The IMPACT of Clinical Pharmacy Services on the Health of High-Risk Patients with Diabetes

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Abstract

Clinical Pharmacy Services (CPS) within a primary care setting helps identify and address barriers to care, enhance patient self-management and improve health and safety outcomes for high-risk patients with diabetes. High risk patients are challenged with co-morbidities, multiple medications, homelessness, lack of medical insurance, limited financial resources, language and cultural barriers and low health literacy. At Zufall Health Center (ZHC), a federally qualified health center, CPS is provided by a bilingual, culturally competent pharmacist who is a member of a multidisciplinary team. Through a series of on-going visits with the patient and the family, the pharmacist assesses the patient's attitudes, knowledge and cultural beliefs on diabetes. The pharmacist determines literacy levels, comprehension, lifestyle behaviors and socio-economic factors that affect health management, and provides tools and educates the patient on self-management skills. In the first year (June 2011 through July 2012) of Project IMPACT-Diabetes, funded by the APhA Foundation, 88 patients who are enrolled in the program have experienced improvements in health outcomes, have increased their access and adherence to medications, have improved understanding of their conditions and how to self-manage, and are experiencing reduced adverse events. In the cohort, there has been a decrease in Hemoglobin A1c levels by 0.9 % (P = 0.00177), a decrease in diastolic blood pressure of 2.3 mm Hg (P = 0.009892), and a decrease in LDL-C by 13.9 mg/dL (P = 0.01268). Rates of adverse events and potential adverse events are also decreasing. Integrated CPS results in improvements in the health and safety outcomes of high risk patients with diabetes who are enrolled in the program.

Methods

Integrated CPS has been provided at ZHC since 2009 when the center joined HRSA's Patient Safety and Pharmacy Services Collaborative (PSPC). In 2011, the center was chosen as a Project IMPACT-Diabetes site to expand CPS to high risk patients with diabetes facing homelessness, financial barriers, co-morbidities and other conditions. Implementation steps included:

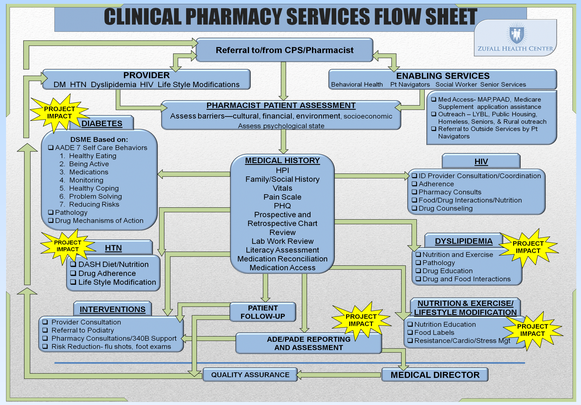
- Adoption of ZHC Project IMPACT-Diabetes curriculum to enhance its existing CPS program
- Pharmacist became a CDE to improve her effectiveness as a provider and educator
- At the Morristown site, the CPS hours were expanded
- Staff identified high risk patients with diabetes including those that
  - ✓ have HbA1c levels above 7%
  - ✓ take an average of 6 medications daily
  - ✓ have an average of 4 chronic conditions
  - ✓ have significant socio-economic barriers
  - ✓ speak a language other than English
  - ✓ are recent immigrants
  - ✓ lack health insurance
  - ✓ have low literacy

Patients that met criteria for enrollment were evaluated with a self-management tool and given education and counseling on their medications and conditions. Baseline data was collected including biometrics and laboratory values, and entered into an Access database managed by the APhA Foundation. At each follow up visit, data on enrollees was updated. On a quarterly basis, data was extracted and analyzed by APhA staff. For ADEs and pADEs, every visit was reviewed by the pharmacist and the Chief Medical Officer to determine if events occurred based on established criteria.[1] Rates were tracked on a quarterly basis using an Excel spreadsheet.

Methods – cont'd

The following flow sheet describes our CPS program. Through a series of ongoing visits with the patient and family, the pharmacist:

- identifies patient barriers towards treatment and attitudes,
- assesses knowledge and cultural beliefs,
- assesses literacy level and self-management skills,
- determines lifestyle, cultural, socioeconomic factors that may present barriers, and
- customizes education to assist the patient in self care.



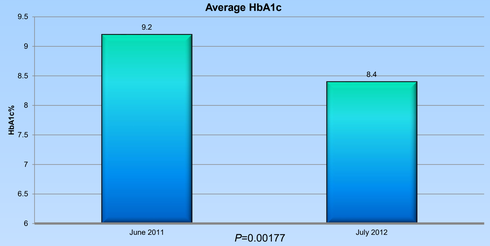
The pharmacist uses the AADE Core Curriculum based on the AADE 7 Self Care Behaviors System[2] for Diabetes Self Management Education (DSME). Plain language materials used include the ADA's "Where Do I Begin", the ACP's "Living with Diabetes", the Plate Method, and others. Completed assessments help educate the patient and their family along with "Teach Back" and "Show Me" methods. Diet and nutritional counseling is given following ADA guidelines, and education focused on hyperglycemia and hypoglycemia avoidance and insulin management serves to prevent hospitalizations due to medication errors and adverse events.

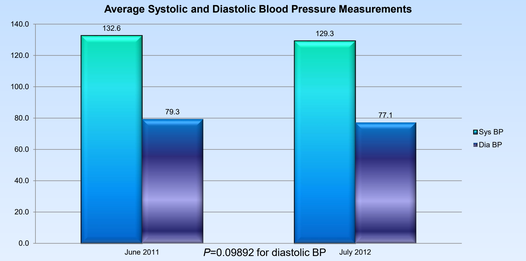
Results

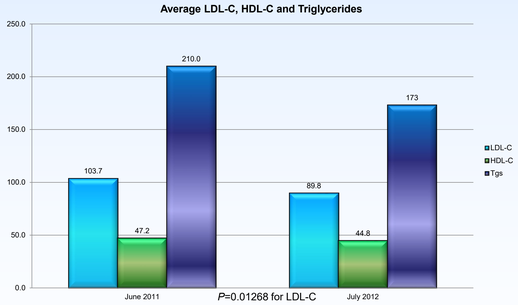
Eighty-eight (88) patients were enrolled starting in June 2011 and followed through July 2012. After the first 12 months of Project IMPACT-Diabetes implementation, our results are as follows:

- The average Hemoglobin decreased from 9.2% to 8.4%
- The average diastolic blood pressure decreased by 2.2 mm Hg
- The average LDL-C levels decreased by 15.6 mg/dL
- The average LDL cholesterol is at 79.9 mg/dL

Results – cont'd

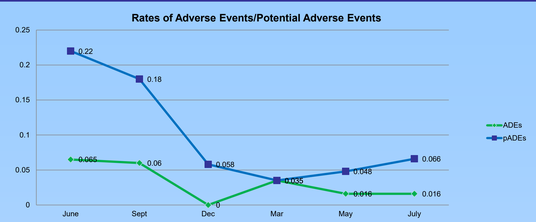






After one year of program implementation, rates of adverse events and potential adverse events in the cohort have decreased, showing a 30% reduction in pADE rates, and 25% reduction in ADE rates.

Results – cont'd



Discussion

Integration of the pharmacist into the multidisciplinary health care team and provision of CPS have served to improve patient safety and outcomes, and has helped reduce the cost to the health care system. Although we do not have a measure for cost-savings, our program models after those that have[3,4]. Support from the following have contributed to our success:

- The APhA Foundation
- ZHC's Leadership Team
- Participation in the PSPC[5]
- ZHC's 340B community pharmacy partners
- Project IMPACT Program Coordinators and Consultants
- Adoption of the AADE Core Curriculum and the AADE7 Self Care Behaviors

Our CPS program is reproducible, may be customized by health centers and other health care settings, may result in reduction of costs to the entire health care system, and enhances the quality of care of participants.

Conclusion

Participants of ZHC's Project IMPACT-Diabetes have had notable improvements in health outcomes such as HbA1c levels, diastolic blood pressure readings, and LDL-C values. Through the use of an enhanced curriculum and self-management tools, the Clinical Pharmacist nurtures trust and addresses barriers to improve the health and well being of patients in the program. In addition, safety outcomes in this population show decreases in events that harm patients and affect quality of life. Patients and their families also report improved enhanced self-esteem as they gain self-management skills through participation in the program. From our continuing participation in Project IMPACT-Diabetes, we expect to see additional and significant improvements in the health and safety outcomes of high risk patients with diabetes.

References

1. Chen, S, Pharm D, USC: USC School of Pharmacy, Medication Therapy Management Protocol – July 2012
2. AADE website www.diabeteseducator.org
3. Bunting BA, Smith CH, Sutherland SE, The Asheville Project: clinical and economic outcomes of a community-based long-term medication therapy management program for hypertension and dyslipidemia, J Am Pharm Assoc. 2008 Jan-Feb;48(1):23-31
4. Fera T, Bluml B, Ellis WM, Diabetes Ten City Challenge: Final economic and clinical results, J Am Pharm Assoc . 2009;49:e52-e60
5. HRSA Patient Safety and Clinical Pharmacy Services Collaborative- National Performance Story PSPC 3 – October 2010-September 2011 http://pspcnationalperformancereport.org/

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