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FEASIBILITY STUDY ON IMPLEMENTATION OF DOSE BANDING IN A TEACHING HOSPITAL

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Background

Dose banding (DB) is a system whereby, through agreement between prescribers and pharmacists, chemotherapy doses calculated on body surface area (BSA) are rounded up or down to predetermined standard doses (SD) with variance limit of **+/- 5%.**
In our hospital, over **30,000 preparations of chemotherapy per year** are made. Implementation of DB could reduce patient waiting time and improve capacity planning of our cytotoxic preparation unit (CPU).

Objective

Feasibility study on the implement of DB in our CPU

Setting and Method

- **Phase I** : Literature review of DB
  ➔ **to identify selection criteria and method of assigning dose bands.**
- **Phase II:** Retrospective analysis of 2013's production in CPU
  ➔ **to identify cytotoxic drugs candidates and select SD**

Results

I. SELECTION CRITERIA

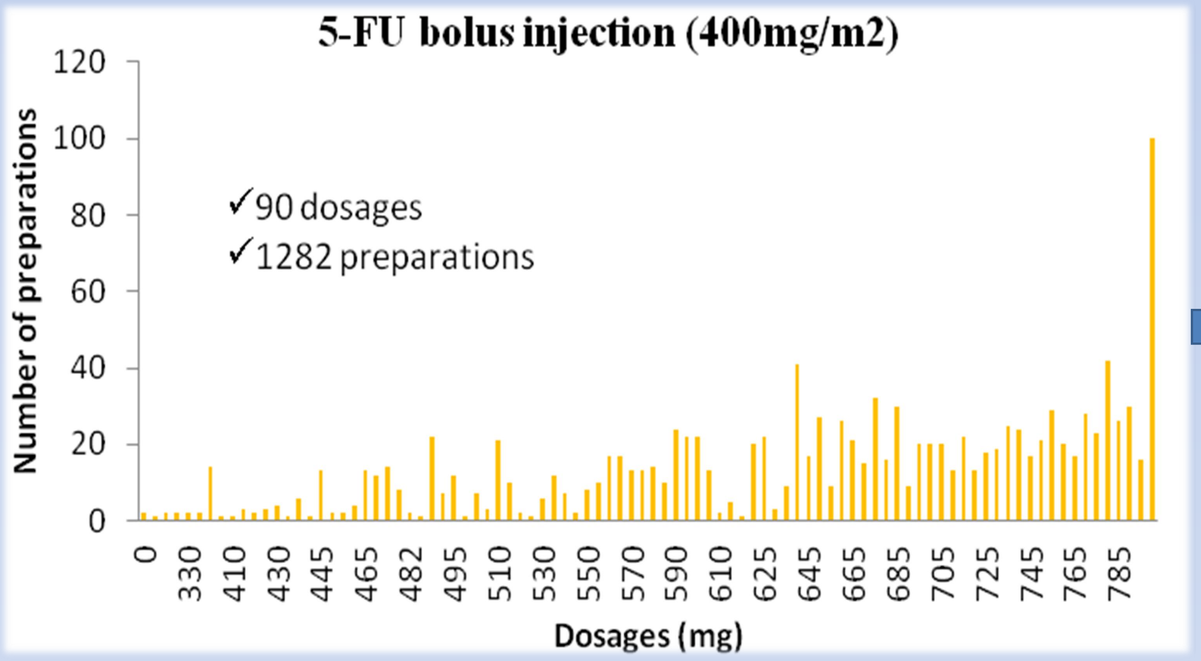
- Frequency of preparation (> 250/year)
- Physicochemical stability after reconstitution (> 7days)
- Opportunity for savings
- 5 SD should cover at least 60% of preparation

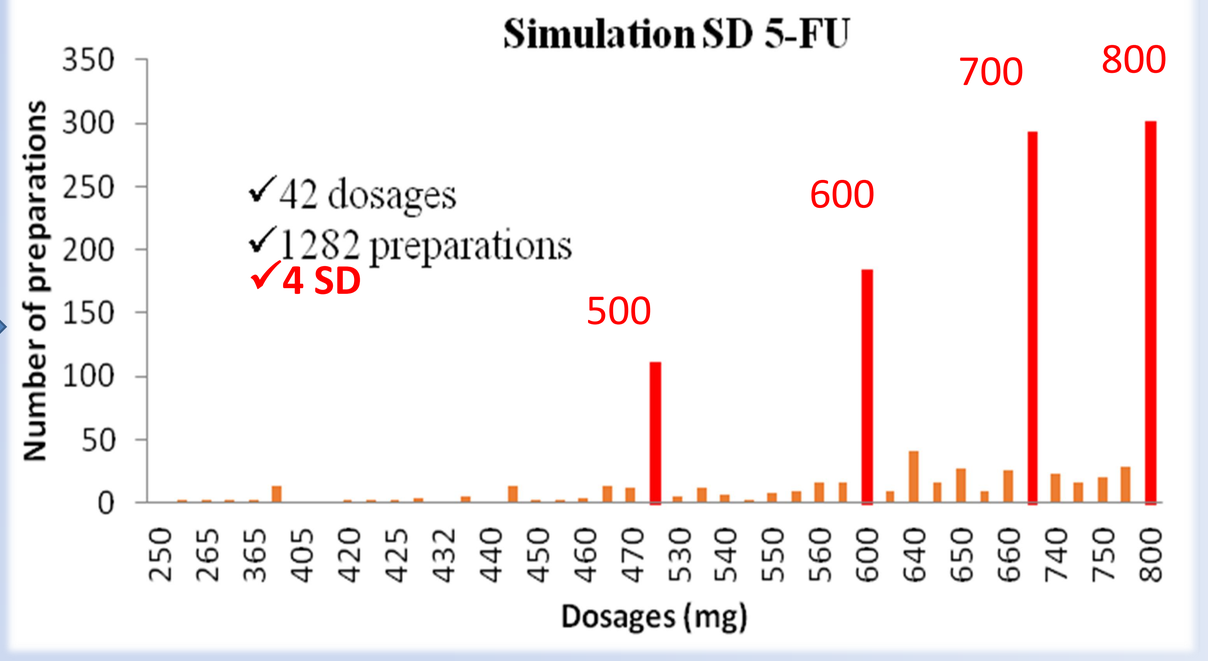
II. CYTOTOXIC DRUGS CANDIDATES

On the 70 pharmaceutical specialties prepared in our CPU,
6 were eligible:

- Cyclophosphamide
- Cytarabine
- Gemcitabine
- Calcium Folinate
- Paclitaxel
- 5-Fluorouracile (5-FU)

Selection dose: « TARGET DOSE » based banding





The simulation was made with paclitaxel, 5-FU bolus injection (400mg/m²), and 5- FU 48-hour continuous infusion (2400 mg/m²)

5-FU Bolus injection (400mg/m²)			
SD (mg)	Min	Max	Volume (ml)
500	475	525	10
600	570	630	12
700	665	735	14
800	760	840	16
4 SD → 69,5% of standardisation			

5-FU 48-hour continuous infusion (2400mg/m²)			
SD (mg)	Min	Max	Volume (ml)
3500	3325	3675	70
3900	3705	4095	78
4300	4085	4515	86
4700	4465	4935	94
4 SD → 79% of standardisation			

Paclitaxel			
SD (mg)	Min	Max	Volume (ml)
105	100	110	17,5
120	114	126	20
135	129	141	22,5
150	143	157	25
165	158	173	27,5
5 SD → 65% of standardisation			

Conclusions

Before implementation, this DB project should be approved by the medical staff and some practical constraints such as software, system management, storage, control should be developed.
On the other hand, status of these preparations is not well established by health authorities in France. They can be considered as hospital preparations (authorization request, statement, and respect of Good Manufacturing Practice) or as compounded medications requiring an early prescription.

References: 1) A Gillian. Toolkit: how to implement dose-banding of chemotherapy. Cancer Network Pharmacists Forum 2008 2) Plumridge RJ , Sewell GJ . Dose banding of cytotoxic drugs: a new concept in cancer chemotherapy. Am J Health-Syst Pharm, 2001: 58 (18): 1760-1764.