Data Logger Implementation in Massachusetts – Lesson’s Learned

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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® 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® 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® vial in a household style refrigerator is critical when measuring the temperature of the vaccine.
Lessons Learned

• Fridge-tag2® 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® 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®2 data logger, vaccine waste as a result of temperature excursions was approximately $232,600.
- In 2014, with the use of the Fridge-tag®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®2 data loggers came with 2 year calibration certification.

• In the spring of 2016 all of them were replaced with the newer Fridge-tag®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?