

ISSUES WITH MEDICATION STORAGE

Background: Temperature-Sensitive Medication

- **From Manufacturer to Hospital**
Vaccines and medications are subject to mandatory precise temperature monitoring with the capability to demonstrate temperature compliance on a 24/7 basis, as per the *Health Canada Guidelines for Temperature Control of Drug Products during Storage and Transportation (GUIDE-0069)*
- **After medication is received by a hospital**
No precise regulations exist in Canada, and drugs can become vulnerable to spoilage

Current Canadian Medication and Vaccine Management Practices in Hospitals

Studies have indicated that 30% to 40% of temperature sensitive drugs are stored outside of the stated ranges required to maintain their maximum effectiveness. Millions of dollars of spoiled medications and vaccines are thrown out each year in Canada. Even worse, many are not detected and get administered to patients.

Typical recommended storage range for refrigerated medications: 2°C to 8°C

Often exposed to levels ranging from: -1°C to 15°C

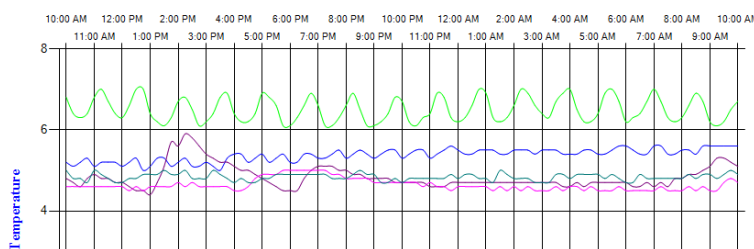
Typically 3 groups of people control pharmaceuticals:

- **Pharmacy:** Generally, only Pharmacy has access to sophisticated refrigeration units designed for the precise storage of temperature sensitive medications.
- **Receiving:** An instance was noted in which temperature sensitive drugs were left on a loading dock in 30°C weather for more than 2 hours. These drugs were likely spoiled, yet, also likely administered to patients because temperature logging did not occur during that period.
- **Nursing:** There are 3 main problem areas...
 - Pharmaceuticals are routinely stored in **common "bar fridges"** that are poorly insulated and cycle in a manner that produces 'spiky' temperatures.
 - Typically, monitoring consists of **routine manual temperature recordings** on written logs. Logs are recorded only a few times per day and are vulnerable to abuse. Furthermore, this method does not determine how long drugs are in/out of acceptable temperature range and if they are safe to use.
 - The widely used **Min/Max thermometers** have no requirement for temperature calibration and do not indicate the duration of "out-of-range" conditions; thus, some drugs are thrown out when they are still effective, and some ineffective drugs still get administered to patients.

The Solution

Recent changes in monitoring technology now provide integrated, cost effective and easily installed solutions to address issues with temperature monitoring and cross-departmental monitoring.

Case Study: The Scarborough Hospital (Ontario) installed a wireless monitoring solution that identified 30% of their medication fridges as being out range. Within 2 weeks they reduced their non-compliance to less than 2% and immediately moved temperature sensitive medications out of their non-compliant fridges until they could be repaired or replaced.



Interval to report on:

- 5 minutes
- 15 minutes
- 30 minutes

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How to Get Started

Hospitals can take immediate action to address temperature non-compliance issues, and to identify the magnitude of their medication and vaccine storage issues through **temperature mapping and storage studies**.

The Short Term

Temperature storage studies can be quickly completed to identify the temperature profiles of each medication and vaccine fridge, and the range of temperatures to which the medications and vaccines are being exposed. This is a low cost option and can quickly identify the magnitude of the problem for taking immediate corrective action.

The Long Term

Hospitals can install temperature monitoring solutions that make use of wireless technologies that can be quickly & inexpensively installed, and provide 24/7 temperature visibility & out-of-range temperature notifications for immediate corrective action.

The Product: Environmental Data Exchange (EDX)

In each solution, IMS sensors are used to monitor any of the following based on your needs:

- Temperature
- Humidity
- Gas Emission Levels (CO₂, NO, CO)
- Water Level
- Flow Rates
- Motion
- Power Consumption
- Vibration
- Many more...

The EDX core functionality is maintained by IMS, and includes the following features:

- Wireless architecture, including the ability to use existing WiFi networks
- 24/ 7 Real-time monitoring
- 24/7 Secure on-line access to current and historical results
- Web enabled access through a standard internet browser
- User definable alert parameters for out of range conditions
- Automated alert notifications and tiered response levels
- Integrated results reporting for multiple locations, and environmental conditions
- Up to 2 years of online access to historical results for trending purposes
- An online audit trail of user interventions

More Information

To learn more about Integrated Monitoring Solutions and Environmental/Temperature Monitoring, contact us:

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