

Letter to the Editor

Was the egg a plausible source for the *Salmonella* Potsdam outbreak?

The paper, *Outbreak of S. Potsdam associated with salad dressing at a restaurant (Commun Dis Intell 2003;27:508–512)*, implicated the egg as the 'most plausible source of *S. Potsdam*'. No tangible evidence to support this statement was provided and broader possibilities were not considered. The reasons for implicating the eggs were that another *Salmonella* serovar (*Salmonella* Infantis) was found on cloth used to clean the eggs and the egg was an ingredient common to the *S. Potsdam* positive dressings.

Is the presence of one serovar in the environment an indication of the presence of another *Salmonella* serovar in the same environment? Unless a scientific reference can support *S. Infantis* presence in environmental samples as an indicator for the presence of *S. Potsdam*, the scientific validity of the argument implicating the eggs is unsustainable.

Was the egg the only ingredient common to all *S. Potsdam* positive dressings?

Salad dressings were prepared by dividing a single batch of mayonnaise to make the five salad dressings (p. 510). *S. Potsdam* was only found in two. This could indicate that the mayonnaise base was not the primary source but that the two salad dressings once they had acquired *S. Potsdam* through cross contamination from another source merely provided good media for multiplication.

If the mayonnaise was the primary source, the main ingredient in the mayonnaise base was vegetable oil that in a kitchen with hygienic standards as described in the paper, could have been subject to cross contamination. Mayonnaise is prepared in restaurant kitchens by manual separation of the egg yolk and the white. Therefore, human hands were another possible common denominator. *S. Potsdam* has been isolated in Australia from potable water (J Powling, National Enteric Pathogens Surveillance System, personal communication). It does not appear that the water, a common denominator to all aspects of food preparation, was tested.

The human cases 'ate a variety of food items' and 73 per cent of the human cases did not consume salad dressings or egg-containing food items. The paper, while acknowledging this discrepancy, argued that the kitchen practices were conducive to cross contamination and this could explain the occurrence

of further cases in people that had not eaten food that contained eggs. Is cross contamination possible only from eggs to other food items? A timely and broader range of food sampling could have cast light on this aspect. However, in view of the lack of tangible evidence to implicate the eggs and the opportunity for cross contamination 'between raw and prepared food' (p. 511), it is puzzling why cross contamination from other food items to food containing eggs was not considered as a plausible explanation.

A lag of 15 days was reported between the time the first case had eaten at the restaurant and the collection of samples that yielded *S. Potsdam*. During this time the bottles described as 'stained and containing food residues and odour, standing at high ambient temperatures', were continually handled by patrons and staff and topped up with 'partly used dressing stocks' (p. 511). The finding of *S. Potsdam* under these circumstances adds considerable weight to the hypothesis that the dressings were not the primary food vehicle.

Investigations of human food poisoning are likely to benefit from a broad epidemiological approach and from knowledge of farming practices.

The paper states that 'meat meal was the major component of laying hen feed at egg producer A'. This is a distorted view of practices in the poultry industry and places distorted epidemiological significance on the meat meal. Poultry rations are grain based and meat meal is not the major component in any poultry ration.

In April/May 2002, shortly after this outbreak, *S. Potsdam*, by the paper's own admission, 'a relatively uncommon serovar in Australia' (page 508), was reported in 10 adults in the Richmond-Tweed region of New South Wales. In late November until the end of December 2002 a multi-state cluster of *S. Potsdam* was reported from New South Wales, the Australian Capital Territory, Victoria and Tasmania. Fresh produce from Queensland was suspected as a source (July 2003 NEPSS annual report). Because of the significant chances for cross contamination in the restaurant and the lack of tangible evidence implicating the eggs, it is plausible that fresh produce in the restaurant was the source of *S. Potsdam* as early as February 2002.

The only *S. Potsdam* from egg source during 1988 to 2002, was from raw egg pulp (and not eggs, p. 508) in Western Australia in July 1990 (J Powling, personal communication). Egg pulp is harvested by manually or mechanically removing the egg contents from the shell. This process provides ample opportunities for cross contamination with bacteria that may not be present in the layer shed, or if present would not normally present a significant hazard.

Between 1996 and 2003, as part of the New South Wales *Salmonella* Enteritidis-Free Accreditation Scheme, 3,470 layer farm tests have been done on a monthly basis. *S. Potsdam* has never been detected (nor has *S. Enteritidis*). In a survey in Queensland. (J Cox, 9th Australian Poultry and Feed Convention, Gold Coast 1993), a variety of *Salmonella* spp. were reported in the Queensland layer environment but *S. Potsdam* was not detected on any of the 60 farms. These are significant, consistent epidemiological findings that provide additional evidence to question the plausibility of the eggs as a source in this case.

Although the majority of affected patrons in the restaurant did not consume egg-containing food, the egg farm was sampled on the 18 February 2002, two days before the *Salmonella* culture results from the various restaurant food items were available (personal communication, the Egg Producer). This perhaps demonstrates that eggs were considered the source before the facts were known and despite very strong hints suggesting other possibilities, none were elucidated. Indeed, the evidence in the paper and the broader epidemiological picture tends to suggest that eggs were unlikely to be the source of *S. Potsdam* and investigations of food poisoning require, from the onset, objective assessment of all possibilities.

George Arzey
Senior Veterinary Officer (Poultry)
NSW Department of Primary Industries

Response to Letter to the Editor: *Salmonella* Potsdam and eggs

In response to George Arzey's letter regarding the paper *Outbreak of Salmonella Potsdam associated with salad dressing at a restaurant, Commun Dis Intell* 2003;27:508–812.

As the title of our paper states we reported an outbreak of *Salmonella* Potsdam associated with salad dressing at a restaurant. We were able to culture *S. Potsdam* from two bottles of salad dressing at the restaurant. Given the difficulty in recalling food consumption many weeks past, it is not surprising that many of the cases could not recall consuming the contaminated salad dressings.

There are potential explanations for this outbreak, other than shell eggs. Alternative sources of *S. Potsdam* were investigated and described. *Salmonella* testing was undertaken on ingredients of the dressings (fresh dill, horseradish relish, anchovies, vinegar, parmesan cheese, vegetable oil, salt and pepper, sour cream, mustard) and other vehicles at the restaurant considered plausible, based on previous data on the distribution of *S. Potsdam* (including swabs of drinking water bottles) and all were found negative.

However, we made extensive commentary on shell eggs for three reasons:

1. Shell eggs found at the restaurant were heavily faecally contaminated and, given the restaurant's handling methods, represented a major food safety hazard at the time of our inspection.
2. The environmental findings at the egg producer identified multiple hazards in an industry that is currently unregulated and subject only to voluntary codes of practice under which only some part of the egg industry operate. Some of the most concerning hazards included *Salmonella* contamination of environmental surfaces including bulk feed and feed troughs, and numerous opportunities for cross-contamination between bird droppings and eggs.
3. Sixteen of 18 cultures collected from the egg producer, including meat meal and drinking water for the chickens, identified *Salmonella*.

Leanne Unicomb
Phillip Bird
Craig Dalton