LIFE IN QUARANTINE, WHEN MEDICATIONS HAVE TEMPERATURE EXCURSIONS

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THE COLD HARD FACTS

- Whilst the storage of medications in patient care areas is the responsibility of nursing unit managers, pharmacy have a duty of care to ensure medication integrity is preserved prior to administration. This extends to medications requiring cold-chain storage and efforts to minimise temperature excursions.

- In 2016, the pharmacy department at Royal Prince Alfred Hospital (RPAH) investigated 71 cold-chain breaches. Between January 2017 and October 2017, pharmacy had investigated 94 cold-chain breaches in 2017.

- In both 2016 and 2017, 62% of cold-chain breaches resulted in stock being quarantined and destroyed.
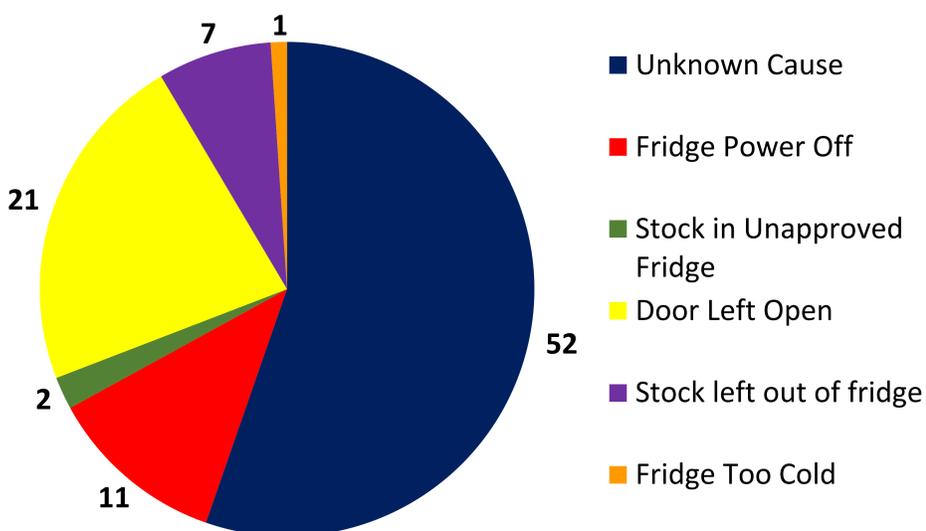
COLD-CHAIN BREACHES: CAUSATIVE FACTORS

Values shown: 52, 11, 2, 21, 7, 1

- Unknown Cause
- Fridge Power Off
- Stock in Unapproved Fridge
- Door Left Open
- Stock left out of fridge
- Fridge Too Cold

Figure 1: Causes of significant cold-chain breaches in 2017

COLD-CHAIN CHALLENGES
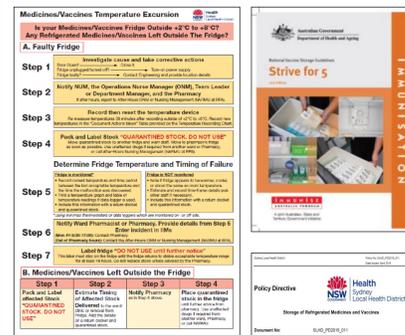

- Accurate, complete and timely reporting of cold-chain breaches. Often insufficient details are provided in regards to the breach.

- Human factors e.g. door left open, are difficult to overcome, yet account for the majority of known causes of a breach. The majority of 'unknown cause' breaches are most likely under reporting of door left open

Figure 2: LEC Rolex™, door open

- Investigating and processing stock from cold-chain breaches is time consuming and detracts from clinical work.

- Salvaging stock can be problematic as drug companies often cannot provide stability data for the conditions of the breach. Shortening expiry dates and documenting this can be laborious.

PREVENTING FUTURE BREACHES

PROCESSES:

Figure's 3, 4 & 5: Temperature Excursion Flow Chart, National Vaccine Storage Guidelines & Sydney Local Health District policy directive

Figure 6: RPAH Medication Fridge Excursion Report form

Figure 7: Temperature Excursion Database

- A standardised protocol to manage cold-chain breaches was implemented across all areas of the hospital. This was based on the 'National Vaccine Storage Guidelines - Strive for 5' and the local policy directive.

- Cold-chain breaches involving medications are referred to pharmacy for advice 24 hours a day. The RPAH Medication Fridge Excursion Report form is used to gather all relevant information.

- A temperature excursion database is used to document, track and process cold-chain breaches.

- Compliance audits by nursing executive with a pharmacy independent are performed annually.

- Causative factors and issues identified are discussed bi-monthly with engineering, nursing executive and corporate services allowing strategies to be developed to prevent future breaches.

- Mandatory training through education sessions on cold-chain management are provided to pharmacy staff on commencement and yearly thereafter.

STRATEGIES:

Table 1: Strategies implemented to prevent cold-chain breaches

• Alarm amplifiers/annunciators	• Engineering interventions to prevent power failures
• Increased education e.g. in-services, online training	• Log-tag™ data loggers
• Increased frequency of compliance audits	• SoftLogic™ Invisible Systems – back to base monitoring
• Engineering interventions to promote door closure	• Reduced stock holdings and imprest rationalisation

Figure 8 & 9: SoftLogic™ Invisible Systems and Log-tag™ temperature logger