

# Mapping the knowledge base for maritime health: conclusions

---

**Tim Carter**

Norwegian Centre for Maritime Medicine, University of Bergen, Norway

---

A historical review of studies on seafarers' health over the last 150 years provided the basis for proposing a taxonomy for knowledge about maritime health based on the types of information that can be collected, where it may be collected, and the uses for which it is required. The utility of such knowledge has been considered in terms of both its ability to improve the health of seafarers and the anticipatable responses from each interest group to its application.

The knowledge base on illness in seafarers, both about patterns of disease and about interventions to reduce harm by prevention or treatment, is limited; a few areas are well supported by evidence, but many are not. In particular there is a sound base on the causes of death and for cancer and arterial disease mortality and morbidity. The relative contribution of occupational and lifestyle risks to the observed patterns of cancer and arterial disease is uncertain, but both have been shown to be important. The sources of this knowledge are the traditional maritime nations of the developed world and there are no comparable studies that enable comparisons to be made with the major crewing nations of the present day.

The long-term risks that have been studied are important in the context of a country concerned about the health of its citizens and the effects of an occupation such as seafaring on health and life expectancy. However, the main current concerns of the commercial maritime sector, and perhaps of some of the authorities in the major crewing countries which benefit from seafarers' remittances, are less about such long-term risks and more about effective health management during each contract of employment. The commercial operator's aim is to reduce the costs of their responsibilities for treatment and repatriation as well as the high costs in the event of opera-

tional delays from diversion, evacuation, or treatment in port; authorities may be complicit in this as they want to maintain their position as labour suppliers.

It can be argued that these economic priorities should not drive scientific activity. But it needs to be recognised that the current limited knowledge base on seafarer fitness assessment, prevention on board, the treatment of emergencies at sea, including the use of telemedical assistance, and arrangements for treatment ashore and repatriation has not been effectively integrated to give the overview that is needed to make a case for improving arrangements and specifying needs in a way that will convince the ship operator, the seafarer, or the national maritime regulator. The scope for developing an enhanced and useful knowledge base on these topics is real; the research questions can readily be framed, and there are important untapped sources such as ship's medical treatment records, telemedical contacts, and shore-based clinical services, which can be studied individually and integrated to build up information on efficient care pathways. These can be linked to and informed by information from medical assessments of seafarers and information about working and living conditions aboard, to enable the value of improved prevention as a means of reducing harm to be determined. Studies on longer-term risks in the major crewing countries are indeed needed, but there is not the same local political pressure for them as there are few similar investigations on the lifetime risks of work for the rest of their population. This means that their use to make comparisons of the risks of seafarers as compared with other occupational groups will not be possible.

By contrast with the current knowledge base on illness and injury to seafarers that on the contribution of health related impairment to accidents and

---

✉ Tim Carter, Norwegian Centre for Maritime Medicine, Department of Occupational Medicine, Haukeland University Hospital, JonasLies vei 65, PO Box 1, 5021 Bergen, Norway; e-mail: Tim.carter@mcga.gov.uk

incidents is considerably weaker. The scope for improving it is limited, and there are dangers of developing more sophisticated risk management methods for health aspects of safety in the absence of a clear link to incidents or to events that are close surrogates for them. The two most likely drivers for change are either new patterns of accidents or concerns about the discriminatory effect of safety-related health standards when they are not grounded in valid evidence of risk other than long usage. Any new investigations need to review information on impairment in the light of a clear understanding of the ways in which it can be expected to interact with the task demands of modern shipping.

A final theme that is rooted both in historical precedent and current practice is that maritime health is very much in the world of politics, economics, and

interest groups who are driven by these forces rather than by concepts of pure science or by the professional concerns of the medical investigator. Maritime health expertise is a utility used to solve problems in a complex sector of human activity and needs to address those problems that are likely to have support. At the same time, one of its key contributions is to remind all the players that seafarers are human and so have a set of inherent biological strengths and vulnerabilities that are immutable. Working and living conditions at sea have to be designed to take account of these. There are limits to human adaptation, and the analysis of the knowledge base for maritime health presented here is concerned with the small differences in individual limits within a larger framework of the largely consistent characteristics for the whole human race.