



The Global Language of Business

Do clinicians care about standards?

34th Global GS1 Healthcare Conference
Bangkok, Thailand

October 30, 2018

Prof Dr Susan Moffatt-Bruce, CEO Ohio State Wexner Medical Centre, Columbus, US; chair

Mr. David Berridge, Deputy Chief Medical Officer, Medical Director – Operations, the Leeds Teaching Hospital, UK

Dr. Chun-Che Shih, Taipei Veterans General Hospital, National Yang-Ming University, Taiwan

Dr. Hinne A. Rakhorst, Medisch Spectrum Twente Enschede, Chair Dutch Association of Plastic Surgeons, The Netherlands



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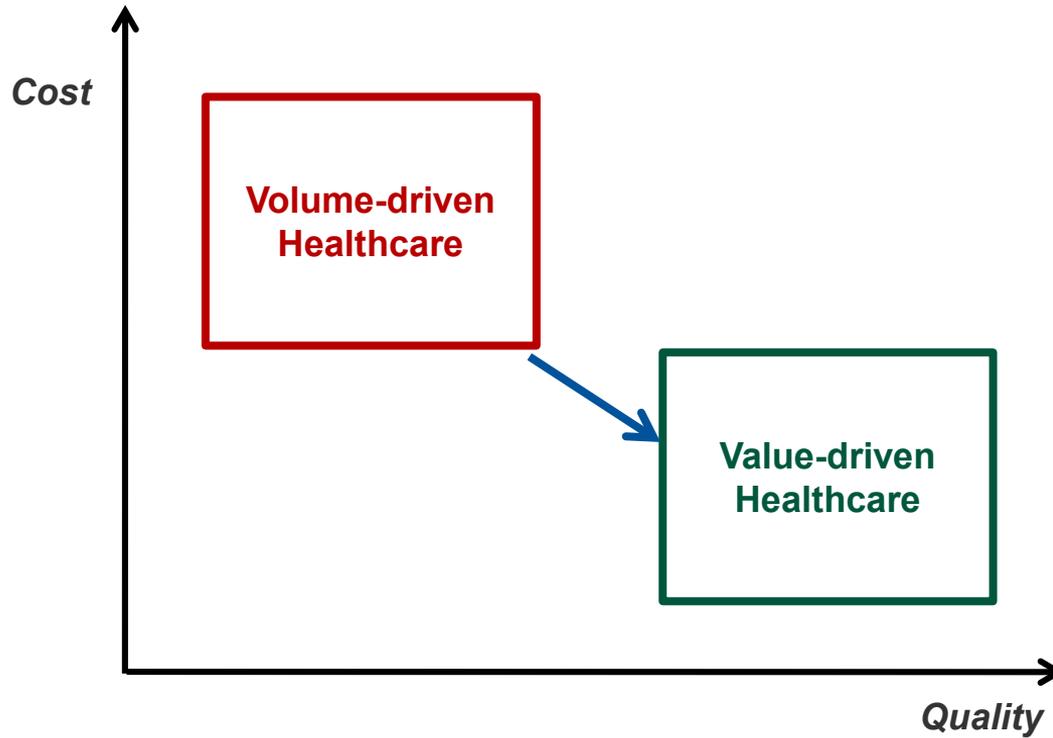


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WEXNER MEDICAL CENTER

Standardization: Challenges and Outcomes for clinicians and CEO's

Susan Moffatt-Bruce, MD, PhD, MBA, FACS
Executive Director, University Hospital
Professor of Surgery
Professor of Biomedical Informatics

Volume-driven to Value-driven Payment Transition



Changes in Value-Based Healthcare Delivery Systems

1. Organizational **change**-integrated practice units
2. Measurement of **outcomes** and costs for every patient
3. Move to **bundled** payments for care provided
4. **Integrated** care delivery systems
5. **Expand** geographic reach
6. Build enabling **informatics**/technology platforms



“What if we don’t change at all ...
and something magical just happens?”





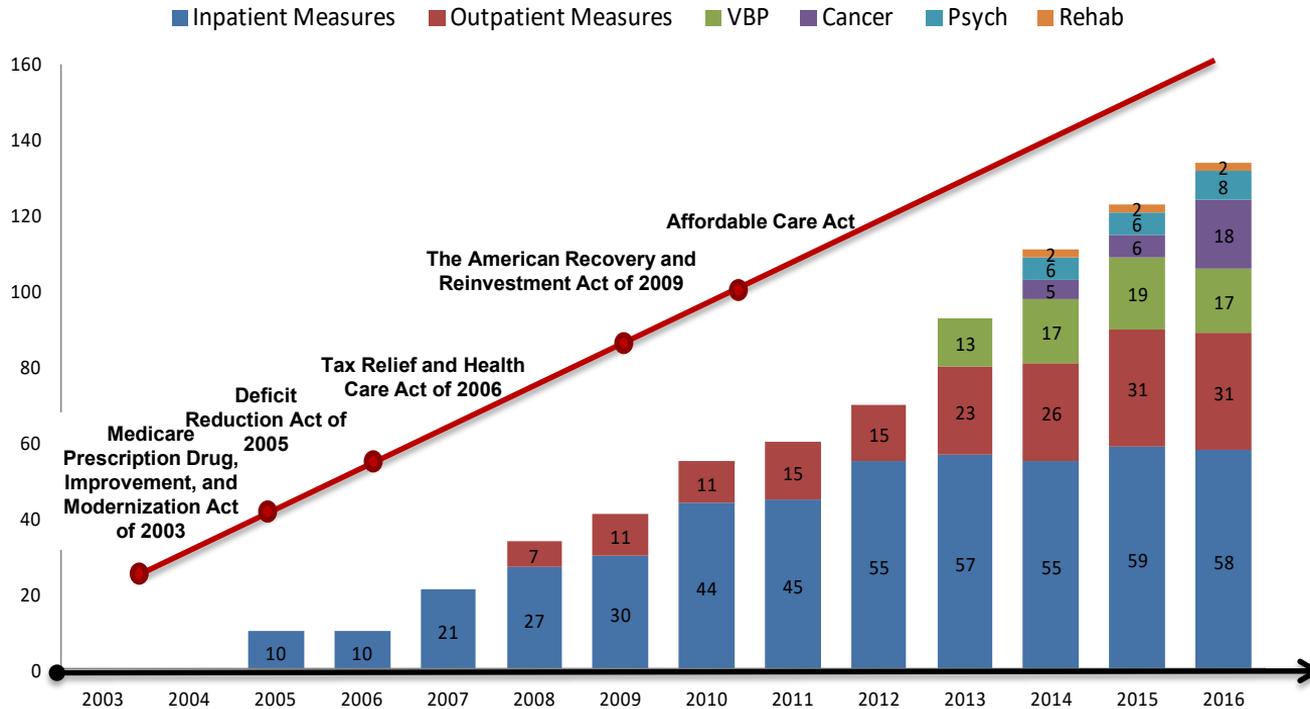
VALUE=

Health outcomes that matter to patients

Cost of delivering outcomes



Quality Measures

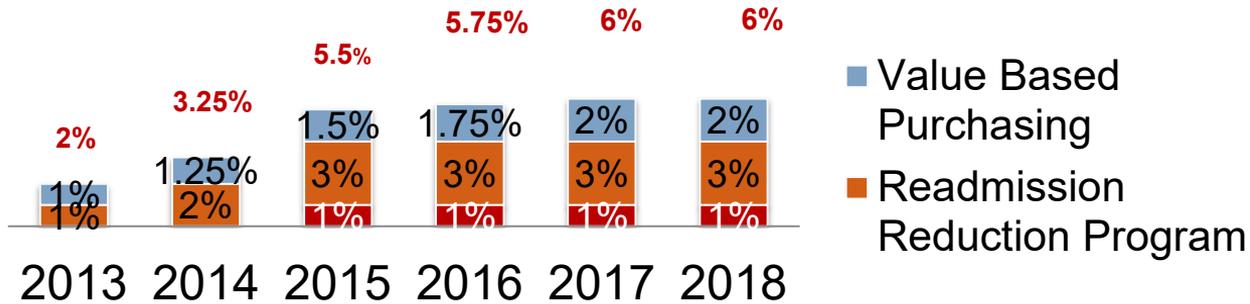


Pay-For-Reporting
0.4% point reduction in the annual market basket update for not reporting

Pay-For-Reporting
2.0% point reduction in the annual market basket update for not reporting

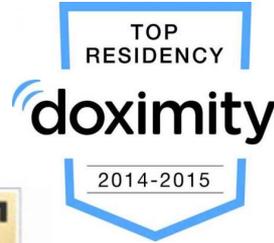
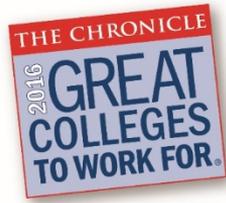
Value Based Purchasing
1% payment reduction – incentive in 2013
2% payment reduction – incentive by 2017

Total Percentage of Medicare Revenue at Risk: Quality Based Payment Programs

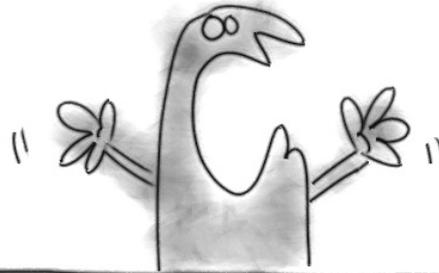


Note: Hospitals that do not successfully participate in the Hospital IQR Program and do not submit the required quality data will be subject to a 25% reduction of the market basket update. Also, the law requires that any hospital that is not a meaningful EHR user will be subject to a 75% reduction of the market basket update in FY 2017.





Now What?!!



I'm here to tell you
that



sticking
your head in the
sand doesn't work

© Dave & Les J

quickmeme.com

We are still the midst of change...

- Healthcare “reform” vs “repent”
- Consumer driven models
- Disruptive innovation
- “Big data” – driving new care models
- Consolidation/alignment of health systems, and physician practices
- Population health models
- Technology growth



Clinical Transformation =

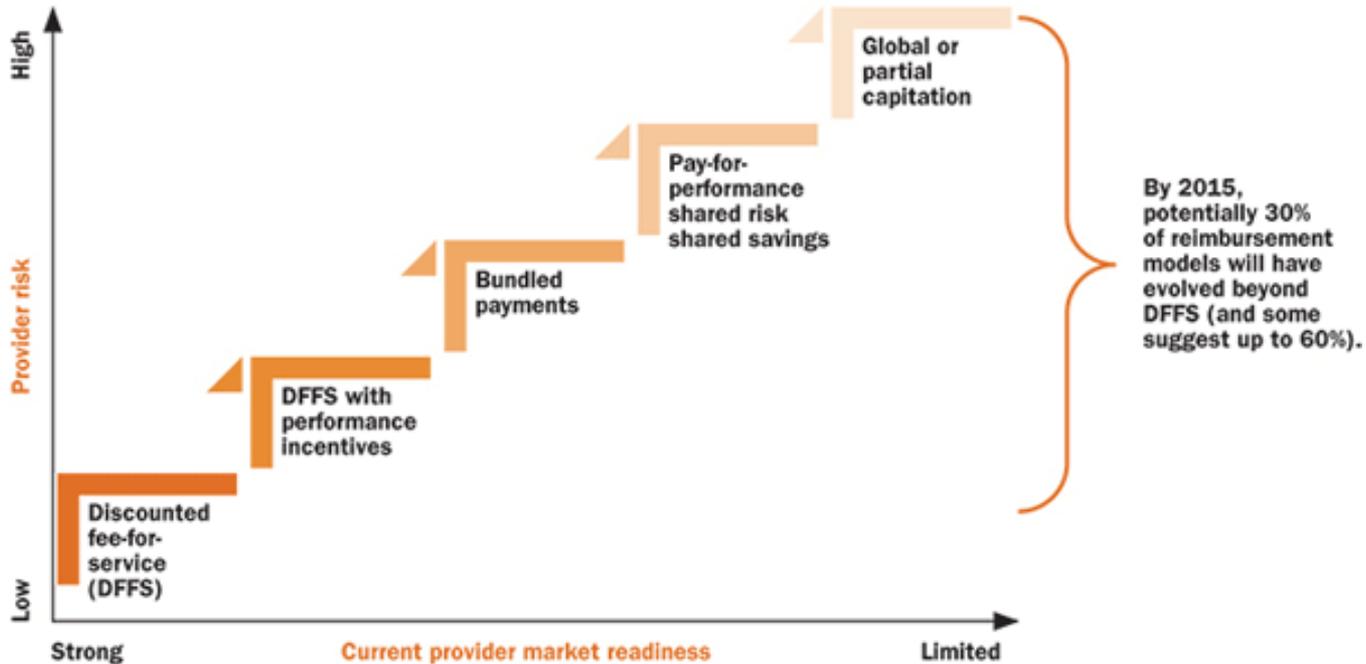
Choosing the Right Path to Standardization



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New payment models

Expected evolution of contracting and reimbursement models from pay for volume to pay for value



Balancing act...investing in the future of standardization

- Health systems have to invest in the infrastructure to build a new care delivery system around standardization
- The return on these investments is not immediate
- Time is a valuable resource and investment is key



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From

Pay for procedures

Fee-for-service

More facilities/capacity

Physicians/Hospitals acting independently

Physicians and Hospitals working in parallel

Hospital centric

Treat disease/episode of care

To

Pay for value

Case rates/budgets/capitation

Better access to appropriate settings

Physicians/Hospitals collaboration: global risk

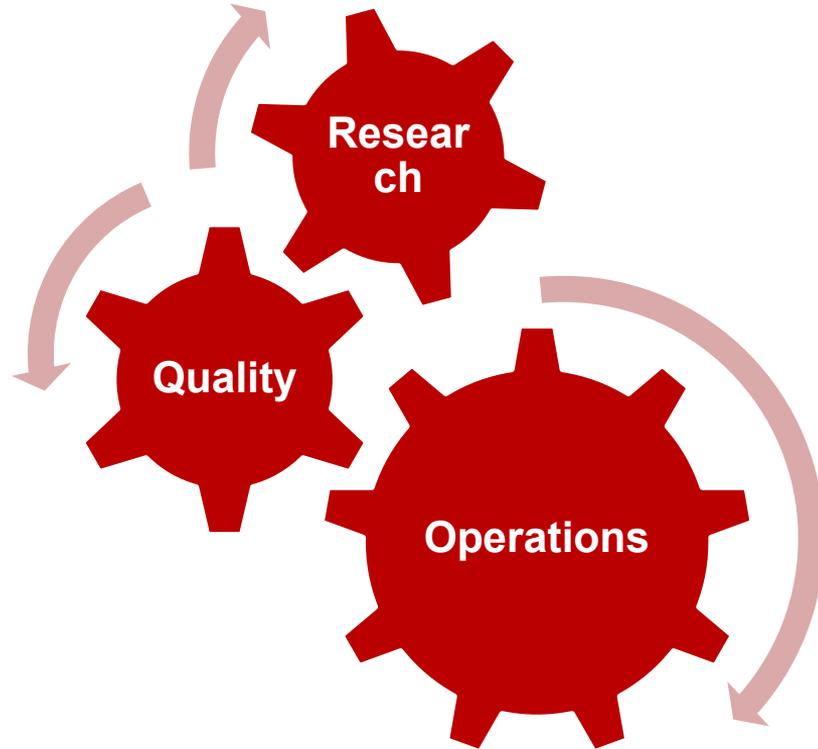
Physicians and Hospitals working in a highly integrated manner

Continuum of Care (Population centric)

Maintain health



Integrating Research, Quality and Operations= Care Transformation for Standardization



Transformation Strategic Objectives

- Organize care around the patient
- Measure quality outcomes, patient satisfaction and efficiency
- Prepare for new payment models and a consumer-driven market
- Integrate care delivery across separate facilities
- Transform the care delivery model
- Build an enabling information technology platform



Clinical Transformation

Technology Transformation

Data Analytics

Predictive Modeling

Deployment of EMR solutions

Operational Transformation

Focused care redesign

Post- acute and other partnerships

Access and throughput

Finance Transformation

Payer negotiations

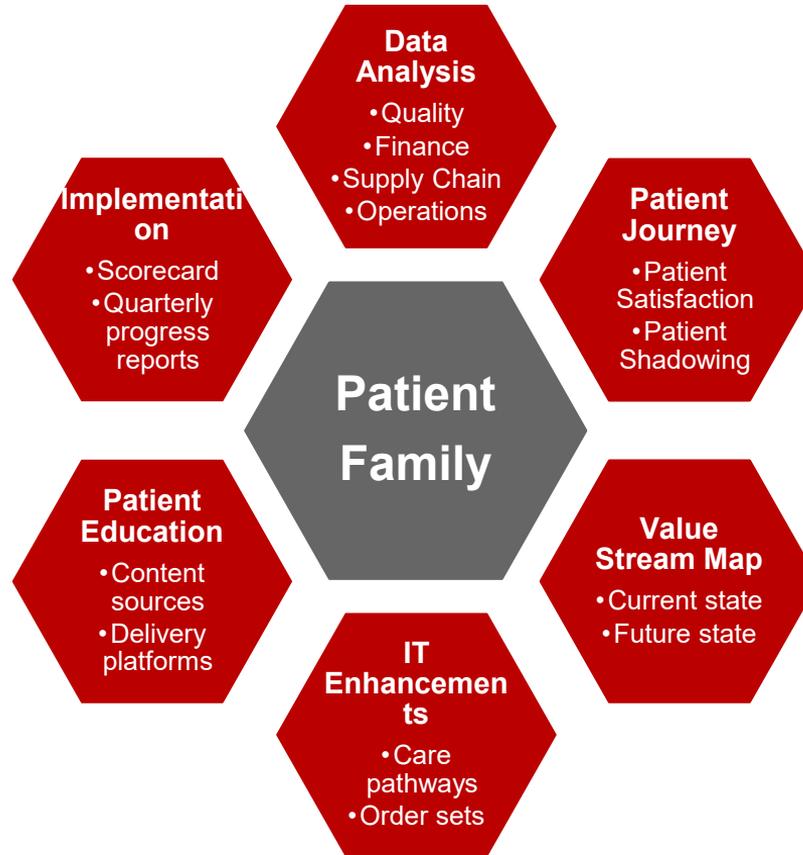
Funds flow/ Gains Sharing

Financial analysis cost detail

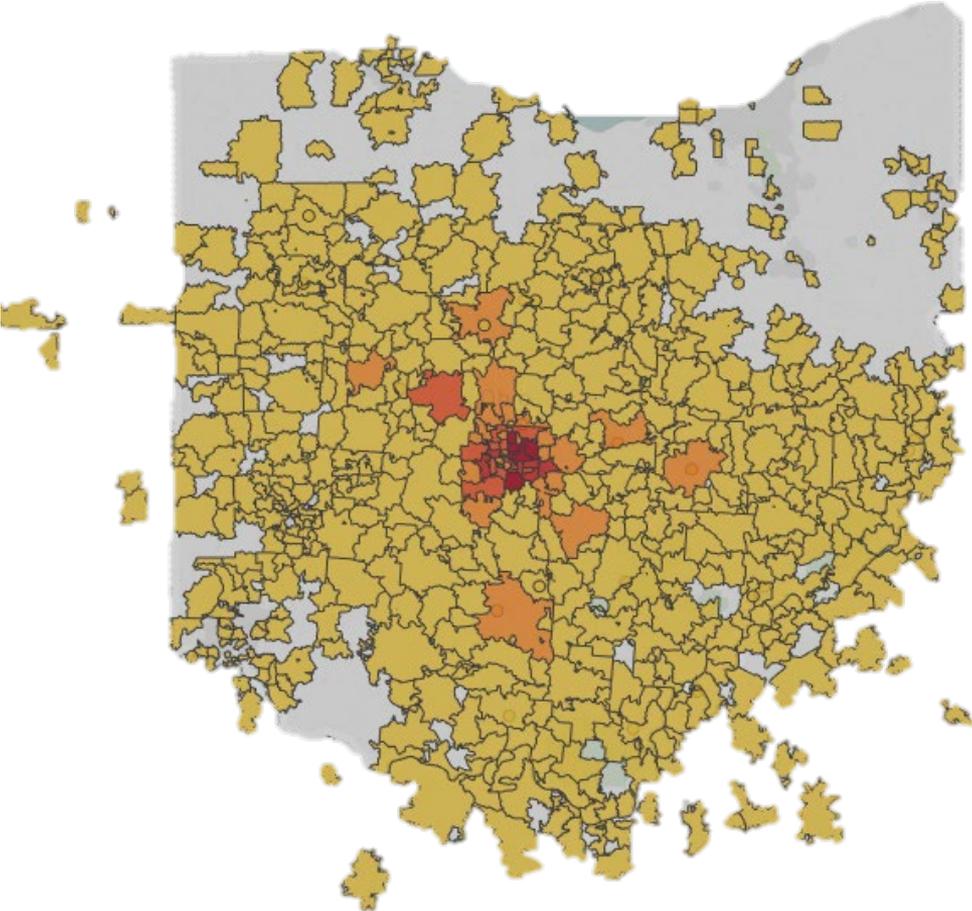
Standardization and Improvement Science



Standard Transformation Life Cycle



Where Our Patients Come From



Density of patients by home zip code



Episodic Readiness Assessment Profile

General Profile
• Volume of Patients
• Predominant entry points into system (e.g. ED, elective admit, etc)
• Inpatient service distribution
• Admission source distribution (i.e. transfer, new admission)
• Discharge disposition distribution
• Demographic distribution (i.e. male, female, age)
• Geographic distribution (home address)
• Percent with a secondary diagnosis of targeted episode
• Referral source distribution

Preadmission Mitigative Care
• Pre-acute care process
• Pre-acute care team
• Post-acute care needs assessment (pre-acute phase)
• Financial aid/medication assistance needs assessment
• Co-morbidity optimization
• Pre-acute care process

Quality Standards & Performance
• Mortality
• LOS
• Pre-op LOS
• ICU LOS
• Post Acute LOS
• 30-day Readmissions
• 60-day Readmissions
• 90-day Readmissions
• Hospital-Acquired Conditions
• Follow-up Appointment
• Pertinent VBP measures
• Related EBM Guidelines

Operational Readiness
• Physician Engagement
• Order sets
• Order set utilization
• Existing care pathway?
• Mechanism to identify/track targeted patients real-time
• IHIS population health tools or discrete data entry optimized
• Transitional & Post-Acute Care plan standardized (Follow-up, etc)

Patient Experience
• HCAHPS Overall Score
• HCAHPS areas below benchmark

Patient Education & Engagement
• Patient education needs assessment
• Undesirable titles retired/suppressed
• Discharge stoplight tool developed (if pertinent)
• Patient education titles mapped to clinical workflow
• Evaluation and development of video/illustrative education

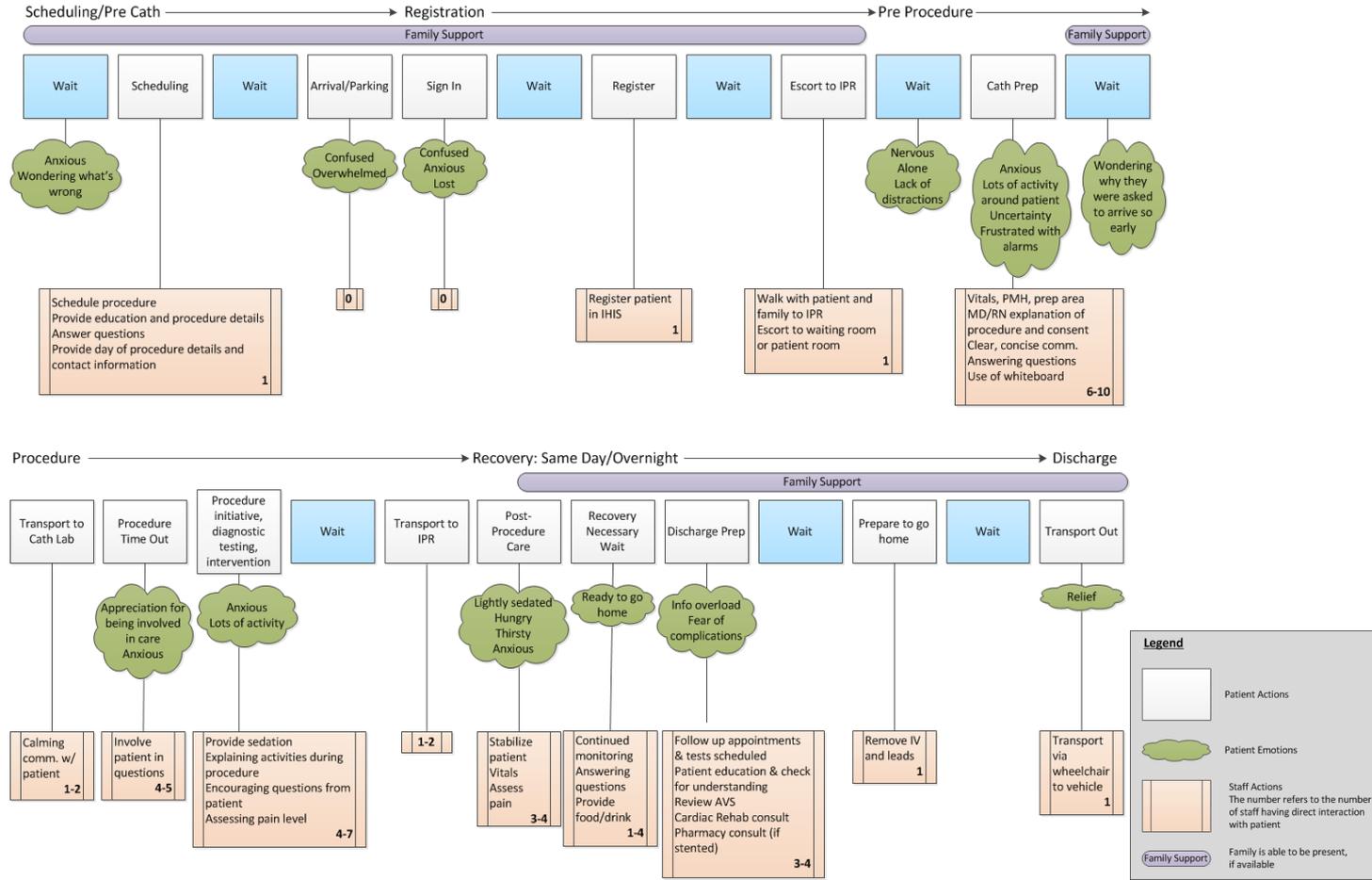
Financial, Supply & Marketing
• Payor Mix
• Cost/Encounter
• Revenue/Encounter
• Gain(loss)/Encounter
• Standardized product utilization/supply chain opportunities
• Marketshare
• Marketability across payers



Decision Matrix

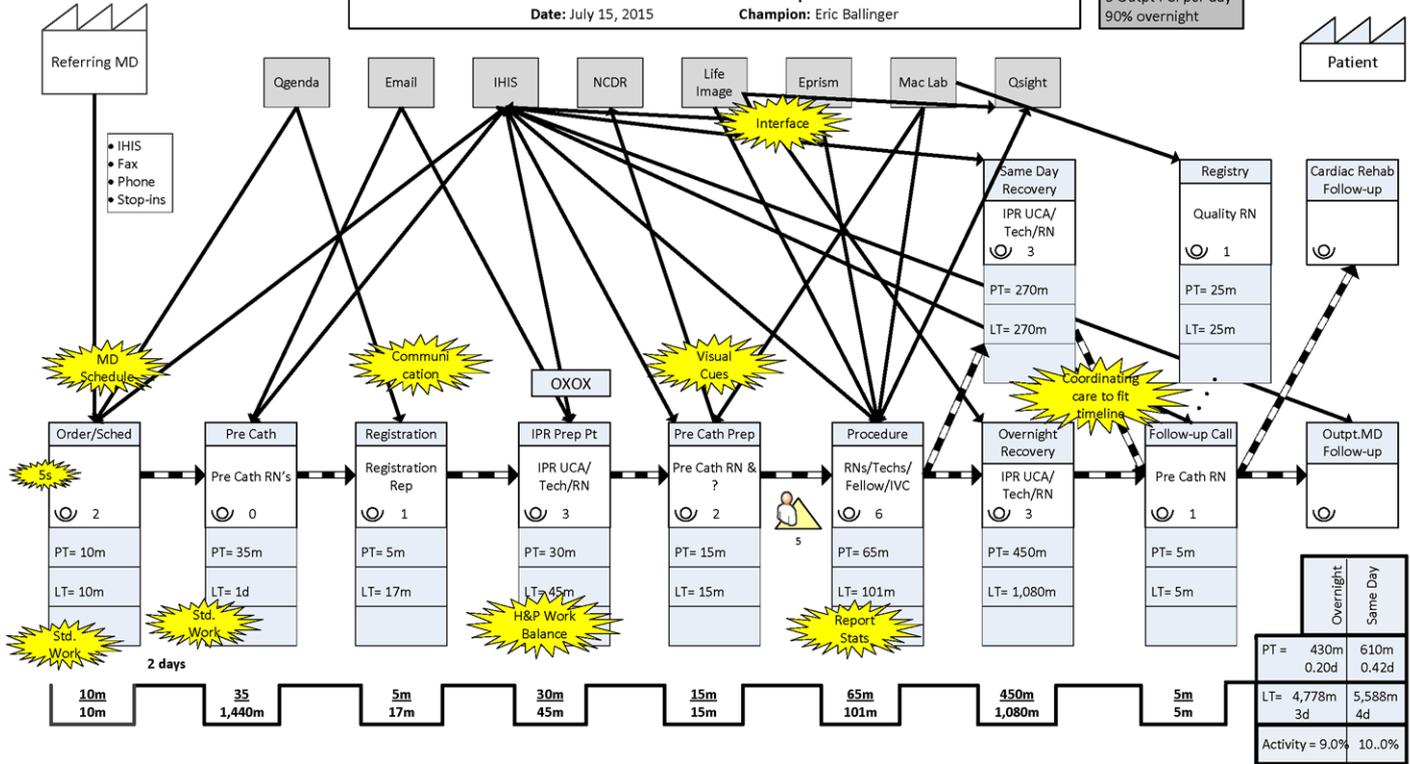
	Episode 1	Episode 2	Episode 3	Episode 4
High Volume		✓	✓	
Market Share Available			✓	
Medicaid	✓	✓	✓	✓
Medicare	✓	✓	✓	
Managed Care (high cost/high expense services)		✓	✓	
Shop-able Service			✓	✓
Engaged Group/Readiness	✓		✓	

Patient Journey

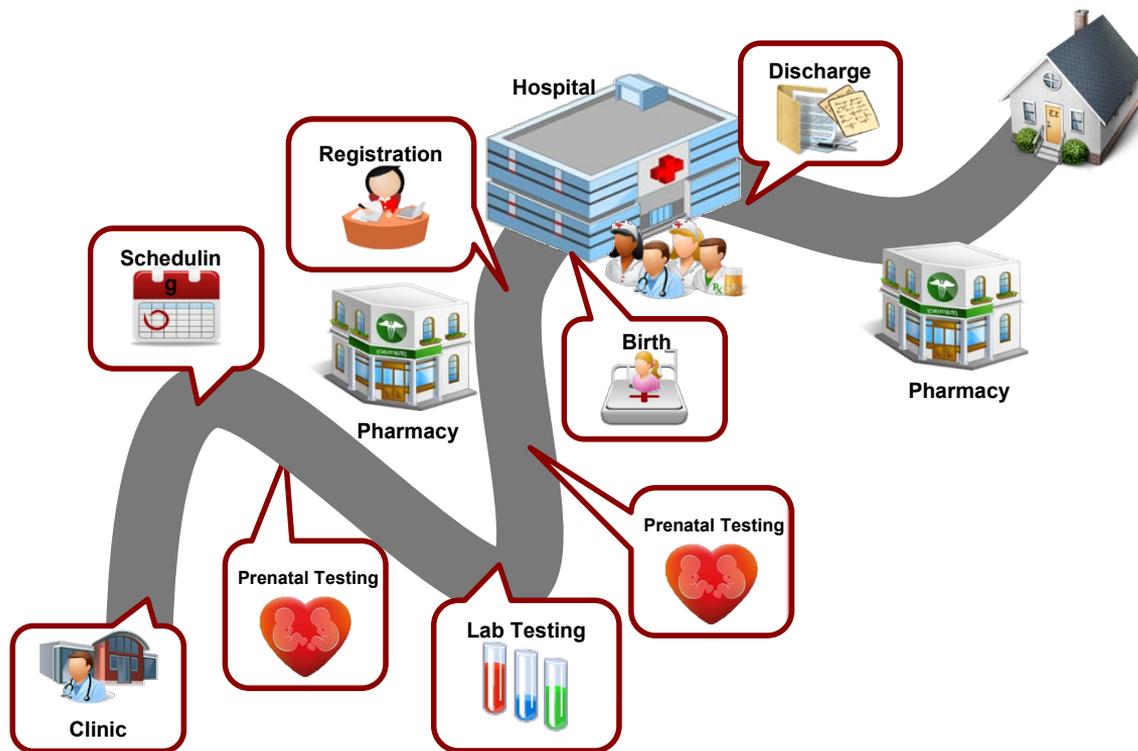


**OSUWMC – Ross Heart
Cath Lab Outpatient PCI
Future Value Stream Map**
Date: July 15, 2015 Champion: Eric Ballinger

Operations:
Monday – Friday
3 Outpt PCI per day
90% overnight



Essential: Patient and Provider Alignment



SYMPTOMS:

WHAT TO DO:



Emergency Zone

- Suspected stroke:
 - New numbness, muscle weakness, trouble swallowing or problems talking
 - Severe headache or confusion
- Onset of severe chest pain, jaw pain and/or severe shortness of breath
- Loss of consciousness

Call 911

Red Zone

- Shortness of breath that is not relieved by rest (or that worsens when you lay down or if you need to sit in a chair to sleep)
- Racing/fast heart beat or if it is very slow or “skipped” a beat
- Lightheadedness, dizziness or feeling unsteady
- Worsening changes in your incisions or wounds (swelling, redness, drainage)
- Signs of bleeding
 - Vomit that looks like coffee grounds or vomit with bright red blood
 - Bright red blood in stool or dark, tarry stool

You May Need to be Evaluated Right Away

Call 614-293-5502

for further assessment by a doctor or nurse practitioner

If unable to reach us, please contact your local physician

Yellow Zone: Caution

If you have any of the following signs or symptoms:

- Weight gain of 2 or more pounds in 24 hours; or 5 pounds in a week
- Increased swelling in your legs, feet, ankles or stomach
- Increased cough or increase in shortness of breath
- Loss of appetite, nausea and/or vomiting
- Swelling, redness, drainage of wounds or incisions
- Questions or concerns about medications

Your Symptoms Need Further Assessment

We will work to determine if medications or other therapies may need adjusted or if an appointment may be needed:

- If you are at a skilled nursing/rehabilitation facility or if you have home health services, notify your nurse (they may need to contact your doctor)
- If you are at home, please call 614-293-5502

Green Zone

- No shortness of breath, swelling or weight gain
- No chest pain
- No increase in surgical site pain
- No swelling, no redness, no drainage of wounds or incisions
- Ability to maintain your activity level

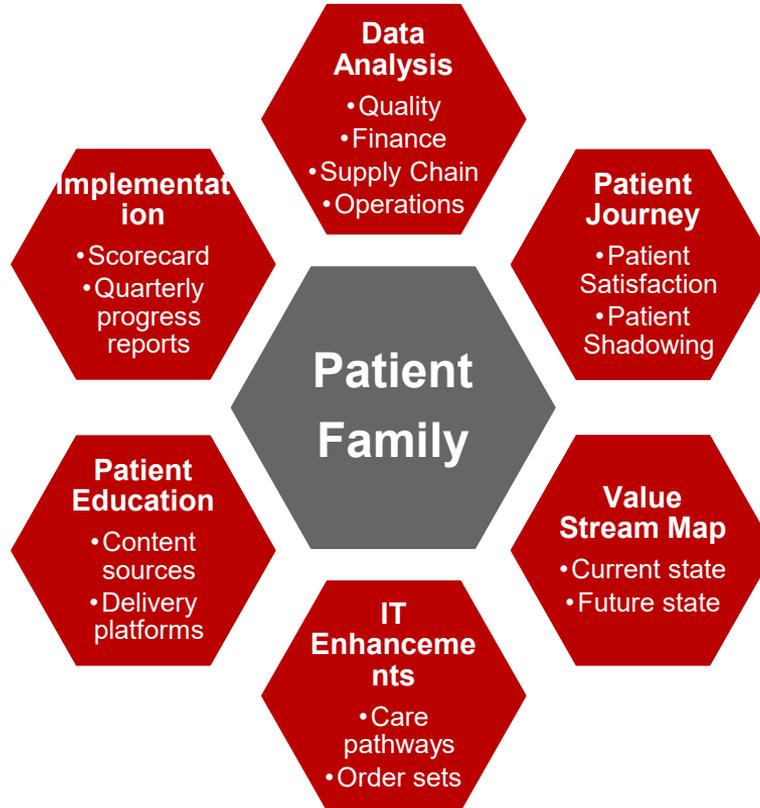
Progressing as Expected

- Your symptoms are under control
- Continue taking your medications as ordered
- Continue daily weights
- Continue to follow dietary restrictions that have been recommended
- Keep all physician appointments



If you are not feeling like yourself or something has changed and is bothering you, please call 614-293-5502.

Standardized Clinical Transformation: A Start



Value Equation

Quality		17%
<hr/>		
Cost		126%

Quality Indicators

-  Achieve 80% or more of Quality Targets
-  Achieve 50-79% of Quality Targets
-  Achieve less than 50% of Quality Targets

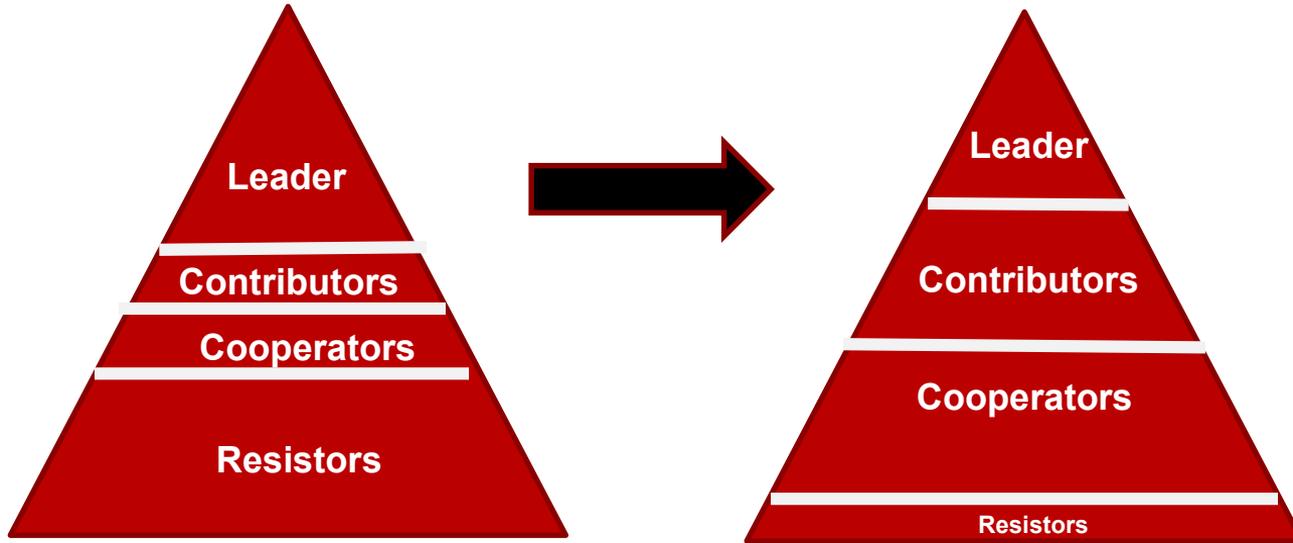
Cost Indicators

-  Cost less than or equal to 125% of Medicare reimbursement
-  Cost is between 126-150% of Medicare reimbursement
-  Cost is over 150% of Medicare reimbursement





Clinical Transformation: Paradigm Shift for Standardization





Sometimes you have to go slow to go fast

-Stowe Boyd

Thank You

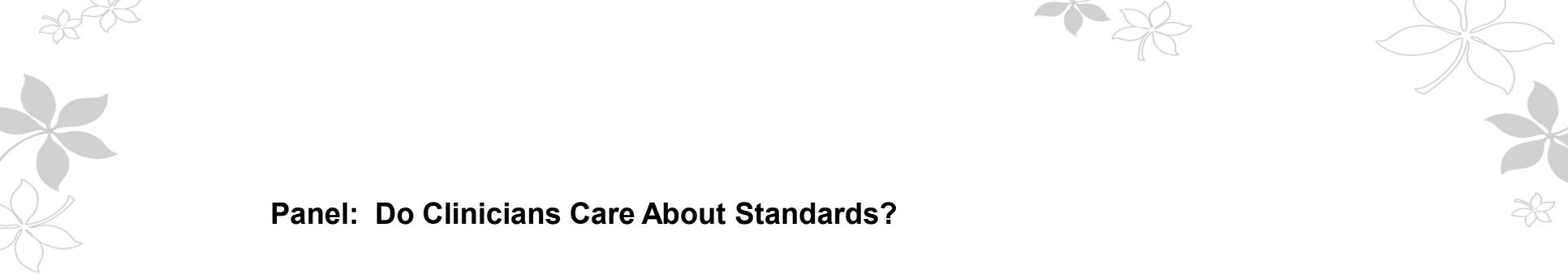
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Panel: Do Clinicians Care About Standards?

- **Mr. David Berridge**, Consultant Vascular Surgeon, Deputy Chief Medical Officer, Medical Director – Operations, the Leeds Teaching Hospital, UK
- **Dr. Chun-Che Shih**, Chief of Division of Cardiovascular Surgery, Taipei Veterans General Hospital, Professor of Institute of Clinical Medicine National Yang-Ming University, Taiwan
- **Dr. Hinne A. Rakhorst**, Plastic Surgeon, Medisch Spectrum Twente, Enschede, Chair, Dutch Association of Plastic Surgeons, ICOBRA member, The Netherlands



Panel: Do clinicians care about standards?



Chair: Prof. Dr.
Susan Moffatt-
Bruce

Mr. David Berridge

Dr. Chun-Che Shih

Dr. Hinne A. Rakhorst





Do Clinicians Care about Standards?

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Mr David Berridge

Deputy Chief Medical Officer - Medical Director Operations ,WYAAT Exec.Sponsor,
Consultant Vascular Surgeon, The Leeds Teaching Hospitals NHS Trust, UK



Tech Transformation is coming



“In all my experience, the small part is finding or inventing the technology. The big part is embedding the culture of always looking for the best possible technology and embracing it. I want to drive that culture change... But from today let this be clear: tech transformation is coming”

Matt Hancock
Secretary of State for Health and Social Care



- *"Nurses waste 'an hour a shift' finding equipment"*
(Source: S Ford, Nursing Times vol. 105, 10 February 2009)
- In a Trust the size of Leeds, that equates to **20** hours per month per nurse, or **212** working hours per year
- Of the 3,794 registered nurses at Leeds that equals **1,241,026 hours** per year
- In total, a loss of **411 Nurses** to looking for equipment

The Leeds Vision



To be the best for specialist and integrated care



A hospital of needs and wants



Patient Location

Test Results
Sufficient Stock
Availability of Resources
Medicines



Research
Innovate
Explore Outcomes

Patient Location

Bed Side Notes
Plans for care
Observations
Medicines



To provide the best levels of care in the best surroundings

Communication
Bed Side Care
Plans for care
Resources



To receive the best care available in a timely manner

Patient Location

Bed Side Notes
Plans for care
Availability
Referrals



Support patient recovery
Innovate

Patient Location

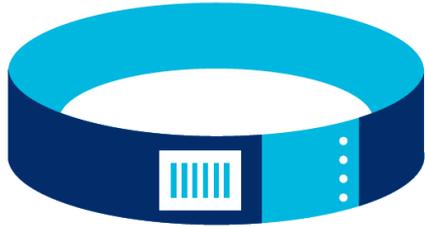
Accurate
Outcomes
Financial
Control



To be the best for specialist and integrated care

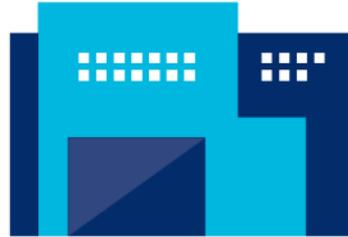
The standards we need

Patient



Global Service
Relationship
Number
(**GSRN**)

Place



Global
Location
Number
(**GLN**)

Product



Global Trade
Item Number
(**GTIN**)

How this looks in real life



GSRN



How this looks in real life

GLN



How this looks in real life



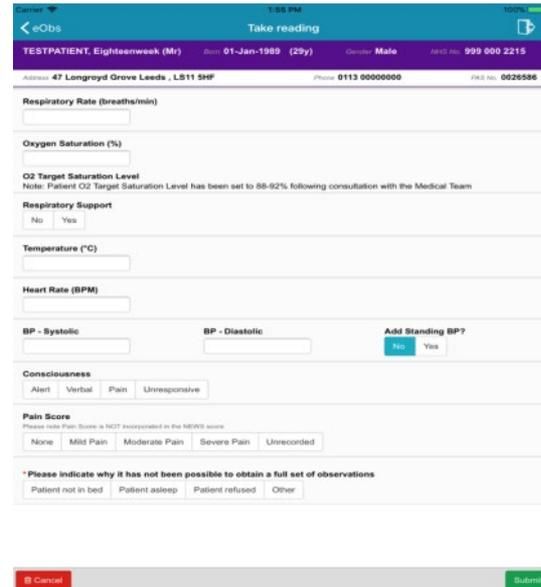
GTIN



Scanning for Safety

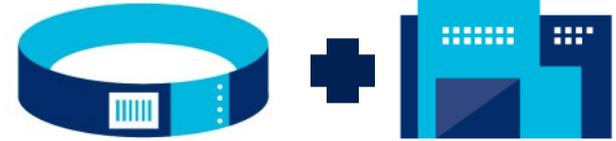


Mobile Application



Combining Standards for success

GSRN + GLN = Patient Tracking



LTHT is able to label down to bed space level and start unlocking the potential



Ward View: 91 (SJR) St James's Institute of Oncology, Ward Code: J91

Active	Bed	Patient	Age	Resident Location	Time Since Admitted	Connection	Speciality	LOS	ESC	MPFD	Planning	ESD	Medicines	Pharmacy	Other
✓	BT (SJR)	1	64	RESIDENT	2017-10-20 10:20	AA	General Medicine	19d	✓	✓	On Ward	✓	Pharmacy	Pharmacy	Other
✓	BT (SJR)	2	47	RESIDENT	2017-10-20 10:20	AA	General Medicine	19d	✓	✓	On Ward	✓	Pharmacy	Pharmacy	Other
✓	BT (SJR)	3	57	RESIDENT	2017-10-20 10:20	AA	General Medicine	19d	✓	✓	On Ward	✓	Pharmacy	Pharmacy	Other
✓	BT (SJR)	4	57	RESIDENT	2017-10-20 10:20	AA	General Medicine	19d	✓	✓	On Ward	✓	Pharmacy	Pharmacy	Other
✓	BT (SJR)	5	57	RESIDENT	2017-10-20 10:20	AA	General Medicine	19d	✓	✓	On Ward	✓	Pharmacy	Pharmacy	Other
✓	BT (SJR)	6	47	RESIDENT	2017-10-20 10:20	AA	General Medicine	19d	✓	✓	On Ward	✓	Pharmacy	Pharmacy	Other
✓	BT (SJR)	7	57	RESIDENT	2017-10-20 10:20	AA	General Medicine	19d	✓	✓	On Ward	✓	Pharmacy	Pharmacy	Other
✓	BT (SJR)	8	57	RESIDENT	2017-10-20 10:20	AA	General Medicine	19d	✓	✓	On Ward	✓	Pharmacy	Pharmacy	Other
✓	BT (SJR)	9	57	RESIDENT	2017-10-20 10:20	AA	General Medicine	19d	✓	✓	On Ward	✓	Pharmacy	Pharmacy	Other

Associates patient, to place, to product, to process.

Automatically updates the e-whiteboard

Mobile ppm+ app will allow access to e-forms within the patient EPR at the bedside



Combining Standards for success



GSRN + GLN = Patient Tracking

Ward View: 23 (S, J, H) St James's University Hospital, Ward Code: J23																	ANONIMISED						
Action	Ward	Bed	Patient	Age	Scanned Location	Time Since Arrival	Consultant	Speciality	LOS	EDD	MFFD	Planning	EDD	Needed For Discharge / Transfer	Clinical Summary	eDAN	eMed	Medical Jobs	Other Jobs	CR	Abs		
Bed Unassigned																							
+	23 (S, J, H)			39y	Waiting Area, Ward J23 07:46:01-Dec-2017	3h 54m	SM	Breast Surgery	0d				On Ward			?						?	
All Beds																							
+	23 (S, J, H)	SR1		42y	Bed1, Ward J23 17:11:29-Nov-2017	4d 3h 54m	MPLJL	Surgery	4d	30-Nov-2017			On Ward		Total thyroidectomy for large multinodular...	Ward Check						✓ 1	
+	23 (S, J, H)	SR2		44y	Breast Imaging Unit, 15:20:30-Nov-2017	1d 3h 54m	BH	Breast Surgery	1d	04-Dec-2017			On Ward		R Skin Sparing Mastectomy andADM...	Ward Check							✓ 1
+	23 (S, J, H)	SR3		52y	Bed3, Ward J23 25-Nov-2017 15:28	14d 19h 8m	JOKG	Clinical Oncology	17d	05-Dec-2017			On Ward (NFTL)	DN (3) (More info) ?	Vaginal cancer adm. groin...	?						✓ 3	
+	23 (S, J, H)	4		54y	Bed4, Ward J23 14:10:30-Nov-2017	1d 3h 54m	CN	Breast Surgery	1d	01-Dec-2017			On Ward		R mastectomy and SLNB 17	Ward Check						✓ 0	
+	23 (S, J, H)	5		40y	Bed5, Ward J23 19:54:29-Nov-2017	3d 10h 52m	RSB	Geriatric Medicine	22d	30-Nov-2017	✓	Discharge (FTL)	NOD (3) (Screening) residential home	NICEOPD DNAR - PMH; dementia...	Ward Check				L2			✓ 2	
-	23 (S, J, H)				Bed6, Ward J23 07:14:29-Nov-2017	4h 7m									SAU abdo pain								



13 Nov 2017

- 14:05** Bed11 - Ward J23
Level 01 - First Floor - Chancellor's Wing(S,J,H)
by 5055218890634
- 11:32** Recovery Area - Ward J23
Level 01 - First Floor - Chancellor's Wing(S,J,H)
by 5055218890627
- 10:41** Theatre5 - Operating Theatres
Level 01 - First Floor - Chancellor's Wing(S,J,H)
by 5055218890504
- 10:38** AnaesRm5 - Operating Theatres
Level 01 - First Floor - Chancellor's Wing(S,J,H)
by 5055218890498
- 09:50** WardWaitingArea - Ward J23
Level 01 - First Floor - Chancellor's Wing(S,J,H)
by 5055218889973
- 08:30** BreastImaging - Outpatients
Level 01 - First Floor - Chancellor's Wing(S,J,H)
by 5055218888358
- 07:05** WardWaitingArea - Ward J23
Level 01 - First Floor - Chancellor's Wing(S,J,H)
by 5055218889973

Combining Standards for success



GTIN + GLN = Stocks and Stores



Organisation

The Leeds
Teaching Hospitals


Physical Location



Function



Combining Standards for success



GTIN + GSRN + GLN = Recall



194 Books in this slide
800 records per book
Over **155,000** potential records



SCAN SAFETY Product Recall The Leeds Teaching Hospitals NHS Trust

Serial No: KFX17789

Location Name: 44000-EL-CENTRE/UK/LOGY TUGAT782 Consultant ID: 3051173210276463

Item Description	00000104 819-CEG ONE PUBLISHED 16 6 11
Item Description Code	828-2318
Case Date	18/06/2018
Expiry Date	10/04/2023

Confirmed at: Hospital Device

Patient ID: 000000411

Can this be done at Scale?



120 Specialist Services



175 Buildings



114 Wards



135 Departments and Clinical Areas



69 Operating Theatres

Providing 120 specialist services

82 Adult Specialities 28 Paediatric Specialities

5 Pathology Services 5 Medicines

Management and Pharmacy Services



232 Materials Management Areas



28 Inventory Managed locations



£18m Inventory



- Turnover of **£1.17** billion
- Over 17,000 staff
- Over 2,000 beds

What have we done at Leeds



Global Location Numbering



22,303



22,303



2,000+

Plus Over 1,400 function GLNs for Stores

What have we done at Leeds



Patients – All patients receiving medication or intervention have a GS1 Compliant Wristband



114,000 inpatients



242,000 Emergency
Department attendees



9,969 babies born



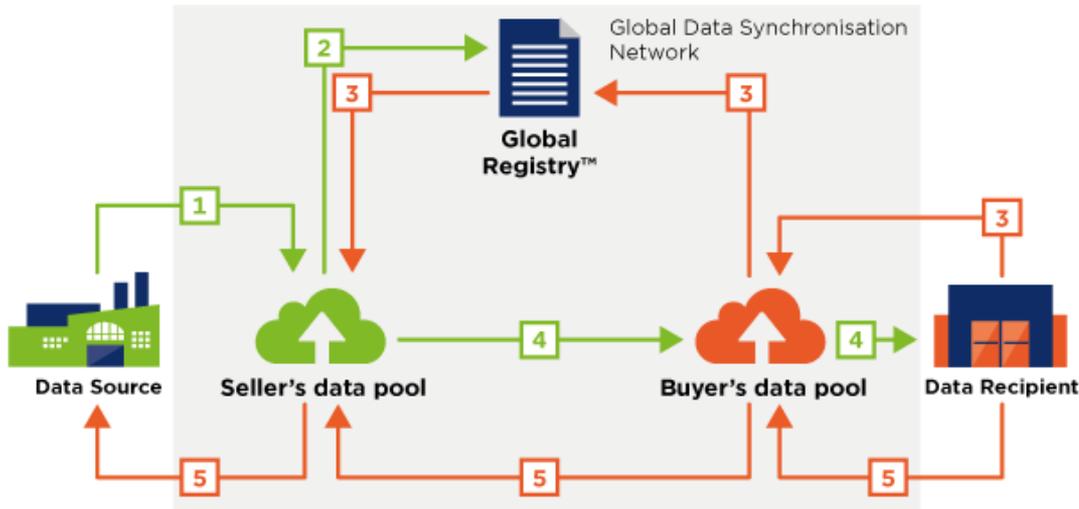
72,532 Day Cases



What have we done at Leeds



Catalogue Management



Our work with GHX and two other demonstrator sites (Plymouth and Salisbury) has given us access to over 130,000 GTINs



PEPPOL Enabled



790,000 Order lines



630,000 Invoices



300 Systems and Applications

What have we done at Leeds



Inventory Management



32 of 69 Theatres fully scanning at **Point of Care**
(awaiting a development in PPM+ before further roles out due December 2018)

Reviewing usage information to **reduce** Inventory further

What have we done at Leeds



Reduced Wastage



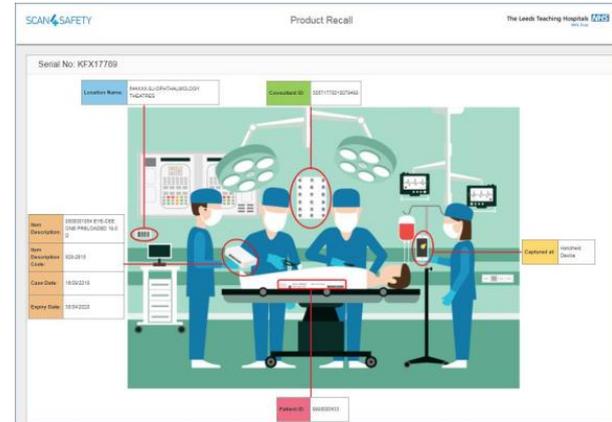
What have we done at Leeds



Product Recall



2 months work checking
we had no cases



17,000+ patients / **22,000**
implanted items checked in
under **30** minutes

What have we done at Leeds



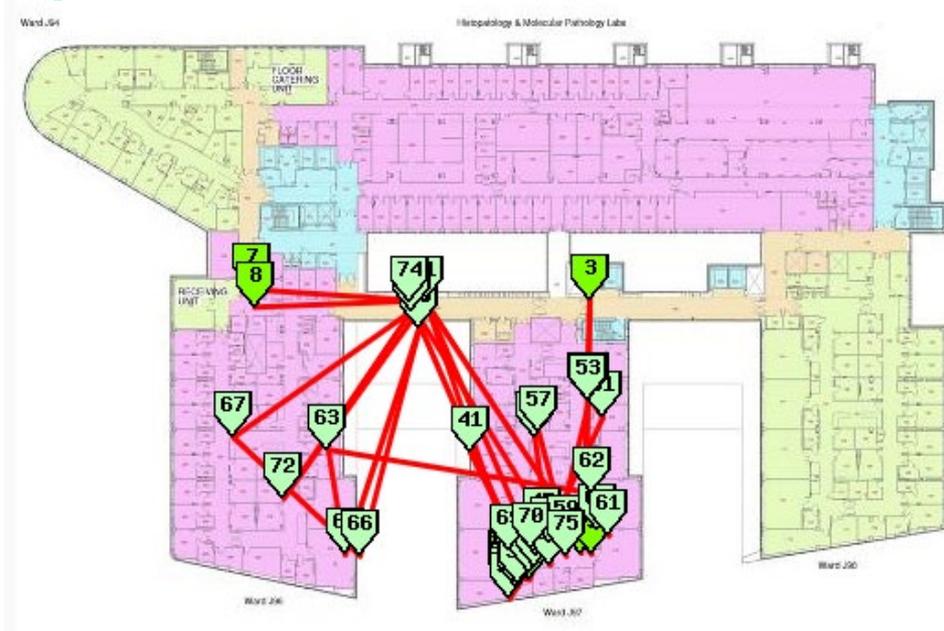
Finding Equipment



What have we done at Leeds



Improving Equipment Use





Right Patient

Setting standards to make sure we always have the right patient and know **what** product was used with **which** patient, **when**.



Right Product

Setting standards to make sure our staff have **what** they need, **when** they need it.



Right Place

Setting standards to make sure that patients and products are in the right place.



Right Process

Setting standards and implementing common ways of working to deliver better and more easily repeatable patient care.

Every Time

Do Clinicians Care about Standards?

Mr David Berridge

Deputy Chief Medical Officer - Medical Director Operations ,WYAAT Exec.Sponsor,
Consultant Vascular Surgeon, The Leeds Teaching Hospitals NHS Trust, UK



Does it work?



Matt Hancock ✓

@MattHancock

Following



Blown away by the tech at [@LeedsHospitals](#)

Why? With 30 techies they've built an EHR that costs 10x LESS than external & is constantly improved according to clinical need

NHS IT needn't cost £££. It needs standards & inhouse expertise

And it's working - on the wards - in Leeds

5:56 PM - 18 Oct 2018

506 Retweets 1,628 Likes



139 506 1.6K



Thank You

What is the impact on first line staff in the OR?



1. Current Situation of Medical Recordings in Taiwan
2. The Impacts on the Adoption of GS1 UDI Standards
3. The Effects of UDI Standard Adoptions on Patient Safety and Hospital
4. The Benefits of UDI Standard Adoptions in Department of Cardiovascular Surgery
5. Conclusions

TFDA announce class III medical device ungoing for clinical UDI application on Oct. 30, 2015

Taipei Veterans General Hospital (VGH)



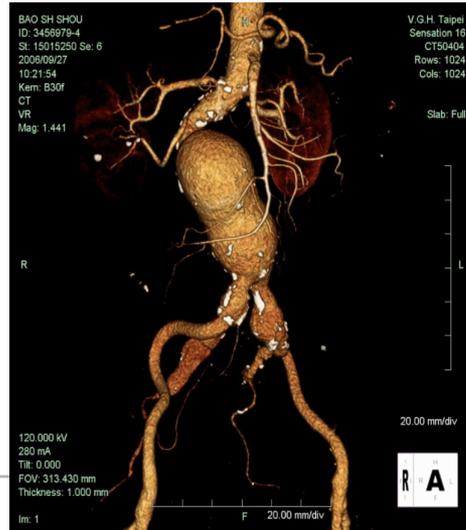
- National first-class medical and teaching center providing tertiary patient care, undergraduate and residency educational programs in Taiwan. It was founded in 1958 and administered by the Veterans Affairs Commission. It is in Beitou District, Taipei and majorly serves patients in northern Taipei and New Taipei. Three branches, Taoyuan Veterans Hospital, Yuanshan Veterans Hospital, and Suao Veterans Hospital, were established.
- Hospital Size: 73 hectares(Site area);
457,492 m² (Floor area)
- No. of staff: 6,141
- Hospitalized Patients: 3,531,913
- No. of beds: 3,077



Cardiovascular Surgery Department, TVGH



- The Cardiovascular Surgery Division at Taipei Veterans General Hospital was founded in 1958 in order to provide the public with the most advanced treatment for cardiovascular diseases and to conduct the highest level of basic as well as applied research on the cardiovascular system and diseases.

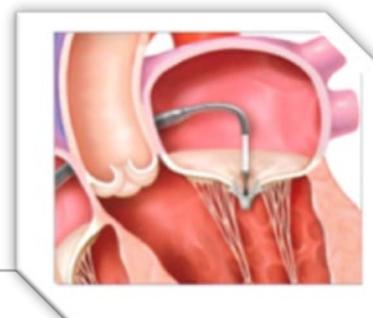
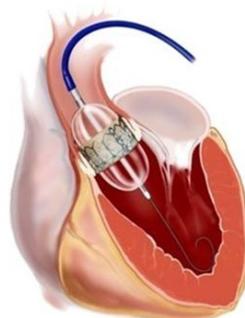


Tremendous Work Loading for High-price Class III Medical Device Management



Services includes:

- Cardiac Surgery : CABG, cardiac valve repair or replacement, congenital heart disease, heart transplantation, ECMO, and VAD.
- Endovascular Stent Graft Surgery: Minimally invasive endovascular stent graft surgery for thoracic aortic aneurysm(TAA), abdominal aortic aneurysm (AA), transcatheter aortic valve implantation (TAVI), mitral Clip.
- Robotic-assisted minimal invasive cardiac surgery



Management Process for high price Class III Medical Device at Taipei VGH

Centralized Purchasing Process

Before Adoption

- Taipei VGH department of Supply Department
- Division of Cardiovascular Surgery and Operation Room Manual Inventory management Process
- Suppliers by TEL order and account reconciliation one month later

The Adoption Purpose of Medical Supply Chain Management System



Material Inventory



- Smart capability managing general medical supplies, consumables, high-value implants.
- Reduce the managing burden of administration personnel
- Clear and simple accounting
- Less procurement process
- Less expired inventory in Hospital

Clinical utilization



- One Scan and easy use.
- Significantly reduce the problems of out-of-stock.
- Lower the cost

Healthcare Practitioners



- Improve the accuracy of health insurance declaration
- Reduce medical loss of hospital
- provide complete Electronic Medical Records (EMRs)

Suppliers



- Precise reconciliation

Application of WHOLESALE Management System



1978 Taiwan



1983 Seattle USA



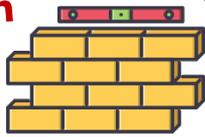
There are two ways of application adoption concepts

The Global Language of Business

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Wholesales 7-11 System

Complicated
Low Precision



Waste of man-power

Nurses/ MD suppliers/
Purchaser/ IT

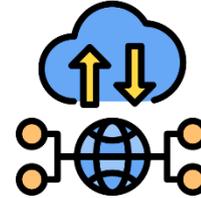
- Upload Database during Registration
- Manual Data-checking
- Precision Rate: 50-60%
- Multi-systems
- High risks on Information Security

Traditional

The Adoption Customized System since 2013



EASY to USE



EASY INTEGRATION
on Clinical systems

- Smart Algorithm
- Easy Integration of Existing Clinical Systems
- Precision Rate: 100%
- Cloud Computing: Easy Integration on data (clinical/ logistics/ suppliers)
- Low risks on Information Security

NEW Design



One Item Number for Same Products

The Global Language of Business

One Item, one ID (Spirit UDI)

© GS1 2018

The Adoption of GS1 UDI Standards- A Chief Cardiovascular Surgery Perspective in 2013



No hardware device added



Same Nursing Care Computer



One Scan for Inventory Registry

Current Medical Recordings Methods in Taiwan



- Item Number in Hospital
 - One Item Number for Numerous Medical Equipment
 - Diverse Hospital-dedicated Own Item Number
 - Nurses-serviced Centered Pricing and Reimbursement Insurance Declaration
- Burdens on Nurses
 - Reorder of Medical Equipment by Phone
 - Communication between Nursing Colleagues and Medical Devices Manufactures/Wholesalers
 - Extra Un-nursing Services After Surgery
 - Lengthy Time On Closing the Ledger and Requesting for Invoice

物料號12	醫材規格	REF#	品名	供應商	條碼號預覽
651567257011	WANDA 4.0-20, 8	SCH-50503	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003262C003D121212
651567257011	WANDA 4.0-40, 8	SCH-50504	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003263C003D121212
651567257011	WANDA 4.0-80, 8	SCH-50505	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003264C003D121212
651567257011	WANDA 4.0-120, 8	SCH-50506	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003265C003D121212
651567257011	WANDA 4.0-160, 8	SCH-50507	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003266C003D121212
651567257011	WANDA 4.0-200, 8	SCH-50508	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003267C003D121212
651567257011	WANDA 4.0-240, 8	SCH-50509	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003268C003D121212
651567257011	WANDA 4.0-280, 8	SCH-50510	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003269C003D121212
651567257011	WANDA 4.0-320, 8	SCH-50511	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003270C003D121212
651567257011	WANDA 4.0-360, 8	SCH-50512	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003271C003D121212
651567257011	WANDA 4.0-400, 8	SCH-50513	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003272C003D121212
651567257011	WANDA 4.0-440, 8	SCH-50514	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003273C003D121212
651567257011	WANDA 4.0-480, 8	SCH-50515	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003274C003D121212
651567257011	WANDA 4.0-520, 8	SCH-50516	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003275C003D121212
651567257011	WANDA 4.0-560, 8	SCH-50517	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003276C003D121212
651567257011	WANDA 4.0-600, 8	SCH-50518	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003277C003D121212
651567257011	WANDA 4.0-640, 8	SCH-50519	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003278C003D121212
651567257011	WANDA 4.0-680, 8	SCH-50520	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003279C003D121212
651567257011	WANDA 4.0-720, 8	SCH-50521	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003280C003D121212
651567257011	WANDA 4.0-760, 8	SCH-50522	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1007735C003D121212
651567257011	WANDA 4.0-800, 8	SCH-50523	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003281C003D121212
651567257011	WANDA 4.0-840, 8	SCH-50524	波士頓科技 萬達氣球擴張導管 "Boston Scientific"	Wanda P T / Boston	1003282C003D121212

One Number for Different MD Spec

Current Medical Recordings Methods in Taiwan



- Manpower-Serviced Centered Recording Process
 - Patient Photographic Image Numbering Books
 - Used Medical Equipment Recording Notebooks
 - Surgery Participants Recording Notebooks
 - Triplicate Paper Forms on Pricing
 - Phone Ordering and Reordering Notebooks





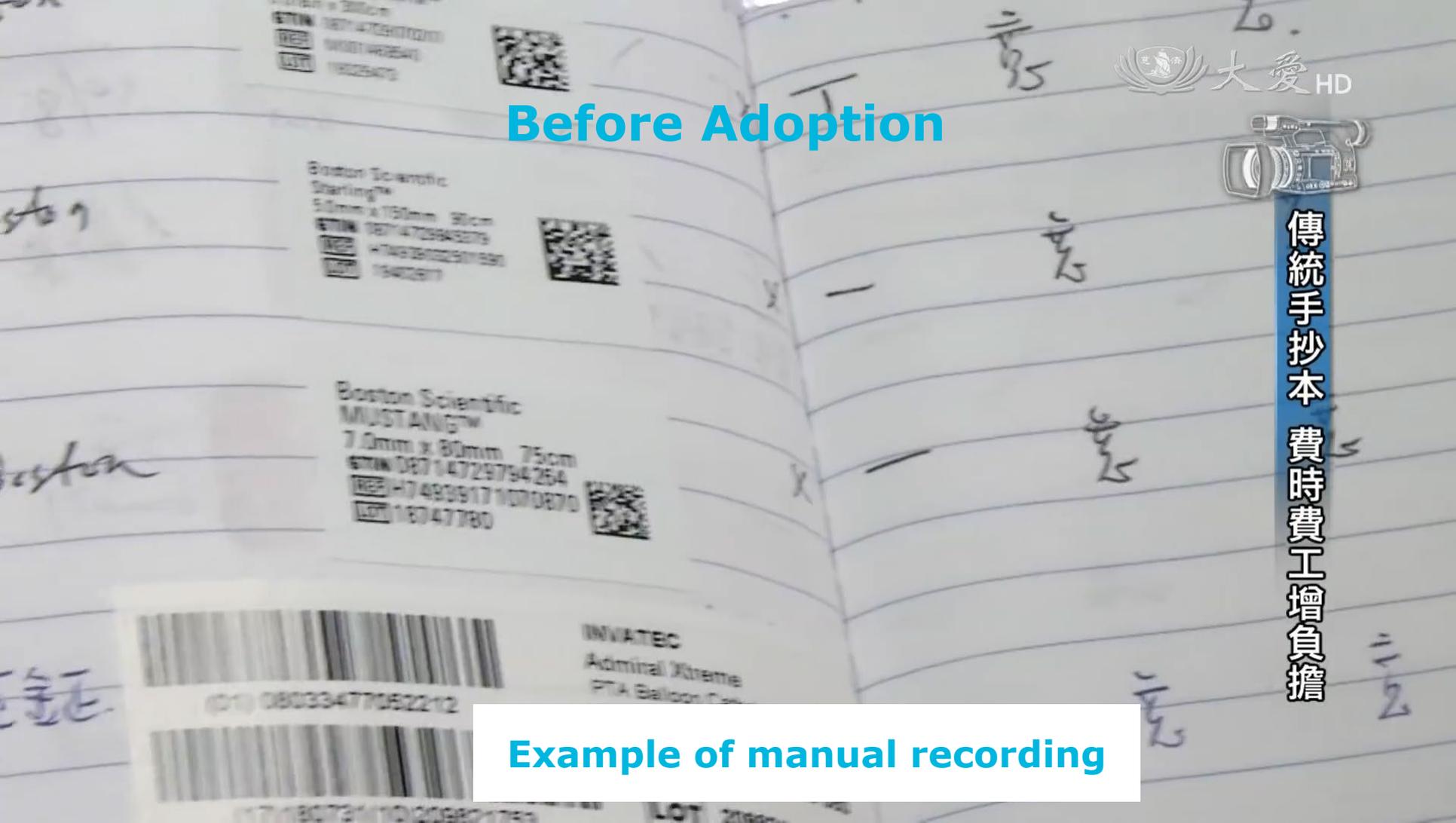
- Infinite Medical Equipment
 - Periodic Self-Inventory Check from Manufacturers and Wholesalers
 - Frequent Discrepant Data and Delayed Procurement on Current Inventory
 - Require Designated Nurse on Medical Equipment Management





傳統手抄本
費時費工
增負擔

Before Adoption



ETIN: 08714702972201
REF: W001492840
LOT: 19422670

Boston Scientific
Starting™
5.0mm x 150mm 90cm
ETIN: 08714702943279
REF: H74929022971991
LOT: 19422670

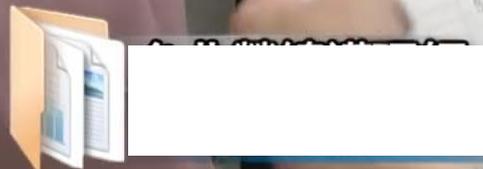
Boston Scientific
MUSTANG™
7.0mm x 80mm 75cm
ETIN: 08714729794254
REF: H74939171070870
LOT: 18747780

INVATEC
Admiral Xtreme
PTA Balloon Cath

(01) 080334770522-12

Example of manual recording

Before Adoption



Manual ways to double check auditing

Current process after adoption of UDI system



Just one scan to
get all information
of Product data

臺北榮民總醫院 手術帳目紀錄系統

首頁 手術帳目系統 醫材庫存管理系統 廠商管理系統 帳務管理 轉院 資料管理 匯計

基本手術資料

手術編號: 23
手術日期: 28
病患姓名: 張
病歷號: 22

查詢結果

NO.	狀態	叫貨單號	叫貨 特別	叫貨時間	供應商	叫貨人員	項目 筆數
1	等待出貨	16-003-00399	CVS	2016年10月13日 下午 05:33	Boston	NUR850	1
2	等待出貨	16-028-00183	CVS	2016年10月13日 下午 05:33	西友	NUR850	2
3	等待出貨	16-002-00178	CVS	2016年10月13日 下午 05:33	BARO	NUR850	1
4	等待出貨	16-022-001CF	CVS	2016年10月13日 下午 05:33	維輝	NUR850	1

只要一刷包括產品名稱廠商名稱

Detailed Recording
Easy Auditing

The Frequent Encountered Problems on the Adoption of GS1 UDI Standards



1. Insufficient Cognitions on UDI Standard of Medical Equipment Manufacturers and Wholesalers
2. Database is Inappropriate for UDI Decoding
3. Hardly Achievement on UDI Barcode Information of Imported Implants and Medical Equipment
4. Difficult Data Interfacing with the Old Hospital System
5. Nurses resistance on Electronic pricing process
6. Unreadable UDI barcode and Ingrained Pricing behavior on nurses

Different kinds of label layout increase the difficulties for human-eye identification and machine scan



The Impacts of UDI Standard Adoptions on Patient Safety



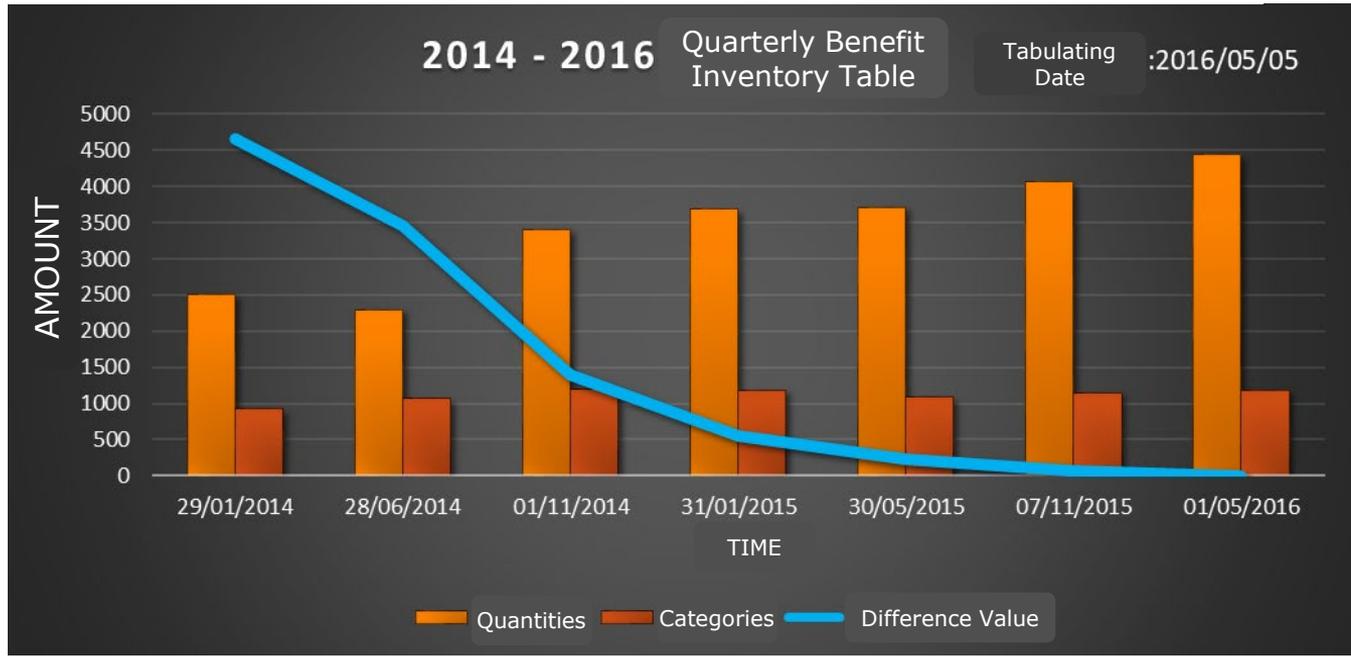
- **Before** UDI adoption, the information such as batch no. and Expiration date is not so easy to manage. This is no doubt against patient safety.
- **After** UDI adoption,
 - Increase the automated administration of surgical operating room (pricing, declaration)
 - Avoid misusing or accessing of the expired products.
 - Complete the medical and nursing records of patients immediately.
 - Improve the turnover rate of operating room and the surgical quality and nursing care.



The Benefits of UDI Standard Adoptions in Department of Cardiovascular Surgery



Loss before UDI adoption; Gain after UDI adoption



Income Growth of Medical Device after UDI adoption

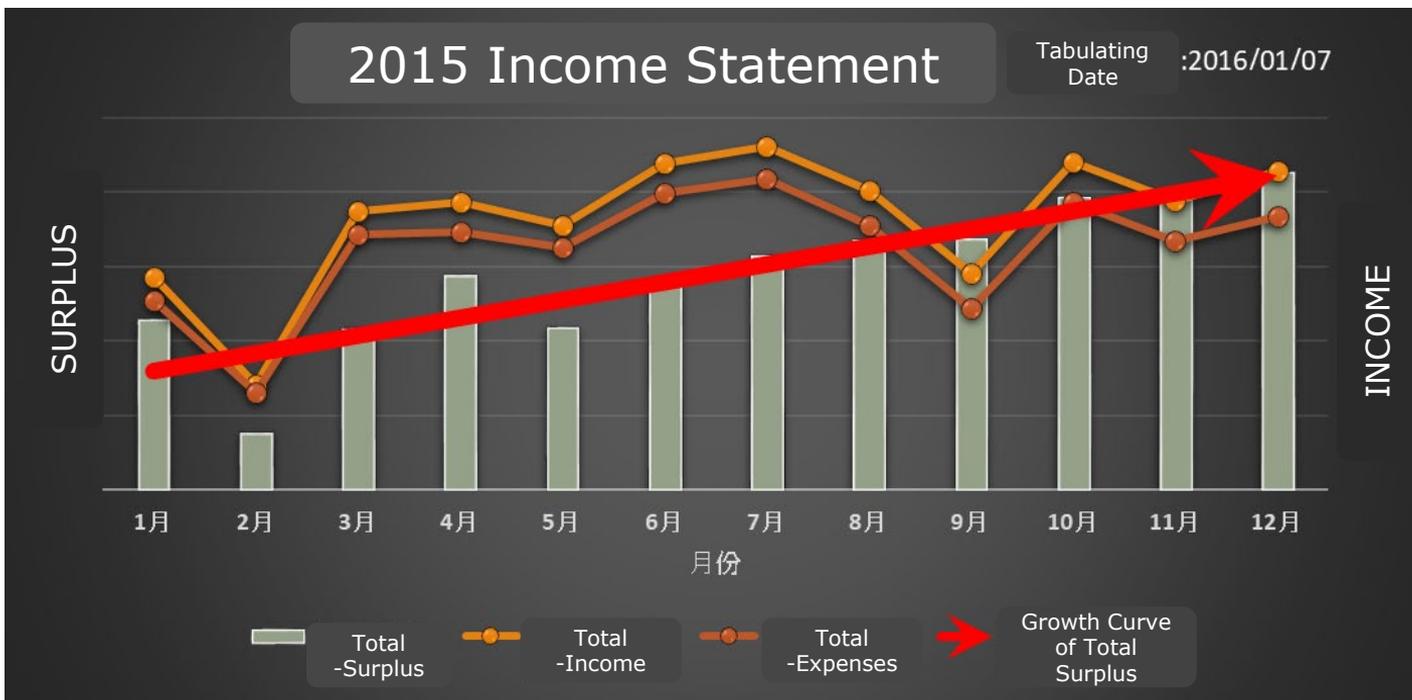


Chart of Cost Analysis



Cost Analysis on Sets

(2016/01/01~2016/05/10)

Items Name (Sets)	Total Expenses (average)	Total Income (average)	Implied Income (average)	Surplus (average)	GPM (average)	Income Percentage (average)	Income Percentage (no implied income)
Cook AAA Stent Graft	379263.3	493527.8	14453.9	128718.3	24.10%	77.68%	75.09%
Cook AAA Stent Graft(一段式)	46482.0	56686.0	12769.7	22973.7	29.11%	82.00%	59.47%
Cook TAA Stent Graft	423310.0	487000.0	7124.5	70814.5	14.31%	86.96%	85.44%
Cook TAA Stent Graft(一段式)	407160.0	468000.0	0.0	60840.0	13.00%	87.00%	87.00%
Cook TAA Stent Graft(二段式)	407160.0	468000.0	0.0	60840.0	13.00%	87.00%	87.00%
Cook TAA Stentgraft - 1支	407160.0	468000.0	6348.9	67188.9	14.14%	87.00%	85.64%
Cook TAA Stentgraft - 3支	363375.0	427500.0	28347.0	92472.0	20.29%	85.00%	78.37%
GORE TAA Stentgraft - 1支	402632.0	470877.2	7660.6	75905.8	15.78%	85.56%	83.93%
GORE TAA Stentgraft - 2支	363375.0	427500.0	52634.0	116759.0	24.32%	85.00%	72.69%
Gore-AAA 一段式-PXC	47230.0	56686.0	0.0	9456.0	16.68%	83.32%	83.32%
Gore-Excluder AAA Stent Graft	366846.0	431534.5	10344.7	75033.2	16.92%	85.00%	82.62%
Gore-Excluder TAA Stent Graft	402632.0	469438.6	3326.1	70132.7	14.78%	85.80%	85.10%
Gore-Excluder TAA Stent Graft一段	429780.0	468000.0	0.0	38220.0	8.17%	91.83%	91.83%
Gore-Excluder TAA Stent Graft二段	429780.0	468000.0	0.0	38220.0	8.17%	91.83%	91.83%
Medtronic -Endurant AAA	342000.0	427500.0	3269.1	88769.1	20.58%	80.00%	79.24%
Medtronic -Valiant TAA	402632.0	468000.0	631.1	65999.1	14.08%	86.03%	85.90%
Medtronic Cora-Valve System(1)	990000.0	1070000.0	581.0	80581.0	7.53%	92.52%	92.47%
Medtronic TAA Stentgraft - 1支	402632.0	468000.0	3956.0	69324.0	14.69%	86.03%	85.19%
Total	441668.4	512017.4	6957.4	77306.5	15.85%	85.47%	83.66%



Conclusions



UDI brings benefits:

1. Efficiency for Hospital management
2. Accuracy for Healthcare practices
3. Easy & simplified accounting
4. Income profits for Hospital execution



“Smart” Medical Care and Management Process

Contact Information



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Professor of Institute of Clinical Medicine National Yang-Ming University,
Taiwan

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The Global Language of Business

Why standardize? Why UDI? A work floor perspective

34th Global GS1 Healthcare Conference
Bangkok, Thailand

Dr. Hinne A. Rakhorst, Plastic Surgeon, Medisch Spectrum Twente, Enschede, Chair, Dutch Association of Plastic Surgeons, ICOBRA member, The Netherlands

October 30, 2018





Why standardize?

Why UDI?

A work floor perspective

Hinne Rakhorst

Babette Becherer, Marc Mureau, Juliette Hommes, Xavier Keuter, Pauline Spronk,,

Manuel Harmsen

All plastic surgeons in the Netherlands

Disclosures

None other than voluntary professional board work
No connections to industry

Thank you

Here for you

Questions/requests; Rakhorst@gmail.com

SLIDES ARE SHARED

**STRONGER
TOGETHER**

Breast implants;
Nobody really knows how many women have
them

Who knows someone with breast implants?

Estimate
1:30 adult Dutch women

Approximately the same as hip athroplasties



Bangkok;
≈ 150.000 women

70% vs 30%

Esthetic vs Reconstructive

Many types, few variables

- Texture; Smooth vs macrotextured vs microtexture vs nanotexture
- Shape; Round vs Anatomical
- Fill; Saline fill vs silicone vs methylcellulose vs air
- Coating; Silicone vs polyurethane coating
- Duration; Temporary (tissue expander) vs Permanent

Large international variation in preference

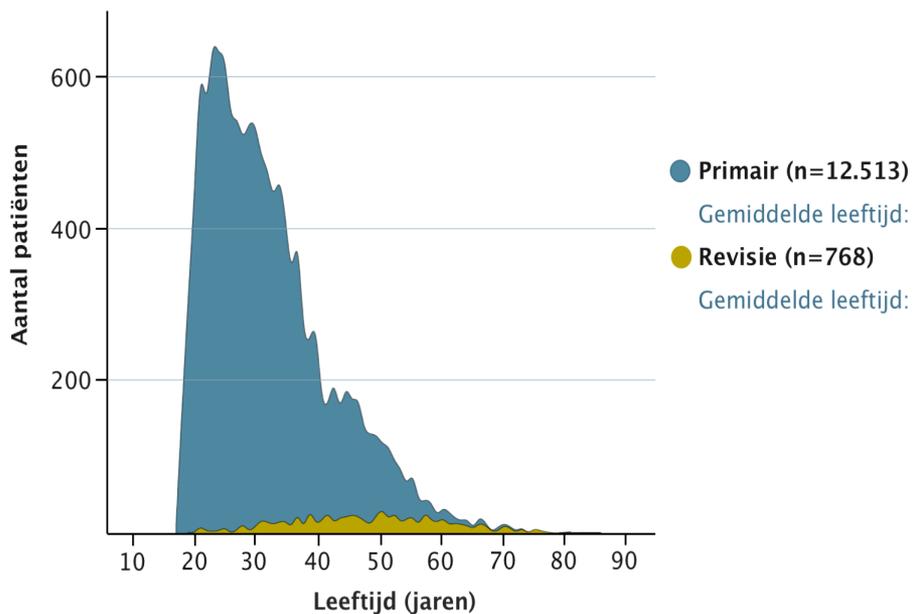


Breast implants are safe implants, class III

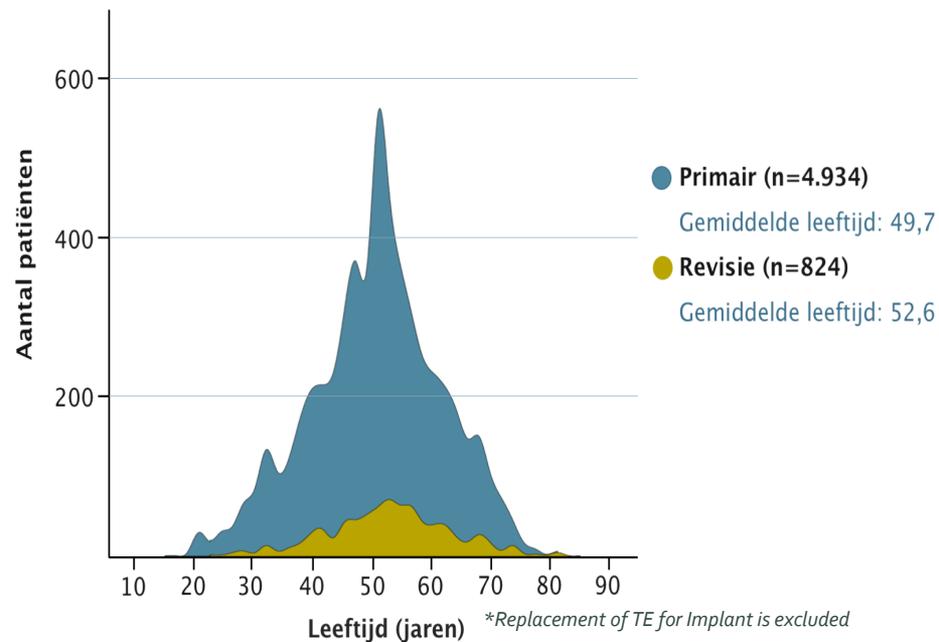
Breast implants have adverse events

Breast implants often need revision surgery

AESTHETIC



RECONSTRUCTIVE



Breast implants have serious adverse events

A Shocking Diagnosis: Breast Implants ‘Gave Me Cancer’

By DENISE GRADY MAY 14, 2017



FDA U.S. FOOD & DRUG ADMINISTRATION

A to Z Index Follow FDA En Español

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Medical Devices

Home > Medical Devices > Products and Medical Procedures > Implants and Prosthetics > Breast Implants

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- Regulatory History of Breast Implants in the U.S.
- Saline-Filled Breast Implants
- Silicone Gel-Filled Breast Implants
- Labeling for Approved Breast Implants
- Breast Implant Surgery
- Risks of Breast Implants
- Breast Implant Complications
- Breast Implant-Associated Anaplastic Large Cell Lymphoma (BIA-ALCL)
- Breast Implants: Other Resources

Breast Implant-Associated Anaplastic Large Cell Lymphoma (BIA-ALCL)



In 2011, the FDA identified a possible association between breast implants and the development of anaplastic large cell lymphoma (ALCL), a rare type of non-Hodgkin's lymphoma.

At that time, the FDA knew of so few cases of this disease that it was not possible to determine what factors increased the risk. In a report summarizing the Agency's findings, we emphasized the need to gather additional information to better characterize ALCL in women with breast implants.

Since 2011, we have strengthened our understanding of this condition and concur with the World Health Organization designation of breast implant-associated anaplastic large cell lymphoma (BIA-ALCL) as a rare T-cell lymphoma that can develop following breast implants. The exact number of cases remains difficult to determine due to significant limitations in word-wide reporting and lack of global implant sales data. At this time, most data suggest that BIA-ALCL occurs more frequently following implantation of breast implants with textured surfaces rather than those with smooth surfaces.

We continue to collect and evaluate information about ALCL in women with breast implants. On an ongoing basis, we:

- Review and analyze medical device reports (MDRs)

Breast Implants and Anaplastic Large Cell Lymphoma

Scientific Committee on Health, Environmental and Emerging Risks
SCHEER

Scientific Advice on
The state of scientific knowledge regarding a possible connection between breast implants and anaplastic large cell lymphoma



Breast implants have serious adverse events

so what do we tell

What is the risk?

Risk;

Numerator

Denominator

Number of cases

Total number of women that have implants

Challenge

≈ Rough estimate number of cases

≈ Rough estimate number of women that have implants

Challenge

≈ Rough estimate number of cases

≈ Rough estimate number of women with **types of** implants

Solution come when we know
about;
Numbers
Types

So register these data

What do you think I do all day?

Google

knows

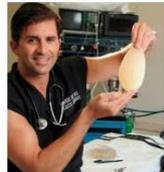
kylie jenner celebrity nose cosmetic nicole kidman cosmetic surgery doctor hours salary cosmetic procedures tomi lahren marilyn monroe gigi hadid botched nose bill clinton bts



Patients Complain of Plastic Surgeries ...
geniusbeauty.com



What Does a Plastic Surgeon Do? | Chron.c...
work.chron.com



Plastic Surgery Facts
plasticsurgeryfacts.blogspot.c...



The Salary of an Esthetician Working ...
work.chron.com



Plastic surgeons offering revolutionary ...
irishmirror.ie



Jobs in Cosmetic Surgery ...
wisegeek.com



GLZG.ORG - Training of Surgeons
glzg.org



Cosmetic surgery can be an 'aggression ...
catholicherald.co.uk



Choosing The Right Plastic Surgeon ...
divalikes.com



Surgery - Wikipedia
en.wikipedia.org



Careers in Plastic Surgeons' Offices ...
work.chron.com



Weekly Earnings for a Plastic Surgeon ...
work.chron.com



AAMC plastic surgeon gives back through ...
aamgplasticsurgery.com



What are the Different Surgeon Jobs ...
wisegeek.com



Jobs: Women Consider Plastic Surgery to ...
abcnews.go.com



The 20 Richest Plastic Surgeons in the ...
moneyinc.com



hair transplant surgery on April 27 ...
gettyimages.com



What does a Plastic Surgery Nurse do ...
wisegeek.com



Cuthbertson's Volunteer in Nepal ...
chuffed.org



Making Plastic Surgery Work for You ...
lynchburgbusinessmag.com



plastic surgeons undergo cosmetic ...
belvedereclinic.co.uk



February 2012 ENT/Plastic Surgery ...
lao-foundation.org



Plastic Surgery
rebelcircus.com



How To Find Cheap Plastic Surgery and ...
smartguy.com



Plastic surgery addict left with ...
news.com.au



Dr Stafford Broumand's Medical Missio...
plasticsurgeonsnyc.com



Kylie Jenner's Plastic Surgery — Spent ...
medium.com

My surgical working day

Registration time

Surgery

- 1-8 patients
- Surgery is great
- 'turn over time' is 5 minutes
 - Write or report
 - Write discharge letter
 - Pills
 - Call family
 - Focus on next case, read notes
 - Say hi to next patient
 - Mark up next patient
- ~~Have coffee~~
- ~~EXTRA TIME~~

So what about breast implants?

Breast implants have serious adverse events

so what can we tell

patients/ clients/ citizens / salespersons

Challenge

Rough estimate number of cases

Rough estimate number of women with **types of** implants

Need to register data

Need to register data
Big data

Need to register data

Big data

NO TIME!

Dutch Breast Implant Registry

DBIR

Start 2015

National

All patients

All procedures

Data

Patient;

Name

Age

History?

Other diseases

Surgery

L / R / L + R

Cosmetic/reconstructive

New or exchange

Implant

Shape

Texture

Fill

Patient characteristics

i Unique patientnumber, clinic*

What is the ASA classification before operation*

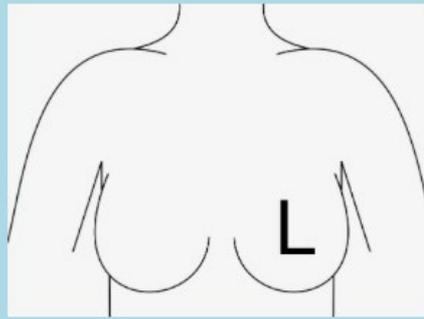
- A normal healthy patient.
- A patient with a mild systemic disease.
- A patient with a severe systemic disease that limits activity but is not incapacitating.
- A patient with an incapacitating systemic disease that is a constant threat to life.
- A moribund patient not expected to survive 24 hours with or without operation.
- ASA unknown

Nicotine abuse*

- Yes
- No
- Not known

Height in centimeters*

Weight in kilograms*



Side of operation*

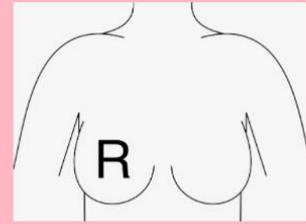
- Right
- Left

Indication of surgery*

- Cosmetic augmentation
- Reconstruction post cancer
- Reconstruction benign
- Congenital deformity
- Reconstruction post prophylactic mastectomy

In case of revision, register indication and timing (if applicable) of primary surgery.

i Timing initial reconstruction*



Texture*

- Textured
- Smooth

Coating*

- Silicone
- Polyurethane
- Other

Fill*

- Silicone
- Saline
- Hydrogel
- Other

Shape*

- Round
- Shaped / Anatomical

i Weight/Volume of implant (cc or gr)*

Volgende sectie

Toevoegen device

Het maximum aantal records is al bereikt (1)

Results



DUTCH BREAST IMPLANT REGISTRY (DBIR)
ANNUAL REPORT 2015 – 2017

DBIR

DUTCH BREAST
IMPLANT REGISTRY

DICA

DUTCH
INSTITUTE
FOR CLINICAL
AUDITING



Nederlandse Vereniging voor Plastische Chirurgie
handchirurgie, reconstructieve en esthetische chirurgie

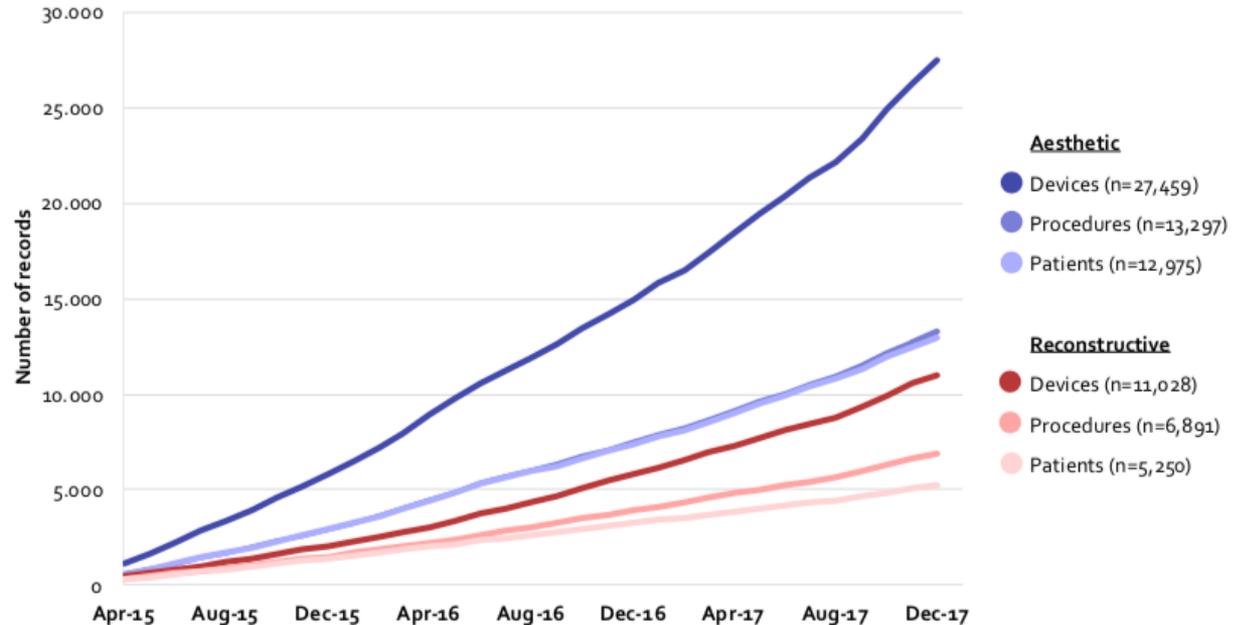
40.000 implants

(2015 – 2017)

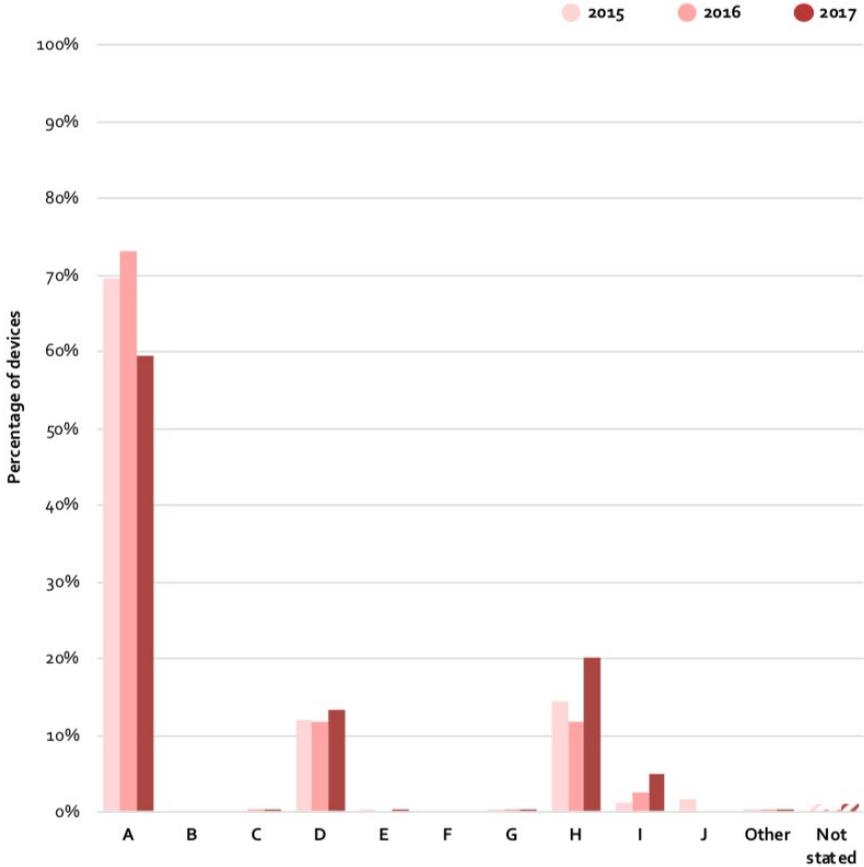
Total number of

- Patients ± 18.000
- Operations ± 20.000
- Implants ± 38.000

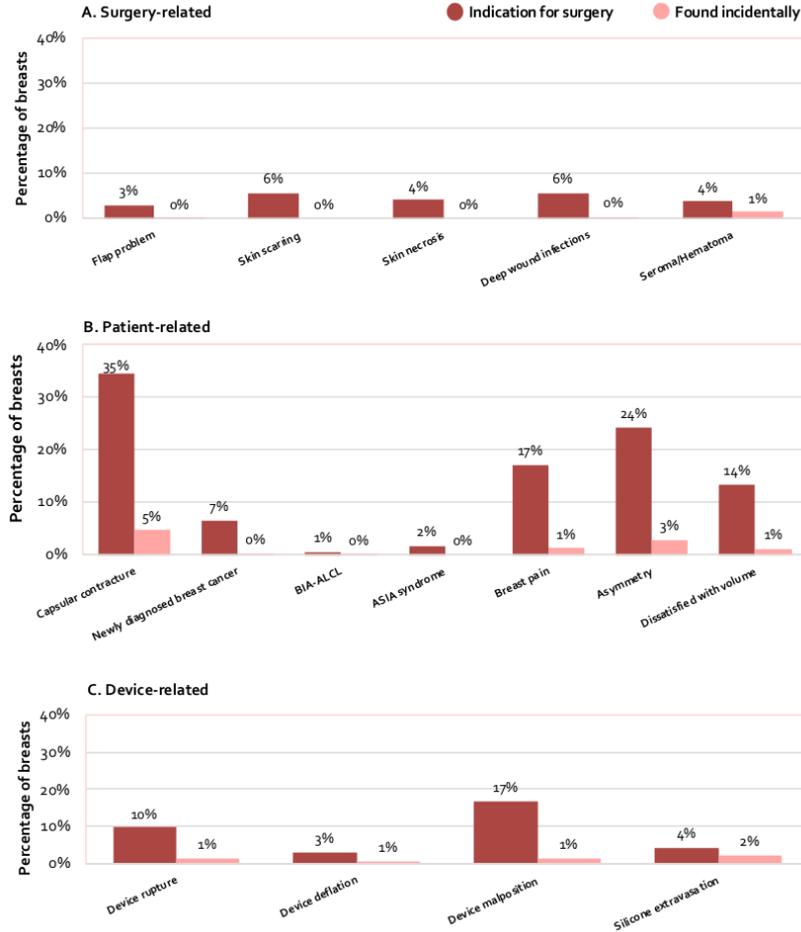
Figure 3. Cumulative number of registered patients, procedures and devices (2015 – 2017)



Vendor distribution



Adverse events; reoperation





Arctic Ocean

OnTheWorldMap.com

Netherlands

Atlantic Ocean

Pacific Ocean

Indian Ocean

Atlantic Ocean

Pacific Ocean

Southern Ocean



International Collaboration of Breast Registry Activities

25 countries



International professionals all want the same data
ICOBRA set of minimum datapoints

ICOBRA MINIMUM DATA SET; implant

- UDI; serial number/Lot
- Producer
- Texture
- Fill
- Shape
- Volume of implant

We have an international professional standard



DUTCH BREAST IMPLANT REGISTRY (DBIR) ANNUAL REPORT 2015 – 2017

DBIR

DUTCH BREAST
IMPLANT REGISTRY



BRIMP- BREAST IMPLANT REGISTER ANNUAL REPORT 2017



Lessons learned;

- Reduce typo's
- Reduce administrative time
- Enhance re-use of already registered data
- Use IT
- Enhance reliability in tracing and output

What would help?

- A single identifier for an implant

What helps?

- UDI Unique device Identifier

What did we do to make use of UDI?

Choose one

- Ask industry for support
- Ask government for guidance

- Made it functional

Uw wijzigingen zijn opgeslagen

Patiënt !

Registered surgeries

- !

Side of operation !

Hospital/patient characteristics !

Right-Cosmetic augmentation

Intervention

Operation techniques

Antiseptic precautions/drains

Devices

Inserted-Permanent implant

Device type

Device specific information

Device Manufacturer and barcode

Device identification information

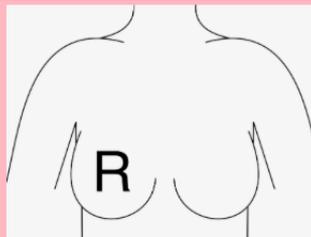
Status

DBIR

DUTCH BREAST
IMPLANT REGISTRY

General information:

- Registration of a patient is finished when all errors (!) have disappeared.
- Please visit the DICA website for instruction videos (section DBIR - Documenten).



Manufacturer*

Eurosilicone

Using GS1 barcode scanner?*

- No, enter details manually
- Yes

GS1 barcode. Code starts with (01)*

Volgende sectie >

Toevoegen device +

Het maximum aantal records is al bereikt (1)

FNC1010061414199999617100101101123ABC FNC1211234567890



(01) 00614141999996 (17) 100101 (10) 123ABC (21) 1234567890

AI GTIN AI AI AI

Expiration Date Lot Number Serial Number



Barcode modality

- Less typos
- Quicker entry
- More reliable output;
 - Manufacturer
 - Surgeons
 - Patients
 - Society

Future

More automation

A golden key is shown horizontally. The head of the key on the left is highly decorative, featuring a central star-like shape surrounded by intricate, interlocking loops and curves. The bit on the right is a standard, symmetrical key bit. The shaft of the key is a simple, cylindrical rod. The text "Unique Device Identifier" is printed in black on the shaft.

Unique Device Identifier



Key to

Fixed number of globally agreed device datapoints



Stakeholders

- Surgeons
- Patients
- Hospitals
- Industry
- Governments





Why standardize?

YES PLEASE

Hinne Rakhorst

Babette Becherer, Marc Mureau, Juliette Hommes, Xavier Keuter, Pauline Spronk,,

Manuel Harmsen

All plastic surgeons in the Netherlands

An aerial photograph of a city at sunset. The sun is low on the horizon, casting a warm orange glow over the scene. A wide river flows through the city, with several boats visible. A prominent skyscraper stands on the right side of the river. In the foreground, there are residential buildings with red roofs and a parking lot. The overall atmosphere is serene and urban.

Be in touch;
Rakhorst@gmail.com



Do clinicians care about standards?

34th Global GS1 Healthcare Conference
Bangkok, Thailand

Wrap up

October 30, 2018



Do clinicians care about standards? Wrap up



A vision, a plan, a roadmap and global sharing facilitates good implementations

Clinicians are used to procedures and protocols for the content of their work

GS1 standards / identifiers support aggregation and decision making

GS1 is an enabler to assure the patient rights in healthcare



GS1 in clinical processes:
correct product data support quality &
safety, efficiency & cost containment



The Global Language of Business

Thank you very much for your attention

