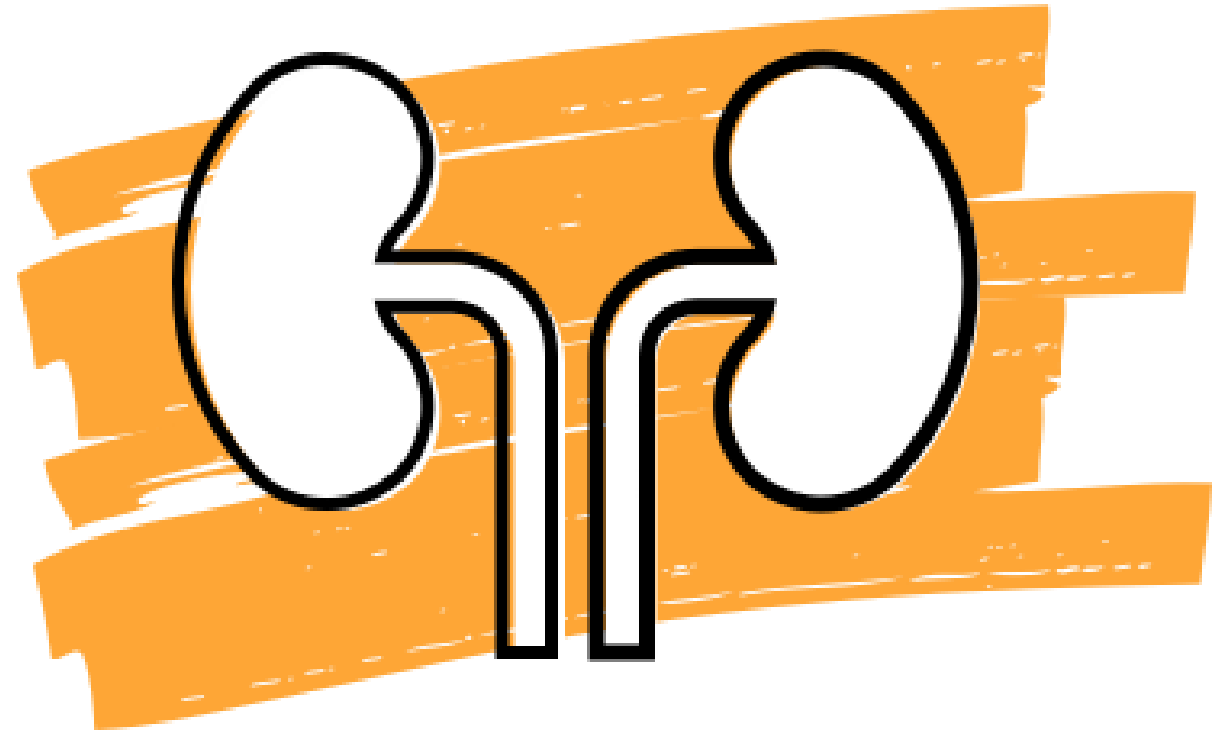


Improving Diabetic Kidney Disease Screening

An Erlanger Internal Medicine
Resident QI Project



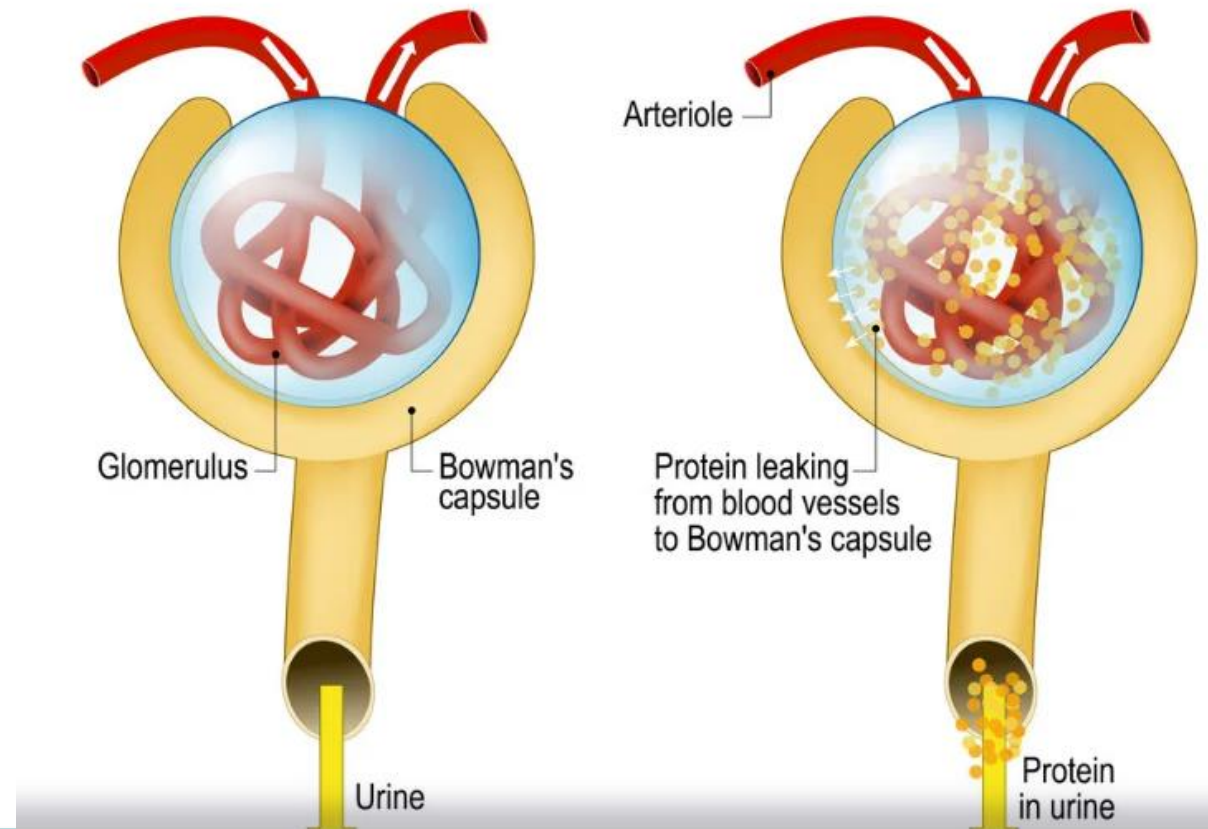
Improving Diabetic Kidney Disease Screening

Team Members:

- Dr Tanner Bond
- Dr Victor Kremser
- Dr Alyssa Ferrell
- Dr Nicholas Pumilia - Faculty Supervisor

Background

- Diabetes mellitus is one of the leading causes of death in the United States and plays an important role in mortality from other causes including heart disease and stroke.
- 44% of all new cases of end-stage kidney disease are diabetic related.
- These are patients that would warrant specific treatment such as ACE or ARB, SGLT-2i, or GLP-1 initiation.



Problem Statement

- American Diabetes Association (ADA) recommends that a urinary albumin-to-creatinine ratio (UACR) along with renal function testing should be assessed yearly in patients with type 1 and type 2 diabetes
- Adequate screening rates for diabetic kidney disease is suboptimal across the US with rates at approximately 43% according to one study
- Failure to properly screen these patients results in patients missing critical therapy that could potentially slow progression of kidney disease

Aim of the project

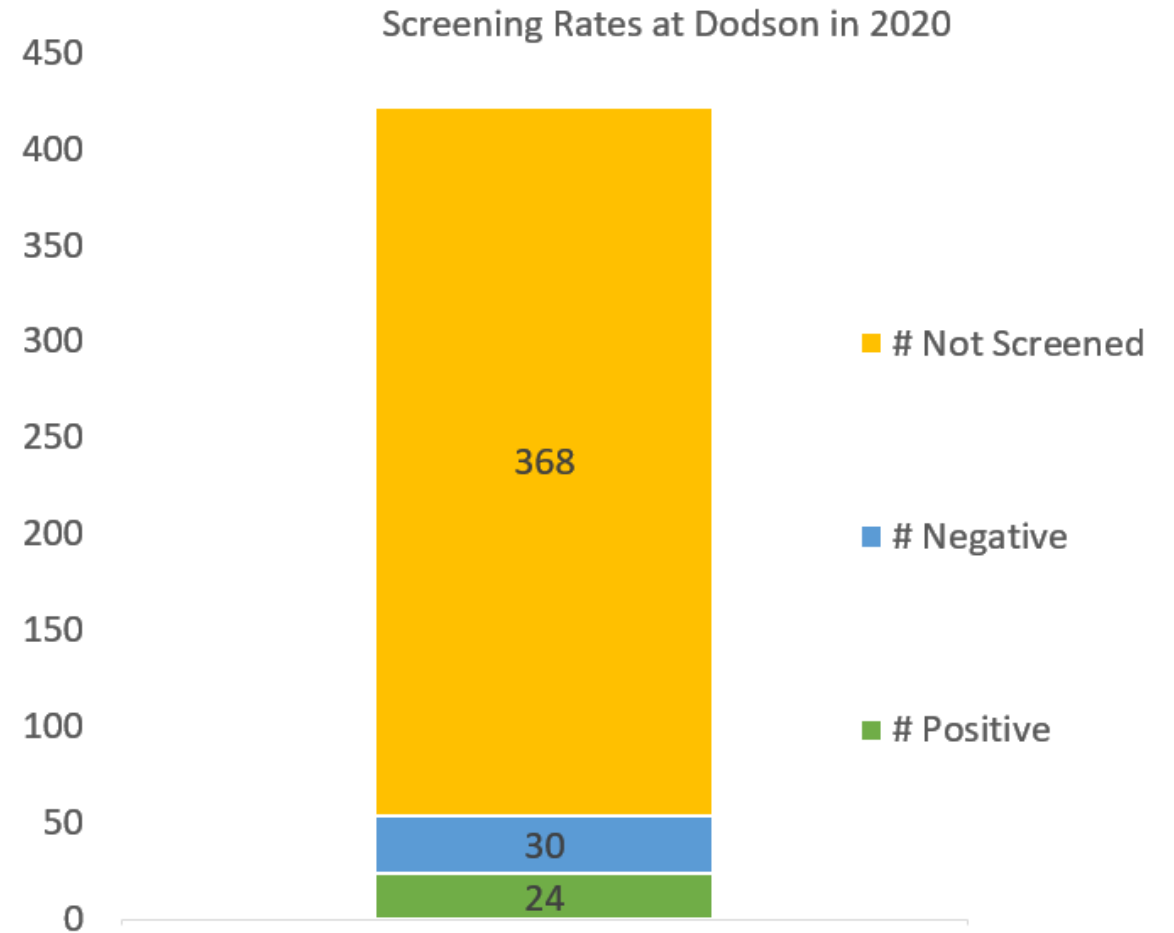
AIM 1: Quantify the deficiency in outpatient screening for diabetic kidney disease with the use of the urine albumin creatinine ratio.

AIM 2: Identify barriers to the proper screening for diabetic kidney disease.

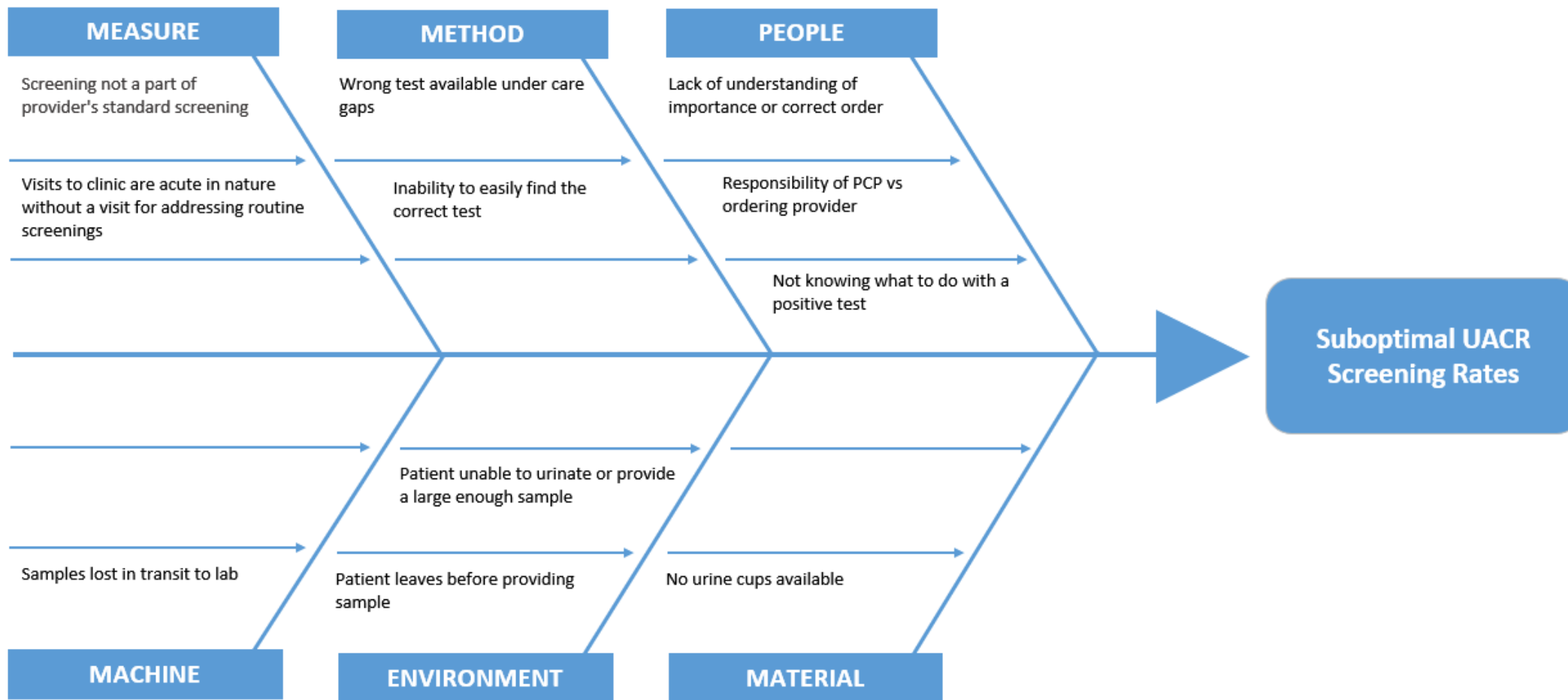
AIM 3: Improve compliance with yearly screenings of urine albumin to creatinine ratio via progress note reminders, educational handouts, nursing-driven protocols, and printouts that will be placed in the dictation room of the clinic.

Data Collection Process

- Patient seen by a resident during July 1, 2020 - June 30, 2021
- Patients included
 - Diabetes type 1 or 2
- Data type
 - Yes/No on a reported UACR
 - Yes/No an abnormal UACR



Causes Leading to the problem



Improvement Implementation

1. Resident education beginning January 1st with the Yale Office Based Medicine topics taught during didactics weeks.
 - Includes required reading before the session, discussion among residents regarding basics of screening, and questions at the end to assess understanding.
2. Alteration of clinic templates to leave a section for care gaps.
3. Worked with IT to change the lab to UACR.

Yale Office Based Medicine Curriculum

MICROVASCULAR COMPLICATIONS ASSOCIATED WITH TYPE II DIABETES

Sameer Khan, MD
Week 1

Educational Objectives:

1. List common microvascular complications associated with type II diabetes
2. Understand the pathophysiologic mechanisms that contribute to these complications, namely diabetic nephropathy and retinopathy
3. Identify screening tools and therapeutic strategies and goals according to guidelines
4. Develop an approach for monitoring patients to prevent the development of diabetic microvascular complications

Note Implementation of Care Gaps

Healthcare maintenance

Health Maintenance

Topic	Date Due
• Mammogram	Never done
• Hepatitis C Screening	Never done
• Urine Microalbumin	Never done
• COVID-19 Vaccine (1)	Never done
• Pap Smear	Never done
• HPV Testing	Never done
• DTaP, Tdap, and Td Vaccines (3 - Td or Tdap)	09/24/2009
• CT Low Dose Lung Cancer Screening	Never done
• Colonoscopy	Never done
• Zoster (Shingles) Vaccines (1 of 2)	Never done
• Diabetic Eye Exam	08/11/2021 (Originally 4/2/1973)
• Pneumococcal 0-64 Combined (1 of 2 - PPSV23)	09/01/2021 (Originally 4/2/1969)
• Influenza Vaccine (1)	09/01/2021

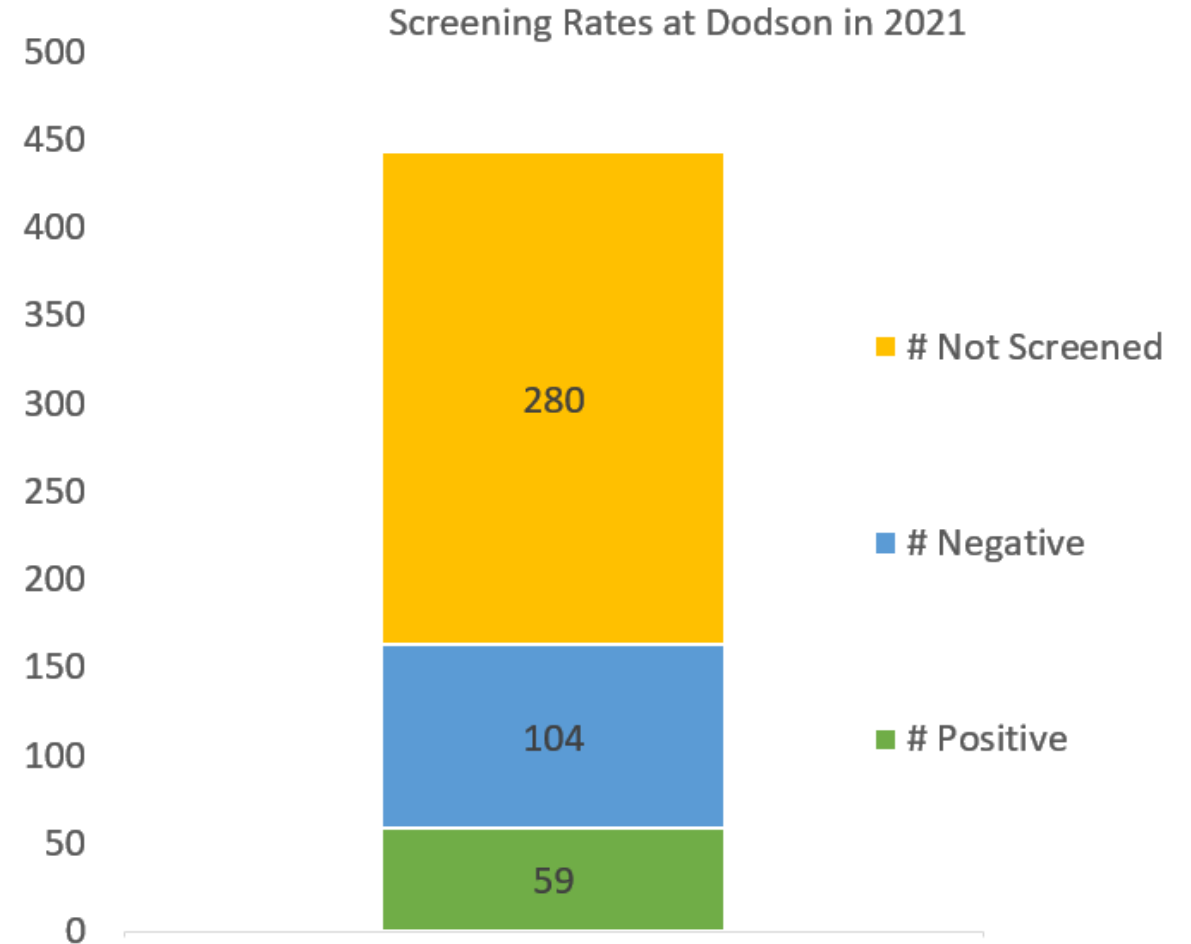
IT Department Modification of Epic

The screenshot displays the Epic patient care interface. On the left sidebar, under 'CARE GAPS', there is a list of items including 'Medicare Wellness Visit (MWV)', 'COVID-19 Vaccine (1)', 'Annual Physical Exam', and '3 more care gaps +6 awaiting completion'. A red arrow labeled '1' points to this section. The main content area is divided into several sections: 'Diabetes Screening' (labeled '2'), 'Zoster (Shingles) Vaccines', and 'Influenza Vaccine'. Under 'Diabetes Screening', there are two items: 'HP HEALTH MAINTENANCE COMPLETING DIABETES SCREENING PROCEDURES' and 'Diabetes mellitus screening [Z13.1]'. Under 'Zoster (Shingles) Vaccines', there is a sub-section 'HP IMM ZOSTER VACCINE HEALTH MAINTENANCE' with a description and two items: 'Zoster Recombinant Vaccine' and 'Need for zoster vaccine [Z23]'. Under 'Influenza Vaccine', there is a sub-section 'HP HEALTH MAINTENANCE COMPLETING INFLUENZA VACCINE PROCEDURES' with two items: 'Need for immunization against influenza [Z23]' and 'Flu vaccine quadrivalent 6mo to 64yr preservative free'. A red arrow labeled '3' points to the 'Microalbumin / creatinine urine ratio' procedure under the 'Diabetes Screening' section.

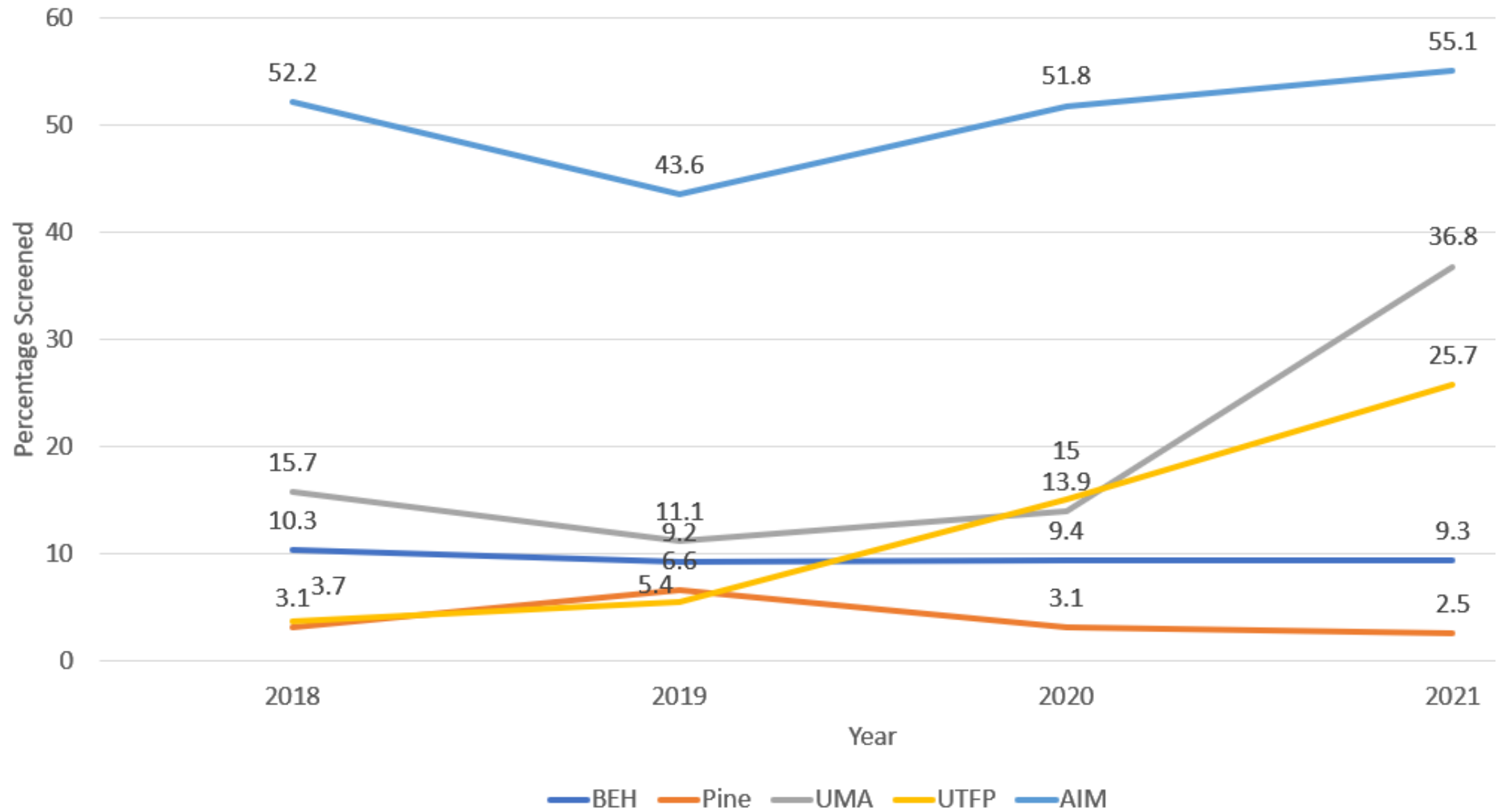
Post-Intervention Data

- Patient seen by a resident during July 1, 2021 - May 10, 2022
- Patients included
 - Diabetes type 1 or 2
- Data type
 - Yes/No on a reported UACR

- A 164% increased rate of screening over one year!



Rates of Screening Across Erlanger Clinics



Discussion

- Key breakthroughs included:
 - Appropriate use of SlicerDicer
 - Identifying that residents did not know the appropriate test
 - Realizing that the wrong order was the default in the care gaps
- The project addressed a simple fix with a potentially large impact, i.e. preventing or delaying patients from ultimately needing dialysis

Barriers/Lessons Learned

- Surprised about the initial lack of screening and amount of residents that knew the appropriate laboratory test.
- Challenges encountered: navigation of Epic/IT, ability to reach out to all residents and UMA Dodson Avenue staff.
- Key learnings throughout this project include the realization that it truly takes a multidisciplinary approach in order to accomplish such a task. Also, the fact that a small change such as ours can make such an impact on patient care is encouraging for future endeavors.

Next Steps

- The QI project reached our aim, and the screening rate continues to improve.
- Need to ensure that the upcoming intern class understands the importance of screening and teach them how to order the appropriate test.
- Continue annual education for existing residents on yearly screening.
- Will continue to look for additional or new barriers in the future.
- Change Care Gaps from “Urine Microalbumin” to “Diabetic Kidney Disease”



References and Appreciation

- Our supportive mentor, Dr. Pumilia, for his insight and encouragement.
- Dr. McCartt for offering a helpful hand.
- IT department, in particular Oliver Aaron, for assistance with Epic navigation.
- Fellow internal medicine residents for their participation and commitment to improving patient care.
- Additional nursing and staff at UMA Dodson Avenue Clinic for their patience and feedback.

References

1. <https://www.kidney.org/atoz/content/preventkiddisease> - front illustration
2. <https://clinical.diabetesjournals.org/content/39/1/14> - ADA recommendations
3. <https://www.vectorstock.com/royalty-free-vector/diabetic-nephropathy-kidney-disease-vector-23522989>
4. [https://www.mayoclinicproceedings.org/article/S0025-6196\(20\)30933-2/pdf](https://www.mayoclinicproceedings.org/article/S0025-6196(20)30933-2/pdf)