Salmonellosis and eggs

More information needed, meanwhile avoid raw eggs

Throughout the 1980s in Britain cases of food poisoning due to *Salmonella enteritidis* have dramatically increased. Between 1982 and 1987 the incidence of human *S enteritidis* infection reported annually in England and Wales increased sixfold from 1101 to 6858 cases, of which 80% were further identified by the Public Health Laboratory Service’s division of enteric pathogens as belonging to phage type 4.1 In 1988, by the end of November, a total of 12 097 isolates of *S enteritidis* had been recorded at the Communicable Disease Surveillance Centre (unpublished data). In Scotland *S enteritidis* infections reported to the Communicable Diseases (Scotland) Unit increased from 279 (11% of all human salmonella isolates) in 1982 to 940 (41%) by 1987, while by the end of November 1988, 1281 cases had been recorded (52%).

Until two years ago *S enteritidis* type 4 infections in Britain usually affected holidaymakers who had been in Spain or Portugal. Since then, however, an increasing proportion of patients have had no history of overseas travel. In Spain infection due to *S enteritidis* has been increasingly associated since 1978 with egg and egg based products such as mayonnaise.2 Similarly, in the north eastern United States infected grade A hen eggs were responsible for many reports of human infection by *S enteritidis* between 1976 and 1986,3 although the phage type was different from that causing problems in Britain.

Until recently home produced hen eggs in the United Kingdom had a good record and were only occasionally implicated in episodes of human salmonella infection, whereas during the 1950s and early 1960s imported bulk liquid and frozen egg was responsible for several outbreaks of paratyphoid, in consequence of which the Liquid Egg (Pasteurisation) Regulations were introduced as a control measure in 1964. While infection by *S enteritidis* type 8 has been associated from time to time with poultry meat in Britain, only since 1985 have zoonoses order reports and other surveillance mechanisms increasingly featured phage type 4 in poultry flocks and poultry products, including hens' eggs, concurrent with the dramatic upsurge in human infection.

Contamination of eggs with salmonella organisms may result from faecal contamination of the shell or from infection originating within the ovary or oviduct. Hitherto, the most common route of infection was through cracks in the shell or through its pores as micro-organisms were drawn inwards as the egg cooled down or, alternatively, by contamination of the contents on breaking open. Most commercially produced eggs nowadays, however, are largely protected from faecal contamination after laying by being collected in a roll away system.

Unlike most other salmonella serotypes (with the notable exceptions of *S pullorum* and *S gallinarum*), *S enteritidis* is unusual in causing clinical disease in chickens, affecting the ovaries, pericardium, and liver. Nevertheless, the presence of *S enteritidis* infection in laying birds does not always seem to have a significantly adverse effect on fertility, thereby facilitating vertical transmission of infection.4 5 After a recent outbreak of food poisoning in England in which raw shell eggs were implicated epidemiologically *S enteritidis* was recovered from the ovaries and oviducts of birds in the layer flock of origin.6

An extensive nationwide outbreak of infection by *S enteritidis* type 4 has clearly been taking place in Britain over the past two years, with contaminated poultry meat being a major food vehicle in its spread.7 The role of egg borne infection was initially less apparent, but reports of outbreaks have increasingly implicated hens’ eggs as a vehicle of infection and the infection has occasionally been due to salmonellas other than *S enteritidis*.6 8 9 Homemade mayonnaise, omelette mix, tartar sauce, egg nog, milk shakes, mousse, ice cream, egg sandwiches, Scotch eggs, and various other foods containing raw or “cooked” eggs have all been implicated in outbreaks of infection. In one family episode in Scotland a mother and her two children who together had scraped clean the remnants of a raw sponge mix became infected by *S enteritidis* type 4. Epidemiological and microbiological investigation of outbreaks in Wales in 1988 implicated foods containing hens’ eggs, while a case-control study of sporadic cases of *S enteritidis* type 4 also showed a significant association between infection and the eating of egg in the three days before the illness.10 Salmonella organisms in egg have been shown experimentally to survive conventional light cooking methods, especially if the eggs have previously been stored in a refrigerator.8

There seems to be little doubt that infection by *S enteritidis*, type 4 in particular, albeit subclinical, is currently a problem among many broiler and layer flocks in Britain. Though a survey in 1987 showed levels of salmonella contamination of retail chilled and frozen poultry carcasses of 53% and 64%, respectively (D Roberts and R J Gilbert, personal communication), it is much more difficult to quantify infection in eggs. Chapman and colleagues succeeded in isolating...
salmonellas from bulk eggs produced by five of the 11 farms surveyed; they failed to grow any organisms from 1000 shell eggs examined. More detailed information is undoubtedly required about the distribution of infection among flocks, the incidence of infected birds within flocks, the frequency with which infected birds lay infected eggs, and the numbers of salmonella organisms present in such eggs.

Among possible control methods, recent research has shown that irradiating eggs is feasible, but at present it is illegal to sell irradiated food in Britain. In the immediate future, however, the use of irradiation to sterilise poultry feedstuffs offers greater promise but could only be complementary to establishing infection free breeding stocks.

Given the current level of salmonellosis in Britain, whether poultry borne or egg borne, it can only be in the long term interests of the poultry industry as a whole, as well as of the consumer, that these objectives are realised. Meanwhile, the recommendations issued by the United Kingdom departments of health, and re-emphasised last week, advising against the consumption of foods to be served cold with raw egg as an ingredient need to be followed, along with the maintenance of proper standards of kitchen hygiene and good temperature control throughout food preparation.

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6 Hopper SA, Mawer SL. Salmonella enteritidis in poultry. Veterinary Record 1988;123:351.

Government must act on community care

An agency to oversee local authorities might be the best option

It is now nine months since the publication of the Griffiths report on community care—ample time for the government to consider the proposals. Yet still it has not responded. A recent survey by the King's Fund Institute found widespread consensus among district managers in the health service and social service directors that a response was urgently required and the time overdue for a change in government policy. Clearly central government should set objectives, establish a framework for planning, and supervise the implementation of local plans. Griffiths suggested that this task should be spearheaded by a minister with responsibility for community care. Enthusiastic debate followed the publication of the Griffiths report, and overall it has received increasingly positive support. There is agreement on the report's three key principles: targeting resources at the most needy, providing a suitable domestic environment, and giving more voice and more choice to consumers and their families. Most of Griffiths's five recommendations for achieving these objectives have also been applauded. One of the most attractive of these is a system of care management in which managers hold budgets and have clearly defined responsibilities to provide a service to a group of clients. There was support too for new methods of financing through a specific community care grant; for all public funds for residential care to be channelled through a single agency; for promoting greater diversity of provision by the statutory, private, and voluntary sectors; for joint training across agencies; and for developing generic "hands on" community carers to provide personal care. Overall, the Griffiths principles provide a strategy for creating order out of the current chaos in community care.

The government's lengthy silence on the report is widely attributed to one sticking point—the recommendation that local authorities should become the "lead agency" responsible for community care. This one notion alone accounts for the King's Fund Institute's finding that nine out of 10 directors of local authority social services were in favour of the proposals in contrast to less than half (46%) of district general managers. Opposition within professional organisations has largely centred on this point and is less about losing health service resources to local authorities than about a deep scepticism as to the commitment, capability, and effectiveness of some social services departments. Some authorities have committed themselves to caring for elderly people and people with a mental handicap or physical disability, but the widespread failure of local government to recognise the plight of people who are chronically mentally ill, a politically unattractive cause, has aroused enormous anxiety. At government level, while David Mellor and Edwina Currie are broadly in favour of Griffiths, Kenneth Clarke is said to be unconvinced. Could the proposals be implemented in such a way that the potential disadvantages of local authorities taking the key role are overcome?

There exist practical proposals for a way forward. The Association of Directors of Social Services has proposed a community care development agency to audit the available funds from all services, oversee the development of plans, and monitor their initial implementation. Such an agency could ensure that budgets were truly "ring fenced" and that local plans were acceptable. It might be dissolved once a smooth transition to local government had been effected. The attraction of this solution to the government is that it provides a model for central government to gain greater control over other local government services.

A more radical solution would be to combine the community health services and community care parts of priority care services (currently within health authorities) with family practitioner services and social services departments to create one primary health care authority. This could fit in with the government's expressed intention of unfettering the short stay hospital sector and developing the internal market among health authorities. It has the advantage of combining those primary care professionals who should work closely together, and the independent contractor status of general practitioners fits in well with a primary care authority purchasing

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