pelvic floor disorders Network

Eunice Kennedy Shriver National Institute of Child Health and Human Development

Best Practices and Lessons Learned in Transitioning a Large Data Coordinating Center

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Introduction

The Pelvic Floor Disorders Network (PFDN):

- Is a large clinical trial network funded by the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development.
- Conducts multi-center clinical trials and epidemiological studies for urinary incontinence, fecal incontinence, pelvic organ prolapse and related conditions.
- Is governed by a steering committee that includes representatives of eight clinical centers, the data coordinating center, and NICHD.

RTI International:

- Is a not-for-profit research organization that aims to “improve the human condition by turning knowledge into practice.”
- Is primarily located in Research Triangle Park, NC but has multiple offices in the US, Europe, and Africa.

Background

In March, 2011:

- RTI was awarded a cooperative agreement to become data coordinating center for the PFDN.
- Four sites were unsuccessful in their re-competes and left the network.
- Four new sites joined the network.

A four month, overlapping, transition period was setup (March 1, 2011 through June 30,2011) to:

- Transition all data coordinating center activities (logistics, protocol development, monitoring, safety reporting, data management, systems development) from the incumbent to RTI, which included four active and enrolling clinical trials.
- Development of timelines to ensure seamless transition of systems and data.

Scope of Transition Activities

	Archived	In Analysis Phase	Follow-up Ongoing	Randomization Ongoing	Under Development
# Studies	4	5	4	1	1
# Subjects	1,414	1,763	1,181	304	380
Protocol Amendment & Development					
Operational Documents Update & Development					
IRB Approval Tracking					
SAE Management					
Clinical Data Receipt & QC					
Derived and Public Use Data Receipt &QC					
Randomization Coverage & System Development					
Intermediate Paper-based Clinical Data Collection					
EDC Development & Implementation					
QOL System Development					
QOL Interviews & Data Collection					
IND/IDE Development					
IND Annual Reporting					
Specimen Tracking System Development & Implementation					
SAP Development					
Analysis Dataset Creation					
Analysis Conduct					
Public Use Dataset Creation					

Early/Higher Concern Transition Activity | Intermediate/Mid Concern Transition Activities | Late or Post /Lower Concern Transition Activities

Key data management and IT activities:

- IRB approval tracking
- Randomization system development.
- EDC systems development
- Clinical data receipt, QC and integration with new EDC system.
- Development, implementation, and integration of call center systems for quality of life interviewing.
- Website development for project coordination and communication.

Key Active Trials

ABC

- Anticholinergics versus Botox Comparison in Women with Urge Incontinence
- Enrollment/Randomization completed
- 249 Subjects in follow-up

OPTIMAL

- Operations and Pelvic Muscle Training in the Management of Apical Support Loss
- Enrollment/Randomization completed
- 374 Subjects in follow-up

E-OPTIMAL

- Extended Follow-up of Patients Enrolled in OPTIMAL
- Enrollment/Randomization ongoing
- 99 Subjects in follow-up

Overview of Incumbent IT Systems

EDC Systems, Reporting, and Query Management

- Efficient, well-organized and effective data management procedures.
- Homegrown EDC system programmed in Java with an Oracle database.
- Online scheduling, contact information, and visit tracking tools.
- Mixed-mode data collection:
  - Paper-based data collection and subsequent double-keying for the majority of CRFs.
  - Real-time web-based data entry for key CRFs (randomization, scheduling, adverse events, protocol deviations).
- Fax-based data querying and reconciliation process.

Quality of Life Interviewing

- Significant quality of life assessment conducted by specialized, dedicated team of staff.

Key Tenets of Transition Approach

Key tenets of the transition approach were:

- Development of a transition plan in consultation with incumbent DCC
- Initial site visits and regular meetings between IT & DM groups
- Overlapping period where incumbent continued data collection while RTI systems were implemented
- Phased transition of active clinical trials and components
  - Current real-time systems transitioned first (e.g. randomization)
  - Sites continued to complete paper-based data collection and held CRFs for subsequent keying into RTI systems
  - Significant keying of CRFs already sent to the incumbent DCC
- Detailed schedule developed to coordinate these issues
- Priorities
  - Transition of web portal for communication, ABC data systems, E-OPTIMAL randomization, OPTIMAL/E-OPTIMAL systems

Transition Timeline

Mar 1, 2011	Beginning of transition period
Apr 30, 2011	Cessation of mailing of paper forms to incumbent
Jun 30, 2011	Official transfer date and end of transition period
Jul 25, 2011	Release of ABC (V1.0)
Jul 26, 2011	Release of ABC (V1.1)
Aug 9, 2011	Development of OPTIMAL/E-OPTIMAL system (V1.0)
Aug 18, 2011	Release of OPTIMAL/E-OPTIMAL system (V1.1)
Sep 30, 2011	Release of ABC (V1.2)
Oct 5, 2011	Release of OPTIMAL/E-OPTIMAL system (V1.2)
Oct 30, 2011	Release of ABC (V1.3)
Jan 15, 2012	Release of OPTIMAL/E-OPTIMAL system (V1.3)

EDC System Development and Transition

EDC System Development:

- Review incumbent documentation
- Develop EDC system specifications
- Implement and test EDC system using incumbent-supplied test data

Data Import Process:

- Receive Oracle data and import into temporary Oracle instance
- Generate EDC data import specifications
- Export and format Oracle data to match EDC import specifications
- Configure EDC import utility
- Import data into EDC test environment
- Verify accuracy of imported data versus original Oracle source files

Data Issues Overview

Data issues included:

- Data queries arising from unclear, misinterpreted, and undocumented requirements
- Missing data issues due to paper CRFs being sent to the incumbent for keying prior to the transition
- Study calendar and overdue visits (study visits scheduled in weeks versus days)
- Date/time import issues (imported data used two digit dates, e.g. visit date of 4/11/11, corrected manually)
- Non-conformant data (character values in numeric fields, inconsistent missing codes, free-text for Likert responses)
- Additional required field queries instead of skip logic
- Data keying issues (keying rather than querying erroneous values)
- Queries based on operational differences
- Inconsistent coding (e.g. missing codes)

Data Queries (ABC)

Center	Participants with Queries Generated	Queries Generated (N)	Average Queries Per Participant
02-AB	57	433	7.6
06-LU	42	522	12.4
07-DK	90	387	4.3
08-PT	21	217	10.3
14-SD	15	76	5.1
15-KS	35	395	11.3
16-CC	29	219	7.6
17-UH	44	680	15.5
18-TX	63	423	6.7
20-KB	6	23	3.8
21-BH	6	76	12.7
22-OK	10	18	1.8
Totals	418	3469	8.3

Query Breakdown (ABC)

eCRF	Queries Generated (N)
Form 01 - Eligibility	2462
Form 18 - Non-Medical/Productivity Loss	1657
Form 06 - Voiding Diary Evaluation	826
Form 11 - Expected AE Screen	738
Form 24 - Voiding Function	645
Form 07 - Cumulative Medications and Therapies (Table 2)	504
Form 17 - Follow-Up Medical History (Page 1)	450
Form 03 - Demographics	392
Form 40 - Medication Dispensing	319
Form 05 - Baseline Physical Exam	218

Reasons for Data Issues

Reasons for elevated query counts included:

- Eligibility: policy of not keying all exclusion criteria
- Non-medical/Productivity Loss: erroneous edit check based on incorrect skip pattern, out-of-range values for hours worked per week, days worked per week, etc suggesting keying of verbatim responses, and pointing to the need to improve QC checks

General issues identified and resolved:

- Partial responses on CRFs
- Site variations in the collection of measures and interpretation of study procedures

Process Issues

- Although the data transition was effective and helped identify and resolve more complex issues, there were a number of process issues that could have been improved:
  - Transition of data between very different systems required IT and data management staff with broad expertise, which resulted in a large team
  - The transition was a learning process, which improved as time progressed, however decisions made early in the process had a significant impact on costs and timeline
    - E.g. Use of different Oracle export formats could have streamlined the initial transition of data
  - Aggressive schedule resulted in increased cost and less time for effective planning
  - Limited availability of incumbent staff due to work reassignments, particularly after the formal end of the transition period

Best Practices Identified

Best practices included:

- Use of a formal data transfer process with 100% data verification process
- Detailed review of data queries to identify system issues, protocol implementation issues, resolve unclear specifications, and resolve missing data issues
- Incumbent and new DCC planning meetings with appropriate subcommittees (e.g. data management) with clearly defined communication plan
- Site visits to understand workflow and current processes, and to assess the impact of system changes
- Bring the right people to the table early in the process to help set direction and minimize rework

Lessons Learned

Lesson learned had implications often reaching beyond data management into broader study operations, and included:

- Some post-transfer manual changes are time and cost effective
  - Birthdates prior to 1950 were incorrectly denoted as being in the future, e.g. 1949 2049.

- Document and plan for old/existing standard coded values prior to transfer
  - Example: In historical data, the site used "NA" as an abbreviation to indicate data were "Not Available" but the field in the new system is programmed with a dictionary (or a numeric format) that does not accept this abbreviation without producing a non-conformant query.

Lessons Learned

- Ensure calendars from legacy system are compatible with new system
  - Example: Study calendar only specified visits in months (e.g. 6 month visit) but Medidata study calendar programming requires days so values of 30/31 were alternated for when converting months elapsed to days, e.g. 6 month visit occurs at Day 183 based on 30+31+30+31+30+31.
- Be judicious in the use of system features
  - Example: Use of overview forms field in the EDC system caused significant confusion due to the natural lag in data entry of paper-based CRF data.
- Ask sites to inventory all forms and note what data are expected to be present/entered at the outset
  - Example: Missing data queries are inserted resulting in large amounts of site time invested researching master files only to find the form should have already been entered (per site records) but was not present in the legacy data.

Conclusions

- The PFDN transition was a time-consuming and difficult process, but one that resulted in improved data quality for ongoing trials
- System, process, and data issues helped identify areas for improvement both in the transition of future networks and in the development of systems and processes for future PFDN studies

Thank you,

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