Outcome Measurement:
An Essential Component of Value-Based Health Care

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A Mutually Reinforcing Strategic Agenda

Organize into Integrated Practice Units (IPUs)

Integrate Care Delivery Systems

Measure Outcomes

Measure Cost For Every Patient

Move to Bundled Payments for Care Cycles

Expand Geographic Reach

Build an Integrated Information Technology Platform
The Importance of Outcome Measurement

- Outcomes are the most important information for **patients**
- Outcomes **define success** for every physician, health care organization and payor
- Outcomes encourage **multidisciplinary IPUs** and facilitate **care improvement**
- Outcomes highlight and validate **value-enhancing cost reduction**
- Outcomes enable shifting to true **value-based bundled payments**
- Outcomes guide the delivery of the **right services** at the **right locations**
- Outcomes define areas for **service line choices** and **areas for affiliation**

**Standardization** of outcomes by condition unlocks comparison and improvement
Evolution of Outcome Measurement

1910
Ernest Codman
• Father of outcome measurement
• Tracked patients with end result cards
• Surgeons refused to participate
• Codman’s hospital privileges revoked

1966
Avedis Donabedian
• Described the dimensions of health system quality as structure, process, and outcomes
• Led to widespread measurement of structure and process
• Little progress on outcome measurement

1990
U.S. News – Best Hospitals
• First prominent effort to benchmark hospital quality
• Structure, process & outcomes adopted as the measurement framework
• Structure measured with objective data
• Process quality inferred from reputation surveys
• Outcomes limited to inpatient mortality

2001
Ken Shine - IOM
• Crossing the Quality Chasm report identified six aims: safety, effectiveness, timeliness, patient-centered, efficiency, equity
• Performance measured by care processes and hospital-wide events
• The National Quality Forum focused on process measurement as a practical approach

Despite recognition of its importance, outcome measurement limited or nonexistent
Evolution of Outcome Measurement

- **2001**
  - VA program in 1990s (NVASRS) developed surgical outcome program
  - Private sector added in 2001 with ACS to do validated, risk adjusted measurement benchmarked over 30 day post operative period

- **2006**
  - Outline six steps needed to achieve value
  - Spearheaded significant efforts around the world to implement value-based health care

- **2011**
  - Non-profit organization founded by individuals from three esteemed institutions
  - Purpose to transform health care systems worldwide by measuring and reporting patient outcomes in a standardized way
Measure Outcomes for Every Patient
The Quality Measurement Landscape

Outcome measurement is necessary to derive value for measuring other quality dimensions.
Measuring Multiple Outcomes
Martini Klinik Outcomes

5 year disease specific survival
- Average hospital: 94%
- Best hospital: 95%

Source: ICHOM
Measuring Multiple Outcomes
Martini Klinik Outcomes

- **5 year disease specific survival**
  - Average hospital: 94%
  - Best hospital: 95%

- **Severe erectile dysfunction after one year**
  - Average hospital: 75.5%
  - Best hospital: 17.4%

- **Incontinence after one year**
  - Average hospital: 43.3%
  - Best hospital: 9.2%

Source: ICHOM
The Principles of Outcome Measure

- Outcomes should be measured by condition or primary care segment
  - Not for specialties, procedures, or interventions
- Outcomes are always multi-dimensional and include what matters most to patients, not just to clinicians
  - Patient reported outcomes are important in every condition
- Outcomes cover the full cycle of care
- Outcome measurement includes initial conditions/risk factors to control for patient differences
- Outcomes should be standardized for each condition to maximize comparison, learning, and improvement
- Value-based principles far different than the historical focus on provider behavior, instead of overall patient success
How Should Health Outcomes Be Measured?

- **Determining What to Measure**
  - Identify key *stakeholders*
  - Set up a multi-disciplinary project *team* with an influential *leader*
  - Identify standards, *risk adjustment* factors and validated instruments
  - Involve patients
  - Use *established measures (ICHOM, NSQIP, STS)*

- **Collecting the Data**
  - Develop a *data-capture* model, tools, and a strategic solution
  - Surveys to measure patient reported outcomes *(PROMs)*
  - Integrate data collection in the *workflow*
Martini Klinik Patient Follow Up

From: Huland H, Graefen M and Deerberg J. Das Martini-Prinzip, MWV, mbH& Co, Berlin 2018
How Should Health Outcomes Be Measured?

• **Analyze and Disseminate**
  - Data verification and auditing
  - Apply risk adjustment models or report on risk adjusted patient cohorts
  - Compare to registry and other benchmarks
  - Report data at multiple levels and with increasing transparency

• **Learn and Innovate**
  - Meet regularly to analyze and review outcomes
  - Create an environment that allows open discussion of results with no repercussions for participants willing to learn and make constructive changes
  - Create mechanisms to assist providers whose results are lagging
  - Combine outcome data with care cycle costing data to examine opportunities for value improvement
  - Identify best practices and opportunities for improvement
  - Create mechanisms to diffuse best practices across the team
Martini Klinik Surgeon Performance
Incontinence

From: Huland H, Graefen M and Deerberg J. Das Martini-Prinzip, MWV, mbH& Co, Berlin 2018
How Should Health Outcomes Be Reported?

• Begin with **internal reporting to clinicians**
  – Compare outcomes of care teams or physicians over time
  – Compare across locations
  – Move from blinded to un-blinded data at the individual provider level

• **Expand outcome reporting** over time to include referring providers, payers, and patients
  – An agreed upon **path to external transparency**

• Work with provider, payers, and government to **standardize measures and methods**

• Ultimately, **universal reporting of standardized measures** will be the strongest driver in value improvement
Barriers to Outcome Measurement

• Resources devoted to **non-outcome quality measures**

• Lack of a **clear definition** of outcomes

• The need for **standardized outcomes** at the condition level

• Need for **IT tools** to enable seamless outcome collection and aggregation as part of the clinical workflow and from patients

• **Limited incentives** and **mandates** for outcome collection
  – Need to move value-based payment model (e.g. bundled payments)
  – Mandatory collection and reporting
Breaking Down the Barriers to Outcome Measurement

- Effectively **integrate care** for conditions
- Build a **framework** for determining outcomes at the **condition** level
- Address the current high **hurdles** for **validating** outcomes
- Address the **cost** and **complexity** of measurement
- **Incentivize** good outcomes
- Work with **organizations** focusing on outcome measurement
21st Century PROMs – how patient outcomes and data analytics will transform healthcare and improve lives.

Dr. Neil Bacon
President and Chief Executive Officer
@neilbacon
Variation in health outcomes is a worldwide problem

- **2x** variation in 30-day mortality rate from heart attack in US hospitals
- **4x** variation in bypass surgery mortality in the UK hospitals
- **5x** variation of major obstetrical complications among US hospitals
- **9x** variation in complication rates from radical prostatectomies in the Dutch hospitals
- **18x** variation in reoperation rates after hip surgery in German hospitals
- **20x** variation in mortality after colon cancer surgery in Swedish hospitals
- **36x** variation in capsule complications after cataract surgery in Swedish hospitals

But, for outcomes that matter most to patients – improvement in their symptoms, functioning, and well-being – this only begins to describe the magnitude of the problem.
Healthcare versus TripAdvisor...

It's difficult to make decisions about best health care options...

- Regulator: Protect public health
- Pharma/Medtech: Maximize product sales
- Academia: Maximize publications
- Providers: Maximize procedures
- Payers: Minimize medical loss ratio

Confounding factors:

1. Large variation in outcomes generates "noise", making evaluation of all treatments, especially innovations, difficult.
2. No commonly agreed definition of health "quality" (nor of outcomes).
3. Limited transparent, outcomes data available to evaluate treatment options.
4. Misaligned incentives and market inefficiencies skew treatment choices, worsening outcomes.

Where's the patient?

Source: ICHOM analysis
We need standardisation so that we can meaningfully and reliably compare the *same* outcomes.

Comparing apples with oranges is a lot harder than…

...comparing apples with apples

Measuring different outcomes in different ways makes it impossible to meaningfully compare.
ICHOM was founded to define standards for global outcomes measurement and accelerate adoption and international benchmarking

**Where we come from**

Three organizations with the desire to unlock the potential of value-based health care founded ICHOM in 2012:

ICHOM is a nonprofit
- Independent 501(c)3 organization
- Ambitious yet achievable goals
- Global focus
- Engages diverse stakeholders

**Our mission**

Unlock the potential of value-based health care by **defining global Standard Sets of outcome measures that really matter to patients** for the most relevant medical conditions and by **driving adoption and reporting** of these measures worldwide

\[
\text{Value} = \frac{\text{Patient health outcomes achieved}}{\text{Cost of delivering those outcomes}}
\]
Six building blocks of Value-Based Healthcare strategy

1. Organize into Integrated Practice Units
2. Measure Outcomes and Cost For Every Patient
3. Move to Bundled Prices for Care Cycles
4. Integrate Care Delivery Across Separate Facilities
5. Grow Excellent Services Across Geography
6. Build an Enabling IT Platform
Process: standard outcomes, data harmonization, benchmarking +

1. Standard outcomes for each disease and condition (aim to cover global disease burden)
2. Internationally meaningful, accepted and practical across care-settings
3. Harmonized outcomes data collected from multiple centres
4. IT-enabled data platform
5. Enable rapid local, national and international benchmarking
6. Central data repository of outcomes facilitates AI-powered analytics: multiple secondary uses of data
Focus of health care must shift to value – where outcomes are those that matter to patients

We believe in a model where value is at the center of health care...

- **Providers**
  - “Compete to deliver high-quality results at competitive prices”

- **Payers**
  - “Contain costs by paying for results achieved”

Value = \[
\frac{\text{Patient health outcomes achieved}}{\text{Cost of delivering those outcomes}}
\]

... which will impact every stakeholder

- **Patients** will choose their provider based on its expected outcomes and their share of the cost

- **Providers** will differentiate into areas where they deliver superior outcomes at competitive prices

- **Payers** will negotiate contracts based on results and encourage innovation to achieve those results

- **Suppliers** will market their products on value, showing improved outcomes relative to costs
Why measuring and reporting meaningful outcomes matters
Comparing outcomes of prostate cancer care

Focussing on mortality alone...

94.0 94.0 95.0

5 year survival

Germany  Sweden  Best-in-class: Martini Klinik

Swedish data rough estimates from graphs; Source: National quality report for the year of diagnosis 2012 from the National Prostate Cancer Register (NPCR) Sweden, Martini Klinik, BARMER GEK Report Krankenhaus 2012, Patient-reported outcomes (EORTC-PSM), 1 year after treatment, 2010
Why measuring and reporting meaningful outcomes matters
Comparing outcomes of prostate cancer care

Focussing on mortality alone...

...may obscure large differences in outcomes that matter most to patients

Swedish data rough estimates from graphs; Source: National quality report for the year of diagnosis 2012 from the National Prostate Cancer Register (NPCR) Sweden, Martini Klinik, BARMER GEK Report Krankenhaus 2012, Patient-reported outcomes (EORTC-PSM), 1 year after treatment, 2010
How do we define a health outcome?

“Outcomes are the results people care about most when seeking treatment, including functional improvement and the ability to live normal, productive lives.” – ICHOM
ICHOM is creating standard global outcomes in partnership

What are ICHOM Standard Sets?
- Set of **10-15 outcomes** that matter most to patients by condition
- Comprises both clinician- and patient-reported outcomes
- Includes **case-mix variables**, **measure definitions**, and **measurement time points**

Who develops them?
- **International, multidisciplinary** Working Group of clinical experts
- **Patient representatives** play key role in selecting outcome domains
- Iterative consensus process to agree on final recommendation

Who is endorsing them?
- Strong support from **patient advocacy groups**, e.g., Movember and the AHA
- Active engagement with **governments, payers**, e.g., Scottish Government, CMS (US)
32 Countries
650+ Organizations
13 National Registries
• 25 Outcome measures defined
• Accelerating process to produce further 25 in two years
  • Harmonising sets = EMR integration
  • Bring together life sciences, clinicians, providers and payors
The theory of (transparent) benchmarking

Large variation exists in the outcomes achieved by different healthcare providers

Benchmarking will cause variation to narrow and performance to improve

Mean change in ODI

Study this clinic...

...to improve outcomes in these clinics

(each dot represents one clinic)
Outcomes data applications – virtuous learning cycle

Inter-organisational applications

Collect data

Identify outlier performance

Learn from outlier performance and best practice codification

Test value improvement strategies

Diffuse

Intra-organisational applications
The Swedish myocardial infarction registry
The power of measurement and transparency on compliance to guidelines

RIKS-HIA Quality index

Data made public

Measurement and comparisons alone fuels adherence; transparency accelerates it
Learning from positive deviance: aggregated outcomes data can help answer many of the questions we face in healthcare today

<table>
<thead>
<tr>
<th>Direct clinical care</th>
<th>Comparison &amp; benchmarking</th>
<th>Systems-level use of data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How is our patient doing today?</td>
<td>5. How can I measure what I achieve?</td>
<td>9. How can I better design payment models?</td>
</tr>
<tr>
<td>2. How can help the patient understand what to expect</td>
<td>6. Where does my hospital stand?</td>
<td>10. How can we design better studies?</td>
</tr>
<tr>
<td>3. How do we know when an intervention may be warranted?</td>
<td>7. How do I improve the quality of care at my institution?</td>
<td>11. How can we assess if current interventions are effective?</td>
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<td></td>
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<td>13. How can I segment and leverage subgroups of patients based on response?</td>
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The impact of measuring outcomes in Breast cancer: Santeon hospital network, Netherlands

By measuring the outcomes that matter most to patients, the Santeon hospital network in the Netherlands has identified improvement initiatives to increase the value of care for breast cancer patients.

**Measures from the ICHOM breast cancer standard set**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Cycle 1</th>
<th>Cycle 3</th>
<th>Santeon average</th>
<th>Canisius Wilhelmina Hospital</th>
<th>St. Antonius Hospital</th>
<th>Medisc Spectrum Twente</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reoperation after positive margins (%)</td>
<td>11.0</td>
<td>4.0</td>
<td>6.0</td>
<td>5.0</td>
<td>2.6</td>
<td>20.0</td>
</tr>
<tr>
<td>Reoperation after complication (%)</td>
<td>2.6</td>
<td>1.9</td>
<td>1.9</td>
<td>1.9</td>
<td>1.9</td>
<td>20.0</td>
</tr>
<tr>
<td>Lumpectomy day cases (versus inpatient) (%)</td>
<td>31.1</td>
<td>8.0</td>
<td>56.0</td>
<td>66.0</td>
<td>56.0</td>
<td>43.0</td>
</tr>
</tbody>
</table>

Source: Data from Santeon hospital and NABON Breast Cancer Audit, Netherlands Comprehensive Cancer Organization: Santeon and BCG analysis
Next phase of ICHOM: Global Flagship Programmes

- **Globally important conditions**: HIV, Malaria, Cancer, Diabetes, Respiratory

- **Integrated**: unified projects to define outcome measures, implement them and deliver true benchmarking

- **Scale**: international implementation, high volumes of data

- **Partnerships**: brings together life sciences, foundations/NGOs, clinicians, providers and payors

- **Data-driven**: standardised data platform to collect, manage, interpret and analyse outcomes data
Questions?