

Prescrire's Red Cards for drug packaging, 1991-2012: some improvements, but many dangers persist

Since 1991, as part of its annual Prescrire Awards, *Prescrire* has issued more than 100 Red Cards for poor-quality packaging. The reasons were varied:

- Dangers, especially for children, due to the lack of a child-proof cap on bulk bottles, easily peeled blister packs, or an attractive flavour or shape;
- Incomplete or misleading information in the labelling or patient leaflet;
- Lack of a suitable dosing device;
- Similar appearance of different products marketed under an umbrella brand, creating a risk of confusion between products with very different compositions;
- Presentations that trivialise a drug or increase the risk of overdose.

In October 2013, we re-examined the packaging of these drugs to see if there had been any improvements (a).

Some products more secure. Some companies have made efforts to prevent accidental exposure of children. This is the case for Sectral[®] oral solution 40 mg/ml (*acebutolol*), whose bottles are now equipped with a child-proof cap (*Rev Prescrire* n° 266), and also Suboxone[®] tablets (*buprenorphine* + *naloxone*), which have been marketed since 2013 in unit blister packs equipped with a tamper-proof film that restricts access by children (*Rev Prescrire* n° 342; n° 362). The *quinine*-containing combination (Okimus[®]), authorised for cramps, has been sold since late 2012 in blister packs rather than bulk bottles, although it remains a drug to avoid (*Rev Prescrire* n° 297; n° 352).

In contrast, no improvements were made in the packaging of tablets containing *methotrexate* (Imeth[®], Méthotrexate Belion[®], Novatrex[®]) or that of *Quinimax*[®] tablets (*quinidine* + *quinine* + *cinchonidine* + *cinchonine*), which are still sold in bulk bottles without a child-proof cap, even though the bottles contain enough tablets to kill a child (*Rev Prescrire* n° 352; n° 231).

Vials of Dolko[®] oral *paracetamol* solution, as well as Toplexil[®] syrup (*oxememazine*) and Zarontin[®] (*ethosuximide*, an antiepileptic drug) are still not equipped with a child-proof cap (*Rev Prescrire* n° 284; n° 309; n° 359).

Some improvements in patient information. The labelling of certain drugs has improved. This is the case for Renaudin[®] vials of *adrenaline* and *atropine*, following harmonisation of the labelling on vials of several injectable solutions by the French drug regulatory agency in 2007. The dose strengths of *fosphenytoin* and *phenytoin* equivalent can now be more clearly distinguished on boxes of Prodilantin[®] (*Rev Prescrire* n° 201). And the total amount of *ziconotide* has been added to the front of boxes of Prialt[®] solution for infusion 100 micrograms/ml, while the international nonproprietary name (INN) has been added to the vials, albeit in small print (*Rev Prescrire* n° 316).

In contrast, no improvements were made to two products containing *isotretinoin* (Procuta[®] and Curacné[®]): the brand name still overshadows the INN of this highly teratogenic drug (*Rev Prescrire* n° 267). Similarly, boxes of Nurofentabs[®] and Nurofen-flash[®] (formerly Nuroflash[®]) do not sufficiently highlight the INN (*ibuprofen*). This creates a risk of accidental exposure during pregnancy, and also a risk of overdose, particularly during concomitant self-medication with other products containing *ibuprofen* (*Rev Prescrire* n° 264, n° 319).

Some instructions for use are now more informative, such as those for Monuril[®] (*fosfomycin*) (*Rev Prescrire* n° 103) (1). In contrast, the patient leaflets for the nonsteroidal anti-inflammatory drugs (NSAIDs) we examined in 2013 fail to highlight the risks to the fetus during the first two trimesters of pregnancy (*Rev Prescrire* n° 352; n° 340; n° 328; n° 304; n° 292).

The two-box dosing schedule printed on boxes of Flixovate[®] (*fluticasone*) cream and ointment, which exposed infants to a risk of overdose, has been removed.

Ease of use: we can and must do better. The results of our analysis of dosing devices are disappointing. One questionable improvement is the inclusion of a measuring cup graduated in millilitres for *ethosuximide* (Zarontin[®]). This is better than using a household spoon, but the cups are imprecise and unreliable, which is unacceptable for an antiepileptic drug (*Rev Prescrire* n° 309; n° 338).

The oral syringes provided with oral *levetiracetam* 100 mg/ml (Keppra[®]) are still graduated in millilitres, requiring the user to convert the dose; this is a proven source of serious dosing errors (2) (*Rev Prescrire* n° 327).

Vials of BCG SSI[®] vaccine still contain a volume equivalent to 10 or 20 doses and a syringe of inappropriate capacity, even though abscesses at the injection site have been reported following overdose (*Rev Prescrire* n° 267; n° 285).

Confusing packaging: slight improvements. The oral solution and syrup of *valproic acid* (Dépakine[®]) are easier to distinguish, with the use of different-coloured boxes and syringe plungers (*Rev Prescrire* n° 231; n° 257).

Although the packaging for Atacand[®] (*candesartan*) and Hytacand[®] (*candesartan* + *hydrochlorothiazide*) was slightly improved, the graphics used for these two products remain similar and are easily confused (*Rev Prescrire* n° 226183).

Presentations that trivialise drugs. The appearance of some packaging remains inappropriate. Ketum[®] 120 g gel (*ketoprofen*) still resembles a toothpaste tube (*Rev Prescrire* n° 202). Lozenges containing *flurbiprofen* (Strefen[®]), an NSAID for self-medication, still resemble candy (*Rev Prescrire* n° 281). Most *methylphenidate* tablets and capsules are still sold in bulk bottles (Concerta[®] LP, Ritalin[®] LP), making it more difficult to teach children of the need to carefully respect the prescribed dose of this amphetamine (*Rev Prescrire* n° 258).

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a- About twenty drugs that received a Red Card since 1991 are no longer marketed in France.

1- ANSM "Notice-Monuril[®] 3 g, granulés pour solution buvable en sachets" 25 October 2010: 5 pages.
2- European Commission "Leaflet-Keppra[®] 100 mg/ml, oral solution" 26 August 2013: 8 pages.