Jens Deerberg-Wittram
Director, The Boston Consulting Group

Why every Medtech company needs a value-based strategy

A MedTech Europe event
The MedTech Forum
bringing HealthTech stakeholders together

2018 © The MedTech Forum. All rights reserved - Reproduction in whole or in part is prohibited.

Significant outcome variation within countries

4-36x variation in outcome, depending on procedure and country

- **4x** variation in bypass surgery mortality in the UK
- **5x** variation in reoperations due to complications after knee replacement in Germany
- **6x** variation in emergency readmissions after hip surgery in the UK
- **9x** variation in complication rates from radical prostatectomies in the Netherlands
- **18x** variation in reoperation rates after hip surgery in Germany
- **36x** variation in capsule complications after cataract surgery in Sweden

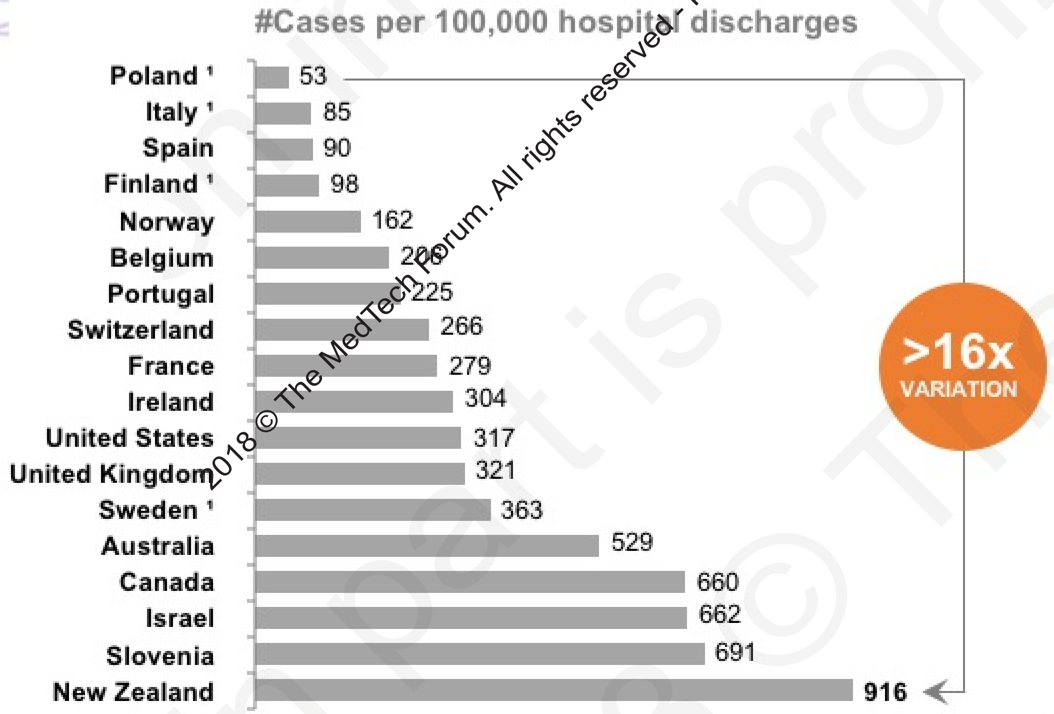
Source: National Institute for Cardiovascular Outcomes research annual report 2016-2017; The Swedish National Cataract Registry HSCIC; NIS and SID 2011 data; AHRQ IQI SAS Module; Dimick et al. (2009). Composite measures for surgical mortality in the hospital. Health Affairs, 28(4), 1189–98 Health at a Glance 2013, OECD Indicators; Statistisches Bundesamt (DRG_OPSvier, Stat_Bev_EA), eigene Berechnung und Darstellung (IGES 2014) https://faktencheck-gesundheit.de/die-faktenchecks/interaktive-karten-zu-regionalen-unterschieden/kniegelenk-erstimplantationen/; BCG analysis

The MedTech Forum
A MedTech Europe event
bringing HealthTech stakeholders together

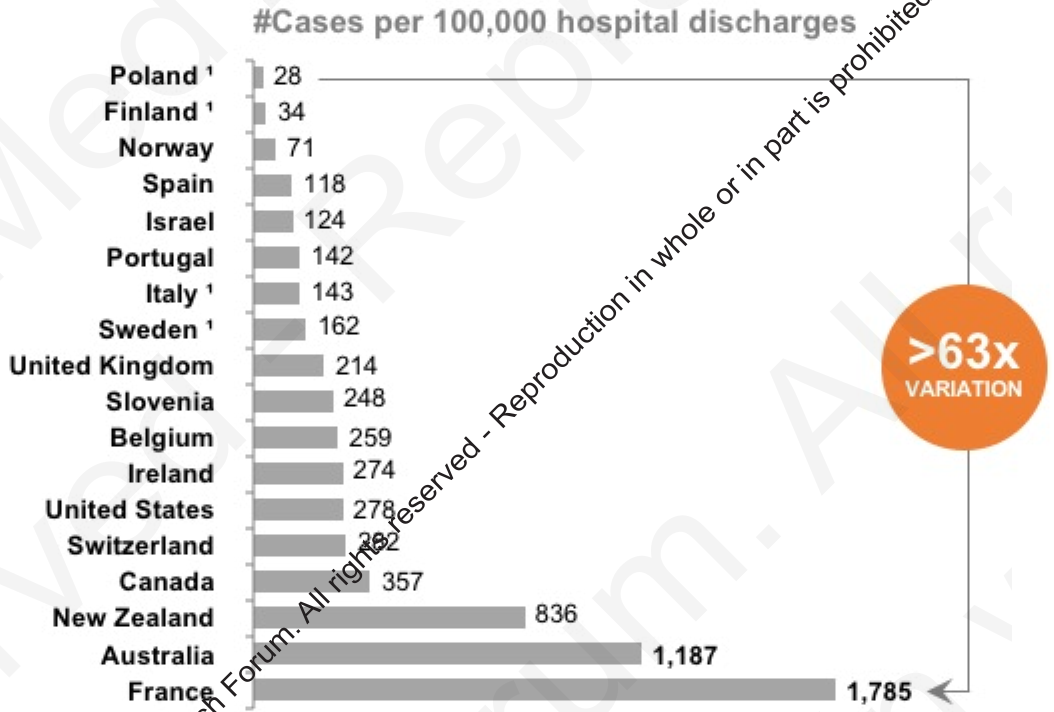
Outcome variations between countries

Example: Complications after hip replacement surgery

Deep Vein Thrombosis (DVT)



Postoperative Pulmonary Embolism (PE)



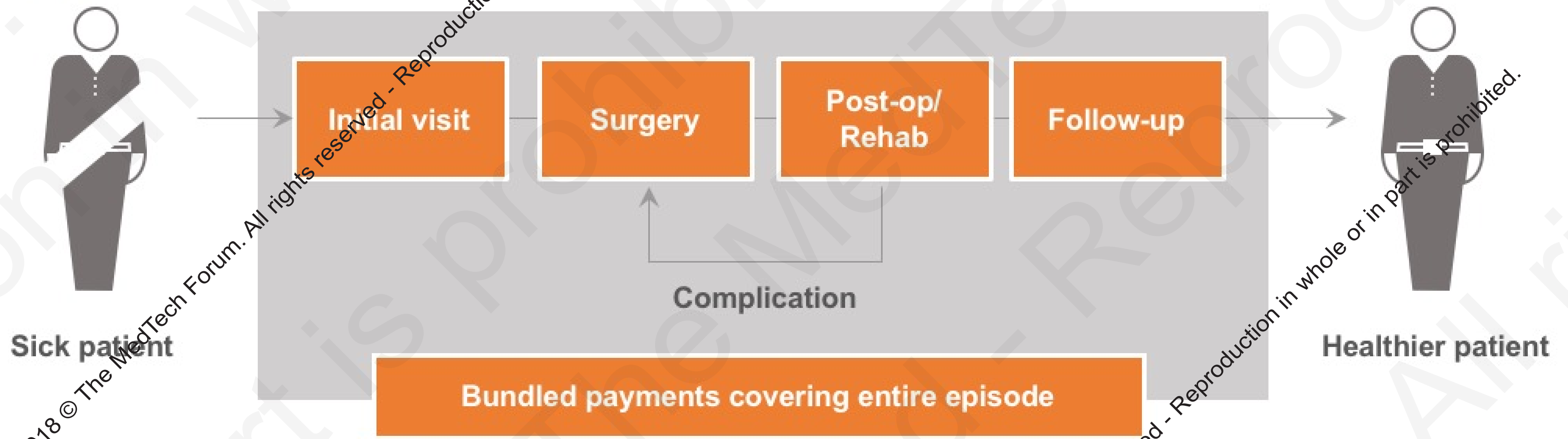
1. Average number of secondary diagnoses <1.5 for all surgeries which may result in an underestimation. Notes: Numbers are not risk-adjusted. Numbers obtained by all episode method. Surgical episode method used for Poland, Belgium, UK, Switzerland, Ireland, USA, Slovenia, Australia, France.
Source: OECD Health Statistics 2015

The MedTech Forum
A MedTech Europe event
bringing HealthTech stakeholders together

Outcome and cost variation is all over the place in healthcare

2018 © The MedTech Forum. All rights reserved - Reproduction in whole or in part is prohibited.

Bundle payment pays fixed price per patient



- Fixed reimbursement per patient—Not by activity
- Reimbursement covering full care episode—Not a single service
- Complication warranty—Provider responsible for complications, strong outcomes and low costs
- Outcome based reimbursement—Part of payment based on patient outcomes
- Informed patient choice of provider—Transparent outcomes/rankings

Bundles drive better outcomes at lower cost

Model design

Bundled payment for hip- and knee surgery

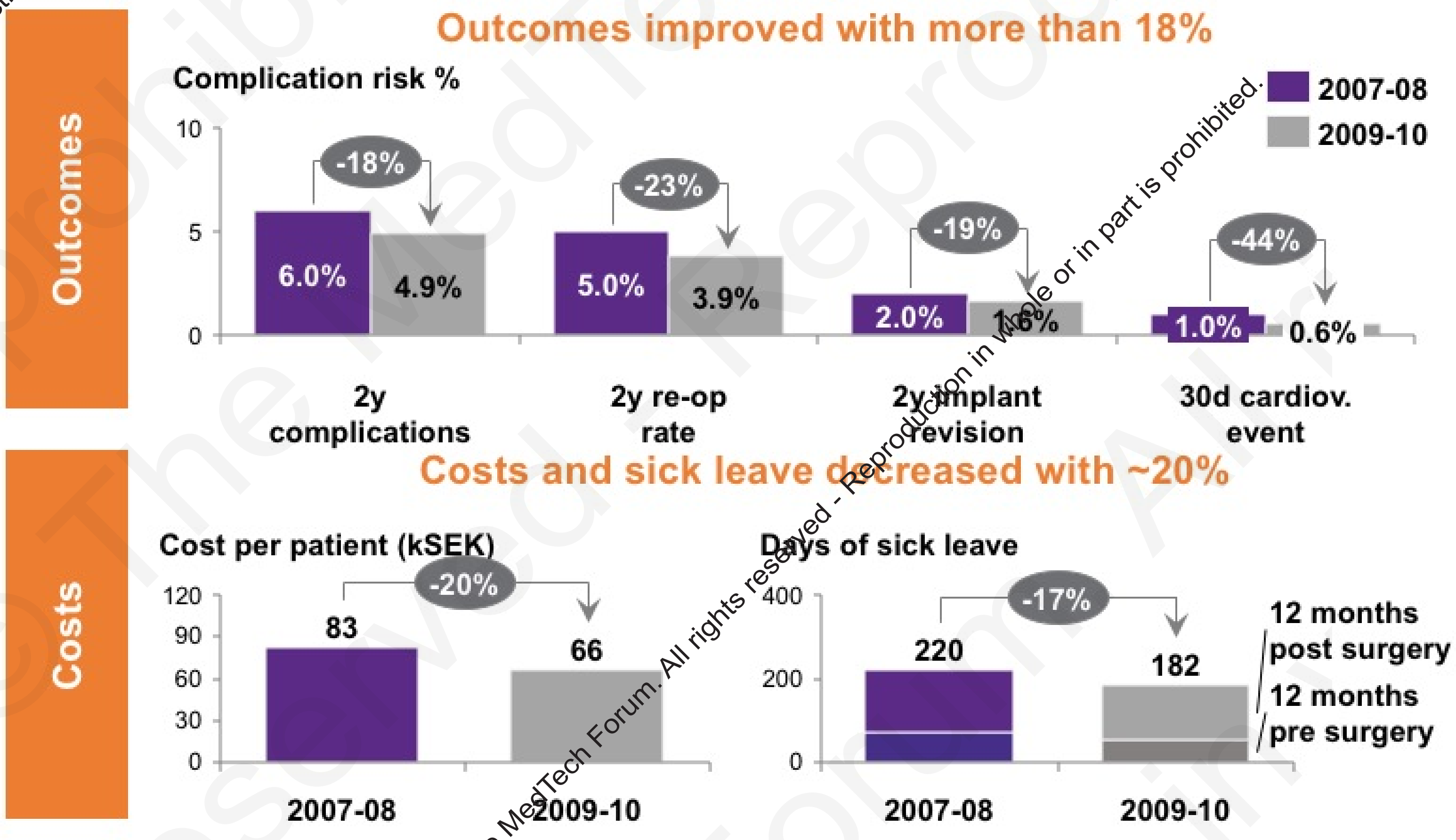
- Payment of €6,300 to cover full cycle of care, including diagnostics, surgery with post-operative care, implant and follow-ups

Complication guarantee

- Provider financially responsible for non-acute complications related to the primary surgery up to 2 years post-operation

Result dependent payment

- 3.2% of the reimbursement was retained and paid out if the provider achieved defined goals



Note: 2007-08 and 2009-10 were the 2 years before and after the new model was introduced.
Source: New reimbursement model for care choice hip- and knee prosthesis surgery – Follow up report; BCG analysis

The MedTech Forum
bringing HealthTech stakeholders together

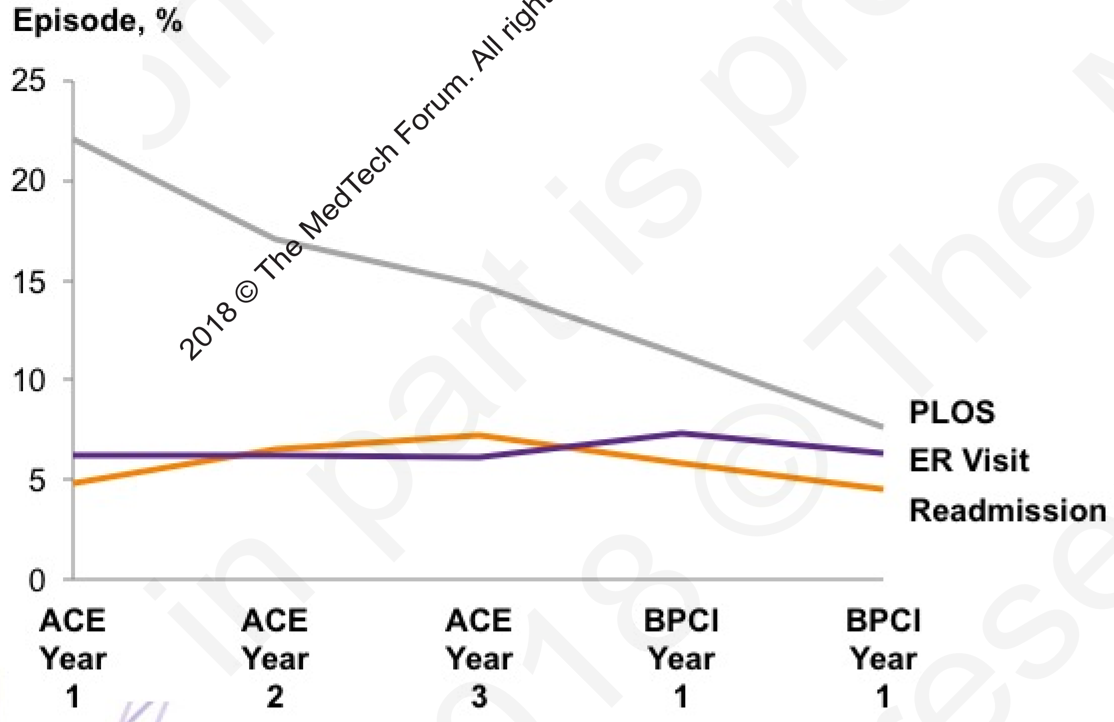
Bundled payments incentivize providers to minimize avoidable, and costly, complications

2018 © The MedTech Forum. All rights reserved - Reproduction in whole or in part is prohibited.

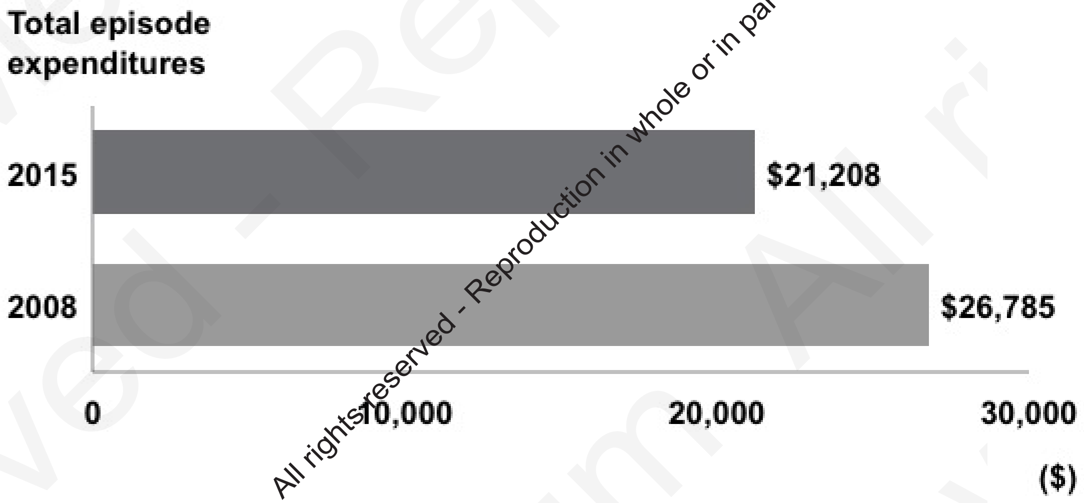
Joint bundle puts pressure on implant prices

Example: Baptist Health System 2010–2015

Quality of care—ER visits, readmissions, and Prolonged Length or Stay (PLOS)



Cost savings over Acute Care Episodes (ACE) and Bundled Payments for Care Improvement (BPCI)

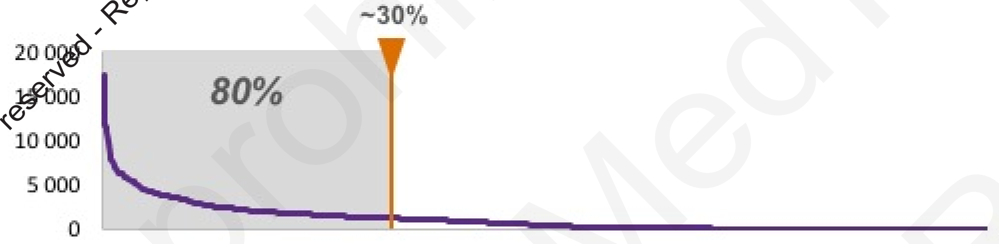
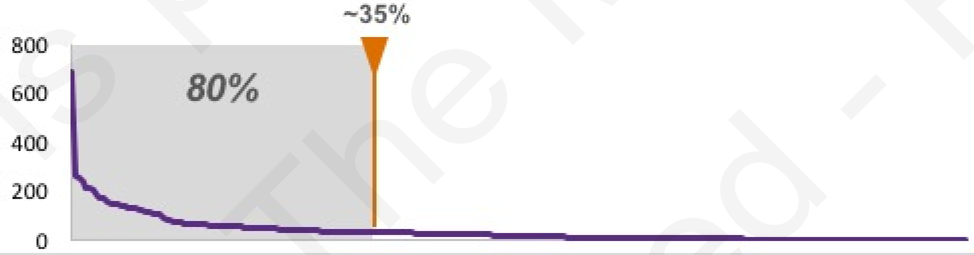
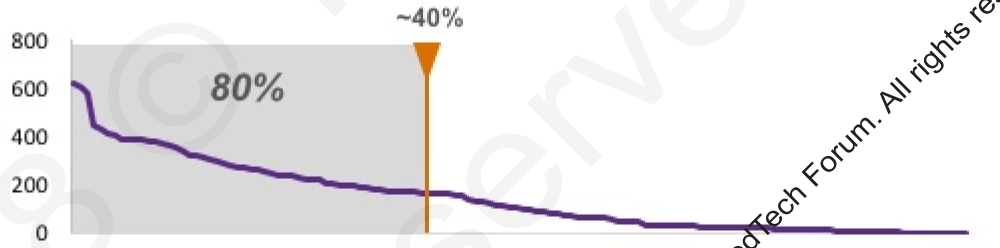


Total episode expenditures:	-20.8% ($5,577)
Implant expenditures:	- 28.9% ($ 1,921)
Supply expenditures:	- 59.4% ($ 728)

Note: CJR: Comprehensive Joint Replacement; Source: JAMA Intern Med, 3 Jan 2017

The MedTech Forum

Volumes for high cost procedures consolidating

Treatment area	Procedure volumes by hospital	Out of 1.956 hospitals...
Cardiac catheter procedures[1]		...1'041 perform procedure 302 hospitals account for 80% of procedure volume
Prostate laser treatment[2]		...256 perform procedure 87 hospitals account for 80% of procedure volume
TAVI[3]		...132 perform procedure 52 hospitals account for 80% of procedure volume

1. OPS-Codes included: 1-273, 1-274, 1-275, 1-277, 1-279, 8-839 (Herzkatheter-Untersuchungen) 2. OPS-Codes included: 5-601.4..., 5-601.7... (Transurethrale Exzision und Destruktion von Prostatagewebe mit Laser) 3. Transcatheter aortic valve implantation, OPS-Codes included: 5-35a (Minimalinvasive Operationen an Herzklappen) Source: G-BA Quality Reports; BCG analysis

A MedTech Europe event
The MedTech Forum
bringing HealthTech stakeholders together

Value-based reimbursement models will put pressure on device prices if value proof is lacking

2018 © The MedTech Forum. All rights reserved - Reproduction in whole or in part is prohibited.

Care practice variation in knee replacement

Example hospitals of a private hospital group

	Pre-operative Care	Pre-surgery Room/anesthesia	Or prep	Operation	Post-operative care
Hospital A	• Outpatient knee consultation	• Spinal anesthesia • Femoral artery block • Additional oral medications	• Patient positioned in pre-surgery room by doctor • Operating room setup	• Implant product A • With cell saver • No hemostasis	• 24h recovery room • No autologous blood • No banked blood checked
Hospital B	• Consultation by appointment • Ward	• Spinal anesthesia + minimal sedation • Femoral artery + sciatic nerve block catheter	• Patient positioned in operating room by assistant • Operating room setup	• Implant product B • With navigation • No cell saver	• ~3h recovery room • No autologous blood • Two banked bloods checked

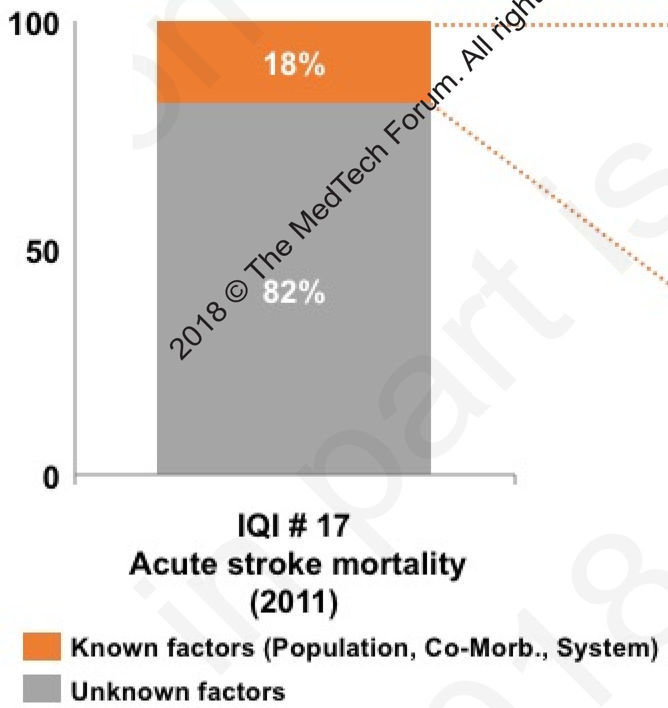
Evidence-Based Medicine?

2018 © The MedTech Forum. All rights reserved - Reproduction in whole or in part is prohibited.

Ample opportunity to improve care practice

Population factors & co-morbidities account for ~20% of variation

% of variation accounted for



Key significant factors

Category	Contributing factor[1]	P Value
Population Factors	Gender (female)	0.01
Co-Morbidities	CHF	<0.001
	Hypertension	<0.001
	Neurological disorders	0.004
System	Total inpatient revenue	<0.001
	Total outpatient revenue	<0.001
	Total discharges	0.003
	Teaching hospital	<0.001
	Discharges per capita	<0.001

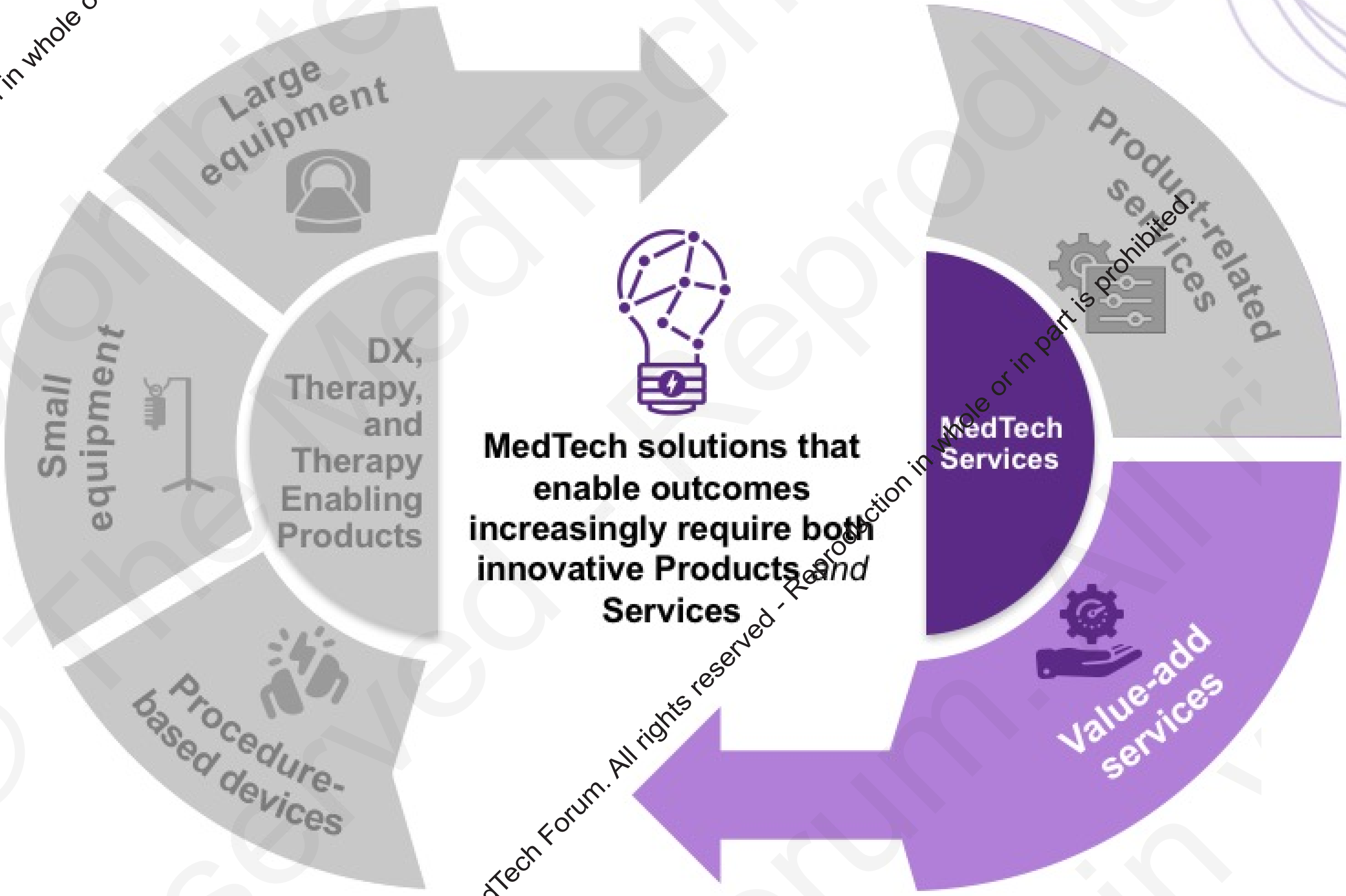
>80% of variability driven by factors *inside* the hospital and are unobserved by this study

1. Only includes contributing factors with P<0.01 Source: XXXXX ; BCG

The MedTech Forum

Value-add services

Opportunities to pull the cost and/or outcomes levers of the value equation



The edge for Medtech firms: > 80 % of outcome variation driven by care practice

Value-add services based on pathway analysis

VBHC Implementation Toolkit

Outcomes transparency (ICHOM) — Outcome drivers
Cost transparency (TDABC) — Patient cohorts

- Outcomes and cost measurement to understand value drivers
- Outcome driver tree based on key structure and process elements
- Patient cohorts to understand risk profiles and care differences

Patient pathway analysis

Outpat. sector & rehab. ⇐⇒ Client VBHC Laboratory ⇐⇒ Benchmarking Partner

- Detailed client patient pathway mapping
- Benchmarking with best-in-class stroke centers
- Understanding interface with rehab and outpatient sectors

Pain points and care variation with impact on

Outcomes — Costs

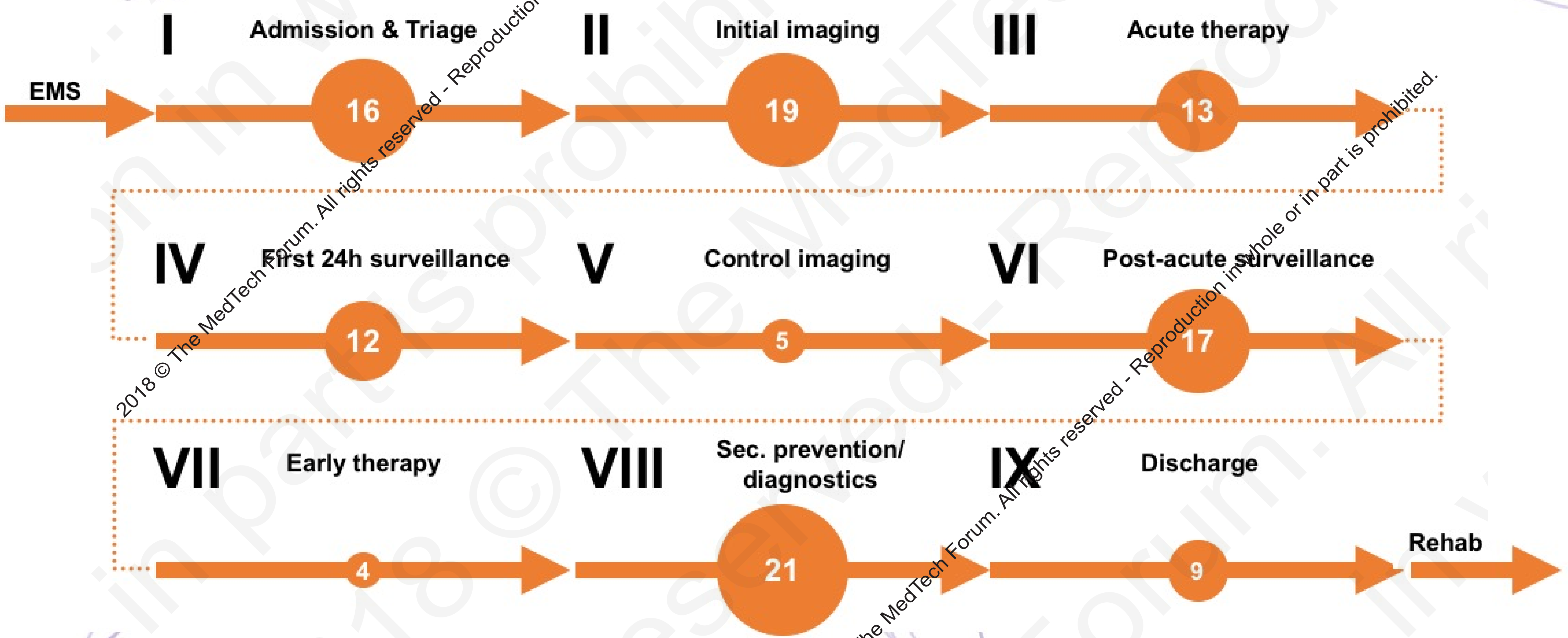
- Jointly develop long list of pain points that cause care variation
- Identify corresponding care solutions that address pain points

VBHC Solutions Framework

- Value-add services to reduce care variation and improve outcomes/reduce costs
- Value-add services prioritization along dimensions match with client capabilities, monetarization potential and market scalability

2018 © The MedTech Forum. All rights reserved - Reproduction in whole or in part is prohibited.

> 100 pain points along the stroke care pathway



Source: Client project team discussions; BCG

Pain points grouped into five root causes

Information Silos

Delayed, incomplete and non-prioritized information flows between involved staff

Insufficient Enablement

Lack of required education/training and nominal authority of staff

Numerous Decision Options

Lack of clear protocols in acute care causing critical time delay

Capacity Constraints

Delays and waiting times for diagnostic/ therapeutic facilities despite high prioritization protocols

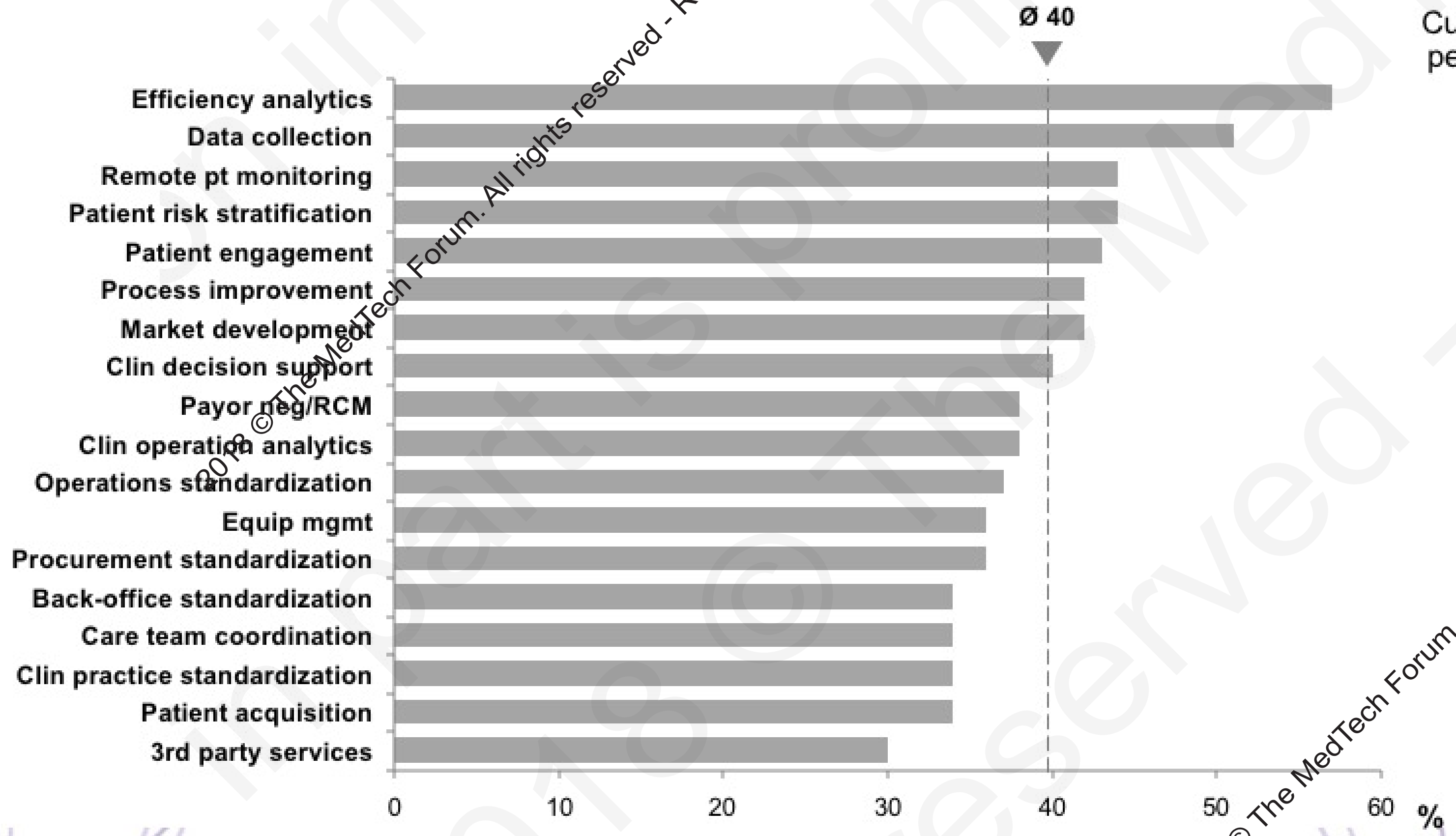
Lack of follow up and rehab

No structured data sharing with lacks in prevention programs and compliance controlling

Source: Client project team discussions; BCG

Providers willing to adopt value-add services

Percent of respondents that will buy more of these services in the next 3 years



Service	Current provider penetration (%)	Would buy from MedTech[1]
Efficiency analytics	74	High
Data collection	78	High
Remote pt monitoring	56	Low
Patient risk stratification	55	High
Patient engagement	61	High
Process improvement	66	Med
Market development	55	Med
Clin decision support	53	High
Payor neg/RCM	59	High
Clin operation analytics	58	Low
Operations standardization	71	High
Equip mgmt	68	High
Procurement standardization	66	Low
Back-office standardization	54	Med
Care team coordination	62	Med
Clin practice standardization	62	High
Patient acquisition	50	Low
3rd party services	68	Med

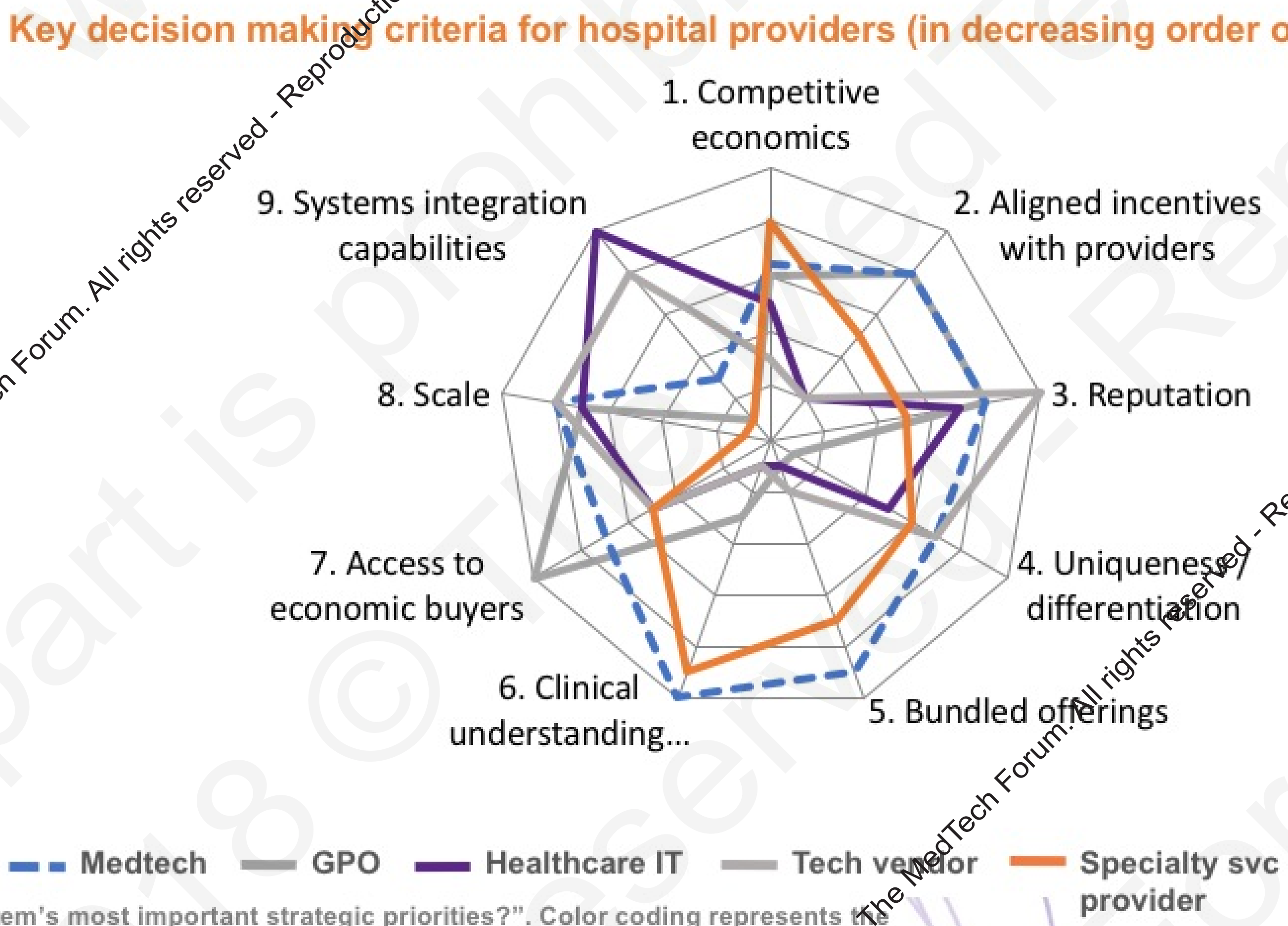
Despite high demand, only ~10% would buy from MedTech due to concerns of collecting patient data

~100% of respondents look to buy service from Medtech due to high clinical expertise

1. Low = <40% of respondents, Med = 40-60%; High = >60% Source: BCG Provider Survey April 2017

The MedTech Forum

MedTech companies with a clear right to win



1. "What are your hospital or system's most important strategic priorities?". Color coding represents the proportion within each provider segment that indicated that answer as their top priority

Source: BCG Provider Survey April 2017 (n=117)

MedTech industry well positioned to provide value-add services

- Providers are willing to adopt value-add services

- Providers value MedTech companies' knowledge and capabilities

Value from services captured in different ways

Free with product → Fee for service (independent of product) → Priced as a solution → Value-based outcome-driven pricing

Traditional pricing models

Services provided for “free” as part of the product / equipment sale
- Services typically confined to installation, warranty, training and education

▫Manufacturers primarily capture value through prod. margins
- Margins used to fund price concessions

Traditional MedTech players

New ways to capture value

▫Services with standalone value prop and clear value proofs
- E.g., Stryker Performance Solutions OR workflow improvement services

▫Manufacturers capture value through bundled solutions sales
- E.g. Zimmer Biomet Signature Solutions delivers value across continuum of care (pre-op to post-op recovery)

ZIMMER BIOMET Your progress. Our promise.

stryker®

Implant makers offering value-based solutions

Implant Makers	Care Delivery Cycle							
	Prehospital		Inpatient		Post acute		Value tracking & improvement	
	Patient education	Patient engagement	Surgical preparation	Safety & self care	Facility selection & logistics	Online rehabilitation	Outcomes	Cost
DePuy Synthes Advantage	✓	✓	✓	✓	✓	✓	✓	✓
Medtronic Orthopedic Solutions	✓	✓	✓	✓	✓	✓	✓	✓
smith&nephew Syncera			✓	✓			✓	✓
stryker Performance Solutions	✓	✓	✓	✓	✓	✓	✓	✓
zimmer Signature Solutions	✓	✓	✓	✓	✓	✓	✓	✓

Source: Why Every MedTech Company Needs a Value-Based Strategy, BCG perspectives, based on publically available data

Seven determinants of success for value-add services

1. Proximity of service offering to a product portfolio
2. Product or procedure provides link to patient beyond episode of care
3. Deep clinical expertise in disease state where procedure is core to therapy
4. Leading market position and scale within and/or across the portfolio
5. Care pathway is fragmented across sites of care
6. Device represents >20% of the overall cost of the procedure
7. Factors "beyond the product" can be impacted to improve the outcome

2018 © The MedTech Forum. All rights reserved - Reproduction in whole or in part is prohibited.

New BCG report


BCG
WHY EVERY MEDTECH COMPANY NEEDS A VALUE-BASED STRATEGY

Why Every MedTech Company need a VBHC Strategy

New health care VBHC funding models have transformed MedTech players' offering fundamentally

- **E.g. in orthopedics where US bundled payments require industry to rethink their service offering**

The paper outlines various VBHC models with examples from the industry according to 3 value-based strategies:

- **From stand-alone products to value based solution**
- **Leveraging value measurement**
- **Investing in value based case delivery**

The VBHC funding models are likely to further expand and MedTech companies must hence to respond by adapting their corporate and business strategy according to five VBHC steps:

1. **Deciding where to play**
2. **Size the opportunity**
3. **Map the care delivery cycle**
4. **Develop the VBHC solution set**
5. **Design the VBHC business model**

Stay tuned for our upcoming value-based publication:

Serious About Services
on how to unlock business opportunities in MedTech services

2018 © The MedTech Forum. All rights reserved - Reproduction in whole or in part is prohibited.