Managing risk to participants in clinical studies that use mobile data

Christopher J. Whalen
International Program Director
Research Data + Communication Technologies Corp.
Why me?
International Program
Ten years of technical support
Improving Data Collection in Clinical Studies at field sites - 2009
Where we wanted to be: Mobile Data Collection
The Problems 2009: Regulatory objections to mobile data collection

• Monitoring: Source document vs. Case Report Form
  • Electronic capture to Case Report Form no SDV possible

• Audit trails from mobile devices?
  • Completeness of audit trails on mobile devices?

• Loss of data? Loss of source?

• Access to the source from the clinical site?
  • Clinical records of the participants
Solution 1: Separating Source Data systems + eCRF/CDMS

For the studies and investigators that we support:

- 42% of studies the CRF is the only source document
- 26% of studies CRF is one of the source documents
- 33% have other source documents
Solution 2: Completeness of Audit trails
Solution 3:
Online data capture with SSL prevents data loss due to theft or damage.

Data coverage is prevalent.
Continuing Challenge
Access to the source data from the clinical site...

• Participant clinical records
• Lab results
• Protocol information
• Format? Location?
Our next step – reducing incidence of protocol violations
Can electronic capture systems reduce the number of protocol violations?

<table>
<thead>
<tr>
<th>Examples</th>
<th>Guidance and Regulation</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>The subject had procedures conducted that were not part of the protocol.</td>
<td>GCP 2.6; GCP 4.5.1; 21CFR312.60;</td>
<td>1</td>
</tr>
<tr>
<td>A study procedure was done on the wrong study day.</td>
<td>GCP 2.6; GCP 4.5.1; 21CFR312.60;</td>
<td>2</td>
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<tr>
<td>Study staff performed tasks before they were delegated to do so on the</td>
<td>GCP 4.1.5</td>
<td>3</td>
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<tr>
<td>delegation log.</td>
<td></td>
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<tr>
<td>The site used CRFs as source but the protocol does not allow them to</td>
<td>GCP 2.6; GCP 4.5.1; 21CFR312.60;</td>
<td>4</td>
</tr>
<tr>
<td>do so.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person who completed the CRFs did not initial and date the pages.</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Source documents have been lost.</td>
<td>GCP 2.10</td>
<td>6</td>
</tr>
<tr>
<td>A historical eligibility criteria was not recorded as assessed prior to</td>
<td>GCP 4.5.1; GCP 2.6</td>
<td>7</td>
</tr>
<tr>
<td>enrollment (for example, alcohol use).</td>
<td></td>
<td></td>
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<tr>
<td>AEs were not being properly recorded in the source documents.</td>
<td>GCP 4.9.1</td>
<td>8</td>
</tr>
<tr>
<td>Study staff did not document reviewing lab values as required by the</td>
<td>GCP 2.6; GCP 4.5.1; 21CFR312.60;</td>
<td>9</td>
</tr>
<tr>
<td>protocol.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple subjects were given the same study number.</td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>
Case Study 2:
A study procedure was done on the wrong study day.

Build skip logic, scheduling, and workflows into the data capture system.

This requires more than simple form development skills, often specialized programmers.
Case Study 3:
Study staff performed tasks before they were delegated to do so on the delegation log.
Case Study 4:
The site used CRFs as source but the protocol does not allow them to do so.

• The separation of our data collection system from the CDMS and/or eCRF means that this should not happen.
• In those cases where another source document exists reminders can be programed into the data collection system
Case Study 5: Person who completed the CRFs did not initial and date the pages - Mobile Device Management

In addition to authenticating users and mapping to their roles in the protocol the MDM provides the ability to:

1. remotely wipe devices that are lost or stolen.
2. Force encryption of data on the device.
Newer technologies for to improve data collection and participant protection
Next generation - new technologies

• DOTS and Dose Tracking
• Randomization
• Offline collection of source data using tablets and phones
• Integration of multimedia data into data management systems
• CDISC: CDASH and SDTM for study setup and HL7
• Audit trail hubs
Video Directly Observed Therapy

VCP-DOT: Video Cell Phone - Directly Observed Therapy for Tuberculosis

Funded by NIAID, grant R21-AI088326-0; PI: Richard S. Garfein

The purpose of this study is to develop and pilot test a novel, cost-effective method of assuring high rates of patient adherence to anti-tuberculosis (TB) medication regimens. An estimated 2.2 billion persons are infected with M. tuberculosis, resulting in 9.2 million cases of disease and nearly 2 million deaths annually. TB is now the leading cause of death among persons with HIV. Reports of drug resistant TB cases – the result of poor adherence to antibiotic treatment – has led to an increasing demand for directly observed therapy (DOT) as a means of assuring high treatment adherence. While daily visits with a healthcare worker to receive DOT places significant costs on patients and providers, the consequences of poor adherence would be far costlier. The goal of our intervention will be to achieve treatment adherence at least as high as traditional DOT at a lower cost and reduced burden to patients and care providers.
Wisepill – real time adherence
Strategies to provide randomization for clinical trials

- Multisite multi technology solutions
- Need to be able to interoperate between different data collection needs at different sites
  - Paper
  - Mobile
  - EDC
- Text based access to randomization for Paper based sites
- Integrated into data capture system
- Integrated in the EDC interface on the CDMS
The CliniPAK Node consolidates IT computing and networking electronics into one convenient, no-fuss package for local data capture and sharing without specialized IT support on the ground.
Developing Central Audit Trail Hubs and Single Sign on

Data Service Providers

- Service 1
- Service 2
- Service 3

SAML Attribute Authority

Database (PostgreSQL)

List of data fields that will be stored in Audit Trail Database:
- UserName
- SP Name/ID
- IP Address
- Log Date
- Process Date
- Additional Attribute(s) information
Standard data models

• CDISC: CDASH and SDTM for study setup
• HL7 formatted exports from source systems
Video Microscopy using iPhones

A rapid method for quantifying *L. loa* mf at the POC by video microscopy with a mobile phone. Our method is based on the wriggling motion of live *L. loa* mf, which can be seen in magnified time-lapse images of mf isolated from blood samples.

*Science Translational Medicine, 6MAY2015 D’Ambrosio, et. al.*
Warning: Files can contain unexpected metadata

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Exif.GPSInfo.GPSVersionID Byte 4 2.2.0.0
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107 Rue de Rivoli, 75001 Paris, France
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Conclusion

• New technologies offer new data types, faster data validation, possibly reduced costs, and greater accuracy

• These technologies also offer the ability to improve the protections for clinical trial participants
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whalen@researchdata.us