

## Tröhler U. James Lind and the evaluation of clinical practice

**Commentary on:** Lind J (1771). An essay on diseases incidental to Europeans in hot climates with the method of preventing their fatal consequences 2nd edition, London Printed for T Becket and PA De Hondt.

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**Author contact details:** Ulrich Tröhler, Department of Social and Preventive Medicine (ISPM), University of Bern, Finkenhubelweg 11, CH-3012 Bern, Switzerland, Email: [utroehler@ispm.unibe.ch](mailto:utroehler@ispm.unibe.ch)

Lind was not only an authority on scurvy, but used his senior position at the 1000-bed naval Hospital at Haslar for an extensive study of "fevers". "Of the various diseases afflicting mankind," he wrote in 1762, "few are more fatal, none more frequent, than fever" (Lind, 1763, p 1). It is therefore worth asking whether and how he used the opportunities afforded by this large hospital practice to perform further studies to evaluate therapies in these two major and contested clinical fields. The answers are to be found in the various editions of his writings published after taking up his appointment in Haslar in 1758, which are therefore included in *The James Lind Library*. They are, in order of publication, the 2nd and 3rd editions of *An Essay of the Most Effectual Means of Preserving the Health of Seamen* (1762, 1774), and all three editions of *An Essay on Diseases Incident to Europeans in Hot Climates* (1768, 1771 and 1777). We have drawn attention in a separate Commentary ([Lind 1763](#)) to his methodological awareness as expressed in his *Two Papers on Fever* (twice edited - 1763, 1774, and translated into French).

Lind was a practical man, with a duty to perform. One can see this in his recommendation of a simple method of obtaining drinkable water by distillation from sea water in 1757. This was so appreciated by the Admiralty that it had his *Essay on the Most Effectual Means...* republished, as a honour, in 1762. He had little patience with the then innumerable attempts to classify or to account for fevers theoretically (Lind 1768, p 322). A number of statistical returns from ships and from his hospital supported his view that the common ship fever was infectious, as all his epidemiologic conclusions and hygienic recommendations were based on such numerically stated facts (Lind 1762, p 141-143). To interrupt contagion he adopted strict isolation measures and burned infected clothing. He fumigated the wards with brimstone, tobacco or gunpowder. In fact he introduced separate fever wards at Haslar twenty years before Haygarth did so in Chester (Lind, 1762, p 122).

As far as therapy is concerned, Lind also made some judicious methodological statements (see [Commentary on Lind 1763](#)). In practical terms he recommended traditional bleeding only occasionally in cases of light fever. He thought bleeding dangerous in the malignant pestilential fever ("typhus"), for which he recommended certain antimonial medicines as febrifuges, local blistering and clysters, still hoping that a specific therapy might be found for these fevers (as Peruvian bark had been for the intermittent fevers). In accordance with his general outlook, Lind claimed that more attention should be paid to his indications as they were not founded on private observations, "or on any one particular case, which might prove an exception to a general established principle in practice. They are the result of some thousand patients, whose cases are still preserved in the hospital" (Lind 1763, p 71-72). In fact, during the visit of 4,200 men of the Russian fleet in 1769, 1521 cases of typhus were landed at Haslar, and only 86 died.

*The Essay on Diseases... in Hot Climates*, became a standard work (it was in its 6th London edition in 1808 and still edited in America even in the 1810s). Written for the benefit of seamen, soldiers, and emigrants alike, it dealt with a topic of fundamental importance for British enterprise abroad. A long 'Appendix' dealt with intermittent fevers, which were also still prevalent in some parts of England. The approach to theory, classification, prevention and therapy of these fevers in the *Essay* was comparable to the approach he took to continuous fevers in the *Two Papers*. His plan consisted in bringing about a

remission of the first hot fit by tartar, blistering and opium, but without bleeding. In the interval he started with Peruvian bark. As with scurvy, he listed over fifty other possible treatments, some of which might occasionally be helpful. But his simple plan would usually do for all types of intermittent fevers, as proved by his overall results stated numerically, but not in a very precise manner. For example, he wrote "Of between four and five hundred patients, afflicted with remitting or intermitting fevers, under my care in the year 1765, I lost but two; neither of whom had taken the bark." ([Lind, 1771, p 318-319](#)).

The choice of bark for agues (malaria) probably needed no special justification in Lind's opinion, since Sydenham had already recommended it. His use of opium to abbreviate the first hot fit, however, was based on the following trial. In one fever ward, Lind had given it to all 25 patients: nineteen had felt immediate relief, with three there had been no change, and the three remaining had not taken it (no results stated). Based on this success, Lind administered opium to another dozen patients the next day, in eleven of whom it removed the headache and abated the fever, so that bark could be started earlier than usual. Since that time and the time his *Essay* was published he had given opiates "to upwards of three hundred patients labouring under this disease" and noticed its effect in the hot fit ([Lind 1771, p 342-345](#)).

As in the case of scurvy (see [Commentary on Lind 1753](#)), the Admiralty ordered trials of medicaments against fever, especially Dr James's Powder. Lind was probably prejudiced against this panacea. Considering the different nature of fevers, he thought that one powder was unlikely to be universally effective. Furthermore, at about the same time as Millar and Lettsom, Lind campaigned against secret medicines, considering that the powder was not likely to be of general benefit to mankind unless made public ([Lind, 1771, p 304-305](#)).

In spite of these views, Lind had to obey orders and try it out at Haslar in various cases, "to above a thousand patients". He found it to have about the same effect as tartar emetic in similar cases, but admitted that he had continued his usual treatment "as if no such powder had been given"! It seems clear that, from the outset of this 'trial' Lind had little intention of making a case for Dr James' Powder ([Lind 1771, p 301-305](#)).

Lind used his hospital facilities consciously for a number of "comparative trials" of febrifuges - for instance a comparison between vinum antimoniale and tartar emetic. However, as in his studies of various antiscorbutics, he did not present the results with precise numbers, the only exception being a trial of opium ([1771, p 305-306](#)).

There is no evidence that Lind repeated anything comparable to his 1747 controlled trial of treatments for scurvy, although, as shown in the *Commentary on his Two Papers on Fevers*, he appreciated and emphasised repeatedly several valuable points concerning the evaluation of therapy: A given treatment could only be effective in a certain proportion of patients, requiring in turn large series of observations before it could be adopted or rejected. Success, expressed in terms of comparative mortality, was the measure of all plans of treatment. Lind stated numerically some treatment results that he had compiled directly from the records early in his hospital career, but these appeared unaltered in the later editions of his works on fevers (see Lind 1777, pp 262-265, 291, 313-315, 342-343; 1808, pp 271-272, 333-334, 353-354).

Lind was among the first to publish success rates obtained in one group of diseases, with one known method, in one hospital over a given time period. He could do this directly for his own practice at Haslar. Because it was insufficient for the fevers of the West and East Indies, Lind relied on the descriptions in Robert Robertson's (1742-1829) papers - even before the latter had published some of them (Lind, 1774, pp 54-63). Thus, even the imperfect publication of results by Lind was a departure from the vaguely supported claims of an earlier generation of internationally known authorities, such as the Dutchman Hermann Boerhaave, Sir John Pringle, or Robert James, who referred only to isolated cases or indirectly, using figures selected from the Bills of Mortality.

Lind's was a departure towards a more objective evaluation of therapy. He had shown a way of doing this at Haslar, and this had impressed some of the next generation of top-ranking physicians of in the Royal Navy, such as Robert Robertson and then Sir Gilbert Blane (1749-1834), and some of those in the Honourable East India Company, such as John Clark (1744-1805). Making specific reference to Lind, these men applied his approach with perseverance during their active service afloat in several parts of the globe, and later in their respective hospitals in England.

Lind summarized the transition from belief in an absolute authority to reliance on relative statistics in 1772: "A work indeed more perfect, and remedies more absolutely certain might perhaps have been expected from an inspection of several thousand...patients." But even such facts always remained partial in his view, and he concluded, "for though they may for a little, flatter with hopes of greater success, yet more enlarged experience must ever evince the fallacy of all positive assertions in the healing art" (Lind, 1772, p v-vi).

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