

**Dr A**

**District Health Board**

**A Report by the  
Health and Disability Commissioner**

**(Case 00HDC05805)**



Health and Disability Commissioner  
*Te Toihau Hauora, Hauātanga*



## Complaint

The Commissioner received the following complaint regarding services provided to Master B by Dr A, paediatric registrar, and the District Health Board:

- *After admission to a Public Hospital on 30 March 2000 Master B was incorrectly charted clonazepam rather than clobazam by Dr A. In addition to this the level of clonazepam charted by Dr A was at a level inappropriate for a child weighing 12 kilograms.*
  - *Staff at the District Health Board failed to take immediate action once Ms C brought the medication error to their attention.*
  - *The District Health Board did not adequately respond to Ms C's complaint of 10 April 2000.*
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## Investigation

The complaint was received on 6 June 2000 and an investigation was commenced on 29 June 2000. Information was obtained from:

Dr A	Paediatrics Registrar, Provider
Master B	Consumer
Ms C	Complainant
Dr D	Paediatric Consultant
Ms E	Customer Services Manager, The District Health Board
Mr F	Clinical Manager, Pharmacy Services, The District Health Board

Master B's relevant medical records from the Public Hospital were reviewed by the Commissioner.

Independent expert advice was obtained from Dr Carl Burgess, a general physician with pharmacological expertise.

## Information gathered during investigation

### *Past history*

Master B was born on 31 October 1997 with congenital toxoplasmosis (an infection that is passed from mother to child while in the womb, and that is characterised by cerebral calcification, convulsions, blindness, an abnormally small or swollen head and mental retardation). Master B's congenital condition caused him to experience developmental problems and epilepsy.

In January 1998 Master B was admitted to the paediatric department at the Public Hospital after suffering a non-accidental head injury. A report for the Accident Compensation and Rehabilitation Corporation (ACC) completed by a paediatric neurologist stated that Master B had suffered brain injury during the incident, leading to his admission; that injury resulted in Master B experiencing pseudobulbar palsy (a form of paralysis) and an inability to feed. The paediatric neurologist also concluded that Master B's congenital toxoplasmosis makes him more susceptible to further brain injury.

### *30 March 2000*

Master B was admitted to the Public Hospital on 30 March 2000 with a fever and increased respiratory distress. He was referred by his general practitioner, whose referral note stated that he suspected Master B was suffering a lower respiratory tract infection and requested that a chest x-ray be conducted. At the time of this admission Master B was aged 2 years and 5 months.

A house surgeon examined Master B and noted that he was miserable, febrile (feverish) and had to use increased effort to breathe. The house surgeon spoke to Master B's mother, Ms C, and recorded information relating to Master B's past medical history but added the annotation "*awaiting old notes*" to indicate that previous admission records had not been reviewed. The house surgeon questioned Ms C about regular medication taken by Master B and recorded the following:

*“Ventolin [a bronchodilator]  
Serevent [a bronchodilator] 2 puffs bd [twice a day]  
Flixotide [a corticosteriod used to prevent breathing problems] 25 µg 2 puffs bd  
Epilim [an anticonvulsant] 100mg qid [four times daily]  
Clonazepam [an anticonvulsant] ¼ tablet”*

The word "*clonazepam*" has a line through the letter "z" and the word "*error*" written below it. At the time of his admission Master B's medication regime included clobazam, an anti-epileptic medication, but did not include clonazepam. One of the adverse effects arising from use of clonazepam is respiratory depression.

Under the heading "*plan*" the house surgeon recorded the following:

- “1. CXR [chest x-ray]
2. ?bloods – FBC [full blood count], *biochem, blood cultures and CRP* [c-reactive protein]
3. *oxygen to keep sats* [oxygen saturation] >94%
4. *continue ventolin Q1-2H via spacer*
5. *await results re needs Abs* [antibiotics] *or prednisolone* [a medication that acts on the immune system]
6. *chase old notes – re PMHx* [previous medical history] *and medication doses*
7. *MSU* [mid stream urine analysis] *please”*.

The results of the chest x-ray requested by the house surgeon recorded that Master B's lungs were hyperinflated but there was no sign of consolidation and he had a small heart.

Master B was transferred to Ward 22, Paediatrics, where he was seen by Dr A, paediatric registrar, at around 7.00pm. Dr A advised me that at around 10.00pm he was asked by nursing staff to sign off Master B's medication chart. Dr A said that Ms C did not have Master B's current medications, he did not have access to previous medical records, and he could not contact Master B's general practitioner because of the late hour. Dr A stated that nursing staff were concerned that Master B might suffer a fit if he was not supplied with his normal medication. Dr A's understanding from Ms C was that Master B's usual medication included clonazepam in a 1mg dose. However, Ms C stated that she told Dr A that Master B's usual medication included Epilim in a 100mg dose and clobazam, although she did not know the dosage.

Dr A stated that he charted clonazepam for the following day because he was sufficiently concerned about the risk of Master B fitting, but stressed that the drug and the dose must be checked before being administered. Dr A advised that it was his understanding that Ms C would go home, check the drug and ring the ward to confirm both drug and dose. The drug chart records “clonazepam 2.5mg mane (=1ml)” and in the margin a note reads “awaiting dose”.

Ms C stated that she told Dr A that because she was unsure of the dose of clobazam regularly prescribed to Master B, she would bring it in with her in the morning along with his other medication. Ms C further stated that she informed a member of staff that she would bring Master B's medication with her the following morning and would give it to him then.

The prescription for clonazepam was completed from the drug chart by a pharmacist in the hospital pharmacy who dispensed clonazepam in a 2.5mg dose.

### *31 March 2000*

In the early hours of 31 March 2000 Master B's fever increased and he was given intravenous antibiotics. It was recorded in the medical notes that staff should treat Master B as if he were suffering pneumonia and then re-assess his condition later in the day. Staff attempted to phone Ms C but could not reach her and instead left a message on her

answerphone. At approximately 7.15am Ms C rang the ward and spoke to a nurse. Ms C advised me that she told the nurse that she had Master B's clobazam, but would be an hour late.

Ms C arrived at the hospital at around 8.30am and had Master B's medication with her. Ms C and a nurse administered the clobazam she had brought sometime after 8.30am. While Ms C and the nurse were preparing the clobazam a consultant examined Master B and discussed the treatment options with Ms C.

Ms C stated that Master B's condition began to improve on the afternoon of 31 March 2000 and that he appeared more playful.

*1 April 2000*

Ms C administered Master B's medication on the morning of 1 April 2000. Ms C stated that Master B's respiration had improved. Master B's antibiotic medication was changed from intravenous to oral administration.

*2 April 2000*

Ms E, Customer Services Manager, Public Hospital, advised me that at around 8.00am on 2 April 2000 a nurse administered clonazepam 2.5mg to Master B as per the medication chart.

Ms C advised me that she arrived at the Public Hospital at approximately 9.30am on 2 April 2000 to find that Master B's condition had deteriorated. Master B looked sick and off colour and did not seem very alert. He would not respond to his mother's voice or hold her fingers. At approximately 10.00am Ms C and a nurse accompanied Master B to the x-ray room. Ms C stated that she informed the nurse that Master B wasn't very responsive and moved her hand over his eyes to show the nurse that he was not responding to light. Ms C said that the nurse replied that there wasn't enough light in the x-ray room, and an x-ray technician interrupted them before the conversation could go any further.

At 11.20am a registrar reviewed Master B after a discussion with Ms C. The registrar recorded in the notes:

*“Less alert. Periph blue [indicating that Master B's extremities were turning blue].  
Resp [respiratory] deterioration last 2 hrs.  
increased respiratory effort  
paradoxical breathing [a condition where part of the lung deflates during inspiration and inflates during expiration]  
noisy insp [inspiration]  
indrawing increased, tug increased  
good AE [air entry]  
upper airways noise increased  
decreased AE at base*

*heart sounds inaudible*  
*Imp [impression]: further aspiration"*

Master B was placed back on intravenous fluids and at 11.45am was transferred to the high dependency unit (HDU). On arrival at HDU Master B was noted to be mottled and grey looking, rattly with increased respiratory effort and afebrile (without fever). Dr D, paediatric consultant, ordered a chest x-ray and recorded that the results indicated that the lower left lobe of the lungs had collapsed and Master B was suffering from atelectasis (collapse of the alveoli, preventing respiratory exchange of carbon dioxide and oxygen). Dr D discussed Master B's status with Ms C and the options available if resuscitation was required.

At 2.15pm Master B was transferred to the intensive care unit (ICU). Dr D discussed the use of ventilation and continuous positive airways pressure (CPAP) with Ms C and Master B's grandparents. Dr D stated his preference that CPAP be used if required, but not ventilation, and recorded in the notes that Ms C was also keen on CPAP but had not decided whether to authorise ventilation. Master B was commenced on CPAP and responded well initially but his condition deteriorated further at approximately 3.00pm. After a discussion with Ms C, Master B was intubated and placed on ventilation at 6.15pm.

### *3 April 2000*

Master B remained under the care of ICU. At 8.00am on 3 April 2000 he was again given clonazepam, as per the medication chart. Later that morning Ms C noticed a small white box sitting amongst Master B's medication and asked one of the nursing staff what it was. The nurse informed Ms C that it was Master B's seizure medication. Ms C realised that it did not look like his usual medication. Ms C told the nurse she would go home and pick up Master B's normal medication to confirm the correct medication, strength and mode of administration. Ms E advised me that after Ms C left to collect the medication, the nurse failed to inform staff on the next shift of Ms C's concerns. There is no record in the notes relating to Ms C's concerns.

Ms C returned with Master B's usual medication in the early afternoon. Ms C showed the clobazam to a nurse, who contacted the hospital pharmacist. The pharmacist confirmed that clonazepam was used in paediatrics and the dose prescribed was within the normal range. The nurse explained this to Ms C. Ms C advised me that she tried to discuss what effect a change in seizure medication might have on Master B, but her concerns were "*brushed aside*".

Ms E advised me that at the next shift change the nurse advised relieving staff that Master B's medication had been checked with the hospital pharmacist, but did not mention Ms C's concerns. There is no documentation relating to these concerns in Master B's notes. Ms E also stated that the nurse on duty during the night of 3 April 2000 was aware that there was concern about Master B's medication, but thought the issue was over the mode of delivery rather than the type of medication.

*4 April 2000*

At 8.00am on 4 April 2000 Master B was given clonazepam as per the chart.

At approximately 1.40pm on 4 April 2000 Master B was extubated. After this procedure an ICU consultant asked Ms C whether she thought Master B appeared sleepier than usual. Ms C told the ICU Consultant that she thought Master B was too sleepy and that she thought that this might be due to the fact he was receiving the wrong medication. The ICU Consultant reviewed Master B's medication chart and found that clonazepam had been charted instead of clobazam. The ICU Consultant discussed the use of flumazenil (an antagonist used in the termination of benzodiazepine treatment) with Ms C and explained the danger that this could induce seizures. Flumazenil 5ml was commenced at 2.50pm. The notes record:

*"Persistent sedation secondary to clonazepam.  
Therefore Flumazenil infusion commenced.*

...

*Parents aware of clonazepam substitution for clobazam (which he is on but is less potent)."*

*5 April 2000*

Master B's condition began to improve. At 3.00pm on 5 April 2000 he was transferred back to the HDU. Master B's condition continued to improve and he was recommenced on clobazam on 13 April 2000 and discharged home on 14 April 2000.

At a meeting on 2 May 2000 to review Master B's care, Ms C complained to the District Health Board about his treatment. Ms C rang Ms E, Customer Services Manager, on 5 May, 24 May, 31 May, 7 June and 16 June to enquire about progress on her complaint. Ms C also received update letters on 8 June and 27 June. On 27 June Ms C received an apology from Dr A and on 7 July she received a copy of the District Health Board's internal report on the incident.

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## **Independent Advice to the Commissioner**

The following expert advice was obtained from an independent general physician with pharmacological expertise, Dr Carl Burgess:

"I have been requested to provide expert advice regarding whether [Master B] was given an appropriate standard of care from [Dr A] and staff at [the Public Hospital]. In particular, I have been asked to address a number of issues; these are as follows:



- Given the information available to him, was it appropriate for [Dr A] to chart clonazepam?
- Once he had charted clonazepam should [Dr A], or any other staff member, have taken action to confirm with [Ms C] that this was the correct medication for her son?
- Were the inpatient dispensing procedures in place at the [District Health Board] adequate?
- Could the administration of clonazepam, rather than clobazam, have any long-term effects on [Master B's] well-being?
- Are there any other issues arising from the supporting information enclosed?

I have been supplied with the complaint letter from [Ms C] (31 May 2000), response from [Dr A] (20 July 2000), response from [the District Health Board] (4 August 2000), medical records and policies and procedures.

The circumstances of the complaint relate to the care of [Master B], who was admitted to [the Public Hospital] on 30<sup>th</sup> March 2000. He was initially seen by an unnamed house surgeon and his medication chart was forwarded to [Dr A], the then Registrar in Paediatrics. According to [Dr A], he was presented with the prescription chart for Master B, in which the house surgeon had charted clonazepam but no dose was mentioned, and the house surgeon had not signed the script. There was a note attached that the dose of his medication should be checked. As this patient was subject to seizures, the nursing staff were concerned that he may have a seizure unless he had his usual medication. Unfortunately [Ms C (Master B's) mother) had not brought [Master B's] usual medicines in with her. According to [Dr A], medical records were not available. According to [Dr A] the understanding from [Ms C] was that the dose of clonazepam was 1 mg. He charted this for the morning but stressed that the drug and the dose should be checked before it was given to the child. His understanding was that [Ms C] was to go home, check the drug and ring in to confirm both the drug and the dose. He then handed over the care of [Master B] to the Night Registrar. According to [Dr A] he heard no more about this matter until about a week later. He met with [a Professor] and [Ms C] on 13<sup>th</sup> April where it was noted that he apologised because [Master B] had been given clonazepam instead of clobazam. Unfortunately clonazepam was dispensed in the doses that [Master B] got for clobazam. His usual dose was 2.5 mg of clobazam but he was given 2.5 mg clonazepam, which is about 2.5 times the dose he should have been given. This did not occur initially, as his mother was administering his medicines. The overdose took place on 2<sup>nd</sup> April 2000 which resulted in marked sedation and he developed aspiration pneumonia. This necessitated his being transferred to the Intensive Care Unit where had to be placed on a ventilator. Despite his mother informing the Intensive Care staff (according to her letter 10<sup>th</sup> April 2000 to [the Professor]), [Master B] was still given clonazepam in a dose of

2.5 mg. The error was noted and a benzodiazepine antagonist had to be given to reverse the sedative effects with consequent risk of provoking epileptic seizures. His condition eventually improved and he was able to be discharged from hospital.

That he was given the incorrect medicine is not in doubt here. He was also given a dose that was far higher than that that he should have been given. That is also not in doubt here.

In answer to the questions:

- **Given the information available to him, was it appropriate for [Dr A] to chart clonazepam?**

Clonazepam is a benzodiazepine drug which can be used as an anticonvulsant for certain types of convulsive disorder. As [Dr A] was not familiar with the patient but was presented with the chart one can understand that he wrote up the medicine with a caveat that the dose should be checked with [Master B's] mother. However, in this particular case [Master B] had just been admitted to the hospital and he ought to have checked that clonazepam was the correct medication. He does mention that [Ms C] was going to ring in, and as he was going off duty he assumed that this would happen. This is one of the consequences of the rosters that junior hospital doctors are involved in. They frequently leave the hospital and hand over to another individual who may become busy with other patients and thus something that may seem to be relatively simple may slip the individual's mind. In essence, a note should have been made in the clinical notes that the dose and the name of the medication needed to be checked before administration.

- **Once he had chartered clonazepam should [Dr A] or any other staff member have taken action to confirm with [Ms C] that this was the correct medication for her son?**

According to [Dr A], [Ms C] said that she would contact the hospital with the correct name and dose of medication for [Master B]. As that did not occur it then behoves a member of the team to either try to contact the patient or to contact the patient's general practitioner who will have a record of the medicines that the patient is taking.

- **Were the inpatient dispensing procedures in place at the District Health Board adequate?**

The policies and procedures regarding inpatient dispensing are extremely detailed. They are certainly adequate. The problem here is not with the policies and procedures but rather that the wrong drug was prescribed.

- **Could the administration of clonazepam, rather than clobazam, have had an impact on [Master B's] condition? Could this have caused, or contributed to his deterioration on 2<sup>nd</sup> April 2000.**

The administration of clonazepam, rather than clobazam, could have had an impact on [Master B's] condition because the dose is 2-2.5 times that he would have received for his body weight and is likely to cause excessive sedation. Individuals who are heavily sedated have a risk of developing aspiration pneumonia if they are fed. It is likely that this did cause and contribute to his deterioration.

- **Could the administration of clonazepam, rather than clobazam, have any long-term effects on [Master B's] well-being?**

This is a difficult question to answer. The deterioration in his condition was noted relatively early on by his mother and her concerns were conveyed to the hospital staff. I do not have all the detailed hospital notes but he seems to have been placed in Intensive Care relatively rapidly. Nonetheless, it is likely that he would have been hypoxic for some time, and this could very well have caused further damage to his brain, but it would be very difficult to prove this.

- **Are there any other issues arising from the supporting information enclosed?**

There are no other issues. It is plain that [the District Health Board] have taken this complaint extremely seriously, particularly in regard to medication errors. They have brought in changes which hopefully will prevent further episodes occurring.

### **Conclusion**

The problems that eventuated in this particular case resulted from a simple medication error that the wrong drug and dose was given. If the correct dose of clonazepam had been charted, it is unlikely that any disorder would have occurred. Dosing in children, particularly in small children, is one of the main areas of concern in regard to medication errors. I note that [the District Health Board] have now put in place checks that the prescribing staff consult with ward pharmacists to make sure that the correct doses are given.

In answer directly to the Health and Disability Commissioner's questions, whether [Master B] received an appropriate standard of care from [Dr A] and staff at [the Public Hospital], the answer would be that in general, and particularly after the medication error was noted, he certainly did receive an appropriate standard of care. As mentioned above, there ought to have been either a check either with [Ms C] or with [Master B's] general practitioner as regards the dose and medicine that [Master B] usually received. The initial note to [Dr A] that the dose of medicine was not

known ought to have been the reminder that would have supplied this young boy with the care that he should have had.”

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## **Code of Health and Disability Services Consumers’ Rights**

The following Rights in the Code of Health and Disability Services Consumers’ Rights are 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.*

...

5) *Every consumer has the right to co-operation among providers to ensure quality and continuity of services.*

### *RIGHT 10*

#### *Right to Complain*

3) *Every provider must facilitate the fair, simple, speedy, and efficient resolution of complaints.*

4) *Every provider must inform a consumer about progress on the consumer’s complaint at intervals of not more than 1 month.*

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## **Other relevant standards**

*The District Health Board’s Inpatient Dispensing Procedures – issued 12 March 1999*

### Checking prescriptions

5.4 (Pharmacist) checks MR4s [drug chart] for

- potential interactions
  - appropriate dose
  - drug reaction stickers
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## **Opinion: Breach – Dr A**

### **Rights 4(1) and 4(5)**

When Dr A was approached by nursing staff to sign off Master B's medication chart on 30 March 2000, he was informed that the history had been taken by a house surgeon, that Master B's mother did not have his current medications with her and that his medical records were not available. Dr A noted that the chart prepared by the house surgeon had included clonazepam without dose or signature, with a note made to check the dose and to ensure that the medication was correct. Nursing staff advised Dr A that they were concerned that Master B might suffer a fit if he was not given his usual medication.

Dr A stated that his understanding from Ms C was that Master B's usual medication was clonazepam in a 1mg dose, although he charted the drug at a 2.5mg dose, which was the dosage usually given by Ms C. Dr A charted the medication for the morning but was concerned that the drug and dose should be checked before it was given to Master B. A note was made in the margin of the drug chart that reads "awaiting dose". Dr A advised Ms C to go home, check the drug and ring and confirm both the drug and the dose. Twenty minutes later, Dr A handed care over to another doctor.

Nursing staff should have been made aware that Dr A was unsure whether the correct medication had been prescribed. My expert advisor, Dr Burgess, informed me that, given the lack of information available to him about Master B's usual medication, Dr A should have made a clear statement in the clinical notes to the effect that the dose and form of Master B's medication needed to be checked before administration. No such note was made and subsequent nursing staff did not check that Master B was being given the correct medication. Ms C agreed with Dr A that she would contact staff with details of Master B's medication and failed to do so. However, I accept my expert advice that it was the responsibility of staff to follow up with Ms C or to contact Master B's general practitioner.

In my opinion, Dr A was the person responsible for ensuring that the medication administered to Master B was correct. I accept that Dr A did intend that the dose and form of Master B's medication be checked against the child's normal prescription the following morning. However, there was no documented instruction that this occur and as events transpired it did not occur. Dr A should have written a clear instruction in Master B's notes asking that his prescription be checked against Master B's usual medication as supplied by Ms C or as supplied by Master B's general practitioner. Dr A's failure to clearly document such an instruction is a breach of Right 4(5) of the Code.

Dr A also prescribed clonazepam in a dose that was 2.5 times higher than that recommended for someone of Master B's weight. I accept that in doing so he appears to have relied on inaccurate information from Ms C. Nevertheless, Dr A's prescription of clonazepam at such a high dose demonstrates a lack of reasonable care and skill and, in my opinion, constitutes a breach of Right 4(1) of the Code.

## **Opinion: No Breach – District Health Board**

### *Response to complaint*

Ms C complained that the District Health Board did not respond appropriately to her complaint of 2 May 2000. Right 10(3) of the Code states that providers must ensure the fair, simple, speedy, and efficient resolution of complaints. Right 10(4) of the Code states that every provider must inform a consumer about progress on the consumer's complaint at intervals of not more than one month. After the meeting held between the District Health Board staff on 2 May 2000, Ms C spoke to the Complaints Manager at the District Health Board on a weekly basis until she received Dr A's letter on 27 June 2000 and an internal report from the hospital on 7 July 2000. During this time Ms C also received two update letters. Taking into account the seriousness of the incident, in my opinion the District Health Board responded in a timely manner and acted appropriately to ensure that the complainant was aware of progress in the investigation of her complaint. Accordingly, the District Health Board did not breach Rights 10(3) and 10(4) of the Code.

### *Vicarious liability*

Employers are vicariously liable under section 72(2) of the Health and Disability Commissioner Act 1994 for ensuring that employees comply with the Code of Health and Disability Services Consumers' Rights. Under section 72(5) it is a defence for an employing authority to prove that it took such steps as were reasonably practicable to prevent the employee from doing or omitting to do the thing that breached the Code.

Dr A was an employee of the District Health Board. I am advised that the District Health Board had detailed and adequate policies and procedures regarding inpatient dispensing procedures. The problem in this case was that the wrong drug was prescribed. Accurate prescribing is a competency expected by all medical staff and I do not consider that the District Health Board could reasonably be expected to have prevented Dr A's error. Accordingly, the District Health Board is excused from vicarious liability for Dr A's breaches of Rights 4(1) and 4(5) of the Code.

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## **Other Comment**

My investigation was extended to include the Public Hospital Pharmacy. Despite repeated requests, it took the District Health Board six months to supply the name of the dispensing pharmacist. The District Health Board informed me that the delays were attributable to industrial unrest in 2001.

Although I have not formed an opinion that the pharmacist breached the Code, I believe that the inappropriateness of Master B's prescription should have been detected at the hospital pharmacy. The "Inpatient Dispensing Procedures" in use at the District Health Board in June 2000 required that the dispensing pharmacist check the drug chart to ensure that the prescribed dose is appropriate. My expert advisor, Dr Burgess, noted that 2.5mg clonazepam is 2–2.5 times the dose appropriate for a child of Master B's age. The

pharmacist dispensed Master B's medication. Had she checked the dosage prescribed against dispensing guidelines, it is likely that she would have realised that the dosage was inappropriate and brought this fact to the attention of medical staff involved in Master B's care. I note that the pharmacist is no longer working as a pharmacist in New Zealand and, accordingly, I intend taking no further action in relation to this matter.

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## **Actions**

Dr A provided a letter of apology to Ms C on 22 June 2000. After the incident was brought to its attention, the District Health Board conducted a review of prescribing practices, and implemented a policy whereby prescribing staff consult with pharmacists to make sure that correct doses are given. My expert advisor informs me that these steps will hopefully prevent further episodes occurring.

In light of the positive steps taken by Dr A and the District Health Board, no further actions are necessary or appropriate.

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## **Other actions**

- A copy of this report will be forwarded to the Medical Council of New Zealand.
  - A copy of this report, with identifying features removed, will be sent to the Royal Australasian College of Physicians, and placed on the Health and Disability Commissioner website, [www.hdc.org.nz](http://www.hdc.org.nz), for educational purposes.
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