

**CREW REFERRALS TO DENTISTS AND MEDICAL
SPECIALIST ASHORE:
A DESCRIPTIVE STUDY OF PRACTICE ON THREE
PASSENGER VESSELS DURING ONE YEAR**

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ABSTRACT

Study objective - To study crew referrals to out-patient port services from 3 passenger ships during 12 months (2004), with focus on dentist appointments. The median number of crew on Ship A was 561, on Ship B 534 and on Ship C 614.

Methods - Crew referrals were registered continuously and after each cruise segment recorded in the ship's doctor's medical cruise report, from which the data were retrieved and reviewed.

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Results - During 2004 the doctors of the 3 sister ships had a total of 8888 crew consultations (Table 1). Mean number of doctor consultations for crew was 17.5 a day. On Ship A 50%, on B 59% and on C 70% of the port referrals were dentist appointments. A crew member was referred to a dentist every 7 (Ship C) to 10 days (Ships A + B). Among the specified dental referrals, 18% were extraction requests.

Conclusions - The ship's doctors had a busy crew practice, but were neither trained nor equipped to do elective dentistry aboard. Crew referral rate to services ashore was low, but 50-70% of the referrals for out-patient port services concerned dentistry. Inadequate health insurance caused low-wage crew to request free extractions instead of expensive repair in high-cost ports. As dentistry in local ports is a poor substitute for the person's own dentist, doctors performing seafarer examinations should ensure that dental problems are solved before sign-on.

INTRODUCTION

Crew referrals to medical service ashore are necessary when the ship's doctor - or the patient - feels that the ship's resources are insufficient. Experienced cruise doctors try to avoid port consultations whenever possible as they are time-consuming, inconvenient, costly and often useless because of language barriers and limited port time. Referrals to dentists may represent an exception, since the ship's doctors are only expected to handle emergencies and simple temporary repair.

A large series from cargo ships with doctors aboard showed that 67% of port referrals in 1984 concerned oral diseases [1], while 44% of port referrals of crew during a 1997 world cruise were to dentists [2].

A one-year study focusing on sick leave among crew on a passenger vessel in 2004 revealed a low rate of referrals to out-patient port services, while 70% of the referrals were dentist appointments [3]. Hence, seafarers' oral health seems to warrant closer attention. The crew referral data from that ship were therefore reviewed together with 2004 referral data from two other passenger vessels, focusing on dentist appointments in port.

The aim was to compare practice on the 3 ships and discuss similarities, differences, and possible ways to reduce referrals to port dentists.

MATERIALS AND METHODS

Ships and Crew

The three sister ships (A, B and C) are large luxury passenger vessels. Some previously published 2004 data from the largest one, Ship C, are included in the present study [2,4]. The ships did worldwide cruising with crew from more than 50 different nations. Duration of each cruise segment ranged from 7 to 29 (median: 12) days.

Between $\frac{1}{4}$ and $\frac{1}{5}$ of the crew members were female [2,3]. The median number of crew on Ship A was 561, on Ship B 534 and on Ship C 614 (Table 1). All crew members had been subjected to standardized pre-employment examinations, which includes dental status.

The Medical Centers

The medical centers were equipped for performance of most simple diagnostic and therapeutic procedures. It comprised waiting areas, reception, doctor's office, pharmacy, laboratory, emergency room (for stabilization, surgery and x-rays), and three 2-bed wards with four beds for intensive care.

The medical staff of each ship comprised one physician and two nurses. A nurse was always on-call. The doctors had separate office hours for passengers and crew twice every day and were on 24-hour call for emergencies at sea. The doctors treated all crew whenever possible, but referred those in need of special attention to specialists ashore. None of the doctors had any dental training, there was at no time any dentist working aboard, and remedies for dental disorders were limited to medication (antibiotics, analgesics and anti-inflammatories, local and topical anesthetics) and temporary fillings.

Data Collection

All crew referrals ashore were registered continuously by the nurse on duty as part of the daily routine and entered after each cruise segment in the Doctor's Cruise Report from each ship. For the present study the pertinent data (age, sex, type of referral, requested speciality and procedure) were retrieved from these cruise reports, which also contained total number of crew aboard and of crew consultations during each cruise segment. Data for the 3 ships were simply counted for a full year (12 months of 2004). The findings of the three ships were compared and totalled.

RESULTS

During 2004 (365 days) the doctors on the 3 ships had a total of 8888 crew consultations (Table 1). Mean number of doctor consultations for crew was 17.5 a day, ranging from 14 a day on Ships A and B to 19.5 a day on Ship C, but the number of consultations per 100 crew was similar (= 5-6) on all 3 ships over the year, as was the percentage of crew consultations resulting in a referral to shore-side services (about 3%) (Tabl.1) and the total number of shore-side referrals per 100 crew members (Tabl.2).

Table 1. Data regarding crew and doctor consultations (DC) for crew aboard 3 ships (A,B,C) during a 12-month period

	Ship A	Ship B	Ship C	A+B+C
Median number of crew (range)	561 (520-582)	534 (491-568)	614 (561-665)	
Number of DC a year (365 days)	2683	2500	3705	8888
Number of DC per day	14.4	14.0	19.5	17.5
Number of DC a year per 100 crew	4.8	4.7	6.0	
Percentage of DC resulting in referral	3.4 %	3.4 %	2.9 %	3.2 %

Table 2. Number of referrals per 100 crew to dentists and medical specialists in local ports, as well as number of medical sign-offs per 100 crew, from 3 ships during a 12-months period

	Ship A (Crew n= 561)	Ship B (Crew n=534)	Ship C (Crew n=614)
Referrals per 100 crew to:			
Port dentists	6.4	7.1	9.1
Port medical specialists	6.4	4.9	3.9
Specialists after medical sign-off	3.2	4.1	4.6
Total number of referrals ashore per 100 crew	16.0	16.1	17.6

Tabl.3 shows the number of crew from each ship who returned to the ship following referrals to dentists and medical specialists in port. It also details the number of crew who were signed off for medical reasons and repatriated for further diagnostic work-up, treatment and recuperation at home. Ten crew members (5 women) of the signed-off group were hospitalized in port prior to repatriation (appendicitis 4; pregnancy complications 2; coma, burn, allergy, fracture: 1 each).

Table 3. Number of crew referrals to dentists and medical specialists in local ports, as well as number of crew signed off the ships for medical reasons, from 3 ships during a 12-months period. Percentage of female crew in parentheses

Referrals to:	Number of crew referrals (% women)			
	Total	Ship A	Ship B	Ship C
Port dentists	36 (29)	38 (32)	56 (29)	130 (30)
Port medical specialists	36 (39)	26 (31)	24 (37)	86 (33)
Specialists after medical sign-off	18 (61)	22 (27)	28 (33)	68 (39)
Total number of shore-side crew referrals	90 (40)	86 (30)	108 (30)	284 (33)

The most frequent medical referrals in ports were to orthopedic (22%), laboratory (15%) and radiology (11%) services and to gynecologists (10%) and dermatologists (10%).

Dancers represented less than 2% of the crew population, but accounted for 9% of the port referrals, all but one of them to orthopaedic or radiology services.

Medically signed off crew were most frequently sent home to see orthopedic (48%) and general surgeons (12%), followed by internists (11%) and gynecologists (6%).

In port, crew members were more often referred to dentists than to medical specialists (Tabl.3): On ship A 50%, on Ship B 59% and on Ship C 70% of the port referrals were to dentists. Ship C also had the highest fraction of specified dentist referrals (Table 4). Among the specified dental referrals, 18% had requested extractions (Tabl.4).

Table 4. Number of crew referrals to dentists in port, according to cause, from 3 ships during a 12-month period

	Ship A	Ship B	Ship C	A+B+C
Repair (cap, filling, braces)	8	7	27	42
Extraction	4	4	7	15
Toothache	2	2	10	14
Tooth fracture	3	0	5	8
Abscess	0	0	3	3
Unspecified dentistry	19	25	4	48
Total	36	38	56	130

During the study period 28 passengers were referred to dentists ashore (Ship A: 4; Ship B: 8; Ship C: 16). Thus, a passenger was referred from a ship to a dentist ashore every 3 months (Ship A) to every 3 weeks (Ship C), while a crew member was referred to a dentist every 7 (Ship C) to 10 days (Ships A + B).

While less than ¼ of the crew were women, the female fraction of all 3 types of referral was higher than that (Table 3).

DISCUSSION AND CONCLUSIONS

This is a simple descriptive review of crew referrals specialists ashore from ship's doctors on 3 passenger vessels doing worldwide cruising during a 12-month period. It is focused on dental appointments. The study has severe limitations; the findings are valid only for passenger ships that seldom revisit the same ports and can not tell us anything about the real need for dentistry among the crew.

The review shows that the crew kept the ship's doctors rather busy with an average of 17.5 consultations a day, ranging from 14 on the two smaller ships to 20 on the larger one.

However, the number of consultations a year per 100 crew members was similar (5-6) on all 3 ships.

Furthermore, it revealed that the referral rate to services ashore was low, lower than previously reported from an earlier world cruise [2].

Half the out-patient referrals in port from Ship A and 70% from Ship C were to dentists. These fractions were higher than on the previous world cruise [2], but not as high as during the world cruise of Ship C [4]. However, they are in agreement with a large study from 1984 of 201 voyages of Polish cargo ships having doctors aboard. The majority (67%) of all 1868 cases referred for consultation and treatment in foreign ports concerned diseases of teeth, pulp and periapical tissue [1]. The conclusion was that oral diseases prevention among seafarers needed improvement, and both a Norwegian [5] and a Finnish study [6] suggest that seafaring could constitute a risk factor for oral health.

The present study discloses no explanation for the differences in reference practice of the three ships. But it should not be surprising that many port referrals concern dentistry, taking into account the ship's doctors' lack of dental training and tools.

Dental and medical treatment performed aboard is free. The ships' insurance cover medical referrals for crew, while the crew members have to pay for dentistry ashore, except for work-related dental injuries and tooth extractions. Therefore, many crew members choose to wait until they can see their own dentist at home, but their decision may depend on numerous factors, like symptom control, general fear of dentists, damage visibility, vanity, income level, remaining contract length, availability of a dentist in the next port within the possible time frame, possible language barrier, estimated cost of the dental procedure, reputation of the port dentist's skill and

friendliness, etc. This 'wait-and-see' attitude is often encouraged by the ship's medical staff members, who have seen that many port referrals cause frustration, as prices for emergency port dentistry are uncontrolled and often too high, communication poor, the time in port too short and follow-up impossible.

An adverse effect of the insurance practice of covering extractions, but not maintenance, is that low-wage crew insist on extracting a painful, but salvageable tooth. 18% of dental appointments were requests for extractions in the present series. And this may be just the 'tip of the iceberg', as the present review does not show how many extractions were actually performed.

Another problem arising from this insurance policy occurs when a low-wage crew is referred to a modern dentist who refuses to sacrifice the tooth and instead, believing that the cost is covered by the ship, starts high-priced root canal work that has to be followed up and finished by expensive dentists in other ports.

Passengers with toothache are disappointed not to get expert help on board [4], but because they are aboard for much shorter time than the crew, the referral rate of passengers to port dentists are lower. The findings of the present study, showing only one dental referral (passenger and crew) about every 5 days from the busiest ship, hardly justify keeping a resident ship's dentist aboard. However, with improved dental accessibility and inexpensive (or for crew free) service at sea, the demand might soar. One cruise line actually introduced a pilot program of full service dentistry aboard, provided by a company ashore [8], offering free dental care for the crew. However, after initial enthusiasm, the program seems to have crumbled. One problem was lack of guaranteed cabin space for the dentist during busy cruises [8].

So how can dental conditions at sea be improved? A change of the seafarers' insurance policy is wishful thinking, as it is in accordance with government-run social programs, like the Norwegian Social Security system ('Folketrygden') [9]. A more realistic solution might be to involve seafarers' unions. Or appeal to fellow crew's compassion and set up a 'solidarity foundation' to cover dental costs for low-wage employees from the Welfare Program, which on many cruise vessels controls considerable funds. Doctors performing pre- and re-employment seafarer examinations are by international law required to examine the dental state of the crew [10] and must realize that they do not do anybody a favor by signing on a person with dental problems before proper repair is done. Also, the crew officers and the medical staff should routinely emphasize at sign-off how important it is to have necessary dental work done before returning to sea.

Crew members who can't work for some time must be replaced, and concerns regarding sick leave and medical sign-off, based on findings from Ship C during 2004, have been discussed elsewhere [3]. Referral to specialized services in port is required

for specialized examinations and treatments not available aboard and is often a last resource to keep the crew member fit for work or to avoid missing damage that can impair the crew's health or performance. This is demonstrated in the present study where the dancers are responsible for 9% of port referrals, but comprise less than 2% of the total crew population. They have a high-profile, risky job and are difficult to replace, while having strong ambitions and high work morale [3]. Typically, all but one of their referrals were for orthopedic or radiology services. An indication that port referrals might prevent sign-offs is seen when comparing the practice of Ship A and C: Ship A referred more crew to port specialists, but signed less crew off medical. However, this study is not designed to tell whether the differences are significant.

Appendicitis was the most frequent reason for hospitalization in port. In earlier years, appendectomy was done aboard when convenient [11], but ship's doctors are now only required to have minor surgical skills, according to The Health Care Guidelines for Cruise Ship Medical Facilities PREP, issued by the American College of Emergency Physicians [12]. Therefore, in today's litigious society every effort is made to get both passengers and crew to modern facilities ashore for surgical procedures. While less than ¼ of the crew were women, the female fraction of all 3 types of referral (to dentists in port, medical services in port and medical sign-off) was higher than that, possibly suggesting that at sea there is 'a weaker sex' – or one more concerned with health? However, the design of this study doesn't allow conclusions regarding this sensitive subject.

In conclusion, the ship's doctors had a busy crew practice, but were neither trained nor equipped to do elective dentistry aboard. Crew referral rate to services ashore was low, but 50-70% of the referrals for out-patient port services concerned dentistry. Inadequate health insurance caused low-wage crew to request free extractions instead of expensive repair in high-cost ports. As dentistry in local ports is a poor substitute for the person's own dentist, doctors performing seafarer examinations should ensure that dental problems are solved before sign-on.

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