Multi-Stakeholder Workshop on

THE UNIVERSITY OF MELBOURNE

HaBiC Health & Biomedical Informatics Centre

Data Quality of Health Wearables

Is Wearable Data Reliable for Use in Clinical Care?

Agenda

- **Section 1: Welcome & Introduction**
- **Section 2: Presentation**
- **Section 3: Networking & Break**
- **Section 4: Group Discussion 1**
- **Section 5: Networking and Break**
- **Section 6: Group Discussion 2**
- **Section 7: Conclusion**

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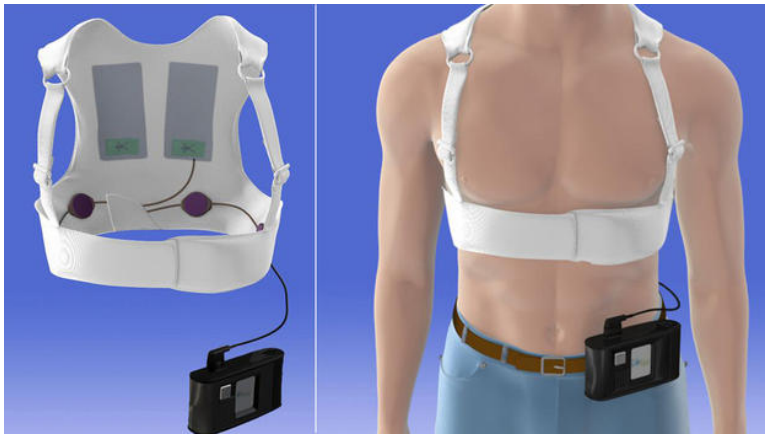
REMOTE PATIENT MONITORING

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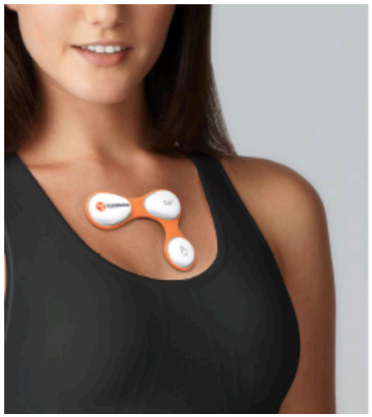



Continuous
Glucose Monitor
Control – Algorithm
Insulin Pump

PATIENT GENERATED HEALTH DATA (PGHD)

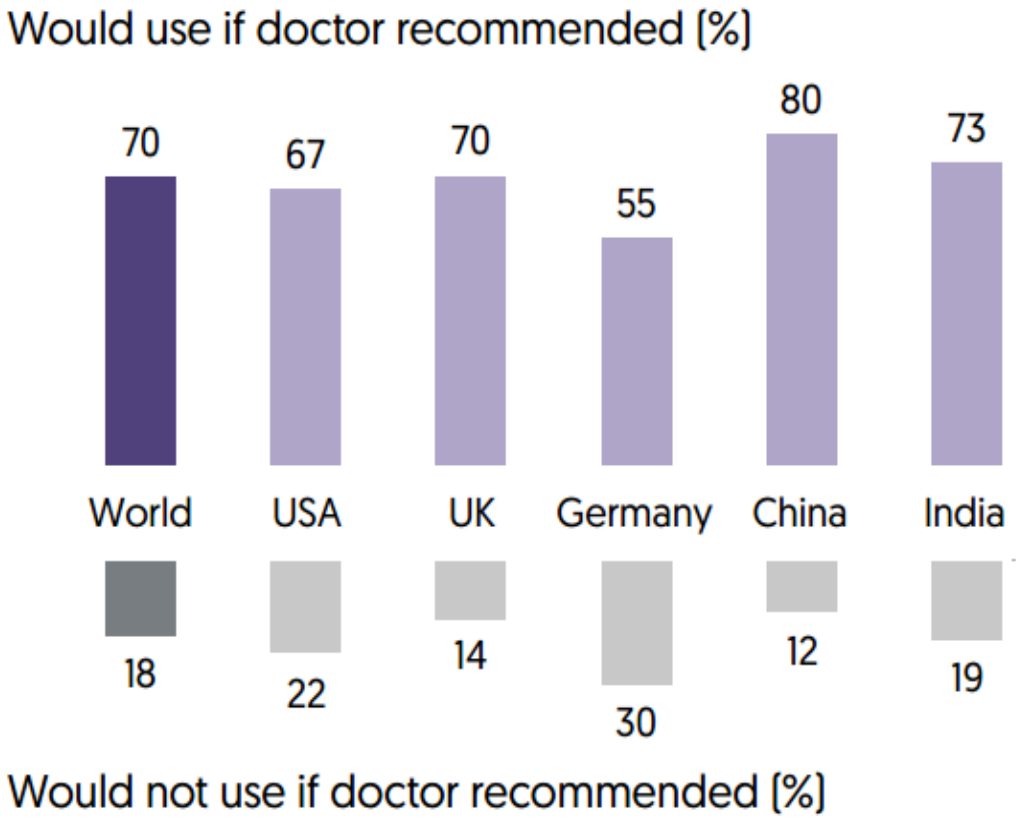
- Patients, not clinicians, are primarily responsible for capturing or recording these data
- Data are collected outside the clinical setting
- Patients may choose how and with whom they can share their health data

Why are we not using wearables data routinely in clinical care?

Wearable Devices Market

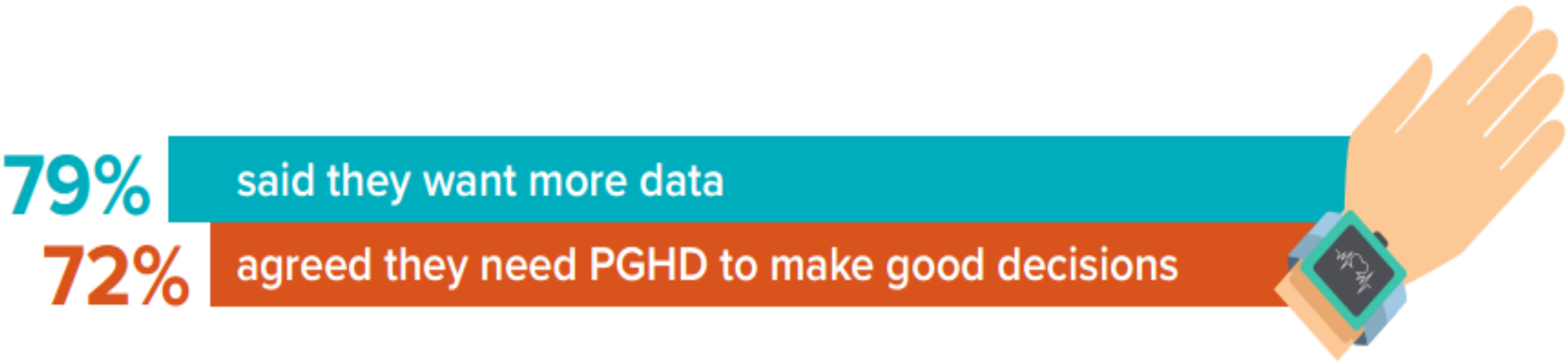
RPM and PGHD Adoption

Health consumers would use wearables and collect PGHD if recommended by the clinician

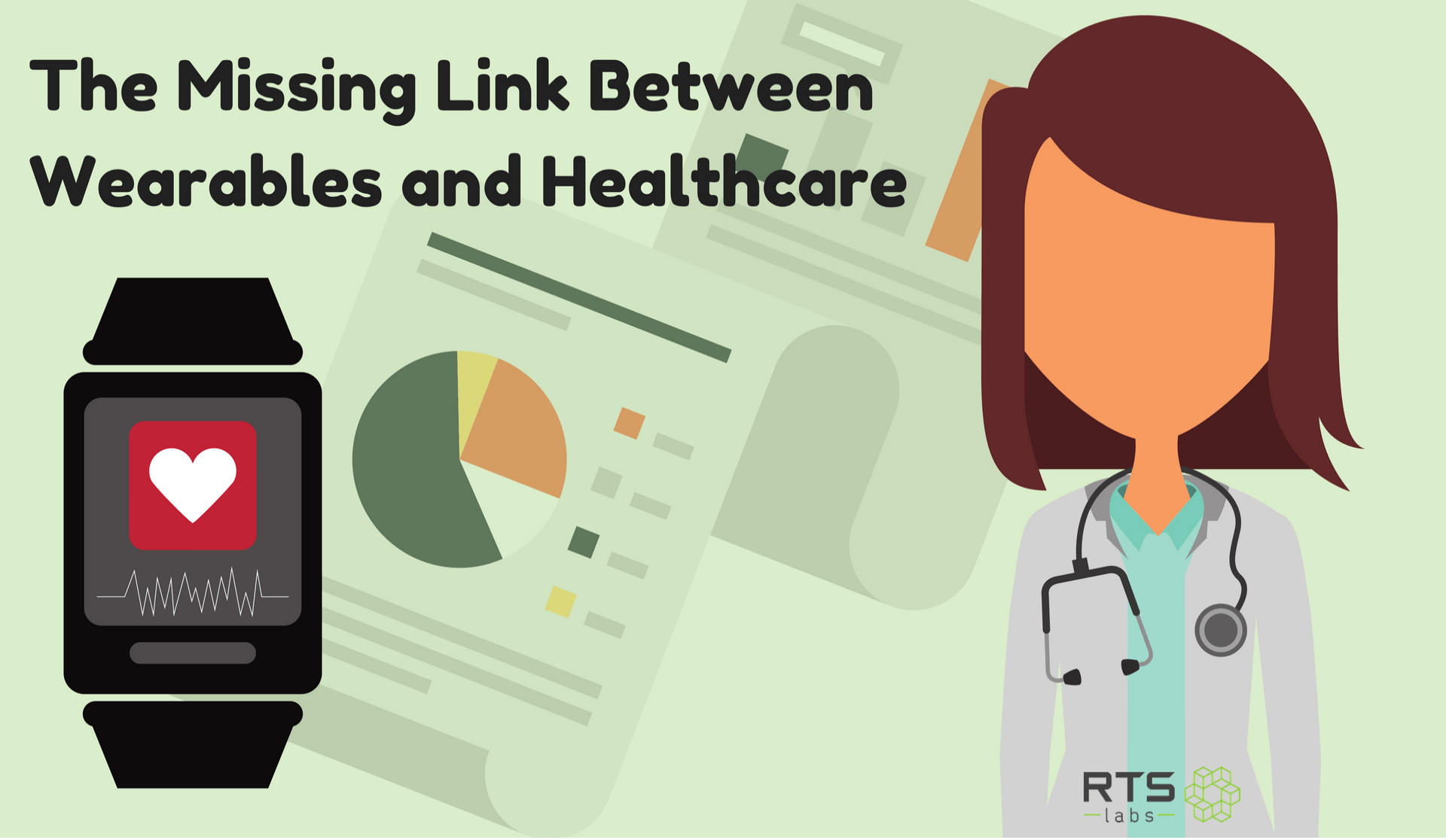


Source: Ipsos Global Connected Health Trends 2018
Base: 23,249 online adults aged 16-64 across 28 countries May 25 – June 8, 2018

Clinicians want wearables and PGHD in the care delivery continuum



Source: HIMSS Media 2018
Base: 101 online responses from IT decision makers, business/administrative decision makers and healthcare professionals at hospitals and health systems.



DATA QUALITY ASSURANCE

Who is responsible for for data quality assurance?

Our aim = data quality assurance for PGHD no matter the device, no matter the disease

International Consensus on Use of Continuous Glucose Monitoring

Diabetes Care 2017;40:1631–1640 | https://doi.org/10.2337/dc17-1600

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[8]Science & Co, Düsseldorf, Germany

Measurement of glycated hemoglobin (HbA_{1c}) has been the traditional method for assessing glycemic control. However, it does not reflect intra- and interday glycemic excursions that may lead to acute events (such as hypoglycemia) or postprandial hyperglycemia, which have been linked to both microvascular and macrovascular complications. Continuous glucose monitoring (CGM), either from real-time use (rtCGM) or intermittently viewed (iCGM), addresses many of the limitations inherent in HbA_{1c} testing and self-monitoring of blood glucose. Although both provide the means to move beyond the HbA_{1c} measurement as the sole marker of glycemic control, standardized metrics for analyzing CGM data are lacking. Moreover, clear criteria for matching people with diabetes to the most appropriate glucose monitoring methodologies, as well as standardized advice about how best to use the new information they provide, have yet to be established. In February 2017, the Advanced Technologies & Treatments for Diabetes (ATTD) Congress convened an international panel of physicians, researchers, and individuals with diabetes who are expert in CGM technologies to address these issues. This article summarizes the ATTD consensus recommendations and represents the current understanding of how CGM results can affect outcomes.

Glucose measurements are critical to effective diabetes management. Although measurement of glycated hemoglobin (HbA_{1c}) has been the traditional method for assessing glycemic control, it does not reflect intra- and interday glycemic excursions that may lead to acute events (such as hypoglycemia) or postprandial hyperglycemia, which have been linked to both microvascular and macrovascular complications. Moreover, although self-monitoring of blood glucose (SMBG) has been shown to improve glyce-

HRS Expert Consensus Statement on remote interrogation and monitoring for cardiovascular implantable electronic devices

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PGHD

Is it understandable?

Is it accurate?

Is it relevant?

Is it consistent with other data?

Is it accessible?

Is it complete?

Is it available at anytime?

Is it compliant with clinical standards?

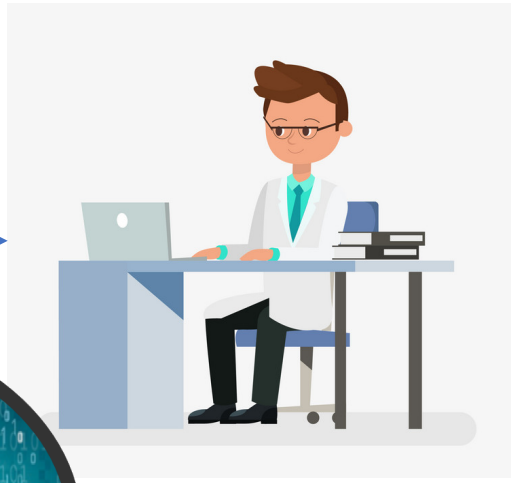
Why Should We Care about Data Quality?

"If you don't reveal some insights soon, I'm going to be forced to slice, dice, and drill!"

This is Steve,
35 years old, diabetic type 1

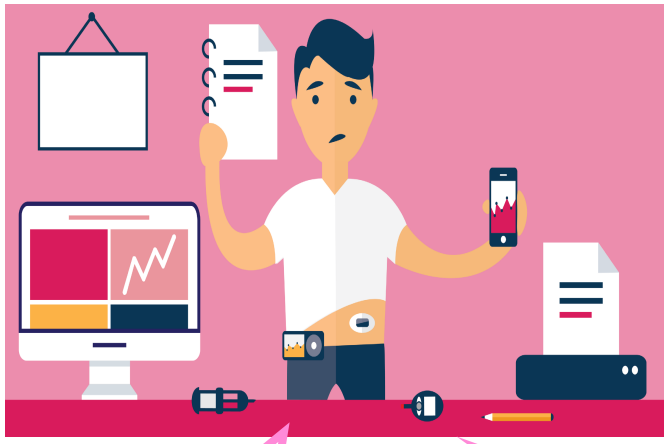
1 Data Accessibility

“authorised users (and no one else) can access data”



2 Data Accuracy

"Data are free from errors"



Manual Data Entry?

How do I know these data are accurate?

Does the wearable work properly?

How often do I need to calibrate it?

3 Data Completeness

"There are no data missing"

4 Data Consistency

“Data from different devices, convey the same meaning”

5 Data Interpretability

“The data presentation highlights the key message”

6 Data Relevancy

"The data being collected are pertinent to the standard of care"

7 Data Timeliness

“Up-to-date data are available when needed”

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PGHD Quality in Remote Patient Monitoring Problems and Ideas

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Stakeholders' Expectations about PGHD Quality Assurance

Health Consumers Group

Healthcare Providers Group

Health Information Professionals Group

Wearable Vendors/Data Integration Service Providers Group

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Thank You!

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