PHARMACY BULLETIN

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FOOD POISONING: SALMONELLOSIS by PRP SHANNON & MS IZYAN

Background

Newspaper reported that the food poisoning among pupils in Malaysia has increased by 57% in the first quarter of 2016 compared to last year. According to Director-General of Health Malaysia, Datuk Dr Noor Hisham Abdullah, in that span of 4 months, a total of 2,352 poisoning cases were reported with majority due to contaminated raw materials, cross-contamination while handling food and prepared food taken after more than 4 hours.

The first mass food poisoning among schools were reported in April 2016 where 62 students and a teacher from Sekolah Menengah Sains Tapah, Perak were rushed to the hospital after having series of diarrhea and vomiting after eating 'roti jala' (lace pancakes) and chicken curry for supper. Initially, it was thought that the source of contamination was from the chicken as it was not kept at –6°C for 32 hours before being cooked. Furthermore, the curry chicken was only cooked for 30 minutes which was too short to kill the bacteria which would have been exponentiated by then.

However, laboratory analysis conducted on the samples showed that the source of contamination was not from the chicken curry; but from the lace pancakes instead. The samples were positive with 3 bacterias; *Salmonella, Bacillus cereus dan E.coli* which were believed transferred by the cook who did not wash her hands after breaking the egg shells which were tainted with chicken feces and soil. Further inspection revealed that dirty egg containers were also reused to place new eggs bought. From these findings, the food supplier services was terminated right after the incident.

Subsequently on May 12th, Bernama reported that 23 students of a secondary school in Dungun came down with food poisoning after eating chicken rice served at its canteen. 2 weeks later another incident reported in Kelantan where 29 students of Sekolah Kebangsaan Tiong complained of nausea, stomachache and vomiting after having a spicy chicken meal at the school canteen. Series of food poisoning is becoming more common of late and this warrants more stringent preventive measures by Ministry of Health and Ministry of Education to curb this incident from becoming an epidemic to the country.

The latest mass of food poisoning was reported on 21st August 2016 among 56 Malay College Kuala Kangsar (MCKK) students who had abdominal cramps, vomiting and diarrhea after taking food prepared by the school canteen. Preliminary findings found that the van used to transport food from the kitchen to the dining hall was dirty and full of maggots. Furthermore dirty kitchen utensils such as trays, jugs, water dispensers, bowls and plates were found. In accordance to the Prevantion and Control of Infectious Disease Act 1988, the hostel was told to close.

Causes of Food Poisoning

Most food poisoning is caused by the bacterium that causes one of the most common intestinal infections; Salmonella. The common serotypes are *S. typhimurium* (typhoidal) and *S. enteritidis* (non-typhoidal). Study found that 87% of all confirmed cases of Salmonella were foodborne, with 10% from person-to-person infection and 3% caused by pets. Transmission of bacteria are commonly through **food** and **egg,** including the **egg shell.** Chickens carry the bacteria in their own bodies, and pass along to the yolk and white while the egg is forming in the ovaries. The bacteria is also passed to the eggshell and through the shell pores into the inner egg when the egg is laid. Interestingly, *Salmonella* can live on both the outside and inside of eggs that appear to be normal.

Anyone can be infected by Salmonella, but certain people are at greater risk for severe illness. These include children, older adults, pregnant women, and people with weakened immune systems (such as transplant patients and individuals with HIV/AIDS, cancer, and diabetes). In these patients, the *Salmonella* infection may spread from the intestines to the blood stream, and then to other body sites and can cause death unless the person is treated quickly with antibiotics.

Food Sources	Symptoms	Onset Time after ingestion	Duration	Bacteria stays in GI tract & stool
Eggs, poultry, meat, unpasteurized milk or juice, cheese, contaminated raw fruits and vegetables	Painful abdominal cramps, diarrhoea, fever (38-39 ° C), vomiting, body ache, headache	Non-typhoidal: **6-72 hours** Typhoidal : **8-14 days**	Recover in 3-7 days (without treatment)	Adults: 1 month Children: longer than 1 month

Complications of Food Poisoning

Complications of food poisoning are more prone among young children and elderly such as reactive arthritis and focal infection. Patient with reactive arthritis are presented with inflammation (swelling, redness, heat and pain) of the joints, eyes and genitourinary organs. Focal infection on the other hand are caused by Salmonella typhoidal only which affects the body tissue and causes endocarditis or arthritis.

Treatments

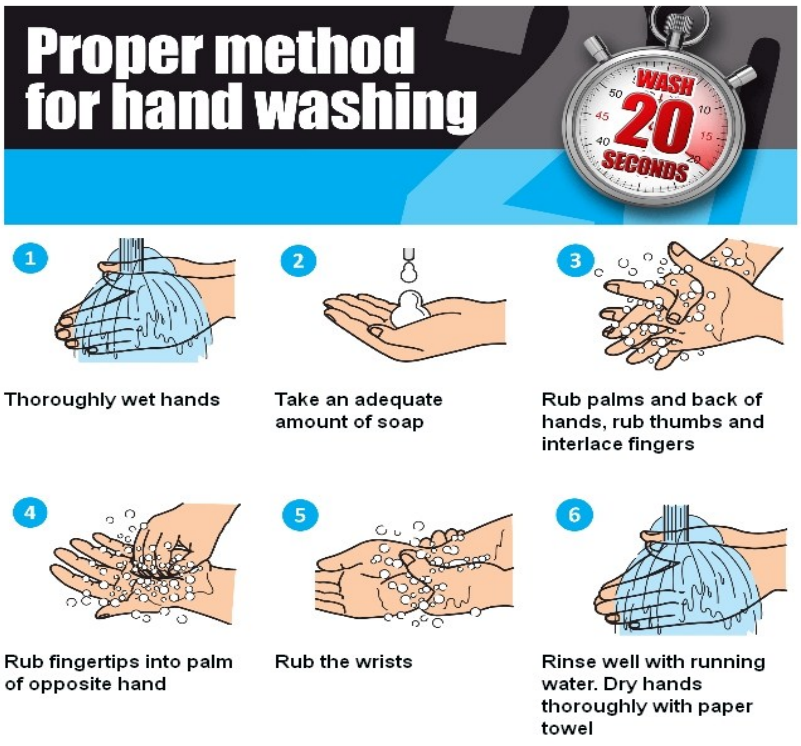
Most people recover from Salmonella without the need for antibiotic treatment. The symptoms usually resolve within **3-7 days** without treatment. Symptomatic treatments are given to relieve symptoms. However, medicines to stop diarrhoea is not recommended as it may prolong infection. Below are the recommendation for antibiotics :

Reference	Suggested treatment	Alternatives
National Antibiotic Guideline 2014		
Salmonella non-typhi	Ciprofloxacin 15-20 mg/kg/day PO in 2 divided doses for 5-7 days	Chloramphenicol 50-100mg/kg/day PO in q6H for minimum 14 days.
PPUKM Antibiotic Guideline 2012		
S. typhi S. paratyphi A + B + C	500mg q6h x 14 Ciprofloxacin 400mg q12H IV x 14 days (switch to PO 500 mg q12H asap) **OR** Chloramphenicol 500mg q6H x 14days	Ceftriaxone 2g q24H IV x 14 days.
Salmonella non-typhi	Ciprofloxacin 500mg q12H PO x 10-14 days	

Prevention

Below are the recommendations to prevent Salmonella from spreading :

- Always **wash hands** before preparing food or eating with hands.
- **Avoid eating raw food**, cook poultry, eggs until its fully cooked before consuming.
- **Drink only pasteurized milk**.
- **Avoid cross-contamination**. That means that you should never allow foods that will not be cooked (like salads) to come into contact with raw foods of animal origin (e.g., on dirty countertops, kitchen sinks, or cutting boards).
- **Wash hands**, **kitchen work surfaces, and utensils with soap** and water immediately after they have been in contact with raw foods of animal origin.
- **Store food appropriately** according to storage conditions



References

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2. http://www.about-salmonella.com/salmonella_prevention/#.Vysbg9J96Ht
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5. PPUKM Antibiotic Guideline 2012