Integrating Telemedicine Applications into Existing Healthcare Systems

Peter S. Greene, MD
Chief Medical Information Officer
Johns Hopkins Medicine

American Telemedicine Association Summit – September 28, 2010
Outline

• What is the landscape at Johns Hopkins Medicine?
• What does it mean to be fully integrated?
• Where will telemedicine fit in?
• What are the opportunities for better patient care?
Historic Billings Building
New Clinical Building
**Facts and Components**

**Johns Hopkins Academic and Community Hospitals**

**The Johns Hopkins Hospital**
For 20 straight years, ranked nation’s #1 hospital by *U.S. News & World Report*. 1,085 licensed beds, including 1,049 acute care beds; 1,714 attending physicians.

**Johns Hopkins Children’s Center**
Consistently ranked by *U.S. News & World Report* as one of the top centers in the nation.

**Johns Hopkins Sidney Kimmel Comprehensive Cancer Center**
NCI-designated cancer center; ranked fourth in the nation by *U.S. News & World Report*.

**Johns Hopkins Bayview Medical Center**
686 licensed beds, including 371 acute beds; 500 attending physicians.

**Community Hospitals**
- **Howard County General Hospital** *(Columbia, MD)*
  275 licensed beds, including 245 acute beds; 744 mostly community physicians.
- **Suburban Hospital** *(Bethesda, MD)*
  239 licensed acute beds, 881 mostly community physicians.
Johns Hopkins Health Care and Surgery Centers

Johns Hopkins Green Spring Station
(Northwest Baltimore County)

Johns Hopkins White Marsh
(Eastern Baltimore County)

Johns Hopkins Odenton
(Western Anne Arundel County)

Johns Hopkins Cedar Lane
(Howard County)

- Virtually all specialty services offered: outpatient surgery, internal medicine, family practice, Ob/Gyn, pediatrics, cardiology, gastroenterology, ophthalmology, orthopedics/rehabilitation, radiology, Wilmer Optical, medical laboratory
Facts and Components
Johns Hopkins Health System

Johns Hopkins HealthCare
Managed care plans covering 264,000 lives in three unique populations, including Medicaid, Employer Health Plans, and U.S. Family Health Plan

Johns Hopkins Community Physicians
540,000 annual patient visits to 25 primary health care sites with 230 providers

Johns Hopkins Home Care Group
A full-service home care provider. Joint Commission accredited; CMS certified, 82,000 patients served
Dr. Edward Miller
National Press Club – June 21, 2010

- Hopkins believes in the promise of medicine and the need for ceaseless innovation
- Founded 120 years ago to care for poor
- Affordable Care Act a huge step forward
- Medicaid expansion most rewarding aspect
- Need population health with quantifiable results
Core Clinical System at JHH

- Vendor: Eclipsys
- Product: Sunrise Enterprise
- Modules:
  - Provider Order Entry (POE)
  - Clinical Documentation (Clin Doc)
### Patient Synopsis

- **Value**: testing patient synopsis

**Patient Information**

- **Name**: CLINDOCtesting, Cathy
- **ID**: NCC7-017-P
- **Blood Type**: ACD
- **Allergies**: None
- **Height**: 6'4"
- **Weight**: 270 lbs
- **Date of Birth**: 03/10/1975
- **Gender**: Male
- **Race**: Caucasian

**Reference Weight**: 70 kg (08/12/2009)

### Daily Goals

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
<th>Last Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulmonary</td>
<td>Out of bed, pulmonary toilet</td>
<td>09/10/2009 00:27</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>Fluids net even</td>
<td>09/10/2009 00:27</td>
</tr>
</tbody>
</table>

### Consults/Brief Op Notes

- **Document Name**: Consult - Neurology
- **Author**: Geisler, Cathy
- **Entered Date**: 09/02/2009 10:55

### Problem List

<table>
<thead>
<tr>
<th>Health Issue</th>
<th>Type</th>
<th>Onset Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Spontaneous Subarachnoid Hemorrhage</td>
<td>Diagnosis</td>
<td>09/10/2009</td>
</tr>
<tr>
<td>Marfan Syndrome</td>
<td>Diagnosis</td>
<td>08/12/2009</td>
</tr>
<tr>
<td>NonInfective Diarrhea</td>
<td>Diagnosis</td>
<td>08/12/2009</td>
</tr>
<tr>
<td>Abnormal Metabolic State in Diabetes Mellitus</td>
<td>Diagnosis</td>
<td>07/13/2009</td>
</tr>
<tr>
<td>Major Depression</td>
<td>Diagnosis</td>
<td>06/13/2009</td>
</tr>
</tbody>
</table>

### Significant Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Onset Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lumbar Puncture</td>
<td>09/03/2009</td>
</tr>
<tr>
<td>Lumbar Puncture</td>
<td>09/01/2009</td>
</tr>
<tr>
<td>Suicidal Ideation</td>
<td>06/19/2009</td>
</tr>
<tr>
<td>Fall</td>
<td>07/17/2009</td>
</tr>
<tr>
<td>Intraventricular Catheter</td>
<td>06/20/2003</td>
</tr>
<tr>
<td>Arterial Line</td>
<td>06/21/2003</td>
</tr>
<tr>
<td>Bronchoscopy</td>
<td>06/08/2003</td>
</tr>
<tr>
<td>Central Line</td>
<td>06/08/2003</td>
</tr>
</tbody>
</table>

### Daily Goals

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
<th>Last Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>OT</td>
<td>Continue therapy as recommended</td>
<td>10/21/2009 11:30</td>
</tr>
<tr>
<td>Neurological/ Pain</td>
<td>Continue neuro exams q2, get tegretol and dilantin...</td>
<td>10/21/2009 11:30</td>
</tr>
<tr>
<td>Pulmonary</td>
<td>Maintain current support RLL infiltrate on xray, PEG...</td>
<td>10/21/2009 11:30</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>NS @ 84cc/hr, creat level increasing, CVP q 8 HOB...</td>
<td>10/21/2009 11:30</td>
</tr>
<tr>
<td>GI</td>
<td>NPO PEG today</td>
<td>10/21/2009 11:30</td>
</tr>
</tbody>
</table>
# Current Systems

<table>
<thead>
<tr>
<th>Category</th>
<th>JHH</th>
<th>JHBMC</th>
<th>HCGH</th>
<th>Suburban</th>
<th>JHCP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient Portal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registration/Scheduling</td>
<td>Epic</td>
<td>MEDITECH, Epic, GE (IDX)</td>
<td>MEDITECH</td>
<td>MCKESSON</td>
<td>GE (IDX)</td>
</tr>
<tr>
<td>ADT</td>
<td>Keane</td>
<td>MEDITECH</td>
<td>MEDITECH</td>
<td>MCKESSON</td>
<td>N/A</td>
</tr>
<tr>
<td>Inpatient EMR</td>
<td>Eclipsys</td>
<td>MEDITECH</td>
<td>MEDITECH</td>
<td>MCKESSON</td>
<td></td>
</tr>
<tr>
<td>Ambulatory EMR</td>
<td>Eclipsys (limited)</td>
<td>MEDITECH/LSS (limited)</td>
<td>MEDITECH/LSS (limited)</td>
<td>GE (Centricity EMR)</td>
<td>GE (Centricity EMR)</td>
</tr>
<tr>
<td>Specialties</td>
<td>Varied</td>
<td>Varied</td>
<td>Varied</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>EPR2020</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital Billing</td>
<td>Keane</td>
<td>MEDITECH</td>
<td>MEDITECH</td>
<td>MCKESSON</td>
<td>N/A</td>
</tr>
<tr>
<td>Professional Billing</td>
<td>GE (IDX)</td>
<td>GE (IDX)</td>
<td>GE (IDX)</td>
<td>GE (IDX)</td>
<td>GE (IDX)</td>
</tr>
</tbody>
</table>

10/5/2010
EMR Data Integration

- JHBMC
- JHHCGH
- JHSH
- JHCP

JHH

JHH S

Region
Regional Data Integration

NEW: CRISP has released an RFP for Master Patient Indexing Services. To download the RFP click here.

WHAT IS CRISP?

CRISP (Chesapeake Regional Information Systems for our Patients)

CRISP is Maryland's statewide health information exchange. Health information exchange, or HIE, allows clinical information to move electronically among disparate health information systems. The goal of HIE is to deliver the right health information to the right place at the right time—anywhere in Maryland—providing safer, more timely, efficient, effective, equitable, patient-centered care. As one example of the application of HIE, a patient's discharge summary from a hospital visit could be securely and electronically delivered to his or her primary care physician, providing for more seamless continuity of care.

Combined with the widespread adoption of electronic medical records by hospitals and physicians, HIE is one of the two critical components to building a truly integrated, 21st century healthcare delivery system.
Johns Hopkins Medicine IT

- Critical juncture
- Entity centric approach has reached its limits
- Patient centered care requires coordination of care across JHM
- Populations and preventive health require longitudinal patient and data management
- Must enable operational efficiencies, cost controls, and productivity
- Must achieve quality and patient safety well beyond meaningful use
Core System Vision

- Patient-centered
- Single tightly integrated solution
- Encompasses all major areas of EHR functionality
- Includes workflow as well as content and data.
- Enables seamless coordination of care delivery
- Requires careful TCO and ROI analysis
- Require redesign of care
A clinical microsystem is a small group of people who work together on a regular basis to provide care to discrete subpopulations of patients. It has clinical and business aims, linked processes, and a shared information environment, and it produces performance outcomes. Microsystems evolve over time and are often embedded in larger organizations. They are complex adaptive systems, and as such they must do the primary work associated with core aims, meet the needs of internal staff, and maintain themselves over time as clinical units.
Telehealth @ JHM
Alex Nason – Director of Telehealth Services

- Anesthesiology / Critical Care
  - Intensive Care
  - PICU
- Cardiology
- Dermatology
- Emergency Medicine
- Gastroenterology
- Infectious Diseases
- Johns Hopkins Community Physicians
- JHM International
- Johns Hopkins Healthcare
- Johns Hopkins Homecare Group
- Minimally Invasive Surgical Training Center
- Radiology
- Urology
- Pediatric Psychiatry
- Physical Medicine – Rehab
- Obstetrics and Gynecology
- Ophthalmology
- Otolaryngology
Research Presentations at Telehealth Colloquim

- Can Telemedicine Improve Adherence to Pediatric Resuscitation Guidelines? A Randomized Controlled Trial Using High Fidelity Simulation
  - Robert Dudas, MD

- Multidisciplinary Care of International Cleft Palate Using Telemedicine
  - Chad A. Glazer, MD
Teledermatology Program
Drs. Nik Tchopev and Bernard Cohen

- Johns Hopkins Healthcare
- Medicaid population
- Eastern shore of MD
- Store & forward consults
- Consultants paid by health plan

<table>
<thead>
<tr>
<th>Diagnosis Level</th>
<th>Dermatology PCP E&amp;M</th>
<th>Dermatology Specialist Visits</th>
<th>Dermatology ED Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Volume</td>
<td>Cost ($)</td>
<td>Volume</td>
</tr>
<tr>
<td>Dermatology as Primary Diagnosis</td>
<td>5,099</td>
<td>375,025</td>
<td>4,167</td>
</tr>
<tr>
<td>Dermatology as Secondary Diagnosis</td>
<td>3,840</td>
<td>313,675</td>
<td>2,515</td>
</tr>
</tbody>
</table>
ARRA Incentives for Health IT

“Meaningful Use”

• Improve quality, safety, efficiency
• Manage populations
• Engage patients and families
• Coordinate care
• Improve population and public health
• Ensure privacy & security protections
Telemedicine

• Focus on “Berwick” goals:
  – Better care (Chasm Report)
  – Better health
  – Lower cost

• Expand evidence base

• Ensure information continuity

• Help to lead care system redesign