EVALUATION OF THE QUALITY OF DRUG STORAGE CONDITIONS IN HOSPITAL WARDS REFRIGERATORS

Wasilewski-Rasca AF, Fonzo-Christe C, Bonnabry P
Pharmacy, University Hospitals of Geneva (HUG), Switzerland

BACKGROUND

Quality assurance programmes for medication storage in refrigerator have been developed earlier. However recent studies found that 4.5 to 30% of refrigerators in wards were too warm or too cold, and that vaccines were inappropriately stored on the door shelf in 46% of the cases. The objective of our study was to validate an evaluation grid for storage conditions quality in wards refrigerators, to measure the quality in a hospital department and to edit good practice guidelines.

METHOD

- **Settings:** 25 refrigerators in 28 wards from Geriatrics Department (404 beds)
- **Validation and evaluation:**
  Wards were visited by two pharmacists who simultaneously filled in a standardized grid (Fig.1) allocating points to 18 questions (0,1 or 2 points: maximum 36 points) concerning the following criteria:
  - refrigerator’s technical data
  - ergonomics (refrigerator stock) (16 points)
  - general organisation (10 points)
  - means of control (10 points)

Measurement of internal refrigerator temperatures in different locations (door, up, middle, down shelves) were checked simultaneously with electronical thermometer probes (Elpro Ecolog®).

RESULTS

![Fig 1. Evaluation grid for refrigerator stock quality](Image)

- **Validation:** the correlation coefficient (r) between the 2 pharmacists was 0.925 (p=0.678) for the overall score (Fig.2).
- **Evaluation:** the average quality index was 16/36 (43%) ± 3.46 (SD) (min 8, max 22) for the 28 wards.
- **Internal temperatures** were conform (+2 to +8°C) in 6 (24%) refrigerators, 16 (64%) were to warm (+9 to +21°C) and 3 (12%) too cold (-1.4°C to +1°C).
- **Temperature in the door shelves** were always over 8°C
- Only two wards checked systematically the temperature of their refrigerator but almost all wards (except 3) had weekly cleaning guidelines.

CONCLUSIONS

- The agreement between the results obtained during the evaluation by the two pharmacists permitted the validation of the evaluation grid used to test the quality of drug storage in wards refrigerators.
- Averal global quality index was poor: unsuitable material (use of refrigerators designed to stock food rather than drugs) and lack of knowledge about good practices in storing drugs in refrigerator were main factors.
- Temperature in door shelves of a food designed refrigerator is too warm and should not be used to stock drugs.
- The grid can be used as a routine tool to measure and improve stock quality, with the ultimate aim of reducing the risk of inadequate storage of drugs needed to be refrigerated and poor quality of patient drug treatment.
- This study resulted in the elaboration and publication of guidelines on good practices of drug cold handling and storage.
- A new study will measure the impact of these guidelines.

REFERENCES

(1) Jeffrey LP et al, Assuring the quality of medications stored in patient care areas, AJHP 1975;32:283-85
(2) Bishai DM et al, Vaccine storage practices in pediatric offices, Pediatrics 1992;89:193-96
(3) Bell KN et al, Risk factors for improper vaccine storage and handling in private provider offices, Pediatrics 2001;107:e100

This poster can be downloaded and printed at the following internet address: http://www.hcuge.ch/Pharmacie/rd/posters.htm