Review

An exploration of the potential risks associated with using pet therapy in healthcare settings

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Accepted for publication 31 October 2001

Summary

• The widespread inclusion of companion animals into the homes and lives of humans has prompted a considerable amount of research into the health benefits of such relationships.

• Findings seem to confirm that if humans interact with companion animals they are likely to experience various health benefits.

• Programmes that encourage and facilitate pet visiting schemes in hospitals have developed and animals can often be found in in-patient and long-term care facilities, with the aim of contributing towards a positive therapeutic milieu.

• Despite supportive research evidence, the adoption of such a therapeutic activity may have been restricted by the belief that client safety could be compromised by an increase in the risk of infection acquired from animals, allergic responses and bites.

• This paper explores the literature on these risks and concludes that, in a controlled health care environment in urban Europe or North America and with responsible human behaviour the potential benefits of sharing our lives with companion animals, either at home or hospital, far outweigh the apparently insignificant risks.

• Recommendations aimed at limiting the potential risk of infection and guidelines for the safe management of pet therapy are developed.

Keywords: animal-acquired infection, pet therapy, risks, zoonoses.

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Introduction

A review of the literature that examined the health benefits for humans of having companion animals and of having animals in various health care facilities revealed that in general research studies and other published material seem to indicate that human–animal interaction can have positive effects on human health (Brodie & Biley, 1999). Improvements in physical health, such as a reduced risk of cardiac problems and lowered blood pressure, have been seen. In addition, animals seem to improve social interactions and promote social happiness and harmony for the general population as well as for certain groups such as children and those with a disability. Animals can instigate higher levels of relaxation amongst their human companions. In general, people who interact with animals may benefit from improved physical, psychological and social health (Brodie & Biley, 1999).

However, despite the positive outcomes of human–animal interactions, the potential risks that could arise cannot be ignored. This paper aims to assess the risks that might arise from the human–animal contact that may take place in urban European, North American and other Western countries’ health care facilities and evaluates whether patients’ health may be jeopardized by pet therapy.

There are several disadvantages linked to pet therapy, such as cost, dislike of animals, phobias and cultural inhibitions. Whilst these are acknowledged, they will be not addressed here. Rather, the additional potential risks of zoonoses, allergies and bites, which are worries that can arise from animal contact (Barba, 1995), will be evaluated, taking into account only the issues that are likely to arise in urban European, North American and other Western countries with developed health and veterinarian care, regulations and controls.

Search strategy

In order to explore the subject in question, the literature was searched, using all available dates on the CINAHL (1982 onwards), CAB Abstracts (1973 onwards) and MEDLINE (1966 onwards) databases and the key words pet therapy, animal acquired infection, zoonosis and zoonoses. Although the search initially appeared to be productive, revealing a considerable number of articles on pet therapy or zoonoses, there were no articles that specifically looked at the potential risks of pet therapy. Given the relatively unusual nature of the topic, the subsequent search and review cannot be considered to have been systematically performed. Rather, the review progressed serendipitously, with information being sought according an initial predetermined but dynamic and responsive structure.

Zoonoses

The term ‘zoonoses’ has been defined by the World Health Organisation (1959, p. 2) as ‘those diseases and infections naturally transmitted between vertebrates and man’. Estimates of the number of zoonotic diseases ranges between 150 (Strickland, 1991) and 200 (Hart et al., 1996), but it is thought that only 35 zoonotic disease agents may affect animals and subsequently humans through use in pet therapy (Schantz, 1990). There appears to have been a relatively recent increase in the incidence of zoonotic disease, which may be the result of improved laboratory diagnostic techniques (Strickland, 1991) and the increase in prosperity and suburbanization since the Second World War which has led to an extension in both human and animal populations and increased chances of interaction (Schantz, 1990). A trend to own more exotic pets also increases the possibility of zoonotic disease transmission as well as there being more susceptible individuals in society. Those particularly at risk include the very young, the very old (Haas, 1987), and individuals who are immunosuppressed, such as those who have human immunodeficiency virus (HIV), are on prolonged steroid treatment, are having chemotherapy or are undergoing organ transplantation (Ettinger & Feldman, 1993).

How zoonoses are spread

There are four components that contribute to the transmission of all infectious diseases: the infective agent, the host, the route of transmission and the environment (Strickland, 1991). With zoonoses, however, a minimum of two hosts (the natural reservoir and the human) is needed for transmission. Humans are not necessary for the transmission of zoonotic diseases in nature but become accidentally infected after contact with an animal host during the natural transmission cycle. Naturally, animals may play host to anything from viruses to helminths but transmission of the infective agent between reservoir host and the human is limited to four basic routes: contact, airborne, vector borne and common vehicle route (Strickland, 1991). In all cases, the human is not part of the natural life cycle, but becomes an accidental end-host.

Transmission between animals and humans is not always identical to natural host transmission and can be more complicated when several different animal hosts are
involved. Wild animals are often the permanent source and the primary reservoir, and domestic animals are frequently secondary reservoir hosts that are not necessary for the survival of infectious agents but are an important link in the transmission chain. An understanding of the transmission process is valuable when devising guidelines to reduce risk of spread. For example, one means of control is to restrict pet contact with nature (Strickland, 1991) as the risk of a zoonotic disease occurring within a pet animal, which has the potential to spread to associated humans, is strongly linked to the extent of interaction between pet animals and primary host (Hart et al., 1996).

What affects transmission rates?
Although there are numerous zoonotic diseases linked with pet animals that have the potential to infect humans, actual occurrence is reduced by certain factors known to control transmission, such as:
(1) the number of infected animals in the home environment;
(2) the route and efficiency of disease transmission from pets to humans;
(3) the behaviour characteristics of owners, such as the extent of human–pet interaction;
(4) the existing measures to prevent transmission (Schantz, 1990).
These known factors can explain why the incidence of zoonotic disease is more prevalent among some individuals. For example, children often have a more intimate relationship with pet animals and may indulge in such habits such as pica or oral exploration of the environment, which makes them more susceptible than adults.

Estimating figures
Estimating the incidence of zoonoses in humans can be difficult because not all cases are notifiable (Marier, 1977). Interpreting any statistical reports of zoonotic disease incidence must involve caution as figures often summate all types of zoonoses and not only pet animal zoonoses. This is important as workers such as abattoir employees, farmers and veterinary surgeons, and those working intimately with animals account for a larger number of outbreaks than pet-animal-induced contamination (Hart et al., 1996). Additionally, figures estimating zoonotic disease surveillance often refer to incidences in the general community and there are very few specific indicators of zoonotic disease outbreak within a care setting or as part of pet-facilitated therapy (Hart et al., 1996).

What diseases?
It can be argued that the negative effects of sharing our houses and lives with pets is overstated (Smith, 1996). Pet-associated illness appears to be infrequent (Elliot et al., 1985) and difficult to acquire, possibly as most common pet zoonoses have narrow host ranges and do not readily infect other species (Glickman, 1992). However, zoonoses do exist and those associated with the most popular animals used as part of pet-therapy programmes, namely dogs, cats, birds and fish, will be examined. The more significant zoonoses will be discussed in some detail, while details related to the less significant zoonoses are given in Tables 1–5.

Dogs
Dogs are probably the most widely used animals in pet therapy and seem to have a very positive therapeutic effect. They also appear potentially to transmit the greatest number of zoonotic diseases (see Tables 1–3).

ROUNDWORMS
Visceral larva migrans, as the name suggests, is a disease caused in humans by the migration of larval stages of parasites (most commonly of the roundworm Toxocara canis) through various organ or bodily routes. Roundworm is a well-recognized zoonosis and the majority of the population seem to recognize the possible link between dog faeces and ill health (Miller, 1989). Dogs are the primary source (Miller, 1989), but infestation rates vary according to age. Puppies are known to be highly contaminated (Smith, 1996) and 10% (Nicholl et al., 1981; Kershaw et al., 1990) to 15% (Elliot et al., 1985) of the adult dog population is thought to be infected. Transmission of T. canis, presumed to be the main cause of human toxocariasis, is through ingestion of embryonated eggs from soil or an environment contaminated by the eggs from an infected dog’s faeces (Smith, 1996). Human contact with pregnant bitches or puppies significantly increases the chance of becoming infected as they are the most common shedding. This was shown by Woodruff et al. (1978), who used enzyme-linked immunosorbent assay tests (ELISA) to measure antibodies to the T. canis parasite in human blood. Test results for dog breeders (16% positive) when compared with results for the rest of the population (2.6%) established that greater contact with dogs, in particular pregnant bitches and puppies, leads to a higher rate of human infestation.
### Table 1  Arthropod and bacterial zoonoses associated with dogs (taken from Haas, 1987; Schantz, 1990; Ettinger, & Feldman, 1993; Angulo et al., 1994; Hart et al., 1996)

<table>
<thead>
<tr>
<th>Disease</th>
<th>Infective agent</th>
<th>Other animal hosts</th>
<th>Mode of transmission</th>
<th>Test</th>
<th>Preventative measures</th>
<th>Comments</th>
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<tbody>
<tr>
<td><strong>Arthropods</strong></td>
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<tr>
<td>Acariasis (scabies/mange)</td>
<td><em>Sarcoptes scabiei</em> var. <em>canis</em></td>
<td></td>
<td>Direct contact</td>
<td>Physical examination of pet</td>
<td>Screen pets, preclude contact with infected pets</td>
<td></td>
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<tr>
<td>Fleas</td>
<td><em>Ctenocephalides canis</em></td>
<td>Cats</td>
<td>Exposure to environment shared by cats, dogs and people; direct contact</td>
<td>Physical examination of pet</td>
<td>Eliminate fleas by periodic treatment of pet and environment</td>
<td></td>
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<tr>
<td><strong>Bacteria</strong></td>
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<tr>
<td>Bacterial complication of animal bites</td>
<td><em>Pasteurella multocida</em>, anaerobes, DF-2, <em>Staphylococcus aureus</em>, <em>Pseudomonas</em>, <em>Enterobacteriaceae</em>, streptobacillus, other bacteria</td>
<td>Cats, rodents and rabbits</td>
<td>Bites and scratches</td>
<td>Not appropriate</td>
<td>Pair animals and patients carefully. Scrutinise cleaning of all bites and scratches</td>
<td>Very few reports of direct human–dog transmission</td>
</tr>
<tr>
<td>Foodborne bacterial diseases</td>
<td><em>Salmonella</em>, campylobacter, yersinia, other enterobacteriaceae</td>
<td>Cats, rodents, rabbits and birds</td>
<td>Faecal contamination from pet to hand to food</td>
<td>Culture faeces but not always reliable</td>
<td>Frequent hand washing. Keep pets away from food preparation and consumption areas</td>
<td></td>
</tr>
<tr>
<td>Brucellosis</td>
<td><em>Brucella canis</em></td>
<td></td>
<td>Direct contact with contaminated genitourinary discharges</td>
<td>Antibody detection, bacteriologic culture</td>
<td>Screen dogs before introduction</td>
<td>Unknown in pet dogs in the UK, human transmission is rare</td>
</tr>
<tr>
<td>Leptospirosis</td>
<td><em>Leptospira canicola L.</em> Icterohemorrhagica</td>
<td>Most other mammals</td>
<td>Contact with urine and other secretions</td>
<td>Antibody detection, bacteriologic culture of urine</td>
<td>Vaccinate dogs, avoid urine contact and screen all new animals</td>
<td>Apparently healthy dogs can shed organism in urine</td>
</tr>
<tr>
<td>Disease</td>
<td>Infective agent</td>
<td>Other animal hosts</td>
<td>Mode of transmission</td>
<td>Test</td>
<td>Preventative measures</td>
<td>Comments</td>
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<tr>
<td>Helminths</td>
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<tr>
<td>Visceral larva migrans</td>
<td><em>Toxocara canis</em> (cati)</td>
<td>Cats</td>
<td>Ingestion of eggs/ooocysts found in faeces</td>
<td>Stool examination for ova and parasites</td>
<td>Screening and/or prophylactic treatment, prompt collection and disposal of faeces</td>
<td>Eggs are not immediately infective on passage with faeces</td>
</tr>
<tr>
<td>Strongyloidiasis</td>
<td><em>Strongyloides stercoralis</em></td>
<td>Cats and monkeys</td>
<td>Larval penetration of skin following contact with faeces or contaminated soil</td>
<td>Stool examination</td>
<td>Repeated stool examination, elimination of infected animals</td>
<td>Relatively rare infection of cats and dogs</td>
</tr>
<tr>
<td>Dirofilariasis (heart worm)</td>
<td><em>Dirofilaria immitis</em></td>
<td>Cats</td>
<td>Mosquito bites</td>
<td>Examination of blood for microfilaria, antigen detection</td>
<td>Prophylactic chemo for dogs exposed to mosquito bites</td>
<td>Not a problem in the UK as human dirofilariasis is rare Has been seen in Wales and Ireland</td>
</tr>
<tr>
<td>Dipyldiasis (tapeworm)</td>
<td><em>Diplidium caninum</em></td>
<td>Cats</td>
<td>Ingestion of infected fleas from dogs and cats</td>
<td>Stool examination</td>
<td>Diagnose and treat infections in dogs and cats, strict flea control</td>
<td></td>
</tr>
<tr>
<td>Hydatid disease</td>
<td><em>Echinococcus granulosa</em>, E.</td>
<td>Cats</td>
<td>Ingestion of eggs in faeces, fomites</td>
<td>Arecoline, purge method, faecal examination</td>
<td>Control diet, prevent pets from eating raw viscera or rodents</td>
<td>More common in sheep ranching areas of the USA</td>
</tr>
<tr>
<td>Ancylostomiasis and uncinariasis (hook worm)</td>
<td><em>Ancylostoma caninum</em>, <em>Uncinaria stenocephala</em></td>
<td>Cats</td>
<td>Larvae in soil penetrate skin, ingestion of faeces</td>
<td>Facal examination, evidence of anaemia</td>
<td>Diagnose and treat infection in pet, strict hand-washing</td>
<td>More common in farming areas</td>
</tr>
<tr>
<td>Cryptosporidiosis</td>
<td><em>Cryptosporidium spp</em></td>
<td>Cats, mice, rabbits, and guinea pigs</td>
<td>Ingestion of oocysts in faeces of infected animals</td>
<td>Stool examination</td>
<td>Screen and quarantine or eliminate infected animals</td>
<td>Primarily a disease of neonates, 1–3 weeks old, pet therapy not used</td>
</tr>
<tr>
<td>Giardiasis T. canis (cati)</td>
<td><em>Giardia lamblia</em></td>
<td>Cats and other animals, kittens and puppies</td>
<td>Ingestion of cysts in faeces of infected animals</td>
<td>Stool examination</td>
<td>Screen and treat or eliminate pets</td>
<td>Most strains in cats and some in dogs and may not be infective in humans</td>
</tr>
</tbody>
</table>
Annual reports of human outbreaks are rare in the United Kingdom (UK) and range from 10 (Vines, 1993) to 40 (Smith, 1996) and the incidence of toxocara-induced disease in the UK is in the order of two cases per million of the population per annum. Serological surveys that measure the rate of past infection by recognizing antibodies that have developed after previous exposure suggest the presence of antibodies in 10% of the population of England and Wales (Glickman & Schantz, 1981), underlining that infection among humans is not always serious but frequently subclinical, self-limiting and not reported (Elliot et al., 1985), although it can, rarely, cause blindness and death (Elliot et al., 1985).

Although humans can suffer the same strain of toxocara as their canine companions and transmission between the two species does occur, its spread is controllable and this zoonosis appears to pose little threat in pet-therapy programmes. Good hygiene measures, an awareness of avoiding pregnant bitches and puppies, and following strict antihelminth regimes have the potential to eliminate risk to all involved (Baxter, 1984; SCAS, 1996). A decrease of 50% in the number of cases reported over the last decade indicates that an awareness of the problem and use of appropriate actions, including antihelminth treatments, could result in even tighter control (SCAS, 1996). An investigation into the effectiveness of de-worming pets in Scotland found that among 256 dogs treated with antihelminths only one was found to be infected after 4 months (Leslie, 1994). Holland (1991) investigated whether household dust could facilitate cross-infection between animals and their owners through providing a suitable environment to nurture the maturing ova. However, the hypothesis was disproved as all 53 samples of dust examined for ova proved negative.

It is unlikely that dogs pose a substantial threat of contamination to people involved in pet-therapy programmes. The probability of the pet itself being infected is reasonable; however, with simple measures any risk can be virtually eliminated and the pet can be easily treated. Transmission to humans is possible, yet the chain of transmission is very weak and easily broken.

Cats

The literature suggests that there are a number of cat zoonoses (see Tables 4 and 5). The principal ones are discussed below.

RINGWORM

This is a non-life-threatening fungal infection or dermatophyte resulting in round, crusty lesions, transmitted usually by direct skin-to-skin contact (HSE, 1993). It is probably the most common zoonosis in cats. To give an indication of its prevalence, it was cultured from up to 35% of asymptomatic cats attending four cat shows in North America (Quaife & Womar, 1982) and found in 40% of asymptomatic cats in catteries in New Zealand (Woodgyer, 1977). Each dermatophyte differs in preference of chosen environment; however, zoophilic dermatophytes will only occasionally cause disease in human beings (Elliot et al., 1985). It is microsporum canis, a common dermatophyte producing superficial fungal infections in cats and dogs, which causes tinea or ringworm in humans (Elliot et al., 1985). Ten to 30% of cases of human dermatophytoses in urban settings are estimated to be of animal origin (Steele, 1977). Exact prediction of incidences of zoonotic ringworm is limited as dermatophytes found in cats and dogs are also found among other animals.

Despite cats being at times silent carriers of the strain of dermatophyte that is known to infect humans, measures can be taken to prevent or reduce transmission to humans. If an animal is known to be infected, direct physical contact should be avoided. However, hand–washing postinteraction will reduce the risk (Miller, 1989). If the human skin is abraded, broken or punctured there is an increased risk of fungal spores entering through the epidermal layer. Therefore, all cuts should be well...
<table>
<thead>
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<th>Preventative measures</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteria</td>
<td></td>
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</tr>
<tr>
<td>Cat scratch disease</td>
<td>Gram negative bacillus</td>
<td>Dogs – rarely</td>
<td>Scratch, bite</td>
<td>None available</td>
<td>Avoid bites and scratches, clean scratches thoroughly</td>
<td></td>
</tr>
<tr>
<td>Tularemia</td>
<td><em>Francisella tularensis</em></td>
<td>Dogs, rabbits and rodents</td>
<td>Bites and scratches</td>
<td>None available</td>
<td>Avoid introducing pets that may have been exposed to bacteria, improve tick and flea control</td>
<td>Unlikely in institutional setting</td>
</tr>
<tr>
<td>Q fever</td>
<td><em>Coxiella burnetii</em></td>
<td></td>
<td>Direct contact with</td>
<td></td>
<td>Avoid contact with pregnant mother pets, those aborting or close to parturition</td>
<td>Disease of Mediterranean countries</td>
</tr>
<tr>
<td>Helminths</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Cutaneous larva migrans</td>
<td><em>Ancylostoma brasiiense</em></td>
<td>Dogs</td>
<td>Skin contact with/ or ingestion of soil contaminated with infected faeces</td>
<td>Stool examination for ova and parasites</td>
<td>Screening of infected animals, prompt collection and disposal of faeces</td>
<td>Disease of Mediterranean countries</td>
</tr>
</tbody>
</table>
**Table 5** Protozoan and fungal zoonoses associated with cats (taken from Haas, 1987; Schantz, 1990; Ettinger & Feldman, 1993; Angulo *et al*., 1994; Hart *et al*., 1996)

<table>
<thead>
<tr>
<th>Disease</th>
<th>Infective agent</th>
<th>Other animal hosts</th>
<th>Mode of transmission</th>
<th>Test</th>
<th>Preventative measures</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protozoa</td>
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</tr>
<tr>
<td>Toxoplasmosis</td>
<td><em>Toxoplasma gondii</em></td>
<td></td>
<td>Ingestion of oocysts in soil or fomites contaminated by cat faeces, transplacental or through raw meat</td>
<td>Stool exam</td>
<td>Control cat’s diet, prevent them eating raw meat, mice and birds</td>
<td>Infected cats only pass infected stools 2–3 weeks after infection unless stressed. Clinical manifestations in humans are rare unless immuno-suppressed</td>
</tr>
<tr>
<td>Fungi</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Dermatophytosis</td>
<td><em>Microsporum canis</em></td>
<td>Dogs</td>
<td>Direct or indirect contact with infected animals</td>
<td>Fungal cultures</td>
<td>Only introduce fungi free animals, immediate response if infection suspected</td>
<td>Screening cats is very difficult</td>
</tr>
<tr>
<td>Sporotrichosis</td>
<td><em>Sporothrix schenckii</em></td>
<td>Dogs</td>
<td>Direct skin lesions</td>
<td>Fungal cultures</td>
<td>Introduce fungi free, use gloves for precaution</td>
<td></td>
</tr>
</tbody>
</table>
irrigated following contact and then covered (HSE, 1993). If infestation of the animal is suspected, immediate consultation with a vet and subsequent treatment is indicated and thorough cleansing of the environment with a suitable fungicide is recommended (Elliot et al., 1985). Regular pet health checks will facilitate early detection, and follow-up action will reduce transmission rates.

TOXOPLASMOsis

Toxoplasmosis is the result of infection caused by the parasite *Toxoplasma gondii* and is contracted by humans via two means: direct contact with infected cats and eating undercooked previously infected meat (HSE, 1993). The latter cause accounted for the majority of the annually reported cases of toxoplasmosis in the UK (Frenkel, 1990; Glickman, 1992; Vines, 1993), but awareness of the possible link between the human and feline disease is important. Cats are the definitive host of *T. gondii* as they are the only animals to pass oocysts in their faeces (Angulo et al., 1994). This passage is not continuous and only occurs 2–3 weeks following primary infection (Dubey, 1986). One to 5 days after the oocysts are shed they sporate and become infective and it is only at this stage of development that there is any risk to humans (Angulo et al., 1994). The disease rarely causes clinical manifestation in adult humans unless they are immunosuppressed, but infection of the human foetus can lead to severe clinical disease at birth and ocular disease later in life.

Neither faecal examination for oocysts nor serum testing for toxoplasma antibodies is completely reliable (Angulo et al., 1994), but Ladiges et al. (1982) found that between 30% and 80% of domestic cats in the United States of America are serologically positive. There are currently between six and seven million cats in the UK (PFMA, 1996) and the prevalence of *Toxoplasmosis gondii* infection, based on antibody detection, is reported to be between 16% and 48%.

Pet cats pose a minimal risk to humans, despite a considerable number of cats themselves being infected, either previously or currently. Action can be taken to reduce any risk and this incorporates practising good hygiene by hand-washing, and most importantly by frequent litter box changes and regular visits to the vet. Controlling the pet’s diet will help break the chain of transmission from nature to the host.

**Birds**

Between 1975 and 1991, there were between 100 and 150 human psittacosis (*Chlamydia psittaci*) infections reported annually in the UK (Smith, 1996). Among these incidents, most had no definite identified source of infection, but birds are assumed to be the largest reservoir. Psittacosis indicates an infection originating from psittacine birds, namely parrots, parakeets, budgerigars and macaws, and chlamydia is an obligate intracellular bacterium (BSAVA, 1992) of which there are two strains: psittaci and trachomatis (HSE, 1993). Psittaci is the only strain which has the potential to infect humans (HSE, 1993). If humans become infected, they experience flu-like symptoms including headaches and joint and muscle pain in about 25% of cases, yet in 60% of cases pneumonia develops and death can result. Between 1967 and 1987 there were 23 deaths in the UK as the result of contraction of psittacosis, usually among the frail elderly (HSE, 1993). However, psittacosis is considered a disease mainly affecting younger people through occupational exposure such as game-keeping or bird-breeding.

Transmission occurs through inhalation or ingestion of desiccated faeces or lacrimal and nasal secretions from infected birds. The bird becomes infected either directly during nesting, vertically from other birds, or mechanically via mites and lice (BSAVA, 1992), but the infection may lie dormant and not be excreted until the bird becomes stressed (HSE, 1993). Figures on reported cases must be interpreted with caution as a new strain of psittaci, *Chlamydia pneumoniae*, has been identified. This is not a zoonotic strain but its incidence has been included in reports of psittacosis outbreaks in the UK (Smith, 1996). This may help to explain why only 20% of the reported cases have described definite contact with birds and only 9% of these were psitacines (Smith, 1996) (see Table 6).

Although infected birds may have the potential to harm human health and damage may be more serious in the populations likely to be benefiting from pet-therapy programmes, action can be taken to reduce risk. Strict hygiene protocols again form the fundamentals of risk-reducing measures, as well as obtaining a ward bird from a reputable source and housing it in a stress-free environment, which may be difficult or impossible in a typical health care establishment. The cage should be cleaned frequently to avoid build up of excrement and cleaning should be carried out in an environment away from vulnerable persons, with the bird being resettled before it is returned. Close supervision and early detection of ill health can also control disease outbreaks. Despite posing a realistic threat to human health, the risk arising from interaction with caged birds can be limited through awareness and the use of appropriate hygiene measures.
Other animals

Despite dogs, cats and birds being the most popular animals participating in pet-therapy programmes, sometimes other animals, such as fish or gerbils, are chosen. Some of the early studies into the relationship between relaxation and animals were conducted using fish (Katcher et al., 1983). However, these can also spread diseases (Angulo et al., 1994), such as leptospirosis (Weil’s disease) and Tyzzer’s disease. Mycobacterium marinum is a bacterial infection transmissible from fish to humans, yet only a very few cases have ever been reported (Angulo et al., 1994) and, because fish live in a confined environment, spreading is easily prevented. Transmission occurs during cleaning of the tank and so wearing gloves and careful hygiene will almost eliminate any risk.

Turtles and reptiles pose a threat of spreading salmonella to humans but strict hygiene practices and ensuring that they are fed a carefully sourced diet specially processed for reptiles dramatically reduces any risk (Angulo et al., 1994). World-wide, about 40 000 human cases arise annually because of contamination by pets or by eating food contaminated by pets (Stehr-Green & Schantz, 1987), with a fatality rate of pet-associated salmonellosis of 0.1%. Rodents can also be included as transmission sources of infectious diseases, including human salmonellosis. However, incidences are very rare and problems are more likely to arise from allergies or bites (Chomel, 1992). Fish et al. (1968) described a family outbreak of salmonella contracted from guinea pigs on a large-scale commercial ranch in Canada. Rodents also transmit lymphocytic choriomeningitis by infected aerosols, direct animal contact or animal bites (Chomel, 1992); however, there have not been any reported outbreaks since the 1970s.

Non-specific zoonotic disease spread

In addition to the potential of specific zoonotic disease spread, most companion animals carry the risk of contributing to the spread of infections, such as methicillin resistant Staphylococcus aureus (MRSA), that are already present in the health care environment. A report of such an outbreak in the UK linked with a feline companion were given by Scott et al. (1988), where high levels of contamination led to an MRSA outbreak and the ward cat acted as a reservoir for infection. Despite the cat being heavily colonized by the Gram positive bacteria, it was thought to be the substandard hygiene and hand-washing practices by nursing staff that facilitated the outbreak.
(Haggar, 1992). Once again improved hygiene is the principal measure to reduce transmission of disease associated with therapeutic animals.

The literature suggests a wide range of diseases, from viral, bacterial, parasitic to mycotic that are contractible from pet animals. However, the risk is small and can be reduced further if fairly simple steps are followed. It appears that there is a significant difference between ‘what people can get from animals and what they do actually get’ (Burton, 1989, p. 34) and often claims of the health risks involved in pet therapy are exaggerated (Barba, 1995; Smith, 1996).

Allergies

Allergy to animals is cited as one of the hazards arising from human–animal interaction (Barba, 1995). However, only 6% of people seen by allergists in North America have an allergic reaction as a result of animal dander (Elliot et al., 1985). Symptoms of animal allergy include nocturnal wheezy cough, asthma, rhinitis and conjunctivitis (Cripe, 1982), and it is the dander, saliva, hair, urine and other secretions from animals which can become allergens (Schantz, 1990). Careful selection of the animal can reduce the risk of an allergic reaction: cats are at the top of the allergy-inducing hierarchy, followed by guinea pigs and horses (Schantz, 1990), but dogs and pet birds can also cause allergies (Marks, 1984). It appears that the incidence of pet-induced allergy can be reduced in a controlled environment, for example by obtaining accurate history from patients (Elliot et al., 1985), choosing the correct pet and by careful and regular grooming.

Animal-induced accidents (bites)

Bites from animals are hailed as the most troublesome animal-associated health hazard (Schantz, 1990) in terms of seriousness, frequency and cost. In the UK, more than 250 000 dog bites are registered annually (Vines, 1993), while cat bites account for between 5% and 15% of total bites (Weber et al., 1984). It is not possible to obtain a definite figure for dog-bite incidence as not all cases are reported (Baxter, 1984, 1985); the exact figure may surpass current estimates. There are no figures that relate specifically to incidences arising from pet-therapy programmes. Despite this, information, such as highlighting the most troublesome breeds, the importance of a good temperament and the need for schooling, can be collated from other studies (Baxter, 1984) and incorporated into guidelines to reduce the risk of injury in a pet-therapy programme. It is reasonable to suggest that, in a well-supervised environment such as a hospital ward, after careful selection of the pet-therapy animal and education of nurses and clients alike, the risks of animal bites are minimal and should not prevent the implementation of such therapy.

Conclusion

Animals can have a positive impact on the lives of their human compatriots (Brodie & Biley, 1999). For many, a meaningful relationship can develop which is reciprocal yet often unacknowledged. Studies have shown a link between ownership or interaction with animals and improved health status (Brodie & Biley, 1999). Despite this, the use of pet therapy has not been unopposed. The principal confrontation arises through fear of client safety in the form of animal bites, allergies or zoonoses. A search of the literature has assessed potential and actual risk and concludes that the hazards are minimal. The potential to suffer harm does exist but can be minimized by taking simple measures, including careful selection of animal and client, thorough planning and allocation of responsibility, rigorous health care of the animal and informed practices by all involved. Hospitals, hospices, residential and private homes are all examples of settings which could experience some of the benefits of introducing a resident or visiting pet animal. However, they are all controlled environments, and this is a crucial characteristic. Zoonoses, allergies and bites, the three issues surrounding pet therapy causing greatest concern, have the potential to be controlled in a supervised health care setting (Barba, 1995), thereby reducing risks to minimal levels for patients and staff (Schantz, 1990). If simple guidelines incorporating comprehensive veterinary care and improved education are followed most areas can enjoy problem-free animal interaction. An example of such a guideline, drawn up on the basis of the literature reviewed here, is given in Appendix 1. As identified by the WHO (1981, p. 43):

Whilst irresponsible attitudes easily result in problems of surplus and straying animals, environmental pollution and an increased risk of zoonotic disease, companion animals which are properly cared for bring immense benefits to their owners and to society and are a danger to no-one.

Finally, the animals involved in pet-therapy programmes need to be well cared for, and careful veterinary support and health screening, a good diet and perhaps rest from participation in healing activity should be provided.

References


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Appendix 1 Guidelines for nurses and others
introducing pet animals into a health care facility

A. CAREFUL SELECTION
This involves carefully selecting suitable pets and patients.
1. Clients’ situations must be carefully assessed prior to inclusion in pet-therapy sessions or interaction with the ward pet to establish those who may have unpredictable behaviour and could either harm the animal or induce a frightened response resulting in injury to the patient (Barba, 1995). Also, patients with altered physical states may not be suited to animal contact, for example, those with lowered immunological resistance, open wounds, delicate skin, respiratory disease, known allergies, phobias of animals or attachment to complex medical equipment (Barba, 1995).

2. Careful selection of the most suitable animal is also important. The two cardinal requisites are a flawless temperament and optimum health (Barba, 1995). All animals should have required immunization certification and undergo a veterinarian examination to include faecal parasite analysis in order to produce a certificate of health prior to introduction (Hundley, 1991). Cautious consideration must be paid to the suitability of the pet to the ward, for example, small caged animals are not recommended for elder care wards (Cooper, 1976) and if many patients are using wheelchairs either large reachable dogs or small light-weight lap dogs are more appropriate (Hundley, 1991). Birds will be unhappy in a changing environment as might be found in a hospital ward or nursing home and, for the health of the bird, should be avoided.

B. VETERINARY CARE
1. After the chosen animal has been vetted by a qualified professional, surveillance must be maintained and should consist of four monthly health checks, routine worming and de-fleasng. To ensure continuity specific members of staff should be designated to care for the animal. Such staff should have knowledge of the correct feeding and exercise that the animal requires and should be aware of what to do if the animal becomes ill. For some zoonotic diseases there are vaccines or preventative treatments that will either eliminate or minimize the risk of the animal becoming infected and reduce the chance of spread (Schantz, 1990). Regular deworming and checks for flea infestation are important (Hibell, 1987) to prevent pet ill health; however, if the pet becomes ill it is most important to seek help early in the clinical course of illness (Angulo et al., 1994). Included in this action is taking samples of any diarrhoea (Angulo et al., 1994) and removing the pet from the ward (Hibell, 1987). If the illness results in death of the animal it is necessary to proceed with a postmortem to establish the exact cause (Hibell, 1987).

C. EDUCATION FOR PATIENTS, VISITORS AND STAFF INVOLVED IN PET THERAPY
1. Careful handwashing at all times for everyone (Angulo et al., 1994) especially before eating or smoking (Montague, 1997) is crucial in reducing any potential risk.
2. Avoid contact with faeces and bodily fluids such as urine, saliva and vomit. If unavoidable wear gloves (Montague, 1997).
3. Try to avoid pets having contact with an individual’s face and do not allow them to lick wounds.
4. In order to reduce the risk of spread of toxoplasmosis attend to the cat litter tray several times daily and tie the subsequent bags of rubbish carefully in order not to inhale any dust. Disinfect the tray with boiling hot water and allow to stand (Montague, 1997).
5. If the pet is a caged bird, clean cage frequently away from the clinical situation to avoid build up of shed feathers and excrement and allow bird to resettle.
6. If cleaning out a fish tank always wear rubber gloves.
7. Keep pets clean and well groomed to prevent excessive hair loss, cover beds when not in use (Barba, 1995).
8. Do not feed the pet at client meal times and ensure separate utensils are used.
9. Be careful about what the pet eats and drinks, use high-quality feed, try to discourage scavenging, hunting or access to rubbish or toilet bowls. Ensure food is well cooked and all dairy products are pasteurized and birds are not fed seed that could have been stored for long periods in warehouses (Angulo et al., 1994).
10. The animal should be well supervised.
11. Control animal activity to a certain extent when on the ward. Restrict from areas such as those used for food preparation or consumption, medical preparation, cleaning supplies, linen storage and barrier nursing rooms (Barba, 1995).
12. External stimuli should be controlled, for example, noise, in order to prevent startling the pet, which may elicit injury. If a bite or scratch does occur wash immediately and thoroughly and inform individuals how to avoid activities that may encourage over-playfulness in the animal (Angulo et al., 1994).
13. Animals on visiting programmes should be with a trained handler at all times.
14. Hospital policies and procedures should be in place in order to describe the correct actions should a bite or the detection of a disease occur.
15. Provision of liability insurance should be considered in order to provide accident or injury cover.