# Update on New Zealand standardised batch sheets for compounded oral liquid formulations – July 2019

A review and update of the standardised batch sheets for oral liquid formulations compounded in New Zealand (NZSOF) was completed and a revised series of standardised batch sheets released in April 2019 (see Appendix 1 for an overview of the review process).

The NZSOF are hosted on the Pharmaceutical Society of New Zealand website along with the companion document '*general guidance on compounding oral liquids*' (which addresses frequently asked questions). The NZSOF are also linked from within the NZF/NZFC.

The purpose of this update is to provide detail about the changes between the 2011 and 2019 batch sheets, and to alert you to *two amendments being made after the April 2019 release*.

## Comparison between old 2011 and new 2019 standardised batch sheets

Changes to the NZSOF standardised batch sheets released in April 2019 with practical implications are shown in the table below, including where there are new standard batch sheets. It is recommended that all those involved in extemporaneous compounding of oral liquid medicines review this table and consider the implications for their practice. There are *eight* completely new batch sheets and *two* batch sheets were withdrawn due to funded proprietary products becoming available (levetiracetam and clozapine).

## Changes to hydrocortisone and omeprazole batch sheets *after* April 2019 release

Two key revisions are being made at the time of this update (July 2019). They are outlined below and highlighted on the summary table.

- **Hydrocortisone suspension** - April 2019 release was 2 mg/mL strength. The compounding working group (CWG) received feedback with supporting data to retain the previous 1 mg/mL strength. **Decision made to return to 1 mg/mL.** *Please check if any action is needed in your pharmacy in response to this change and ensure that patients/caregivers are aware and understand any changes in strength.*
- **Omeprazole suspension** - April 2019 release included a 30-day expiry. CWG received feedback about in-use performance of the product. **Decision made to reduce the expiry to 14 days.** *Please check if any action is needed in your pharmacy in response to this change.*

## New format for storage recommendations

The 2019 batch sheets present storage recommendations in a new way – see picture below. Information is included about both room temperature and under refrigeration. In general, when the product is chemically and physically stable both at room temperature and in a refrigerator, the batch sheets will recommend storage in a refrigerator (2-8°C). This is to reduce the risk of problems associated with inadvertent storage at excessive heat or light and microbial growth in-use (these are rarely adequately assessed in published studies).

| Storage condition | In a refrigerator | At room temperature |
|---|---|---|
| Temperature | 2-8°C | ≤ 25°C |
| Shelf life | 30 days | 30 days |
| Recommended storage | ☑ | May be stored at room temperature if this is more practical and temperatures greater than 25°C are avoided |

The exception to this is if stability problems have been identified (usually physical instability such as precipitation) if the product is refrigerated. Please note that where the product is shown to be stable under both storage conditions, pharmacists may use their discretion to decide that storage at room temperature (≤ 25°C) is acceptable as long as exposure to excessive heat and light are avoided.

*Dave Woods, Billy Allan, Chloë Campbell - on behalf of the Compounding Working Group - 26 July 2019*

## Summary of changes to standardised oral liquid formulation batch sheets

**KEY** New NZSOF batch sheet | Changed NZSOF batch sheet | Withdrawn NZSOF batch sheet

| Medicine | New Strength (2019) | Old Strength (2011) | Comment |
|---|---|---|---|
| Acetazolamide | 25 mg/mL | 25 mg/mL | Storage recommendations amended* |
| Allopurinol | 20 mg/mL | 20 mg/mL | No significant changes |
| Amiodarone | 10 mg/mL | new | New NZSOF batch sheet |
| Amlodipine | 1 mg/mL | 1 mg/mL | • Uses amlodipine 10 mg tablets (previously 5 mg)<br>• Changed recommended base to Ora-Sweet or Ora-Sweet SF; as Ora-Plus, Ora-Blend and Ora-Blend SF may cause clumping |
| Azathioprine | 50 mg/mL | 50 mg/mL | Storage recommendations amended* |
| Baclofen | 10 mg/mL | 10 mg/mL | Storage recommendations amended*<br>**NOTE:** Section 29 product of a *different strength* (1 mg/mL) is listed in the PHARMAC Hospital Medicines List (HML) - *take care with communication at transitions of care*. |
| Carvedilol | 1 mg/mL | 1 mg/mL | • Recommended volume 100 mL<br>• Ora-Blend SF and Ora-Sweet SF may be used<br>• Storage recommendations amended* |
| Clobazam | 1 mg/mL | new | New NZSOF batch sheet |
| Clopidogrel | 5 mg/mL | 5 mg/mL | • Recommended volume 100 mL<br>• Storage recommendations amended* |
| Clozapine | NZSOF batch sheet withdrawn | 20 mg/mL | Funded commercial product 50 mg/mL available (Clopine®) |
| Diltiazem | 12 mg/mL | 12 mg/mL | Storage recommendations amended* |
| Dipyridamole | 10 mg/mL | 10 mg/mL | No significant changes |
| Domperidone | 1 mg/mL | 1 mg/mL | No significant changes |
| Enalapril | 1 mg/mL | 1 mg/mL | Storage recommendations amended* |
| Flecainide | 20 mg/mL | 20 mg/mL | Uses flecainide 50 mg tablets (previously 100 mg); flecainide 100 mg immediate release tablets no longer available |
| Gabapentin | 100 mg/mL | 100 mg/mL | No significant changes |
| Hydrocortisone | 1 mg/mL | 1 mg/mL | • **IMPORTANT** April 2019 release was a 2 mg/mL strength. CWG received feedback with supporting data to retain the 1 mg/mL strength. Decision made to return to 1 mg/mL. **Please check if action needed in your pharmacy.**<br>• Storage recommendations amended* |
| Levetiracetam | NZSOF batch sheet withdrawn | 100 mg/mL | Funded commercial product 100 mg/mL available (Levetiracetam-AFT) |

| Medicine | New Strength (2019) | Old Strength (2011) | Comment |
|---|---|---|---|
| Levodopa/carbidopa | levodopa 5 mg/mL<br>+ carbidopa 1.25 mg/mL | levodopa 5 mg/mL<br>+ carbidopa 1.25 mg/mL | No significant changes |
| Levothyroxine -15 | 15 microgram/mL | new | New NZSOF batch sheet<br>**NOTE** Due to use of different strengths in major tertiary hospitals, there are two strengths of this formulation - *take care to confirm strength*. |
| Levothyroxine -25 | 25 microgram/mL | new | New NZSOF batch sheet<br>**NOTE** Due to use of different strengths in major tertiary hospitals, there are two strengths of this formulation - *take care to confirm strength*. |
| Metoprolol | 10 mg/mL | 10 mg/mL | • Uses metoprolol tartrate 100 mg immediate release tablets (previously 50 mg)<br>• Recommended volume 100 mL |
| Nitrofurantoin | 10 mg/mL | new | New NZSOF batch sheet |
| Omeprazole | 2 mg/mL | new<br>There was no NZSOF batch sheet | • **IMPORTANT** April 2019 release included a 30-day expiry. CWG received feedback about in-use performance of the product. Decision made to reduce the expiry to 14 days. **Please check if action needed in your pharmacy.**<br>• New NZSOF batch sheet - similar formula as in Pharmaceutical Schedule but with standardisation of strength. |
| Phenobarbital sodium | 10 mg/mL | new | New NZSOF batch sheet<br>New batch sheet is the same formulation as the phenobarbitone sodium *paediatric* oral liquid in the Pharmaceutical Schedule. |
| Rifabutin | 20 mg/mL | 20 mg/mL | • Recommended volume 60 mL<br>• Storage recommendations amended* |
| Sildenafil | 2 mg/mL | 2 mg/mL | Storage recommendations amended* |
| Terbinafine | 25 mg/mL | 25 mg/mL | Storage recommendations amended* |
| Tramadol | 10 mg/mL | 10 mg/mL | Storage recommendations amended* |
| Trimethoprim | 10 mg/mL | new | New NZSOF batch sheet |
| Ursodeoxycholic acid | 50 mg/mL | 50 mg/mL | • Recommended volume 100 mL<br>• Uses ursodeoxycholic acid 250mg capsules (previously 300 mg); change in funded product<br>• Storage recommendations amended* |
| Vancomycin | 25 mg/mL | new<br>+<br>Pharmaceutical Schedule 50 mg/mL | New NZSOF batch sheet<br>**NOTE:** New batch sheet (using an Ora product) is a different strength to that currently in the Pharmaceutical Schedule. CWG is working with PHARMAC to align funding – use Pharmaceutical Schedule formula until new formulation funded. |
| Verapamil | 50 mg/mL | 50 mg/mL | Storage recommendations amended* |

* See '***new format for storage recommendations'*** section earlier in this document or General guidance for compounding oral liquids, March 2019 for further explanation.

## Appendix 1 Background and overview of NZSOF process

NZSOF help to ensure consistent and best evidence-based information is available for pharmacists compounding these preparations and that the same strength is prepared across all health sectors to prevent medicine dosing errors occurring due to mix-ups. There have been several instances of overdoses and underdosing occurring due to confusion caused by different strengths being prepared by different pharmacies.

The 2019 review was performed by the compounding working group (CWG), a sub-committee of the Health Quality & Safety Commission's Medication Safety Expert Advisory Group (see below). The review process included:

- Updating formulas according to the latest literature
- Consulting with the sector to ensure the strengths of the NZSOF are appropriate and applicable in practice
- Clarifying issues relating to application of storage and expiry dates
- Indicating when substitution of the suspending base is appropriate
- Restyling the batch sheet.

A more robust review and quality assurance process for the documentation was also introduced. This will be followed by a cycle of regular updates to ensure the NZSOF always remain relevant and up to date.

The NZSOF are based on the best available evidence from recent or robust published studies. In situations where such evidence is weak or unavailable the recommendations are based on current best practice from New Zealand or overseas. The review process has identified several situations where stability studies are required to improve the evidence; the CWG is currently scoping these research projects, which will be part of ongoing work to ensure compounded oral medicines are as effective and safe as possible.

As well as ongoing review and revision, the next stage of the project is to identify those medicines that pose the highest potential risk. For example, the risk of precipitation in a medicine with a low margin of safety in overdose. The outcome will be advice on risk management strategies and lobbying for the sourcing and funding of commercially available preparations that are generally safer.

### Compounding Working Group

The compounding working group (CWG) is a sub-committee of the Health Quality & Safety Commission's medication safety expert advisory group. It is made up of pharmacists with an interest in compounding, particularly for children. Many others also gave input. Members are:

- David Woods [chair] (Best Practice Advocacy Centre, School of Pharmacy University of Auckland, independent practitioner)
- Billy Allan (Health Quality & Safety Commission)
- Dr Sara Hanning (School of Pharmacy, University of Auckland)
- Louise McDermott (pharmacy, Canterbury DHB)
- Anh Nguyen (pharmacy, Southern DHB and WellSouth)
- Preetika Prakash (pharmacy, Waikato DHB; ex Auckland DHB)
- Marinda van Staden (pharmacy, Waikato DHB)
- Jovan Krstik (pharmacy, Counties Manukau DHB)

Dr Desiree Kunac (NZ Pharmacovigilance Centre), Dr Chloë Campbell (Pharmaceutical Society of New Zealand) and Pam Duncan (Pharmacy Council of New Zealand) also advised and assisted.