Lehigh Valley Health Network
LVHN Scholarly Works

Department of Medicine

Improving Outcomes in Diabetic Patients

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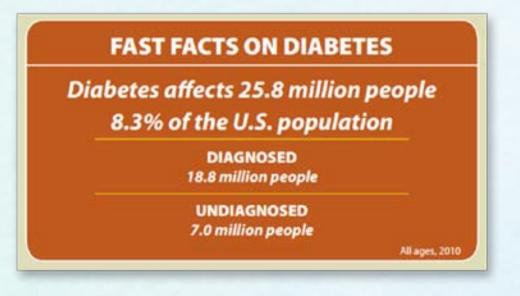
Improving Outcomes in Diabetic Patients

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Number of Adults Diagnosed with Diabetes
1980-2011

Burden of Illness: Diabetes

FAST FACTS ON DIABETES
Diabetes affects 25.8 million people 8.3% of the U.S. population
DIAGNOSED 18.8 million people
UNDIAGNOSED 7.0 million people

2010:
- Among US residents aged 65 yo and older, 10.9 M, or 26.9% had diabetes
- 215,000 people younger than 20 years had diabetes (type I or II) in USA
- 1.9 M people aged 20+ newly diagnosed with diabetes

2005-2008:
- Based on fasting HbA1c levels, 35% US adults aged 20+ had prediabetes (of those 50% were adults older than 65)
- Applying this percentage to the entire US population in 2010 yields an estimated 79 M American adults 20 years or older w/ prediabetes

Diabetes is the LEADING cause of kidney failure, nontraumatic lower-limb amputations, and new cases of blindness among adults in the United States (major contributing cause of heart disease and stroke)
- Diabetes is the 7th leading cause of death in the United States

Source: CDC. 2011.

AIM Statement
- S.M.A.R.T Criteria:
- **S= Specific** (Who, what, where, when, and why)
- **M=Measurable** (Concrete criteria for assessing progress toward goal attainment)
- **A=Attainable** (Must be obtainable)
- **R=Reasonable** (Must be something you are willing to work towards)
- **T= Time Frame** (Aim needs to be grounded within a time frame)

> "Working with the internal medicine cohort A residents and staff at outpatient clinic, we will increase the amount of high risk, diabetic patients receiving monofilament podiatric exams to 90% over a 6 month time period."

What are we trying to accomplish?
- To increase the number of "high risk" diabetic patients receiving monofilament diabetic foot exams.

Reason for Effort
- Diabetes increases risk for peripheral neuropathy. Peripheral neuropathy increases risk for skin breakdown, Charcot joints, and open wounds which predispose to bacteremia, sepsis, osteomyelitis, and potentially need for amputation. These complications impair functional capacity, standard of living, and perpetuate decline.

Improvement Model

PDSA cycle-Small rapid cycles of change
Langley, Nolan, et al. 1996
Weblink Resources: www.ihi.org/ihi/sitemap.aspx

PDSA Cycle
- PDSA Cycle #1: Incorporate all diabetic patients in Lehigh Valley Physicians Practice (not just 'high risk')
- PDSA Cycle #2: Reveal resident cohort data in addition to practice data to encourage personal accomplishment.
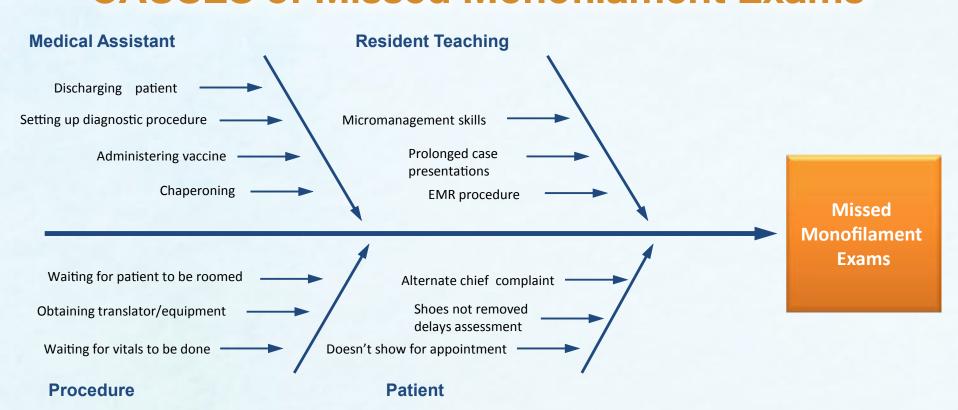
How will we know that a change is an improvement?
- Track the percentage of diabetic patients who receive a yearly monofilament exam in our practice over 6 month time period.

Barriers to monofilament exam
- Providers did not know the patient was "high risk" diabetic patient
- Medical assistant occupied w/ multiple tasks
- Resident provider naïve of monofilament technique
- Resident provider thought the test was already done by medical assistant

CAUSES of Missed Monofilament Exams

Resident Education

Goals: increase house staff skills
- How to properly assess for diabetic neuropathy using the Semmes Weinstein monofilament testing.
- Notification indicating high risk patient in CPO
- Increase house staff communication w/ MA's regarding completion of task
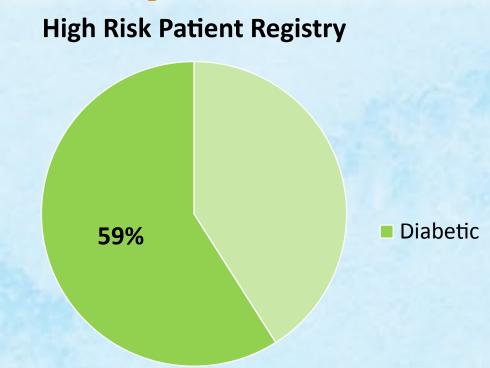
Gaps in Resident Knowledge

Content Knowledge
- Indications for monofilament exam
- Equipment necessary for exam
- Understanding of who are the "High Risk" patients

Procedural Knowledge
- What are the steps necessary to conduct a monofilament exam
- Effective ways to communicate with MA/RN

Preliminary Practice Data
High Risk Patient Registry

59% Diabetic

- November 2013: 671 total high risk patients
- 391 patients diabetic (59% of high risk registry)
- High Risk Patient: defined as patients with multiple comorbidities and highest utilizers healthcare resources.

Implementation
- Nurses/Medical assistants Involvement
- Education for residents and staff
  - Monofilament Article
- Pre-test and post-test
- Reminders (signs in rooms)

Education
- Diabetes Care Task Force Article
- Monofilament Pretest/Posttest: 5 questions based on lecture training session
- How to document monofilament in CPO 11/19/13 training session:
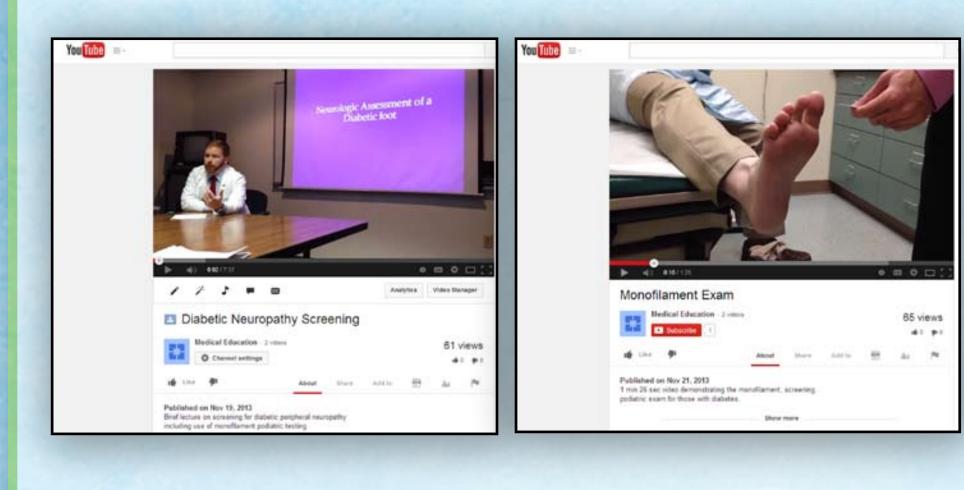- 10 minute lecture on diabetic foot exams
- Monofilament video

Comprehensive Foot Examination and Risk Assessment

Pre-test and Post-test
- Number of staff taking exam: 16
  - Medical Assistants
  - Registered Nurses
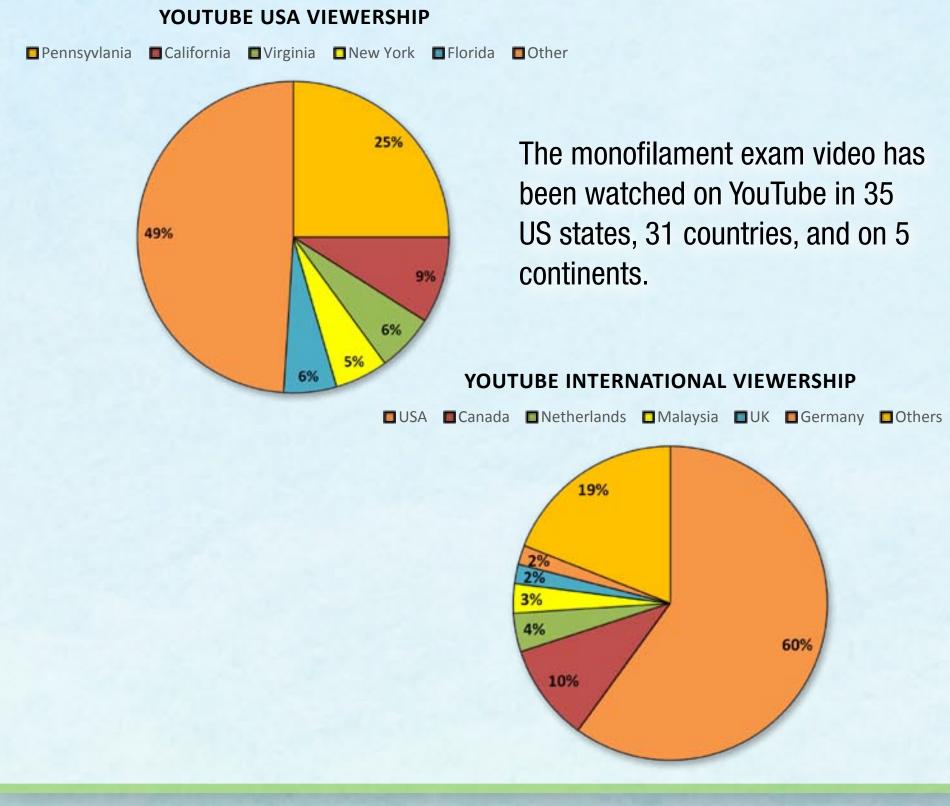 - Resident Physicians
  - Attending Physicians
- Staff took pre-test, watched instructional video (based on article), took post-test
- 5 questions based on article: questions regarding the monofilament device, Diabetes epidemiology, risk factors, and technique
- Pre-test mean: **40%**
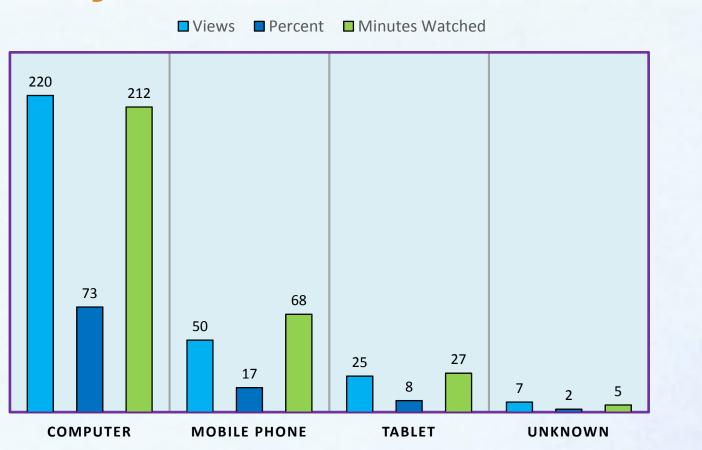- Post-test mean: **96%**

Exam Mean

PreTest PostTest

- Diabetic Neuropathy Lecture provided for staff members by Resident physician
- Lecture was recorded on video
- Video uploaded to www.youtube.com and made publicly available

YOUTUBE USA VIEWERSHIP
Pennsylvania California Virginia New York Florida Other

The monofilament exam video has been watched on YouTube in 35 US states, 31 countries, and on 5 continents.

YOUTUBE INTERNATIONAL VIEWERSHIP
USA Canada Netherlands Malaysia UK Germany Others

Access by Device: Monofilament Exam

Views Percent Minutes Watched

Conclusions

Regarding internet as a tool for education:
- Unexpected results for internet viewership
- Broad exposure locally, nationally, and internationally
- Short video clips
- People access medical information on multiple platforms
- A way to disseminate information and utilize for future reference

LVPP Results

October 2013	67%
November 2013	67%
December 2013	69%
January 2014	68%
February 2014	68%
March 2014	68%
April 2014	68%
May 2014	68%

Run Chart
LVPP Diabetic Foot Exams

2013 - 2014

Conclusions
- Learning the difference between research and quality improvement initiatives
- Organization, leadership, and population health
- Importance of team-based collaboration and education
- Assessment of a need, application of change, follow-up outcome measures … and repeat!
- Documentation: 'Responsible Provider', EPIC implementation?
- Differentiating resident provider data per cohort
- Preventive care during acute illness or unrelated chief complaint
- Consistency/Efficiency
- Short instructional videos > longer duration content

Future
- Continue to trend outcomes w/ PDSA cycles
- More unified residency goals/QI projects
- Unifying network goals with practice goals
- Incorporation into resident and medical student curriculum

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