

Closing Plenary on Future Frontiers: Performance assessment and predictive modeling within the EHR / HIT environment

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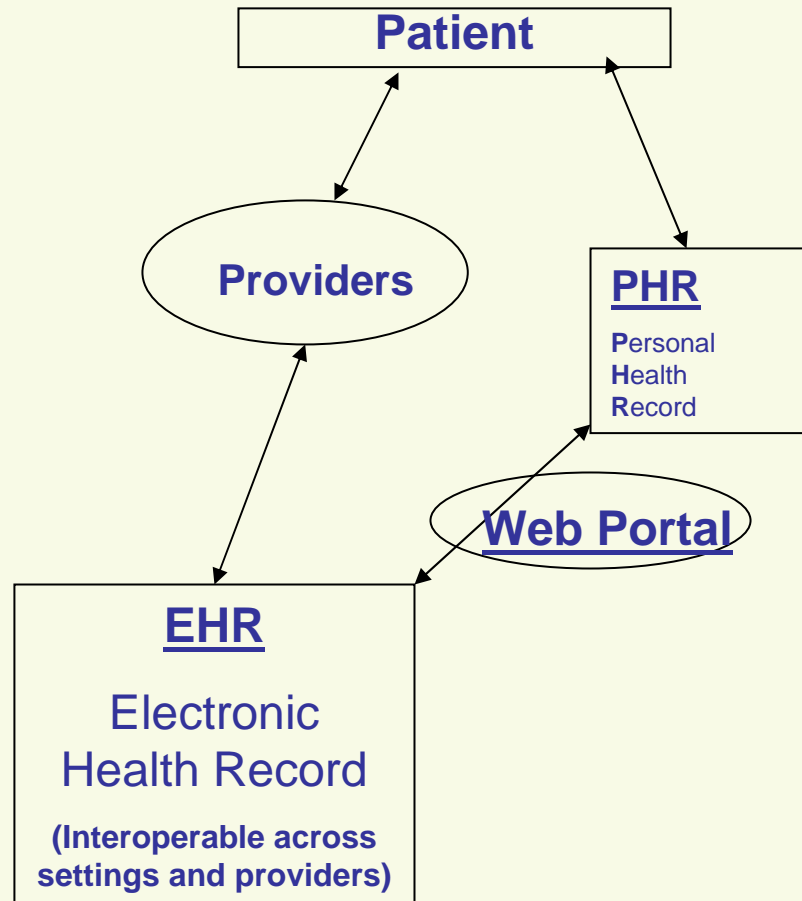
Improving Your Hand in Care Management

May 4-7, 2008 - The Mirage - Las Vegas, Nevada

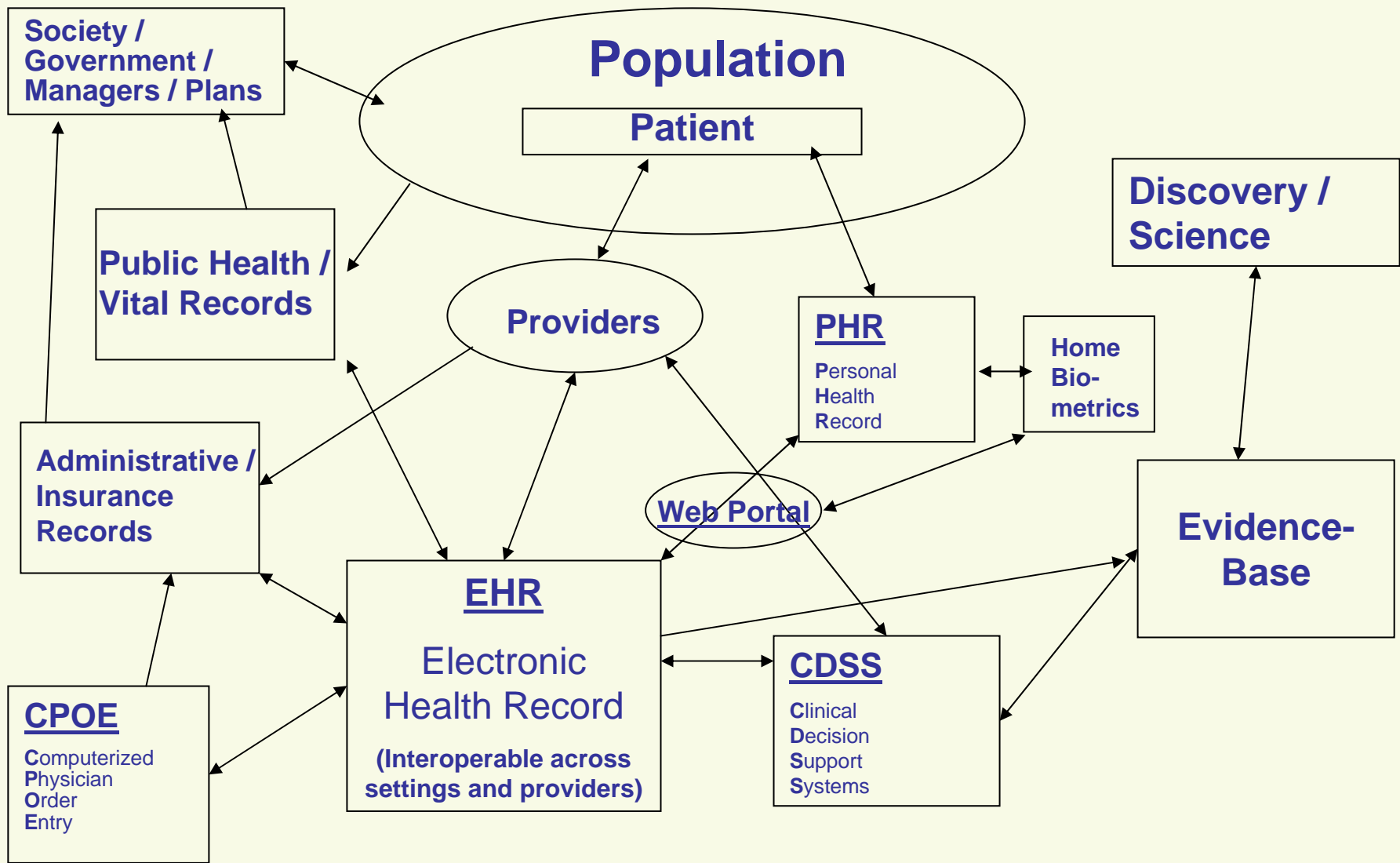
Goals of session

- To discuss some of the implications of health IT (HIT) and electronic health records (EHRs) for for future:
 - **of performance assessment; and**
 - **predictive modeling (PM) and risk adjustment.**
- To share a few words about JHU development agenda and a planned IT initiative.
- To continue the dialogue initiated at previous sessions (e.g., Leff's PCC and Forrest's future of HIT).
- To offer a few summations about conference and coming year and to offer opportunity for interaction.





The HIT core: The electronic health record / personal health record



The components of an HIT enabled health care delivery system

Data sources and types of performance measures

<u>Data Source:</u>	<u>Type of Measure</u>				
	<u>Denominator</u>	<u>Process</u>	<u>Outcome</u>	<u>Pt-Cent.</u>	<u>Cost</u>
<u>Electronic / HIT</u>					
PH records / registry	X				
Insurance files	X	X	X		X
EHR		X	X		X
CPOE		X			
PHR / Web portal		X	X	X	
<u>Non-electronic</u>					
Paper medical record		X	X		
Surveys			X	X	



HIT will transform performance measurement

- Electronic indicators (“e-indicators”) of performance will be essential tools for:
 - Provider / clinician teams
 - Organization leadership / management
 - Government / society / public health
 - Outcomes researchers / scientists



Applications of HIT-based performance measures

- Quality improvement
- “Pay for performance” incentives
- Community / regional collaboration / strategic planning



Examples of innovative “e-indicators” of performance using HIT enabled systems

- **Access / outreach measures**

- % of patients with e-prescriptions whose Rx not picked up from pharmacy

- **Effectiveness**

- **Process**

- % of abnormal lab results reviewed and acted upon by clinician within 48 hours of receipt

- **Coordination / Continuity**

- % of all referrals to consultants that result in feedback to primary care doctor within 7 days of visit

- **Outcomes**

- % of persons with negative outcomes based on home biometric devices monitoring (e.g., for CHF, diabetes, hypertension)



Performance “e-indicators” examples - 2

- **Equity**

- Disparities in use of personal health records (PHRs) or web portals by region, population group of interest.

- **Efficiency / Cost**

- % of providers in highest “value” quadrant (i.e., high quality measures and average or below average risk adjusted cost)



HIT and EHRs will transform the
development and application of
predictive modeling and risk
adjustment



Components of a PM Implementation: Each may evolve within EHR environment

- Risk factors input data
- Data warehouse / repository
- Analytic model
- Reports / targeting information
- Care management interventions
- Ongoing assessment / feedback improvement



Potential new electronic sources of risk factor input data

- Electronic health record (EHR)
 - Clinical findings
 - Workflow / clinical decision process / information retrieval
 - CPOE (e.g., electronic ordering)
- Automated streaming from lab/imaging diagnostics / provider system devices



Potential new inputs from electronic sources (2)

- Home devices / biometrics
- Personal health records (PHRs)
 - Patient preferences
 - Patient reports of function
 - Patterns of information storage and retrieval
- Genomics
- Community surveillance / public health network
 - Environmental
 - Social
 - Evolving science base / evidence
- Other?



HIT will have implications for other PM components as well

- Risk factor input data
- Data warehouse/repository
- Analytic model
- Reports / targeting information
- Care management interventions
- Ongoing assessment / feedback improvement



How ACGs and PCCs will be integrated into the HIT / EHR platform



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EHR can have
"ACG-PM" hot
button including
real time alerts

The screenshot displays an EHR interface for a patient named Smith, M. The interface includes a navigation sidebar on the left with options like Admin, Practice, and Resource Schedu... The main content area shows patient details, a list of HPI symptoms, and a table of musculo-skeletal symptoms. The HPI list includes items like Cervical Exam, Claudication, Depression, Diabetes Consult, ENT/respiratory, FU for Breast Cancer, FU for Diabetes, FU for High Blood Pres, FU for Hypertension, FU for Weight Loss, GU Male, Incontinence, Injury Mechanism, Lacerations, Milestones, Nephrology, and Oncology. The musculo-skeletal table lists symptoms such as pain, radiation of pain, fall, and tingling/numbness, along with their durations and notes. The interface also features a search bar, a toolbar, and a taskbar at the bottom.

c/o	descri	Symptom	Duration	Notes
X		pain	2-3 days	right side, medial aspect of knee
X		radiation of pain		to lateral thigh
X		fall		fell while playing basketball 2 days ago
X		tingling/ numbness		lateral side of the leg
		lower back pain		



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- Numerous co-morbidities
- At risk for future hospitalization
- ER Visit with no admission
- Poly-pharmacy use
- Tobacco Use

Example of ACG-PM EHR Hot Button Report

Identifying Information			
Member ID	6456254*161940127	Product	Commercial
Name	XYSGST*ZX_NAME, XYSGST*ZX_NAME M	Product Type	HMO
Sex	F	GROUP	CONSOLIDATED ENERGIES
Age	65	GROUP_TYPE2	COMM - NORTHWEST
Member Months	12	GROUP_TYPE3	NORTHWEST
PCP ID - PCP Name	4114243*11 - LNAME, FNAME MI	GROUP_TYPE4	4114243*11
PCP Specialty	11 - Internal Medicine	GROUP_TYPE5	11

Risk and Utilization			
<u>Risk</u>		<u>Special Markers</u>	
RUB	4	Chronic Condition Count	7
RRS - Current	4.92	HosDom	1
RRS - Predicted	7.99	Frailty Flag	N
		Tobacco Use	Y
		<u>Utilization</u>	
		Ambulatory Visits	14
		Ambulatory Surgery	2
		Inpatient Admissions	0
		ER Services	1
		MH Services	0
		CD Services	0
		# Unique MDs	13
		# RX Filled	49

Condition Markers			
Asthma	NP	Chronic Renal Failure	NP
Arthritis	ICD	COPD	ICD
Anxiety	RX	Depression	NP
CHF	NP	Diabetes	BTH
		Hyperlipidemia	BTH
		Hypertension	BTH
		Ischemic Heart Dz	ICD
		Low Back Pain	ICD
		Migraines	NP
		Pain	NP
		Pain / Inflammation	RX
		Peptic Ulcer Dz	BTH



**PCCs will be integrated into
EHR system as a real time
electronic provider performance
reporting application**



Using PCC framework for assessing provider or organization practices with EHRs

Physician

Name: **Richard Jones**
Physician ID: **700X10308**
Specialty: **Primary Care**

Practice Characteristics

Single Physician
Multi Physician
Generalist/Single Specialty
Generalist/Multi- Specialty
Multi-Specialist

Service Population Selection

Primary PCC:
Co-Managed PCC:
Care Modulator: Yes No
Provider Attribution:

Date of Profile

September 21, 2007

Period Profiled

Last Year
Last Month
Last Two Months
Last Three Months
Last Six Months
Custom



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Example of EHR- based cost report using PCC framework

Physician
Name: **Richard Jones**
Physician ID: **700X10308**
Specialty: **Primary Care**

Practice Characteristics
Single Physician

Service Population Selection
Primary PCC: Diabetes
Co-Managed PCC: Hypertension
Care Modulator: Yes No
Provider Attribution: Princial

Date of Profile
September 21, 2007

Period Profiled
Last Year

UPDATE

Care Population Performance Summary Quality **Costs**

Outpatient Total Costs



Average Per Patient

	Profiled	Cohort	Percentile
Outpatient	\$ 1,399	\$ 1,273	0.89
E & M	\$ 332	\$ 300	0.67
Laboratory	\$ 256	\$ 170	0.75
Procedures	\$ 443	\$ 448	0.44
Pharmacy	\$ 368	\$ 355	0.58
Inpatient	\$ 334	\$ 270	0.92
ED	\$ 545	\$ 453	0.83
Total	\$ 2,278	\$ 1,996	0.88

- Total Outpatient
- E&M
- Laboratory
- Procedures
- Pharmacy
- Total Inpatient

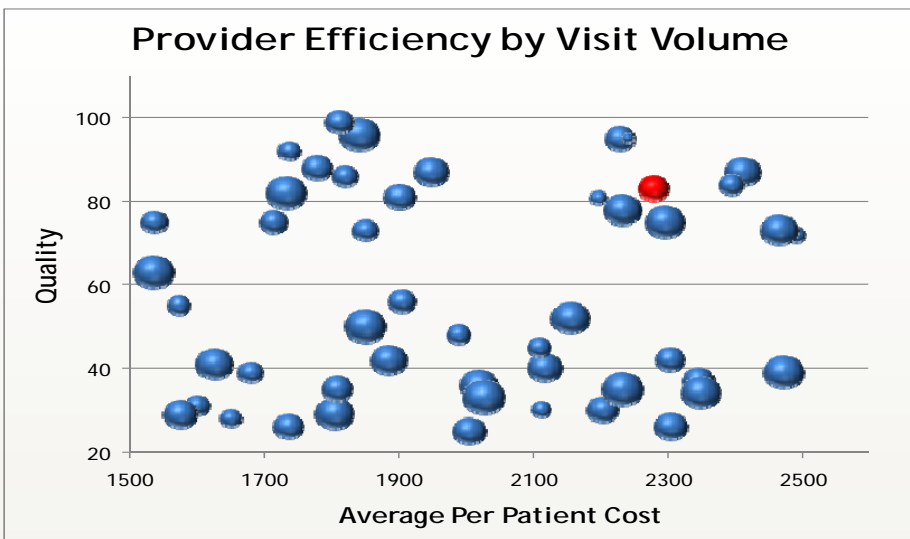


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Example of EHR- based cost / quality report using PCC framework

Physician Name: Richard Jones Physician ID: 700X10308 Specialty: Primary Care	Service Population Selection Primary PCC: Diabetes Co-Managed PCC: Hypertension Care Modulator: <input checked="" type="radio"/> Yes <input type="radio"/> No Provider Attribution: Princial	Date of Profile September 21, 2007 Period Profiled Last Year
Practice Characteristics Single Physician	<input type="button" value="UPDATE"/>	

Care Population | **Performance Summary** | Quality | Costs



Quality

Overall Quality	0.83	Average	0.64
Process	0.92	Average	0.85
Outcome	0.80	Average	0.55

Costs

Average Per Patient Cost	\$2,278	Average	\$1,996
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R&D frontiers: Priorities for ACG team

- Integrating risk measurement / PM and quality improvement; particularly related to care coordination.
- Developing alternative approaches for episode assessment that capture multi-morbidity, complex nature of care patterns while retaining holistic perspective.
- Incorporating risk measurement and population based performance measures into EMR / HIT systems.

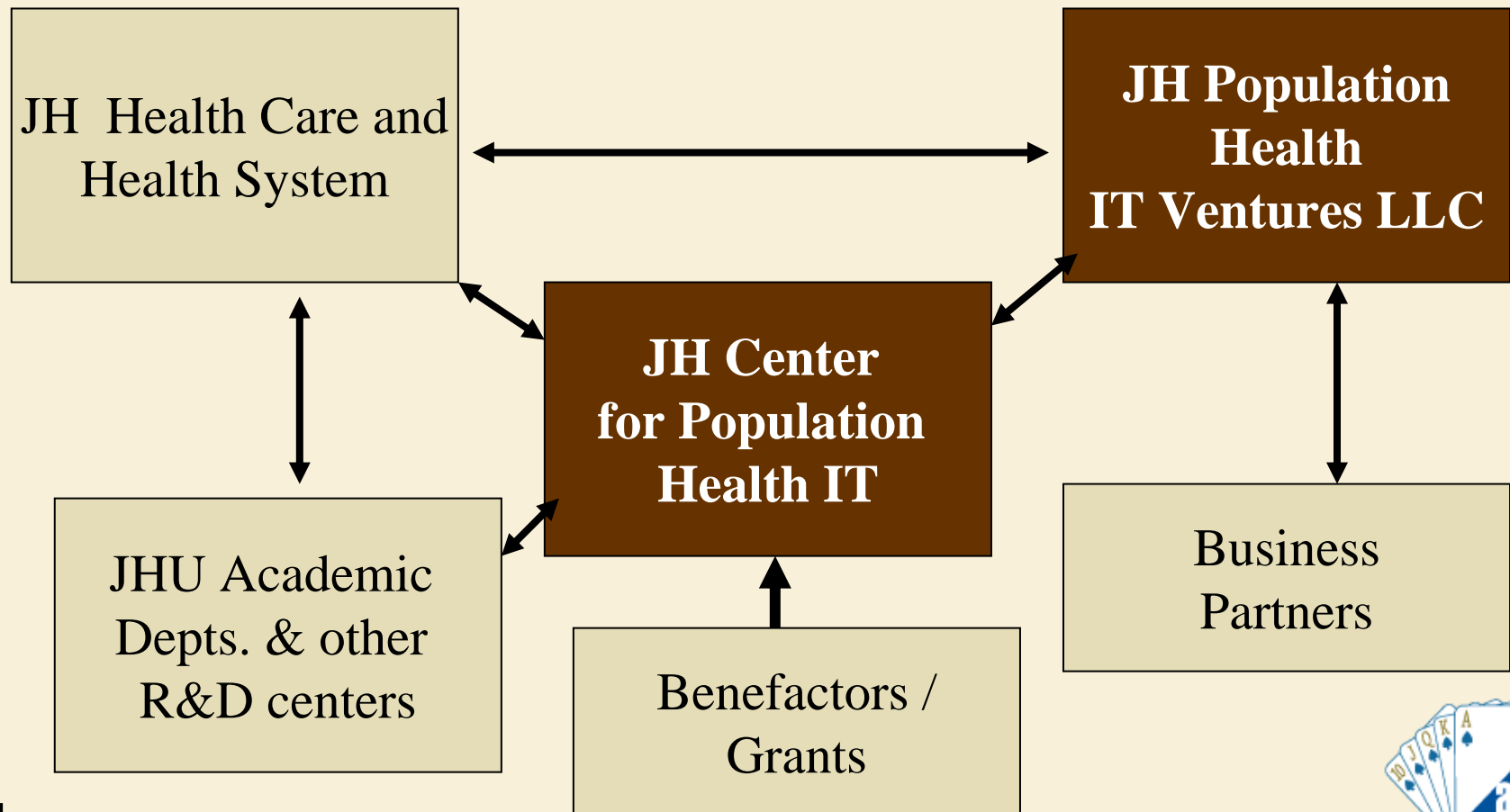


**Given the current EHR /HIT trajectory,
the Johns Hopkins' vision is to become
a pre-eminent global research and
development provider of knowledge-
ware to offer digital support for
population health.**



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To increase our capacity, the ACG team and colleagues at JH Health Care are planning major population health IT initiative



Closing

- Conference summation
- Attendee comments feedback
- Thanks to staff, sponsors and attendees
- Please contact us over coming year with ideas, concerns and questions.

www.acg.jhsph.edu

