A Pharmacy

Pharmacy technician, Ms B

Pharmacist, Ms C

A Report by the

Health and Disability Commissioner

(Case 06HDC01037)

Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

Parties involved

Miss A	Consumer
Mr A	Complainant/Miss A's father
Mrs A	Complainant/Miss A's mother
Ms B	Provider/Pharmacy technician
Ms C	Provider/Pharmacist
The pharmacy	Provider/Pharmacy
Mr D	Owner of the pharmacy

Complaint

On 31 January 2006, the Commissioner received a complaint from Mr and Mrs A about the services provided to their daughter, Miss A. The following issues were identified for investigation:

Whether the pharmacy, registered pharmacist Ms C, and pharmacy technician Ms B provided services of an appropriate standard to Miss A on 27 January 2006.

An investigation was commenced on 7 February 2006. The investigation was extended on 16 February 2006 to include the actions of Ms B.

Information reviewed

Information from:

- The pharmacy
- Ms B
- Ms C
- Mr D
- Mr and Mrs A
- New Zealand Medicines and Medical Devices Safety Authority (Medsafe)
- Environmental Science and Research Ltd.

Independent expert advice was obtained from registered pharmacist Mr John Fraser.

Information gathered during investigation

Prescription
On 27 January 2006, Mr and Mrs A took their two-and-a-half-year-old daughter, Miss A, to her general practitioner because she had a night-time cough. The general practitioner prescribed prednisolone[1] syrup, 5ml at night, for five nights — a total of 25ml.

Dispensing
Mrs A took the prescription to a pharmacy. A pharmacist entered the prescription onto the computer, which produced a label on which the patient's details were printed.

The drug was dispensed as follows. On the shelf adjacent to the prednisolone stock bottles was a bottle of risperidone[2] in a non-stock bottle. Pharmacy technician Ms B (who qualified as a pharmacy technician[3] in 2002 and had worked at the pharmacy for 19 months) was responsible for the next step in dispensing Miss A's prescription. She mistakenly took the bottle of risperidone from the shelf, believing it to be prednisolone. The risperidone bottle was only partially full, containing 22–23ml. Ms B poured this into a measuring beaker and then discarded the risperidone bottle, having emptied its contents.

Ms B stated that she then took a bottle of prednisolone syrup from the shelf, and added 2ml or 3ml to make up to the 25ml total volume dispensed. This was then poured into a bottle, and the label was attached. The bottle of prednisolone was left by the dispensed medication to be checked by a registered pharmacist.

Ms B was aware at the time of the pharmacy's Standard Operating Procedure *Checking Dispensed Prescriptions* (15 January 2002), which stated that "containers [are] to be left beside dispensed medicines until after checking procedure". However, for reasons unknown to her, she did not follow this procedure. She stated that although she was very busy, she did not feel under any work pressure at the time of dispensing the medication.

Pharmacist Ms C was responsible for checking that the drug that had been dispensed matched the prescription. She noted that 25ml had been dispensed, and that a bottle of prednisolone had been used to dispense the medication. However, she was unaware that a second bottle containing risperidone had been used in making up the dosage. She signed the prescription to show that she had checked and approved the dispensed medicine against the prescription.

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[1] Prednisolone brand name: Redipred.
[2] Risperidone brand name: Risperdal.
[3] As a pharmacy technician, Ms B has the qualification of National Certificate Level 5 Pharmacy Technician. A pharmacy technician is not a registered health professional.

After Ms C's check, Ms B performed a final check of the dispensed medication, and signed the prescription to confirm the check.

The dispensed medication was placed in a paper bag, to await collection by Mrs A. Ms B and Ms C advised that the person doing the final check of the prescription was normally the person who placed the medications in the paper bag, but Ms B cannot specifically recall that she did so for Miss A's medication.

Mrs A arrived at the pharmacy and collected the dispensed medication.

Subsequent events

When she got home, Mrs A found that two bottles of Dermol cream meant for another patient had been incorrectly included in the bag containing Miss A's medication. Mrs A contacted the pharmacy to advise them of this error.

Later that evening, Mrs A gave 5ml of the dispensed medication to Miss A. Soon afterwards, Miss A became increasingly drowsy and unwell. As they were concerned about her condition, Mr and Mrs A took Miss A back to the pharmacy, and then to the neighbouring medical practice. Eventually, they took her to the emergency department of a public hospital, where she was admitted at approximately 7.15pm.

Meanwhile, alerted by Mr and Mrs A's attendance with Miss A at the pharmacy, the pharmacy staff contacted Ms B to enquire about her involvement in the dispensing process for Miss A's medication. Ms B advised that she had used two bottles to dispense the medication, but had discarded the first she had used. The discarded bottle was retrieved from the rubbish bin, and the pharmacy staff immediately contacted the public hospital to advise that it had contained risperidone.

Miss A was given charcoal to drink in the emergency department to absorb the risperidone she had swallowed, and she was placed on a cardiac monitor and closely observed. She gradually recovered over the next two days, and was discharged home on 29 January. Miss A appears to have made a full recovery.

A sample of the dispensed medication was sent by the public hospital to Environmental Science and Research Ltd (ESR) for analysis. The analysis report dated 15 February 2006 stated that risperidone was detected in the sample, but no prednisone was detected. ESR stated that a solution of "well under 1% of prednisone would have been detected" by the analysis.

Internal investigation

Mr D, registered pharmacist and owner of the pharmacy, commenced an investigation immediately on being made aware of the dispensing error. Ms B was transferred from dispensing duties, returning at the beginning of June 2006 to fully supervised, light dispensing duties. On 30 January 2006, Mr D wrote to Mr and Mrs A, apologising for

the dispensing error, and setting out the events that led to it. Mr D advised them that he had implemented changes to the processes at the pharmacy:

> "…
>
> 1. All stock is now placed back into the original stock bottle where possible and if it has been repackaged for any reason into a pharmacy labelled bottle, these bottles are to be rubber-banded with an original stock bottle for easier identification. If no original stock bottle is available then the product must be discarded.
>
> 2. Redipred and [risperidone] liquids are both clear liquids and are now being kept in separate areas to avoid confusion. [Risperidone] liquid is now kept with the [risperidone] tablets.
>
> 3. Any new products introduced to the dispensary must be notified to all staff concerned through the dispensary communication book. (Availability of [risperidone] in the liquid form is new to our pharmacy.)
>
> …
>
> I can only offer you my humble apologies for the distress and inconvenience that has occurred. I realise that this must be a parent's worst nightmare … and all the staff concerned apologise for putting your family through this ordeal."

Standard Operating Procedure
In January 2006, the pharmacy had a standard operating procedure (SOP) for checking dispensed medications which stated:

> "5. Check each item & label:
>
> **Correct medicine:** open bottle to identify &/or check against stock container. (Check expiry date.) Original containers to be left beside dispensed medicines until after checking procedure."

As a result of the incident, the pharmacy has introduced a further checking stage in the dispensing procedure. When the dispensed medications are given to the collecting patient, the technician or pharmacist handing over the medications is to check with the patient the contents of the bag containing the medications.

Medsafe audit
Medsafe performed an audit (Pharmacy Quality Audit III) of the pharmacy on 28 February 2006. A follow-up verification site visit took place on 13 June 2006 to check that issues identified during the audit had been addressed. No critical issues were identified at the verification visit, and all the criteria were fully met. The verification audit report stated:

> "The pharmacy manager has made a considerable effort throughout the audit process and the audit has now been completed."

Dispensary audit
A dispensary audit undertaken by a registered pharmacist (who was employed to undertake the audit, in the knowledge that he would continue to work as a senior pharmacist at the pharmacy) concluded that the dispensary systems at the Pharmacy are "on the whole robust and safe". A copy of the audit report is attached as Appendix 1.

Complaint to Health and Disability Commissioner
On 30 January 2006, Mr and Mrs A complained to the Health and Disability Commissioner about what had happened to Miss A. They stated:

> "It is unbelievable to us that [the pharmacy] could have made such a huge mistake with medication and put [Miss A] into this potentially life-threatening overdose. We sincerely hope and want to do all that we can to prevent this happening to anyone else."

Ms and Mrs A told their story to their local newspaper, which named the pharmacy in a lead article (subsequently picked up by nationwide print, radio and television media). In a subsequent interview with a magazine, Mrs A stated: "People need to be vigilant. Prescription mix-ups could happen to anyone."

Independent advice to Commissioner

The following expert advice was obtained from Mr John Fraser, registered pharmacist:

"1 Introductory comments

1.1 Introduction

I would like to thank the Commissioner for asking me to review this case, number 06/01037, regarding [Miss A]. This matter was referred to me for my opinion on 27 April 2006.

1.2 Qualifications, training and experience of expert advisor

I am John Fraser, a registered pharmacist. I am a member of the New Zealand Pharmaceutical Society with a Diploma in Pharmacy, and I also hold the degree of Bachelor of Science in Physiology (Otago). I am a practising rural pharmacist with about 45 years' experience working in pharmacy in New Zealand, the United Kingdom and the United States. I have worked in pharmacy at all levels from junior apprentice to proprietor/manager.

I am a Past President of the Southland Pharmacists' Association; a Pharmacy Preceptor (a person involved in the tuition of pharmacy interns); a Member of the Southland Rural Health Committee; and a Member of the Joint Trans-Tasman Expert Committee on Drug Labelling.

I have had a long-standing professional interest in the safe and effective labelling and use of pharmaceutical agents. I have been involved as a label safety consultant to the pharmaceutical industry although at the present time I have no financial interests in this area.

In June 2006, my work in developing an error prevention program for New Zealand Pharmacies led to me receiving the New Zealand Pharmacy Award for Innovation in Pharmacy Practice, and also the Overall Pharmacy Award.

1.3 Declarations

I have read and agree to follow the HDC Guidelines for Independent advisors. I have also previously entered into a confidentiality agreement with the HDC.

I have compiled this report in good faith based on the information available to me.

1.4 Directions from the Commissioner

I have been directed by the Commissioner to consider the following questions:

1. *Please comment generally on the standard of care provided to [Miss A] by the staff [at the pharmacy].*

If not answered above, please provide the following advice:

2. *Was the SOP 'checking dispensed prescriptions' in place in January 2006, appropriate?*
3. *Please comment on the updated SOP, introduced after the dispensing incident.*
4. *Please comment specifically on the actions of technician [Ms B] in the dispensing of [Miss A's] prescription.*
5. *Please comment specifically on the actions of pharmacist [Ms C] in the dispensing of [Miss A's] prescription.*
6. *The analysis of the liquid dispensed showed no prednisolone. Please advise:*

   Is prednisolone denatured in the presence of risperidone?

   Do prednisolone and risperidone oral liquids separate when combined?

   Is there any other reasonable explanation why prednisolone was not detected in the analysis?
7. *Please comment on the incorrect dispensing of Dermol cream.*
8. *Please comment on the actions taken by the pharmacy management on discovery of the error. In particular, please comment on the actions taken to prevent further dispensing errors.*

If, in answering any of the above questions, you believe that an appropriate standard of care was not provided to [Miss A], please indicate the severity of the departure from that standard.

To assist you on this last point, I note that some experts approach the question by considering whether the providers' peers would view the conduct with mild, moderate, or severe disapproval.

Are there any aspects of the care provided that you consider warrant additional comment?

1.5 Material examined

In providing my opinion, I have examined the following material:

1. Letter of complaint (pages 1 to 4)

2. Notification letters (pages 5 to 12)

3. Pharmacy / [Mr D's] responses, including interview transcript (pages 13 to 56)

4. Pharmacist [Ms C's] responses, including interview transcript (pages 57 to 102)

5. Technician [Ms B's] responses, including interview transcript (pages 103 to 135)

6. Stock bottles of Redipred (prednisolone) and Risperdal (risperidone)

7. The Risperdal mission bottle involved in the error

9. Risperidone and Prednisolone medication data sheets produced by Medsafe (available at www.medsafe.govt.nz)

Furthermore, I have obtained information relevant to this case from the following sources:

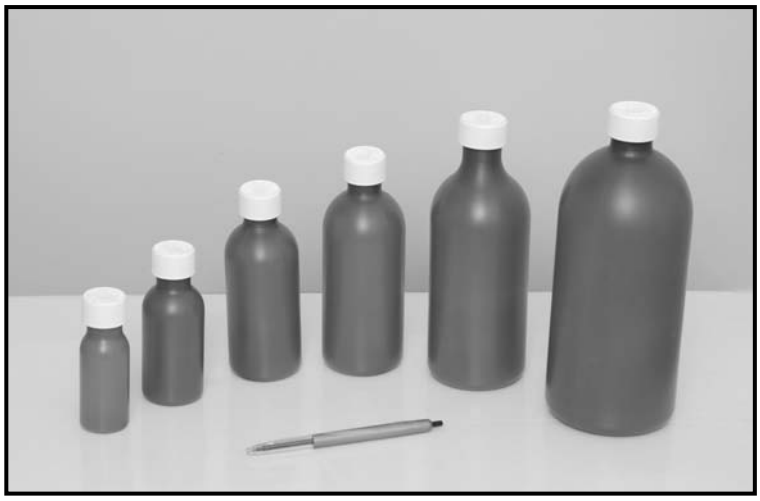
- I have corresponded with the manufacturers of Redipred and Risperdal about this error. Relevant points of this correspondence have been incorporated into this report. A full list of ingredients of each solution, supplied by the manufacturers, is listed in Appendix A of this report.
- With the help of Environmental Science and Research (ESR), I have also conducted a detailed investigation into the stability and detectability of the constituents of a prednisolone / risperidone mixture. The investigation is detailed in Appendix B of this report.

2. Key Terms

In this report I refer to the following key terms several times. To avoid any confusion I will thoroughly define these terms now.

Dermol — Dermol is the brand name for a preparation of clobetasol propionate. It is a highly-active topical corticosteroid which is used for treatment of eczema, psoriasis and other skin conditions. An error involving Dermol is considered in the current investigation. A full data sheet for Dermol can be viewed on the Medsafe website at http://www.medsafe.govt.nz/Profs/Datasheet/d/Dermol%20Scalpsoln.htm.

Mission bottle — This is the bottle in which measured liquid preparations are given to the customer. In New Zealand these are usually made of brown high-density plastic. The name 'mission' comes from a Latin term meaning 'sent out'.



The actual Risperdal mission bottle involved in the current report

Prednisolone Prednisolone is a corticosteroid drug. It is a powerful anti-inflammatory agent and is used for a variety of conditions. The current investigation involves the prednisolone oral solution marketed under the brand name *Redipred*. A full data sheet for Redipred can be viewed on the Medsafe web site at http://www.medsafe.govt.nz/Profs/Datasheet/r/Redipredoralliq.htm.

Prednisone Prednisone is a 'prodrug'. It has no pharmaceutical action itself, but after being taken it is converted by the liver into prednisolone, the active drug. The current investigation does **not** involve prednisone. However I mention it here as it appears that there is sometimes name confusion between prednisone and prednisolone in New Zealand pharmacies — where in day-to-day use they are sometimes considered to be the same thing.[4] While they have very similar end effects on the body, they have different chemical structures.

Risperidone Risperidone is an atypical anti-psychotic medication. It works by suppressing the action of the neurotransmitters serotonin and dopamine in certain areas of the brain. The current investigation involves the risperidone oral solution marketed under the brand name *Risperdal*. A full data sheet for Risperdal can be viewed at

[4] For more discussion on this confusion, please refer to section 4.9

http://www.medsafe.govt.nz/Profs/Datasheet/r/Risperdaltabquickletssol.htm.

Stock bottle This is the bottle the drug manufacturer uses to package their liquid medications. Some of these are not intended to be given to the customer (i.e. they are used for bulk storage and their contents must be measured out into a mission bottle for the customer); but other stock bottles are regularly given directly to the customer. Under some circumstances a stock bottle may also be called a *manufacturer's bottle* or an *original pack.*

Risperdal and Redipred stock bottles. The Redipred bottle shown on the right is the actual bottle involved in the current report.

3. Summary of Facts

On Friday, 27 January 2006, [Mr and Mrs A] took their two-and-a-half year old daughter, [Miss A], to her [general practitioner] because she had a cough at night. [The general practitioner] prescribed prednisolone syrup, 5mL at night, for five nights (a total of 25mL). This is a normal prescription for a cough caused by inflammatory processes, such as acute asthma. The prescription was taken to [the pharmacy].

[Ms B], a pharmacy technician, had the task of measuring out 25mL of prednisolone. She claims that she mistakenly selected a previously prepared mission bottle of risperidone, believing it to be prednisolone. The mission bottle had been prepared for another patient, but it had not been required so it had remained in the pharmacy.

[Ms B] claims she poured the contents of the risperidone mission bottle into a conical measure, then discarded the bottle; an act not in line with pharmacy Standard Operating Procedures (SOPs). [Ms B] claims she then took a stock bottle of prednisolone and added 2 or 3mL to make up to the 25mL volume required. She then poured the mixture into another mission bottle to be checked by a pharmacist.

[Ms C], the dispensing pharmacist, checked the mission bottle prepared by [Ms B] against the prednisolone stock bottle on the bench, and approved the dispensing for [Miss A]. She was apparently unaware that another mission bottle (containing risperidone) had been used and discarded in making up the 25mL dispensed.

[Miss A's] prescription was then 'bagged up' and another patient's prescription for Dermol Scalp Application was erroneously placed in the same bag. It appears that [Ms B] was the last person to sign off the prescription, so she was probably (but not definitely) the person who put the Dermol in the wrong bag.

[Mr and Mrs A] collected the prescription about half an hour after handing it in to the pharmacy.

On return home, the two bottles of Dermol were found to be in [Miss A's] prescription bag, with another patient's name on the label. Mrs A telephoned the pharmacy about the error and was asked to bring the Dermol back at her convenience. She also received an apology. ([Mrs A] reports that a similar incident had occurred about six months earlier with the same pharmacy.)

Later, at approximately 6.30pm, [Miss A] was given 5mL of the mixture that she had been dispensed, labelled as prednisolone. She did not appear to like the taste; and within 10 minutes she was exhibiting signs of acute toxicity. Miss A became increasingly unwell, and after visiting both [the pharmacy] and the medical practice which is connected to the pharmacy, her parents took her to [the public hospital]. She was admitted to the Emergency Department at about 7.15pm.

Pharmacist [Ms C] investigated the situation and discovered that [Miss A] had been given risperidone instead of prednisolone. She informed the hospital immediately (at about 7.35pm).

[Miss A] became critically ill and was treated for a risperidone overdose. She remained in hospital over the weekend, but fortunately made a full recovery.

After the incident, [the pharmacy] management undertook a full review of their operating procedures, including an independent audit.

Subsequent analysis of the mixture given to [Miss A] showed that no prednisone or prednisolone were present at detectable levels.

4. Commissioner's questions

4.1 Please comment generally on the standard of care provided to [Miss A] by the staff of [the pharmacy].

The standard of care provided to [Miss A] by [the pharmacy] on 27 January 2006 was quite clearly not appropriate or acceptable. [Miss A] and her parents had the right to expect her medicines to be dispensed in an accurate manner, but that did not happen in this case.

There were in fact two distinct and independent errors in [Miss A's] prescription:

1) She was incorrectly given risperidone labelled as prednisolone; and
2) Another patient's medication was incorrectly placed in her prescription bag.

Both errors appear to have been made by pharmacy technician [Ms B]. I further discuss these errors in section 4.4, below.

4.2 Was the SOP, 'checking dispensed prescriptions,' in place in January 2006, appropriate?

Yes. I have reviewed the standard operating procedure referred to and it appears to be adequate and appropriate. I also note that the pharmacy procedures had passed quality audits before the error occurred.

The errors that affected [Miss A] were not due to bad operating procedures at [the pharmacy]. They resulted simply from a few seconds of inattention by one pharmacy employee, leading to a breach of those procedures.

4.3 Please comment on the updated SOP, introduced after the dispensing incident.

While the old SOP was adequate and appropriate, the updated SOP is an improvement. In particular the updated SOP outlines more thorough, pro-active procedures for checking dispensed items (including repeats). These improvements would help to further reduce the risk for dispensing errors.

4.4 Please comment specifically on the actions of technician [Ms B] in the dispensing of [Miss A's] prescription.

[Ms B] appears to have made three slips in relation to [Miss A's] prescription.

1) She inappropriately poured out risperidone instead of prednsisolone;

2) She breached pharmacy SOP by discarding the original risperidone mission bottle before it was checked by a pharmacist; and

3) She was probably the person who put another patient's medication (Dermol) in [Miss A's] prescription bag. (Although it is not established with absolute certainty that [Ms B] was the person who put the Dermol in the wrong bag, I believe, after reviewing all the available information, including interview transcripts with [Ms C] and [Ms B] that she is the most likely person to have made this error. She was the last person to sign off on [Miss A's] script and hence she would normally have been the person putting her medicine(s) in the bag.)

   Under the Pharmacy Code of Ethics 2004[5] (especially principles 6.4 and 6.5); the Pharmacy Competence Standards[6] (especially element 4.1.2), and the provisions of the Medicines Act 1981, pharmacy technicians must always work under the care of a pharmacist, who is fully responsible for their actions. From a legal and ethical point of view, pharmacy technicians must always be under the supervision of a pharmacist. There is a strong suggestion that whenever a pharmacy error occurs, it must be the responsibility of a pharmacist; as such I am generally more hesitant to suggest that a technician has departed from an acceptable standard of care.

   However, after careful consideration of the facts in this case, and after discussing the case with an expert in administrative law, and with reference to other opinions published by the Health & Disability Commissioner in response to similar incidents — I conclude that just because [Ms B] was working under the supervision and responsibility of a pharmacist ([Ms C]) does not excuse her from being held accountable for her actions. A very serious error occurred when [Ms B] mistook a mission bottle of risperidone for prednisolone. This error was compounded by [Ms B's] decision to throw out the original mission bottle — a failure to follow standard pharmacy procedures, which meant that [Ms C], the supervising pharmacist, unwittingly approved an unsafe dispensing.

[5] Pharmacy Council of New Zealand (2004). *Code of Ethics 2004*. Available on the world wide web at http://www.pharmacycouncil.org.nz/pharmacists/standard/documents/CODEofEthics20044preps.pdf

[6] Pharmacy Council of New Zealand Competence Standards; available on the world wide web at http://www.pharmacycouncil.org.nz/pharmacists/standard/documents/Standards1-7Sept04.pdf

The error with the risperidone was a serious departure from an acceptable level of care, and I believe this error would be regarded with moderate disapproval by [Ms B's] professional peers.

The error with the Dermol was a mistake of a much smaller magnitude; and while this was a regrettable slip, I believe it would be regarded with a quite mild level of disapproval by [Ms B's] professional peers.

4.5 Please comment specifically on the actions of pharmacist [Ms C] in the dispensing of [Miss A's] prescription.

[Ms C] has clearly been let down by [Ms B]. Based on the evidence I have seen, I find it difficult to find any fault with [Ms C].

[Ms C] appears to have done everything right: she followed pharmacy SOPs and compared the prepared mission bottle with the Redipred stock bottle and approved the dispensing. She was evidently unaware about the other mission bottle, which had contained risperidone. As such, she was *unwittingly* approving an unsafe dispensing. There is little more anyone could have expected of [Ms C] under the circumstances.

There is no way anyone could expect [Ms C] to know about the risperidone mission bottle lying in the rubbish bin.

It is not reasonable to expect a pharmacist to undertake extra checks on every dispensed solution (such as smelling or tasting) to check they are appropriate. Comparing the dispensed items with the stock bottles should be sufficient in all cases.

From a strict, legalistic perspective, [Ms C] probably has some accountability for this incident — but there are practical and reasonable limits on how far such standards of accountability can extend. I do not believe it would be fair, nor in the spirit of the current pharmacy standards, to find that [Ms C] failed to provide a reasonable standard of care.

In conclusion, I believe that [Ms C] did provide an adequate standard of care to [Miss A].

4.6 The analysis of the liquid dispensed showed no prednisolone. Please advise:

4.6.1 Is prednisolone denatured in the presence of Risperdal?

No.

To answer this question I undertook very detailed investigations over the course of several weeks.

- I examined the complete excipient list for both drugs for any obvious suggestions of reactivity;
- I corresponded with the manufacturer of the Redipred (Aspen Pharmacare) and Risperdal (Janssen-Cilag) to review all available information about the stability of a prednisolone / risperidone mixture;
- With the assistance of the ESR, I performed an empirical experiment to study the stability of such a mixture (outlined in appendix B).

To summarise these findings: there is no evidence to suggest that any significant denaturing occurs to the active ingredients in a prednisolone/risperidone mixture. In fact, the evidence suggests that such a mixture is stable.

4.6.2 Do prednisolone and risperidone liquids separate when combined?

This is very unlikely.

Both preparations are buffered oral solutions in a purified water solvent. They contain several excipients (inactive ingredients) including sodium phosphate, an emulsifying agent (a chemical that enhances miscibility). Based on this observation alone I feel it is reasonably unlikely that the solutions would systematically separate out after being shaken.

Furthermore, neither I nor the ESR analysis personnel noticed any visual separation or precipitation when the two solutions were mixed. An ESR representative says that the sample appeared homogenous (i.e. uniform and thoroughly mixed) before analysis.

I note [Mrs A's] claim that she shook the bottle immediately before administering the drug to her daughter. This physical shaking would certainly counteract any speculated separation that might have occurred.

The mixture given to [Miss A] was examined by the ESR, who detected absolutely no prednisone or prednisolone in the mixture. Even if the Redipred and Risperdal did somehow separate out, I would expect at least some *detectable trace* to

remain. (The sensitivity of the test was very high, with a detection level of around 0.01 mg/mL.)

Finally, I refer again to my experiment (outlined in appendix B) which showed there was no difficulty in detecting presnisolone in a risperdal solution with an extremely high degree of accuracy.

For all of these reasons, I conclude that it is very unlikely that prednisolone and risperidone liquids separate when combined; and even if they do, such separation is insignificant and irrelevant to the current investigation.

4.6.3 Is there any other reasonable explanation why prednisolone was not detected in the analysis?

I can speculate several possible explanations. There may have been a failure in analysis process; the ESR lab may have somehow been sent the wrong sample to test; there may have been some unexpected reaction or separation of the risperidone and prednisolone components in the mixture that contradicts my previous conclusions on the matter. The sample may have been exposed to high temperatures causing the prednisolone to somehow thermally degrade.

However, in context, and considering all probabilities carefully, I do not believe that any of the above explanations are reasonable.

If we accept that the ESR received a homogenous sample and tested it properly, there are only two reasonable explanations:

1) [Ms B] added less than 50 microlitres (that is, much less than one drop) of prednisolone to the 25mL mixture, and hence the concentration of prednisolone in the mixture was below the detection threshold stated by the ESR; or

2) [Ms B] did not add any prednisolone to the mixture at all.

I am perplexed at the obvious discrepancy between [Ms B's] testimony (that she 'added 2 to 3mL' of prednisolone to the mixture) and the findings of the analysis. I doubt that [Ms B] is deliberately lying and I am sure she is also confused about this situation.

Perhaps she picked up the Redipred bottle *anticipating* the need to add more liquid to the conical measure, but when she looked

at the measure scale she found she did not actually need to pour any more solution out; that is, the Risperdal mission bottle contained the full 25mL needed. Then she threw out the 'messy' looking mission bottle and kept the 'neater' looking stock bottle. Of course, this is all speculation on my part.

Perhaps her recall of events has been affected by the high amount of stress she has been under; perhaps she was recalling pouring a different medicine for someone else. Again, this is mere speculation.

4.7 Please comment on the incorrect dispensing of Dermol cream.

The incorrect dispensing of Dermol was the result of human error. It also appears to have been made by [Ms B]. I believe I already covered this issue in section 4.4, above.

I have one further comment on this error. It appears that [the pharmacy] do not use a Certified Repeat Copy (CRC) system for repeats. This system means that a prescription-like form is printed in the pharmacy for every repeat dispensing. This additional form (the CRC) helps hold an individual's repeats together while they are being dispensed; assists in the checking process; allows for additional written comments or calculations to be recorded in a systematic manner; and provides an extra 'audit trail' if the need arises.

The disadvantages of CRCs include the added expense and time needed to work with them.

While it is perfectly acceptable for pharmacies to not use CRCs, it does mean that a higher standard of attention is required when processing repeats. Although I am absolutely satisfied with the current procedures at [the pharmacy], I suggest they might want to consider implementing a CRC system if the need arises. This might be worth considering, at the manager's discretion, the next time the pharmacy SOPs are updated.

4.8 Please comment on the actions taken by the pharmacy management on discovery of the error. In particular, please comment on the actions taken to prevent further dispensing errors.

The Pharmacy Defence Association spells out the appropriate steps to take in response to a medication error:[7,8]

- if a patient notifies an error, the appropriate response is to express immediate concern;
- if the error is obvious, then the pharmacist should acknowledge the error and apologise;
- if the error is not obvious, the pharmacist should inform the patient they will investigate the situation and report back to the patient as quickly as possible;
- the pharmacist should ask questions of the patient to find out whether he or she has taken any of the incorrect medication and, if so, what symptoms have been experienced;
- the pharmacist should inform the patient about what the incorrectly dispensed medication is normally used for and its possible side effects;
- if appropriate, the patient should be reassured that the symptoms experienced are side effects of the medication and advised when they are likely to abate;
- if necessary, the patient should be referred to the prescriber, and the pharmacy should offer to pay for the visit;
- the pharmacist should notify the prescriber of the situation, how the patient is, and what actions have been taken to date; and
- all aspects of the incident should be documented.

It appears that in this case all of these guidelines have been followed, as far as is reasonable to expect.

The response taken by the pharmacy management on discovery of the error has been outlined by pharmacist [Ms D] in detail, in his letter dated 8 March 2006.

- [Ms C], as the senior staff member on duty, responded appropriately to the incident when the first details of the error emerged. She expeditiously contacted all staff who had been on duty when the dispensing occurred. She was able to determine the nature of the error reasonably quickly (within an hour). She also attempted to make contact with the

[7] Pharmaceutical Society of New Zealand (2002). Pharmacy Defence Association: How to respond when a dispensing error occurs. *Interactions.* Vol 60, p.2

[8] Pharmacy Defence Association of New Zealand (2005). How to respond when a dispensing error occurs. The Pharmacist's Guide to Member Benefits, p.10; available on the World Wide Web at: http://www.pharmacydefence.co.nz/errors.cfm

dispensary manager and another senior pharmacist. It appears she performed well given the trying circumstances she was facing.

- Pharmacy management made prompt contact with [the family] (by telephone, letter and personal visit) to apologise for the incident and to offer any help as necessary.
- Appropriate actions were taken to prevent further dispensing errors. The pharmacy SOPs were reviewed and updated within a few days of the incident and an independent Medsafe audit of the pharmacy was arranged. I also understand that staff meetings were held about the error, and the person responsible for the error was suspended from dispensing work.

In short, the management seem to have done everything almost exactly right in responding to a very serious and regrettable error. The actions taken to prevent further dispensing errors also seem appropriate.

4.9 Additional comments

- I have reviewed the manufacturer's bottles for Redipred and Risperdal, and also reviewed the mission bottle for the Risperdal. I have found no significant problems with the packaging or labels on any of these products that may have contributed to the error.

- I note that in her original letter of complaint, [Mrs A] refers to another error at [the pharmacy], approximately six months prior to the January 2006 incident. In that case, it appeared that another person's medication had been put in with her prescription. As there are no other details, I can make no further comment regarding this error.

- It is apparent that there has been some confusion between **prednisone** and **prednisolone** in this case.
  - When the sample of [Miss A's] medicine was originally sent to [a testing laboratory], the request was to determine if risperidone or prednisONE were present. Clearly this request was incorrect – it should have referred to prednisOLONE. Ultimately this error did not matter because if prednisOLONE was present, the ESR would have noted an unexpected peak in their chromatography results, and further investigation would

have revealed the presence of prednisOLONE in any case.[9] (Subsequent analysis on the original sample confirms that neither prednisONE nor prednisOLONE were present at detectable levels.)

- The case notes sent to me originally refer to prednisONE several times when prednisOLONE should have been stated.
- I myself became confused about the distinction between prednisONE and prednisOLONE when communicating with the ESR, an error I apologise for.

I believe it is timely to remind all pharmacists and medical practitioners that while prednisone and prednisolone are often treated as equipotent — if not completely identical — they are in fact two distinct entities with different characteristics.

- I note that [Ms B] has received some rather severe criticism in this report to the Commissioner. I also understand that this incident has affected her badly on a personal level. It is clear that she is very sorry about the mistakes and her confidence is 'shattered'. I hope that once the Commissioner's report is released, she should see this whole episode as a constructive — if very painful — learning experience. I am sure she will be taking great care in all of her future pharmacy work. For what it is worth, I wish her all the best.

5. Conclusion

It is obvious that [the family], and the team at [the pharmacy], were deeply upset by this incident. I am sure that everyone involved was horrified as young [Miss A] was admitted to hospital under the most unpleasant circumstances.

It is also obvious that [the pharmacy] have a commitment to provide optimum care for their patients — a goal that can be difficult in the overworked and often hectic environment of modern pharmacies.

I wish to commend [Mr D] and his pharmacy team for the way they have positively and constructively responded to this unfortunate chain of events. This incident has clearly resulted in a stronger emphasis on correct procedure at [the pharmacy].

[9] Reference: correspondence with ESR personnel.

My wish is that this incident should be seen as a learning experience for all parties and that a stronger pharmaceutical profession will emerge from the lessons of these unfortunate mistakes.

Appendix A — Ingredients of Risperdal and Redipred solutions

RISPERDAL INGREDIENTS

Risperidone	*Active Ingredient*
Tartaric Acid	*Preservative*
Benzoic Acid	*Preservative*
Sodium Hydroxide	*Strong base*
Purified Water	*Solvent*

REDIPRED INGREDIENTS

Prednisolone sodium phosphate	*Active Ingredient*
Sorbitol solution	*Artificial sweetener*
Sodium phosphate (dibasic anhydrous)	*Acidity regulator/emulsifier/thickener*
Sodium phosphate (monobasic)	*Acidity regulator/emulsifier/thickener*
Disodium edetate	*Preservative/Stabiliser*
Raspberry	*Flavour*
Methyl hydroxybenzoate	*Preservative*
Propyl hydroxybenzoate	*Preservative*
Purified Water	*Solvent*

Appendix B — Presnisolone / Respiridone Experiment

Aim

The purpose of this experiment was to test the stability and detectability of a mixture containing known amounts of Redipred (prednisolone) and Risperdal (respiridone) oral solutions.

Materials

- Risperdal (risperidone) 1mg/mL oral solution (batch 5BB4800, expiry 02-2007)
- Redipred (prednisolone) 5mg/mL oral solution (batch 30280, expiry 01-2007)
- 50mL mission bottles (x8)
- Calibrated measuring syringe

Method

Eight mixtures of risperidone and prednisolone solution were prepared according to the following table. Great care was taken to ensure the accurate measurement of each volume.

Bottle Number	Bottle ID	Redipred volume (mL)	Prednisolone conc. (mg/mL)	Risperdal volume (mL)	Risperidone conc. (mg/mL)	Total volume (mL)
1	71885A	**5.00**	5.00	**0.00**	0.00	**5.00**
2	19A6B3	**2.50**	2.50	**2.50**	0.50	**5.00**
3	358D1A	**1.00**	1.00	**4.00**	0.80	**5.00**
4	B0D7DE	**0.80**	0.80	**4.20**	0.84	**5.00**
5	D8A8A1	**0.60**	0.60	**4.40**	0.88	**5.00**
6	847D0B	**0.40**	0.40	**4.60**	0.92	**5.00**
7	496D05	**0.20**	0.20	**4.80**	0.96	**5.00**
8	87AB43	**0.00**	0.00	**5.00**	1.00	**5.00**

The total volume of each solution was 5mL. Each mixture was dispensed into a standard 50mL mission bottle and shaken. Each bottle was labelled with a unique, randomly generated six-letter alphanumeric ID code, and no other individually identifying information. As such, the analysis was blind: the individuals performing the analysis were not aware of the composition of the bottles.

The prepared mixtures were delivered to [a testing laboratory] for independent analysis by the ESR using chromatographic techniques.

Results

As outlined in the following tables, the concentrations detected for each drug were almost identical to the actual amounts present.

Risperidone concentration *(mg/mL)*		
ID	**Actual**	**Detected**
71885A	0.00	0.00
19A6B3	0.50	0.50
358D1A	0.80	0.75
B0D7DE	0.84	0.80
D8A8A1	0.88	0.85
847D08	0.92	0.90
496D05	0.96	0.90
87AB43	1.00	1.00

Prednisolone concentration *(mg/mL)*		
ID	**Actual**	**Detected**
71885A	5.00	5.00
19A6B3	2.50	2.50
358D1A	1.00	1.00
B0D7DE	0.80	0.80
D8A8A1	0.60	0.60
847D08	0.40	0.40
496D05	0.20	0.20
87AB43	0.00	0.00

The levels of risperidone detected were, on average, 97% accurate. The levels of prednisolone detected in each sample were 100% accurate to two decimal places.

The ESR reported that each solution appeared homogenous.

Discussion

This experiment confirms that a prednisolone / risperidone mixture is stable and each active ingredient can be detected with a high degree of accuracy, when mixed at the specified concentrations.

This experiment re-confirms the accuracy of the original analysis of the mixture given to [Miss A].

The levels of prednisolone detected were *totally accurate* at a concentration of 0.2mg/mL. (This concentration is equivalent to 1ml of 5mg/mL prednisolone solution added to risperidone solution for a total volume of 25mL.)

The ESR stated that the minimum detectable amount of prednisolone would be in the region of 0.01mg/mL, or less than one drop dissolved in 25mL."

Responses to provisional opinion

The pharmacy, Ms C and Ms B
The Pharmacy, Ms C and Ms B responded to the provisional opinion through their lawyer:

"The pharmacy, [Ms C and Ms B] all accept the factual description of the events which took place is accurately set out in the opinion.

The pharmacy and [Ms C] acknowledge your findings and appreciate your understanding of their role in the error which occurred.

[…]

It is our suggestion and request that you remove the recommendation for referral of [Ms B's] circumstances in the final opinion."

Mr and Mrs A
In their response, Mr and Mrs A stated:

> "[W]e would like to comment on the effect this incident has had on our family. … Please let's not for one moment forget just who are the 'victims' in this. It is incomprehensible how helpless we felt watching our little 2 year old in Hospital that night and the worry that is still with us as we hope she has no long term effects from this overdose. There seems to be no medical evidence of an overdose of risperidone in a child as young as [Miss A], so it is something that we will always be worrying about and will have to live with for many years to come. [Miss A] has two older siblings and they have also been affected by this incident in ways that are very unsettling to us. It has been a horrendous time for our whole family."

Code of Health and Disability Services Consumers' Rights

The following Right in the Code of Health and Disability Services Consumers' Rights is applicable to this complaint:

RIGHT 4
Right to Services of an Appropriate Standard

(1) Every consumer has the right to have services provided with reasonable care and skill.

Opinion: Breach — Ms B

Under Right 4(1) of the Code of Health and Disability Services Consumers' Rights (the Code), Miss A had the right to pharmacy technician services provided with reasonable care and skill.

In relation to the dispensing of the prednisolone, Ms B made two errors: she incorrectly dispensed risperidone instead of prednisolone, and she discarded the empty bottle of risperidone. Ms B agreed that she was aware of the Standard Operating Procedure (SOP), which stated that when dispensing medications, all original containers are to be left beside dispensed medicines until after the checking procedure. However, for reasons unknown to her, she did not do this when dispensing Miss A's medication. This was a violation of a key safeguard in the SOP. As a consequence, when Ms C checked the prescription against the drug that appeared to have been dispensed, all she noted was the prednisolone bottle, and the error was not corrected.

Two bottles of Dermol scalp lotion were also incorrectly dispensed as part of Miss A's medications. Both Ms C and Ms B have indicated that the last person to check the medications was usually the person to place the medications in the bag. In this case, the last checker was Ms B. Although she does not specifically recall placing the Dermol lotion in the bag with Miss A's medication, on the balance of probabilities, I consider that she was responsible for that error.

Mr John Fraser, my expert pharmacist, advised that the errors made in the dispensing of the prednisolone were a "serious departure from an acceptable level of care", and he believed that the error would be regarded with "moderate disapproval by [Ms B's] professional peers". Mr Fraser considered Ms B's error in placing the Dermol cream in with Miss A's dispensed medication to be a mistake "of a much smaller magnitude", and would be viewed by her peers with a "quite mild level of disapproval".

In dispensing risperidone instead of the prescribed prednisolone, disposing of the empty bottle of risperidone, and placing the Dermol cream in the bag containing Miss A's prescription, Ms B failed to provide Miss A with services of an appropriate standard, and thereby breached Right 4(1) of the Code.

To her credit, Ms B has not attempted to excuse her errors. She has accepted full and unconditional responsibility, and has apologised to Mr and Mrs A for her errors. Ms B was suspended by the Pharmacy from dispensing duties for four months, until June 2006, and now dispenses under the direct supervision of a pharmacist. Ms B has been deeply affected by her error, and by the resulting publicity on nationwide television, radio, local and nationwide daily newspapers.

Opinion: No Breach — Ms C

As noted above, Ms B discarded the empty bottle of risperidone that had been used to make up Miss A's prescription. This was contrary to standard operating procedure. Consequently, Ms C, when performing her check of the dispensed medication, was unaware that another bottle, besides the prednisolone stock bottle, had been used to make up Miss A's prescription. In these circumstances, Ms C could not have prevented the error made by Ms B.

Mr Fraser advised that from a "strict, legalistic perspective" Ms C probably had some accountability for the error, but he felt that there are "practical and reasonable limits on how far such standards of accountability can extend". Mr Fraser concluded that Ms C provided an adequate standard of care to Miss A. I agree with this view, and consider that Ms C did not breach the Code.

Opinion: No Breach — the pharmacy

Guided by my expert, I am satisfied that the operating procedures in place at the pharmacy were adequate, if followed, to prevent a dispensing error, and that Ms B, as a pharmacy technician, had been made aware of her responsibilities in relation to dispensing. Consequently, the pharmacy did not breach the Code. I note Mr Fraser's comment that the pharmacy has further improved its Standard Operating Procedures relating to the dispensing of medications.

Ms B's errors were her own, and she has not blamed pressure of work for her error. In my opinion, no act or omission of the Pharmacy caused her error. Accordingly, the pharmacy is not vicariously liable for Ms B's breach of the Code.

I note, however, that subsequent to this incident my Office has received two further complaints about dispensing errors at the pharmacy. The incidents occurred on 8 June 2006 and 5 August 2006. As a matter of law, it would be unfair to judge the pharmacy systems in January 2006 in light of subsequent incidents, particularly when Medsafe has completed a verification audit in June 2006 and reported no outstanding issues. Nonetheless, I am concerned about the further incidents, each of which my Office will investigate. In light of the public safety implications, I intend to suggest to Medsafe that a further audit needs to be undertaken as a matter of urgency.

Other comment — analysis of dispensed medication

As noted above, analysis by ESR of the medication dispensed to Miss A detected no prednisolone. A number of scenarios could explain why prednisolone was not detected in the analysis, when Ms B stated that she had dispensed 2–3ml of that drug. There is no reason to believe that any of the parties intentionally misled my investigation. However, I am inclined to agree with the view of my expert that Ms B is mistaken in her recollection.

Conclusion

This investigation and my findings highlight the need for all staff working in pharmacies to be vigilant in dispensing medications, and to adhere strictly to standard operating procedures. Miss A's life was put in peril by Ms B's careless conduct. Miss A's parents have suffered terrible anguish as a result of this incident. As they note, "It has been a horrendous time for our whole family."

Ms B has acknowledged her errors and is (as she should be) remorseful. She was removed from dispensing duties for several months.

As a pharmacy technician, Ms B is not a registered health practitioner and therefore not liable to disciplinary proceedings before the Health Practitioners Disciplinary Tribunal. The only other avenue for further proceedings would be in the Human Rights Review Tribunal (HRRT). I am required to consider whether such proceedings are warranted, taking into account the wishes of the complainant, the provider's views, and "the need to ensure that appropriate proceedings are instituted in any case where the public interest (whether for reasons of public health or public safety or for any other reason) so requires".[10]

Mr A supports further proceedings against Ms B. He advised me that "the case should be pushed as far as it can go".

Ms B's lawyer submitted: "It is difficult to know what purpose will be served by a continuation of the complaint by referral to the Director of Proceedings. [Ms B] has acknowledged the error and is plainly remorseful."

In terms of the broader public interest, I do not believe that public health or public safety will be advanced in any way by HRRT proceedings. There are clear educational messages in this report, which will be widely distributed.

Ms B is a young health practitioner at the start of her career. She has been held accountable and censured in this investigation. It may be questioned whether there is any public interest in further accountability in relation to her.

The fact that Ms B's error with the risperidone was (as noted by my expert) "a serious departure from an acceptable level of care" and that her discarding of the empty bottle was a violation of the standard operating procedures persuades me, on balance, that Ms B should be referred to the Director of Proceedings for consideration of further proceedings.

I am, however, confident that Ms B has already learnt salutary lessons from her errors, and will (as stated by my expert) be "taking great care in all her future pharmacy work".

[10] Section 44(3)(c) of the Health and Disability Commissioner Act 1994.

Follow-up actions

- Ms B will be referred to the Director of Proceedings in accordance with section 45(2)(f) of the Health and Disability Commissioner Act 1994 for the purpose of deciding whether any proceedings should be taken.

- A copy of this report will be sent to the Pharmacy Council of New Zealand, Medsafe, and the District Health Board.

- A copy of this report, with details identifying the parties removed, will be sent to the Pharmaceutical Society, the Pharmacy Industry Training Organisation, the Safe and Quality Use of Medicines Group, and Janssen-Cilag Ltd (the manufacturer of risperidone), and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes, following completion of the Director of Proceedings' processes.

Addendum

The Director of Proceedings decided to issue proceedings before the Human Rights Review Tribunal. On 19 December 2007 the Tribunal made a declaration by consent that Ms B had breached Rights 4(1) and 4(2) of the Code.

Appendix A

– Independent Dispensary Audit
Ref#

I have been engaged by to audit the dispensing procedures at Pharmacy.

I am an experienced Pharmacist who has been practising since 1984. I have worked in Hospital and Retail Pharmacies . In I I have owned and managed Pharmacy a large suburban Pharmacy, owned and managed , a large shopping center Pharmacy and been a director of , a group of four Pharmacies in dispensing over 250,000 prescriptions a year.

I have not done a Medsafe type audit, instead I have worked in the dispensary as a Pharmacist. This has enabled me to focus on the dispensing systems that Pharmacy are using to reassure and his staff that they are robust and safe. Medsafe have just completed their audit, which takes more of a snapshot approach to the dispensing process and has a strong focus on the written procedures of the Pharmacy.

. Pharmacy is open 14 hours a day (8am – 10pm), 7 days a week. It is located in a busy Medical Centre that has two resident Doctors. These doctors are assisted by local GPs who cover weekends and some of the after hours. Pharmacy has a close working relationship with these doctors and their staff. The Medical Centre mainly sees acute patients and these patients either have no regular GP or are unable to see their own GP. Several specialists also run clinics on a regular basis. Pharmacy also dispenses prescriptions from a dental surgery located next door. As a result, the majority of the on demand prescriptions presented for dispensing are for acute conditions. These prescriptions are usually for 1 or 2 items and are relatively problem free[1]. This enables the dispensary to easily cope with the higher numbers of prescriptions.

I have been part of the dispensing team for three weeks and have had a chance to work with all the staff and experience the full range of hours that the Pharmacy is open.

I believe that the numbers of Pharmacists and Technicians rostered on are more than adequate to cope with the current volume of prescriptions. Each prescription is isolated from others during the dispensing process in plastic trays and is always signed off by a Pharmacist. Other dispensary work includes Methadone and unit dose packing for several rest homes. This work is undertaken by designated people and doesn't interfere with the normal on demand dispensing.

I have found the dispensary staff to be friendly, intelligent and professionally very capable. The dispensary is well designed and has a good work flow. The Pharmacy has a comprehensive and usable set of Standard Operating Procedures (SOPs).[2]

In my opinion the dispensing systems that the Pharmacy is using are on the whole robust and safe.

[1] I have worked extensively in Community Pharmacy dispensaries where the majority of the prescriptions are for elderly patients. These prescriptions tend to be for multiple items (usually >5 items). They tend to be for multiple conditions & require a longer time to process, dispense, check and counsel. Often Pharmac Pricing Rules further complicate the dispensing process.
[2] A change from 'Lots' to 'Toniq' dispensary software has meant that some SOPs are currently being reviewed.

9 March 2006 Created by

Names have been removed to protect privacy. Identifying letters are assigned in alphabetical order and bear no relationship to the person's actual name.