T1D Exchange: UndeFEETed Quality Improvement to Increase Rates of Documented Diabetic Foot Exams for Outpatient Type 2 Diabetes Pediatric Patients

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Introduction

As the incidence of pediatric type 2 diabetes mellitus (T2DM) increases, so does the incidence of microvascular complications. This is especially concerning for patients who are diagnosed at younger ages and therefore have diabetes for longer duration increasing risk for irreversible complications such as neuropathy. Current screening guidelines for the diabetic foot exam for T2DM patients recommend annual screening starting at diagnosis.

Key Components of Diabetic Foot Exam:

Inspection	Neurological	Vascular
Skin & Muscle	10g Monofilament and 1 of 4:	Foot Pulses
Deformities, including nails	Vibration 128Hz Tuning Fork Pinprick Ankle Reflexes Vibration Perception Threshold	Ankle Brachial Index if indicated
10-15 seconds	2-3 minutes	20-40 seconds

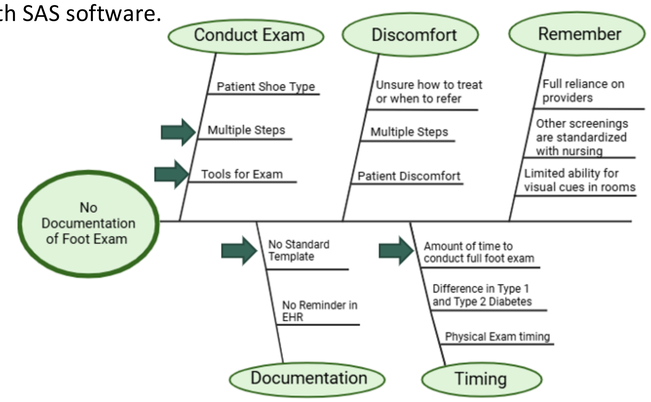
In our outpatient clinics we had a decrease in the number of documented foot exams after a change in electronic health record (EHR) system from 25% to <5%. Our goal was to improve documentation of diabetic foot exams in our T2DM patients to at least 25% within an 8-month timeframe.

Methods

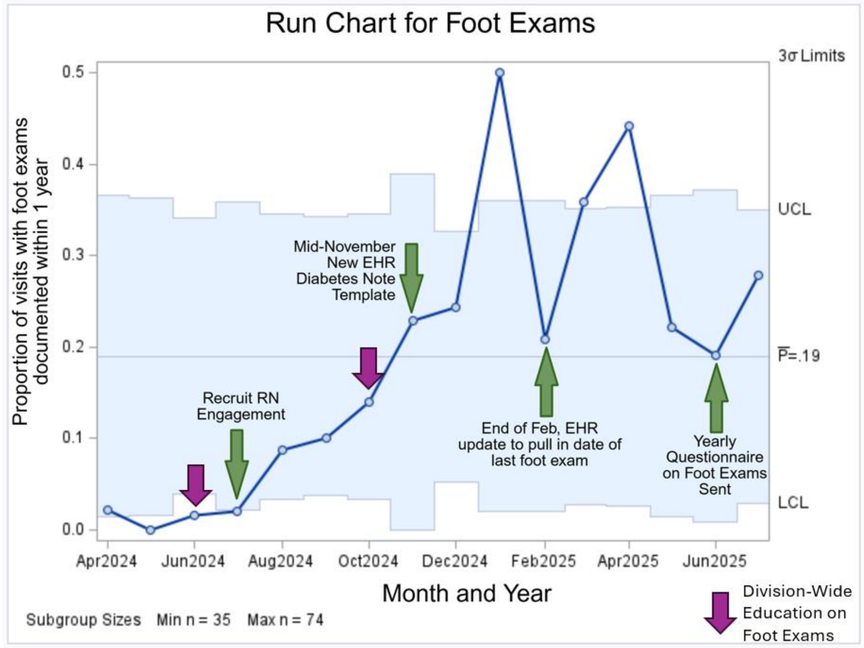
We formed a multidisciplinary team comprising of physicians, nurse practitioners, and clinic nurses (RNs).

Discussions led to creation of a fish bone diagram and driving factors. We developed PDSA cycles addressing these factors. Our four leading drivers were: tools for conducting the exam (monofilament and tuning forks), lack of standardized template, education for steps of exam, and time to conduct/document exam.

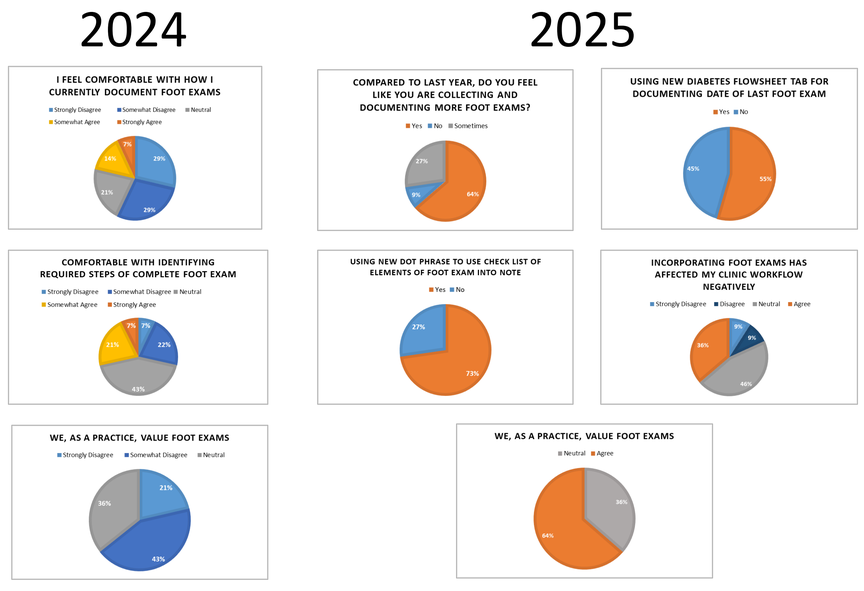
We conducted manual chart reviews of patients with T2DM seen within the two months prior to EHR change (January and February of 2023, documentation rate 25%) and then after initiation of PDSA cycles monthly. Patient charts were reviewed from either first two or last weeks of a month. Statistical analysis was performed using Chi-Square to calculate p-values using SPSS software and Control Charts created with SAS software.



Results: Change in Documentation



Results: Change in Provider Experience



Results

Within an 8-month timeframe, documented diabetic foot exams increased from less than 5% to 22% (p-value <0.01) prior to creation of our new diabetes note template. Once more than half of providers were utilizing the new template our documentation rate increased to 50%.

Our 1-year provider follow-up surveys revealed that there was an improved collective dedication to collection of foot exams and improved comfort with time for conducting exam and documentation.

We included data from the months following our active QI changes (PDSA runs were April 2024 to January 2025), as our goal is to maintain increased documentation rates without requiring regular check-ins and reminders with providers.

Conclusions

Through a data-informed, multidisciplinary approach, we achieved noticeable improvements by fostering a cultural shift in provider value and dedication to documenting foot exams, rather than relying solely on automated EHR interventions. The engagement of clinic RNs had the most significant impact on improving documentation rates.

Initial follow-up months show that our initial progress is sustained with a new median documentation rate of 19%. We will be working with our EHR technology team and nursing teams to investigate ways to ensure the significant progress we saw in January 2025 can be sustained.

Resources

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Section 12: Retinopathy, Neuropathy, and Foot Care. Clin Diabetes 15 April 2024; 42 (2): 214–215. https://doi.org/10.2337/cd24-a012 IBM Corp. Released 2023. IBM SPSS Statistics for Windows, Version 29.0.2.0 Armonk, NY: IBM Corp

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Study data were collected and managed using REDCap electronic data capture tools hosted at UAB/Childrens of Alabama.1,2 REDCap (Research Electronic Data Capture) is a secure, web-based software platform designed to support data capture for research studies, providing 1) an intuitive interface for validated data capture; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for data integration and interoperability with external sources.

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