Your child's hearing

by Mary Bagby

A baby's first earache is an unsettling time, almost as distressing for you as it is for him. Your child is likely to be in great pain: adults describe earache as a stabbing pain inside the head. But the chances are he will be unable to communicate how he's feeling.

Too often, parents fail to recognise the symptoms, or confuse them with feeding problems, and are left feeling guilty that their child suffered for longer than he had to. It's easy to miss the signs of earache in babies and children, all of whom react differently to ear infections.

Earache is common in childhood. Studies suggest anything from 85 to 99 per cent of children will have at least one ear infection. Some children get them constantly: it is not unusual for a young child to suffer as many as three or four ear infections during winter. Other children have few.

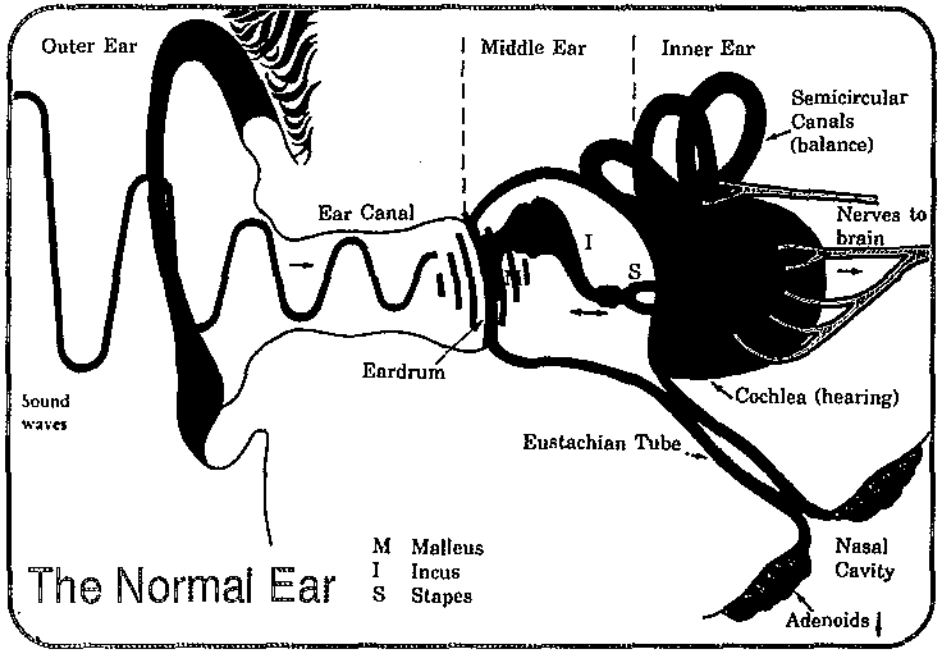
Eventually, with experience, you will learn to recognise tell-tale signs of earache that may be unique to your child. Perhaps it will be a certain cry, unusual fussiness, sudden waking in the night different from the child's usual sleep pattern, pulling away from the breast in the middle of sucking, batting at the ear, loss of appetite, an obvious discharge from the ear, or a temperature. Try not to misinterpret the symptoms of earache as teething problems. Teething usually occurs from the age of six months onwards, so it is quite likely that at one time or another a child will be ill and teething at the same time.

Ideally, if a child seems "off colour", especially if there is a history of ear problems, you should rule out earache by having a doctor or nurse check the child's ears. Unfortunately, this is not always possible. You may live in an isolated area, lack transport, or not be able to manage "just in case" visits to the doctor. Ask your Plunket or public health nurse if she will check your child's ears. Most GPs now provide free medical services for children under six.

In some areas, there are drop-in ear clinics or a visiting ear van where you can take your child to have his hearing assessed. Contact your local community health service for more information.

'Jamie would wake at 3am screaming with pain. We had a few frantic night trips to the doctor.'

– Linda



The Normal Ear

ILLUSTRATION FROM *UNDERSTANDING EAR INFECTIONS* BY DR PETER ALLEN

How the ear works

The ear is divided into three parts – the outer, middle and inner ear. Sound is collected by the outer ear and travels down the ear canal where it strikes the eardrum, causing it to vibrate. In simple terms, these vibrations are transmitted to three small bones in the middle ear (M, I, S).

These in turn vibrate the inner ear fluid in the cochlea where over 24,000 "touch" cells send electrical energy or signals to the brain via the auditory nerve. It is important to the hearing process that the middle ear is "well-aired" by the Eustachian tubes. In a child with glue ear, this area is fluid filled.

Detecting hearing loss

Become familiar with the warning signs. "All the evidence is that parents and family members are better than medical practitioners at detecting hearing loss in their children," says audiologist Suzanne Purdy.

Warning signs of glue ear in babies under six months:

- not showing interest in sounds
- crying, fretting or not sleeping
- unusual, unsettled or frustrated behaviour without an obvious cause
- a fever or cold
- a constantly running nose, whether green or clear
- pulling at or rubbing the ears

Warning signs in a toddler or preschooler:

- not listening
- a delay in learning to talk
- disruptive or frustrated behaviour without an obvious cause
- withdrawn, frightened about making mistakes or getting things wrong
- unsteadiness and falling over
- pulling at or rubbing ears
- earlier bouts of earache
- constantly clear or greenish runny nose
- snoring and breathing through the mouth.

Dr Peter Thorne also advises parents to listen to what other people say about their children. "It's hard for a first born because there is no precedent for the parent to understand what is expected," he says. "Take notice of what grandparents or other family members say because they are often coming in at different intervals."

A child's hearing is the foundation of speech and language. Many of the conditions that cause deafness in children are preventable and can be corrected. It is worth making the effort to recognise the symptoms of ear infections and become familiar with the various options for treatment.

Glue ear is a condition in which fluid or mucus fills the middle ear. It often follows repeated ear infections, and is the most common cause of hearing loss in children. However, glue ear can be relatively painless and children can adapt to their "fuzzy" hearing without necessarily complaining to their parents.

Parents need to be aware of the warning signs of hearing loss (see box above) and ask their doctor to test their child if they are concerned. It is important that ear conditions be diagnosed and treated.

There are three main types of hearing loss.

- **Conductive** hearing loss can occur when there is an infection or an obstruction in either the outer or middle ear. It is most often caused by glue ear. Fluid trapped in the middle ear reduces the effectiveness of the three small bones to transmit vibrations into the inner ear. It also decreases the eardrum's ability to vibrate. Conductive hearing loss is the most common cause of hearing loss in preschool children. It is usually reversible and hearing will return to normal after the fluid clears.
- **Sensorineural** hearing loss occurs when the inner ear is damaged and is almost always irreversible. Possible causes of this type of hearing loss in babies are inherited factors, low birth weight, prematurity, meningitis, asphyxia, and severe jaundice.
- **Mixed** hearing loss is a combination of conductive and sensorineural hearing loss.

Types of ear infections

An infection in the ear canal is called otitis externa.

Abnormal wax build-up or foreign objects can cause infections in the ear canal. The most common outer ear infection is "swimmer's ear". Bacteria or fungi multiply quickly in water that is trapped in the ear canal.

Using cotton buds to clean the ear can push wax further into the ear and damage the eardrum, as well as damage the ear canal, causing infection. This can cause inflammation of the skin that can become painful and itchy. A doctor can clean the ear canal and prescribe ear drops which will clear up the infection.

The most common ear infection in children is known as otitis media, which is an inflammation of the middle ear. Otitis media is often "self-limiting"; that is, it will eventually subside if left untreated.

Several studies have shown that between 70 and 80 per cent of untreated cases of acute otitis media will resolve in 24 to 72 hours and the acute symptoms of pain and fever will disappear (although fluid can remain trapped in the middle ear for 10 weeks or longer).

However, otitis media should never be taken lightly, as it can lead to serious complications such as meningitis, mastoiditis or brain abscesses.

Even without complications, otitis media can be extremely painful.

Sometimes the build-up of infected fluid in the middle ear will become so great that the eardrum will burst and a discharge will be seen running out of the ear.

A burst eardrum can heal itself (usually in 24 hours), but it must be watched closely by a doctor to ensure that it does heal and that there is no harmful scarring or further infection.

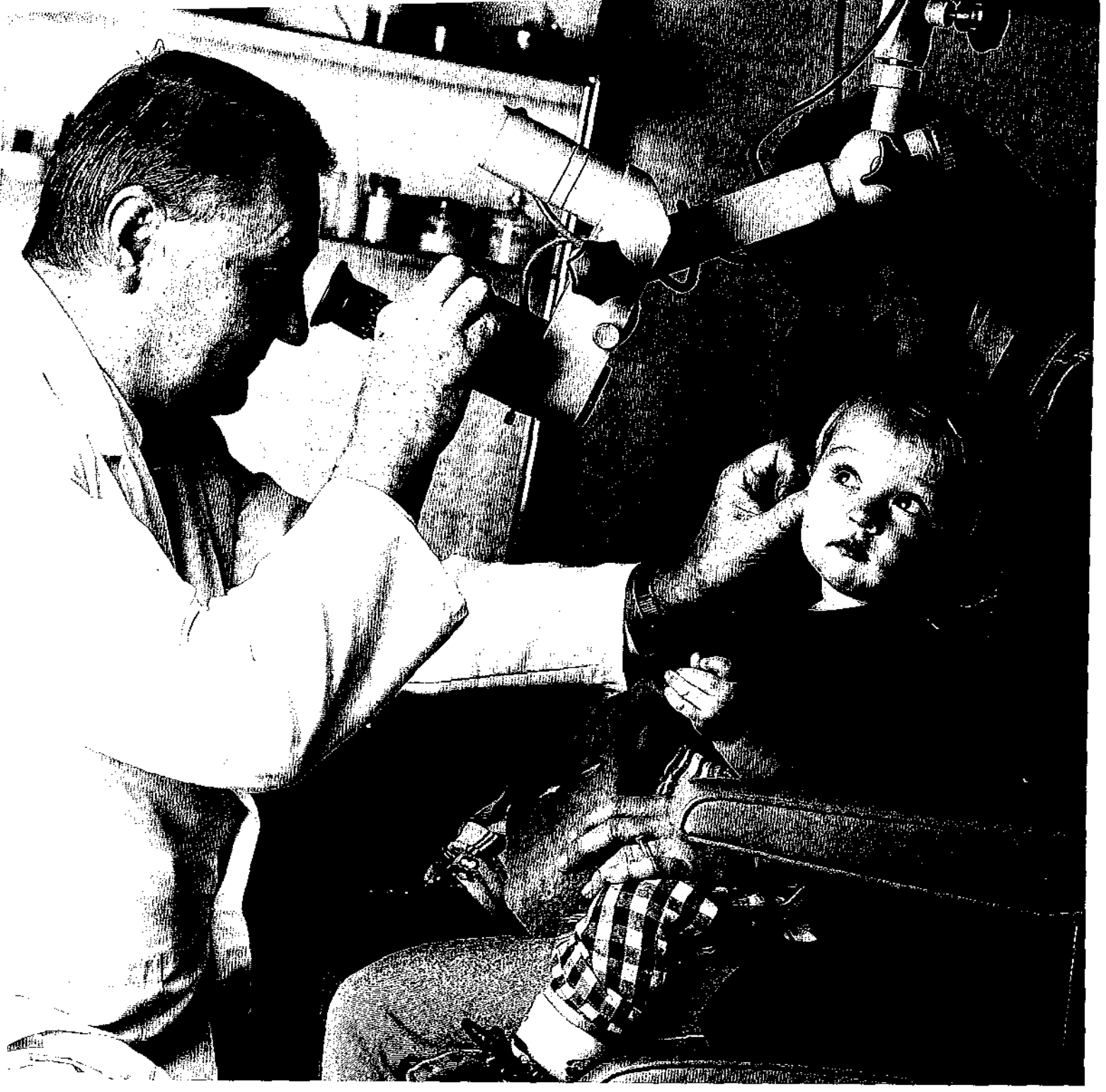
What causes ear infections?

Some ear infections are caused by hereditary or structural problems and cannot be controlled. Some are environmental and parents can take steps to prevent them.

Parents can take heart that most children will outgrow their ear problems. We know that:

- Children between the ages of six and 12 months suffer most ear infections.
- More boys than girls suffer ear infections.
- Children of parents who smoke are much more prone to otitis media and glue ear.
- Recurrent otitis media can run in families.
- Children with cleft palate have recurrent otitis media and persistent middle ear fluid due to Eustachian tube dysfunction.

PHOTOGRAPH RACHAEL HALE



o Many Down syndrome children suffer from middle ear problems which continue into adulthood.

Eustachian tube dysfunction Blocked or poorly functioning Eustachian tubes are the most common cause of ear infection. The Eustachian tube is a passageway connecting the middle ear with the nasopharynx, a space directly behind the nose. It allows air into the middle ear, and drains fluid from the middle ear to the throat. The tubes open and close with each swallow or yawn because the muscles at the roof of the mouth pull them open.

Children's Eustachian tubes are more prone to problems than adults', as they tend to be floppier, shorter and more horizontal, and are irritated, blocked or inflamed by frequent colds and illnesses, and by the adenoids, pads of tissue in the nasopharynx.

Allergies Nasal allergies can occasionally contribute to ear infections.

Upper respiratory infection Many children develop an ear infection as part of a cold, along with a runny nose, cough or sore throat.

Adenoids and tonsils These tissues can become infected and spread bacteria and viruses to the middle ear through the Eustachian tube. Adenoids can also swell up and block Eustachian tubes.

Enviromental factors

Cigarette smoke Children who live with smokers suffer from more frequent ear infections than children who do not live with smokers.

Day care Attending day care on a regular basis increases a child's exposure to childhood illnesses, which can increase his susceptibility to ear infections.

Feeding methods Breastfeeding protects against ear infections. If you are bottle feeding, make sure you feed baby in a propped position. Giving him a bottle to drink from while he's lying flat can cause ear infections and glue ear.

Treating ear infection

The symptoms of acute otitis media come on suddenly. Symptoms could be fever, irritability, loss of appetite, inability to sleep, crying, reluctance to suck, and pulling at the ear or rubbing or batting at the side of the face.

Parents should carefully monitor the child's temperature. If the child develops a high temperature (around 38.5 to 39°C or 101.5 to 102°F) and becomes inconsolable or shows other signs of severe illness, such as lethargy or inability to rouse, then he should be taken to the doctor or emergency clinic as soon as possible.

If the pain persists after 24 hours, a course of antibiotics may be prescribed to clear up the infection. Even if an ear infection clears up on its own, it is wise to have the child's ears checked by a doctor as repeated middle ear infections can cause permanent hearing damage.

When antibiotics work, the child will show marked improvement within 24 hours. Viral infections do not respond to antibiotics and bacteria can become resistant to certain antibiotics. Finding the most effective antibiotic can be frustrating, especially if the child is suffering from unpleasant side effects such as diarrhoea, fatigue, thrush or yeast infections.

When infections recur

When your child keeps getting recurrent ear infections, and/or has persistent glue ear, you need to discuss the situation with your doctor.

It may be best to keep treating each infection "as it comes", either by carefully watching the ear infection to see if it resolves itself or by treating the infection with a course of antibiotics. Some doctors will suggest a long-term preventative course of low-dose antibiotics over several months.

For children who suffer glue ear for more than three months, or have more than six acute ear infections in a year, doctors often suggest grommets. These are tiny plastic tubes, shaped like tiny plastic cotton reels with a hole through the middle and are smaller than a necklace clasp. They are inserted in the eardrum by an ear, nose and throat specialist, during a brief general anaesthetic. They act as artificial Eustachian tubes to allow air to enter the middle ear space to keep the pressure normal. They also drain off fluid, which reduces discomfort and hearing loss.

Grommets grow out as a child grows. They stay in the ear, on average, from six to 18 months, but sometimes longer. Complications are few. Some children will continue to have many ear infections, although they should recover faster, and one in 100 will be left with a tiny hole in their eardrum after the grommet grows out. If this doesn't heal, the child may need a graft to repair it.

How you can help

Parents can take several steps to help a child who experiences recurrent acute otitis media. You can consider the possibility of allergy, middle ear effusion (glue ear) or the possibility of drug resistance if children have repeated treatments with antibiotics.

- A persistent blocked nose can often be remedied with nose drops.
- Babies should be held for bottle feeding and should never be fed lying down.
- Tobacco smoke in the house increases susceptibility to ear and nose problems.
- Teaching a child how to blow his nose can be helpful.
- Elevating the head of a child's bed slightly can relieve symptoms.
- Breastfeeding may help to prevent glue ear.
- When other treatments have been tried, the insertion of grommets may be considered. These can reduce the occurrence rate by about 80 per cent.

Testing and detection of problems

Clear hearing is important to a child's development, especially in the preschool years. The years until your child turns three are the most vital.

Many children suffer from temporary hearing loss caused by infections or glue ear but, given the right treatment, they can usually make up for any loss in development. If the problem is not detected soon enough, the child may miss out

Tips on caring for a child with an acute ear infection

- TLC (tender, loving care) is the bottom line when looking after a child with an ear infection. Your child is in a lot of pain and needs reassurance.
- Lifting your baby up on your shoulder will help reduce the pressure on painfully inflamed ears.
- Use a children's pain relief medication. "Some people worry about over-using Pamol or Panadol, but I think in these situations it's important to follow the four-hourly regime over the acute period," says ear nurse specialist Margaret Roughton. "Don't leave it to chance."
- Keep up the child's fluid intake, even if he is not eating.
- If you can't settle your baby, call your nurse or doctor.
- If the pain persists after 24 hours, antibiotics may be needed. Remember that the symptoms may go away before the problem has cleared up, so make sure your child takes all his medication.
- If your child's temperature reaches 38.5 to 39°C, or he becomes inconsolable or shows other signs of severe illness such as lethargy or inability to rouse, get to a doctor or emergency clinic as soon as possible.

at a vital learning stage and never catch up. Look out for the warning signs of hearing loss in your child (see box on page 68).

Chronic hearing loss affects up to 10 per cent of children and can seriously interfere with their speech, education and social development.

Health professionals can pick up glue ear quickly and efficiently with a device called a tympanometer, which uses sound waves to measure the mobility of the eardrum. A healthy eardrum with clean air space behind it will vibrate; an eardrum backed up with fluid becomes immobile.

Vision-hearing testers carry out tympanometry tests at preschools and schools throughout New Zealand. Plunket clinics and many GPs can also do the tests.

Unfortunately, many cases of glue ear are not picked up until children get to school. Many children do not show any outward signs of the problem.

"It can be quite a silent disease where children don't necessarily complain," says Auckland audiologist Suzanne Purdy. "If you or I had conductive hearing loss and an ear full of fluid we would complain, but children often don't. It can go on for months and years and nobody really knows."

If glue ear is detected, your child may need some work with a speech therapist or audiologist.

"Speech language therapy is invaluable in helping children to recoup what they've lost, and it helps the parents get involved," says ear nurse specialist Margaret Roughton of the National Audiology Centre in Auckland.

She says parents need to be aware that children suffering mild to moderate hearing loss through glue ear can quickly become withdrawn.

They get upset when they misunderstand instructions, are slow to react because they haven't heard, or get left out by kids who notice their hearing problem.

Parents can unwittingly contribute by mistaking a hearing problem for disobedience. "Often the first the child knows that you have been calling out is when they see an angry face looking down at them!" says Roughton.

Ear care facts

Wonderful wax

Ear wax is wonderful stuff, says ear nurse specialist Margaret Roughton. A natural antibiotic and waterproofer that keeps the ear canal in top condition, it slowly migrates outwards in a nifty self-cleaning fashion.

Poking with a cotton bud jams the wax up in your ear canal, and sets a dangerous example for kids. Just clean the very outside of the ear with a flannel – don't clean ears with cotton buds!

Grommet facts

Grommet implants are probably the most commonly performed operation in the world. "The first grommets were tried back in 1860," says ear specialist Dr Colin Barber. "They made them out of all sorts of things: wood, gold, silver, cotton thread and even fish bone, but the whole principle of making a hole and keeping it open was there. It was only with the advent of modern lightweight non-toxic plastic that we have been able to do it successfully. A piece of fish bone in the ear is pretty irritating."

Grommet care

Grommets should be checked every four to six months to ensure they are not blocked. It's okay for children with grommets to go swimming. However, they shouldn't dive, or put their head under the water in tepid baths or spas.

Children with perforated eardrums require extra care and must keep their ears dry. Custom-made earplugs can be very helpful.

If your child has a hearing loss, you can help by:

- talking to them a lot
- reading a lot of stories one-on-one
- making sure you have their attention before talking to them
- reducing background noise by turning off radios and televisions
- sitting close to them
- raise your voice if they are having trouble picking up what you are saying.

"A mild to moderate hearing loss for adults might not be so bad because we have a good vocabulary and language base and we can fill in the bits we miss, but when children are just learning language and don't know that many words, they can't fill in the gaps," says Margaret Roughton.

Special help

If you have any concerns, contact vision hearing testers, public health nurses or, in some areas, ear nurse specialists by phoning your local community health services.

North Shore	09 486 8945
West Auckland	09 837 2777
Central Auckland	09 520 4009
South Auckland	09 262 1855
Rotorua	07 349 3520
Wairoa	06 838 7099
Napier	06 835 3139
Wanganui	06 345 5527
Palmerston North	06 358 1055
Masterton	06 378 9029
Wellington	04 385 5999
Lower Hutt	04 566 6999
Porirua	04 237 5549
Blenheim	03 578 4099
Nelson	03 546 1800
Greymouth	03 768 0499
Ashburton	03 308 4149
Timaru	03 688 6019

REFERENCES

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This article was mainly written by Mary Bagby, a freelance writer who writes the regular Toy Talk column for Little Treasures. *Parts of it were taken from an article on ear infections written for* Little Treasures *by freelance writer Karen Holdom.*