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Inexpensive Device and App for Monitoring Temperature of Neuromodulator Storage

Busy practitioners can have tens of thousands of dollars of neuromodulator inventory in the office at any given time. Although incabotulinumtoxinA does not require refrigeration, the makers of onabotulinumtoxinA and abobotulinumtoxinA recommend both unreconstituted and reconstituted storage at 36 to 46°F. The loss of refrigeration, especially should it occur over a weekend or vacation, could result in significant loss of neuromodulatory inventory or harvested fat storage for doctors that bank frozen fat.

Although alarm and alert systems are available, they can be sophisticated and expensive and are not used by most injectors. The La Crosse Alerts Mobile Wireless Monitor System (Model 926-25101 GP) can be purchased online with prices ranging from $30 to 60 for the same device. This simple system consists of a monitor that measures room and probe temperature as well as room humidity. The included probe has a thin 6-foot cord that is simply placed in the refrigerator or freezer between the rubber door seal. The thin cord does not disrupt the seal. Placing the cord through the hinge side of the door keeps it out of the way. Also included is a receiver with a 200-foot range that simply plugs into any common router (Figures 1 and 2). An accompanying free downloadable software application interfaces with the system and is compatible with any mobile smart phone, tablet, or computer.

The system sets up out of the box in 10 minutes and begins working immediately. The monitor registers ambient room temperature (in Fahrenheit or centigrade decided by user settings), ambient humidity, and actual probe temperature (Figure 2). High and low alarm settings are available for ambient temperature, probe temperature, and humidity. The temperature and humidity settings are monitored at intervals set up by the user from 5 to 60 minutes.

The probe system takes readings and sends the data to a cloud, and the software displays the temperature in various formats including real-time as well as globally in log and graph format (Figure 3).

The crux of the system is that a text and/or email message is automatically sent when temperature readings rise above or fall below chosen alarm set points (Figure 4). The system will also alarm from the loss of Internet connection or low battery. A “Connection Lost” alert is sent to the user in the event of
electrical loss, modem power loss, or failure or Internet connection loss lasting an hour. In the event of power loss, or equipment failure, the device alerts the user that no data have been transmitted. Although no simple system is 100% failsafe, having this type of monitoring is superior to no monitoring, and I have personally experienced several alerts from the loss of power during my first several months of purchasing the device.

A backup battery on a modem would ultimately solve power loss problem for more accurate data delivery.

There is no charge for the emergency alert messaging for the first 90 days. A monthly charge of 99 cents is required after this trial time to continue the messaging service, although the real-time information is always available free of charge by logging into.

Figure 1. The monitor consists of a sensor that is placed in the refrigerator/freezer and a receiver that plugs into a common router.

Figure 2. The external unit sits outside the unit and measures both room and probe temperature as well as room humidity. The probe is placed inside the refrigerator.
Three to five optional sensor devices can be simultaneously used with the included modem gateway. Also, available from the same company is an emergency water detector, which has medical office applications. These probes are similarly placed on the floor in areas of potential flooding such as washing or ice machines. Alerts are generated when there is water accumulation on the floor.

Discussion

Several years ago, Richmond, VA experienced widespread power outages from a hurricane, tornado, and earthquake that occurred in a 1-year period. One power outage occurred over a weekend, and $30,000 of neuromodulator inventory was ruined from refrigeration failure in one author’s (JN) office. A freezer or refrigerator that loses power basically becomes an incubator and sensitive products can be ruined. Unfortunately, this was not covered by our common insurance policies. More expensive monitoring systems are available from third party security companies, and backup generators are also available. In the authors’ experience, most offices do not use either to protect neuromodulator inventory. This simple, affordable system, or one similar, could have alerted...
the office manager of the power loss and salvaged inventory.

**Conclusion**

Technologic advances now offer a simple and inexpensive monitoring and alarm system with related smart phone apps for the protection of neurotoxin inventory or banked fat in the cosmetic surgery office.

**COMMENTARY**

**Commentary on Inexpensive Device and App for Monitoring Temperature of Neuromodulator Storage**

After Hurricane Katrina in 2005, the power in my New Orleans office was out for ten days. The temperatures reached 90°F that September, so I assumed that my stock of onabotulinumtoxinA was unusable.

Rather than to discard it, after full disclosure, I offered it to my family and used it on myself as well. The clinical response and longevity of effect appeared to be the same as with previous treatments in all “subjects.” This was by no means a scientific study. However as a wag once said “If you throw a rock out of a window and it goes up instead of down, i.e., not statistically significant, but it sure is interesting!”

**LETTERS AND COMMUNICATIONS**

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