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Welcome to ISMH17 Rotterdam

Dear Editor,

Dear colleagues and friends,

I am happy to welcome you to the 17th International Symposium on Maritime Health and to Rotterdam — a city shaped by the sea and defined by resilience. This year's symposium brings all of us together to address one shared mission: safeguarding the health and wellbeing of those who live and work at sea.

Our program reflects both urgency and opportunity. From mental health innovations and pandemic resilience to occupational medicine and digital health at sea, ISMH17 offers a solid platform for evidence-based dialogue and collaboration. We are better — together. Rotterdam's maritime legacy and modern infrastructure provide the perfect setting for this convergence of science, care, and community.

While we are presenting, sharing knowledge and discussing, the men and women out at sea, are working — delivering critical supplies to people and countries all around the globe, fishing the oceans or providing energy, often unseen and unheard. It is our responsibility to provide them with the best medical care possible and bring the crew back home safely.

Thank you all for participating and contributing in many ways. I extend my sincere thanks to the International Maritime Health Association (IMHA) for the trust and opportunity to host ISMH17 in Rotterdam. Our team is honoured to carry forward this tradition.

Walther Boon
Chair — ISMH17



Seafarers are key workers. The industry they serve is crucial. The health of seafarers is a critical factor in the sector — that is why maritime medicine is so important.

The International Maritime Health Symposium — ISMH celebrates its 17th edition this year in Rotterdam. It has become the leading networking event in Maritime Medicine.

The International Maritime Health Association — IMHA was founded in 1997 on the occasion of the 4th ISMH, in Oslo. The concept was to provide a forum for people, ideas, initiatives, research and any questions in relation to maritime healthcare.

ISMH is our most important event and gives everyone who is interested in the health of maritime workers the opportunity to meet, learn, and share their passion and knowledge about all aspects of the healthcare support of workers at sea.

From seafarers and fishers we are evolving fast into new jobs at sea. The cruise line industry needs large numbers of employees; the energy transition creates new jobs in the offshore industry. A future with fewer if any crew on board is not far away.

This brings significant but exciting challenges for a small group of international experts. We need to ensure that the medical support and the medical criteria and regulations keep track of all these evolutions and changes, and remain up to date and relevant to today's maritime industry.

The organizers in Rotterdam have done an excellent job in presenting a stimulating programme for participants, one that will give everyone inspiration to improve their work and become better professionals.

Rob Verbist
President — International Maritime Health Association



Dear ISMH17 participants,

The symposium team has worked very hard for over a year to facilitate a wonderful 17th International Symposium on Maritime Health. The success of every symposium does not just depend on its setting, the social events and the networking of individual professionals. Most important is the quality of the content of the contributions from the participants.

Maritime health is a critical field that deserves serious attention and advocacy. Demonstrating the evidence-based nature of maritime health is just as important as in any other sector of healthcare. This abstract book covers a great collection of such evidence-based content and showcases what encompasses healthy maritime working conditions.

The content of the 70 abstracts is first of all characterised by a wide variation of industries, such as cargo, fishery, cruises and offshore. The content of the abstracts also reflects the diversity of factors that need to be taken into consideration. Among these are: defining and supervising legislation and regulation, education, pre-employment medical examination, e-health, telemedicine assistance, evacuation, and search and rescue. In-depth medical themes include mental health, infectious diseases, diabetes, obesity and eye and ear problems.

All submitted abstracts were reviewed in a rigorous and robust manner by the members of the scientific committee. They had the difficult and time-consuming, but also rewarding, task of accepting and selecting the submitted abstracts. Some committee members were also helpful in advising authors on how to improve their abstract. Their efforts are highly appreciated. Especially the supportive role of Kirby Tong-Minh has been essential to establishing a high-quality program.

The times we live in are influenced by unprecedented and at the same time difficult to anticipate, changes. Inability to deal with global warming, migration and international trade regulation affects the working conditions and the overall physical and mental health of the workers at sea. It would be wonderful when the medical knowledge shared during the symposium and the presentations, the network expanded at STC-University and on board the SS Rotterdam, and all the inspiration gained from the posters, could contribute to continuously bringing crewmembers back home safely.

I wish you an unforgettable ISMH17 in Rotterdam.

Best regards,

Prof. Dr. Joost Bierens MD (Ret) PhD MCDM
Chair, Scientific Committee ISMH17



BOOK OF ABSTRACTS

17TH INTERNATIONAL SYMPOSIUM ON MARITIME HEALTH,

11-14 JUNE 2025, ROTTERDAM, THE NETHERLANDS

Collaboration between maritime doctors and nautical colleges: the best practice of the pilot project between Liguria Health Port Authority and “ANDREA DORIA” Imperia Nautical College

Antonello Campagna¹, Mattia Latorre¹, Ellsabetta Fanni¹, Paolo Rosati¹, Concetta Tuzzolino¹, Daniel Gattal², Giorgio Timm², Chiara Sorlente², Giovanni Battista Siffredi², Antonella Mofferlin¹

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ABSTRACT

Introduction: Since the late 1980s, the World Health Organization has emphasised schools' role in promoting health and public health interventions in school settings have proved to be effective to promote behaviours/practices that improve physical, mental, and emotional health. At the same time, future officers on modern ships need training in maritime safety, occupational health, and public health issues. It is also very important that conditions or diseases that render individuals unfit for work on board can be detected at the start of the course of study.

In light of the above, a pilot collaboration project has been established between Liguria Health Port Authority and “Andrea Doria” Nautical College (which is one of the schools within I.I.S. Polo Tecnologico Imperiese), one of the most prestigious and renowned Italian centres for marine education and training for future merchant ship officers (deck and engineer), since it was established in 1856.

In this work, we present the actions included in this program as best practices.

Methods: The collaboration project in its first phase (2025–2027) includes three main areas of school-based interventions:

- 1) Students' health promotion;
 - 2) Teaching and training on ships' officers occupational and public health responsibilities;
 - 3) Screening of conditions or diseases that cause unfitness for maritime work (see details in Table 1).
- The target of the interventions is the entire nautical school student population aged 14–19 (180 students). The first phase of the project will last two years, with periodic follow-up meetings to analyse the results based on a set of indicators and identify corrective actions and continuous improvement for the planned activities.

Discussions: A successful promotion of occupational medicine and public health for seafarers should start in nautical school, where future ship officers are trained. In particular, preventing unhealthy habits, like tobacco use, alcohol abuse and drugs dependence could be very important for their future life on board. In addition, according to international ILO/IMO conventions, WHO ship sanitation rules, EU Shipsan Program, and US CDC Vessel Sanitation Programme, ship officers are increasingly involved in management of maritime public health system and crew occupational health, necessitating specific training in these competences.

Last but not least, early detection of conditions or pathologies listed as causes of unfitness to maritime work (e.g. colour vision defects) in students before they make a definitive career choice could help them focus on a different course of study (e.g. engine versus deck) or another professional goal in the maritime sector (e.g. logistics) without wasting valuable time and effort.

Conclusions: Even though the project is still in its early stages, we definitely think that our activities so far are worth presenting to obtain valuable international feedback. Collaboration between maritime medical doctors and nautical colleges could become a fundamental tool in the future of maritime medicine, ensuring a healthier and safer global maritime workforce.

Keywords: nautical students medical examination, school health promotion, public and occupational health training

Table 1. Content and tools

- 1. HEALTH PROMOTION ISSUES:** vaccinations, motor vehicle safety, safer and healthier foods, promotion of physical activity, recognition of tobacco use as a health hazard, prevention of HIV and other sexually transmitted infections, healthy nutrition, physical activity, obesity prevention; mental health awareness. (**Tools:** questionnaires, informative brochures and meetings)
- 2. EDUCATION ON SHIP'S OFFICERS OCCUPATIONAL AND PUBLIC HEALTH COMPETENCES:** safety of ships workplaces, control of infectious diseases onboard, WHO International Health Regulation 2005, WHO Ship Sanitation System management (Potable and recreational water, Sewage and ballast water, waste management, pest control, safe food, Engine room requirements, telemedical assistance, first aid skills). EU Shipsan Program, CDC Vessel Sanitation Program (**Tools:** dedicated workshop and training on the field during inspections onboard).
- 3. VOLUNTARY SCREENING** for pathologies that are cause for unfitness to maritime work according to ILO/IMO guidelines: (**Tools** BMI and physical capability for obesity, blood glucose control for diabetes, Ishihara test and indication for second level tests, if required, for colour vision deficiencies). Meeting with the student's family in case of specific conditions/pathologies requiring awareness and insight are also planned.

Testing of seafarers' color vision: an update on work in progress

Antonello Campagna, Antonella Mofferdin

Italian Ministry of Health, Liguria Health Port Authority

ABSTRACT

Color discrimination is very important for seafarers: lookout duties require color discrimination, often in conditions of poor visibility both during the day and at night. Analyzing the visual patterns observed and the use of instrumentation and visual displays in all parts of a vessel also relies on adequate color perception. In addition, denotative color codes are used, especially in engineering, for cabling, gas cylinders and visual warning and alarm systems.

Defects in color vision were found to be a cause of maritime accidents in the late nineteenth century. The most common form of defect, found in around 5% of males but rare in females, is an inability to distinguish between red and green, the colors first adopted for oil navigation lights and still used. The defect is genetic and present throughout life. In rare cases, a defect can develop secondary to another medical condition, or a minor level of impairment may become apparent as the eye ages. The seafarer's medical examination, performed according to STCW reg I/9, must ensure that the seafarer meets the color vision standards provided by CIE 143:2001 (International Recommendations for Color Vision Requirements in Transport). According to this international guideline, testing for all seafarers should be done with the standard 24- or 38-plate Ishihara book. (screen-based test)

Applicants who fail the Ishihara test should be re-tested using the Holmes Wright B Lantern test (HWB) (deck) or Farnsworth D15 or City University tests (engineer or radio officer) This recommendation is now considered outdated and the lanterns are no longer manufactured.

In this presentation, according to literature evidence, we provide a review of alternative procedures based on the CAD test (Color Assessment and Diagnosis test) to promote an IMHA consensus conference on this topic

Conclusions: There is a need for new internationally accepted seafarers' color vision testing guidance. Key discussion points remain a) The use of the CAD test as a second-level test (and if so, setting thresholds pattern values specific for seafarers). b) The possible replacement of the Ishihara test with the CAD screening test.

Keywords: color vision; CIE standard; CAD test, seafarers examination

Protocol to detect and follow up seafarers' alcohol dependence and misuse with a review of new alcohol intake biomarkers

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ABSTRACT

Introduction: Over the decades, several studies have shown the relevance of alcohol use among seafarers and fishermen. The dangerous consequences of alcohol consumption during maritime working hours have been well highlighted (e.g., occupational accidents and serious maritime incidents involving crew on duty under the influence of alcohol).

Many legislations require zero-alcohol concentration during working hours for crew members on the bridge or in safety-related roles. The ILO/IMO guidelines on medical examination of seafarers include alcohol abuse as a condition for medical unfitness. In these cases, successful participation in a rehabilitation program with periodic laboratory screening is required.

The aim of the study is to present the Liguria Health Port Authority protocol for detecting alcohol abuse and assessing the effectiveness of rehabilitation programs during seafarers' medical examinations. A review of biomarkers associated with alcohol use, with a particular focus on ethyl glucuronide (EtG) in hair, carbohydrate-deficient transferrin (CDT), and phosphatidylethanol (PEth) is provided.

Methods: In the context of alcohol abuse, a biomarker serves as a precise indicator of an individual's drinking pattern or predisposition to alcohol abuse and addiction. Markers of excessive alcohol intake can be grouped into two types: A) Indicators of alcohol-induced organ damage, B) Indicators of alcohol consumption. In particular EtG, CDT and the new PEth provide an indication of chronic alcohol use. The initial screening for seafarers' alcohol dependence is carried out using the Alcohol Use Disorders Identification Test (AUDIT), a 10-item screening tool developed by the World Health Organization to assess alcohol consumption, drinking behaviors, and alcohol-related problems

Discussion: For all seafarers undergoing the STCW medical examination, the AUDIT WHO screening questionnaire is administered, and traditional alcohol intake biomarkers, plus CDT, are evaluated. Seafarers are also tested using a new biological biomarker (EtG on keratin matrix) if: it is their first examination (enter career), they have a positive AUDIT screening (score > 8), traditional biomarkers values are out of range, there is a report of alcohol abuse from traffic police or shipping company doctors. Seafarers suspected of alcohol abuse are referred to specialized alcohol addiction support services for rehabilitation treatment, and follow-up is conducted through periodic reassessments of EtG on keratin matrix. In the near future, we plan to innovate our protocol by replacing the CDT biomarker with PEth, which is more sensitive and easier to perform using a capillary blood sample.

Conclusions: Effective screening and management of seafarers' alcohol abuse/dependence are crucial for ship safety, prevention of maritime occupational accidents, and ensuring compliance with STCW medical fitness guidelines. No trustworthy medical diagnosis of alcohol abuse/dependence can be made solely from any recognized laboratory marker, unless the patient undergoes medical evaluation (seafarer doctors have a key role in this process). On the other hand, a medical diagnosis cannot be made without reliable lab tests. Given this, new alcohol consumption biomarkers, such as EtG and PEth, should be considered in the next revision of ILO/IMO guidelines for seafarers' medical examination.

Keywords: alcohol abuse, alcohol dependence, alcohol intake biomarkers, ethyl glucuronide (EtG), carbohydrate-deficient transferrin, phosphatidylethanol

Healthy Sailing Guideline on medical operations in expedition vessel: aspects of maritime occupational medicine

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ABSTRACT

Introduction: Development of guidelines for specificities/needs of medical operations in expedition vessels is included in task 3.7 of the European project Healthy Sailing [1], a research/innovation action that aims to improve the quality of passenger shipping services, and make them, more resilient, competitive and efficient. A draft of this guideline with a special focus on their innovative points regarding crew medical assistance on board will be presented in order to receive feedback from all stakeholders. **Methods:** The guideline draft has been developed on the basis of ILO/IMO Regulations [2], the Maritime Labor Convention 2006, the WHO Handbook for Ship Sanitation [3], the Shipsan Manual [4], and previous guidelines (American College of Emergency Physicians [5], Norwegian Maritime Medical Centre [6] and International Maritime Health Association documents [7]).

References for ashore hospitals have also been considered (Joint Commission [8] Accreditation Standards, best practices for clinical risk management and international medical facility guidelines [9, 10]), including relevant EU Legislation [11–13] and ISO regulations [14].

The development of draft guidelines proceeded in light of our practical experience gained in new cruise ships/ferries' medical facilities' authorization process [15, 16].

The draft layout includes: 1) Medical facilities activities; 2) Health ship services plan; 3) Health staff (consistency and professionals required, qualifications, training and skills; 4) Layout and physical design; 5) Equipment and laboratory testing capability; 6) Telemedical assistance; 7) Medicines; 8) Preparedness and readiness (contingency medical plan and reserve emergency medical facility); 9) Public health and infection control; 10) Quality System, Clinical Risk Management; 11) Customer satisfaction and complaints management; 12) Prevention and occupational medicine on crew; 13) Medico legal practice (according to the new US Legislation [17]; 14) Medical spa, aesthetic center, and dialysis; 15) Environmental management; 16) Administrative provisions (authorization process, periodic audits, grading).

The draft will be implemented subsequently with a six-month pilot testing on board, conducted in collaboration of some cruise ship companies.

Conclusions: The innovative aspects of this guideline compared to the previous are A) A global view of the ship medical facilities based on the three-pillar model, ensuring that they provide high-quality medical care, effective actions to prevent the spread of communicable diseases, and occupational/preventive medicine on crew. Specifically, the following are required. 1) Prevention of cardiovascular risk, alcohol/drugs abuse and psychiatric disorders; 2) Management of chronic conditions among

crew members (e.g., diabetes, anticoagulant therapies, psychological distress); 3) Coordination with PME crew examination, including the integration of the medicine chest; B) A health quality and clinical risk management system including crew satisfaction surveys and measures to increase accessibility to medical facilities, specific for crew; C) The provision of an advanced second level of TMAS for ships without a doctor on board or sailing in remote areas lacking adequate shore-based medical facilities. D) A collaborative authorization process, extending from the design phase through shipyard to sea operations and post-launch audits that consider crew opinions/suggestions. This guidelines draft will be open to continuous review, updates, and expansion with the contribution of all stakeholders. Readers are encouraged to provide feedback and to contribute material for further updates.

Keywords: shp medical facilities, Healthy Sailing, seafarers' preventive and occupational medicine

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Table 1. Guidelines contents

STRUCTURE AND CONTENTS

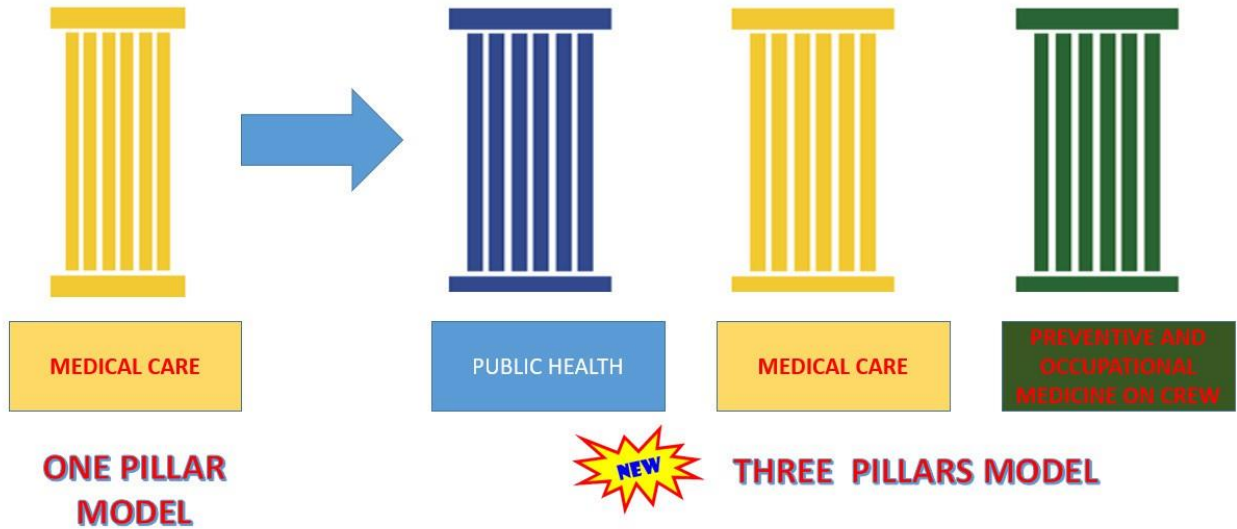


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- **S3 STAFF**
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Table 2. Requirements for the guidelines section “Medical Prevention and Occupational Medicine on Crew”

Any seaman should get medical care at sea as equivalent as possible to what she or he can expect ashore *Maritime Labour Convention's standard A 4.1*

ITEM	REQUIREMENT	
S13 MPOMC	MEDICAL PREVENTION AND OCCUPATIONAL MEDICINE ON CREW	
<p>HEALTH ASSISTANCE FOR CREW MUST BE FREE WITHOUT APPLICATION OF ANY CHARGE</p> <p>MEDICAL SERVICES ARE TIME ACCESSIBLE FOR CREW : evidence of organizational document granting for crew :</p> <p>A) in case of acute conditions possibility to leave work immediately to access medical facilities</p> <p>B) in case of non acute conditions or follow up compatibility medical facilities opening times with crew free time from work shift or possibility for crew to have permission to access medical facility during work shift</p> <p>Dedicated consultation for follow up of crew with chronic pathologies (eg Diabetes hypertension , HIV infection)</p> <p>PREVENTIVE OCCUPATIONAL MEDICINE :PRESENCE OF PLANS TO PROMOTE ONBOARD THE PREVENTION AMONG CREW OF</p> <p>A) CARDIOVASCULAR RISKS</p> <p>C) ALCOHOL ABUSE AND DRUG USE</p> <p>D) SEXUAL TRANSMITTED INFECTION</p> <p>PRESENCE OF SPECIFIC PROGRAM TO SUPPORT CREW MENTAL HEALTH AND PREVENT PSYCHIATRIC DISORDERS including psychiatric y and/or Psychological counselling on line if deemed necessary by ship doctor or company occupational doctor</p> <p>Copyright MMXXIV A. CAMPAGNA mail camp.anto@virgilio.it - All rights reserved - Reproduction forbidden</p>	<p>PROCEDURE OF COMMUNICATION FROM OCCUPATIONAL MEDICINE COMPANY SERVICE ABOUT CREW'S SPECIFIC</p> <p>A) FOLLOW UP CLINICAL (LABORATORY AND IMAGING)</p> <p>b) REQUIRED MEDICAL TREATMENT ONBOARD</p> <p>c) LIMITATIONS GIVEN ON STCVW REG I/9 Fitness Certificate in particular " fit only for ship with doctor onboard"</p> <p>IN ADDITION TO FLAG REQUIREMENT, SHIP'S MEDICINE CHEST ADEQUATE TO CREW PATHOLOGIES (EG Asthma medications , HRTT for HIV, Antidiabetic drugs;)</p> <p>VACCINATION SERVICE onboard FOR CREW</p> <p>A) according to Flag State law and OCCUPATIONAL MEDICINE COMPANY PROGRAM (mandatory presence of tetanus / tetanus dyphtheria vaccine, antitetanus immunoglobulin)</p> <p>B) according to Guidelines for vaccination of passengers/crew in large passenger ships t372 healthy sailing</p> <p>C) vaccine for seasonal influenza and Covid 19</p> <p>D) vaccines for medical staff (hepatitis b , chickenpox , measles)</p> <p>CREW CHECK AT EMBARKATION FOR PRESENCE OF SYMPTOMS AS GROUNDS FOR SUSPECTING THE EXISTENCE OF A DISEASE OF AN INFECTIOUS NATURE</p>	<p>C164 - Health Protection and Medical Care (Seafarers) Convention, 1987 (No. 164)</p> <p><i>Convention concerning Health Protection and Medical Care for Seafarers (Entry into force: 11 Jan 1991)Adoption: Geneva, 74th ILC session (08 Oct 1987) - Status: Up-to-date instrument (Technical Convention).</i></p>



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Figure 1. The Ship Medical Facilities “Three Pillars Model”

INFORMATION FOR AUTHORS

The International Maritime Health will publish original papers on medical and health problems of seafarers, fishermen, divers, dockers, shipyard workers and other maritime workers, as well as papers on tropical medicine, travel medicine, epidemiology, and other related topics.

Typical length of such a paper would be 2000–4000 words, not including tables, figures and references. Its construction should follow the usual pattern: abstract (structured abstract of no more than 300 words); key words; introduction; participants; materials; methods; results; discussion; and conclusions/key messages.

Case Reports will also be accepted, particularly of work-related diseases and accidents among maritime workers.

All papers will be peer-reviewed. The comments made by the reviewers will be sent to authors, and their criticism and proposed amendments should be taken into consideration by authors submitting revised texts.

Review articles on specific topics, exposures, preventive interventions, and on the national maritime health services will also be considered for publication. Their length will be from 1000 to 4000 words, including tables, figures and references.

Letters to the Editor discussing recently published articles, reporting research projects or informing about workshops will be accepted; they should not exceed 500 words of text and 5 references.

There also will be the section Chronicle, in which brief reports will be published on the international symposia and national meetings on maritime medicine and health, on tropical parasitology and epidemiology, on travel medicine and other subjects related to the health of seafarers and other maritime workers. Information will also be given on training activities in this field, and on international collaborative projects related to the above subjects.

All articles should be submitted to IMH electronically online at www.intmarhealth.pl where detailed instruction regarding submission process will be provided.

Only English texts will be accepted.

Manuscripts should be typed in double line spacing on numbered pages and conform to the usual requirements (Ref.: International Committee on Medical Journals Editors. Uniform Requirements for Manuscripts Submitted to Biomedical Journals, JAMA, 1997; 277: 927–934).

Only manuscripts that have not been published previously, and are not under consideration by another publisher, will be accepted.

Full texts of oral presentations at meetings (with abstracts printed in the conference materials) can be considered. All authors must give written consent to publication of the text.

Manuscripts should present original material, the writing should be clear, study methods appropriate, the conclusions should be reasonable and supported by the data. Abbreviations, if used, should be explained.

Drugs should be referred to by their approved names (not by trade names). Scientific measurements should be given in SI units, except for blood pressure, which should be expressed in mm Hg.

Authors should give their names, addresses, and affiliations for the time they did the work. A current address of one author should be indicated for correspondence, including telephone and fax numbers, and e-mail address.

All financial and material support for the reported research and work should be identified in the manuscript.

REFERENCES

References should be numbered in the order in which they appear in the text. At the end of the article the full list of references should give the names and initials of all authors (unless there are more than six authors, when only the first three should be given followed by: et al.).

The authors' names are followed by the title of the article; the title of the journal abbreviated according to Medline; the year of publication, the volume number; and the first and last page numbers. **Please note:** References you should include DOI numbers of the cited papers (if applicable) – it will enable the references to be linked out directly to proper websites. (e.g. Redon J, Cifkova R, Laurent S et al. Mechanisms of hypertension in the cardiometabolic syndrome. *J Hypertens*. 2009; 27(3): 441–451, doi: 10.1097/HJH.0b013e32831e13e5.).

Reference to books should give the title, names of authors or of editors, publisher, place of publication, and the year.

Information from yet unpublished articles, papers reported at meetings, or personal communications should be cited only in the text, not in References.

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