

# Infections onboard ship – analysis of 1290 advice calls to the Radio Medical (RM) doctor in Sweden. Results from 1997, 2002, 2007, and 2009

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## ABSTRACT

Results from a descriptive study on Swedish Telemedical Advice Services (TMAS) from 1997, 2002, 2007, and the first six months of 2009 on infectious conditions are presented. These findings concern symptoms, actions taken, number of evacuations, means of communication, and use of digital photos. They show that infectious conditions are a significant contributor to calls to the service and that they can be more frequently treated on board than can other conditions.

(Int Marit Health 2011; 62, 3: 191-195)

**Key words:** Radio Medical, infections onboard ships, descriptive study

## INTRODUCTION

Sahlgrenska University Hospital in Gothenburg, Sweden, one of the largest hospitals in Europe, provides Telemedical advice service to employees onboard ships worldwide. The service was established in 1922. The hospital is the international reference hospital for the Swedish Maritime Administration, and the radiomedical (RM) service is asked for advice about new regulations relating to maritime health. The RM service is free of charge to ships and seafarers in accordance with international agreements. The RM provides medical support and advice to merchant ships all over the world, to the Swedish Navy and to the Coast Guard. Advice may be requested and given by text and/or speech communication. Figure 1 shows the worldwide coverage.

The RM doctor is an Internal medicine specialist and has all other specialists available for consultation when needed.

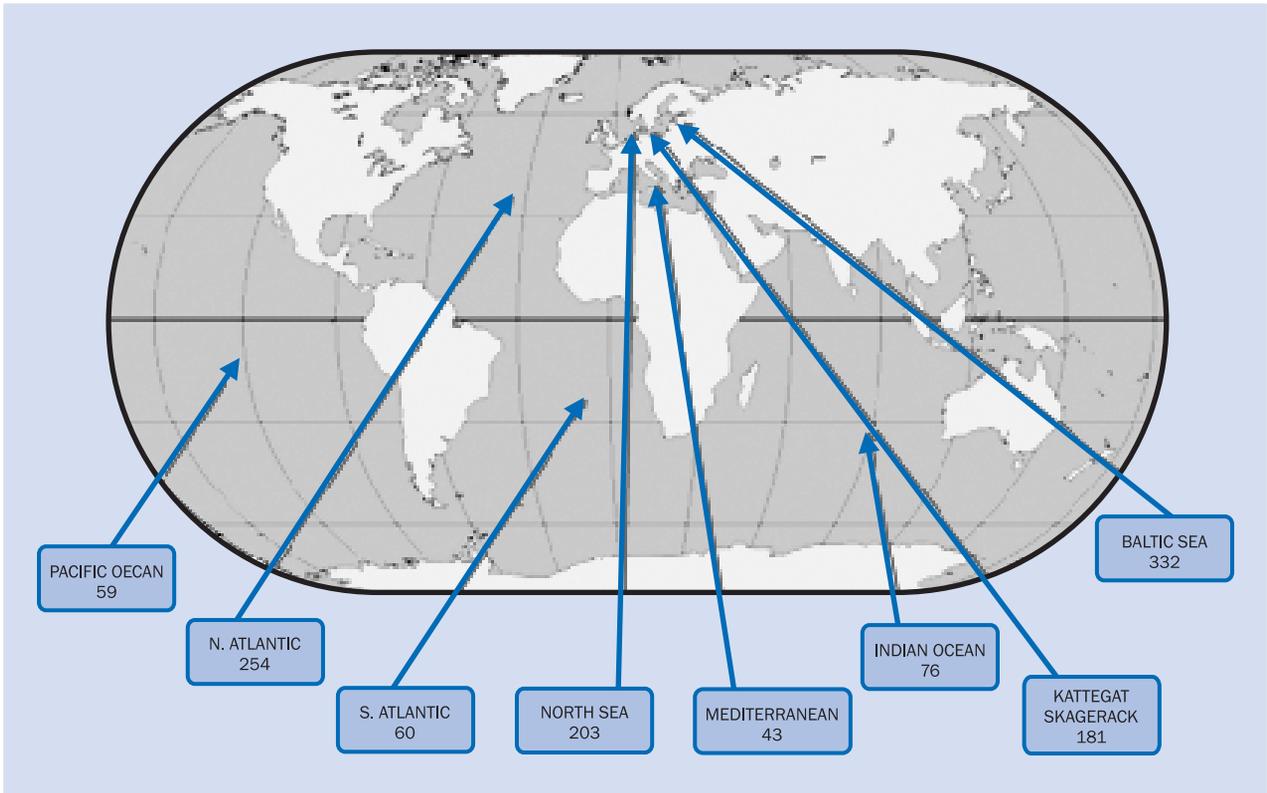
In case of illness or accidents onboard, the officer responsible for medical services contacts the JRCC (Joint Rescue Coordination Centre) in Göteborg, Swe-

den irrespective of position. The JRCC sends the call on to the Radio Medical doctor on duty. There is a doctor on duty around the clock. During the past 10 years, the Swedish TMAS has handled approximately 500 cases per year. In this study, however, cases with passengers were excluded.

The focus of this part of the study was to analyze the disease-pattern concerning infections onboard. We also studied whether the use of digital photos was optimal and if access to the Internet has had any effect on the type of cases on which advice is given: more or less minor illnesses/injuries and more or less evacuations.

We are not aware of similar published studies on infections from other national TMAS services. Previous presentations have been made using results from other parts of the wider Swedish study:

- 2008, IMHA Workshop Medical chest – present achievements and further perspectives, Athens, Greece; Classification of 201 cases, prescriptions made and results concerning total treatment onboard, number of evacuations and recommen-



**Figure 1.** The geographical spread of Radio Medical cases during 1997, 2002, 2005, 2007, and the first six months of 2009

datations of seeing a doctor in next port of destination.

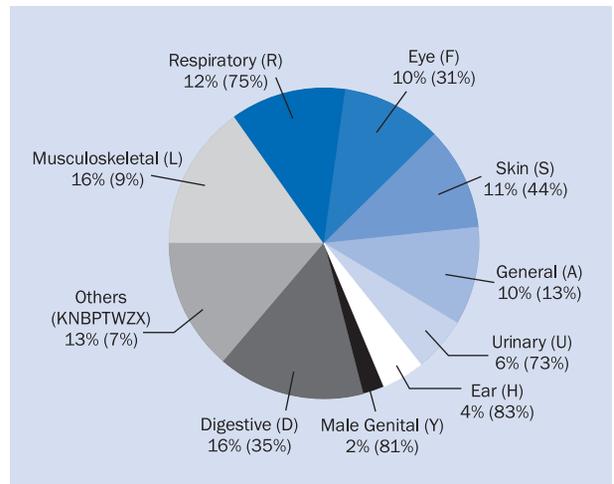
- 2009, 10<sup>th</sup> ISMH in Goa, India; Reasons for contact, illnesses versus accidents, and use of digital photos, consultations with other specialists, and type of communication.
- 2010, 3<sup>rd</sup> NECTM in Hamburg, Germany; Disease patterns in telemedicine advice – Experiences from Swedish RM.

**MATERIALS AND METHODS**

All contacts with RM passes through the Swedish JRCC. The JRCC’s role is to maintain an online link with duty RM doctor and to ensure communication between the doctor and the ship. In this study all logs from JRCC and the RM doctors’ documentation are studied, in total 1290 cases.

Medical records on RM cases is available since 1991 and the study describes the years 1997, 2002, 2007, and the first six months of 2009 (376, 312, 407, and 195 cases) (figure 2).

The international classification for primary care, ICPC-2 ver. 1.2 by Wonca’s international classification committee (WICC) is used (Table 1). The ICPC-classification is set during the study. The average number of cases handled by Swedish RM is approx-



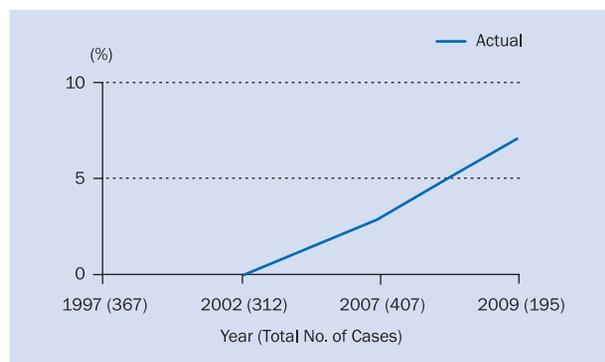
**Figure 2.** Reasons for contact 1997, 2002, 2007, and the first six months of 2009. In total there were 1290 cases, of which 449 concerned infections. The percentage of infection cases in each group is shown in parentheses

imately 500 per year, but in this study cases concerning passengers are excluded.

Data collection contains the number of each case, date, position and flag-state, ICPC-classification, illness/accident, treatment and other actions taken, consultation with other specialists, evacuation, type

**Table 1.** Structure of International Classification of Primary Care (ICP-2). Each group is divided into symptoms/complaints, infectious diseases, neoplasms, injuries, congenital anomalies, and other diseases

A General and unspecified	L Musculoskeletal	U Urinary
B Blood, blood forming	N Neurological	W Pregnancy, family planning
D Digestive	P Psychological	X Female genital
F Eye	R Respiratory	Y Male genital
H Ear	S Skin	Z Social
K Circulatory	T Metabolic, endocrine, nutrition	

**Figure 3.** Digital photography usage started in 2002 and is slowly increasing. The red line in the figure shows the usage concerning all cases (1290) in the study. The grey line shows cases where a photo might have added useful information**Table 2.** Infections in the symptom groups. 30–35% of all cases dealt with infections

	(%)
Respiratory (R)	25
Digestive (D)	16
Skin (S)	15
Urinary (U)	12
Ear (H)	10
Eye (F)	8
Others	14

of communication and use of digital photo, age and sex, and duty onboard. Genders were combined, except for genital infections, as females formed only a small proportion of those on whom advice was given.

## RESULTS

33% (428) of all cases (1290) are concerned with infections (Figure 3 and Table 2). Tables 3–10 show the different symptom groups divided into subgroups in the first column followed by number of cases, consultation with other specialists, and number of evacuations. Infection symptoms occur most often from

respiratory (113) and digestive systems (73) and skin (62) (Tables 3–5).

Cases concerning ear, male genitals, and urinary system were the most frequently dealt with infections (83%, 81%, 73%) (Tables 6, 7, 9).

Antibiotics were prescribed 337 times and anti-malarial drugs 7 times. 84 cases had no antibiotic prescription. This might be because it was not necessary, the patient was already under treatment, was evacuated, or data is missing.

The use of digital photos is increasing but could be used more frequently (Figure 3).

Full treatment onboard was given in 71% of cases. 6% were evacuated and 23% were recommended to see a physician in next port of destination. In comparison to all cases in the study there is no big difference concerning full treatment given onboard, less evacuations, but considerably more frequent recommendation of seeing a physician in next port of destination (Figure 4).

Consultations with other specialists at the hospital were carried out in 12% of the cases concerning infections. That does not differ from the number of consultations concerning all 1290 cases (Table 11).

When comparing the cases during 1997, 2002, 2007, and the first six months of 2009 there are no big differences concerning symptoms, reason for contact, or actions taken. The most important change has been the means of communication between ships and the RM doctors. E-mail became more common: 2% in 1997 and 19% in 2009, and the use of satellite mobile phones increased from 64% in 1997 to 88% in 2009 (Figure 5). Sending digital photos via e-mail started after 2002 and was used in 8% of all cases in the first six months of 2009 (Figure 3).

## DISCUSSION

71% of all cases received full treatment onboard. Whether this is the optimal percentage is a matter for speculation. 33% of all requests for advice dealt with infections. Advice on treatment is necessarily linked to the antibiotics carried. There is scope for

**Table 3.** 75% (113) of 150 cases in the Respiratory group concerned infections. The Respiratory group was 12% of all cases

Respiratory (R)	113 cases (75%)	Cons.	Evac.
Tonsillitis	34		1
Resp. tract inf.	25		
Sinusitis	26	1	1
Others	28	2	1

**Table 4.** 35% (73) of 206 cases in the Digestive group concerned infections. The Digestive group was 16% of all cases

Digestive (D)	73 cases (35%)	Cons.	Evac.
Teeth & gingivitis	30	2	2
Appendicitis	14	7	5
Gastroenteritis	14	1	3
Others	15	1	5

**Table 5.** 44% (62) of 143 cases in the Skin group concerned infections. The Skin group was 11% of all cases

Skin (S)	62 cases (44%)	Cons.	Evac.
Abscess	20	4	1
Post trauma inf.	9	2	
Impetigo	6	1	
Others	27	5	1

**Table 6.** 73% (55) of 75 cases in the Urinary group concerned infections. The Urinary group was 2% of all cases

Urinary (U)	55 cases (73%)	Cons.	Evac.
Cystitis	50	1	1
Others	5	1	

**Table 7.** 83% (46) of 55 cases in the Ear group concerned infections. The Ear group was 4% of all cases

Ear (H)	46 cases (83%)	Cons.	Evac.
Otitis	21	1	
External otitis	18	1	
Others	7		1

**Table 8.** 31% (39) of 129 cases in the Eye group concerned infections. The Eye group was 10% of all cases

Eye (F)	39 cases (31%)	Cons.	Evac.
Inf. conjunctivitis	21	2	
Eyelid infection	9		
Others	9	4	1

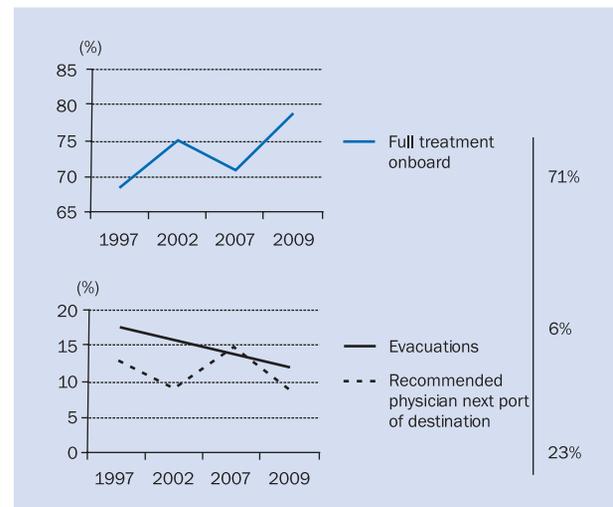
**Table 9.** 81% (23) of 27 cases in the Male genital group concerned infections. The Male genital group was 2% of all cases

Male Genital (Y)	23 cases (81%)	Cons.	Evac.
STD	10	2	
Herpes simplex	2		
Others	11	8	

STD – Sexually Transmitted Disease

**Table 10.** 13% (17) of 129 cases in the General group concerned infections. The General group was 10% of all cases

General (A)	17 cases (13%)	Cons.	Evac.
Chicken pox	3		
Malaria	2	1	
Others	12	4	2

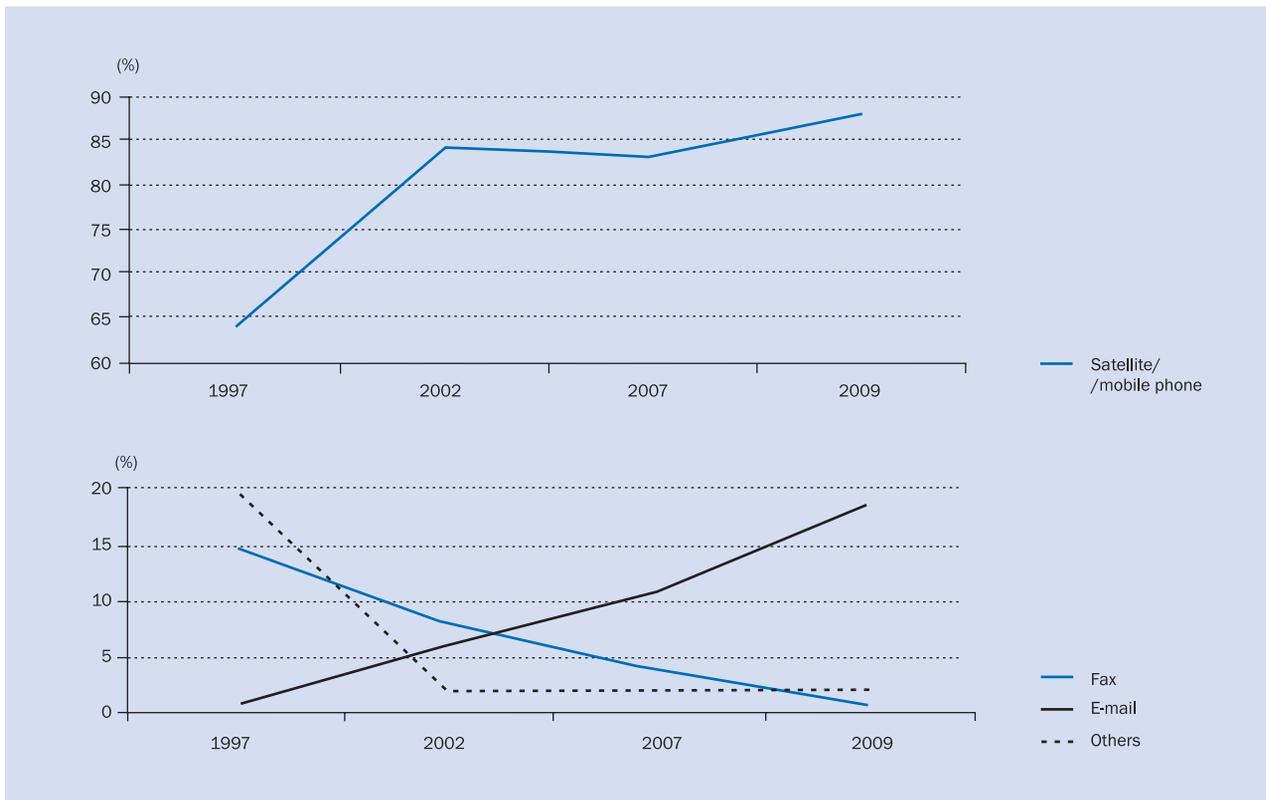


**Figure 4.** Results concerning full treatment onboard, evacuation, or recommendation of physician in next port of destination. The left column shows all cases. The numbers in the right column show the infection-related cases

a more detailed analysis to see if those carried are the most appropriate ones for the cases recorded. More detailed analysis could also review whether those with health-care responsibility on board are well enough prepared and educated and trained? Increased use of digital photography could improve the quality of diagnosis, treatment, and follow up. The use of standard forms for documenting Radio Medical cases can simplify the exchange of knowledge and aid continued studies and future scientific research.

**Table 11.** Number of cases where the Radio Medical physician has consulted another specialist at the hospital

Speciality	1997	2002	2007	2009 (6 months)
<b>No of cases</b>	376	312	407	195
Surgery	3	4	5	7
Orthopaedic/hand surgery	2/3	6/0	4/1	1/6
Dermatology/plastic surgery	0	1	7/1	1
Ophthalmology	<b>8</b>	<b>7</b>	<b>5</b>	<b>9</b>
<b>Infection</b>	<b>1</b>	<b>1</b>	<b>9</b>	<b>2</b>
Dental, jaw injury	<b>2</b>	<b>0</b>	<b>6</b>	<b>0</b>
Others	11	21	10	2
<b>Total (% of cases)</b>	<b>30 (8%)</b>	<b>40 (13%)</b>	<b>48 (12%)</b>	<b>28 (14%)</b>



**Figure 5.** The means of communication between the ship and the Radio Medical physician on duty

References in author's possession.