Development of a BRIDG-Harmonized Multipurpose Information System for an Academic Cancer Center

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Background: Typical Academic Cancer Center
Fox Chase-Temple BMT Information System

- Real-Time Clinical Decision Support
- Teaching
- Research Planning, Execution, and Analysis
- Quality Management
- Marketing and Recruiting
- BMT online Information System (BMTIS)

Quality-Assured Data Repository

- Data Required for Accreditation and Certification for Blue-Cross, Aetna, Cigna, URN, CIBMTR, NMDP, BMT Info Net, BMT-CTN, Care Science, FACT, Cancer Registry, etc.

Document Management

Administrative Decision Support
## Personnel and Funding

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Funding</th>
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<tbody>
<tr>
<td>Mouneer Odeh</td>
<td>Project Administrator</td>
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<td>Nick DeGregorio</td>
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<td>Joe Neff</td>
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<td>Ed Bruner</td>
<td>Applications Developer</td>
<td>Med Onc, SKCC</td>
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<td>Lisa Wen</td>
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## Work Plan: Iterative Approach, Starting with BMT

<table>
<thead>
<tr>
<th>Iteration</th>
<th>Solution Delivered</th>
<th>Patient Benefit</th>
<th>Clinical Excellence</th>
<th>Program Administration</th>
<th>High-Impact Science</th>
<th>Program of Global Distinction</th>
<th>Forward-Thinking Education</th>
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<tbody>
<tr>
<td>Iteration 1</td>
<td>• Quality assured relational database tracking 36 “Inner Core” data elements</td>
<td>• Improved outcomes due to use of quality-assured data to guide clinical decision-making.</td>
<td>• Incorporate high-quality data into real-time clinical decision-making, including real-time actuarial analyses of EFS, OS, TRM, RFS, within subsets of patients</td>
<td>• Accurate real-time tracking of volume and outcomes data for the program as a whole or within key subsets of patients</td>
<td>• Reduced duplication of data entry by research staff</td>
<td>• CIBMTR and NCI have already expressed interest in this project</td>
<td>• Inclusion of accurate research-quality data in teaching</td>
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<td>Iteration 2</td>
<td>• Tracking ~100 data elements in robust, quality assured database</td>
<td>• Streamlined intake procedure</td>
<td>• Increased accuracy of physicians’ predictions of patient outcomes</td>
<td>• Partial electronic submission to CIBMTR</td>
<td>• BMT coordinator’s duplicative data input is reduced dramatically</td>
<td>• Improved support for status as NCI-designated Comprehensive Cancer Center</td>
<td>• Online, ad hoc analytics for qualified faculty</td>
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<td>Iteration 3</td>
<td>• Online data entry for BMI coordinator</td>
<td>• Streamlined follow-up procedure</td>
<td>• Improvements in outcomes metrics</td>
<td>• Accurate tabulation of pts eligible for research protocols</td>
<td>• Automated notification to Research Coordinators re: protocol-eligible patients</td>
<td>• Increased ability to attract and retain research talent</td>
<td>• Online, ad hoc analytics for qualified students</td>
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<td>Iteration 4</td>
<td>• Online access to interactive insights for all team members</td>
<td>• High-stringency clinical quality management analyses</td>
<td>• Bidirectional interface of BMT application database and OJDT</td>
<td>• Automated protocol activation transmission</td>
<td>• Support for translational research</td>
<td>• Substantial support for status as NCI-designated Comprehensive Cancer Center</td>
<td>• Bedside access to BMT database &amp; analytics while rounding</td>
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<td>Iteration 4</td>
<td>• Bidirectional interface of BMT application database and OJDT</td>
<td>• Eliminate ~10 duplicative data repositories</td>
<td>• Eliminate ~500 data elements in comprehensive, quality assured database</td>
<td>• Bidirectional interface of BMT application database and OJDT</td>
<td>• Automated protocol activation transmission</td>
<td>• Full electronic submission to CIBMTR on TED-level patients</td>
<td>• Bedside access to BMT database &amp; analytics while rounding</td>
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<td>Iteration 4</td>
<td>• Tracking full set of quality-assured CIBMTR TED-Level data elements (~1,000 elements)</td>
<td>• Decreased readmissions</td>
<td>• Protocol adherence/deviation statistics</td>
<td>• Electronic submissions to ASBMT, BMT Infonet</td>
<td>• Dramatic reduction of duplication of effort by research data staff</td>
<td>• Substantial support for status as NCI-designated Comprehensive Cancer Center</td>
<td>• Bedside access to BMT database &amp; analytics while rounding</td>
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First Iteration Software Overview

Retrospective Data Grab
- CIBMTR/DBTC File
- SPSS File (Lori)
- BMT Consecutive list
- BMT ProgInfo file
- “BMT Database”

Prospective Data Capturing
- Demographics window
- Transplant window
- Follow-Up Window

Quality-Assured Core Data Repository

Staging File

Reporting File

CIBMTR/Forms Net Database

FormsNet Windows

Training and Reference Documentation

SAS

SQL

ROR/Data Entry

ROR/Data QA

SQL

AGNIS

FN3

IDA/SQL

IDAC/SQL
Biomedical Research Integrated Domain Group Model
NCI, FDA, CDISC, HL7, ISO (BRIDG)
SAS PROGRAM TO DETECT AND CORRECT ERRORS AND INCONSISTENCIES IN THE PRIMARY KEY VARIABLES
SAS PROGRAM TO DETECT AND CORRECT ERRORS IN NON-PRIMARY KEY VARIABLES IN THE EXISTING BMT DATA REPOSITORIES
Questions?