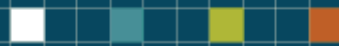




Telemedicine at Sea; Communicational Challenges

F. Amenta and A. Tveito





The ILO convention 164

- Article 4:

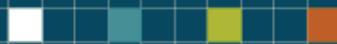
Each Member shall ensure that measures providing for health protection and medical care for seafarers on board ship are adopted which:

(b) aim at providing seafarers with health protection and medical care as comparable as possible to that which is generally available to workers ashore;

- Article 7:

1. The competent authority shall ensure by a prearranged system that medical advice by radio or satellite communication to ships at sea, including specialist advice, is available at any hour of the day or night.

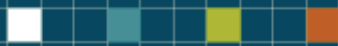
2. Such medical advice, including the onward transmission of medical messages by radio or satellite communication between a ship and those ashore giving the advice, shall be available free of charge to all ships irrespective of the territory in which they are registered.





Injuries and illnesses at sea: Who is in charge?

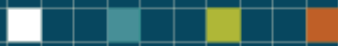
- A medical officer is in charge of the patient
- On land, dedicated medical centres are available to give advise
- The doctors will need the best possible information about the state of the patient
- The medical responsibility remains with the captain





Some difficulties

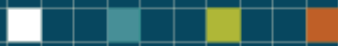
- The doctor has never seen the patient, and probably never will
- The doctor will talk to the first mate, not the patient
- No global system for personal IDs
- The doctor has no previous medical history of the patient





Telemedicine at sea

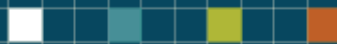
- Since the first Radio Medical service started in New York City (1920) and in Sweden (1922) 12 countries have developed Radio Medico
- All countries ratifying ILO 164 are required to have a Radio Medical Service free of charge
- No distinction made between nationality of patients using Radio Medical services





Telemedicine at sea

- More advanced telemedical systems are slowly being taken on board the ships
- Since medical assistance shall be free of charge, the funding of the Radio Medicos must allow for the introduction of telemedicine systems
- Circular IMO MSC/circ 960 (2000) “ Medical assistance at sea” emphasizes the relevance of telemedical services for providing high quality medical assistance to sailing seafarers
- The circular introduces the Telemedical Maritime Assistance Service (TMAS) and defines standards and roles for TMAS



CIRM (International Radiomedical Centre, Italian TMAS)

Established: 1935

Headquarters: Roma

Service: 24 h a day, every day

Organization: Telemedicine Department, Telecommunication Department and Research Department

Doctors : 9 + medical director

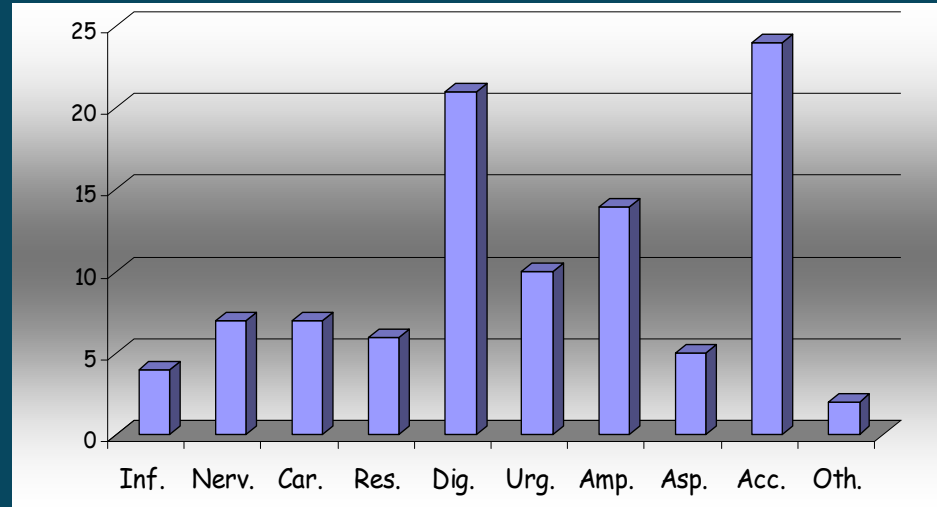
T.C. operators: 7 + supervisor

Patients assisted: 52,000

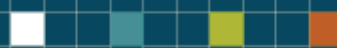
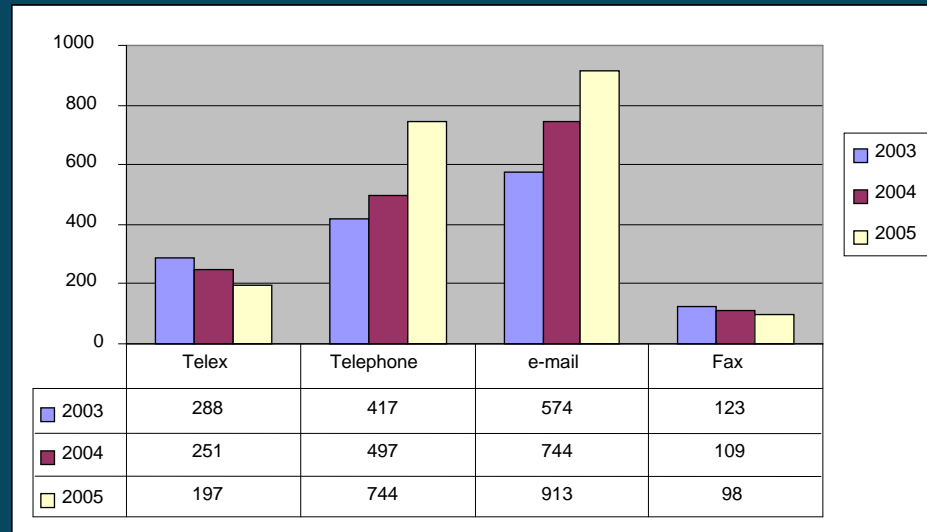




Pathologies assisted

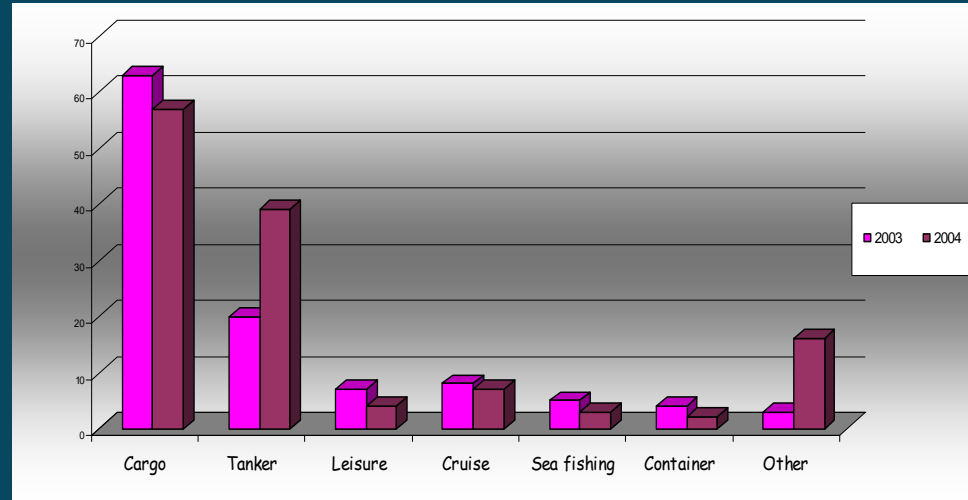


Telecommunication systems used

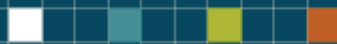
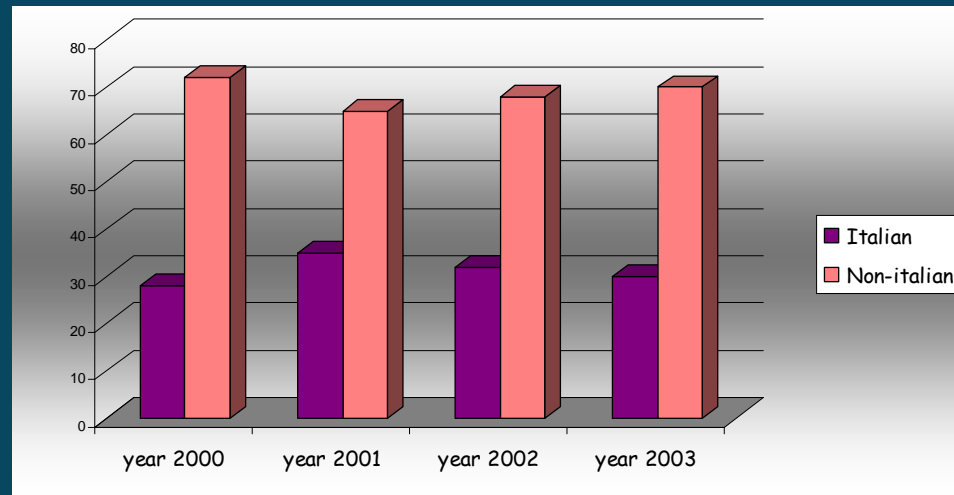




Types of ships asking for medical advice



Nationality of ships assisted



Patient data

Teleassistenza CIRM Ver. 2.2.2

Casi e Calls Accounting Utità Categorie
2 Selezione Agno Sintonamento automatico

Operatori SATURNINO 2997

Statistiche Report periodici

Anagrafica Navi

Name of patient: DANIEL BAUTISTA
GEO Loc: ...

Accident place: ...

Operator: ...

Default POSITION: CRUISING

Incoming MSG: ...

Shipping Company: EPIC SHIP MANAGEMENT PTE LTD
Radio Code: 9VRLAS
Flag of Ship: SINGAPORE
Type of Ship: TANKER
Telex # 1: 795532910
E-Mail: ...
Telefono: 764592389
Fax: 764602789
Medicine Chest: ...

Modifica New OK

Teleassistenza C.I.R.M. Ver. 2.2.2 (c) IBST - Roma

INS CAPS NLM Smista Off 11:39:17

Teleassistenza CIRM Ver. 2.2.2

Casi e Calls Accounting Utità Categorie
2 Selezione Agno Sintonamento automatico

Operatori SATURNINO 2997

Statistiche Report periodici

Case Details

N. Case: 13 04 07
Year: 13 04 07
Call source: SHIP
NAME OF SHIP: MINORCA
Radio Code: 9VRLAS
Telex number: 456532910

Name of patient: DANIEL BAUTISTA
Duty on board: ...
Departure port: ...
Target port: ...
ETA Date: 14 04 07

GEO Loc: ...
Altern. ETA Date: ...
FAO AREA: WESTERN CENTRAL PACIFIC
Latitude: 32.15N
Longitude: 132.20E

Accident place: ...
Accident aspect: ...

Operator: ...

Default POSITION: CRUISING
Communication type: FONIA
Class of communication: IHMARSAT
Telexed signal: NONE

Incoming MSG: ...
Received MSG: ...
Response MSG: ...
Treatment detail: ...
Evolution summary: ...
Tg. Maricogroup: ...

Treatment 1 e 2: ERITROMICINA
GHIACCIO

Treatment 3 e 4: ...

Decision: TREAT ON BOARD WITHOUT DOCTOR

Diagnosi presunta: TRAUMA CRANICO
Diagnosi finale: ...
WHO Classification: ...
Follow up: ...
Evolution: ...
Patology 1: ...
Patology 2: ...
Beg. Sym: ...

Teleassistenza C.I.R.M. Ver. 2.2.2 (c) IBST - Roma

Assegna la call al caso selezionato

INS CAPS NLM Smista Off 11:40:18

start Posta in arrivo - Documenti - Mic...

C.I.R.M.

messaggi in coda

In lavorazione dai medici

Patient data

Teleassistenza CIRM Ver. 2.2.2

Casi e Calls | Accounting | Utilità | Consegne

2 Selezione Anno | Smistamento automatico

Operator **SATURINIIO** 2007

Statistiche | Report periodici

Casi | Calls | Case | Ports | Ships | Patients | Stati

N. Case	Year	Data	Call source	NAME OF SHIP...	Radio Code	Telex number	
465	0	13/04/07	SHIP	MINORCA	9VKA5	456532910	11:37:26

Name of patient...: **DANIEL BAUTISTA**

Duties on board: [dropdown]

Departure port...: [dropdown] | Target port...: **IULSAN** | ETA Date: **14/04/07**

GEO Loc: [dropdown] | Altern. ETA Date: [dropdown] | FAO AREA: **WESTERN CENTRAL PACIFIC** | Latitude: **32.15N** | Longitude: **132.20E** | Closed: [checkbox]

Accident place: [dropdown] | Accident aspect: [dropdown]

Operator: **Calls** | [Navigation icons]

Default...	POSITION	Communication type	Class of communication	Telemed signal
	CRUISING	IONIA	INMARSAT	NONE

Language: **ENGLISH**

Pulisci | Conferma le modifiche | Annulla

Incoming MSG | Received MSG | Response MSG | Treatment detail | Evolution summary | To Maricogecap

NOTIZIE CLINICHE:
 COMANDANTE INFORMA CHE PAZIENTE MENTRE LAVORAVA HA AVUTO UN EPISODIO IMPROVISO DI LIPOTIMIA SUBENDO TRAUMA CRANICO DURANTE LA CADUTA A TERRA. HA RIPORTATO PICCOLO TAGLIO AL PADIGLIONE ORECCHIO DESTRO E PRESENZA DI EVIDENTE RIGONFIAMENTO DIETRO L'ORECCHIO STESSO. ATTUALMENTE COSCIENTE E IN BUONE CONDIZIONI.

TRATTAMENTI CONSIGLIATI:
 SI CONSIGLIA DI TENERE PAZIENTE A RIPOSO LETTO. MEDICARE LA FERITA RINNOVANDO MEDICAZIONE OGNI 24 ORE. APPLICARE PER LE PROSSIME DODICI ORE IMPACCHI DI GHIACCIO SULLA ZONA CONTUSA. ERITROMICINA 500 OGNI SEI ORE. SE DOLORE DATE PARACETAMOLO 500 OGNI 8/12 ORE. DIETA LEGGERA CON ABBONDANTI LIQUIDI. NOTIZIARE TRA 6 ORE

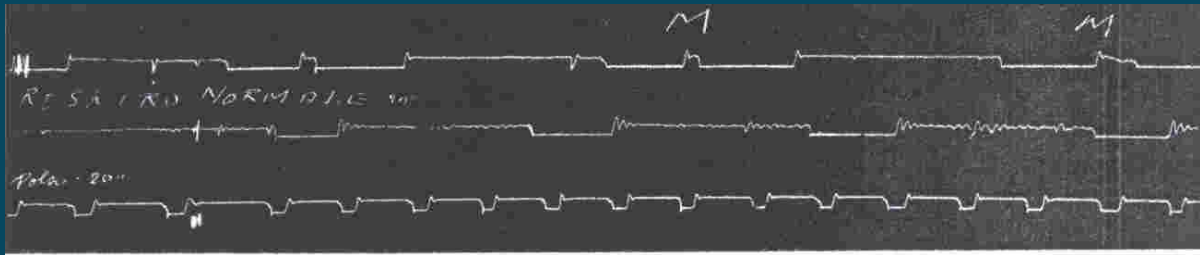
messaggi in coda...
 In lavorazione dai medici
 Tot.Casi | Tot.Calls

Teleassistenza C.I.R.M. Ver. 2.2.2 (c) I&ST - Roma

C.I.R.M.

messaggi in coda...
 In lavorazione dai medici
 Tot.Casi | Tot.Calls

Advantages offered by telemedicine



1938: Transmission of breathing and pulse rate by radiotelegraphy



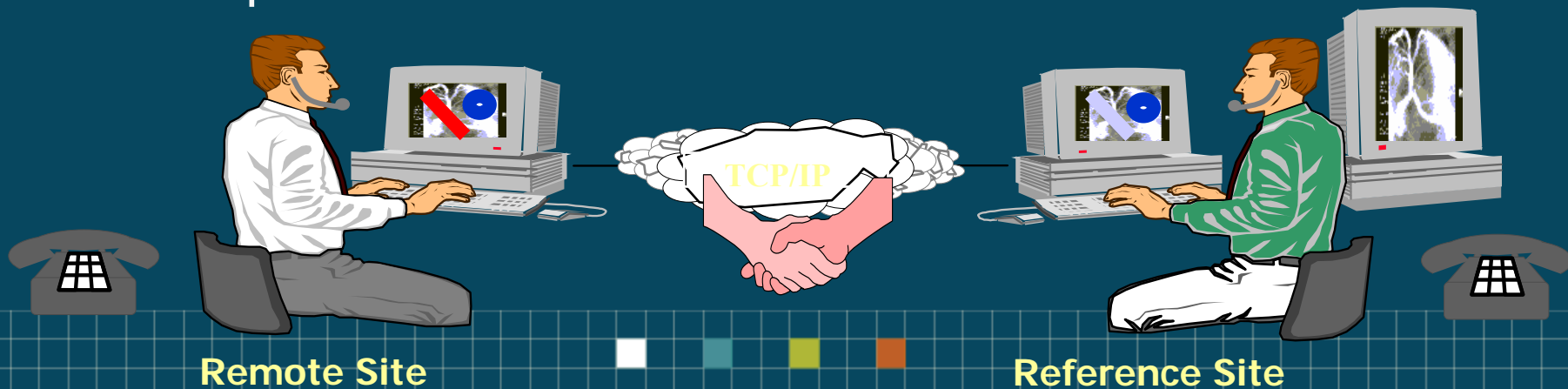
2000: Dermatological lesion

2002: Store-and-forward picture of an ankle injury used for guiding medication



Medical issues (present/future perspectives for improvement)

- Availability of basic telemedical devices on board (blood pressure, pulse rate, ECG, hematochemistry, oxymetry)
- Possibility of videoconsultation and of written dialogue between ship and TMAS
- Virtual smart card with main sanitary data of potential users of the service

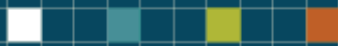




Medical issues (present/future perspectives for improvement)

Application of a dedicated telemedical system for seafares including:

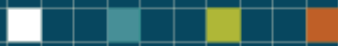
- Health education
- Training
- Improvement of lifestyles
 - Exercise
 - Eating
 - Encouragement to keep life style on land





The need for a smart card

- The doctor may be able to give better advice if the patient medical history is available
- Further follow-up of the incident will be aided by relevant medical information
- The content must be universal for all Radio Medical Centres



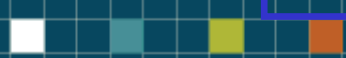
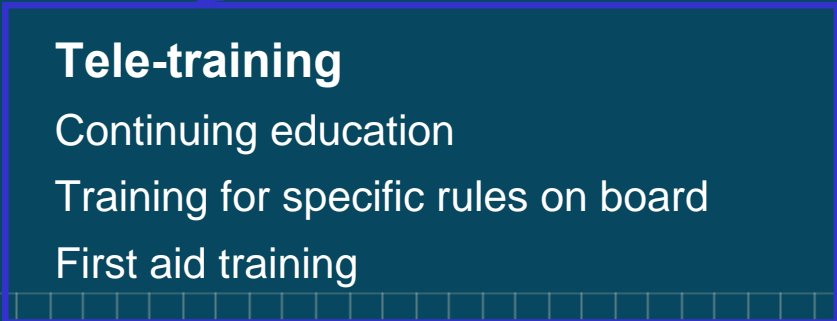
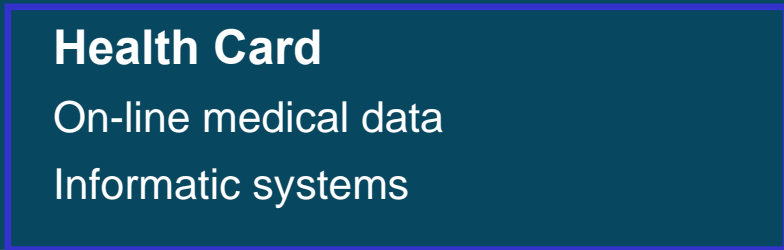
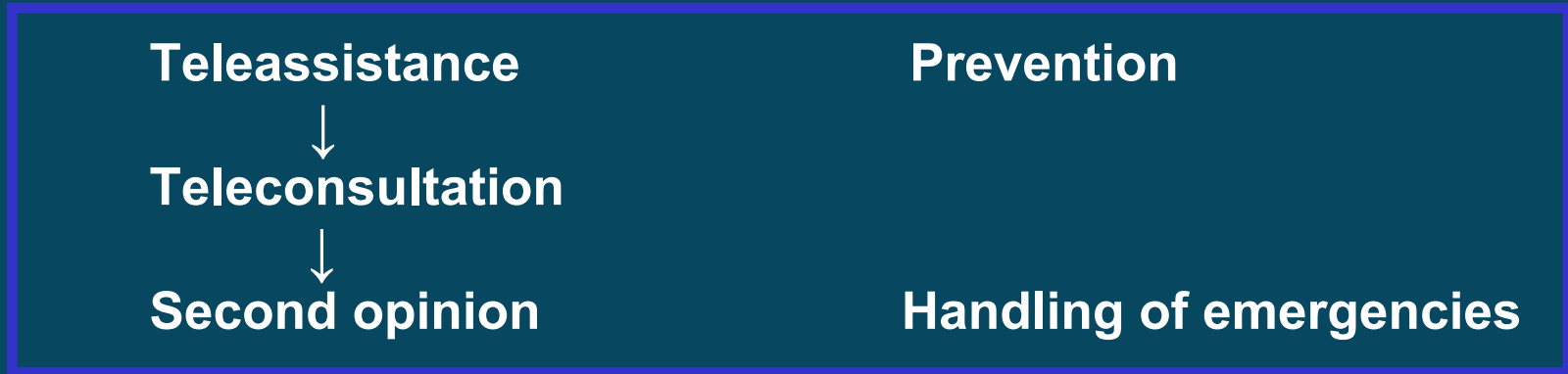


Critical success factors for a smart card solution

- A unique patient ID (i.e. passport number)
- A critical mass of seafarers that are enrolled
- A common understanding between the Radio Medical centres of what information is needed and on what format
- A large scale trial



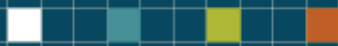
Organisational issues





Conclusions

- Telemedicine has a place in maritime medicine
- The funding mechanism is a problem
 - Ship owners are entitled to free services
 - Government funding at a minimum
- The number of systems available at one centre must be limited BUT
- International standards for secure communication are lacking, making universal systems difficult
- Still need for large scale pilot projects in the field





Road ahead

- CIRM would like to invite partners to join this venture that could represent an updated system for providing high quality medical assistance to seafarers in this century

