SHORT REPORT

Maritime health emergencies

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Background Commercial ships flying the US flag must conform to Coast Guard standards and have medical care available onboard. Consultation with a physician is required if medication is to be prescribed.

Aim To evaluate the epidemiology of medical contacts for US ships at sea.

Method Retrospective analysis of cases where shipboard caregivers made contact with US emergency medicine physicians for advice.

Results There were 866 cases and 1720 contacts in 48 consecutive months of study. Eighty-eight per cent of cases were men with a mean age of 43.7 years (SD 13.7). Eighty-four per cent of cases were medical, 14% were injuries and 2% were purely psychiatric. Fifty-eight per cent of medical cases, 50% of psychiatric cases and 42% of injury cases were handled with a single contact. Injuries and psychiatric cases required a higher number of contacts per case compared with medical cases ($P < 0.01$). Five categories of illness accounted for 43% of medical cases (respiratory infections, abdominal problems, genitourinary complaints, rashes and dental issues). Psychiatric cases required the most medication, with 12% requiring four medications. The most common categories of medication given were pain relievers (non-steroidal anti-inflammatory drugs, opiates, heartburn relief) and antibiotics.

Conclusions Even with pre-screening of seafarers and the potential dangers of life at sea, the majority of cases requiring physician advice are not related to trauma. However, cases of injury or acute psychiatric problems required more physician interaction and medication than medical cases.

Key words Injuries; maritime; medical advice; radio medical advice; ships.

Introduction

Crew members and passengers on ships at sea may be injured, develop acute medical problems or suffer from chronic conditions. The availability of medical care aboard ships flying the US flag follows standards set out by the US Coast Guard [1]. Officers in charge of navigational or engineering watches must qualify as ‘Medical First Aid Provider’. Individuals designated as shipboard ‘Persons in Charge of Medical Care’ undergo 2 weeks of further training. Seagoing ships must carry a ‘medicine chest’ [2] that meets standards set by the Department of Health and Human Services. The standards include the notation in red ink, ‘Obtain medical advice by radio before using!!!’, next to each prescription medication [3].

There is no national system that ensures ships have access to medical advice. Ocean-going enterprises must contract with providers on an ad hoc basis. Maritime Medical Access (MMA) is a company that uses satellite technology to allow shipboard caregivers direct phone or e-mail contact with a US board-certified emergency physician. For each ship, a content list of the on-board medicine chest is available to MMA and the physician. Transoceanic shipping, actively racing yachts and offshore fishing and marine maintenance boats are included within the MMA fleet portfolio. This study reports on medical contacts made by shipboard caregivers to physicians.

Methods

This study is a retrospective review of computerized case records for 48 months from May 2001 to May 2005. Approximately 90 vessels participated early in the study period. This rose to 120 vessels by May 2005. There was no information on the characteristics of covered individuals. Thus, the results of this study are limited to a description of the numbers of cases rather than incidence rates. Cases were defined as up to six contacts related to a single health issue for a passenger or crew member.
Contacts consisted of any interaction requiring physician advice or follow-up. Cases were considered ‘new’ if they involved a new problem occurring in an individual. Cases were grouped as ‘injury’, ‘medical’ (defined as ‘non-injury’) and ‘psychiatric’. At the time of the initial contact, advising physicians determined the category of illness from a brief drop-down list. SPSS v13.0 determined chi-squared results with alpha set at 0.05. Human subjects research approval was granted by The George Washington University.

Results

A total of 866 cases and 1720 contacts occurred over the 48 months of study. Eighty-eight per cent of cases were males. Mean age was 43.7 years (SD 13.7, range 11–92, data missing in 120 cases). Medical issues accounted for 84% of cases, injuries for 14% and psychiatric problems for 2%. Fifty-eight per cent of medical cases and 42% of injury cases required a single contact. At least six contacts were required for 11% of injury cases and 12% of psychiatric cases, but only for 5% of medical cases (P < 0.01) (Table 1). Five categories of illness accounted for 43% of medical cases. These were respiratory infections (15%, e.g. colds, bronchitis and pneumonia), abdominal complaints (10%, e.g. pain, nausea, vomiting and/or diarrhea), genitourinary complaints (9%, e.g. dysuria, hematuria, scrotal or testicular pain), non-traumatic skin lesions (8%, e.g. rashes and cellulitis) and purely dental issues (7%, e.g. lost fillings, dental abscesses, tooth ache). The maximum number of medications administered for a given case was four. In 37% of cases, no medication was prescribed. Psychiatric cases accounted for the most medication, with 12% requiring four medications. This was significant when compared to number of medications administered for medical cases and injury cases (P < 0.001). The most common categories of medication given were pain relievers (non-steroidal anti-inflammatory drugs, opiates, heartburn relief) and antibiotics.

There was one fatality, namely, a crew member found onboard in cardiac arrest. There were three outbreaks of contagious disease. The first was an outbreak of an abdominal complaint (63%) [10].

Table 1. Maritime health emergencies

<table>
<thead>
<tr>
<th>Case type</th>
<th>n (%)</th>
<th>Cases with six or more contacts</th>
<th>Required four medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical</td>
<td>724 (84)</td>
<td>39 (5%)*</td>
<td>0</td>
</tr>
<tr>
<td>Injury</td>
<td>125 (14)</td>
<td>14 (11%)*</td>
<td>1</td>
</tr>
<tr>
<td>Psychiatric</td>
<td>16 (2)</td>
<td>2 (12%)*</td>
<td>2 (12%)**</td>
</tr>
<tr>
<td>Cardio-pulmonary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>resuscitation</td>
<td>1 (0)</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Total</td>
<td>866 (100)</td>
<td>55 (6%)</td>
<td>3</td>
</tr>
</tbody>
</table>

*P < 0.01 for difference between medical and injury case types, **P < 0.001.

Discussion

Our study found that the major proportion of medical cases requiring physician advice were not related to trauma. However, cases of injury or acute psychiatric problems required more physician interaction and medication than medical cases. The World Health Organization recommends pre-screening seafarers for health prior to embarkation on commercial ships [4]. Even so, seafarers have higher hospitalization and mortality rates than age-matched peers, particularly for traumatic causes [5,6]. In fact, as many as 9% of seafarers report being injured during a single tour of duty, with nearly half of them unable to work for at least 1 day as a result [7]. Three other international entities have published data regarding a similar service. International Radio Medical Centre (Centro Internazionale Radio Medico, http://www.cirm.it/) located in Rome reports accidents as the most common problem (23% of cases) [8]. At the Singapore General Hospital, 25% of calls over a 21-year period were regarding abdominal pain [9]. For Radio Medical Denmark, which provides advice to passenger ferries, the majority of calls were related to passengers and pain was the commonest complaint (63%) [10].

In this study, skin diseases and dental problems accounted for a significant number of cases (15%). Skin disorders could potentially be better managed by the submission of digital images to enable the physician to correctly diagnose the problem. Few vessels carry dental material. The availability of temporary filling material or improved dental screening might improve these situations. The results of this study are limited to a description of the numbers of cases involved rather than the rates of specific complaints in a given population because of the inability to determine the number of people at risk. Some cases did require emergency evacuation (ranging from an emergency stop in an unplanned port to removing the patient by helicopter from the ship while at sea), but the data collection system did not collect that as a data-point and specific analysis of those cases was not possible.

Even with pre-screening of seafarers and the potential dangers of life at sea, the majority of medical cases requiring physician advice were not related to trauma. The proportion of dental and dermatologic problems suggests that technological and/or material improvements may help in the future.
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Conflicts of interest

None declared.

References