Studies Included in Meta-Analysis		
	Pharmacist Medication Management Present	**Pharmacist Recommendations Only**
Duration of Follow-Up (number of studies, number of patients in study		
≤6 months (8, n=96)	3	5
>6 months-<9 months (2, n=80)	0	2
>9 months-≤12 months (6, n=97)	4	2
>12 months (5, n=89.6)	2	3

Wubben DP, Vivian EM. Effects of Pharmacist Outpatient Interventions on Adults with Diabetes Mellitus: A Systematic Review. Pharmacotherapy, 2008.

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Co-Resident Preliminary Results

- Of the patients included in the study
  - –
  - –
  - –
    reached it over 5 years.
  - – Only 9 (11.4%) of 79 patients never reached <9.0% over 5 years

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Summary

- Diabetes is a serious epidemic
- Pharmacists are effective in providing diabetes management
- Little existing research has established:
  - – The impact pharmacist-led interventions have on diabetes control over long or extended time periods
  - – The type and frequency of pharmacist-led interventions in time frames of one year and above

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2. Study development

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Study site

- OU Family Medicine Center
- Oklahoma City, OK
- Majority of patients on Medicaid and/or Medicare
- Majority of patients White, African-American or Hispanic and middle-aged

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OU Family Medicine CPA

- Pharmacists=“sole managers” of their patients’ diabetes pharmacotherapy
- Able to initiate, discontinue, and titrate any diabetes medication without physician approval

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Clinical Question

Which interventions do pharmacists perform when managing diabetes, and how frequently do these interventions occur?

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Process-based study endpoints

Study Endpoints	
Primary	Secondary
1. Quantify number of non-insulin medications initiated, titrated, continued, or discontinued by pharmacists	1. Assess frequency of pharmacists role in the coordination of care
2. Quantify changes to basal and/or bolus insulin regimens made by pharmacists	2. Identify number of medication samples and monitoring devices provided by pharmacists
	3. Determine the frequency in which the American Diabetes Association standards of care are being carried out and evaluated by pharmacists

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3. Methods

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Patient selection

Table: Criteria for inclusion and exclusion	
Inclusion criteria	**Exclusion criteria**
Patients ≥ 18 years old diagnosed with diabetes and baseline AIC ≥7.0%	Pregnancy during the study period
Initiated care with the pharmacotherapy service between July 1, 2009 and December 31, 2013	Diabetes care initiation with pharmacotherapy service before July 1, 2009 or later than December 31, 2013
Minimum 365 days in care	Non-continuous care: no diabetes-specific care; no diabetes lab values obtained over 9 consecutive months or periods ≥ 365 days between visits

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Statistical analyses

- Descriptive statistics
  –
  –
- Exploratory data analysis
  –
    interventions or changes made by pharmacist
- Associations
  – Established between type/quantity of interventions and time to reach A1c goal
- Survival analysis
  – Used to plot time to reach A1c goal

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Study design

Single-center, retrospective analysis

Enrollment

Identify individuals with diabetes fitting inclusion criteria

Data collection

Collect patient data, demographics, medications for diabetes and changes made by pharmacists

Analysis

Descriptive analysis of pharmacist-led interventions

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4. Preliminary results

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Data Collection-to date

5520 new pharmacotherapy visits between 1998 and 2017

286 patients had new visits for diabetes between July 1, 2009 and December 31, 2013

Patients with no follow-up in ≥ 12 months and those meeting exclusion criteria eliminated

79 patients to be included in initial data collection and analysis

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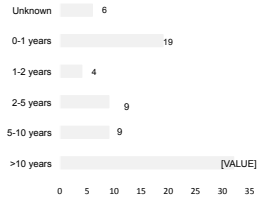
Demographics – to date

Average A1c at baseline: 10.12
Median A1c at baseline: 9.55

Gender, *n*=79

Average Age at baseline: 56.1
Median Age at baseline: 57.8

Duration of Diabetes, *n*=79



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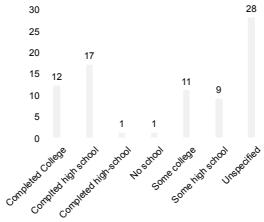
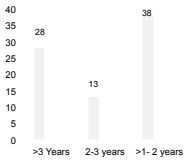
Demographics – to date

Education Completed



Continuity of Care



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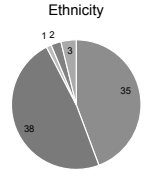
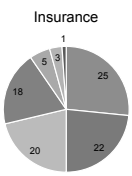
Demographics-to date

Ethnicity



- White or Caucasian
- Black or African American
- Asian
- American Indian or Alaska Native
- Not Specified

Insurance



- Commercial
- Medicare
- Medicare + Supplemental
- Uninsured
- Medicaid
- Medicare/Medicaid
- Unspecified

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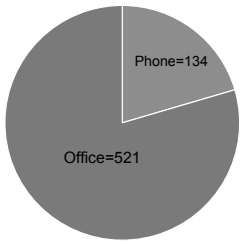
Pharmacist encounters-to date (*n*=22)

Pharmacist Encounters in 22 patients



Total: 655 encounters

Average duration of follow up: **5.21 years**

Average of **29.7** encounters per patient

Average of **5.7** encounters per patient/year

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Pharmacist Medication Interventions-to date (*n*)=22

Non-Insulin Medications
- 11 (50%) agent initiations
- 20 (91%)up-titrations
- 14 (64%) down-titrations
- 17 (77%) discontinuations

Insulin
- Basal initiated in 7 (32%) patients
- Basal up-titrated in 14 (64%) patients by an average of 2.9 units/ titration
- Bolus initiated in 6 (27%) patients
- Bolus up-titrated in 6 (27%) patients by an average of 7.9 units/ titration

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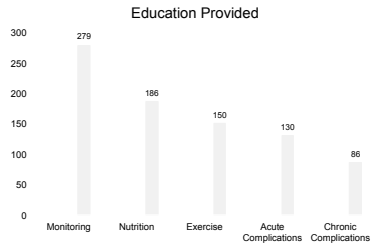
Education Provided-to Date (*n*=22)



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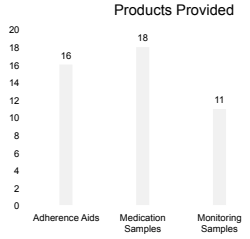
Other Interventions- to Date (*n*=22)



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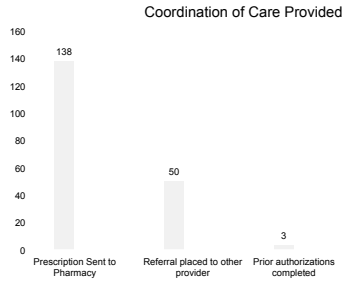
Other Interventions- to date (*n*=22)



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Limitations

- Single-center study
  - Patient population may differ from other populations
- Retrospective in nature
- Variations in documentation
- Variations in interpretation of documentation

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5. Conclusions

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Conclusions

- Assessment of pharmacist-led interventions in diabetes has yet to be performed
- Findings may be applied to various ambulatory care settings
- Final data collection commencing
- Final analyses pending

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Assessment questions

1.
of a pharmacists on diabetes outcomes, how long are patients being followed?

a. Up to 1 year
b. Up to 2 years
c. Up to 3 years
d. Up to 5 years

2. Which of the following provides pharmacists the ability to work under collaborative practice agreements in Oklahoma:

a. Oklahoma Administrative Code 353.30
b. Oklahoma Administrative Code 535:10-9-5
c. Oklahoma Administrative Code 535:15-3-15.1
d. Oklahoma Administrative Code 164.512

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