Evidence for an Effective Tool Supporting Individuals in a Home Setting
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Why Are Homeowners Choosing to Age in Place?

- 66% say their home is conveniently located
- 38% say they live close to their family
- 68% say they feel independent in their home
- 54% say they are familiar with their neighborhood
- 66% say they feel safe in their home
HELLO!

David W. Keeley, PhD

Degree conferred in 2011

Assistant/Associate Professor | 2011 - 2018 |

Transitioned to Electronic Caregiver | 2018 |

Director of Clinical Research
DISCLOSURES

ACTUAL Conflicts of Interest
- Financial – income (general and deferred) is derived from a company focusing on telehealth technology development

POTENTIAL
- Research – Prior to acceptance of Director position at ECG, company funded academic research in my lab

PERCEIVED
- Financial, Research and Development, Organizational
ECG Mobile Screening Laboratory
HELLO!

- Founded | 2009 |
- Mobile Laboratory Screenings | 2,500+ |
- Research Contributions to Date | $10,000,000+ |
- New Mexico State University | 5 laboratories |
NMSU Laboratories
HELLO!

- Founded | 2009 |
- Mobile Laboratory Screenings | 2,500+ |
- Research Contributions to Date | $10,000,000+ |
- New Mexico State University | 5 laboratories |
- G60 Trauma
DISCLOSURES

- ACTUAL Conflicts of Interest
  - Financial – Electronic Caregiver is an event sponsor in 2019

- POTENTIAL
  - No known

- PERCEIVED
  - No known
Evidence for an Effective Tool Supporting Individuals in a Home Setting

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Evidence for an Effective Tool Supporting Individuals in a Home Setting

- Evidence – scientific and peer reviewed
- Effective – produce the desired result
- Support – provision of needed assistance, bear all or part of a weight
- Home – a place where something flourishes
Health Resources and Services Administration of the United States Department of Health and Human Services

» Telehealth - the use of electronic information and telecommunications technologies to support and promote long-distance health care, patient and professional health-related education, public health and health administration

» Telemedicine – refers specifically to the provision of remote clinical services
Telehealth Modalities

1. Live video (Real-time):
   Live, two-way interaction between a person (patient, caregiver, or provider) and a provider using audiovisual telecommunications technology.

2. Store-and-forward:
   Transmission of recorded health history (for example, pre-recorded videos and digital images such as x-rays and photos) through a secure electronic communications system to a practitioner.

3. Remote patient monitoring (RPM):
   Personal health and medical data collection from an individual in one location via electronic communication technologies, which is transmitted to a provider in a different location for use in care and related support.

4. Mobile health (mHealth):
   Healthcare and public health practice and education supported by mobile communication devices such as cell phones, tablet computers, and PDAs.
Telehealth Utilization – Clinical Attitudes

- 84% of healthcare executives indicate telehealth is important to their organization
- 42.5% of health system clinicians indicate they currently use telehealth options to fill current gaps in care delivery
- > 50% of all U.S. hospitals have telehealth programs
- 48 states require payers to cover telehealth
Telehealth Utilization – Patient Attitudes

» 65% of patients with a primary provider would be willing to see them via telehealth technologies

» 74% of consumers indicate they are open to video visits

» 76% of consumers prioritize access to treatment over the ability to visit face-to-face

» 50 million Americans indicate they would be willing to switch their family practice provider for access to video visits

» Nearly 60% of patients 65+ would be willing to manage a chronic condition with telehealth visits

» The majority of consumers indicate comfort with their medical records being cloud-based
Remote Patient Monitoring

STAYING CONNECTED
### Table 1. Remote patient monitoring systematic review study

<table>
<thead>
<tr>
<th>1st Author</th>
<th>Study Year</th>
<th>Study Duration</th>
<th>n</th>
<th>% of Sample Male</th>
<th>Mean Age</th>
<th>HQS</th>
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<tr>
<td>Scalvini et al.</td>
<td>2005</td>
<td>7 days</td>
<td>310</td>
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<td>Woodend et al.</td>
<td>2008</td>
<td>15 months</td>
<td>249</td>
<td>75.1</td>
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<td>Chau et al.</td>
<td>2012</td>
<td>2 months</td>
<td>40</td>
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<td>De San Miguel et al.</td>
<td>2013</td>
<td>6 months</td>
<td>80</td>
<td>48.5</td>
<td>72.5</td>
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<td>Wijsman et al.</td>
<td>2013</td>
<td>3 months</td>
<td>226</td>
<td>59.2</td>
<td>64.8</td>
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<td>Kim et al.</td>
<td>2015</td>
<td>29 months</td>
<td>374</td>
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<tr>
<td>Ong et al.</td>
<td>2016</td>
<td>3 months</td>
<td>1437</td>
<td>53.1</td>
<td>73.5</td>
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</table>

Remote Patient Monitoring – Systematic Review

Representative meta-analysis data describing systolic blood pressure monitoring.
Remote Patient Monitoring – Systematic Review

Representative meta-analysis data describing diastolic blood pressure monitoring.
Remote Patient Monitoring – Systematic Review

Representative meta-analysis data describing body mass index monitoring.
Representative meta-analysis data describing weight monitoring.

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Mean</th>
<th>SD</th>
<th>Total</th>
<th>Mean</th>
<th>SD</th>
<th>Total</th>
<th>Mean Difference</th>
<th>Mean Difference</th>
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<tbody>
<tr>
<td>Shuger 2011</td>
<td>-4</td>
<td>8.31</td>
<td>147</td>
<td>-0.9</td>
<td>7.34</td>
<td>50</td>
<td>14.1%</td>
<td>-3.10 [-5.54, -0.66]</td>
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<tr>
<td>Luley 2014</td>
<td>-10.53</td>
<td>6.54</td>
<td>118</td>
<td>-4.2</td>
<td>6.78</td>
<td>60</td>
<td>15.2%</td>
<td>-6.33 [-8.41, -4.25]</td>
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<tr>
<td>Finkelstein 2016</td>
<td>-0.6</td>
<td>11.3</td>
<td>599</td>
<td>-1.3</td>
<td>10.78</td>
<td>201</td>
<td>16.2%</td>
<td>0.70 [-1.04, 2.44]</td>
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<td>Jakicic 2016</td>
<td>-3.5</td>
<td>7.42</td>
<td>237</td>
<td>-5.9</td>
<td>6.97</td>
<td>233</td>
<td>17.4%</td>
<td>2.40 [1.10, 3.70]</td>
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<tr>
<td>Greene 2013</td>
<td>-2.36</td>
<td>4.35</td>
<td>177</td>
<td>-0.73</td>
<td>4.08</td>
<td>168</td>
<td>18.3%</td>
<td>-1.63 [-2.52, -0.74]</td>
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<td>Wijsman 2013</td>
<td>-1.49</td>
<td>2.77</td>
<td>114</td>
<td>-0.82</td>
<td>2.22</td>
<td>112</td>
<td>18.7%</td>
<td>-0.67 [-1.32, -0.02]</td>
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<tr>
<td><strong>Total (95% CI)</strong></td>
<td>1392</td>
<td></td>
<td>824</td>
<td><strong>100.0%</strong></td>
<td></td>
<td><strong>-1.29 [-3.06, 0.48]</strong></td>
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</table>

Heterogeneity: $\tau^2 = 4.25$; $\text{Chi}^2 = 60.08$, $\text{df} = 5$ ($P < 0.000001$); $I^2 = 92\%$

Test for overall effect: $Z = 1.43$ ($P = 0.15$)
Remote Patient Monitoring – Systematic Review

Representative meta-analysis data describing waist circumference monitoring.
All indicators suggest that remote monitoring will develop into a new standard of care in the near future.

By the end of the decade, 5G is expected to support 50 billion devices and 212 billion sensors worldwide!
Remote Patient Monitoring – Mobile Applications
Remote Patient Monitoring – Standard PERS

» RPM 99454 = $64.15 (CMS Average)

» Electronic Caregiver Premier = $49.95 / $59.95 (w/ PocketMD®)

» Life Alert® = $49.95

» Bay Alarm Medical = $29.95
Remote Patient Monitoring – CCM

- RPM 99453 ($19.46), 99454 ($64.15) and 99457 ($51.45)
- Electronic Caregiver Pro Health - $59.95
- Life Alert - $89.95
- GreatCall® - $54.95
- Medical Guardian - $79.95
<table>
<thead>
<tr>
<th>Date</th>
<th>Flag</th>
<th>Measured At</th>
<th>Limit Over Threshold</th>
<th>Threshold Type</th>
<th>Is Addressed?</th>
<th>Addressed By</th>
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<td>Called PocketMD Ms</td>
<td></td>
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<td>AneltoPhoneLog</td>
<td>false</td>
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<td>Called PocketMD Ms</td>
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<td>07-08-2019 1:39 PM</td>
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<td>161</td>
<td>41</td>
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<td>07-02-2019 9:11 AM</td>
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<td>07-02-2019 9:09 AM</td>
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<td>48</td>
<td>12</td>
<td>Diastolic</td>
<td>false</td>
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</tr>
</tbody>
</table>
Remote Patient Monitoring – CCM
Remote Patient Monitoring – Virtual Caregiving

» Addresses isolation
» Plug and play across many devices and applications
» Enhances educational component
» Decreases apprehension
Remote Patient Monitoring – Return on Investment

**Clinical Return on Investment**

- Assessment of data trends
- Identification of outliers
- Automation of treatment adherence

Supports earlier diagnosis, personalized intervention and individualized treatment as well as passively supporting patient engagement
Remote Patient Monitoring – Return on Investment

Operational Return on Investment

» Stress reduction in overburdened clinicians

» Improved provider to patient ratios

» Allows targeting of high-risk patient populations

» Reduction in potential liability

Supports provision of better, more efficient care and opportunities to better provide care where it is most needed
Remote Patient Monitoring – Return on Investment

Financial Return on Investment

» Challenging to Describe
  » Different entities have different thoughts

» Reduction in costs for hospitalizations and ER visits
  » 49.6% (hospitalizations) and 73.0% (ER visits)
  » Claims paid reduction of $5,271 PMPY
  » ROI estimated at 200%

» Provides opportunity for increased customer/patient base
  » Beds and resources available for high revenue patients
  » RPM Reimbursement and Cost Savings
    » Estimated 213% ROI and Estimated 68% reduction in care delivery costs
Take Home Message

Why Are Homeowners Choosing to Age in Place?

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