HealthCatalyst

Driving Insights, Driving Value: Boosting Clinical Registry Value using ARMUS Solutions

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ARMUS Overview



ARMUS Solutions

Clinical Registry Software Solutions

- HYBRID Outcomes Streamlined and customizable data entry
- HYBRID Analytics Comprehensive reporting
- Interface Applications Reduced data burden
- MIPS Submit Quality measures to CMS

Data Abstraction and Management

• Reduce costs and improve outcomes

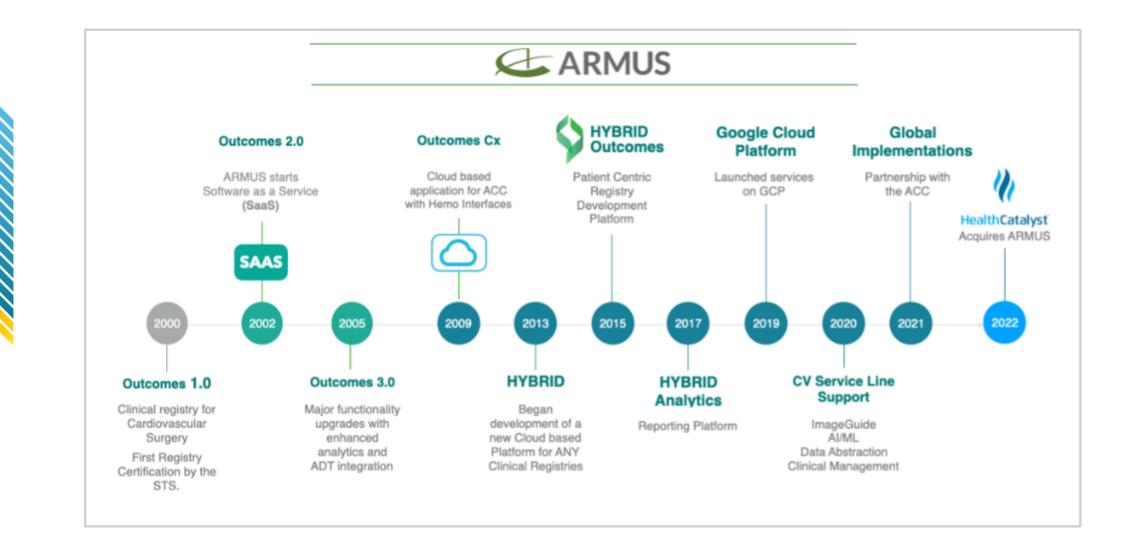
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ARMUS Benefits

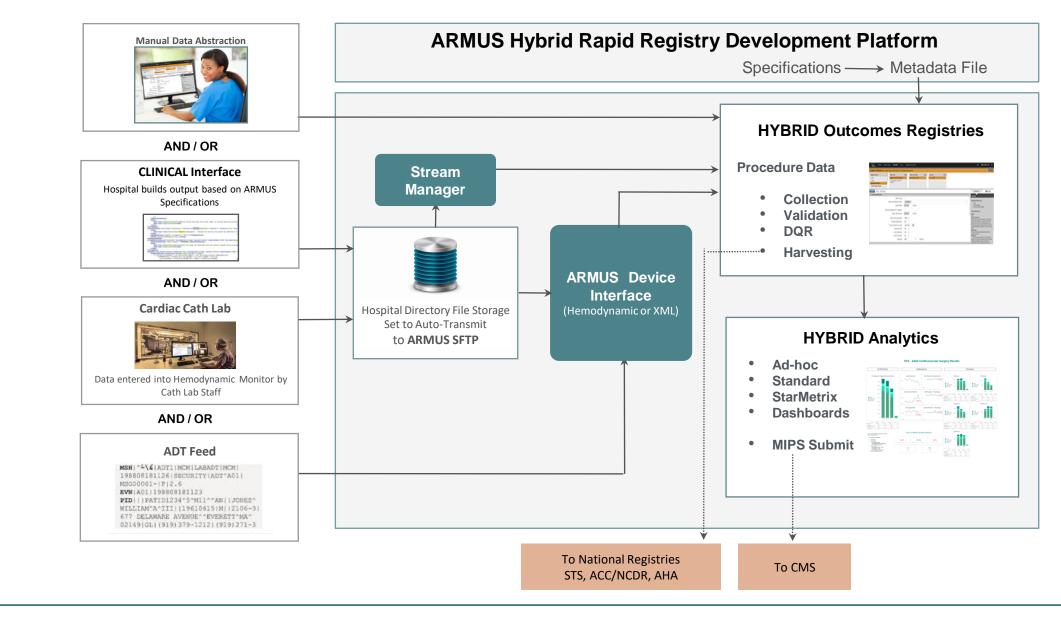
- ✓ Improved data quality
- ✓ Reduced data abstraction time
- ✓ One patient-centric application for all clinical registries
- ✓ Meaningful reporting to drive improved clinical outcomes
- On-demand and longitudinal analytics (spanning all data versions)
- Technology + Cloud-based solution supports rapid registry development
- ✓ Minimal Hospital IT Requirements

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 $\ensuremath{\mathbb{C}}$ Health Catalyst. Confidential and Proprietary.



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Hospitals & Hospital Systems

500 Hospitals with over 4500 Users



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ARMUS Supported Registries

Clinical Registries Supported by ARMUS										
National Society Registries	State Initiative Registries	Society Technology Partnerships								
ACC-NCDR AFIB	NY State PCIRS (PCI)	Sub-Specialty Society Registries								
ACC-NCDR CathPCI	NY State CSRS (Adult Cardiac Surgery)	ImageGuide Transthoracic Esophageal								
ACC-NCDR Chest Pain MI	NJ State Cardiac Cath (PCI)	ImageGuide Stress Echo								
ACC-NCDR EP Device Implant	NJ State Open Heart Surgery	ImageGuide Nuclear								
ACC-NCDR IMPACT	CA State CCORP (Adult Cardiac Surgery)	International Registries								
STS/ACC TVT	GA State CV Disease Program - CathPCI/CPMI (Export Only)	ACC Global Quality Initiative CathPCI								
AHA GWTG-CAD	MA State Adult Cardiac Surgery (Export only)	ACC Global Quality Initiative CPMI								
AHA GWTG-Heart Failure		ACC Global Quality Initiative GHATI								
AHA GWTG-Stroke		Quality Collaborative Registries								
STS Adult Cardiac Surgery		PERForm (owned by MSTCVS**)								
STS Congenital Heart Surgery		OB COAP (Owned by FHCQ*)								
STS General Thoracic Surgery		SCOAP (Surgical Care and Outcomes Assessment Program) (Owned by FHCQ*)								



1st Certified Vendor for LAAO*

"One patient-centric solution for all of your registries."

HYBRID - Organization:	Demo 👻		Administration -	E Applications - We	come Back, admin 🛛 👤 👻
Jane Do (0980908) MRN: 09809	08 DOB: 01/01/70 PatientID: 190849722	MERGE PATIENT	DELETE PATIENT		٩٧
Patient Forms	LAAO Episodes 🕀 😣	Procedures	Ð	Follow-Ups	Ð
> LAAO	LAAO 02/02/23-02/15/23 CathPCI 04/01/20-04/02/20 CPMI 04/01/20-04/02/20	Procedure - 02/02/2	3 18:00	Follow-Up - 03/15/23	
SAVE PRINT X CANCEL	Jump to:	Administrative	~	 Definitions 	Validation
Record Created	09/05/2023 10:15			Health Insurance Paymer	nt Source
Record Updated	09/05/2023 10:15			Field Definitions	
Administrative				Seq. #:	3010
Abstractors Name	conroe,helen ∨ Q			Short Name:	hips
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Record Complete Date	iii			Note(s):	
Registry Version	1.4 ~			 If the patient has multiple all payors. 	insurance payors, select
Hospital Demographics	Certification Hospital: 1234567890, 99	99996 v Q		If there is uncertainty regardle	arding how to identify a plan, please discuss with
Episode Key	822431277				understand how it should
Arrival Date and Time	02/02/2023 08:00			Target Value	
	Health Insurance			The value on arrival at thi	s facility
Health Insurance Payment Source	Military Health Care Private Health Insurance	-		is coverage by a health	e: Private health insurance plan provided through an urchased by an individual
Medicare Beneficiary Identifier	Patient Enrolled in Research Study			from a private health in maintenance organizat private health insuranc	surance company. A health ion (HMO) is considered
					costs for people 65 and

*Left Atrial Appendage Occlusion

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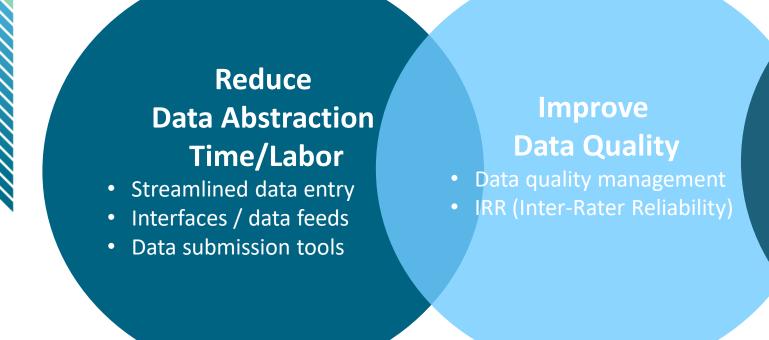
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Poll Question 1:

What is your biggest challenge in managing your clinical registry participation?

A. Data abstraction - too time-consuming
B. Providing reports to stakeholders - wish it were easier
C. Meeting Data Submission Deadlines is a challenge
D. Not Applicable - I do not participate directly in clinical registries

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- Comprehensive reporting
- Visual dashboards

Benefits of Interfacing

Utilizing Interfaces = - Abstraction Time + T Data Quality

Supported Interfaces:

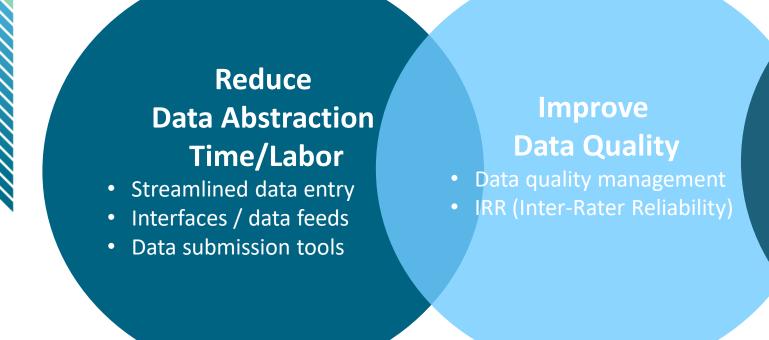
- Hemo
- ADT
- Clinical Importers (any registry)

Supported hemodynamic monitoring systems

- GE MacLab Siemens
 - Phillips
 - (XPER, WITT) and other
- MERGE
- Mckesson •
- FUJI
- custom
- interfaces

Interfaces + **Cross Registry Mapping**





- Comprehensive reporting
- Visual dashboards

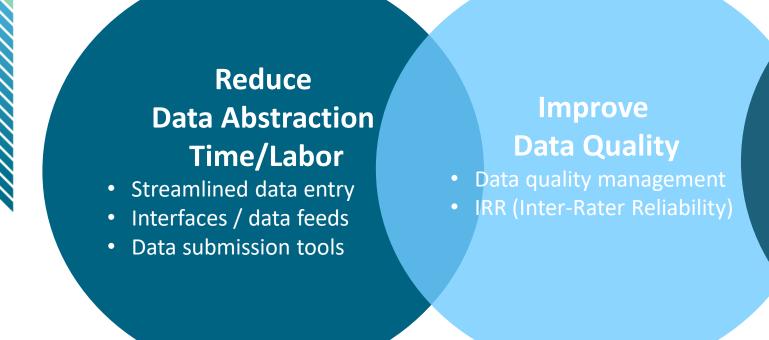
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• Poll Question 2:

How do you perform IRR for your registries today? (inter-rater reliability for data abstraction audits)

(answer options: A. Paper, B. Electronic, C. Not currently doing but would like to, D. Not Applicable)

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- Comprehensive reporting
- Visual dashboards



A Health Catalyst Case Study Electronic Data Abstraction Improves Efficiency and Registry Submission Accuracy

Participation in the Society of Thoracic Surgeons (STS) Adult Cardiac Surgery Database (ACSD) National Database is a key component of Johns Hopkins Medicine's cardiothoracic surgery quality performance program. The organization leveraged ARMUS by Health Catalyst to reduce its registry data entry burden and simplify registry data management, achieving improved efficiency and data quality, reducing data cleaning, and lowering missing data rates.





Challenges & Impact

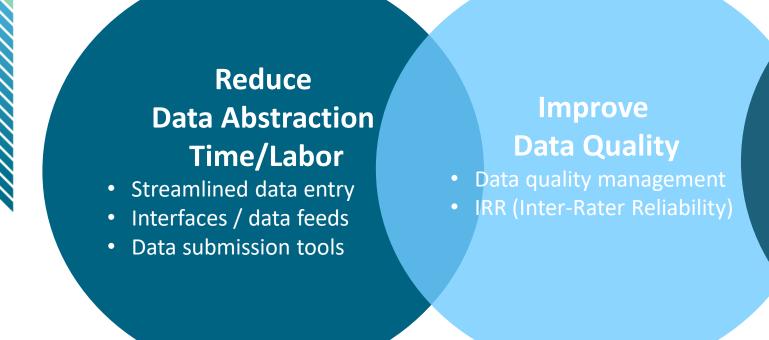
- Participation in the program required the organization to invest costly resources to accurately abstract, validate, and submit quality data.
- Impact: Johns Hopkins Medicine wanted to pursue options that would allow it to improve efficiencies while maintaining highquality performance.

Solution

- Leveraged ARMUS by Health Catalyst to reduce its registry data entry burden and simplify registry data management.
- ARMUS Clinical Registry cloud-based application streamlines the data collection, validation, and submission process.
- The organization can now use its resources to measure, analyze, and continually improve performance rather than spending limited resources on data abstraction.

Results

- 69 ACSD registry fields automatically imported.
- **12-15 minutes** in abstraction time saved per record.
- 10-25 percent reduction in abstraction time.



- Comprehensive reporting
- Visual dashboards

StarMetrix – The fastest way to prep for M&M meetings

Ionth and Quarter Ionth warter edure Type AB Only	Risk Adjusted Outcomes Measures Jan 2018 - Dec 2018 Total																			
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B Only Y	CAB ONLY			13	11	2	26	67	8	21	6	8	9	23	11	2	6	19 89		1
	Cardiac Reoperation (NQF) - Observed			0.0	0.0	0.0	0.0 0	.0 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.7	5.3 1.1	<=	2
'ear	Deep Sternal Infection - Observed			0.0	0.0	0.0	0.0 0	.0 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 (0.0 0.0	<=	0
8 🗸	Postop Stroke - Observed			0.0	0.0	0.0	0.0 0	.0 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 0.0	<=	1
	Renal Failure - Observed			0.0	0.0	0.0	0.0 0	.0 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 0.0	<=	2
uarter	Prolonged Vent - Observed			0.0	9.1	0.0	3.8 16	8.7 0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	50.0	0.0	5.3 3.4	<=	€
Jan-Mar 🗸	Internal Mammary Artery used for grafts			100.0	100.0	100.0 1	00.0 10	0.0 100.	0 100.0	100.0	100.0	100.0	100.0 1	100.0	90.9	100.0	83.3 8	9.5 97.7	>=	9
	Composite Quality Rating - Use of All Evid	ence-based Perioperative	Medications (CAB Only)	100.0	100.0	100.0 1	00.0 10	0.0 100.	0 100.0	100.0	80.0	100.0 1	100.0	95.0	90.9	100.0	66.7 8	37.5 95.7	>=	9
~	Pre Op Beta Blocker			100.0	100.0	100.0 1	00.0 10	0.0 100.	0 100.0	100.0	100.0	100.0	100.0 1	100.0	90.9	100.0	80.0 8	8.9 97.5	5 >=	9
	Discharge Anti-Platelet Medications			100.0	100.0	100.0 1	00.0 10	0.0 100.	0 100.0	100.0	100.0	100.0 1	100.0 1	100.0	90.9	100.0	75.0 8	88.2 97.6	5 >=	9
1	Discharge Beta Blockers								0 100.0		_							8.9 97.7		9
~	Discharge Statin								100.0								75.0 8	8.2 95.1	>=	9
Status	Operative Mortality								0.0						0.0	0.0	16.7 3		<=	2
~	Absence of Operative Mortality			_											_	_		4.7 98.9		9
	Absence of Major Morbidity			100.0	90.9	100.0	96.2 83	3.3 100.	0 100.0	95.2	100.0	100.0 1	100.0 1	100.0	100.0	50.0	83.3 8	9.5 95.5	5 >=	8
esh Table			>=50% 25%-50% 10	00/ 050/	10/ 100/	Color Key	10/ 100/	108/ 058	25% 50	×										
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Quickly identify areas of excellence as well as opportunities for improvement based on benchmarks. Metric definitions with patient drilldown.

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Data Tables

ARMUS Hybrid Analytics Data Tables - Demo International -🔲 Applications 👻 Welcome Back, admin 💄 🗸 **Q**--Population Field selection Table1 + Selected fields Apply Selection Immediately -O 🗈 🕹 🗢 # Arrival Date Procedure Start Date PCI Indications for Cath Lab Visit PCI Status LOS Admit to Discharge Q Search field... 04/01/2020 04/02/2020 1 Yes ACS <= 24 hrs^Pre-operative Ev... Elective 1 CathPCI Internationals 2 04/01/2020 04/01/20120 0 Yes Other Urgent A. Demographics 3 02/01/2020 02/06/2020 Yes Pre-operative Evaluation Emergency 60 - B. Episode of Care ---- 11142999 Episode Key 4 04/10/2020 04/12/2020 Yes Valvular Disease^Other Salvage 3 11151000 Participant ID 5 04/10/2020 04/11/2020 Yes Pre-operative Evaluation Emergency 3 11161010 Participant Name 6 04/01/2020 04/02/2020 Yes Othe Salvage 1 11173001 Arrival Date - 11183001 Arrival Time C. History and Risk Factors D1. Pre-Procedure Information D2. Pre-Procedure-Diagnostic Test D3. Pre-Procedure-Medications E1. Procedure Information E2. Procedure Information - Closure Devices 🕣 F. Labs 🛞 G. Cath Lab Visit H. Coronary Anatomy ·
 I1. PCI Procedure I2. PCI Procedure - Medications Il. Lesions and Devices - Calculated 💿 J2. Lesions 🛞 J3. Devices · · · K. Intra and Post Procedure Events 💿 L1. Discharge • L2. Discharge-Medications M1. Aux - COVID19 X. Calculated Fields - AUC (a) X. Other Calculated Fields 1 - 6 of 6 Show 1000 V entries © 2022, ARMUS Corporation

"Ask your data: Use an Ad Hoc query builder to answer your own questions from all registry fields."

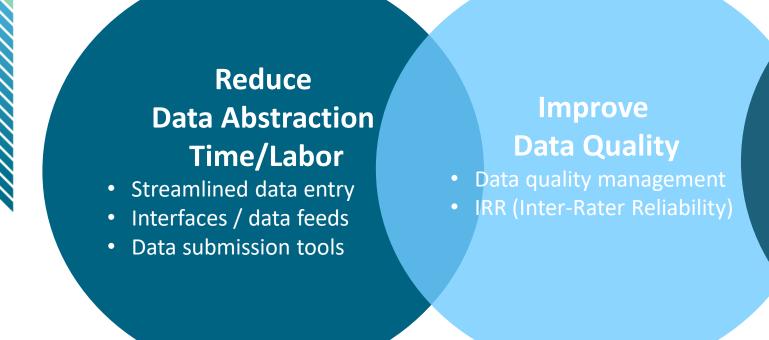


Metric Library

ARMUS Hybrid Analytics New Reports - Demo	•					a	pplications -	Welcome Back	, sfairless 🏾			
ategory Report CC CathPCI CathPCI Me	tric Library											
Metric Parameters									^			
						- Metric Orientation						
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Metric Variable Display												
Split Cell 👻 🗹 Includ	e variables for each m	netric	Suppress Sect	ion Labels		Suppress Re	epeated Colun	nn Header				
Filter Physician By												
Name De-Ide	entify Hospitals											
Report Group 1 All Visits AND All versions AND All Indications Filter Date By Date of Discharge Quarterly	From Year 2022	•	From Quarter	Q3 (2022	¥	CTo Quarter	Q2 Q3	~ Q4			
Physicians 👻 Hospital		-	Finaluate By Time Intervals Time Intervals Time Intervals Time Intervals									
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01. Patient, Episode, and Procedure Volumes	Q1 '2		Q2 '22		Q3 '22	Q4 '22	т	otal				
	Patients 9		5		0	0	1	4				
	Episodes 9		5		0	0	1	4				
Visit	s (Dx and/or PCI) 9		8		0	0	1	7				
	DxCath with PCI 77.8	3%	25.0%		0.0%	0.0%	5	2.9%				
	N 7		2		0	0	9					
	D 9		8		0	0	10	7				

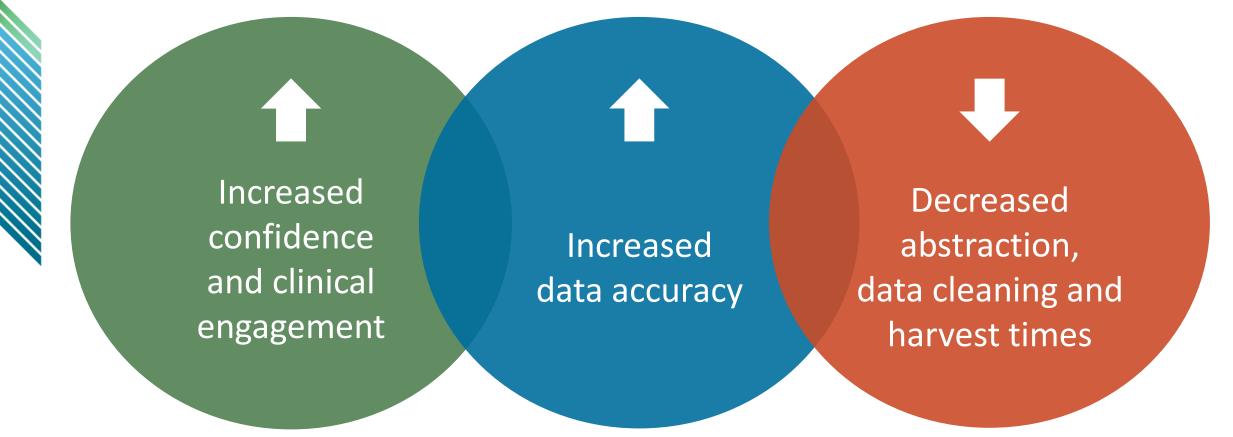
- Available for most registries
- Select specific metrics, parameters or filters
- Output grid or graphs, and can export to Excel or PDF

– Metrics –	
Search	
01. Patie	ent, Episode, and Procedure Volumes
02. Exec	sutive Metrics - PCI Performance
	PCI In-Hospital Risk Adjusted Mortality - All Patients
	PCI In-Hospital Standardized Risk Adjusted Bleeding Ra
	Composite: Appropriate DC Meds Prescribed
	PCI In-Hospital Standardized Risk Adjusted Mortality - (F



- Comprehensive reporting
- Visual dashboards

Meaningful Improvements lead to:





Q & A

	Frequently Asked Questions	
1	Can you house my historic data, and will it be available for reporting?	Yes
2	How timely are you with new data versions?] st
3	Do you have an IRR tool?	Yes
4	Do you have dashboard reporting?	Yes
5	Do you have patient detail reporting?	Yes
6	Do you have Data Quality Tools and Definitions available in your data entry?	Yes
7	Can I submit data from your tool?	Yes
8	Can you interface from our EMR or our CathLab?	Yes

Win a Complimentary Pass to HAS24

Participate in the poll to be entered into the drawing.



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