

Proceeding Paper

e-Healthy Ship: New Approaches for Improving Health Management on Merchant Vessels [†]

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Abstract: On Merchant vessels, there is usually no physician on board. Health management there is a great challenge for the responsible nautical officers. To simplify health administration on board diverse electronic health modules including a medical logbook and pharmacy module were developed in cooperation with an IT company. These modules are integrated in an existing fleet management system. The medical logbook and pharmacy modules were designed to offer more functions than just classic documentation and allow quick access to patient information. The included functions can support the nautical officer in his healthcare duties on the vessel.

Keywords: medical logbook; pharmacy; health care on board



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1. Introduction

A great challenge regarding health management on merchant vessels is that all health care is performed by nautical officers. This duty and its extensive analogue documentation constitute an additional occupational burden aside from other nautical tasks. The introduction of different software modules shall make the documentation of medical work for the officer responsible for healthcare faster and easier.

2. Material and Methods


In cooperation with an IT company, diverse health modules were developed that are currently integrated in an existing fleet management system. The key modules are the digital medical logbook and pharmacy. Suggestions and requests of seafarers were considered for modules' development.

3. Results and Discussion



















The developed medical logbook module offers more functions than just classic documentation. Its most important advantage is the summary of several examinations in one entity to show the medical history of a case (Figure 1). There is also the option to attach documents and files to the entity (e.g., radiographs). Furthermore, it is possible to use a filter and sort function to quickly access older comparable cases or past examinations of a certain patient.

A linked connection to the pharmacy module automatically updates the pharmacy inventory when documenting the prescription of medication in the medical logbook. Besides containing medication inventories, the pharmacy module also warns the user if medication is about to expire (Figure 2). Other modules include the documentation of vaccinations and medical certificates. There is the possibility to export data either as a list of all examinations according to the paper versions of the classic medical logbook for port authorities or as one complete case, e.g., in case a patient visits a doctor in a port. The system also supports a

semi-automatic creation of Telemedical Maritime Assistance Service (TMAS) protocols and forms for insurances.

Medical logbook 

ADD | EDIT | DELETE | EXPORT

Seaman	Reporting Date	Description / Symptoms	Illness / Injury Type	Examination history	Condition
  Foxtrot, Françoise SECOND ENGINEER	05.02.2020	Eczema under both armpits sus...	Other	17.02.2020 by Seafarer, 05.02.2020 by Seafarer	n/a
  Foxtrot, Françoise SECOND ENGINEER	14.02.2020	Fell from ladder in Cargohold left leg broken	Fracture	15.02.2020 by Doctor, 14.02.2020 by Seafarer	Unfit for duty
  Hotel, Henrietta FOURTH ENGINEER	13.02.2020	patient fainted, high temperatu...	Infectious disease	15.02.2020 by Doctor, 14.02.2020 by Seafarer,...	Unfit for duty
  Alpha, Alonso MASTER	11.02.2020	Headache, fever, coughs	Infectious disease	13.02.2020 by Seafarer, 11.02.2020 by Seafarer,...	Unfit for duty
  Uniform, Ulysses DECK CADET	12.02.2020	light burns on lower arm	Burn	12.02.2020 by Seafarer	Fit for duty
  Tango, Tanja FITTER	10.02.2020	dry skin between toes, both feet	Other	10.02.2020 by Seafarer	n/a
  Uniform, Ulysses DECK CADET	08.02.2020	Headache since 4 days	Other	08.02.2020 by Seafarer	n/a
  Victor, Victoria COOK	06.02.2020	sick, headache, blood in face aft...	Concussion	06.02.2020 by Seafarer	Unfit for duty
  Echo, Elias CHIEF ENGINEER	05.02.2020	Infection of tip on toe on right f...	Other	05.02.2020 by Seafarer	Fit for duty

TMAS Export

Figure 1. Edited screenshot of the digital medical logbook with dummy data. Lines indicate case entities.

Dashboard

Pharmacy

Inventory

Transactions

Flag Changes

Inventory

Expand All

|

Export

|

Add

|

Edit

|

Delete

27.0 First aid equipment for use in accidents involving dangerous goods (in accordance with MFAAG)

6.0 Sedatives and hypnotics

14.0 Diseases and injuries of the skin

21.0 Instruments and aids

5.0 Pain relievers

2.0 Diseases of the cardiac system

13.0 Women's diseases and obstetrics (if woman on board)

3.0 Diseases of the digestive organs

8.0 Antibiotics

8.02, Doxycycline, 100 mg, tablets

8.06, Clindamycin hydrochloride, 600 mg, tablets

8.01, Amoxicillin, 500 mg, tablets

8.03.1, Ceftriaxone, 2 g, vial, i.m.; appropriate amount of diluent for i.m. injection

8.05, Cotrimoxazole, 960 mg, tablets

8.03.0, Azithromycin, 500 mg, tablets

8.04, Ciprofloxacin hydrochloride, 500 mg, tablets

1.0 Diseases of the respiratory tract

rescue devices

Items: 44

Items: 6

Items: 14

Items: 34

Items: 12

Items: 9

Items: 4

Items: 12

Items: 7

Stock: 40.00

Stock: 30.00

Stock: 0.00

Stock: 6.00

Stock: 101.00

Stock: 32.00

Stock: 40.00

Items: 5

Items: 3

Details

Medicine

8.03.1, Ceftriaxone, 2 g, vial, i.m.

ATC-Code

J01DA13

Dose

2,000 Gram

Remaining Stock

6.00

Pharmaceutical Form

Vial

Storage Place

-

Storage Conditions

-

Max. Stock

-

Min. Stock

-

Description

Antibiotic for severe courses (only in simultaneous combination with 8.03.0) ind.

Attachment

Associated Items

Add | Edit

Quantity

Expiration Date

Incentration

Prescription

5

31/07/2020

1

31/12/2029

Figure 2. Edited screenshot of the digital pharmacy inventory with dummy data.

4. Conclusions

The included functions can simplify tasks for the nautical officer responsible for healthcare on the vessel. A preliminary version with dummy data has been tested on a merchant vessel for practicability and usability and is currently being optimized.

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