HJF’s Journey

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1 Oct 2015
LabKey User Conference & Workshop 2015
About HJF

☑ Private, not-for-profit organization
☑ Authorized by Congress in 1983
☑ We serve military medicine and Uniformed Services University of the Health Sciences
Our Mission

Advancing military medical research
A Brief History

In 1983, President Reagan signed congressional legislation establishing HJF

Sen. Henry M. “Scoop” Jackson championed the bill in Congress

Company renamed in his honor shortly after his death
Where We Work

- Nearly 2,450 employees
- 100 locations worldwide
- 28 states and D.C.
- 10 foreign nations
- Nearly 90 percent work on research and clinical studies
In 1985, Congress directed DoD to study HIV disease and its impact on military readiness through the U.S. Military HIV Research Program.

Focus: Develop a globally effective HIV-1 vaccine and provide prevention, care and treatment.
HIV and the Military

An effective HIV vaccine is needed to:

- End the pandemic
- Protect deployed U.S. and allied troops
- Stabilize key partners affected by AIDS
MHRP’s Global Research Effort

Robust international research infrastructure and clinical trial capabilities

Unique combination of research and care in endemic settings

U.S. President’s Emergency Plan for AIDS Relief (PEPFAR)
HJF (MHRP) and LabKey Beginnings

Our journey started (a long time ago) with an article about Neutralizing Antibody (NAb) assays and LabKey

MHRP’s Dr. Shelly Krebs saw that LabKey had automated analysis for others using similar NAb assays

Software like LabKey was new to MHRP researchers with “some assembly required”
Improved NAb Assay Tool

Shelly’s team works with LabKey to demonstrate capabilities for the NAb assay using LabKey hosted environment.

LabKey Services customizes the NAb assay to provide:

- 384-well plate layout
- 2 viruses per plate
Improved NAb Assay Tool – continued

- New import formats
- New export utility
The (boundaries of) Automation Challenge

LabKey’s modification offers huge efficiency gains for the lab’s NAb assay.

Almost immediately Shelly’s lab looks at additional automation.

Many different levels of need and opportunity exist for different laboratory groups as regards laboratory workflows.
The LabKey Word Spreads

LabKey evangelism takes hold within MHRP’s labs

Other labs express both interest and doubts but agree that the product offers promise for streamlining some assays and related analyses

Then others within MHRP, but outside of the laboratory space take an interest...
LabKey as an Integration Platform

The concept and value of using LabKey to provide an integrated view of Program studies takes hold.

Soon we are prototyping our first MHRP protocol within LabKey as we learn the mechanics of LabKey studies...
MHRP Studies are Primarily Overseas

Operations in multiple countries and often multiple locations within countries

Building infrastructure and research capacity in country is part of the mission

Challenges – among them are Information and Communications Technology (ICT)
Evolution of Program Data Communications

Initially very limited

Later limited terrestrial and then satellite based

Now improved terrestrial but still episodic issues

Cellular technologies widespread and increased pressure for distributed operations

isolated systems with periodic data transfers

interactive applications can suffer from reliability issues

off-line computing with uplink

mobile devices for EDC
MHRP (internal) LabKey Portal - WARP

Next uses within MHRP:

- studies
- supporting information
- site specimens
- site clinical data
- site laboratory data
- related research data
- reporting
- sharing
LIMS Secure Web Front End

Another LabKey use within MHRP now in development

HIV diagnostic group running LabWare LIMS

LabKey Services building a secure web front end to LabWare LIMS to allow customers to:

- request tests
- retrieve results
LIMS Secure Web Front End – continued

Application design emphasis on security and audit for intrinsically sensitive data

Simple UI to submit test requests and to provide specimen shipping information but not such a simple workflow
LabKey Services designed integration to support Two-Factor Authentication (2FA)

Using Duo Security at present

Important improvement in application security, but not without its own challenges
MHRP LabKey Summary

- Laboratory workflows within the domestic lab space
- Integrated overview of disparate program data
- Uses in overseas sites, communications permitting
- Learning and adoption curves, standardization, coordination and staffing
- External collaborators
ACESO
(Austere environments Consortium for Enhanced Sepsis Outcomes)

Improving Survival of Sepsis in Austere Environments
ACESO
(Austere environments Consortium for Enhanced Sepsis Outcomes)

Aceso (Ἀκεσώ)  
Greek goddess of healing wounds and curing illness
Severe Sepsis

Bloodstream infection by any pathogen (bacterial, viral, fungal, parasitic, etc.) leading to:

- an overwhelming inflammatory response
- septic shock with damage to vital organs

A leading cause of mortality in both developed and developing countries

Supportive care, ICUs in developed countries

Involved in >10% military multi-trauma patients
Aims of ACESO

Improve adult patient survival in austere settings through:

- early recognition of disease
- identifying useful biomarker panels
- evidence-based clinical management
The ACESO Network

The collaborative research effort includes the NMRC, LLNL, American and Ugandan universities, and U.S. Navy medical laboratories in Egypt, Cambodia, and West Africa.
ACESO and LabKey

Initial phase:

- aggregate clinical and laboratory data from Program sites

Follow on:

- automate lab workflows
- automate QC processes
- reporting
ACESO Futures – More than Sepsis

Future challenges:
- more remote locations
- more austere conditions
- disconnected data collection
- mobile medical teams
Research Data Trends

clinical data
paper CRFs
electronic CRFs
mobile electronic CRFs
raw data
wearables

laboratory data
volume
complexity
analytics
collaboration
HJF and LabKey Summary

flexible standard framework
open source model and technologies
community and professional services
complements existing applications
collaboration/communication
“line-of-business” for research labs
Acknowledgments

LabKey Software
  Josh Eckels, Britt Piehler, Karl Lum, others

MHRP
  Dr. Shelly Krebs, Dr. Leigh Anne Eller and many others

ACESO
  Janice Hepburn, others

HJF IT Services
  Chris Schoening, Nickhat Zafar, IT Operations team

US Government Sponsors and Collaborators
Questions & Discussion