Symposium on Innovation in Healthcare Technology and Delivery

1:30-3:15 New Models for Drug Development and Personalized Therapy
Keynote: Richard Schlegel, MD, PhD.
Professor and Chairman of the Department of Pathology, Director of the Center for Cellular Reprogramming, Lombardi Comprehensive Cancer Center, Georgetown University Medical Center
- Woo Lee, PhD, George Meade Bond Professor, Stevens Institute of Technology
- Jenny Zilberberg, PhD, Researcher, Hackensack University Medical Center
- Alvin Stern, PhD, Visiting Professor, Stevens Institute of Technology
- Carrie Perlman PhD, Assistant Professor, Stevens Institute of Technology
- Panel discussion/Q&A

3:15-3:30 Break

3:30-5:15 Healthcare Delivery in the Era of the Affordable Care Act
Keynote: William Rouse, PhD,
Alexander Crombie Humphreys Professor and Director of the Center for Complex Systems & Enterprises, Stevens Institute of Technology
- Mark Spektor, DO, President and CEO, Bayonne Medical Center, CarePoint Health
- Yingying Chen, PhD, Associate Professor, Stevens Institute of Technology
- Samantha Kleinberg, PhD, Assistant Professor, Stevens Institute of Technology
- Donald Lombardi, PhD, Industry Associate Professor, Stevens Institute of Technology
- Panel discussion/Q&A

5:15-6:00 Networking Reception (Babbio Atrium)
Overview

• Healthcare Delivery – Follow the Money
• Healthcare Delivery – Who Affects What
• Enterprise of Healthcare Delivery
• Responses to Affordable Care Act
• Strategy Elements
• New York Study
• Resulting Healthcare System of 2025
Healthcare Delivery
Economic Model & Incentive Structure

System Structure (Organizations)

Delivery Operations (Processes)

Clinical Practices (People)

Healthcare Ecosystem (Society)

Human Productivity & Healthcare Costs

Economic Returns & Performance Information

Patient Care & Health Outcomes

Care Capabilities & Health Information

Competitive Positions & Economic Investments

Responses to Affordable Care Act

**Health plans** (Consolidate, and Increase Membership)
- Drug and healthcare equipment companies:
  - Ally with hospitals and insurers
  - Invest in R&D and sustain innovation
  - Seek profit to compensate for increased taxes
  - Pursue shares of sales in emerging markets
  - Deliver personalized service

**Physician Groups**
- Three-part payment structure
  - Fee-for-service
  - Capitation
  - Shared savings and costs

**Patients**

** Hospitals** (Consolidate, Achieve High Utilization and Expand Array of Services)
- Drug and healthcare equipment companies

**Physicians**

**Hospital**
- Initiate forming Accountable Care Organizations
- Invest in health IT and care management platforms, e.g., Electronic Health Records (EHR)
- Improve inpatient/outpatient operation services, reduce operation errors
- Achieve higher utilization of facilities and workforces
- Expand clinical space and/or upgrade facilities
- Research in disease diagnosis and treatment
- Invest in medical education
- Move to post-discharge care
- Gain increased access to payers’ claim data

**ACO Initiatives: Bargaining Power. Who Leads?**

**Value Driven Patient Centered** (Improve Quality, Reduce Cost, and Expand Coverage)
- Drug and healthcare equipment companies

**The Patient Protection and Affordable Care Act**
Sec. 1001. Amendments to the Public Health Service Act.
Sec. 2713. Coverage of preventive health services.
Sec. 2718. Bringing down the cost
Sec. 5003. Ensuring that insurance premiums increased
Sec. 1101. Immediate

**INTEGRATED**
- Kaiser Permanente
  - Founded in 1945, Kaiser Permanente is one of the nation’s largest not-for-profit health plans, serving more than 9 million members, with headquarters in Oakland, Calif. It comprises Kaiser Foundation Hospitals and their subsidiaries, Kaiser Foundation Health Plan, Inc. and Permanente Medical Groups.
  - Medical facilities and physicians as of Dec 31, 2011:
    - Hospitals: 37
    - Medical Offices: 611
    - Physicians: 10,638
    - Employees: 172,067

**CENTER FOR COMPLEX SYSTEMS AND ENTERPRISES**
Strategy Elements

- Invest in improved efficiency and integration of delivery processes to both lower costs and increase quality.
- Invest in population health offerings, e.g., ACOs, where providers are paid PMPM fees per patient plus bonuses on savings due to reduced ED visits and IP admissions.
- Invest in highly profitable Diagnosis-Related Groups (DRGs), while also moving away from marginally profitable DRGs or money losers in general.
- Invest in acquisition of other providers and physician groups to gain access to greater market share, achieve economies of scale, gain capabilities to address more profitable DRGs, etc.
- Invest in developing health plans to become both provider and payer.
New York Study
Attributes of Providers

- Name and Address
- Total Patient Revenue
- Total Operating Expense
- Net Income (from Service to Patients)
- Fund Balance
- (Adjusted) Inpatient/Outpatient Cost
- Inpatient/Outpatient Charges
- Other Costs (e.g., General and Administrative Cost, Emergency Room Cost)
- Hospital (Total/Medicare) Discharges
- Calculated Hospital Bed Utilization
- Estimated Medicare Spending per Hospital Patient
- Estimated Rate of Reimbursement for Medicare Inpatient/Outpatient
- Diagnosis Related Group Names and Number of Inpatients
- Patient Recommendation data from Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS)
- Operation Quality data Agency for Healthcare Research and Quality (AHRQ)
Hospital’s DRG Market Share Heatmap
(Based on Total Charges)
Hospital’s DRG Overlapping Heatmap
Predicted Outcomes

• Over 10-20 years, 36 providers will consolidate to 3-5 providers
• Repeated runs of the model will lead to different equilibria – no single equilibrium
• Varying early decisions will precipitate different equilibria, e.g., who acts first
• Decisions will be significantly affected by government payment policies
Craft Industry

Integrated Enterprise

Integrated Retail Systems
e.g., Wal-Mart, Target, Home Depot, et al.
(1980-2000)

Integrated Health Systems
e.g., Geisinger Health System, Scott & White Healthcare, et al.
(2000-2025)

Consumer-Directed Retail
e.g., Amazon.com, Edmunds.com, et al.
(2000- )

Consumer-Directed Health
e.g., yourwellness.com, healthadvisor.com, et al.
(2025- )

Networked Enterprises
Summary

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