

Report to the Minister for Ageing on the mouse
infestation at Karingal Nursing Home in April 2009

Report of the investigation by the
Aged Care Standards and
Accreditation Agency Ltd

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Summary and recommendations

This investigation examined the circumstances concerning the mouse infestation at Karingal Nursing Home, Dalby Queensland, in April 2009 including the actions of the approved provider, Darling Downs – West Moreton Health Service (Queensland Health) and the home's management of the infestation and its response to incidents where residents were bitten. Our findings as to those circumstances and actions taken are outlined below. The investigators also developed recommendations to improve procedures and processes for the protection of residents. These recommendations also are below.

Summary

Karingal Nursing Home is part of the Dalby Health Service. The building was opened in April 2006. Since that time there have been reports of mice in the home. The numbers of mice increased dramatically in April 2009 to a point where residents and staff were frequently in close contact with mice.

A resident was bitten by mice in the early hours of the morning of 26 April 2009. The resident had wounds to his head, ears and neck, although the neck wound may have been caused by him trying to push the mice off. Subsequently it became known that another resident and a staff member had been bitten before this incident.

Immediate aid was provided to the resident, monitoring of the resident was increased, his health was assessed by registered staff and a medical officer and treatment was prescribed and followed. While he was unwell immediately following the attack he has since returned to his previous level of health.

The home sought advice from public health experts and developed an action plan. This included increased cleaning to guard against infection, analysis of how the mice were entering the home and how best to rid the home of the infestation.

Modifications were made to the doors to minimise any gaps and a new mouse baiting strategy was implemented. The District Health Service commenced the development of an information document about mouse plagues in its facilities and how to manage them.

While the mouse problem at the home was a long term problem, it increased in intensity from November 2008 to April 2009. Residents suffered discomfort and a loss of personal possessions. Staff had a difficult working environment and often felt frustrated, while the home also had equipment damaged. Of greater concern is that residents, staff and others were exposed to a major infection risk.

There is a large empty paddock adjacent to the home and a paddock used by the Dalby Campus of the Australian Agricultural College Corporation to graze low levels of stock and these paddocks provide a cover for mice when they move from the surrounding agricultural land after crops are harvested and in the cooler weather of autumn. The home's gardens and the surrounding rock wall also provides a suitable habitat. Once inside the building mice found a comfortable environment and began to nest.

For several years the home management believed the baiting of the two paddocks kept some control of the numbers of mice, and when the baiting did not occur because concerns were raised about the effect on native wildlife, the home did not take any other action. Other forms of baiting or trapping were not increased. There were also other environmental factors that contributed to increased numbers. Building debris remained on the empty paddock which was part of Dalby Health Service property, grass was not regularly slashed and entry exclusion measures such as ensuring doors fitted tightly and were kept closed were not addressed.

While the sliding doors were lowered and the home began to install aluminium weather shields in March 2009 to form a barrier to the mice it was not done quickly enough and the work was stopped when the hospital required work to be done elsewhere. However, after the incident with the resident in April work was resumed and completed by 15 May 2009.

The home did increase the pest baiting strategy in March and April 2009 but it was not sufficient. There was no systematic process to check how much bait was being eaten, how many mice were being sighted in the home or how many were being killed. This meant that the extent of the infestation was not understood and action was delayed.

The staff and managers were aware that mice were in the home as over 500 sightings were recorded in March and April 2009 on the pest sighting sheets. However there was no coordinated process to identify the risks and report them. Moreover, the mouse problem was not seen as a serious risk until residents were bitten. Furthermore, the home, the District Health Service (Queensland Health) and the Dalby Regional Council did not have formal plans for the identification and management of the risks in health care facilities associated with pests such as mice.

After the resident was bitten the home increased the checking of bait stations to daily and introduced glue boards to trap mice. The pest contractor also visited the home on the night of 26 April 2009. These proved to be successful strategies with between 130 and 160 mice being caught on the night of 26 April 2009.

The Director Environmental Health inspected the home on 27 April 2009 and observed mice and evidence of mouse faeces. He concluded that the home had not been effectively cleaned on a daily basis and advised about increasing the cleaning schedule, increasing the number of rodent bait stations and glue pads and requiring the pest contractor to inspect them twice daily. However, the pest contractor continued to attend only once a day. Other advice concerned keeping a daily report on dead mice found, emptying of all refuse containers at least twice daily, laundering of all contaminated linen and clothes and the storing of such in plastic containers or rodent proof bags was followed. All foodstuffs, crockery and cutlery was then stored in rigid walled plastic containers.

The home also instituted a revised cleaning schedule and increased the number of cleaning staff. Additional care staff were also employed at night to enable more vigilant checks on all residents.

The Director Environmental Health also required a comprehensive rodent control plan to be developed which the home did. The plan requires immediate action if there is any rodent activity and includes increased cleaning, increased baiting and

vigilance in terms of resident care. Formalised communication concerning local mouse activity also was set up with the local council and the Department of Primary Industries

From 26 April 2009 to 12 May 2009 a total of 159 mice had been counted by the Manager Operational Services as being dead on glue boards; these figures include a small number of these deaths being from bait stations. No dead mice were found between 7 May 2009 and 12 May 2009. A further 14 mice were caught in Karingal Nursing Home on glue boards from 21 May 2009 to 27 May 2009. As of 29 May 2009, Karingal Nursing Home was using 80 glue boards, one for each resident's bed, 40 internal bait stations and 16 external bait stations. They also had eight electromagnetic devices fitted.

While the nursing home appeared to have reduced the number of mice in the home significantly, the adjacent hospital had an increase between 6 May 2009 and 29 May 2009, with 401 mice caught in the hospital in that period. The majority were in the laundry but some were in the maternity ward, acute ward and the operating theatre.

After consulting with Biosecurity Queensland, the Dalby Regional Council Environment and Health Manager obtained approval from the Campus Manager of Dalby Campus of the Australian Agricultural College Corporation, to bait the college's paddock with MOUSEOFF™. This was done on 1 May 2009. The mouse numbers had decreased significantly in the nursing home by the time the baiting occurred and since that time the numbers in the hospital have increased significantly.

With the increase in numbers of mice in the hospital and with the small resurgence in the nursing home, the Manager Operational Services has contracted to install devices called Ecomilles to trap mice. These will be installed on 1 June 2009.

The home still has mice but they are now following the three stage Karingal Rodent Infestation Action Plan which covers both clinical and operational responses.

Recommendations

Based on the findings of this investigation we make the following recommendations:

1. Pest exclusion measures

To address the issue of mice entering the home, the home must review all possible entry points for mice and other pests and install suitable devices to exclude them. These devices must comply with building design guidelines, meet food safety codes, be consistent with pest behaviour, be permanent, not pose an unreasonable risk to residents and staff and be monitored through the home's preventive maintenance program.

2. Baiting strategies

To address the issue of an ineffective baiting strategy, the home must implement a long term mouse baiting strategy that is specific to the location, is based on up

to date information about mouse activity, complies with relevant regulations, complies with the directions for use from bait manufacturers and complies with recommendations of the pest management industry. A process to monitor baiting strategies should be implemented.

3. Habitat modification

To address the issue of favourable habitat, the home must remove all building debris from the site and maintain land around the home in a suitable manner to ensure that mice are not harboured on that land and that the land does not become a breeding ground for mice. A process to monitor mouse habitat should be implemented.

4. Education

To address the issue that the mouse problem was not seen as a serious risk, the home must provide appropriate information to its staff about the risks to residents and to themselves posed by mice.

5. Management plan for designated pests

To address the lack of clear management guidelines, the District Health Service (Queensland Health) should develop a management plan for designated pests that incorporates relevant regulations and standards, pest behaviour research, risk assessment, predictive modelling for mouse plagues and industry guidelines for pest management.

6. Reporting and monitoring

To address deficiencies in incident reporting, risk management and monitoring processes:

- The District Health Service (Queensland Health) should review the reporting mechanisms available at Karingal and implement measures to ensure that management and staff have a clear understanding of what mechanisms to use when reporting incidents involving residents and when reporting risks to residents and staff.
- The District Health Service (Queensland Health) should review the organisational structure in which Karingal operates and take steps to address the tendency of managers to operate in isolation and implement a structure that facilitates the communication of critical information between the home, the Dalby Health Service, the health district and Queensland Health itself and ensure that when risks to residents and staff are identified timely control measures are put in place.
- The District Health Service (Queensland Health) should review its monitoring processes including audit templates and take steps to ensure that those processes monitor incident reporting, risk identification and risk management.

7. Contract management

The District Health Service (Queensland Health) should review processes used to monitor the work carried out by contractors who do not come under the direct control of Karingal's management.

8. National guidelines

The Department of Health and Ageing should consider developing and providing the aged care industry with a standard risk assessment tool and a pest management plan plus appropriate guidelines for their use and information about the risks posed by pests such as mice.

9. Review of Accreditation Standards

The Department of Health and Ageing should review expected outcomes 4.4 Living environment and 4.5 Occupational health and safety to strengthen their focus on the welfare of residents and staff. This is consistent with the Minister's intention to strengthen the Accreditation Standards in relation to homes providing for residents' care and lifestyle needs. In this context consideration should be given to removing the phrase "is actively working to provide" so that under 4.4 Living environment, the management of each home is to provide a safe and comfortable environment consistent with residents' care needs and under 4.5 Occupational health and safety, management is to provide a safe working environment that meets regulatory requirements.

10. Risk assessments in aged care homes

Aged care homes should conduct a risk assessment of their home for pests such as mice and if required implement a pest management plan.

Aged care homes should provide appropriate information to their staff about the risks to residents and to themselves posed by pests such as mice.

1. Introduction

1.1. This investigation and its terms of reference

There were reports in the media on 30 April 2009 and on following days of a bed-ridden resident being bitten by mice in Karingal Nursing Home, Dalby Queensland. Subsequently there was a report of another resident being bitten. The Minister for Ageing, the Hon Justine Elliot, asked the Aged Care Standards and Accreditation Agency Ltd on 2 May 2009 to undertake a broad investigation into the incidents and related matters and to report within 30 days.

The investigation was to consider, but was not limited to:

- the home's management of the mouse plague, including actions taken to defend the home from attack, and the timeliness of actions taken;
- how the nursing home responded to the incidents where residents had been bitten; and
- actions taken to protect residents generally
- actions of the home and the approved provider, Darling Downs West Moreton Health Service (Queensland Health).

The report of the investigation was to include recommendations to improve procedures and processes for the protection of residents.

1.2. The methodology used for the investigation

The Chief Executive Officer of the Agency appointed a team to investigate. They were – Victoria Crawford, General Manager Accreditation, and Christopher South, an experienced and senior Aged Care Quality Assessor.

Firstly, in order to develop an understanding of mice plagues the team undertook a targeted literature review concerning mice plagues and mice control particularly in the Darling Downs area of Queensland.

They spent four days at the home interviewing a sample of residents, relatives, and staff of the home. The team also reviewed records in the home concerning vermin control (including mice sightings), cleaning, maintenance, minutes of relevant meetings, reports and residents' care notes. They spent considerable time interviewing, and confirming what had occurred and what action had been taken, with the Director of Nursing, the Nurse Unit Manager, the Clinical Nurse Consultant, and the Manager Operational Services. Additional time was spent interviewing the pest controller contracted by the home, the local council Environment and Health Manager, the Director Environmental Health (Qld), the District Chief Executive Officer for Darling Downs – West Moreton Health Service and the Executive Director Rural Services for Darling Downs – West Moreton Health Service.

Media references and transcripts of radio interviews and reviewed and where warranted, followed up the issues raised.

2. Background

2.1. Karingal Nursing Home

Karingal Nursing Home is situated in the town of Dalby, Queensland. The approved provider is Darling Downs – West Moreton Health Service which is part of Queensland Health. Dalby is in the Darling Downs and considered to be an inner regional area.

The current building which houses Karingal Nursing Home was opened and occupied in April 2006. It is a modular design on a concrete slab developed for Queensland Health's model of care for residential aged care services and was developed after an audit of state government residential aged care buildings in 2001 against Commonwealth Government Certification Standards for 2008. To develop the design a Design Reference Group, which included clinical representatives, was established in May 2001 and after consultations with Directors of Nursing in Queensland Health's residential aged care homes, and review by experienced architectural firms, the modular design was signed-off for use in all Queensland Health aged care projects. The design is in accordance with *The Design Guidelines for Queensland Residential Aged Care Facilities*. Queensland Health then instituted redevelopment and upgrades to all their homes based on the modular design. Eight, including Dalby, had redevelopments commenced in 2003, while two others commenced in 2004.

Karingal Nursing Home is part of the Dalby Health Service complex with the entire facility being managed by a Director of Nursing (DON). While the Nurse Unit Manager (NUM) reports to the DON, she has responsibility for day to day management of care and lifestyle of residents in Karingal. The Manager Operational Service (MOS) reports to the DON and manages facility operations across the health service. This includes building maintenance, cleaning, gardening and control of pests.

The home can accommodate 80 residents with the majority requiring a high level of care.

The home was first accredited by the Aged Care Standards and Accreditation Agency Ltd (the Agency) in December 2000 and is accredited until 5 December 2011. The Agency found the home did not comply with three expected outcomes (1.8 Information systems, 2.4 Clinical care, and 2.13 Behavioural management) on 13 September 2006. The home was placed on a three month timetable for improvement and resolved the non-compliance within the three months.

At its most recent audit in September 2008 no areas of non-compliance were identified.

2.2. Mice in rural Queensland

The following information has been primarily sourced from a fact sheet, *Mice plagues in northern Australia*, published by the Queensland Department of Industry and Fisheries (January 2006).

The common house mouse (*Mus domesticus*) is an introduced pest now distributed throughout Australia. Mice damage to crops is an ongoing and costly problem in certain areas such as the Darling Downs. Preventing the build up of mouse numbers is the best approach.

Why mice numbers increase

Mice are prolific breeders with females reaching sexual maturity at about six weeks of age. The time from conception to birth is less than three weeks and females can become pregnant again immediately after giving birth. Average litter size is five to six but it can be as high as thirteen.

Mice usually begin breeding in spring. If suitable weather conditions prevail, breeding can continue through summer and into autumn. Food supply and seasonal conditions determine the length of the breeding season. An extended breeding season may allow mouse numbers to reach plague proportions in autumn.

Up to 1400 mice per hectare have been recorded on the Darling Downs during a plague and it is likely that numbers exceed this figure on occasions. At these high densities, they cause considerable damage to crops.

Mice also cause considerable damage in homes, sheds, farm equipment and to electrical wiring. Damage to electrical wiring can be the cause of fires.

They are also known to spread various diseases including *Salmonella* bacteria that may be present in grain, or in the case of domestic areas other foodstuffs contaminated with mouse urine and droppings. Mice and rats are also the major animal contact in Australia for the disease Leptospirosis. (*Communicable Disease Intelligence Volume 31, Number 2*)

The increase in frequency of high numbers of mice is probably a result of changes in agricultural farming practices such as continuous cropping and stubble retention. These practices increase the availability of food and shelter and allow mice numbers to increase rapidly when these conditions are favourable.

Why mice numbers decrease

Most mice numbers decrease in July/August. At this time of the year, food resources become scarcer and the harsh winter conditions place the population under stress. If the population is at high densities, diseases spread more rapidly; the level of fighting increases, leading to wounds that are open to infection and a high mortality rate. As a consequence, the mice are sick and hungry and less able to cope with exposure to climatic extremes and diseases. When populations crash they normally do so rapidly – over a period of a few days to two weeks.

Predicting mice plagues

The Queensland Department of Natural Resources and Mines personnel undertake trapping surveys in June, September, October and November. This allows the likelihood of a plague to be predicted up to six months in advance on the Darling Downs. These warnings are distributed through the local media.

How would a home know how many mice they had?

Mice are nocturnal and are seldom seen unless they are in high densities. Monitoring methods are available and include the use of feeding stations (seeing how much grain is removed overnight), traps, and bait cards. The following two are considered to be useful in determining how many mice are in or near a building:

1. **Visible sightings** – Visible sightings such as the presence of burrows or of worn paths between cracks on the cracking clay soils of the Darling Downs are good indicators that mice are present. Numbers seen at night on roadways is also an indication of mouse abundance.
2. **Rate of bait removal** – The rate of removal of baits placed around the exterior of a building or home is a good indicator of whether mouse numbers are increasing or decreasing. However, a systematic process needs to be put in place to enable the assessment of the extent of any infestation.

2.3. Risks of mice infestation

As stated above, mice are known to spread various diseases because of contamination of food with mouse urine and droppings.

Biting of vulnerable people including babies, children, the elderly and people with a disability (depending on their level of dependency) is also a risk.

Other risks are the destruction of electrical equipment as they can chew through wiring or get into the equipment and mouse urine or the chewing of components may cause the equipment to fail or make the equipment dangerous to use.

2.4. Control of mice

Mice are predominantly controlled with poison baits (rodenticides) in both urban and agricultural environments. A more effective long term control method combines the use of a number of control techniques such as, baiting, habitat manipulation, reducing food availability and removing refuge areas.

In Australia, a grain bait formulation containing zinc phosphide, sterilised wheat and a vegetable oil is registered for use as an in-crop rodenticide (MOUSEOFF®, Animal Control Technologies). It can be used in crops, stubble and pasture. It is applied at the rate of 1 kg/ha (2–3 grains/m²) by aircraft or by ground spreading. In addition, an extruded pellet formulation of zinc phosphide and ground wheat (ZP Rodent Bait™, Bell Laboratories) has also been used under permit.

Zinc phosphide grain bait has never been permitted for use in buildings or agricultural storage. This is because it is an acute, fast-acting poison and its use in such circumstances increases its poisoning risk to children and pets. Several

anticoagulant baits are available for use in buildings or agricultural storage in Australia and these generally provide a lower risk when used in these situations

- **Baiting**

A number of rodenticides are registered for baiting around buildings and storage facilities. These are predominantly anticoagulants and the recommended method of use is to place them in bait stations to reduce the risk of poisoning dogs and children. Mice will feed from numerous bait stations each night, so small amounts of bait in a large number of stations is more effective than a large quantity in one bait station. Several bait formulations should be used – standard cereal based pellets, wax blocks, tracking powders and liquid baits. If bait stations are used they must be checked regularly to determine how quickly the bait is taken.

Perimeter baiting with anticoagulant rodenticides is permitted around a crop and may be effective if performed before mice move into the crop. Once mice invade the crop, perimeter baiting will have little effect on the resident population in the crop.

- **Manipulating habitat**

Habitat manipulation can delay a build-up in mouse numbers by modifying breeding and feeding areas.

- **Trapping**

Traps (wire traps or break-back traps) are used to remove low numbers of mice in homes and buildings, or where poisons pose a risk to people or animals. Another common trapping method is a 'water trap'. Food is used to lure the mice into the trap and when mice attempt to reach the food, they slip and fall into the water and drown. There are variations of these that use alcohol as the agent to kill the mice.

Glue boards can also be used. These are thick cardboard with a glue substance on one side. They are placed where mice usually run and when a mouse walks on the board its feet stick and it cannot move.

During our enquiries RSPCA Qld informed us that they have concerns about the use of glue boards as they cause the mouse to suffer a prolonged death, and also because they can cause harm to native wildlife.

Traps provide a good method of monitoring mouse numbers over time. It is useful to record the number caught in a notebook or on a calendar to enable an analysis of mice numbers.

- **Reducing food supply by exclusion**

All food should be stored in mouse-proof facilities when possible.

Buildings should be mouse-proofed by blocking all holes and gaps in doorways, walls, etc. that are larger than six millimetres in diameter.

- **Control of refuge areas**

Eliminating refuge areas such as grassy verges or paddock areas, and rubbish dumps decreases mouse breeding and feeding areas, as does slashing or burning fence-line areas. If plants are close to buildings and may form a good refuge area, consideration needs to be given to how the area can be monitored.

3. The incidents that triggered this investigation and other incidents

The incident that led to this investigation was initially reported in the media on 30 April 2009. Reports stated that a resident had been bitten by mice on 25 April 2009; ANZAC day. Subsequent reports stated that another resident had also been bitten around the same time. Note that the initial reports were inaccurate in that the incident occurred on the morning of 26 April 2009 and the extent of blood on the hands of the residents were exaggerated when compared with the documentation held by the nursing home.

During April 2009 there were three incidents at Karingal involving a person being bitten by mice; two residents were bitten and one staff member. The details of these incidents follow in chronological order

3.1. Incident one

The first incident was on 22 April 2009 and involved a staff member. A workplace incident report was completed. The details are as follows:

- The incident occurred in Unit one at 1850 hours.
- The staff member was an assistant in nursing.
- The staff member was
“removing a mouse thought to be dead with thick pad and mouse suddenly became alive and bit me on my left index finger and drew blood. I washed with water for approximately two minutes then went to emergency department”.
- A risk rating was completed using the incident report assessing the risk as “low”.

The incident was reviewed by the Nurse Unit Manager who indicated that workplace health and safety input was required to identify preventive controls and noted that the following actions were either completed or required:

- baiting being attended twice weekly
- flaps on doors attached
- risk assessment attended
- risk register updated
- population health personnel organised to visit the facility.

The incident report was reviewed by the Director of Nursing on 27 April 2009 who reviewed the action taken and wrote “Appropriate action taken”.

3.2. Incident two

The second incident occurred on or about 24 April 2009. The incident involved a resident referred to as Resident A and was reported by Resident A's representative. The incident occurred in Unit one. The details are as follows:

- Resident A's representative reported on 29 April 2009 that the resident said they were bitten by a mouse on Friday night on the right arm.
- The incident report noted that the resident was checked and there was "*nil evidence of broken skin. 2 very small scaly areas noted. Resident normally has scaly skin. Reported to Director of Nursing*".
- Mouse activity in this resident's room was not noted on maintenance request forms or pest sighting sheets leading up to the incident.

3.3. Incident three

The third incident was referred to in media reports. This incident was identified during the 0200 hours round on 26 April 2009. The incident involved a resident referred to as Resident B and was reported by an enrolled nurse. The details are as follows:

- During the 0200 hours round, two staff were checking on the resident, as part of half hourly observations and because he needed to be assisted in turning and they found:
"scratch marks on the neck and also blood on both ears and head. Mice were found on the bed".
- When interviewed the endorsed nurse stated that they were checking on Resident B every half hour because of the high level of mice activity in his room and that at the time of the incident there were three mice found on the resident's bed.
- The incident report indicates that the immediate action taken by staff was that the resident was "*cleaned and reported to RN*". The registered nurse on duty (RN 1) reported that she came over from Unit 1 and looked at the wounds.
- Staff entered the following in Resident B's progress notes for 26 April 2009: "*On 0200hrs round found pt with scratch on his neck. Blood found under fingernail. Blood also found on both ears and on top of head. Cleaned and reported to RN*"
- The enrolled nurse completed the incident report.
- Half hourly checks continued for this resident for the rest of the night.
- The incident report indicates that the registered nurse again checked the resident at 0700 hours and noted that the resident was comfortable.
- RN1 sent an email report to the Nurse Unit Manager at 3.30 am that read: "*On 2.00am round staff found (resident) with neck, head and ears bleeding. Some blood found under fingernail which I feel is consistent with neck injury and a mouse on the foot of his bed. Am wondering if the injuries on the head and tips of ears might be mouse bites*".
- A different registered nurse (RN2) checked on the resident at 0900 hours and noted in the progress notes that the resident was "*flushed and right side of face seems restricted – query TIA. Obs BP 180/77 Resp 20 Pulse rate 75 Temp 36.7. RN cut residents fingernails and he pulled away. RN cut 4th digit on l/hand. RN cleaned hands, head ears fingers with chlohexidine due to mice infestation and the blood under nails etc. Family contacted. Dr called.*"

- Resident B's medical officer documented the following in the resident's progress notes:
"Less responsive today. Unable to swallow meds. Mice have bitten (resident) and caused ulceration to his upper chest. Responds to voice – says he is OK. Otherwise eyes closed. Δ general decline. Withhold medications. Nil oral intake necessary. Use S/C Morphine for restlessness agitation.
- At 1100, the resident was given Morphine (5mg) for restlessness and agitation and reported to be sleeping intermittently.
- At 1430, the medical officer discussed with the resident's family the best options and prescribed a syringe driver and Morphine 10mg and Medazalin (5mg) for 24 hours.
- At 2130, the resident was noted by an enrolled nurse to be alert and responding to simple questions and stated that he had no pain.
- On 27 April 2009 at 0520, nursing staff reported that the resident *"was responding to staff when spoken to"*.
- On 27 April 2009, the medical officer noted that the resident was *"more alert and responsive today"* and instructed staff to cease the use of the syringe driver.
- Notations in the progress notes continue to indicate the resident was alert until a different medical officer sees him on 28 April 2009 and decreases Serapax to night time only.
- On 29 April 2009 and 30 April 2009 progress note entries state the resident was bright and alert.

A review of the resident's progress notes and pest reports regarding mice, indicate that mice in Resident B's room had been a problem for some time. For example:

- | | | |
|-----------------|----------------|--|
| • 13 July 2008 | Progress notes | <i>The resident's representative complained of finding mice droppings daily in the room; a maintenance form was filled out</i> |
| • 21 April 2009 | Pest sheets | <i>Three mice in (resident's) bed</i> |
| • 21 April 2009 | Pest sheets | <i>Mice in (resident's) bed again</i> |
| • 21 April 2009 | Pest sheets | <i>Every half hour staff were doing checks on (resident</i> |
| • 23 April 2009 | Pest sheets | <i>One mouse in (resident's) rubbish bin</i> |
| • 23 April 2009 | Pest sheets | <i>Behind TV</i> |
| • 26 April 2009 | Pest sheets | <i>Mice on bed</i> |

It is significant to note that on 21 April 2009 staff introduced half hour checks of this resident overnight to monitor for mice. They also endeavoured to check all

residents every two hours but this would have been difficult given the number of residents. The managers of the home did not direct this action.

3.4. Media coverage

Resident B's daughter said that she wanted to ensure that other residents did not suffer in the same way as her father and so spoke with the local member Mr Ray Hopper MP. He then gave information to the local media which resulted in reports on 30 April 2009 of a bed-ridden resident being bitten by mice in Karingal Nursing Home. Some reports stated that the attack occurred on ANZAC Day and that the resident was covered in blood. These reports do not align with the records in the nursing home. The incident occurred in the early hours of the morning of 26 April 2009 and the resident was found by nursing staff during the 2.00am nursing round to have scratches to his neck, which they believe were caused by the resident attempting to remove the mice, and bites to both ears and his head. The nurses report there was blood under one fingernail. However, the resident's doctor reported at about 10.00 am that the "*mice have bitten (resident) and caused ulceration to his upper chest*".

There were many media reports in newspapers, news web sites and on radio and television. This coverage was intense until 4 May 2009.

3.5. How Queensland Health defines an incident

The home has access to the Queensland Health's incident management system. Documents published about this system including the *Incident Management Implementation Policy* and the *Clinical Incident Management Implementation Standard* provide the following guidelines:

- The goal of clinical incident management is to prevent patient harm.
- An incident is any event or circumstance which has actually or could potentially lead to unintended and/or unnecessary mental or physical harm to a person.
- Incidents include adverse events (harm caused) and near misses (no harm caused).
- Harm is defined as death, disease, injury and/or disability experienced by a person.
- The process is required to identify and treat hazards before they lead to patient harm.
- The process is required to identify when patients are harmed and promptly intervenes to minimise the harm caused to a patient as a result of the incident.
- The process is required to ensure that lessons learned from clinical incidents are applied through taking preventive actions designed to minimise the risk of similar incident occurring in the future.

3.6. Other events involving residents not recorded as incidents

There is evidence that many residents were upset about the intrusion of mice into their daily lives but because they were not bitten their experiences did not enter the organisation's incident database. Documents such as maintenance forms, progress notes and the contractor's pest sighting sheets indicate the degree of intrusion experienced by residents. One example is a resident referred to as

Resident C. Some examples of Resident C's experiences with mice at the home are:

- 16 September 2008 Progress notes *During a case conference Resident C's representatives raised concerns about mice in the resident's room*
- 18 April 2009 Pest sheets *Resident very upset about mice in room*
- 22 April 2009 Progress notes *Three mice around resident's bed. Resident is disturbed and finding it difficult to sleep*
- 22 April 2009 Pest sheets *Mice in bed with resident*
- 23 April 2009 Pest sheets *Three mice in resident's room*
- 26 April 2009 Progress notes *0300 (resident) very distressed about mice in her room. Stated that mice were running over her bed. Moved her out into the dining room. Settled after awhile*
- 26 April 2009 Pest sheets *There were 9 mice in room – resident distressed*

Residents interviewed by quality assessors from the Aged Care Standards and Accreditation Agency Ltd during support contacts on 28 April and 6 May 2009 and during our investigation reported that:

- *they had difficulty sleeping*
- *mice ate some food that was left out*
- *they experienced uncomfortable, sleepless nights.*

Given that Queensland Health defines an incident as "*Incidents include adverse events (harm caused) and near misses (no harm caused)*" these events should have been reported as incidents and if that had occurred there may have been earlier, more focussed action taken.

3.7. Damage to property not recorded as incidents

The home's records (other than incident reports) indicate that mice caused damage to the organisation's property. For example:

- 2 August 2008 Maintenance request *A lounge may need to be removed as it is smelling*
- 9 March 2009 Maintenance request *Mice are damaging and living in furniture recliner chairs*
- 23 March 2009 Director of Nursing report to Executive Director Rural Services *Server in Karingal has had the fried mice removed and is now working. Had 5 days of extra staff in Karingal due to not nurse call, paging or dect system operational*

These events should have been considered incidents under Queensland Health's definition; "*An incident also includes loss or damage to the physical or intellectual property of Queensland Health*".

In the Resident Handbook it says residents are encouraged to bring their personal items such as "a special chair". Some residents who did so had their personal items also damaged by mice. For example:

- 14 April 2009 Progress notes *Resident's chair removed because it was infested with mice*
- 18 April 2009 Maintenance request *Another resident's chair infested with mice*
- 18 April 2009 Pest sheet *Chair smells of mice needs removing*

These events should have been considered incidents under Queensland Health's definition as while damage to residents' personal items may not cause them direct harm it "*..could lead to unintended and/or unnecessary mental or physical harm to a person*".

3.8. Infection control events that could be classified as incidents

There are numerous reports of mice in kitchens and store rooms. For example:

- 12 July 2008 Maintenance request *Mice everywhere in unit 2...dining room*
- 28 August 2008 Maintenance request *Mice in kitchen*
- 17 January 2009 Maintenance request *Mice running through residents' roomsand kitchen*
- 15 March 2009 Pest sheet *Clean utility room running under fridge*
- 15 March 2009 Pest sheet *Mouse in treatment room*
- 16 March 2009 Pest sheet *Two mice in storeroom*
- 16 March 2009 Pest sheet *Mice in room drinking from cup*
- 16 March 2009 Pest sheet *Mice in rubbish bin in servery*
- 30 March 2009 Pest sheet *Mice running into kitchen*
- 2 April 2009 Pest sheet *Mouse seen on clean cups/plates on trolley in kitchen*
- 2 April 2009 Pest sheet *Mice found on food trolley in kitchen*

- | | | |
|-----------------|------------|--|
| • 4 April 2009 | Pest sheet | <i>Live mice in staff dining room
box of drink cups tossed out</i> |
| • 6 April 2009 | Pest sheet | <i>Live mice paper dispenser in
bathrooms</i> |
| • 6 April 2009 | Pest sheet | <i>Mice through linen quilts</i> |
| • 23 April 2009 | Pest sheet | <i>Mice droppings all over
towels in bathrooms</i> |

Standard 3.2.3 of the *Food Safety Standards* (2001) from Food Standards Australia New Zealand states that “Food businesses are required to proof premises against access by pests”.

Given the diseases mice may carry these events compromised the home’s infection control program and should have been recorded as incidents under Queensland Health’s definition of an incident as “..any event or circumstance which has actually or could potentially lead to unintended and/or unnecessary mental or physical harm to a person”.

3.9. Staff experiences

During the investigation staff reported being affected by the presence of mice in the home. For example:

- One staff member reported that “*they hate mice*” and “found it difficult to come to work”.
- Two staff reported feeling frustrated about the baits being around but they were not working.
- One staff member said they wanted to bring their own traps to the home to catch mice.
- Two staff reported bringing in their own mouse repellent.
- While we were on site on 14 May 2009 a staff member screamed in the main corridor. A mouse had run up the staff member’s leg. She was obviously concerned.

These experiences should also have been reported as incidents under Queensland Health’s definition where an incident includes “..any event or circumstance which has actually or could potentially lead to unintended and/or unnecessary mental or physical harm to a person”.

4. How mouse activity was reported at Karingal prior to 26 April 2009

4.1. Mice in Karingal Nursing Home since 2006

There were numerous reporting mechanisms available to management and staff to report incidents and adverse events.

The new nursing home opened in April 2006 and soon after the first sightings of mice were reported. Reports of mouse activity by staff and relatives continued over the following years.

The Director of Nursing stated that since the home opened, mice have seemed to come and go in waves. The Executive Director Rural Services stated that while he was aware of reports of the mouse problem he was not aware of the 'magnitude' or 'severity' of the problem. The District Chief Executive Officer stated that the problem was not reported to her until the morning of 26 April 2009 after a resident was bitten.

Resident B's daughter had raised a concern about mice in 2008.

Several residents' representatives and staff stated that living in Dalby "*you expect mice*". However, one relative said that they shouldn't be in the home. Resident B's son said "you expect mice – one or two is what you expect". He thought that staff had raised concerns but didn't know how far up the chain that went. He was concerned that baits were not being used and told them he'd put them in himself if the home didn't, but then the home did commence baiting.

The general practitioner who was called to see Resident B also stated that living near farms mice are about and get into homes. He believed it was an unfortunate incident. He also told us that there had been a patient in the acute ward of Dalby Health Service who had been bitten on the toe a few years ago.

We were also told that a hospital patient had seen a mouse in a light fitting in the hospital's operating theatre. The theatre was then thoroughly cleaned.

4.2. Reporting mechanisms

The following is a summary of the reporting mechanisms used by staff and management at Dalby to report on mouse activity at Karingal.

- **Reporting at residents, relatives and friends meetings**

Mouse activity was discussed at resident meetings, although not frequently. For example:

August 2006

The minutes of Residents, Relatives and Friends meetings record September 2006 notes discussions about mouse activity. The minutes state that a representative was concerned about mice in their relative's room.

The minutes record management's response as follows:

- *the front sliding automatic door was modified so that it was only automatic when opening from the outside with a push button to exit*
- *the home's pest contractor had baited for mice*
- *some doors had been mouse proofed.*

Further discussion was held in subsequent meetings up to January 2007 and the matter was reported as closed. Meeting minutes indicated that mice were not discussed at meetings since January 2007.

- **Reporting using maintenance request forms**

During the period prior to March 2009, staff reported mouse activity using maintenance request forms. In this process, staff completed the top page of the form and this page was forwarded to the Manager of Operational Services for follow up/action; a carbon copy stayed in the book.

We reviewed maintenance request forms for 2008 and 2009 and noted that there are numerous reports of mouse activity documented on maintenance request forms. For example:

30 June 2008	Mice seen in rooms G5 and J1
7 July 2008	Several mice seen in K7 and J6
9 July 2008	Resident's relative found four live mice in her mother's drawer
12 July 2008	Mice everywhere in Unit 2
13 July 2008	Relative complained of mice droppings daily in the room
28 August 2008	Mice in kitchen
16 September 2008	Family happy with care. Only concern is mice in bedroom
7 October 2008	Dead mouse in bed
14 November 2008	Mice in bedrooms. Residents concerned about seeing mice in rooms
16 November 2008	Mice in room – smelling
17 January 2009	Mice running through residents' rooms, lounge and kitchen
25 February 2009	Mice in most residents' rooms again
1 March 2009	Chair needs cleaning – mice
9 March 2009	Increase on mice in Karingal, mice are damaging and living in furniture e.g. recliner chairs

- **Reporting using *Pest sighting sheets* provided by the pest contractor**

At a management meeting in 3 March 2009 attended by the Director of Nursing, Nurse Unit Manager, Manager of Operational Services and the Clinical Nurse Consultant, it was decided not to use maintenance request forms to report mouse activity. They decided to use pest sighting sheets provided by the District's pest control contractor. This was decided on the advice of the pest contractor so that more information on mouse sightings would be collected. The Manager Operational Services reported that pest sightings were not strictly an issue for maintenance request forms and caused information problems with the organisation's maintenance database. Maintenance reports however indicate that the server in Karingal had been destroyed by mice activity on 13 March 2009 and the home had five days without a nurse call, paging and Dect phone system; extra staff had to be rostered. The Nurse Unit Manager stated that at this time they were concerned that action taken so far to control mice had not been effective and were unsure how to resolve the problem.

The pest sighting sheets are structured to allow staff to enter the date, pest activity, the area sighted and their name. The sheet also allows for the pest contractor to record action taken/recommended in response to each staff entry.

During the six weeks from 14 March 2009 to the incident on 26 April 2009, staff recorded mouse sightings/activity on the pest sighting sheets. The copies available up to 12 May 2009 do not, however, record actions taken by the pest contractor in response. During this period, staff made around 500 individual entries about mice on the pest sighting sheets. The pest contractor stated that they believed that staff 'abused' the sheets by reporting multiple mouse sightings. However the number of mice caught on 26 April 2009 and the amount of bait used indicates that mouse sighting reports were probably accurate. The following are a selection of entries made by staff on pest sighting sheets with a focus on the entries showing the degree of mouse intrusion into the home and mouse interactions with residents.

<i>14 March 2009</i>	<i>Staff dining room, in rubbish bins</i>
<i>15 March 2009</i>	<i>Mouse ran over chair Mouse on top of fridge Side entrance to Karingal Mice droppings on resident's pillow Mice in bed Running up resident's chair while they are sitting in it</i>
<i>16 March 2009</i>	<i>Mouse in room – drinking from cup In rubbish bin in servery</i>
<i>17 March 2009</i>	<i>Mouse in room, dead mouse, mouse droppings</i>
<i>19 March 2009</i>	<i>Resident complaint of live mice</i>
<i>22 March 2009</i>	<i>Two mice in resident's bed</i>
<i>25 March 2009</i>	<i>Mouse eating resident's plant</i>
<i>26 March 2009</i>	<i>Mouse in pad bag</i>
<i>27 March 2009</i>	<i>Mouse asleep in bed with resident</i>
<i>30 March 2009</i>	<i>Mouse in kitchen</i>
<i>2 April 2009</i>	<i>Mice on clean cups, plates in kitchen</i>
<i>3 April 2009</i>	<i>Mice in most rooms</i>
<i>6 April 2009</i>	<i>Mice in resident's clothing</i>
<i>7 April 2009</i>	<i>Mice in all areas of the home, some nesting in resident's chair</i>
<i>13 April 2009</i>	<i>Two mice servery bench</i>
<i>18 April 2009</i>	<i>Two mice in bed with resident Resident very upset about mice in room</i>

19 April 2009	<i>Mice seen in most rooms</i>
20 April 2009	<i>Mice more prominent than ever</i>
21 April 2009	<i>Mouse ate resident's banana</i> <i>Three mice in resident's bed again, staff are doing checks every half hour</i>
23 April 2009	<i>Mice in all bedrooms</i>
24 April 2009	<i>Mice everywhere</i>
25 April 2009	<i>Mice are everywhere in every room in Unit 2 Pts are distressed.</i> <i>Mice droppings in beds of six residents</i>
26 April 2009	<i>There were nine mice in one bedroom, resident distressed</i> <i>No bait in bait traps</i>

- **Reporting using residents' progress notes**

Staff occasionally, but not frequently, documented mouse activity in residents' progress notes. Management and care staff reported that they considered the mouse problem as an operations/maintenance issue, not a clinical issue and so did not document mouse activity in progress notes. One staff member when asked why more entries were not made in progress notes replied that they were asked to put mice sightings on the sighting sheets. The following are examples of progress note entries that were made by care staff about mice activity:

13 July 2008	<i>Relative complained about finding mice droppings daily in the room – filled out a maintenance form.</i>
16 September 2008	<i>Family happy with care. Only concern is with the mice in their relative's room – filled out a maintenance form.</i>
14 April 2009	<i>Staff report that resident's chair is infested with mice. On investigation found that the filling of the chair had broken down. Contacted resident's family re this problem, will pick up chair as soon as possible.</i>
22 April 2009	<i>Three mice around resident's bed. Resident is finding it difficult to sleep.</i>
26 April 2009	<i>Resident very distressed about mice in room. Stated that mice were running over bed. Moved (bed) out into the dining room. Settled after a while.</i>
26 April 2009	<i>At 0200 found resident with scratch on his neck. Blood under finger nail. Blood also found on both ears and top of head. Reported to RN.</i>

- **Reporting using incident reports**

The incident management system was only used as a reporting mechanism when someone was actually bitten by a mouse. There were three incidents in April 2009; two residents and one staff member were bitten. The incident reports are as follows:

22 April 2009 *Staff member. 1850hrs. Removing a mouse thought to be dead with thick pad and mouse suddenly became alive and bit me on the left index finger and drew blood.*

25 April 2009 *Representative states that relative said that they were bitten by a mouse on Friday night on the right arm.*

26 April 2009 *0200 hrs. Found with scratch mark on neck. Also blood on both ears and head. Mice (3) found on bed. Cleaned and reported to RN.*

One staff member when interviewed reported that mice activity was not documented in incident reports because “*they were mice*”. Another stated that there was some confusion about mice being an operational issue rather than a clinical issue. The Nurse Unit Manager and Clinical Nurse Consultant reported that they considered the mouse problem as an operational issue rather than a clinical issue and so did not use the incident reporting system.

- **Reporting using meetings**

There were few examples of reports of mouse activity discussed at staff meetings. One example is:

27 October 2008 *The minutes of an Endorsed Nurse meeting refers to MAN367 and reported that a mouse appeared near large TV in lounge. The minutes reported that mice numbers have dropped over the past few weeks. Pest control visits and cleaning have increased.*

- **Reports by the Director of Nursing to management of the health district**

The Director of Nursing provided two reports by email to the Executive Director Rural Services about mouse; both these reports were in March 2009. The Director of Nursing reported:

16 March 2009 *Mouse plague at Karingal. Mice everywhere. In resident's beds and chairs. Have increased pest baiting program to kill mice inside and have laid fresh traps and baits outside. Have arranged to slash 50 acres surrounding Karingal as the entire place smells of mice.*

23 March 2009 *Mice plague at Karingal is still awful. Extra cleaning hours allocated to clean mouse poo. Amalgamated pest control increasing traps and baits. Have slashed the paddocks to reduce cover for the mice and have organised to remove piles of timber etc which is giving the mice a home. Server in Karingal has had the fried mice removed and is now working. Had five days of extra staff in Karingal due to no nurse call, paging or Dect system operational.*

The Executive Director Rural Services reported that he visited the Dalby Health Service on 9 March 2009 and does not recall having the issue

highlighted as a significant risk. The two reports from the Director of Nursing were not opened by him until we drew his attention to them on Thursday 14 May 2009 and requested, on Friday 15 May 2009, information about any action he had taken concerning the reports.

While the Director of Nursing's reports indicated the situation was serious she did not request additional support nor follow up the issue with the Executive Director Rural Services nor commence the risk reporting process.

- **Reporting by risk assessment process**

The Nurse Unit Manager completed a risk report about the mouse plague on 22 April 2009. The risk report was completed using the Toowoomba and Darling Downs Health Service District Risk Reporting template – the District Health is still in the process of amalgamating and not all templates have been updated. The risk report was emailed to the Director of Nursing, the Executive Director Rural Services and Occupational Health and safety Manager. The Manager Support Services Rural Division replied by email 23 April 2009 and informed the Nurse Unit Manager that the risk report would be considered at the next Quality and Safety Meeting on Thursday 30 April 2009.

The risk report contained the following information:

- *The mouse plague of Dalby area affecting Karingal. Noted in residents' rooms and all other areas. Invading furniture. More infirmed residents unable to protect themselves.*
- *The risk category was "Clinical Adverse Events"*
- *A range of consequences were rated*
 - *Adverse Clinical Incident* N/A
 - *Outrage/damage to reputation* Mod
 - *Litigation* Neg
 - *Disruption to established routines* Neg
 - *Staff morale* Neg
 - *Workplace health and safety* Neg
 - *Security* N/A
 - *Environmental impact* Mod
 - *Workforce issues* Neg
 - *Operational management* Mod
 - *Corporate management* Mod
 - *Financial* Neg
- *The likelihood was assessed as "Possible"*
- *The context was described as, "mice influx owing to local regional mouse plague. Dalby is a grain growing area and Karingal is located on the edge of an open paddock. Mice have invaded the facility and damage has resulted to both resident's possessions and facility's equipment. Mice observed scuffling across residents whilst in bed and sitting out in chairs. Also observed in dining room and common areas. Mice faeces in resident's cupboard drawers and noted in all areas. Dead mice found in resident's rooms, chairs and equipment. Odour of mice strong throughout the facility. Uncomfortable for staff to work in an environment where mice are prevalent".*
- *Current control in place to control the risk were,*

- *Pest control visiting twice per week*
- *Staff documenting sightings of mice*
- *Documentation given to pest control*
- *Extra cleaning has been attended*
- *Residents own food items placed into plastic containers*
- *Notices placed for families informing them about placing food in containers.*

The risk report was added to the Dalby Health Service Risk Register, as a medium risk with a completion timeframe of July 2009.

- **Reporting using the home's quality system**

There is little documentation to indicate that the home's quality system was used to capture information about the mouse problem and implement solutions. A multi purpose form was raised by a staff member on 8 April 2009 to get clarification on who is to remove dead mice and if all clothing is sent to the laundry if a dead mouse is found in the clothing. There was no mention of mice in the Quality and Safety Report in February 2009. The minutes of quality meetings in January 2009 and March 2009 do not record information about the mouse problem or strategies to manage the problem.

4.3. The effectiveness of reporting mechanisms

Mice have been an ongoing problem at Karingal, with the first concerns raised by a resident's representative in August 2006. Through the later half of 2008 and the first quarter of 2009 reported sightings and the degree of intrusion increased to plague like levels. During this period there is evidence that mice were having a significant impact on residents' day to day lives and coming into close contact with residents.

Management and staff from the District saw the issue as an operations/maintenance issue rather than a clinical issue. Therefore, the primary reporting mechanisms used by staff to report mouse activity were initially maintenance request forms and then pest sighting sheets. Almost all reports about mouse intrusion and in some cases the direct impact of mice on residents' daily lives were reported on pest sighting sheets. These sheets were provided by the pest contractor and were used in preference to mechanisms designed by Queensland Health such as incident reports. Although the goal of the organisation's clinical incident management system is to prevent patient harm and identify events or circumstances which have actually or could potentially lead to unintended and/or unnecessary mental or physical harm, management and staff did not view the intrusion of mice into the home as incidents.

Whilst the mouse problem continued over an extended period, reporting mechanisms used to communicate issues from the home to district management were either not used, infrequently used, not followed up, not responded to or did not convey the magnitude of the issue.

The Executive Director Rural Services reported that he was aware of the mouse problem but was not aware of the 'severity' or 'magnitude' of the problem. The two reports sent by the Director of Nursing to the Executive Director Rural

Services on 16 March 2009 and 23 March 2009 highlighting the problem were not responded to by the Executive Director Rural Services or followed up by the Director of Nursing.

A risk report was completed on 22 April 2009 (the staff member was bitten on that day) by the Nurse Unit Manager however it did not identify the risk of an adverse clinical incident and identified the likelihood of adverse consequences as 'possible'. The risk report was forwarded to senior management; Director of Nursing (read 24 April 2009), the Executive Director Rural Services (read 23 April 2009), the Manager Support Services Rural Division (read 23 April 2009) and the Occupational Health and Safety Manager (read 22 April 2009). The risk report was referred to the Rural Executive Safety and Quality meeting for consideration on 30 April 2009. The risk assessment was escalated however it is unclear when this occurred; the Action Plan – Mouse Plague reports 22 April 2009 while an email from the Manager of Support Services dated 23 April 2009, indicates that it was forwarded on 27 April 2009 for consideration at the quality and safety meeting. These actions were overtaken by the incident on 26 April 2009.

The organisation's incident management system was not used until 22 April 2009 when a staff member was actually bitten.

In summary, reporting mechanisms did not effectively capture and communicate:

- the risks to residents and staff from close contact with mice
- adverse outcomes for residents' personal well being and possessions due to the mouse infestation
- risk to the home's equipment
- the magnitude of the problem
- the time already taken to resolve the problem
- the ineffectiveness of current strategies that had been used to control the problem
- physical conditions in the building that contributed to the problem
- environmental conditions that contributed to the problem.

5. Factors that contributed to the increase in the number of mice at Karingal

A review of maintenance request forms and pest sighting reports from July 2008 to the incidents in April 2009 indicates that there were mice in the home throughout that period and that they were an increasing concern to staff, residents and relatives. A maintenance request of 12 July 2008 reports "*mice everywhere in unit two*". By November 2008, mice were reported in numerous rooms. In January 2009, mice were reported "*running through residents' rooms, lounge and kitchen*". In February 2009, "*mice in most residents rooms again*". In March 2009, "*increase in mice in Karingal, mice are damaging and living in furniture eg recliner chairs*". In April 2009, there were many reports of mice in residents' beds, nesting in the furniture and in the kitchen and kitchenettes.

A number of factors may have contributed to the increase in mouse numbers at the home.

5.1. Factor One – the surrounding agricultural environment

Dalby is a large country town located on the Warrego Highway in the northern Darling Downs region of Queensland. Dalby is surrounded by wheat, cotton, sunflowers, sorghum, millet and barley crops. Karingal Nursing Home is located on the edge of Dalby in a rural environment. The home borders the local aerodrome and the Dalby Campus of the Australian Agricultural College Corporation.



Satellite view of Dalby and Karingal courtesy of Google Maps

Management of Karingal and the media reported that the area has a problem with mice about the same time each year due to its location in an agricultural environment. It was reported by the managers of the home, staff, relatives and the local media that each year the agricultural college baited the adjoining land with MOUSEOFF™ and they believed this stopped the mice coming into the home; mice sought shelter as temperatures cooled coming into winter. This year they believed the problem was worse because the college was not allowed to bait its land for mice. The photo shows the view from Dalby Health Service toward the college land.



The college campus manager outlined the college's role in baiting for mice and their experience with mice at the college this year. He reported that the college's land near Karingal is used to run livestock (cattle and sheep) in low numbers. From time to time the college placed baits on its perimeter (baits purchased by the hospital) to reduce rodent numbers; the baits used were MOUSEOFF™. In 2007, there was concern in the town about the college's use of baits so the college made the decision that it would no longer place baits on its perimeter. During 2008 and 2009 no baits were laid. He reported that the college currently does have a problem with mice in buildings; when the weather cools the mice head off the land for protection. This usually occurs in about the second or third week of April; there have been no problems with mice during summer. He reported that currently they may see three to five mice in the buildings during the night.

The evidence from the campus manager of the college is inconsistent with the mice infestation scenario as reported by management at Karingal and in the media. Inconsistencies include:

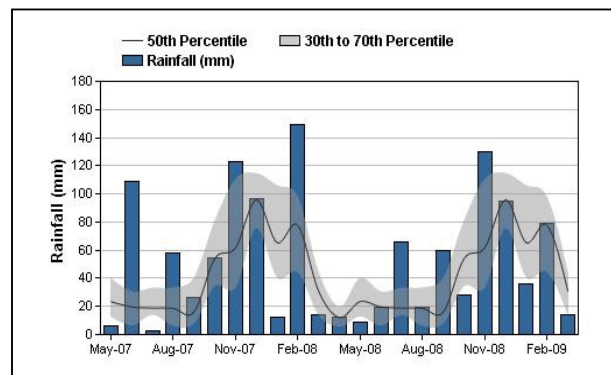
1. While the college did not bait for mice on their land this year, they have not baited since 2007.
2. The college does have a problem with mice and this usually occurs when the weather cools during April. However, the mouse problem at Karingal was spread over a much longer period i.e. spring, summer and autumn.
3. Mouse sightings at the college amount to around three to five mice at night. Mouse sightings at Karingal during April 2009 were greater than one hundred. On the night of 27 April 2009 more than 130 mice were killed inside Karingal.
4. At Karingal mice were also seen during the day.

While it is evident that the surrounding agricultural environment provided a favourable environment for mice, and mice were entering the home from outside the buildings, the lack of baiting by the college is not necessarily a major contributing factor this year. Karingal's mice problem extended from the end of winter 2008 through the 2008/2009 summer and into the 2009 autumn with the numbers of mice at Karingal seemingly being far greater than in the immediate area and greater than in the hospital section of Dalby Health Service up until mid-May 2009.

5.2. Factor Two – favourable conditions and habitat

In the publication *House mouse (Mus domesticus) in Queensland* by J A Caughley (1998) the author states that “Mice living in buildings may breed throughout the year but in the field breeding is mostly in spring and early summer. The start of breeding is usually triggered by the increase in seed and insect availability in spring. The proportion of females breeding at any time is a function of the quality of the food as well as the quantity, both of which are determined by rainfall...if conditions are favourable, mice will continue to breed through into autumn”. And, “If the breeding season extends well into summer and the number of females participating remains high, then the doubling time for a population can be as short as three to four weeks and a plague may develop”.

According to information from the Queensland Primary Industries and Fisheries (part of the Queensland Department of Employment, Economic Development and Innovation) the Dalby area is currently drought declared. The Department reports that “Pastures benefited from early summer rainfall, however there has been insufficient rainfall in the new year in many areas to generate good pasture growth”.



Monthly rainfall for Dalby Agricultural College - Courtesy of the Australian Bureau of Meteorology. Bars represent actual rainfall, grey areas represent average rainfall.

Rainfall data for the area indicates some months of above average rainfall since July 2008 i.e. July, September and November.

With above average rainfall in the latter months of 2008 conditions in the area may have been favourable to trigger an increase in breeding. A fact sheet provided by the Queensland Department of Natural Resources and Mines states that mouse plagues are triggered by above average autumn rainfall. However, favourable climatic conditions do not explain why there were more mice sighted in Karingal than in other buildings in the area.

A mouse plague has not been reported in Dalby in autumn 2009, either by Dalby Regional Council or by Department of Primary Industries. However on 23 March 2009, ABC news reported that a spokesperson, Julianne Farrell, from the Department of Primary Industries and Fisheries reported that mice numbers were increasing in Southern Queensland and that when the weather cooled “we can expect to see a few more mice moving into buildings”. This followed earlier reports in August 2008 on ABC News of Biosecurity Queensland reporting mice in plague proportions on parts of the Darling Downs.

Dr Luke Leung, Senior Lecturer School of Animal Studies at The University of Queensland, who has published numerous papers on the management of wildlife populations including the house mouse, told us that one of the issues on the Darling Downs is occasional hot spots or large influxes of mice.

Staff, relatives, the general practitioner and the pest contractor all reported a high number of mice in the surrounding area.

Caughley (1998) reports that mice mostly *“spend the day in nests they have created in natural cavities or in shallow burrows e.g. cracked soils”*.

Pest sighting reports and reports from staff indicate that in the months leading up to the incidents in April 2009 mice had found favourable habitat adjacent to the home and within the home. During construction of the home, fill was used to create a level pad at ground level. The home is surrounded by a rock retaining wall. Maintenance staff reported that mice activity had been observed in the rock retaining walls. The pest contractor and Operational Services Manager reported that they were reluctant to bait in the walls as this would attract snakes. The photo shows unit two of the home and a section of the rock retaining wall.



Caughley (1998) further reports that refuge habitats for mice include undisturbed areas such as fence lines, roadside verges and areas where weeds or rubbish are allowed to accumulate. Vacant land adjacent to Karingal would have provided favourable habitat for mice to breed. Grass in paddocks was long and piles of debris remained from the home's construction. The Director of Nursing reported that 50 acres of surrounding land was slashed in March 2009 to reduce ground cover for mice and they have "organised to remove piles of timber etc which is giving the mice a home." Paddocks were slashed and some building debris was removed however building debris (as shown in the above photograph) remained as at 15 May 2009.



Reports on maintenance request forms and pest sighting sheets as early as August 2008 indicate that mice were nesting in the home particularly during the months of March and April 2009. For example:

August 2008	<i>Lounge may need to be removed as it is smelling.</i>
March 2009	<i>Mice are damaging and living in furniture eg recliner chairs</i>
April 2009	<i>Staff reported that (resident) chair has been infested by mice</i>
April 2009	<i>Personal chair infested</i>

5.3. Factor Three – building construction

The Karingal nursing home was built under Queensland Health's Aged Care Redevelopment Program using the *Design Guidelines for Queensland Residential Aged Care Facilities* which were developed by Queensland Health to provide a benchmark for the design of new homes. The Modular Design "is a tailored architectural design for residential aged care facilities for Queensland Health".

Dr Leung told us that a very good exclusion/barrier system is required and this system needs to be specific to mice with gaps less than 6-8mm. Reports about mouse activity at the home identify issues with the home's design and construction.

The earliest documented report in August 2006 indicates that the front automatic sliding door was a problem because it stayed open allowing mice into the home. The minutes of the September 2006 Residents, Relatives and Friends meeting reported that the door was changed to fix this problem and now



it only opens automatically from the outside. The minutes also report that “*some doors were mouse proofed*” indicating that the original door sealing allowed mice into the home. However, the replacement door seals used before 2009 were of the type that mice could chew and so were not a long term deterrent.

Despite the front door only opening from the outside, mice were able to enter when it opened. A registered nurse told us that on the night of 25 April 2009 “*the mice were lining up outside the door to come in*” and that one of the endorsed enrolled nurses had thrown a sheet on them to try and keep them out.

A further issue reported by managers of the home, relatives and the Environment and Health Manager, Dalby Regional Council, is that the black soil in Dalby cracks and shifts causing the foundations of buildings to move and doors to become skewed. If buildings are raised on stumps or footings then they can be packed to re-align the building. Karingal Nursing Home is on a slab so that solution does not apply. This means that some external doors do not shut tightly.

The photo shows the front door of Karingal viewed from outside. The Design Guidelines for Queensland Residential Aged Care Facilities do not contain specific requirements for external doorways to exclude mice from the home. Given the number of mice in the home during March and April 2009 and the fact that new doors seals were being fitted as late as May 2009, it may be concluded that if mouse exclusion methods were used around doorways when the home was built, they were not suitable.

Maintenance staff reported that there was further replacement of door seals in unit one during March 2009 and in unit two during April 2009. The home’s action plan prepared by the Manager of Operation Services following the incidents in April 2009 indicates that as at 1 May 2009 “*Work on the fitting of new door seals is progressing. 50% of doors are completed as of 12pm today. Work will progress until finished*”. The photo shows the new door strip on the rear of the front door.



Management, staff, residents and representatives reported that one of the issues with the new nursing home was that the home is built at ground level thus allowing easier access for mice. However, Dr Leung reports that because mice are very good climbers it does not help.

Information from independent researchers and from Queensland Government departments focuses on control measures such as exclusion by making buildings rodent proof, habitat modification by reducing favourable habitat and baiting to reduce mouse numbers. While it is evident that the home’s doors did not exclude mice, the fact that the home was at ground level is only significant because recommended control methods were ineffective.

5.4. Factor Four – rodent baiting strategies

Pest control at Karingal Nursing Home and the Dalby Health Service is contracted to an external service provider, Amalgamated Pest Control. A Rodent Control Log is maintained to record when services are carried out and a description of the service is recorded. The company provides a Pest Management Advice document to the home with information about any chemicals used on site. From July 2008 the frequency of visits to the home by the pest contractor did increase.

However, the number of days between each visit fluctuated during 2008 and between September and December 2008 (the spring/summer breeding season) there was a 16-week gap between visits. The chart shows the number of days between each visit.



In 2009, visits were four weeks apart in January and February, up to two weeks apart in March, one week apart in April and daily from 26 April 2009.

The Rodent Control Log indicates that the pest contractor:

- installed rodent bait stations to the exterior of buildings in July 2008
- quoted for baiting internally in September 2008
- installed internal baits in December 2008
- checked bait stations and topped up baits as necessary at each visit.

The pest contractor was using Bromakil Super Rat Blocks in bait stations. According to the material safety data sheet this product is not classified as hazardous or classified as a dangerous good. The product is manufactured by Rentokil Initial Pty Ltd. Information provided by the manufacturer indicates that the product is suitable for the control of mice in commercial, agricultural and domestic situations.

The manufacturer provides the following advice on the use of this product:

“Baiting Strategy – eliminate as far as practicable, all alternative food sources. Bait infested area. Place baits under cover. Inspect baits daily. Replace eaten baits. If eaten quickly increase number of baits. Continue observation and replenishment until no more baits are taken. Baiting for at least two weeks is necessary to reduce rat/mouse numbers”.

The baiting strategy used by the pest contractor did not include daily inspection and replacement as advised by the manufacturer of Bromakil until after the incident on 26 April 2009.

Dr Leung told us that mice vandalise baits and an effective baiting strategy is important. Homes need to have location specific baiting strategies; a standard baiting program may be over run by an influx of mice. Information about mouse activity in the surrounding area is an important component of the strategy.

Caughley (1998) reports that the rate of removal of baits is a good indicator of whether mouse numbers are increasing or decreasing. The actions of the home in installing rodent stations to the exterior of the buildings in July 2008 and to the interior in December 2008 indicates that management believed that mouse numbers were increasing but because baits were not inspected daily and eaten baits replaced daily, accurate information was not available. The baiting program was ad hoc, not conducted according to the manufacture's advice and was therefore ineffective. It is evident that after 26 April 2009 when a daily baiting strategy was put in place, the number of mice in the home dropped dramatically and the home was almost mouse free within two weeks.

6. Actions taken by the home after the incident on 26 April 2009

6.1. Director Environmental Health Services inspected the home

The Director of Nursing informed the Director Environmental Health Services of the incident at 0800 hrs on Monday 27 April 2009. He visited the home at approximately 10.00am on 27 April 2009 and carried out an environmental health inspection of Karingal Nursing Home and the Dalby Hospital Campus.

His focus was on "*identifying existing and potential environmental and public health issues related to the current mice plague within the facility.*"

He observed mice in the home and detected rodent faeces in all residents' rooms, common areas and store rooms. He concluded that *'these areas were not being effectively cleaned on a daily basis and some areas appeared not to have been cleaned for a sometime. The kitchenettes, however, were found to be very clean with no evidence of any rodent infestation.'*

He gave verbal advice to the Director of Nursing including increasing the cleaning schedule, increasing the number of rodent bait stations and glue pads and to ensure that the pest contractor inspected them twice daily. Other advice concerned keeping a daily report on dead mice found, emptying of all refuse containers at least twice daily, laundering of all contaminated linen and clothes and the storing of such in plastic containers or rodent proof bags. All foodstuffs, crockery and cutlery were to be stored in rigid walled plastic containers and surrounding ground areas to be modified to make them less attractive to rodents.

Finally a comprehensive rodent control plan was to be developed.

He provided a written report on Wednesday 30 April 2009 and visited the home again on Thursday 1 May 2009. He reported to the District CEO that *"overall, conditions were greatly improved and the number of mice being captured/killed*

inside the facility has decreased dramatically (down from 160 on Sunday night to 9 overnight”.

He also reported that the total cleaning all residents rooms would be completed on that day and that all common areas and storerooms would be cleaned over the weekend. He stressed the importance of cleaning all areas daily to a standard that would ensure rodent faeces and dead or dying rodents were removed.

He stated that in his opinion the current rodent control measures were effective in managing the mouse problem and that *“the risk to patients, staff and visitors at Karingal from contact with rodents and/or faeces and urine has been greatly reduced (from a public health perspective) and is now at a level that I am far more comfortable with”.*

He also stated that it was likely that the agricultural land surrounding Dalby Health Service was the likely ongoing source of the mice.

6.2. Action plans developed

An *Action Plan – Mouse Plague* had been developed as of 22 April 2009, after the risk report had been completed, but this was used to record incidents and the actions taken not to plan ahead. This record was still being used as at 15 May 2009.

After the report by the Director Environmental Health Services the *Karingal Rodent Infestation Action Plan* was developed. This includes preventative actions to be followed at all times such as storing food in residents rooms in sealed containers, ensuring residents are free of food or crumbs after eating and cleaning as per schedule

Three stages of observation and the required actions are listed:

- Stage 1 – sighting evidence of one mouse
- Stage 2 – more than one mouse/mice in multiple areas in Karingal
- Stage 3 – Bites on more than one patient or in more than one area

The plan requires immediate action if there is any rodent activity and includes increased cleaning, increased baiting and vigilance in terms of resident care.

Formalised communication concerning local mouse activity also was to be set up with the local council and the Department of Primary Industries.

6.3. Baiting increased

All bait stations were inspected on 26 April 2009 and showed “heavy rodent activity”. A meeting was held with Amalgamated Pest control, the pest contractor, and all bait stations were filled. The pest contractor was contracted to attend every day and inspect all baits and replenish.

Glue boards were placed in every resident’s room, under the bed near the call bell cords as mice had been seen crawling up the cords. The District Chief

Executive Officer (as well as the Director of Nursing, Nurse Unit Manager, pest contractor and the Manager Operational Services) said that they had been hesitant to use glue boards as residents or staff could tread on them. However, given the seriousness of the infestation they decided to use them. (At least one resident did subsequently tread on a glue board and pulled the skin off their foot.)

Two wire traps were placed in Resident B's room (the room where the resident had been bitten) but no mice were caught in this trap.

On the morning of 27 April 2009, 65 mice were caught on glue boards; none were caught in the wire traps. The pest controller estimated he killed a further 40 and two staff said they killed 12 and 13 each. That is a minimum of 130 mice killed on the night of 26 April 2009. Media reports were up to 160 killed and the Director Environmental Health Services also reported 160 were killed.

The Manager Operational Services has kept a tally of mice caught on glue boards or in bait stations but this does not show all dead mice as staff sometimes disposed of bait stations if mice were dead inside them. However this does not take into account other mice that may have been killed by staff using other methods.

From 26 April 2009 to 12 May 2009 a total of 159 mice had been counted by the Manager Operational Services as being dead on glue boards; these figures include a small number of these deaths being from bait stations. No dead mice were found between 7 May 2009 and 12 May 2009. However on 27 May 2009, the Nurse Unit Manager reported that further mice had been caught in the past fortnight. We then asked the Manager Operational Services to provide further data about mice numbers in both Karingal Nursing Home and the hospital. He did so on the evening of 29 May 2009.

As of 29 May 2009, Karingal Nursing Home was using 80 glue boards, one for each resident's bed, 40 internal bait stations and 16 external bait stations. They also had eight electromagnetic devices fitted.

The Manager Operational Services emailed "*to provide additional external controls and to aid in providing a long term method of monitoring and control, we will be installing four Ecomille capturing & monitoring devices to the courtyards between the wards. These will be installed on the week commencing 1/6/089. If these units prove to be an effective method then additional units will be purchased.*" Ecomille is a capturing and monitoring device whereby the rodent is enticed into a trap containing alcohol and cannot get out. The trap counts how many mice are caught and the pest contractor empties it when full. It can contain up to 80 mice. It claims to be hygienic, environmentally safe and is HACCP certified.

The data received on 29 May 2009 shows that a further 14 mice were caught in Karingal Nursing Home on glue boards from 21 May 2009 to 27 May 2009.

The Manager Operational Services also provided data about the numbers of mice being caught in the hospital area of the Dalby Health Service since 6 May 2009

(the first date when data was kept concerning mice numbers). This data shows that between 6 May 2009 and 29 May 2009, 401 mice were caught in the hospital.

Area in hospital	Number of dead mice
Maternity	6
Old maternity	17
Acute	27
Theatre	16
New building	15
Allied and community	2
Dental	5
Laundry	306
Staff room	5
Compactus	2
	401

It appears the laundry became the “hot spot” with a surge in numbers on 19 May 2009 (20) until 28 May 2009 (10). On 22 May 2009 the numbers peaked at 56.

As a result of this increase in numbers in the hospital, additional glue boards are being used in the hospital, bait traps are being checked more regularly and two Ecomille units will be installed in the roof area above the theatre and the acute area. If they are effective additional units may be installed.

6.4. Adjoining land baited

On 30 April 2009 the Director of Nursing approached the Dalby Regional Council to see if the adjoining agricultural land could be baited. The Council’s Environment and Health Manager discussed this with the Director Environmental Health and Pedro Hodgson of Biosecurity Queensland. He was advised by Biosecurity Queensland that the land adjoining the Dalby Health Service probably was where the mice emerged and it could be baited using MOUSEOFF™ at a gram per square metre. The Environment and Health Manager obtained approval from the Campus Manager of Dalby Campus of the Australian Agricultural College Corporation, purchased the MOUSEOFF™ locally and had it spread 50 metres from the paddock fence on 1 May 2009.

It is interesting to note that while many believed the lack of baiting was the reason mouse numbers were so large, the mouse numbers had decreased significantly in the nursing home by the time the baiting occurred and since that time the numbers in the hospital have increased significantly. Our conclusion is that once the mice gained access to the home (and the hospital) they were

breeding inside the building. This is supported by the fact that the mice being caught during the week of 10 May 2009 were predominantly juveniles.

6.5. Cleaning increased

On 26 April 2009 at 0800 hrs cleaning teams commenced a full clean and sanitising of the 80 bedrooms. All areas of the home were thoroughly cleaned and a new cleaning schedule initiated.

Cleaning was a problem in the home before the incident. The Nurse Unit Manager and Clinical Nurse Consultant reported that they became aware after the incident on 26 April 2009 that if cleaning staff were not available for their scheduled shift they were not always replaced. Cleaning records were not always complete or were missing and there were instances whereby the record was amended. Dates were “whited out” and other dates written in. For example, there were two records for Unit 2 with the same dates written in over the “whited out” dates. These were the weeks 6 April, 13 April, 20 April and 27 April 2009. The signatures on the two records were different. The cleaning records that were available confirmed that not all cleaning activities occurred.

On 18 May 2009 two additional cleaning staff and one supervisor commenced work. This provides a team of five cleaners and one supervisor for the internal cleaning of Karingal Nursing Home. External cleaning is provided by the hospital or gardening staff. A contractor has been engaged to conduct a major prune and garden clean up every six months with hospital groundsmen maintaining these areas in between these clean ups.

The Manager Operational Services also introduced new cleaning schedules and cleaning records as well as a monthly audit process. This is fully operational as of 18 May 2009.

6.6. Additional night nursing staff

Additional night nursing staff were rostered as of 26 April 2009. This brought the number from six to eight and enabled half hourly checks on residents throughout the night shift. On 27 May 2009 the Nurse Unit manager reported that this was continuing as there were still mice, although in low numbers, in the nursing home.

6.7. Doors adjusted and new door seals fitted

As the doors in the home were the point of entry for the mice all were inspected and specific alterations devised. Some doors were lowered to ensure the gap would not allow entry, others had aluminium strips screwed into the floor to fill the gap – or in some instances both were done. These alterations were done so as not to create a trip hazard for residents.

This process had commenced on 10 March 2009 in Unit 1 but had been halted on 13 March 2009 due to work being required on nurse’s accommodation for the hospital. It was recommenced after 26 April 2009. The external double doors in the link were to have self-closers and a keypad lock fitted for security. This had not occurred as of 5.00pm 15 May 2009.

A new system was introduced in May 2009 requiring monthly checks on all external doors to ensure the doors are in good repair, seals are intact, doors swing and slide easily and the doors are a tight fit. All doors in both units and common areas were checked on 18 May 2009 as meeting all requirements.

6.8. Environment changes

The watering system was re-programmed on 27 April 2009 to activate from 4.00pm each day to wet all gardens. With the combination of wet gardens and cold nights mice numbers in the grounds of the home should have diminished.

Rubbish piles and old building materials were to be removed from the adjacent paddock. This was decided on 27 April 2009 but as of 5.00pm 15 May 2009 this had not been finalised.

7. Actions taken by the District Health after the incident on 26 April 2009

7.1. Daily reporting to CEO

Daily reports have been given to the CEO since the incident and continued during the investigation. This includes the numbers of mice caught in both Karingal Nursing Home and the Dalby Health Service (the hospital), ongoing measures to deter rodents including baiting, installation of electro-magnetic rodent deterrents and the installation of aluminium door strips.

7.2. Communication with residents and the community

All residents and their representative were contacted by phone and offered a move to another home if they wished. None accepted the offer.

The CEO of the District Health Service maintained daily contact with the daughter of Resident B for the two weeks following the incident.

7.3. Media releases

The Public Affairs Office of the District Health Service released a series of press releases April 27, April 29, April 30, May, May 6 and May 11 2009.

These media releases were not always accurate. In particular the media release on 27 April 2009 states that the pest controller visits twice a day and that baits are emptied hourly; this has not been the case. The pest contractor has been attending the home only once a day since 26 April 2009. While the Manager Operational Services, or his assistant may empty and replenish some baits it was not being done hourly even at the height of the problem.

On 1 May 2009, the press release again stated that the pest contractor was attending twice a day but the log provided to us up until 6 May 2009 shows visits once a day occurring from 26 April 2009. This visit pattern was confirmed with the Manager Operational Services and was the case when we last visited the home on 15 May 2009. The pest sighting sheets faxed to us on 27 May 2009 for 14 May to 26 May 2009 have entries by the pest contractor and do not indicate more than one visit per day.

7.4. Development of information document dealing with mouse plagues

The District Health Service office prepared an *Interim information document on dealing with mouse plagues affecting Queensland Health facilities in rural grain producing area*. This has been circulated within the District Health Service.

7.5. Review of services within Darling Downs and West Moreton Health Service District

All residential aged care services within the district were contacted and asked to report if they had any problems with mice. None reported any problems.

Those health services or hospitals where it was likely to be a problem were required to undertake an audit by a pest control contractor and report if any problems were being experienced with rodents. Twelve services undertook an audit between 1 May 2009 and 14 May 2009. Three hospitals reported intermittent issues with rodents but no major infestations. All reported that their six monthly or monthly pest management program does not include rodent management.

7.6. Review of rodent contracts

The standard contract with pest controllers is under review to ensure treatment and eradication of rodents is in all contracts.

8. Findings of the investigation

8.1. Residents and staff were bitten

Two residents and one staff member were bitten because the number of mice inside the home had grown significantly, up to a point where residents and staff were frequently in close contact with mice.

8.2. Appropriate action taken after residents were bitten

The management and staff of the Karingal Nursing Home responded appropriately after residents were bitten by mice. Immediate aid was provided, monitoring was increased, assessments by registered staff and a medical officer were conducted and treatments were prescribed. Advice from public health experts was sought, an action plan was developed, cleaning was increased, doors strips were added or replaced and a new mouse baiting strategy was implemented. The organisation commenced the development of an information document about mouse plagues in its facilities.

8.3. Mouse infestation was long term

The mouse problem at the home was a long term problem. It may have increased in intensity over the past six months from November 2008 to April 2009 however concerns were first raised about mice soon after the new home opened in 2006. Due to the presence of mice in the home, residents suffered discomfort and a loss of personal possessions. Staff had a difficult working environment and often felt frustrated. The organisation's equipment was damaged. Residents, staff and others were exposed to a major infection risk.

8.4. Environmental controls were not effective

The surrounding environment, including the land adjacent to the home and the home itself provided a suitable habitat for mice. Environmental control measures were not effective. Building debris remained on adjacent land, grass was not regularly slashed and entry exclusion measures such as door strips were not suitable. Mice were able to gain entry to the home and nest in furniture.

8.5. Door seals were not effective

The home's doors enabled access to the home by the mice. The management knew this was a problem and commenced lowering sliding doors and installing aluminium weather shields but did not do so quickly enough and stopped the installation when the hospital required work to be done elsewhere. Work was resumed and completed by 15 May 2009.

8.6. Ineffective baiting strategy

The pest baiting strategy used by the pest contractor and supervised by the home was ineffective because it was not in accordance with the bait manufacturer's directions for use i.e. daily inspection of baits and it was not specific to the home's situation. The pest contractor was not supervised by the organisation when on site to monitor contract performance.

8.7. Poor management response

Management of the organisation did not respond to initial sightings of mice in a timely or coordinated manner; action was taken but the problem was never fully resolved. The mouse problem was not seen as a serious risk until residents were bitten.

8.8. Poor identification of hazards, reporting and analysis

The organisation's mechanisms designed to report incidents, to identify risks to residents and staff, to identify process deficiencies and to identify hazards were not effective. These mechanisms were fragmented and failed to communicate the magnitude of the mouse problem until after the events of 26 April 2009. Incident reports were not used until an incident actually occurred, ignoring potential harm. Mechanisms, such as audits designed to identify process deficiencies were ineffective. Standards to guide management and staff in the use of the organisation's incident management policy were not understood. The organisation's structure did not facilitate timely reporting and decision making.

8.9. No formal plans for management of mice

The home, the District Health Service (Queensland Health) and the local council did not have formal plans for the identification and management of the risks in health care facilities associated with pests such as mice.

9. Recommendations

Based on the findings of this investigation we make the following recommendations:

9.1. Pest exclusion measures

To address the issue of mice entering the home, the home must review all possible entry points for mice and other pests and install suitable devices to exclude them. These devices must comply with building design guidelines, meet food safety codes, be consistent with pest behaviour, be permanent, not pose an unreasonable risk to residents and staff and be monitored through the home's preventive maintenance program.

9.2. Baiting strategies

To address the issue of an ineffective baiting strategy, the home must implement a long term mouse baiting strategy that is specific to the location, is based on up to date information about mouse activity, complies with relevant regulations, complies with the directions for use from bait manufacturers and complies with recommendations of the pest management industry. A process to monitor baiting strategies should be implemented.

9.3. Habitat modification

To address the issue of favourable habitat, the home must remove all building debris from the site and maintain land around the home in a suitable manner to ensure that mice are not harboured on that land and that the land does not become a breeding ground for mice. A process to monitor mouse habitat should be implemented.

9.4. Education

To address the issue that the mouse problem was not seen as a serious risk, the home must provide appropriate information to its staff about the risks to residents and to themselves posed by mice.

9.5. Management plan for designated pests

To address the lack of clear management guidelines, the District Health Service (Queensland Health) should develop a management plan for designated pests that incorporates relevant regulations and standards, pest behaviour research, risk assessment, predictive modelling for mouse plagues and industry guidelines for pest management.

9.6. Reporting and monitoring

To address deficiencies in incident reporting, risk management and monitoring processes:

- The District Health Service (Queensland Health) should review the reporting mechanisms available at Karingal and implement measures to ensure that management and staff have a clear understanding of what mechanisms to use when reporting incidents involving residents and when reporting risks to residents and staff.

- The District Health Service (Queensland Health) should review the organisational structure in which Karingal operates and take steps to address the tendency of managers to operate in isolation and implement a structure that facilitates the communication of critical information between the home, the Dalby Health Service, the health district and Queensland Health itself and ensure that when risks to residents and staff are identified timely control measures are put in place.
- The District Health Service (Queensland Health) should review its monitoring processes including audit templates and take steps to ensure that those processes monitor incident reporting, risk identification and risk management.

9.7. Contract management

The District Health Service (Queensland Health) should review processes used to monitor the work carried out by contractors who do not come under the direct control of Karingal's management.

9.8. National guidelines

The Department of Health and Ageing should consider developing and providing the aged care industry with a standard risk assessment tool and a pest management plan plus appropriate guidelines for their use and information about the risks posed by pests such as mice.

9.9. Review of Accreditation Standards

The Department of Health and Ageing should review expected outcomes 4.4 Living environment and 4.5 Occupational health and safety to strengthen their focus on the welfare of residents and staff. This is consistent with the Minister's intention to strengthen the Accreditation Standards in relation to homes providing for residents' care and lifestyle needs. In this context consideration should be given to removing the phrase "is actively working to provide" so that under 4.4 Living environment, the management of each home is to provide a safe and comfortable environment consistent with residents' care needs and under 4.5 Occupational health and safety, management is to provide a safe working environment that meets regulatory requirements.

9.10. Risk assessments in aged care homes

Aged care homes should conduct a risk assessment of their home for pests such as mice and if required implement a pest management plan.

Aged care homes should provide appropriate information to their staff about the risks to residents and to themselves posed by pests such as mice.

Appendix A Terms of reference

From: Walter.Secord@health.gov.au
[mailto:Walter.Secord@health.gov.au]
Sent: Saturday, May 02, 2009 9:28 AM
To: Mark Brandon
Cc: Chris Falvey
Subject: Original - signed by Minister -- faxed this morning
(9.25am); in meantime here is the text in an email.
[SEC=UNCLASSIFIED]

THE HON JUSTINE ELLIOT MP
Minister for Ageing

Mr Mark Brandon
Chief Executive Officer
Aged Care Standards and Accreditation Agency Ltd
By fax (02) 9633 3499

Dear Mr Brandon

Aged Care Standards and Accreditation Agency investigation into mouse plague and related matters at Karingal Nursing Home

You will be aware that there have been reports that residents at the Karingal Nursing Home, Dalby, Queensland, have been bitten by mice.

Both Department of Health and Ageing staff and Accreditation Agency assessors have recently visited the home. The assessment team will have been limited to an assessment of the home against the Accreditation Standards.

I am now requesting the Accreditation Agency to undertake a separate and broader investigation.

The investigation is to consider, but it should be not limited to:

The home's management of the mouse plague, including actions taken to defend the home from attack, and the timeliness of actions taken;

How the nursing home responded to the incidents where residents had been bitten; and

Actions taken to protect residents generally.

The investigation is to consider the actions of the nursing home, as well as the actions of the approved provider, Darling Downs West Moreton Health Service (Queensland Health).

The report of the investigation should also include recommendations to improve procedures and processes for the protection of residents.

I ask that the Accreditation Agency report to me within 30 days.

Yours sincerely

Hon Justine Elliot MP
Minister for Ageing

2 May 2009

Appendix B The investigation team

The investigation team consisted of:

Victoria Crawford
General Manager Accreditation
Aged Care Standards and Accreditation Agency Ltd

Christopher South
Aged Care Quality Assessor
Aged Care Standards and Accreditation Agency Ltd

Appendix C Consultations

The following people provided verbal information to the investigation team. As the relatives of the resident who had been bitten by mice did not wish to have their father identified we applied that approach to all residents, consequently no names of residents or relatives have been included in this report or in this list of consultations.

Staff names were not always collected as conversations were sometimes held informally during the day-to-day operations of the home.

Managers in the home and from the District Health Service also provided documentation for review.

The team would like to thank those who co-operated with the investigation.

Name	Occupation/Organisation
Barnes, William	Manager Operational Services Dalby Health Service Darling Downs – West Moreton Health Service District Queensland Health
Beatty, Michael	Media and Community Relations Manager RSPCA Qld
Boundy, Lyn	Facility Director for Oakey and Mt Lofty Darling Downs – West Moreton Health Service District Queensland Health (District wide role to assist RACF in meeting the Accreditation Standards)
Brosnan, Shawn	Building Surveyor TT Building Consultants
Callaghan, Bill	Campus Manager Dalby Campus Australian Agricultural College Corporation
Carpenter, Craig	Senior Director Capital Works and Asset Management Branch Queensland Health
Derksen, Scott	Manager Amalgamated Pest Control Dalby
Genge, Kathy	Registered Nurse Karingal Nursing Home Dalby Health Service Darling Downs – West Moreton Health Service District Queensland Health
Gordon, Stewart	Stewart Gordon Executive Director Rural Services Darling Downs – West Moreton Health Service

	District Queensland Health
Jones, Vivienne	Nurse Unit Manager Karingal Nursing Home Dalby Health Service Darling Downs – West Moreton Health Service District Queensland Health
Kelk, Virgil	Director Environmental Health Darling Downs and South West Population Health Units Southern Population Health Services Population Health Queensland Queensland Health
Lane, Pam	District CEO Darling Downs – West Moreton Health Service District Queensland Health
Leung, Luke	Senior Lecturer School of Animal Studies The University of Queensland
Lynch, Kevin	General Practitioner Dalby
Rasmussen, Colleen	Director of Nursing Karingal Nursing Home Dalby Health Service Darling Downs – West Moreton Health Service District Queensland Health
Summerville, Todd	Environment and Health Manager Dalby Regional Council
Trotter, Mark	Architect Fulton Trotter Architects
Trotter, Paul	Architect Fulton Trotter Architects
Wellm, Verna	Clinical Nurse Consultant Karingal Nursing Home Dalby Health Service Darling Downs – West Moreton Health Service District Queensland Health
Woodward, Carmel	Endorsed Enrolled Nurse Karingal Nursing Home Dalby Health Service Darling Downs – West Moreton Health Service District Queensland Health

Following is a list of other people who provided verbal information but where names were not collected as the information was collected through short incidental conversations or they wished not to be identified. All those involved were informed of the investigation and that the information provided would be used to inform the investigation. All are in addition to those listed above.

Numbers interviewed	Staff/Resident/Relative/Visitor
One	Resident
Seven	Relatives/Visitors
One	Maintenance staff
One	Registered nurse (hospital)
Three	Endorsed enrolled nurses
Two	Recreational officers
Three	Cleaning staff
Two	Laundry staff
One	Catering staff

Appendix D Documents reviewed

Many documents were supplied by the Managers of Karingal Nursing Home, Dalby Health Service and the Managers of the District Health Service. Others were sourced from public websites or sent to the investigation team.

Document	Source
Action plan – mouse plague	Nurse Unit Manager
Audit reports	Nurse Unit Manager
Bromakil – directions for use	Rentokil Initial Pty Ltd website
Bromakil – material data sheets	Rentokil Initial Pty Ltd website
Cleaning audits (post 15 May 2009)	Manager Operational Services
Cleaning schedules and records	Manager Operational Services
Clinical incident management implementation standard	Queensland Health website
Comments and complaints register	Nurse Unit Manager
Continuous improvement log	Nurse Unit Manager
Daily reports to District CEO	District CEO
Dalby Health Service – Hospital rodent issue action plan	Manager Operational Services
Dalby Health Service – Karingal aged care rodent issue action plan	Manager Operational Services
Dalby Health Service – weekly reports to Executive Director Rural Services (two)	Director of Nursing Executive Director Rural Services
Design Guidelines for Queensland Residential Aged Care Facilities	Queensland Health website
Door inspections (May)	Manager Operational Services
DRAFT Interim information document on dealing with mouse plagues	Director of Nursing
Ekomille – capturing and monitoring device	Manager Operational Services
Email ‘read’ report	Director of Nursing
Emails	Director of Nursing Executive Director Rural Services Nurse Unit Manager

Environmental audits	Manager Operational Services
File note	Executive Director Rural Services
Food safety program	Karingal Nursing Home
Health and Safety checklist	Nurse Unit Manager
Incident management implementation policy	Queensland Health website
Clinical incident management implementation standard	Queensland Health website
Incident reports	Nurse Unit Manager
Incident report summary	Nurse Unit Manager
Infection control data	Nurse Unit Manager
List of residents	Nurse Unit Manager
Maintenance request forms	Manager Operational Services
Media releases – Queensland Health	Executive Director Rural Services
Media items (public)	Various
Memoranda	Nurse Unit Manager
Minutes of residents, relatives and friends meetings	Nurse Unit Manager
Minutes of safety and quality meeting – rural executive	Executive Director Rural Services
Minutes of staff meetings	Nurse Unit Manager
Minutes of workplace health and safety meetings	Nurse Unit Manager
Multipurpose forms	Nurse Unit Manager
Pest management advice	Manager Operational Services
Pest sighting sheets	Nurse Unit Manager Amalgamated pest control
Plan of bait station locations	Manager Operational Services
Quality and safety log	Nurse Unit Manager
Quality and safety reports	Nurse Unit Manager
Queensland health aged care redevelopment program	Queensland Health website
Reports from Director Environmental Health	Director of Nursing
Residents clinical records	Nurse Unit Manager
Resident handbook	Nurse Unit Manager

Risk assessment	Nurse Unit Manager
Risk register	Nurse Unit Manager
Risk report	Nurse Unit Manager
Rodent control log	Manager Amalgamated Pest Control
Rodent infestation action plan	Nurse Unit Manager
Rural rodent management audit	Executive Director Rural Services
Staff roster	Nurse Unit Manager
Staff satisfaction survey	Nurse Unit Manager
Support contact records	Aged care Standards and Accreditation Agency Ltd

Appendix E References

Biosecurity Queensland (2007) *Zinc phosphide*

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Food Standards Australia New Zealand (2001) *Food Safety Standards*

Queensland Government (Reprint 1H 2009) *Public Health Regulation 2005.*