CLI: A Population at Risk
Can Digital Health Help Close the Gap?

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Disclosures

+ Developer of MyWoundWatch/ShutterHealth
+ www.ShutterHealth.com
The Economic Impact of PAD

+ 200 million patients worldwide have PAD (24% increase over the last decade)

+ $21 billion spent on vascular-related hospitalizations in the US in 2004

+ 40% of total DM costs related to inpatient treatment of DM-related vascular complications

PAD Is a Bad Disease

Relative 5-Year Mortality Rates

<table>
<thead>
<tr>
<th>Disease</th>
<th>Patients (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prostate Cancer*</td>
<td>8</td>
</tr>
<tr>
<td>Hodgkin's Disease</td>
<td>18</td>
</tr>
<tr>
<td>Breast Cancer*</td>
<td>23</td>
</tr>
<tr>
<td>PAD</td>
<td>32</td>
</tr>
<tr>
<td>Colorectal Cancer*</td>
<td>39</td>
</tr>
<tr>
<td>Lung Cancer*</td>
<td>86</td>
</tr>
</tbody>
</table>

CLI: Can we stop the black dot?
The End Game: Amputation

+ 6th most expensive surgical procedure in the US
+ ~ $12 billion on Major amputation
  • Medicare and Medicaid pay 80%
+ Minor amputation account for $13 billion
+ Societal Costs: Unknown
  • lost productivity both patient and family

Yost, MK. Endovascular Today. May 2014
CLI: A population at risk

+ Underserved, remote rural areas
+ Lacking education, socioeconomic means
+ Sickest of the sick
  • Tip of the iceberg
+ Need close monitoring
  • Wound healing
  • Risk factor reduction methods
    - Tobacco cessation
What are my goals for CLI patients?

+ Prevention: both primary and secondary
  • Generate awareness
    - Patients and healthcare providers

+ Access

+ Heal the wound
Our CLI Database (RC V & VI)

+ **2015 CLI Database**
  + Total number of patients: 150
    - Total showed for 1m follow up: 109 (73%)
    - Total NO SHOW: 41 (27%)

+ **2016 CLI Database**
  + Total number of patients: 136
    - Total showed for 1m follow up: 88 (65%)
    - Total NO SHOW for 1m FU: 34
    - Total pts still waiting to come in: 14

+ *Majority from outside 30 mile radius*
This Was My Question...

Can Mobile Medical Applications Improve the Patient-Provider Experience in the CLI Population?

We know a picture is worth a thousand words can it be worth a hundred miles as well?

BY JOHN A. PHILLIPS, MD

A few weeks ago, I was at an outreach clinic about 60 miles from our main office and hospital, where we perform the majority of our interventions. I am only there once a month for a dedicated peripheral vascular clinic, often seeing patients with critical limb ischemia (CLI) and venous ulcerations. We have several outreach clinics like this one, attempting to provide exceptional vascular care.

Inability or unwillingness to travel for procedures or follow-up testing is a major issue.

Phillips, JA ENDOVASCULAR TODAY MAY 2015
Potential Benefits to the Health Care System

1. Real time evaluation
   1. Image capture/compare
   2. Communication via secure texting
2. Access to a specialist in rural areas
3. Can we reduce…
   1. Readmissions?
   2. Office visits?
4. Quicker wound healing rates?
5. Reduction in re-treatment/new ulcer formation?
6. Can we screen those at risk to prevent CLI?
How do we do this?

+ Shift the paradigm (proactive vs. reactive)
  • Can we drive the PATIENT to be the “quarterback” of their care?
  • Screen those at risk (imaging or messaging)

+ Patient a major stakeholder
  • They start the process (image or message)

+ Motivate providers and insurance companies
  • Can we save limbs and money?
    - Incentivize the patient
ShutterHealth(myWoundWatch)

- HIPAA compliant iPhone app
- Free for patients and providers to capture, compare, and share medical images/messaging
ShutterHealth (myWoundWatch)
Patient Barriers to using a Medical App: Initial Survey of our CLI patients

+ Appropriate device-”Doc, I don’t have a smart phone”
+ Not ‘tech savvy’
+ Age prohibitive
+ Lack of support
  • ”I can’t see my wound”
  • Family, Home health
+ Insight into severity of disease process
  • Apathy
## Smart phone use by age

<table>
<thead>
<tr>
<th>Age Group (y)</th>
<th>% with Smartphone</th>
</tr>
</thead>
<tbody>
<tr>
<td>45-54</td>
<td>70.8</td>
</tr>
<tr>
<td>55-64</td>
<td>61.1</td>
</tr>
<tr>
<td>≥ 65</td>
<td>46.3</td>
</tr>
</tbody>
</table>

• About ¼ of the world’s population has a smart phone

Nielson.com, published 9/5/2014

emarker.com. December 2014
Barriers to Providers

+ Data from 2012, reported **34% of clinicians** use mobile devices to monitor patient data
  • Up 30% from 2011

HIMMS Analytics. Available at: www.himssanalytics.org/about/NewDetail.aspx?nid=81558
Barriers to Providers

+ Medical-legal issues
+ Billing
  • Taking the patient out of my office
  • Time to review images/messaging
+ Time expectations
  • How soon do I have to respond?
  • What if I don’t get the message?
+ One more ’thing’ for me to do
Planned Pilot Program: Using ShutterHealth

**Design**

- **10 patients CLI (RC V and VI) post procedure use ShutterHealth**
  - Patient educated on using the device prior to discharge
  - Image of wound taken once weekly, sent to provider (treating interventionalist)
  - Text messaging at the patient/provider discretion
  - NO formal one month follow up scheduled
  - 6 month follow up

- **10 patients in control arm is standard post care**
  - One month follow up scheduled prior to d/c
  - 6 month follow up

- All resting ABI performed prior to d/c
Pilot Program: ShutterHealth

- **Follow both groups for 6 months or until wound heals**
- **Evaluate for:**
  - Readmission/office visits
  - Complications post procedure
  - Image quality/reproducibility
  - Volume of texting
  - Symptom Improvement
    - Wound healing times (working with their wound care provider)
  - Cost analysis
  - “Quality of app” assessment survey @ 6 months
    - Both patient and provider
Digital Health Can Make a Difference

+ **We** need to become proactive, less reactive
+ **We** need to empower and educate the patient
  - Put these devices in their hands
  - Incentivize patients

+ **We** can stop the ‘black dot’ from turning into a missing leg!
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