

The viral diarrhoea epidemic 2002 in the Marshall Islands: its impact on a small island pharmacy

Abstract: This paper describes the increased demands on the pharmacy department of Majuro Hospital in the Marshall Islands during a recent viral diarrhoea epidemic. It discusses the increased number of patients, the increased usage of drugs and also the increased costs during this epidemic. The number of patients only rose 10%. However, the increase in workload of the outpatient department, laboratory and the pharmacy department was much greater. The percentage of children presenting to the outpatient department with diarrhoea increased from 10% to 80%. Oral rehydration solution (ORS) was the most common medication given during the epidemic in line with the World Health Organisation Guidelines.

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Introduction

The Republic of the Marshall Islands (RMI) is a developing country of about 60,000 people¹. The country has 29 coral atolls and 5 islands. RMI is located just north of the equator in Micronesia in the Northwest Pacific Ocean. Majuro Atoll is the capital has approximately 50% of the population.

Majuro Hospital is one of two hospitals in the country. A smaller hospital is located on Ebeye, the second most populated island of the country.

During early June, an increase in number of patients presenting with diarrhoea was noted. This short text is to outline the increased strain on the health care system during this epidemic.

Materials and methods

The study was retrospective and undertaken at Majuro Hospital. All patients presenting to the hospital outpatient department during the study period (January to July 2002) were included in the statistics.

The number of outpatients was calculated from encounter information collected by the medical record department. The number of stool samples was calculated from the hospital laboratory log books. The amount of medication

used was calculated by a stocktake before and after the epidemic period.

Results

During the first five months of the year, the average number of patients that presented to the outpatient department in one month was 2155. Eighteen percent of these were children (defined as below 14 years of age by the hospital medical record department).

During the month of June there was a large increase in the number of children being seen in outpatients and being admitted to the hospital.

There were 2366 patients presenting to outpatients during June and 2393 during July – an increase of just over 10%. Of these patients, 23% were children in June and 34% were children in July. The percentage of children seen in July (34%) was nearly double the average number (18%).

Table 1, figure 1 and figure 2 show the number of patients and the number of children seen each month in Majuro Hospital during this period.

Due to the increased number of patients seen during the "summer" (June/July), the amount of medication supplied to patients also increased dramatically. The amount of acetaminophen (paracetamol), oral rehydration solution (ORS) and multivitamins increased the most. Table 2 shows a comparison of the number of items dispensed during the average six week period and the number of items dispensed during the six week period from 1st June to 13th July.

The extra cost of medication was calculated at approximately USD 1200 – as shown in table 3.

Stool samples were sent to the hospital laboratory in many of the cases. The average number of stool samples tested during the months January to May was 255 (per month). June and July saw nearly double this with 480 and 520 samples tested respectively. All samples were tested for giardia. Table 4 and Figure 3 shows the number of stool samples tested and the percentage found to have giardia.

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Figure 1. Number of patients attending outpatient clinic, by month

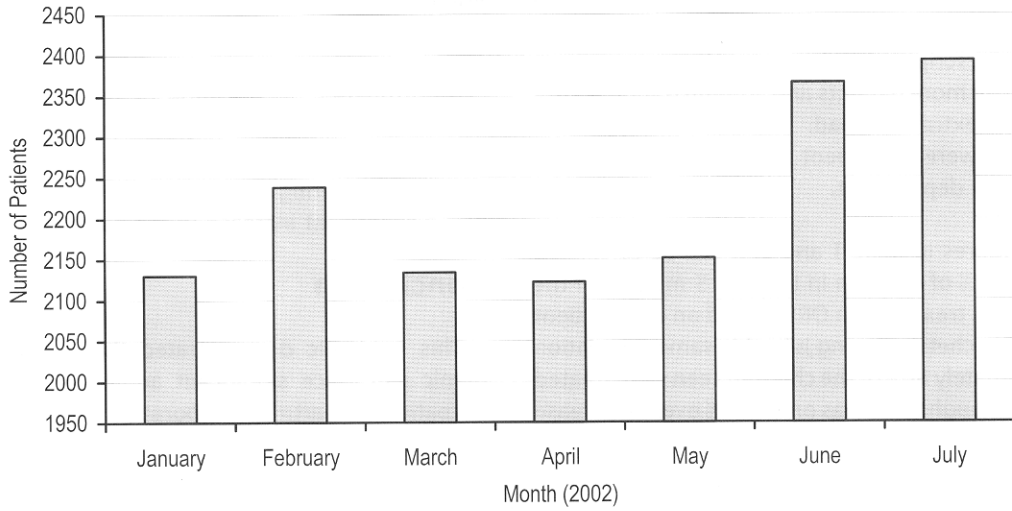


Figure 2. Percentage of outpatients who are children (0-14 years old)

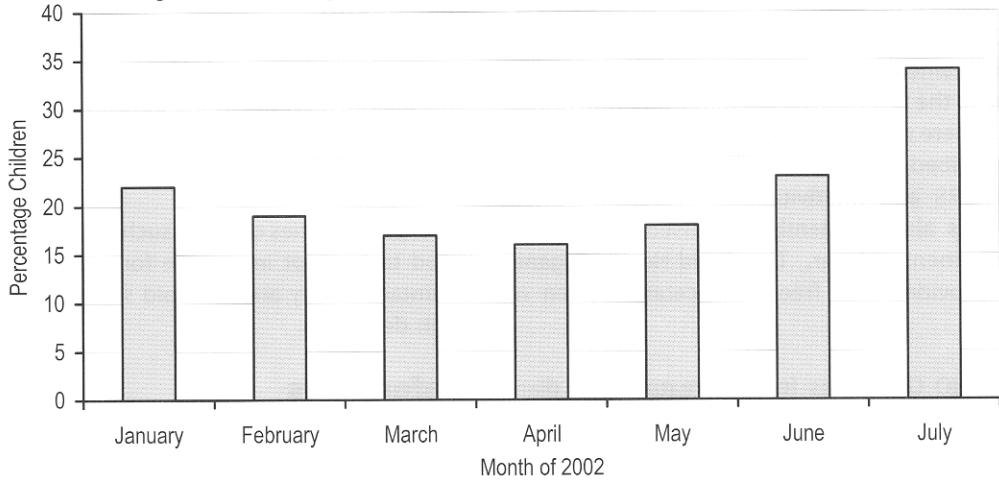
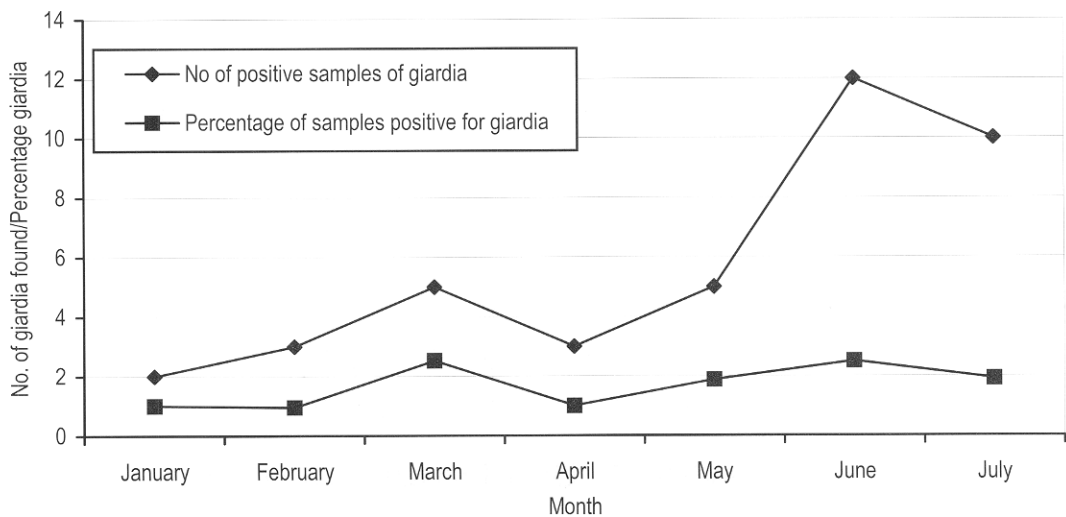


Figure 3. Number of samples tested and percentage of samples found with giardia



During any epidemic, the whole hospital is put under additional strain. The doctors see more patients, the laboratory processes more samples, the pharmacy dispenses more prescriptions, the outpatient nurses are stretched between more patients and administration is kept busier due to the extra workload. The main areas affected by this epidemic were outpatient services, the laboratory and the pharmacy department.

From these figures in table 1 and 2, it can be calculated that just under 10% of children in the first 5 months of the year had an illness treated with ORS (based on each patient receiving 2 ORS sachets). During July, this same calculation reveals approximately 80% of the children seen were treated with ORS. Even though there was only a 10% overall increase in the number of patients presenting to the outpatient department, from these calculations, there was a marked shift in the presenting complaint.

Despite the burden on hospital services, costs, surprisingly, were maintained. This was mainly due to the fact that the epidemic was viral rather than bacterial. There was a slight increase in the number of antibiotics prescribed. The greatest increase in prescriptions was for ORS and multivitamins. Acetaminophen (paracetamol) was also frequently dispensed during this time for the treatment of fever. The World Health Organisation (WHO) provides ORS free and acetaminophen is relatively cheap.

In line with WHO Guidelines for the treatment of diarrhoea, ORS was the main item prescribed during the epidemic². Also in accordance with the WHO Guidelines, antibiotic therapy was not given routinely. There was an insignificant increase in the amount of amoxicillin given in relation to the number of children presenting with diarrhoea.

The increase in multivitamins dispensed would have little impact clinically for the patient and was not an excessive burden in cost.

Unfortunately, at the time of reporting there were no figures on the number of prescriptions dispensed. However, from the increased amount of ORS and multivitamin drops given during this time, it can be deduced that there was a significant increase in the number of prescriptions.

Conclusion

This epidemic demonstrated that a non-bacterial epidemic can place significant additional demands for the outpatient department, laboratory and pharmacy department of a small island hospital. Even though there was only an increase of about 10% in patients seen, the number of laboratory tests performed nearly doubled and the number of medications dispensed increased dramatically. It is also significant that there was a large increase in the percentage of patients presenting with diarrhoea related illnesses and a reduction in those presenting with other illnesses.

Large quantities of items such as ORS and acetaminophen need to be kept in reserve for occasions such as this to maintain supply and to avoid shortages during periods of high demands.

References

1. *Social Statistics Bulletin - June 2002*. Office of Planning and Statistics, Republic of Marshall Islands, June 2002
2. World Health Organisation. *A Manual for the Treatment of Diarrhoea*. 1990. ■

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**Business is Darwinian;
only the fittest survive.**

Robert H. Acourt, Bell Group International