Internet of Things in the context of the latest medical technologies

Dr Achim Regenauer, Chief Medical Director, Munich Re

11th Annual Liability Regimes Conference

Keeping the Floodgates Shut? Mastering Accumulation and Bodily Injury Exposures in a Rapidly Changing Environment

4–5 November 2015, Rüschlikon
Internet of Things in the context of the latest medical technologies

Annual Liability Regimes Conference

Zürich-Rüschlikon 5 November 2015
Dr. Achim Regenauer
Evolution of the Internet – do we understand the potential?

Web 1.0 → only reading & writing
Web 2.0 → mobile & social
Web 3.0 → Internet of Things

Connected devices [billions]

Machines go online: The number of everyday objects connecting to the Internet will exceed PCs & Smartphones

Source: Used with permission from MIT Technology Review
Ubiquitous (24/7) recording of health data just started …

Web 1.0 → only reading & writing
Web 2.0 → mobile & social
Web 3.0 → Internet of Things

Glasses (“Medical wearable”)  iWatch (“Fitness wearable”)  Lenses (“Medical wearable”)

Fitness  Medical
# Wearables: turning smartphones into medical monitors

<table>
<thead>
<tr>
<th>Device</th>
<th>Description</th>
<th>Price</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fitbit Nike+ Runtastic Consumer</td>
<td>Steps, heart rate, calories, fitness level, mood, sleep, etc. &gt;100.000 in Apple Store</td>
<td></td>
<td>Fitness</td>
</tr>
<tr>
<td>Wello $200 Consumer</td>
<td>Smartphone + Sensor Blood pressure, oxygen, heart rate, temperature, respiration “Fever thermometer”</td>
<td></td>
<td>Fitness</td>
</tr>
<tr>
<td>iBG Star €59.90 Patient &amp; Physician</td>
<td>Blood sugar in “real time” Share data with GP</td>
<td></td>
<td>Medical</td>
</tr>
<tr>
<td>MelApp $1.99 ?</td>
<td>Melanoma risk assessment through ABCDE criteria (Asymmetry, Border, Color, Diameter and Evolution) Not cleared by the FDA</td>
<td></td>
<td>Medical</td>
</tr>
</tbody>
</table>

**Personal vs. Private health data?**

**Wrong alarm?**

**Malfunction?**

**Wrong Recommendation?**

Source: MelApp risk assessment tool for skin cancer

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**Steps, heart rate, calories, fitness level, mood, sleep, etc.**

**Smartphone + Sensor**

**Blood pressure, oxygen, heart rate, temperature, respiration**

**“Fever thermometer”**

**Blood sugar in “real time”**

**Share data with GP**

**Melanoma risk assessment through ABCDE criteria (Asymmetry, Border, Color, Diameter and Evolution)**

**Not cleared by the FDA**
Wearables – safe and efficient medical devices?

Usability
- Easy to understand, to operate …
- Too technical

Functionality
- Too narrow (no multiple functions)
- Different hardware components
- Interface to mobile devices, cloud etc.?

Quality
- Lack of standardisation & quality control
- USA-IMS Institut 2013: 90% der Apps “poor performance”

Compliance
- Inefficient utilization for persistent change to behavior
- USA: 2/3 applying > 1 year

Evaluation
- Untested/unvalidated
- Only descriptions – Insight, outcome, conclusions?
- Impact on mortality and morbidity?

Source: Munich Re Study Wearables 2015
Next big “thing”: Evolution of Health data

Fight for platforms

- Single platform for all health data (Central Hub)
  → Exchange between health apps easier
  → Health profile

- Apple
  (Health Kit; healthbook)

- Goggle
  (Goggle Fit)

- Samsung
  (S Health, Sami biometric bank)

iTunes (music)?
Insurance aspects
Asymmetric information of health data
Insurance aspects
Regulations under pressure

Privacy
- Transparent client
- Data protection
- Cyber security

Discrimination
- “Empowered”
- Self diagnosis

Legal framework constant state of flux?!

Medical devices regulations
- Malfunction?
- Liability?
- Which requirements?

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Summary

Wearables/Health Apps
- Immature market
- Health data as goldmine
- Big potential in health care sector

Acceleration by
- Internet of Things
- “i-Tunisation” of health data

Insurance (Liability)
- Regulations lagging behind technology advancement
- Many grey zones → Potential for new business?
Thank you for your attention!