Leading Minds **Seminar**

Post Event Report
November 7th and 8th 2017
in New Jersey, USA

Seminar hosted by ELPRO and Softbox

Thank You

Thank you to all those that participated in the third Leading Minds Seminar in Princeton New Jersey. So many of you came eager to learn, what a great start! Thank you for your contributions during discussions.

A massive thank you to all the speakers, discussion leaders and chairperson. These meetings are "make or break" based on the willingness of speakers to collect their experience and present it in a meaningful way to participants.

Seminar Objective

The purpose of the seminar was to educate participants on how to comply with global GDPs and put each of the components together to create a cost-effective, compliant temperature control chain.

As partners in cold chain pharma for decades, ELPRO and Softbox realize sometimes you need more than just "information overload" at a conference. Rather you need a focused group of people, concentrating on developing a detailed, step by step process approach to find the complete solution that you need.

We received positive feedback that the seminar achieved the right environment to share experiences, ideas and provided practical information for you to shake things up (and improve!) back at the office.

We hope the problem-solving format of the seminar, translates in the post event summary of sessions below and is a useful document to share with colleagues, project team and management.

ELPRO

Softbox
TEMPERATURE CONTROL PACKAGING SYSTEMS

Regulatory Inspector Presentation: Quality Control and GDP Best Practices in Today's Global Supply Chains

Ian Holloway | Senior GMDP Inspector, Inspection Enforcement and Standards Division
Medicines and Healthcare products Regulatory Agency (MHRA)

Summary

India is an area that is growing quickly, with many smaller companies.

Increasingly contract manufacturers are being used by big pharma, where issues can arise. Consistent, thorough audits of contract manufacturers is key.

Generally in third world countries SOPs are not complete or detailed

Data logger abuse is prevalent

- Good common sense measures need to be put in place for things like replacing batteries
- They need to follow instructions in SOP

Site Inspections are key

- Pallet conditions – are they wet? Moldy?
- Some reefers have no load height marked – provider and performance of the reefer is questionable
- Environmental conditions (India) can cause high temps with truck freight
- Lack of data and knowledge about shipments – how long does it take to get from point A to point B?

Take Homes

What is required beyond data logger data?

- Local shipping sites are not following or don't have detailed SOPs

Import Testing

- MRA (Mutual Recognition Agreements) between US and EU in 2017
- Recognition of inspections between countries
- Import testing is expected to be stopped by 2019

Data Integrity

- Concerns started with lab information, lab results, but now migrated to GMP and GDP as well.
- All GxP data must follow ALCOA – Attributable, Legible, Contemporaneous, Original, Accurate
- Simple Scenario – data logger and excel sheet
  - No audit trail
  - Excel can be manipulated – no security of the data
  - Did the data logger actually go with the shipment? Or was info just inputted into the sheet?
- More secure – data logger and PDF/A
  - Digital signatures can be removed
  - Improved security but still somewhat questionable
- Cloud solutions
  - Real time and location tracking
  - In theory the most secure, but there is still some risk
- Third party is more complex and difficult area to control
- Block chain data
  - Very hard to change, data is real time
  - Data stored in many different locations so difficult to alter because ALL areas would need to be altered
  - Hyperledger is a Block Chain company
  - Block Chain may prove to be a game changer for anti-counterfeiting and distribution records

IATA Dangerous Good Regulations Implementation in the Pharmaceutical Supply Chain

Paul Horner | Manager Dangerous Goods | **IATA**

Summary Points

- IATA oversees 84% of all global air cargo
- 247 airlines participate in IATA guidelines
- IATA is governed by the United Nations. Hence, "UN" prefix for Dangerous Goods classifications
- IATA was started in 1956

Lithium Ion Batteries

- Points related to cell phones, laptops, etc.
- Explosion and fire hazard videos and talking points were provided

- ELPRO data loggers do not use lithium ion batteries, instead use button cell batteries in LIBERO data loggers.
- Softbox Systems containers have no batteries of any type, unless a customer has used a data logger.

Dry Ice

- There was some discussion if 2 % or 5 % sublimation rate is allowed while dry ice containers are onboard an aircraft.

Community Forum Discussion: Experiences Within the Air Cargo Supply Chain

Discussion Leader: Paul Horner | Manager Dangerous Goods | **IATA**

Key Points on Regulations

- Innovation and technology are far ahead of regulations
- Little visibility into long term regulations around Dangerous Goods
- How can suppliers plan around constantly changing regulations – can affect innovation investments
- Changing regulations on a regular basis for lithium batteries can have a significant impact on product life cycle. Many packages are designed with a 3 to 5 year life cycle.
- How can IATA help?

Summary Points

- Dry ice limits – there are some complexities with how airlines approve high limits of dry ice, dependent on the aircraft type.
- Are temperature control packages designed to be reused or single use? It was noted that the cost of the packaging did encourage reuse, manufacturers do take this into account when designing packaging. This is easily managed within a closed loop supply chain, but more complex when distribution directly to consumers.
- Would real time tracking/active devices help the supply chain? There were comments that this may not be helpful, particularly in cases where a temperature excursion was identified. Receiving alerts when in a 3rd party supply chain would require what action? A clear escalation and communication would need to be established. It was also noted that there are potential security implications with real time tracking in aviation. The use of active devices requires approval from the airline. They are required to conduct an assessment to approve the carriage on an individual basis dependent on the aircraft type. Why can the aircraft manufacturers provide the approvals and be disseminated to all operators of their aircraft?
- Can raw data be transmitted from aircraft and why is there variance between aircraft – has to do with electromagnetic differences.

Ongoing Lithium Battery Challenges

- Traceability of Lithium batteries and their source could be helpful to relax restrictions
- UN regulates which has 15 members on the Dangerous Goods board
- There is an IATA movement to remove Section 2 altogether but may not happen
- Button Cell batteries are not restricted like other cells and so ELPRO has an advantage in the market with this design
- Section 2 shipments trigger Forwarder DG checks which add cost and delays – IATA states this should not be
- China was identified as an issue as extra checks for lithium batteries and documentation in addition to international regulations is required

Experiences with Transitioning to a New Cold Chain Monitoring Database

Sharmila Babu | Lead, Clinical Supply Capabilities | **Biogen**

3 Main Problems Solved by Using a Cold Chain Database

- Lack of traceability
- Trending not possible
- Lack of consensus of cold chain performance

Upgrading to Software liberoMANAGER 2017.1 realized new Opportunities or System Features

- Private and public views of data
- Better interfaces, intuitive workflows and auto-notifications
- User accounts with assigned access rights
- Additional communication modules
  - Customized email responses
  - Auto-notifications
  - Attach dynamic info on emails
  - Pre-populated comments
- Lean and simple workflow
  - One email to Biogen and one to site when there is an alarm
  - Easier traceability

KPIs or Metrics Gained from Data

- Under performing sites, such as sites not sending the csv file or PDF report back
- Vendor performance
- Shipper performance

Future State

- IRT-ELPRO integration
- Ability to inactivate user account temporarily
- Incorporating stability budget to the system

Stability Data the Superhero – Using a Budget in Practice

Emanuel Schäpper | Team Leader Key Account Management | **ELPRO**

Summary Points

Every product has stability limits, if you have the data – why not use it?

Pharmaceutical world – Stability budget definition = Two or more temp limits

- Defining Zones, "Good Zones", High/Low

Why is stability a Super Hero?

- Helpful and beneficial
- Prevents damages
- Saves lives!
- Makes everything easier

Handling of Temp Excursions – Who is involved? How much effort invested in handling of excursions?

- Audience member said 8–9 man hours
- Other factors than just man hours
  - Time
  - Number of people
  - Non-availability of products
  - Reproduce, repack, and reship products
  - Discard products

Would the number of excursions reduce by implementing alarm criteria based on stability data?

- Case Study 1 – Large German Pharma Company
- Case Study 2 – Large Animal Health Company

"Excursion Allowance Model" – Read one customer's story how they implemented an allowance model

elpro.com/wp_excursionallowancemodel

There are several ways to use a Stability Budget:

- Logger configured
- Post Shipment Assessments with analysis software of cloud database
- Stability Budget Management System
- Long -Term Continuous Monitoring

LIBERO ITS – Long term indicator that gives one source of data along entire supply chain, including "one touch" stability budget read out.

Increase availability of products with reduction of loss

Avoids repacking, reproducing, and reshipping

Getting started

- Start out by analyzing your data
- Calculate deviations that could have been avoided
- Create a business case
- Find an easy way to implement

Problem-Solving Small Group Discussion: Experiences on Managing Re-use and Refurbishment of Re-Usable Temperature Control Packaging in Clinical Trials

Discussion Leader: Richard Wood | Technical Director | **Softbox Systems Inc.**

Lessons Learned

- Reuse program controls are a variable concept and open to interpretation
- Visual guide would be helpful in determining reusability/inspection targets at user facility or refurbishment center
- Suppliers should be responsible for qualification of reuse programs
- Certain companies see benefit in analyzing their own shipments as real time performance qualifications
- Inner-company, site to site models proven to be most effective for reuse application
- Continued search for EPS (expanded polystyrene) replacement due to environmental hazards and lack of recyclability

Summary Points

- Customers would appreciate clearer reuse "approval standards"
- Standardization of certain qualification documents across the industry would help eliminate confusion during initial testing
- When managed by suppliers, reuse programs should be robust and show in-depth knowledge of processes, application, and customer specific modification capabilities
- Most companies are either open to or actively pursuing more sustainable shipping practices

Problem-Solving Small Group Discussion: Managing and Analyzing your Data – Combining Diverse Data Sets for Temperature Data Analysis

Discussion Leader: Terri Montes | Informationist | **Knowledgent**

The discussion centered around how data can help you define and improve your processes. But first how do you set up the central collection of the data, such as using a data lake.

How a Data Lake Model Works

- First step to put all data in central data lake without qualifying it. It's important to ensure the right data is in the data lake.

- From a temperature data perspective, it was discussed that usually at a very early stage in a project it's important to identify with system owners what type of analytics or data output is needed later. This helps to understand and define the data needed in e.g. such a data lake. Or ELPRO customers who use liberoMANAGER as such central repository.

Terri explained different steps to go through to make un-qualified data useful:

- Landing: Data input from various sources (ERP, LIBERO, Forwarder, etc.)
- Conform/Standardize: Bring data in right format to be able to combine it with other data
- Transform/Business Rules: Use rules to link data to each other and transform it into powerful data
- Integrated Zone – Here you finally have data you can use for: Trending / Statistics / Models … for this you can use different visualization tools such as for e. g. Tableau.

Problem-Solving Small Group Discussion: Clinical Site Quality Control and Temperature Monitoring Challenges

Discussion Leaders: Teresa Parayil | Global Account Manager | **ELPRO**
Ed Difilippo | Vice President Sales | **ELPRO**

Discussion Points and Conversation Outcomes

What are the biggest challenges when it comes to temperature monitoring at a clinical site?

- Lots of customer management
- Challenge of change
- Training
- Understanding the why
- Must come from someone on the clinical side for it to be "heard".

Do you have a qualification checklist before sending product to a clinical site? What are your requirements for temperature monitoring?

- Yes. The group seemed to indicate there is some form of checklist
- Site visit audits
- Discussion went into purchasing loggers – Recommendations can be made to purchasing but ultimately purchasing will look to meet specification requirements and lowest cost. Usually they will purchase something the sites are already using vs. mix and matching – Consistent site to site.

If you have complete control over the system, how would you control the last mile monitoring?

- Depends on delivery
- Design a shipper for 300 hours that is reusable
- Create a database to understand – cradle to grave
  - Standardize – use of drop downs in database
  - Control down to individual unit

Do you have continuous auditing at site to ensure product is being stored safely?

- Packaging
- Quality Manages
- Sense of fear – If you don't help with this, we will get product pulled. "fear factor"
- Auditor missing data and needs to be able to explain

What data handling issues do you face if and when you receive reports back from the clinical site?

- No reports
- Logger sits on someone's desk
- Less human intervention = Less errors
- Fast follow up – Need it yesterday. Speed is important

Stay tuned for future Leading Minds Seminars at www.elpro.com/elproseminar