

# Data Logger Implementation in Massachusetts – Lesson's Learned

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AIM New Member Webinar  
March 28 2017

# Background

- In 2013-14 MA was the recipient of a PPHF grant to enhance our provider storage and handling capabilities thru the implementation of digital data loggers.
- Until this grant, MA had historically provided to all its pediatric providers traditional thermometers with probes in 30 ml glycol bottles.



# In Search for the Perfect Data Logger

- There are plenty of data loggers available.
- Survey of providers indicated that software installation would be an issue.
- Lack of resources to do on-site set up required a device with simple set up.
- Recalibration and Recertification on a scheduled basis would also be an issue.

# MDPH choose the Fridge-tag2<sup>®</sup> Logger

- NIST certified
- No software or training required
- Easy to install and use
- Simple YouTube instructional videos
- Can purchase additional units at state pricing



# Initial Roll Out

- By end of 2014 had provided refrigerator and freezer loggers to all pediatric providers (~1,000).
- Extra loggers had been sent to community health centers with multiple refrigerators.
- During initial roll-out small percentage (5%) of equipment problems, mostly USB and external sensor connection.
- Issues were promptly addressed by Berlinger and units were replaced by them when needed.

# Time to Educate Providers

- At least 50% of the Vaccine Manager's and VFC Coordinator's time during the first year of implementation was spent speaking with providers on the merits of data loggers and addressing temperature excursion issues.
- The data loggers record the temperature every minute of every day versus the "looks" in morning and afternoon
- The pdf report provides tremendous detail on the operation of the refrigerator and freezer.

# Time to Educate Providers, cont.

- Fridge-tag2<sup>®</sup> report lets you see the operating range and efficiency of the refrigerator or freezer.
- Often, a refrigerator only needs to be “warmed up” to avoid freezing temperatures.
- Location of the Fridge-tag2<sup>®</sup> vial in a household style refrigerator is critical when measuring the temperature of the vaccine.

# Lessons Learned

- Fridge-tag2<sup>®</sup> data logger with 5 ml vial of glycol is more sensitive to temperature changes than thermometer in 30 ml bottle of glycol.
- Thermometer in 30 ml bottle of glycol will never get as cold or as warm as data logger probe in 5 ml vial of glycol.
- Significantly more temperature excursions detected using the Fridge-tag2<sup>®</sup> data logger.

# More Lessons Learned

- Most temperature excursions occur in household model combination refrigerator/freezers.
- Significant temperature variations occur within the refrigerator compartment.
  - Colder at the top of refrigerator compartment where freezing cold air input is located.
  - Colder at rear of refrigerator compartment where coils are located.

# A Better Tool Has Its Consequences

- Because more temperature excursions were being detected, more vaccine was lost due to damage.
- Increase in revaccination recommendations during initial implementation.
  - During 2014, 150 letters were sent to providers recommending revaccination.
  - In 2015 only 44 revaccination letters were sent and in 2016 only 10.

# Cost of Damaged Vaccines

- In 2013, prior to using the Fridge-tag<sup>®</sup>2 data logger, vaccine waste as a result of temperature excursions was approximately \$232,600.
- In 2014, with the use of the Fridge-tag<sup>®</sup>2 data logger, vaccine waste as a result of temperature excursions was approximately \$930,500.
- In 2015 vaccine waste was approximately \$760,000 and in 2016 it was \$600,000
- As providers transition to pharmaceutical grade refrigerators, we expect to see continued improvement with less vaccine waste.

# Data Logger Reports are Required with Each Vaccine Order

- Reports are reviewed by Vaccine Management Unit staff, and follow up is done by the Vaccine Manager or VFC Coordinator, if necessary.
- In 2015 an enhancement to the registry allowed for these data logger reports to be uploaded into the IIS.
  - Easier to review and match up with orders.
  - Stored permanently.
  - Future enhancements to pull data into database for reporting.

# Pharmaceutical Refrigerators

- In 2016 Massachusetts began requiring a pharmaceutical grade refrigerator for each pediatric provider's primary vaccine storage unit.
  - Stand alone freezers are also required but they do not have to be pharmaceutical grade.
- Beginning in 2018 pharmaceutical grade refrigerators will be required for all vaccine storage by pediatric providers

# Pharmaceutical Refrigerators

- As providers addressed issues of temperature excursions, many were purchasing pharmaceutical refrigerators even before we made them required.
- As providers transition to pharmaceutical grade refrigerators, less time is required of Vaccine Manager and VFC Coordinator to address temperature excursions (~25% in 2015 and ~10% in 2016 ).

# Replacement Loggers

- Initial Fridge-tag<sup>®</sup>2 data loggers came with 2 year calibration certification.
- In the spring of 2016 all of them were replaced with the newer Fridge-tag<sup>®</sup>2L model.
- Berlinger has made enhancements to the new units without a price increase.
  - Battery indicator, external sensor connection, and enhanced reports with graphs.
  - Now come with 3 year calibration certification.

# Long Term Plan

- In the fall 2016 started supplying data loggers for secondary storage units as well.
- MA now provides digital data loggers to all our pediatric practices for all their vaccine storage units.
- Able to use state trust fund dollars (from health plans) to ensure long term sustainability of the program.
- Will continue to evaluate technologies every couple years but will always focus on ease of use and implementation.

# Questions?

