AMA Digital Health Research

Physicians’ motivations and requirements for adopting digital health
Adoption and attitudinal shifts from 2016 to 2019

February 2020
Background and Objectives

• In July 2016 The American Medical Association conducted a comprehensive study of physician’s motivations and requirements for the adoption of digital clinical tools.

• The AMA repeated the study to determine the degree to which adoption has occurred in the past 3 years and identify attitudinal shifts among physicians towards their use and adoption.

• The goals for this research were to update the 2016 study to determine:
  1. Any change in overall interest in digital health tools and the degree to which physicians believe they will help or hinder their patient care
  2. Current familiarity with 7 specific digital health tools and physician enthusiasm, belief in the relevance to their practice, timeline for incorporating or current use
  3. For each tool, the motivators and level of disruption caused or foreseen
  4. The ideal level of involvement physicians would like to have in adoption decisions
  5. An understanding of enthusiasm, current usage and requirements for emerging technologies
Methodology

• This survey was designed to replicate the 2016 survey exactly, to have a statistically valid and reliable comparative sample.
• The same physician panel was used as in 2016, provided by WebMD.
• The 2019 survey was slightly longer at 18 rather than the original 15 minutes, but new questions were added at the back of the survey to not interfere with the flow of the original questionnaire.
• The basic 2016 survey was followed exactly in wording and question order, with only a few variations, to remove some small questions that were no longer relevant.
• The sample used careful quotas to ensure a similar sample composition as in 2016.

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>PCPs</th>
<th>Specialists</th>
<th>Solo Practice</th>
<th>Group Practice</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>1300</td>
<td>650</td>
<td>650</td>
<td>196</td>
<td>879</td>
<td>225</td>
</tr>
<tr>
<td>2019</td>
<td>1359</td>
<td>672</td>
<td>687</td>
<td>155</td>
<td>829</td>
<td>375</td>
</tr>
</tbody>
</table>
### Survey Instrument

**Digital healthcare:** Digital health encompasses a broad scope of tools that engage patients for clinical purposes; collect, organize, interpret and use clinical data; and manage outcomes and other measures of care quality. This includes, but is not limited to, digital solutions involving telemedicine and telehealth, mobile health (mHealth), wearables (Fitbit), remote monitoring, apps and others.

<table>
<thead>
<tr>
<th>7 Specific Tools</th>
<th>Remote monitoring for efficiency</th>
<th>Remote monitoring and management for improved care</th>
<th>Clinical decision support</th>
<th>Patient engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tele-visits/ virtual visits</td>
<td>Point of care/ Workflow enhancement</td>
<td>Consumer access to clinical data</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Questions

**Overall Involvement in Digital Health**
- Impact of ability to provide care
- Overall motivators/attractants
- Overall functional requirements

**Specific digital tools**
- Familiarity
- Current use
- Relevance for practice
- Enthusiasm
- Timeline for incorporating into practice
- Ideal level of involvement in Digital Health in general

**Individual tool deep dives**
(Ask for up to two relevant solutions, not currently being used)
- Overall motivators/attractants towards solution
- Rank of top 3 motivators/attractants
- Overall functional requirements of solution adoption
- Rank of top 3 functional requirements
- Level of disruption caused by solution
- Ideal level of involvement with decision to incorporate solutions

WebMD recruited a sample of 1,300 practicing US physicians

Requirements for participation:
- Age 28-65
- Practicing physicians including those focused on research, academia or public health
- Full-owner, part-owner or employee of a practice (not an independent contractor)
- Provide a minimum of 20 hours of direct patient care each week
Key definitions in the study

• Digital health encompasses a broad scope of tools that engage patients for clinical purposes; collect, organize, interpret and use clinical data; and manage outcomes and other measures of care quality. This includes, but is not limited to, digital solutions involving telemedicine and telehealth, mobile health (mHealth), wearables (e.g., Fitbit), remote monitoring, apps, and others.

• Seven specific tools:

<table>
<thead>
<tr>
<th>Tool</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Remote monitoring for efficiency</td>
<td>Smart versions of common clinical devices such as thermometers, blood pressure cuffs, and scales that automatically record readings in the patient record so you do not have to type it</td>
</tr>
<tr>
<td>Remote monitoring and management for improved care</td>
<td>Apps and devices for use by chronic disease patients for daily measurement of vital signs such as weight, blood pressure, blood glucose, etc. Readings are visible to patients and transmitted to the physician’s office. Alerts are generated as appropriate for missing or out of range readings</td>
</tr>
<tr>
<td>Clinical decision support</td>
<td>Modules used in conjunction with the EHR or apps that integrate with the EHR that highlight potentially significant changes in patient data (e.g., gain or loss of weight, change in blood chemistry)</td>
</tr>
<tr>
<td>Patient engagement</td>
<td>Solutions to promote patient wellness and active participation in their care for chronic diseases (e.g., adherence to treatment regimens)</td>
</tr>
<tr>
<td>Tele-visits/ virtual visits</td>
<td>An audio/video connection used to see patients remotely (i.e., simple acute illness, adjusting therapy, etc.)</td>
</tr>
<tr>
<td>Point of care/ workflow enhancement</td>
<td>Communication and sharing of electronic clinical data to consult with specialists, make referrals and/or transitions of care</td>
</tr>
<tr>
<td>Consumer access to clinical data</td>
<td>Secure access allowing patients to view clinical information such as routine lab results, receive appointment reminders and treatment prompts, and to ask for prescription refills, appointments and to speak with their physician</td>
</tr>
</tbody>
</table>
Summary: Changes from 2016

1. There has been an increase in the number of physicians that see a definite advantage in digital tools
   - Growth in those that see an advantage is among PCPs.
   - Those that see no advantage are trending downwards and are concentrated in the age 50+ segment.

2. Adoption of digital tools has grown significantly among all physicians regardless of gender, specialty or age.
   - Use of all seven tools has increased.
   - Increased efficiency and patient safety are key drivers.
   - Tools need to be covered by standard malpractice insurance and data privacy concerns have increased.

3. Adoption of remote care tools such as tele-visits and remote monitoring had the most movement
   - Providing remote care to patients has increased significantly as a driver of adoption of digital tools.
   - Use of these tools is still at roughly one quarter of physicians, but this is nearly doubled from 2016.
   - Likelihood of adoption has increased significantly.

4. Awareness of most of the emerging technologies such as artificial or augmented intelligence is fairly high.
   - Current adoption of these technologies is however very low.
   - Intentions to adopt these emerging technologies is quite high and aggressive timelines are planned.
Physicians’ motivations and requirements for adopting digital health

Shifts from 2016 to 2019
There has been a small but significant increase in the advantage that physicians feel digital health solutions bring to their ability to care for their patients.

- The most notable increases are among PCPs with specialists moving slightly.
- Those that see no advantage are trending downwards and are concentrated in the age 50+ segment.

<table>
<thead>
<tr>
<th>Specialty</th>
<th>PCPs 2016</th>
<th>PCPs 2019</th>
<th>Specialists 2016</th>
<th>Specialists 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definite Advantage</td>
<td>31</td>
<td>40</td>
<td>31</td>
<td>33</td>
</tr>
<tr>
<td>Some Advantage</td>
<td>56</td>
<td>46</td>
<td>52</td>
<td>53</td>
</tr>
<tr>
<td>No Advantage or Disadvantage</td>
<td>11</td>
<td>11</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Some/Definite Disadvantage</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<table>
<thead>
<tr>
<th>Physician Age</th>
<th>2016</th>
<th>2019</th>
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<tbody>
<tr>
<td>&lt;40</td>
<td>35</td>
<td>38</td>
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<tr>
<td>41-50</td>
<td>35</td>
<td>40</td>
</tr>
<tr>
<td>51+</td>
<td>25</td>
<td>29</td>
</tr>
</tbody>
</table>

Q16. Considering the overall impact, how much of an advantage do digital health solutions give to your ability to care for your patients?

Base: Total Physicians (n=1,300), PCPs (n=650), Specialists (n=650), Age <40 (n=289), Age 41-50 (n=449), Age 51+ (n=562), Solo Practice (n=196), Group Practice (n=879), Other Practice (n=225), AMA Member (n=359), Non-Member (n=941) *Statistically significantly different at 95% confidence interval.
Use of digital health tools has risen significantly

Tele-visits have seen the greatest growth, doubling in use since 2016.

Q20. Which, if any, of these do you currently incorporate into your practice? Base: Total Physicians (n=1300)
The average number of digital tools used has increased

Older physicians and those less enthusiastic about technology (there is a lot of overlap) are catching up in their use.
Use by solo practice physicians and partial owners has also increased

These had been lagging behind other physicians in 2016 and are now closer to the average.
While all digital health tools have seen increases in adoption since 2016, remote care tools have seen the biggest moves forward.

Tele-visits/virtual visits and remote monitoring for improved patient care have seen a significant increase in use.

Q20. Which, if any, of these do you currently incorporate into your practice? Base: Total Physicians (n=1300)
Remote care tools are also those with the highest likelihood of adoption within the next three years.
Providing remote care is also a driving force for adoption, and the only motivator that has seen upward movement in the past three years

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<tbody>
<tr>
<td>Allows me to provide care to my patients remotely</td>
<td>26</td>
<td>31</td>
<td>34</td>
<td>37</td>
<td>40</td>
<td>32</td>
</tr>
<tr>
<td>Improves resource allocation for staff</td>
<td>28</td>
<td>27</td>
<td>40</td>
<td>42</td>
<td>32</td>
<td>31</td>
</tr>
<tr>
<td>Allows me to see more patients</td>
<td>27</td>
<td>26</td>
<td>32</td>
<td>32</td>
<td>41</td>
<td>42</td>
</tr>
<tr>
<td>Demonstrates awareness of the latest technologies</td>
<td>22</td>
<td>23</td>
<td>38</td>
<td>40</td>
<td>40</td>
<td>37</td>
</tr>
<tr>
<td>Provides a new stream of revenue</td>
<td>25</td>
<td>22</td>
<td>29</td>
<td>32</td>
<td>46</td>
<td>46</td>
</tr>
<tr>
<td>Differentiates my practice from others</td>
<td>21</td>
<td>21</td>
<td>31</td>
<td>32</td>
<td>48</td>
<td>47</td>
</tr>
<tr>
<td>Patients demand it</td>
<td>13</td>
<td>14</td>
<td>30</td>
<td>31</td>
<td>57</td>
<td>55</td>
</tr>
</tbody>
</table>

Q17. When thinking about incorporating digital health solutions into your practice, how important would each factor be?  Base: Total Physicians (n=1300)
When asked what digital health tools they are most enthusiastic about, remote tools are the two that gained traction since 2016.

<table>
<thead>
<tr>
<th>Solution</th>
<th>2016</th>
<th>2019</th>
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</thead>
<tbody>
<tr>
<td>Tele-visits</td>
<td>36%</td>
<td>42%</td>
</tr>
<tr>
<td>Remote monitor for efficiency</td>
<td>45%</td>
<td>46%</td>
</tr>
<tr>
<td>Remote monitor &amp; mgt for improved care</td>
<td>45%</td>
<td>50%</td>
</tr>
<tr>
<td>Clinical decision support</td>
<td>45%</td>
<td>45%</td>
</tr>
<tr>
<td>Patient engagement</td>
<td>49%</td>
<td>44%</td>
</tr>
<tr>
<td>Point of care/workflow enhancement</td>
<td>53%</td>
<td>50%</td>
</tr>
<tr>
<td>Consumer access to clinical data</td>
<td>42%</td>
<td>41%</td>
</tr>
</tbody>
</table>

Q22. Which, if any, of the solutions below are you enthusiastic about? Base: Total Physicians (n=1300)
Multi-Specialty Groups are currently the heaviest users of remote digital health tools

Other groups that showed relatively heavier usage of remote digital health tools are hospitals, physicians under 50, and PCP’s.

<table>
<thead>
<tr>
<th>Practice Setting</th>
<th>Solo Prac</th>
<th>Single Spec Grp</th>
<th>Multi-Spec Grp</th>
<th>Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tele-Visits/Virtual Visits</td>
<td>24</td>
<td>19</td>
<td>20</td>
<td>25</td>
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<tr>
<td></td>
<td>29</td>
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<td></td>
<td>28</td>
<td>33</td>
<td>32</td>
<td>33</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Solo Prac</th>
<th>Single Spec Grp</th>
<th>Multi-Spec Grp</th>
<th>Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote Monitoring for Improved Care</td>
<td>29</td>
<td>34</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>27</td>
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<td></td>
<td>31</td>
<td>33</td>
<td>30</td>
<td>33</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Practice Setting</th>
<th>Total</th>
<th>PCP</th>
<th>Specialist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Will Adopt Beyond a Year</td>
<td>Will Adopt Within a Year</td>
<td>Already Using</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>25</td>
<td>18</td>
</tr>
<tr>
<td>Solo Prac</td>
<td>20</td>
<td>19</td>
<td>30</td>
</tr>
<tr>
<td>Single Spec Grp</td>
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<td>19</td>
</tr>
<tr>
<td>Multi-Spec Grp</td>
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<td>20</td>
</tr>
<tr>
<td>Hospital</td>
<td>33</td>
<td>30</td>
<td>20</td>
</tr>
</tbody>
</table>
Q17. When thinking about incorporating digital health solutions into your practice, how important would each factor be?  

Base: Total Physicians (n=1300)

### Improves efficiency
- 2016: 48% Very Important, 34% Somewhat Important, 18% Not Important
- 2019: 51% Very Important, 31% Somewhat Important, 18% Not Important

### Increases safety
- 2016: 47% Very Important, 33% Somewhat Important, 20% Not Important
- 2019: 46% Very Important, 34% Somewhat Important, 20% Not Important

### Improves diagnostic ability
- 2016: 41% Very Important, 38% Somewhat Important, 21% Not Important
- 2019: 41% Very Important, 38% Somewhat Important, 21% Not Important

### Burnout
- 2016: 39% Very Important, 27% Somewhat Important, 34% Not Important
- 2019: 40% Very Important, 29% Somewhat Important, 31% Not Important

### Patient Adherence
- 2016: 36% Very Important, 39% Somewhat Important, 25% Not Important
- 2019: 39% Very Important, 39% Somewhat Important, 22% Not Important

### Convenience
- 2016: 32% Very Important, 45% Somewhat Important, 23% Not Important
- 2019: 36% Very Important, 43% Somewhat Important, 21% Not Important

### Relationship
- 2016: 38% Very Important, 35% Somewhat Important, 27% Not Important
- 2019: 35% Very Important, 38% Somewhat Important, 27% Not Important

What attracts physicians to digital health

Improved efficiency and increased patient safety remain the top motivators for physicians to use digital health tools.

Patient adherence, convenience, and helping address physician burnout have increased in importance as reasons for attraction.
There has been a significant shift in the importance of remote care

More say it is very important as a reason to be attracted to digital health and fewer think it is not important.

<table>
<thead>
<tr>
<th></th>
<th>5 = Very Important</th>
<th>4 = Somewhat Important</th>
<th>1-3 = Not Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allows me to provide care to my patients remotely 2016</td>
<td>26</td>
<td>34</td>
<td>40</td>
</tr>
<tr>
<td>2019</td>
<td>31</td>
<td>37</td>
<td>32</td>
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</tr>
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<td>30</td>
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<tr>
<td>2019</td>
<td>14</td>
<td>31</td>
<td>55</td>
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</table>
Two elements that attract physicians to digital health tools have shifted in importance

“Allows me to provide care remotely” and “Helps reduce stress/burn-out” have moved into the quadrants for drivers, now closely hovering along the line between key motivators and secondary drivers. The movements are small but meaningful.
Requirements for adopting digital health tools have remained unchanged

Integration with EHR and being as good as traditional care are the two key requirements.

- Data security assured by EHR vendor
- Data privacy assured by own practice *
- Well integrated with EHR
- As good as traditional care
- Covered by standard malpractice ins.
- Can be reimbursed for time spent using
- Requires no special training
- Safety/efficacy demonstrated in peer reviewed pub.
- Safety/efficacy validated by FDA *
- It is the standard of care / Safety/efficacy demonstrated in peer reviewed pub.
- Supported by EHR vendor
- Data security assured by EHR vendor / Data privacy assured by own practice *
- Leaders recommend it
- Other physicians are using

2019

Low Priority

Importance (T2B)

Niche Need

Key Requirement

Secondary Driver

* Those marked with an asterisk indicate that those 2 requirements are hovering on the same exact coordinates
The importance of digital health tools being covered by standard malpractice insurance has increased significantly as a requirement.

Q18. How important are each of the attributes below in facilitating the adoption of digital health solutions into your practice? Base: Total Physicians (n=1300)
Demonstration of safety and efficacy in peer reviewed publications has also increased in importance

Q18. How important are each of the attributes below in facilitating the adoption of digital health solutions into your practice? Base: Total Physicians (n=1300)
The degree of responsibility that physicians desire to have in the adoption of digital health solutions in their practice has not changed.

Physicians want to be part of the decision-making process; owners expect to be responsible.
Current or planned future use of digital health tools is also slightly up; most growth is in tele-visits/virtual visits and remote monitoring for improved care.

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<tbody>
<tr>
<td>Combined Use and Plans to Use Digital Health Tools in Practice</td>
<td>39</td>
<td>50</td>
<td>47</td>
<td>48</td>
<td>48</td>
<td>53</td>
<td>54</td>
<td>57</td>
<td>56</td>
<td>52</td>
</tr>
</tbody>
</table>

- **Tele-visits/virtual visits**
  - Will Adopt Beyond a Year: 11%
  - Will Adopt Within a Year: 14%
  - Already Using: 28%

- **Remote monitoring for efficiency**
  - Will Adopt Beyond a Year: 15%
  - Will Adopt Within a Year: 20%
  - Already Using: 12%

- **Remote monitoring for improved care**
  - Will Adopt Beyond a Year: 15%
  - Will Adopt Within a Year: 20%
  - Already Using: 13%

- **Clinical decision support**
  - Will Adopt Beyond a Year: 17%
  - Will Adopt Within a Year: 37%
  - Already Using: 28%

- **Patient Engagement**
  - Will Adopt Beyond a Year: 9%
  - Will Adopt Within a Year: 11%
  - Already Using: 20%

- **Point of care/workflow enhancement**
  - Will Adopt Beyond a Year: 10%
  - Will Adopt Within a Year: 12%
  - Already Using: 26%

- **Consumer access to clinical data**
  - Will Adopt Beyond a Year: 7%
  - Will Adopt Within a Year: 14%
  - Already Using: 42%

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Emerging Technologies
Awareness of augmented intelligence technologies is high, though adoption remains in single digits for almost all tools

<table>
<thead>
<tr>
<th>% Physicians Familiar with and Using Advanced Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augmented Intelligence for health administration</td>
</tr>
<tr>
<td>Augmented Intelligence for clinical applications</td>
</tr>
<tr>
<td>Precision &amp; Personalized Medicine</td>
</tr>
<tr>
<td>Augmented Intelligence for business operations</td>
</tr>
<tr>
<td>Augmented Intelligence for population health</td>
</tr>
<tr>
<td>Augmented Intelligence for research and development</td>
</tr>
<tr>
<td>Blockchain, and other similar data solutions</td>
</tr>
</tbody>
</table>

Q39. When would you expect to start incorporating this into your own practice?
Intentions to adopt augmented intelligence tools within the next three years are very high even if current use is low

One-third of physicians plan to adopt most of these technologies within the next year.

<table>
<thead>
<tr>
<th></th>
<th>% Physicians Adoption Timeline for Advanced Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augmented Intelligence for health administration</td>
<td><img src="chart.png" alt="Chart" /></td>
</tr>
<tr>
<td>Augmented Intelligence for clinical applications</td>
<td><img src="chart.png" alt="Chart" /></td>
</tr>
<tr>
<td>Augmented Intelligence for business operations</td>
<td><img src="chart.png" alt="Chart" /></td>
</tr>
<tr>
<td>Precision &amp; Personalized Medicine</td>
<td><img src="chart.png" alt="Chart" /></td>
</tr>
<tr>
<td>Augmented Intelligence for population health</td>
<td><img src="chart.png" alt="Chart" /></td>
</tr>
<tr>
<td>Augmented Intelligence for research and development</td>
<td><img src="chart.png" alt="Chart" /></td>
</tr>
<tr>
<td>Blockchain, and other similar data solutions</td>
<td><img src="chart.png" alt="Chart" /></td>
</tr>
</tbody>
</table>

Q39. When would you expect to start incorporating this into your own practice?

- **Using**
- **w/in 2-3 Years**
- **w/in Year**
Physicians are most interested in these emerging technologies to help them serve chronic care patients

<table>
<thead>
<tr>
<th>Markets % Physicians Want New Technology to Serve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>PCPs</td>
</tr>
<tr>
<td>Specialists</td>
</tr>
</tbody>
</table>

- **Chronic care patients**
- **Millennial population**
- **Patients in low resource environments**
- **Aging population (85+)**

Q40. What audience would you most desire new technology or solutions to better serve?
Appendix
### Key Definitions in the Study

- **Digital health** encompasses a broad scope of tools that engage patients for clinical purposes; collect, organize, interpret and use clinical data; and manage outcomes and other measures of care quality. This includes, but is not limited to, digital solutions involving telemedicine and telehealth, mobile health (mHealth), wearables (e.g., Fitbit), remote monitoring, apps, and others.

- **Seven specific tools:**

<table>
<thead>
<tr>
<th>Tool</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote monitoring for efficiency</td>
<td>Smart versions of common clinical devices such as thermometers, blood pressure cuffs, and scales that automatically record readings in the patient record so you do not have to type it</td>
</tr>
<tr>
<td>Remote monitoring and management for improved care</td>
<td>Apps and devices for use by chronic disease patients for daily measurement of vital signs such as weight, blood pressure, blood glucose, etc. Readings are visible to patients and transmitted to the physician's office. Alerts are generated as appropriate for missing or out of range readings</td>
</tr>
<tr>
<td>Clinical decision support</td>
<td>Modules used in conjunction with the EHR or apps that integrate with the EHR that highlight potentially significant changes in patient data (e.g., gain or loss of weight, change in blood chemistry)</td>
</tr>
<tr>
<td>Patient engagement</td>
<td>Solutions to promote patient wellness and active participation in their care for chronic diseases (e.g., adherence to treatment regimens)</td>
</tr>
<tr>
<td>Tele-visits/virtual visits</td>
<td>An audio/video connection used to see patients remotely (i.e., simple acute illness, adjusting therapy, etc.)</td>
</tr>
<tr>
<td>Point of care/workflow enhancement</td>
<td>Communication and sharing of electronic clinical data to consult with specialists, make referrals and/or transitions of care</td>
</tr>
<tr>
<td>Consumer access to clinical data</td>
<td>Secure access allowing patients to view clinical information such as routine lab results, receive appointment reminders and treatment prompts, and to ask for prescription refills, appointments and to speak with their physician</td>
</tr>
</tbody>
</table>
Remote Monitoring for Efficiency

Smart versions of common clinical devices such as thermometers, blood pressure cuffs, and scales that automatically record readings in the patient record so you do not have to type it.

Evaluation among Total Physicians

Drivers among Physicians where Tool is Relevant, but Not Yet Used

Most Attractive Elements
Above average importance & ranking

1. Improves work efficiency
2. Improves diagnostic ability
3. Increases patient safety
4. Increases patient adherence
5. Improves resource allocation for staff * New in 2019

Key Functional Requirements
Above average importance & ranking

1. Well integrated with EHR
2. As good as traditional care
3. Covered by standard malpractice * New in 2019
4. Requires no special training
5. Can be reimbursed for time * New in 2019

Timeline of Adoption Among Enthusiastic

Base: Total Physicians, Excited About Solution: Remote Monitoring for Efficiency (n=630)
Remote Monitoring for Improved Care

Apps and devices for use by chronic disease patients for daily measurement of vital signs such as weight, blood pressure, blood glucose, etc. Readings are visible to patients and transmitted to the physician's office. Alerts are generated as appropriate for missing or out of range readings.

Evaluation among Total Physicians

Drivers among Physicians where Tool is Relevant, but Not Yet Used

Most Attractive Elements
Above average importance & ranking
1. Increases patient safety
2. Increases patient adherence
3. Improves diagnostic ability
4. Improves work efficiency
5. Improves patient-doc relationship
6. Allows me to provide care remotely

Key Functional Requirements
Above average importance & ranking
1. Well integrated with EHR
2. As good as traditional care
3. Covered by standard malpractice * New in 2019
4. Requires no special training
5. Can be reimbursed for time * New in 2019

Timeline of Adoption Among Enthusiastic

Base: Total Physicians, Excited About Solution: Remote Monitoring for Improved Care (n=674)
Clinical Decision Support

Modules used in conjunction with the EHR or apps that integrate with the EHR that highlight potentially significant changes in patient data (e.g., gain or loss of weight, change in blood chemistry).

Evaluation among Total Physicians

Drivers among Physicians where Tool is Relevant, but Not Yet Used

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4. Requires no special training
5. Can be reimbursed for time * New in 2019
6. It is the standard of care * New in 2019
Patient Engagement
Communication and sharing of electronic clinical data to consult with specialists, make referrals and/or transitions of care.

Evaluation among Total Physicians

Drivers among Physicians where Tool is Relevant, but Not Yet Used

Most Attractive Elements
Above average importance & ranking
1. Increases patient adherence
2. Increases patient safety
3. Improves work efficiency
4. Improves patient-doc relationship
5. Improves diagnostic ability
6. Helps reduce stress, burn-out

Key Functional Requirements
Above average importance & ranking
1. Well integrated with EHR
2. Requires no special training
3. As good as traditional care
4. It is the standard of care
5. Can be reimbursed for time spent

Timeline of Adoption Among Enthusiastic

Base: Total Physicians, Excited About Solution: Point-of-care / Workflow Enhancement (n=694)

Timeline of Adoption Among Enthusiastic

2019

51
8
15
20
1

2016

51
6
12
23
19
1

% Physicians Top 2 Box Enthusiasm

Base: Total Physicians (n=1300)

Enthusiasm

Specialty

PCP

Specialist

<40

41-50

51+

Physician Age

% Physicians Top 2 Box Enthusiasm

2019

2016

Drivers among Physicians where Tool is Relevant, but Not Yet Used

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% Physicians Top 2 Box Enthusiasm

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Tele-Visits/Virtual Visits
Communication and sharing of electronic clinical data to consult with specialists, make referrals and/or transitions of care.

Evaluation among Total Physicians

Drivers among Physicians where Tool is Relevant, but Not Yet Used

Most Attractive Elements
Above average importance & ranking
1. Increases patient convenience
2. Improves work efficiency
3. Allows me to provide care remotely
4. Improves patient-doc relationship
5. Increases patient safety
6. Provides a new stream of revenue

Key Functional Requirements
Above average importance & ranking
1. Covered by standard malpractice
2. Can be reimbursed for time spent
3. Requires no special training
4. Well integrated with EHR
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Timeline of Adoption Among Enthusiastic

Base: Total Physicians, Excited About Solution: Point-of-care / Workflow Enhancement (n=694)

% Physicians Top 2 Box Enthusiasm

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Timeline of Adoption Among Enthusiastic

Base: Total Physicians, Excited About Solution: Point-of-care / Workflow Enhancement (n=694)

<table>
<thead>
<tr>
<th>Year</th>
<th>2016</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Already using</td>
<td>4</td>
<td>29</td>
</tr>
<tr>
<td>Immediately</td>
<td>15</td>
<td>45</td>
</tr>
<tr>
<td>Next 6 months</td>
<td>19</td>
<td>12</td>
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<tr>
<td>Next year</td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td>Next 2-3 years</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Some other time</td>
<td>24</td>
<td>2</td>
</tr>
</tbody>
</table>

Specialty

- PCP
- Specialist

Physician Age

- <40
- 41-50
- 51+

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Point-of-Care/Workflow Enhancement

Communication and sharing of electronic clinical data to consult with specialists, make referrals and/or transitions of care.

Evaluation among Total Physicians

Drivers among Physicians where Tool is Relevant, but Not Yet Used

Most Attractive Elements
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1. Improves work efficiency
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4. Improves patient-doc relationship
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3. Improves work efficiency
4. Improves patient-doc relationship
5. Increases patient adherence
6. Improves diagnostic ability *New in 2019

**Key Functional Requirements**
Above average importance & ranking

1. Data security assured by EHR vendor
2. Requires no special training
3. Well integrated with EHR
4. As good as traditional care

Timeline of Adoption Among Enthusiastic

<table>
<thead>
<tr>
<th>Specialty</th>
<th>PCP</th>
<th>Specialist</th>
<th>% Physicians Top 2 Box Enthusiasm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician Age</td>
<td>&lt;40</td>
<td>41-50</td>
<td>51+</td>
</tr>
<tr>
<td>2016</td>
<td>72</td>
<td>3 5</td>
<td>10 8</td>
</tr>
<tr>
<td>2019</td>
<td>79</td>
<td>2 4 4 6</td>
<td></td>
</tr>
</tbody>
</table>

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