CANCER RESEARCH INFORMATICS

BMT AS A PARADIGM

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Department of Blood and Marrow Transplantation
UT MD Anderson Cancer Center
Mission

The mission of The University of Texas M. D. Anderson Cancer Center is to eliminate cancer in Texas, the nation, and the world through outstanding programs that integrate patient care, research and prevention, and through education for undergraduate and graduate students, trainees, professionals, employees and the public.
What the Institutional Mission is Not

- Billing
- Scheduling
- Accounting
- Managing Human Resources
- Document Management
- Pharmacy, Radiology, Pathology management
- Food Service
- Parking and Security
- MIS……….
Why Doesn’t Research Have IT Resources?

- Lack of Leadership Support?
- Lack of IT Commitment?
- Lack of Funding?
- Lack of Vision?
- Failure at the IT professional – research professional Interface
IT and Clinical Research

- EMR - patient centric view
- Research Medical Record (RMR) – protocol centric view
  - Not nightly downloads
  - Not “near on line”
  - Not a silo
  - Not “one size fits all”
  - Not multipatient queries exclusively
IT and Clinical Research

• Why is IT critical for the future of Clinical and Translational Research?
  – Cost
  – Regulatory and compliance burden
  – Productivity
  – Collaboration
How the Institution Can Support Research IT

• Not a “pretty front end”
• Provide access to institutional data
  – Data standards
    • Promote national standards if available - code
  – Open database systems, encounter based, historical data access
    • Repository/Warehouse
    • Service-oriented architecture
    • Hybrid
  – De-silo !
  – Read/write mentality
<table>
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<th>Doctor</th>
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<td>LIEBROSS, ROBERT, MD - 06481</td>
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09/19/96

RADIATION ONCOLOGY INITIAL SUMMARY

PRIMARY SITE AND HISTOPATHOLOGY: Right acetabular fracture.

STAGE:

HISTORY: The patient is approximately a 30-year-old white male who on 09/14 was involved in a motor vehicle accident in which he suffered a right tibial plateau fracture, right acetabular fracture and dislocation and head trauma consisting of multiple contusions in his left temporal and right temporal lobes of his brain and skull fractures in his right frontal and left temporal bones as well as subarachnoid hemorrhage. On 09/18, he underwent an open reduction and internal fixation of his right acetabulum and presents to M. D. Anderson from Hermann Hospital for postoperative irradiation of his right hip to prevent formation of heterotropic bone. Patient’s identity remains unknown and he is unresponsive at this time.

SUMMARY OF PERTINENT X-RAY OR LABORATORY FINDINGS:

PHYSICAL FINDINGS:

RISKS OF RADIATION THERAPY: The patient is unresponsive at this time and his identity is unknown.

BASIC TREATMENT PLAN: The plan is to treat this patient using an A9 field to his right hip using 18 MV photons and a total dose of 800 cGy in one fraction.
Alternative Models

- Institutional Database → Service Database
- Institutional Database

OR

Research Systems

NO!
Which Model is Best?

- Decision depends on institutional variables
  - Politics as important as IT optimization
  - Cooperation of "satellite IT kingdoms"
  - IT savvy of managers/administrators
  - Patience of staff

- Without institutional data integration and standardization, research IT is doomed
Goals of BMT Research Systems

- Interface data whenever possible
- Point of care (POC) data entry [(s)he who generated the data enters it]
- Front end programs which mimic clinical research workflow
- Front end systems which are protocol-centric
  - Department-based customization
  - Web-based architecture
  - Role of “IT business process consultant”
  - **Need for informed department-based IT liaison**
PRIORITIES FOR BMT IT DEVELOPMENT

• Enhancement of research
  – Improved protocol enrollment
  – Increased data with improved quality

• Enhancement of business priorities
  – Improved level-of-service justification
  – Increased level-of-service data capture
  – Improved contracting/budgeting

• Improved efficiency
  – No increase workload for physicians or physician-support staff
BMT Architecture
What We Have

• iKnowmed or COIS
  – Protocol-oriented design
  – Knowmed concept (D Simborg)
  – Clinical note and billing output
  – iKnowmed Needs BMT buildout
### Adverse Events

**Category:** GVHD Chronic

**Event Start Date:** 2/14/2005

**Event Type:** Expected

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<tr>
<th>Sites</th>
<th>Indication</th>
<th>Stage</th>
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<tr>
<td>Skin/Hair Alopecia</td>
<td>Absent</td>
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<tr>
<td>Skin/Hair Contractures</td>
<td>Unknown severity</td>
<td></td>
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<tr>
<td>Skin/Hair Dyspigmentation</td>
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<tr>
<td>Skin/Hair Other skin/hair involvement</td>
<td>Severe</td>
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<tr>
<td>Skin/Hair Rash</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td>Skin/Hair Scleroderma</td>
<td>Absent</td>
<td></td>
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</table>

**Grade:**

- **SAE:**
  - Yes
  - No

- **Patient Outcome:**
  - Death
  - Disability/Incapacity
  - Hospitalization

- **Other Describe**
  - Other
  - Persistent
  - Prolonged Hospitalization

- **Report Event**
  - Location

- **Research Related**
  - Disease Related

- **Action Taken**
  - AE Outcome
BMT Architecture
What We Have

• BMTWeb Java
  – Data manager data input
  – CRF format
  – Can evolve from data input to audit format
### Init Dx

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<tr>
<td>Date</td>
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<tr>
<td>Dx</td>
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<tr>
<td>Did AML arise from previous MDS</td>
<td></td>
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<tr>
<td>Transformation date</td>
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<tr>
<td>Histology</td>
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<td>Other</td>
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<td>Findings</td>
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### Cytogenetics

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<td>Tested Date</td>
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<tr>
<td># cells counted</td>
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<td>Abnormal?</td>
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<td>Abnormal cells(%)</td>
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<td>Risk Cat.</td>
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### Dx Lab

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<tbody>
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<td>D Lab</td>
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<tr>
<td>B symptoms</td>
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### Spleen size

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### Workup

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<td>Was extramedullary Disease present in:</td>
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<td>CNS?</td>
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<td>Other sites</td>
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### Treatment

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<td>Is this a treatment related MDS?</td>
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<tr>
<td>Is this a treatment related AML?</td>
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### Smoker

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<tbody>
<tr>
<td>Smoker</td>
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<tr>
<td># of pack years</td>
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### Prior Malignancy Date

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<tr>
<td>Prior Malignancy Date</td>
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<tr>
<td>Transplant for prior malignancy</td>
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### Init Dx record created by

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BMT Architecture
What We Have

- **InsideBMT**
  - Departmental Web page integrated into the insideMDAnderson intranet
  - Useful for support personnel not directly involved in patient care
Welcome to the Blood and Marrow Transplantation (BMT) Program Intranet Site at the University of Texas M. D. Anderson Cancer Center. The goal of this site is to provide authorized MD Anderson staff and physicians who care for BMT patients with a single access point for critical processes and data which direct patient evaluation, treatment, and clinical research. We welcome your thoughts about the content and design of this website. For comments or questions about the use of this website, or permission to access restricted portions of this site, please contact Kathleen Maher at 713-794-5744, kmaher@mdanderson.org
Financial Approvals
Report Screen for Docs
What We’ve Learned

• Data integration is critical for success
• Standard “business” IT solutions often require modification for the research environment
• “Out of the box” pretty front ends usually fail
• Learning the research environment is critical
  – Identify an IT savvy medical collaborator
  – Train in-house IT staff in clinical focus areas and have them work there
• Be liberal when defining who is the “customer” as they will define success
Acknowledgements

• BMT
  – Charles Martinez
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  – Eugene Stead