Lack of **PAD awareness** amongst physicians treating diabetes and end stage renal disease

**Results of multi-region survey in the USA**

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Disclosure

Speaker name: Paramjit “Romi“ Chopra, MD

I have the following potential conflicts of interest to report:

- Consulting - Abbott Vacular, Cardiovascular Systems Inc, Covidien, Terumo Medical.
PAD Burden on “American” Society

Estimated 18 million people affected by PAD in the US, but only 2 million people diagnosed with PAD in the US.

Especially prevalent in patients with diabetes and end stage renal disease.

Diabetics are 8-24 times more likely to have a major amputation as a result of PAD.

Diabetics with ESRD are even more likely to have amputation.

Approximately 1.7 million people in US living with limb loss.

References:
Geographic variation in use of lower-extremity amputation

Treatment of PAD

Timely detection and treatment of PAD can prevent amputations and save limbs\(^1\)

Physicians treating diabetic and ESRD patients need awareness of PAD diagnosis AND referral

Multiple specialists and endovascular specialists working together have higher success rates in salvaging limbs\(^2\)

Team approach

- Comprehensive multidisciplinary foot-care programs have been shown to improve patient outcomes and reduce amputation rates by 36% to 86%.  

What is the central problem?

LACK OF PAD AWARENESS!

Patient
Physician and other providers
other health care professional

All participants in the treatment of PAD (Providers, hospitals, Payors, pharma & med. device Industry) struggle to identify this population and treat them in enough time to avoid amputation

How do we find these patients and treat them early?
Response to this problem!

- Increasing number of market research firms using Medicare data & other retrospective methods for assessing PAD awareness
- Medical device companies and Healthcare institutions started using this for marketing and business development purposes
Methods

• We carried out a small survey of 50 physicians in the Chicago area regarding PAD awareness and referral habits
  – *Direct face-to-face survey*

• Survey was scaled up to 500 endocrinologists, nephrologists, and internists across the U.S. to determine awareness of the prevalence, screening, testing and referral of patients at high-risk of PAD to specialty care
  – *Online survey*
Direct “Pilot” Survey Results

- **60%** of respondents were **nephrologists**
- Majority managed a significant number of patients who were positive for **tobacco, diabetes and kidney disease**.
- **42%** aware of certain risk factors for PAD.
- **60%** did not refer patients with LE wounds to PAD specialists.
- **85%** did not perform vascular assessment in their clinic.
- **72%** did not refer patients with diabetes to specialists for vascular assessment or for diabetes management.
Larger “Online” survey

Objectives

• characterize physicians’ patient populations

• Assess
  – the awareness of PAD
  – current diagnosis tools used
  – referral patterns amongst the nephrologists, endocrinologists and internists who care for diabetes and CKD/ESRD patients;

• to identify decision-making criteria for when patients are referred, to which specialty, and why.
Map of respondent locations

Numbers inside of the states represent percentage of the survey respondents per state.
Lack of patient awareness

• Patients don’t ask for the proper treatment
• Patients show up to office after it is too late
• Younger, more electronically savvy patients may be better informed regarding treatment options

Q19. What factors cause you to refer rather than to treat a patient with lower extremity wounds?

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Nephrologists</th>
<th>Endocrinologists</th>
<th>Internists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient request</td>
<td>0.60%</td>
<td>0.50%</td>
<td>1.10%</td>
<td>-</td>
</tr>
<tr>
<td>Patient compliance/ability to</td>
<td>1.00%</td>
<td>0.90%</td>
<td>0.60%</td>
<td>2.20%</td>
</tr>
<tr>
<td>participate in management</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</table>
LACK OF PHYSICIAN AWARENESS

• Lack of awareness of risk factors
treatment options
referral options
Lack of physician awareness

Lack of awareness of risk factors

<table>
<thead>
<tr>
<th>Question</th>
<th>Total</th>
<th>Nephrologists A</th>
<th>Endocrinologists B</th>
<th>Internists C</th>
</tr>
</thead>
<tbody>
<tr>
<td>What % of your CKD/ESRD pts have PAD?</td>
<td>43.20%</td>
<td>44.10%</td>
<td>-</td>
<td>41.20%</td>
</tr>
<tr>
<td>What % of your diabetic pts have PAD?</td>
<td>32.50%</td>
<td>-</td>
<td>27.80%</td>
<td>40.90%B</td>
</tr>
<tr>
<td>What % of your CKD/ESRD and/or DM pts do you tell about their risk for PAD?</td>
<td>59.40%</td>
<td>58.40%</td>
<td>56.00%</td>
<td>67.80%AB</td>
</tr>
</tbody>
</table>
Lack of physician awareness

Lack of awareness of treatment options

95% chose medical therapy alone

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Nephrologists</th>
<th>Endocrinologists</th>
<th>Internists</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Exercise</td>
<td>92.20%</td>
<td>92.20%</td>
<td>88.80%</td>
<td>98.00%AB</td>
</tr>
<tr>
<td>Medication</td>
<td>95.00%</td>
<td>93.20%</td>
<td>96.60%</td>
<td>96.00%</td>
</tr>
<tr>
<td>Amputation</td>
<td>72.00%</td>
<td>77.60%B</td>
<td>64.20%</td>
<td>73.70%</td>
</tr>
<tr>
<td>Bypass</td>
<td>93.20%</td>
<td>95.40%</td>
<td>92.20%</td>
<td>89.90%</td>
</tr>
<tr>
<td>Angioplasty</td>
<td>93.20%</td>
<td>97.30%B</td>
<td>87.70%</td>
<td>93.90%</td>
</tr>
<tr>
<td>Atherectomy</td>
<td>65.00%</td>
<td>70.30%B</td>
<td>57.50%</td>
<td>66.70%</td>
</tr>
<tr>
<td>Stents</td>
<td>90.50%</td>
<td>94.10%B</td>
<td>87.20%</td>
<td>88.90%</td>
</tr>
</tbody>
</table>
Lack of physician awareness

Lack of awareness of “endovascular” options

97% sent patients for “surgery”

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Total</th>
<th>Nephrologists</th>
<th>Endocrinologists</th>
<th>Internists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interventional Radiologist</td>
<td>30.40%</td>
<td>35.70%B</td>
<td>21.60%</td>
<td>33.80%B</td>
</tr>
<tr>
<td>Interventional Cardiologist</td>
<td>27.60%</td>
<td>24.10%</td>
<td>30.40%</td>
<td>31.30%</td>
</tr>
<tr>
<td>Vascular Surgeon</td>
<td>97.00%</td>
<td>97.00%</td>
<td>98.00%</td>
<td>95.00%</td>
</tr>
<tr>
<td>Podiatrist</td>
<td>39.10%</td>
<td>34.20%</td>
<td>51.40%AC</td>
<td>28.80%</td>
</tr>
<tr>
<td>Wound care specialist</td>
<td>53.90%</td>
<td>49.70%</td>
<td>62.20%A</td>
<td>48.80%</td>
</tr>
<tr>
<td>Endovascular specialist</td>
<td>12.40%</td>
<td>8.00%</td>
<td>14.20%</td>
<td>20.00%A</td>
</tr>
<tr>
<td>Other</td>
<td>0.90%</td>
<td>1.00%</td>
<td>0.70%</td>
<td>1.30%</td>
</tr>
</tbody>
</table>
Problems with clinical approach

Poor diagnoses

majority 70-80% use medical exam and ABI, Duplex (unreliable) for assessment

Only 11% use any tissue perfusion test!

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Nephrologists (A)</th>
<th>Endocrinologists (B)</th>
<th>Internists (C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ankle-Brachial Index</td>
<td>86.60%</td>
<td>80.30%</td>
<td>90.10%A</td>
<td>93.50%A</td>
</tr>
<tr>
<td>Doppler ultrasound</td>
<td>72.60%</td>
<td>74.00%</td>
<td>66.90%</td>
<td>77.40%</td>
</tr>
<tr>
<td>Toe brachial index</td>
<td>10.90%</td>
<td>12.10%</td>
<td>11.60%</td>
<td>7.50%</td>
</tr>
<tr>
<td>Tissue perfusion test</td>
<td>11.40%</td>
<td>11.60%</td>
<td>11.60%</td>
<td>10.80%</td>
</tr>
<tr>
<td>Medical exam determination</td>
<td>70.30%</td>
<td>66.50%</td>
<td>78.50%A</td>
<td>66.70%</td>
</tr>
</tbody>
</table>
Problems with clinical approach

Poor treatment Options

Wait and see approach

Lack of understanding of varied clinical presentations

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Nephrologists (A)</th>
<th>Endocrinologists (B)</th>
<th>Internists (C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise plan</td>
<td>90.20%</td>
<td>89.00%</td>
<td>91.80%</td>
<td>90.10%</td>
</tr>
<tr>
<td>Medication</td>
<td>93.30%</td>
<td>96.10%</td>
<td>87.60%</td>
<td>95.60%</td>
</tr>
<tr>
<td>Smoking cessation</td>
<td>95.60%</td>
<td>96.10%</td>
<td>97.90%</td>
<td>92.30%</td>
</tr>
<tr>
<td>Intervention</td>
<td>35.20%</td>
<td>31.50%</td>
<td>38.10%</td>
<td>37.40%</td>
</tr>
<tr>
<td><strong>Monitoring</strong></td>
<td><strong>73.70%</strong></td>
<td><strong>70.10%</strong></td>
<td><strong>72.20%</strong></td>
<td><strong>80.20%</strong></td>
</tr>
<tr>
<td>Other</td>
<td>4.10%</td>
<td>5.50%</td>
<td>5.20%</td>
<td>1.10%</td>
</tr>
</tbody>
</table>
95% of responding clinicians still believe that appropriate diagnosis and intervention can usually prevent amputation.
How did they learn about PAD?

- What is the most effective?
  67% - learned via CME
  60% relied on old medical school/residency learning

<table>
<thead>
<tr>
<th>Q3. How did you learn the latest information about Peripheral Artery Disease?</th>
<th>Total</th>
<th>Nephrologists (A)</th>
<th>Endocrinologists (B)</th>
<th>Internists (C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>During medical school or residency</td>
<td>59.40%</td>
<td>57.10%</td>
<td>61.50%</td>
<td>60.60%</td>
</tr>
<tr>
<td>From industry</td>
<td>23.30%</td>
<td>21.00%</td>
<td>18.40%</td>
<td>37.40%AB</td>
</tr>
<tr>
<td>From a colleague</td>
<td>33.00%</td>
<td>39.70%B</td>
<td>21.20%</td>
<td>39.40%B</td>
</tr>
<tr>
<td>CME</td>
<td>67.00%</td>
<td>63.00%</td>
<td>67.00%</td>
<td>75.80%A</td>
</tr>
<tr>
<td>Other</td>
<td>10.30%</td>
<td>13.20%C</td>
<td>9.50%</td>
<td>5.10%</td>
</tr>
</tbody>
</table>
How do we assess PAD awareness amongst these physicians?

• What is the most effective?

Direct interview versus online surveys?

Differences in response to survey styles

Each has their own limitations!

Combination of the two?

Should industry, Payors and Provider organizations combine resources and determine best way to assess and put remedial measures in place?
Where do we go from here?

Increase PAD awareness in communities serving diabetic and ESRD patients

- Improved referral habits
- Improved diagnosis
- Improved treatment

Create Clinical partnerships between ESRD, DM and “limb and wound” care providers and endovascular specialists for PAD/Amp prevention programs

E.g. Diabetic Rapid Response Acute Foot Team (DRAFT)
Where do we go from here?

Develop **PAD awareness assessment tools** in your population “zone of influence”

**Customize to your Population!**

**Increase education efforts** to the physicians who care for patients with PAD and CLI risk factors

Partner legally and ethically with other providers, payors, industry partners and employers to improve awareness assessment and Improvement!

Increasing domain of **Population health management**

“Health outcomes of a group of individuals”
Thank you!
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