Infectious Diarrhoea

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Infectious diarrhoea is the second most common cause of morbidity and mortality worldwide. The WHO estimates that about 2.5 million people die annually as a result of infectious diarrhoea, most of them children[1]. In 2002 about 1.6 million children under the age of five in developing countries died from diarrhoeal disease. In the United States between 211-375 million episodes of diarrhoeal disease occur annually resulting in 73 million physician consultations and 1.8 million hospitalisations with over 3,000 deaths[2].

In Malaysia the true burden of infectious diarrhoeal diseases is largely unknown. Many patients do not seek medical attention for mild episodes and even if they were to consult a general practitioner, this encounter is not captured in any systematic manner on a national basis. The Ministry of Health of Malaysia reported around 6,000 cases of food-poisoning in 2004 but this is most likely a gross under estimation as they largely represent cases involved in outbreaks. An attempt was made more than a decade ago to estimate the burden of diarrhoeal disease in children in Malaysia using a community-based study[3]. In this study the incidence of diarrhoea in the children studied was estimated at 23.6 episodes per 100 person year. Based on the 2,000 Malaysian census[4] which showed a total population of 23.27 million with 33.3% under the age of 15 years, there would be nearly two million episodes of diarrhoea annually among Malaysian children.

Due to improvements in socio-economic status of the population and good access to medical facilities, severe dehydration resulting from diarrhoea has become relatively uncommon in Malaysia. The paediatric diarrhoea wards in the majority of government and university hospitals have been closed as diarrhoea cases requiring hospitalisation is increasingly infrequent. Diarrhoeal diseases are no longer among the 10 leading causes of death in Malaysia[5]. Among children under five years of age, diarrhoeal diseases account for only 5% of total mortality. In this issue of the *Medical J[ial of Malaysia*, Poo and Lee have reported their [rience with childhood diarrhoea in their hospital. [rhoea only accounted for 6% of total admissions to the [diatric Department of the University of Malaya Medical Centre in 2002[6]. Even among these hospitalised patients, severe dehydration was uncommon (5%); the median stay in hospital was only three days and no mortalities were recorded.

Although infectious diarrhoea is no longer a major cause of mortality in Malaysia, medical practitioners should still keep abreast of the developments in this field as it remain a commonly encountered illness. In the last two decades, many new pathogens have been shown to be associated with diarrhoeal diseases[7]. They include Campylobacter sp, Cryptosporidium, *Cyclospora cayetanensis, Escherichia coli* O157:H7 and other diarrhoeagenic *E. coli, Nitzschia pungens* (the cause of amnesic shellfish poisoning), *Vibrio cholerae* O139 and *Vibrio vulnificus*. Many of these agents are readily transmitted through food and water and may cause devastating disease in the immunocompromised. Some can lead to long term sequalae like renal failure following haemolytic-uraemic syndrome due to *Escherichia coli* O157:H7 and Guillan-Barre syndrome following *Campylobacter* diarrhoea.

Because of the manner processed food is now mass produced and distributed, a single contaminated food source can cause an outbreak involving many thousands of cases spread over a wide geographical area. In 1994 in the United States, an outbreak of *Salmonella* food poisoning associated with a nationally sold brand of ice-cream affected over 220,000 persons in 41 states[8].

Laboratory tests to ascertain the cause of the diarrhoeal episode is not often performed especially in general practice in Malaysia due to cost factors. However, laboratory test results may be crucial for both individual patient care and for public health purposes. The lack of a specific diagnosis can hinder the institution of appropriate therapeutic and preventive measures. Laboratory surveillance is also necessary for the detection of outbreaks. In the large *Salmonella* outbreak mentioned above, the outbreak was only recognised because some clinicians had performed laboratory tests. Nevertheless performing a laboratory test on every patient with diarrhoea is clearly impractical and a waste of resources. The Infectious Diseases Society of America (IDSA) has developed guidelines on when to perform laboratory tests[2]. The guidelines recommend laboratory testing in cases of bloody diarrhoea with fever, in cases of persistent diarrhoea especially where the patient is immunocompromised and testing for *Clostridium difficile* toxins in cases of nosocomial diarrhoea.

The management of diarrhoeal disease is still a challenge worldwide. In the study by Poo and Lee[6], anti-diarrrhoeal drugs were prescribed in 57% of their patients and 48% were given anti-emetics. These are clearly inappropriate measures for the treatment of diarrhoea in children. Disappointingly oral rehydration therapy was rarely given.

Oral rehydration therapy is the most important mode of treatment in preventing severe dehydration and death in children with diarrhoeal disease. The WHO and UNICEF now

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recommend an improved oral rehydration solution (ORS) with reduced osmolarity to prevent the adverse effects of hypertonicity on net fluid absorption. This solution containing 75 mEq/l of sodium and 75 mmol/l of glucose with a total osmolarity of 245 mOsm/l has been shown to improve the efficacy of ORS regimen for children with acute non-cholera diarrhoea. The need for unscheduled intravenous fluid therapy fell by up to a third with the new ORS[9].

The WHO and UNICEF also recommend zinc supplementation 10 - 20 mg /day for 10 -14 days. This will not only reduce the severity of the acute episode but will also reduce the number of episodes of diarrhoea over the subsequent 2 – 3 months.

Antimicrobials should also be prescribed with caution in diarrhoea. In the majority of cases antimicrobial therapy is not indicated. For traveller's diarrhoea the IDSA recommends a quinolone in adults and cotrimoxazole in children[2]. In cases of *Escherichia coli* O157:H7 antimicrobials are generally contraindicated and may lead to a higher rate of the haemolytic-uraemic syndrome[10]. Antimicrobial therapy will also cause the emergence of resistance, and multi-drug resistance in *Salmonella* has been reported[11].

Infectious diarrhoea remains a common illness. Appropriate management is crucial in preventing severe disease and deaths. There is a need for improved surveillance systems including syndromic and laboratory surveillance to enable us to detect outbreaks in a timely manner in order to take the necessary preventive measures.

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