May 4th, 12:00 AM

# Clinical Practice Workflow Implementation for the Improvement of Diabetic Metric Compliance

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**Background:** The purpose of this study was to explore preventive Diabetes care and implement interventions to increase recommended testing compliance among patients with Type II Diabetes Mellitus. Recent guidance suggests the management of screen-detected Diabetes can be optimized using multifactorial interventions to improve overall disease burden, patient outcomes, and cost-savings[1]. Specific aims of this study are to identify prohibitive factors associated with Diabetic non-adherence of regular testing and preventative screening along with clinical workflow points ripe for innovation. Ultimately, we hope to reinvigorate the clinical workflows for Diabetic patients in order to boost patient outcomes related to hemoglobin A1c, microalbumin, diabetic retinopathy, and adherence to statin medication.

**Methods:** This study employed a multi-faceted approach beginning with the distribution of surveys to patients in the Stratford Family Medicine Office in order to gauge their health literacy level pertaining to Diabetes management. We crafted educational pamphlets outlining the risks of uncontrolled Diabetes along with recommended maintenance screening and specialist visits that were shared with patients, posted in all exam rooms, and circulated via email at the completion of each visit. Our inclusion criteria was limited to adult patients with Type II Diabetes Mellitus with an established Primary Care Provider at the Rowan Stratford Family Medicine Office. This study assessed the efficacy of our novel clinical workflow interventions, consisting of a Diabetic Education Questionnaire, Diabetic Intake Form, and Diabetic Passport, to improve patient compliance as measured by adherence with quarterly HbA1c testing, annual microalbumin levels, annual ophthalmologist eye examination, and statin refill rates. Patient electronic medical records were evaluated to determine baseline levels for all laboratory values. Data analysis was completed using Statistical Package for the Social Sciences (SPSS).

**Results:** There were 326 patients included in our data analysis. Our SPSS results revealed mean systolic blood pressure decreased following our interventions while diastolic blood pressure increased. Both results were statistically significant with p-values of 0.014 and 0.003, respectively. With respect to ophthalmologic exam compliance, microalbumin urine testing, and HbA1c checks, our intervention did not produce statistically significant change. Statin medication compliance decreased following our interventions. These results are reflected in *Tables 1-6*.

**Discussion**: The results of our analysis were both promising, yet surprising. The discordant blood pressure results suggest that blood pressure alterations during our study period were likely the result of multiple factors. Our study window did capture the holiday season and it is possible lifestyle trends during these months had a sizable influence. Our educational and clinical workflow interventions did not have a statistically significant impact on compliance with Diabetic ophthalmologic exams, urine microalbumin, and HbA1c testing compliance. It is plausible that the barriers to entry for these maintenance tests were more involved and required greater specialist coordination. Further, the puzzling result of a decrease in statin medication compliance was likely attributable to confounding variables including seasonal trends and possible socioeconomic factors limiting medication access. Overall, this project cemented a clear path forward for increasing Diabetes educational information in a community office setting and laid a strong foundation for future quality improvement projects targeting clinical workflow improvement. There is a great deal of work still left regarding patient compliant related to Diabetes health.

**Table 1. Average Systolic Blood Pressures of Pre and Post Quality Improvement Intervention**

| Systolic Blood Pressure | | | |
|---|---|---|---|
| | N | Mean (Std. Dev) | P-value |
| | | | **0.014** |
| Pre-Intervention | 41 | 132.68 (21.06) | 21.006 |
| Post-Intervention | 285 | 126.26 (14.65) | 14.645 |

**Table 2. Average Diastolic Blood Pressures of Pre and Post Quality Improvement Intervention**

| Diastolic Blood Pressure | | | |
|---|---|---|---|
| | N | Mean (Std. Dev.) | P-value |
| | | | **0.003** |
| Pre-Intervention | 41 | 69.07 (9.93) | |
| Post-Intervention | 285 | 74.29 (10.49) | |

**Table 3. Chi Square Analysis of Diabetic Eye Exam Compliance and Intervention Timeline**

| Diabetic Eye Exam Compliance | | | |
|---|---|---|---|
| | Pre-Intervention (N=41) | Post-Intervention (N=285) | P-value |
| | | | 0.364 |
| No | 39 (95.1) | 259 (90.9) | |
| Yes | 2 (4.90) | 26 (9.10) | |

**Table 4. Chi Square Analysis of Statin Medication Compliance and Intervention Timeline**

| Statin Medication Compliance | | | |
|---|---|---|---|
| | Pre-Intervention (N=41) | Post-Intervention (N=285) | P-value |
| | | | **0.047** |
| No | 9 (22.0) | 108 (37.9) | |
| Yes | 32 (78.0) | 177 (62.1) | |

**Table 5. Chi Square Analysis of Urine Micro-Albumin Compliance and Intervention Timeline**

| Micro-Albumin Urine Test Compliance | | | |
|---|---|---|---|
| | Pre-Intervention (N=41) | Post-Intervention (N=285) | P-value |
| | | | 0.489 |
| No | 4 (26.7) | 65 (35.3) | |
| Yes | 11 (73.3) | 119 (64.7) | |

**Table 6. Chi Square Analysis of Hemoglobin A1c Compliance and Intervention Timeline**

| Hemoglobin A1C Compliance | | | |
|---|---|---|---|
| | Pre-Intervention (N=41) | Post-Intervention (N=285) | P-value |
| | | | 0.397 |
| No | 3 (7.70) | 34 (12.4) | |
| Yes | 36 (92.3) | 241 (87.6) | |

**Acknowledgments**: We acknowledge the Rowan Family Medicine Office and staff in Stratford, NJ for their support and dedication to this study. The study was approved by Rowan's Institutional Review Board.

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