The Cost Of A Broken Vaccine Cold Chain Part Two,
Financial Cost

When officials in Washington, D.C. consider their annual budgets, they must face a chilling fact that globally nearly half of all vaccines are lost when exposure to unsafe temperature ranges cause the vaccines to lose their efficacy. A majority of these losses are due to failure within the cold chain distribution process. Most states do not even know how much of their budget is spent to cover the costs related to cold chain failure because it goes unmonitored, unreported and unmeasured. They do, however, know the personal and economic burden that a flu epidemic brings. In the U.S. alone, individual states have estimated their own losses at over $3 million a year; a number that only reflects cases reported and is most likely significantly higher.

The cold chain can account for 80% of the financial cost of vaccines, with failures often resulting in the delivery of ineffective and sub-therapeutic doses. Examples of this problem abound.

- **Example 1 - Varicella** was maintained in an inappropriate storage unit leading to a patient recall and the suspension of Varicella delivery until compliance could be demonstrated. Varicella is required for school entry and this could have delayed back-to-school vaccinations.
- **Example 2** - The lack of timely storage was discovered in a facility when a vaccine shipment was left outside a cold storage area for a weekend. This resulted in more than $30,000 of vaccine lost and led to major changes in workflow requiring further cost and disruption of services due to the need for additional staff in-service training.
- **Example 3** - In one clinic, the staff did not monitor the temperature of the storage unit devices. Due to a failure in the unit, all vaccine was unusable. Investigations have found that cold chain failures are far and away the most significant contributor to vaccine storage waste. (Barber, 2012)

The cold chain breaks for several reasons but in 90% of cases, it is due to human error. In a recent survey, only one third of people delivering vaccines knew the drugs holding temperature and less than a third ever monitored the temperature. Their focus was to deliver the vaccines when needed.

A report conducted by the Office of the Inspector General for the Vaccines for Children Program (VFC), published in June 2012, found that 76% of providers (clinics and offices) exposed their vaccine to inappropriate temperatures for at least 5 cumulative hours during the two week period studied. If this pattern were repeated for a year, this could expose vaccines to inappropriate temperatures for 130 hours per year, costing approximately $368,820 per location. ABC News reported that many of the 44,000 offices and clinics participating in the VFC report did not store their vaccines at suitable temperatures while distributing over 80 million vaccines to over 40 million children of low-income homes at a cost of approximately $3.6 billion. The discovery of the improper vaccine storage exposed a major breakdown in the program’s management process (ABC News, 1/6/2006).
As public knowledge and understanding of the cold chain grows, it will likely become a focus of debate as the solutions to solve the problem are neither complicated nor expensive and are readily available. It has never been easier to train, update and communicate with disparate staff. Cold chain requirements can represent major economic and logistical burdens, but ignoring this responsibility can be much, much, more costly.

About CSafe Global

CSafe Global is the world’s largest producer of actively controlled mobile refrigeration units for biopharmaceutical companies, healthcare organizations, global military organizations and international disaster relief agencies. The company manufacturers AcuTemp® brand passive packaging and hand-held mobile carriers, the CSafe® brand of active containers, and is the exclusive manufacturer and provider of ThermoCor® vacuum insulation. CSafe Global’s AcuTemp brand has been providing temperature management solutions since its founding more than 25 years ago. The passive solution assortment includes packaging for 2-8°C, controlled room temperature and frozen shipments with temperature hold times from 12 to 240 hours.

References


Vaccines for Children Program: Vulnerabilities in Vaccine Management (OEI-04-10-00430); Department of Health and Human Services – OFFICE OF INSPECTOR GENERAL; June 2012

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