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# IMPLEMENTATION OF AN ULTRASOUND SCREENING PROGRAM IN A RURAL FAMILY MEDICINE PRACTICE FOR ABDOMINAL AORTIC ANEURYSMS

RACHEL CARPENTER

FAMILY MEDICINE ROTATION

STOWE VT, APRIL 2022

PROJECT MENTOR: DR. KATIE MARVIN



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# DESCRIPTION OF NEED



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- The American Academy of Family Physicians (AAFP) supports the USPSTF recommendation of a one-time screening assessment of all men aged 65 to 75 years old who have ever smoked for an abdominal aortic aneurysm (AAA) via ultrasonography – grade B recommendation.
- Despite this, few eligible patients are referred specifically for screening and many patients that are screened only have it performed as an incidental finding of other indications for imaging.
- AAA screening, when done, has demonstrated up to a 40% reduction in AAA specific deaths and a 3% reduction in all cause mortality after 13 years follow up<sup>2</sup>.
- The initiation of ultrasound use in a primary care clinic has the potential to not only increase AAA screening but also lead to more widespread use of this imaging modality on a comprehensive level.

# PUBLIC HEALTH COST



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- The mortality benefit of screening men aged 65-74 for abdominal aortic aneurysm is maintained up to 10 years and cost effectiveness becomes more favorable over time. To maximize the benefit from a screening program, emphasis should be placed on achieving a high initial rate of attendance and good adherence to clinical follow-up, preventing delays in undertaking surgery, and maintaining a low operative mortality after elective surgery. On the basis of current evidence, rescreening of those originally screened as normal is not justified.<sup>1</sup>
- In-office ultrasound can save patients from a referral to radiology and therefore from an additional healthcare visit and its associated costs.
- Decreased utilization of the Emergency Department and emergent surgery for ruptured or symptomatic AAAs.
- Use of Point of Care Ultrasound (POCUS) in family medicine can lead to better adherence to standard screening guidelines, faster diagnosis, and tailored treatment and follow up, even when examined outside of the evaluation of AAA screening.
- Use of POCUS in the evaluation of dyspnea, for example, can alter management in 58% of cases, find life-threatening diagnoses that were missed in the primary assessment of 14% of patients, and result in a significant reduction in time needed for diagnosis.<sup>2</sup>

# PUBLIC HEALTH COST



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	Description	Gross Charge	Discounted Cash Price	Minimum Negotiated Charge	Maximum Negotiated Charge	BC/BS of VT	Cigna	MVP
<b>At Copley Hospital:</b>	US RENAL/AORTA	\$436	\$392	\$291	\$383	\$383	\$371	\$291
<b>PCP (Stowe Family Practice) Office Estimates:</b>	US AAA Screening	\$70 minimum						

- The minimum estimated cost for Stowe Family Practice is around \$70 with the upper limit set based on what insurance would be able to reimburse, however this would still be less than the price for Copley Hospital.
- It's important to keep in mind that the above hospital price list does not include the separate charge for the radiology image interpretation which is billed separately to the patient.
- In the primary care setting a radiology overread could either be done at a decreased cost or more likely be unnecessary altogether.

# COMMUNITY PERSPECTIVE ON ISSUE



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## Dr. Ben Clements – Fellow of the Ultrasound Leadership Academy

- Easy thing to implement in the primary care office and as such would be a good foot in the door model to start up this practice and to expand down the line.
- Studies show that even operators with minimal training approach sensitivity and specificities seen with radiologists.<sup>4</sup>
- Specifically, ultrasound screening of AAA has a 94-100% sensitivity and 98-100% specificity.
- Ultrasound exams are non-invasive, convenient, and don't expose patients to radiation

## Dr. Katie Marvin – Family Medicine

- Would be a feasible intervention to integrate into primary care
- Cost and time savings overall to the patient

# INTERVENTION AND METHODOLOGY



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## I. Interview

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- Interviews were conducted with local community members who provided a unique perspective on the practical implementation and utility of POCUS in the rural primary care setting

## II. Feasibility

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- Gathered information was assembled, assessed, and shared with interested parties in order to create a preliminary implementation plan

## III. Implementation

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- An in-office training manual along with clinical and operational guidelines was created to be used for AAA screens in the office setting

# RESPONSE RESULTS



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- Ultrasound use in the primary care setting has the potential to increase screening compliance and save the patient and healthcare system time and money once a program has been created.
- Even when considering the experience level of clinicians, a Danish study found that inexperienced general practitioners achieved 100% accuracy for AAA >5cm compared to radiologists when the scan was performed on clinical indication as did a meta analysis when evaluating AAA >3cm.<sup>4</sup>
- After the implementation of ultrasound data could be extracted from the EMR to assess current rates of screening and compare to pre-implementation data.
- Pre-implementation data showed that in the past year only 43 patients were referred to AAA screening of those who were eligible at Stowe Family Practice.



# LIMITATIONS



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- Creation of a novel training program may face challenges especially when trying to implement hands-on training at a rural location.
- Consideration may be taken to screen female populations with a category I recommendation
- There may be significant cost and time considerations associated with:
  - the initial purchasing of materials
  - creation of a training process
  - integrating ultrasound images into the EMR and billing structures
  - QA/QI

# FUTURE INTERVENTIONS



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- Ultrasound has a wide use of clinical applications, and it would be my hope that future interventions would expand the use of POCUS in the primary care setting beyond the utilization of AAA screening.
- In addition, the creation of a robust training and continuing education program would be crucial to the long-term longevity of such a measure.
- Intervention to produce a practical, simple system of integrating captured images into patient charts.
- Expand ultrasound programs to additional interested primary care offices and create a network of ultrasound trained staff.
- Once established, programs could benefit from the creation of a quality review process to assess imaging quality and ensure minimum imaging criteria are met.

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