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‘Fact Baffles Philosophy’: John Atkins’ attempts at cures in ‘The Navy Surgeon’ (1742)

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Abstract

This article considers John Atkins’ (1685–1757) treatment in his book ‘The Navy Surgeon’ (1742 edition). His treatments included surgery, venesection, leeches, mercury, purges and emetics. Atkins’ knowledge about the value of his treatment was informed by practical experience, astute observation, ‘experimentation’ in the form of trial and error, the opinion of other authors, Royal Navy surgeons’ ‘journals’ and his own experience as a patient. Atkins mentions cases with negative outcomes and questions contemporaries’ opinions. He makes no attempts at counting clinical outcomes. His description of amulets and ‘innocent’ medications shows an understanding of the power of placebo.

Introduction

John Atkins was an English surgeon who served in the Royal Navy. Among early 18th century peers, Atkins stands out for his critical approach:

‘Among the eighteenth-century naval surgeons who do not deserve to fall into oblivion may be numbered John Atkins’.¹

Atkins' contributions include recognising the importance of cleanliness and fresh air in disease prevention at sea, noting that navy crews should have:

'as free and frequent communication with the fresh air (by opening the ports) as may be consistent with safety and their other affairs, points too much overlooked and disregarded, though of the greatest consequence to preserve a ship's company on a voyage.'¹

Atkins also makes astute clinical observations and reveals his rationale behind timing of surgery, noting that gun-shot wounds are 'less dangerous, if they do not hit on large vessels, than wounds made by sharp instruments'.² Atkins was an 'independent thinker'³ who described his rationale for timing of amputation. His approach to surgery included:

'methodical planning; sorting of casualties into three categories to allow the surgeon to deal rapidly and effectively with those requiring immediate surgery, priority to be given to the arrest of haemorrhage; scrupulous cleanliness; thorough debridement'.³

Watt notes that that Atkins: 'was first to describe African sleeping sickness (trypanosomiasis). He also described craw-craw, or river blindness (onchocerciasis), and Guinea-worm disease (dracontiasis). Atkins provided probably the first detailed description of cerebral malaria complicating a falciparum infection, which, because it lacked the periodicity of common forms of malaria and was unresponsive to quinine, puzzled him'.³ Despite being recognised as a surgeon in many respects ahead of his time, little has been published about his medical 'cures'. This paper considers Atkins' treatments and his rationale for their efficacy.

Biography

Atkins life is described in detail elsewhere. He was:

'the son of John and Grace Atkins, [John] was baptized on 26 November 1685 at Plaistow, Essex. He served a professional apprenticeship before commencing a chequered naval career in March 1701 as surgeon's mate of the *Charles Galley*. He progressed to first mate of the *Somerset*, where he successfully treated head injuries and splinter and gunshot wounds sustained during Sir George Rooke's action off Malaga in 1704,

and his captain found him diligent, respectful, sober, and worthy of better things'.³

In addition to this, Atkins served aboard HMS Tartar (1705–10) and HMS Lion (1710–14). In 1715 he was awarded the diploma of the Barber–Surgeons' Company.³ Atkins naval career never lacked opportunities for adventure and clinical experience:

'In February, 1721, Atkins sailed for the Guinea Coast with the Swallow and the Weymouth, commissioned to suppress piracy off the west coast of Africa. The voyage was attended with some success, for two hundred and seventy pirates were captured at Cape Lopez with ten thousand pounds in gold-dust. But sickness proved a greater enemy than pirates'.
WRL

In later life, Atkins was a critic of slavery:

'Atkins also became concerned about the plight of black slaves and issued one of the earliest denunciations of the slave trade, which he had witnessed on the African coast. A passage in *A Voyage to Guinea* seems to imply that he had served in a slave ship himself. It would account for the gap in his naval service from 1715 to 1718, during his period of disillusionment'.³

The Navy Surgeon; or, Practical system of surgery (1742 edition)

In 1742, Atkins published the second version of his surgical text entitled: 'The navy surgeon; or, practical system of surgery. With a dissertation on cold and hot mineral springs; and physical observations on the coast of Guiney' (see Image 1). Other editions were published in the 1730s and 1750s, however, the present article examines that of 1742. In this expanded version, Atkins brings together the opinions of other clinicians, both ancients and moderns: for example, Aristotle, Avicenna, Bacon, Boerhaave, Galen, Hippocrates, and Sydenham. The book offers much practical advice in the form of case histories and discussion about treatments. He also gives further clinical descriptions which are presented here as they appear to tally with modern diagnoses (see Table 1).

Image 1 here [Front page of Atkins' book]

TABLE 1 here

'The virulent matter': Atkin's explanatory models of disease causation

Atkins ideas about disease causation are consistent with the period in which he lived. In addition to advocating fresh air, he highlights that 'Filth and stench spreads illness' (p. 358) and makes mentions of humours, the doctrine of effluvia and miasma. For the latter, 'opening a fracture' is described as indicated to 'allay the Itching that has arisen there through the Detention of Humours' (p. 49). Sexual transmission, conversely, is described as contagion that is 'darted' (p. 225) from one sexual partner to another. He appears, however, undecided over the place of microorganisms:

'Venereal Contact seems of such Necessity for communicating Infection, that with me it is a very unlikely Thing for Venereal Matter ever to do it without [contact]...There are but two Ways... whereby Contagion can be supposed to pass, and that is, by their throwing off a greater Quantity of noxious and virulent Effluvia, in the manner some suppose the Plague and Epidemical Distempers to infect ; or else like what is related in the Philosophical Transactions concerning Contagion in the Itch, Animalculae are bred in those Globules dispersed about the Skin, which making their Way through, shift from Place to Place, and so carry Infection, they living (says the Relation [i.e. author]) two or three Days when from the Body. But how well these Assignata may resolve other contagious Distempers, they appear here but light in the Balance; FACT Baffles Philosophy' (p. 225-6)

Elsewhere, Atkins does point to the notion of direct transmission of an infective substance, especially in genital infection:

'the virulent Matter left in the [presumably vaginal or urethral] Passage by a preceding Gallant [i.e. man]' (p. 225).

Atkins recognises the role of 'nature' in healing. This is true even in injuries as serious as penetrating wounds of the thorax or abdomen. For example, here he notes: 'Wonder being more especially the work of Nature' (p166). For this reason, Atkins occasionally urges surgical restraint:

'The Tumor [from a gunshot wound abscess] indeed required Incision, (the Matter fluctuating under my Finger;) but I purposely omitted it for a Week, that my Patient had become heartier' (p 146).

'The Cure how attempted': Atkins' approach to treatment.

Atkins is strong on stages of illnesses and approach to treatment. This is first evident in his surgery:

'The Parts of Surgery are Synthesis, Diaeresis, Exaeresis, and Prosthesis, a Reuniting, Dividing, Extracting, or Adding' (Preface).

This is also true for his understanding of the natural history of disease. Here he makes it clear that his categorisation is intended to facilitate learning:

'I shall chuse [*sic*] to finish the Course [of treatment] in that Method [internal mercury], and for easier Apprehension, divide the Flux into a Beginning, State, and A Declension' (p. 242).

Likewise, he sets out to categorise treatment strategies:

'The Cure [for Gonorrhoea] I shall lay down under these two Intentions: First, To conquer and carry off the Malignancy. And, Secondly, To heal and strengthen the debilitated Parts (p. 231/2).

Atkins occasionally recognises gaps in scientific knowledge about treatments. Where there is uncertainty he concludes that 'innocent' (i.e. harmless) treatments may be used according to the preference of patients:

'[In penetrating wounds to the thorax or abdomen] to use injections, as some have prescribed, of Vulnerary Herbs boiled in Red Wine, to which Syrup of Roses is added, must be wrong ; till we know how such Liquid may be imbibed, and expelled the Cavity again ; and for internal Prescription, whether Physical or Diataetical [presumably, by mouth], they are by Nature made healing, in a way inconceivable to us ; and therefore whatever is innocent, is equally good, with only Preference to what a Patient may like, or has been used to...' (p. 167).

Atkins' treatments: 'Venaesection'

Atkins is cautious about excessive bloodletting and offers insight into the rationale behind a heroic approach:

'The Portuguese practice it the most of any People I ever knew, on every Occasion and often, on this reasoning ; That the human Bones dried making not above 20lb. Weight, the Muscles six or seven, our whole Composition comparatively must be fluid ; and that most Distempers must lay in the Fluids that are in such a perpetual Flux and Change, so as the whole Quantity to be altered in a Month's time. Wherefore, say they, if we can run the bad off quick by bleeding, we shall have a newer and better Mass untainted' (p. 185).

Atkins offers the following reasoning for adopting a more cautious approach:

'[the Portuguese approach is a] Mistake, because the Bowels and Glands elaborating and depurating this Juice, or what are the Solids of them, must be in Fault at the same time ; and not to be amended, but hurt by so large Extractions. (p. 185-6).

Here, Atkins goes on to recognise age differences in outcome from bloodletting but does not present any data:

'Those most likely to recover such an Exhaustion [excessive bloodletting], will be young, vigorous, and sound in Bowels; but People advanced in Years, run a bad Chance in the Trial... (p. 186).

Atkins advocates leaches ('hirudines') in venaesection, especially for children, the elderly and key parts of the body e.g. 'Haemorrhoids, Gums, and Temple Ramifications' (p. 182).

Under a subtitle 'Others oppose Bleeding' Atkins expresses concern over the procedure: 'There are others who condemn as unjustly all Evacuations this way, even in fevers' (187). Here Atkins names only one person: 'Manwaring' who advocates 'condemning it [bleeding] still more in Small-Pox, malignant Fevers and any Distempers arising from the Depravity of the Blood' (p.187). This might be Peter Manwaring M.D. (1694 -1785) of Trinity College, Cambridge and Manchester Royal Infirmary. Instead, we believe it to be an 'E. Manwaring' who published a book entitled 'Pains afflicting Human bodies ; their various Difference, causes, Parts affected, Signals of Danger or Safety ; Shewing the Tendency of chronick and acute Diseases, for a seasonable Prevention of fatal Events ; with a Tract of Issues and Setons'. The book is undated but was printed for Henry Bonwicke at the Red Lion in St. Paul's Church-yard, London.⁴ Unfortunately, it appears not to have survived. Atkins shows Manwaring to have been an early voice against bloodletting,

alongside Noah Biggs (published 1651).⁵ It must be noted, of course, that Manwaring's treatment proffered in lieu of bloodletting remains unknown.

Finally, Atkins offers his cautious practical advice on the use of venaesection. This appears to be a compromise, suggesting it be tried once in severe cases:

'To cast in my own Opinion upon the Subject, robust and plethorick Constitutions, in Fevers, Rheumatisms, Falls or Hurts of any kind, where the Blood is fermenting, or likely to do so, Inflammations ; and for Revulsions in such Pains or Stupor, Bleeding is absolutely required, and a Repetition with a Regard to the Age and Strength' (p. 187)

A description of polycythaemia?

Through his experience of battle injuries, surgical procedures and vanaesection, Atkins never lacked experience of the normal appearance of blood. It is of note, however, that he briefly refers to a few patients whose blood was clearly thicker than others (see Image 2). This may constitute the first description of polycythaemia (or, perhaps apparent erythrocytosis, i.e. secondary to smoking):

'I have known a Person subject now and then to a Lipothymia [i.e. syncope], of a likeness to Appoplexy, the Cause, as I have conjectured, a too great Thickness or Viscosity of the Blood, there not being 3j of Serum, when drawn forth, to 3xij, of Blood' (p. 187).

It is of note that Atkins' treatments (including bloodletting) were reported to be unsuccessful in such cases. Explanations for this could be that the symptoms were long term thrombolytic ones (e.g. stroke) or, alternatively that viscous blood was not their cause. Polycythaemia is of historical note as it is the only surviving problem where bloodletting remains the mainstay of treatment. It is likely that in an age when bloodletting was rife, patients with polycythaemia were - in effect - 'treated'.

IMAGE 2 HERE [Atkins description of what appears to be polycythaemia

'The Power and the Evil of Mercury'

Atkins advocates mercury treatment but notes its risk under the title: 'The Power and the Evil of Mercury' (247). His text shows that he was aware of its potential for harm but concluded that this was the consequence of misuse:

'It must be confessed, there are too often seen many ill Effects from this Mineral [mercury] ; and on a serious Reflection, I cannot but think most of those deplorable Objects [i.e. patients], found in Hospitals, or elsewhere, whose ruined Constitutions are attributed to the Lues, to be with more Truth and justice ascribed to Mercury. But then this is not the Use, but the Abuse of it : An unskilful Management often precipitating Patients (and that in a short Time) into such miserable Circumstances, as the Distemper, left to itself, could not in Years (if ever) have produced... The ingenuity of making Mercury Specificical, will lie in the Measure and Manner of Administration ; that it suits such Degrees of Infection, and such Constitutions : A Point wherein one Man will excel another, according to their different Capacities, and opportunities of Experiment (p. 231-2)

Atkins recognises that mercury is more dangerous when taken internally than externally (p. 242). Presumably because of the toxicity of mercury, he advocates incremental treatment, i.e. starting at a low dose and increasing thereafter:

'After the first or second Time, I increase the Mercury in the Bolus, and give stronger Catharticks [purges, i.e. strong laxatives] (p. 232).

Atkins' uncertainty about the effects of mercury is also evident in his account of the mechanism of action of purges:

'Purges are given after Mercurials, (I believe,) not so much from a Supposition that their Virtues immediately reach the Part affected, and subdue the Poison directly, as from a distant View of altering the Habit of Body, and carrying off those vicious Humours that would else probably take their Course that way, and heighten the [disease's] Fury' (p. 232).

Atkins' use of purges in mercury treatment reveals how one drug may beget another, i.e. to modify the effect of the former:

'Purges are designed likewise to prevent any ill Effect from too great a Quantity of Mercury remaining at once in the Body' p. 233)

Again, Atkins recognises that certain patient groups are particularly susceptible to the effects of mercury (without providing numerical evidence):

'A salivation [as part of mercury treatment] is dangerously undertaken with aged People, with such as are lean, or dejected through Trouble or Misfortunes, or much emaciated ; but especially with those whose Lungs are any Way distempered' (p. 240)

'What arises from Experiments': Atkins' learning about treatment

Atkins makes it clear that he learnt largely from practical experience, trying different treatments and observing the consequences:

'It is exceeding difficult from this, if not impossible to attain any competent Knowledge in Physick, without Practice, and more so in Surgery. The Bulk of what is good, and to be depended on in either, is what arises from Experiments, a careful observation on the Consequences of Hurts, and the good or ill Effects, Management, and medicine had at different Times, in different Constitutions, Climates and Seasons ; a Variation that adds to the Deception...' (Preface).

Atkins appears to have undertaken basic laboratory tests, for example drying and weighing blood (p. 187). He also mentions that he learned from being a patient himself where (under the theme of traumatic wounds) he states: 'I have met with this Accident myself, and under such precaution [bloodletting 'run till fainting'] found no ill Effect' (p. 166). Atkins consulted the works of 'Surgeons [of the Royal Navy] keeping Journals of their Practice (p. 38). A further source of knowledge was reading widely. Here he actively engages in conflicting opinions (e.g. over bloodletting) and was not afraid to disagree with others' conclusions. For example, with regard to treating liver injuries, he states:

'there are Authors who mention Cures here, but their Veracity in this Respect is doubtful' (167).

Hints of clinical comparison

Atkins does make comparisons between patients, most notably his description of the cases of 'John Rice, and William Smith' who both underwent 'Amputations of the Leg, the Stumps of Necessity Shorter

than usual' (p. 132). Here, however, it remains difficult to elicit a contrast between any single intervention and clinical outcome.

He occasionally makes direct comparisons of treatments but these are basic or lost in opinion and description. For example, he states that:

'Tea and Honey [in penetrating wounds] is a better Pectoral, when more agreeable to Taste and Habit, than more compounded Decoctions, Electuaries, or Traumaticks' (p. 167)

He clearly learned by trial and error but the last lines of the description below might imply some simultaneous treatment allowing greater comparison in extreme circumstances:

'I begun the Cure with Emeticks, as the best Foundation, I thought, in Fevers from Intemperance ; and found them so far good, as to procure a little transient Ease and Rest, and so seemingly better for it the following Day ; yet at Night Fever and Head-ach would return with greater Violence, and break off in some lucid Interval again in the Mornings, at which Seasons of Remission, (chiefly) we bled them in the Foot three or four Times, perhaps in eight and forty Hours, according to the Humour and Practice of the Portuguese... I imagined after this Operation, Tinct. Serpent. as and Alexipharmick and Sudorific broth, would best answer to these symptoms... But was mistaken : As they immediately lost all Appetite, ... and hurried on extreme Languors, Faintness, and Convulsions, dying in three Days. With Others again, I try'd Julaps, Volatile Drops and other Cardiacks... I try'd others with testaceous Powders, or the Cortex, and a strong Hartihorn Drink... But all equally unsuccessful... (359-361).

Atkins does not describe any simple treatment comparisons (e.g. hot or cold treatment or alcohol versus non-alcoholic fluids). This is a shame because he does not reveal how he came to advocate an intervention that from modern eyes appears sensible, namely heated alcoholic fluids:

'[In a large gunshot wound to the neck] my intention here (as in all Gunshot Wounds) was to bring away every Thing extraneous, very loose, or jagged ; to wash the Wound well with a warm spirituous Decoction ; and then to fill the muscular Parts up to the Surface with Pledgets imbibed full of the Digestive heated' (p143)

Finally, Atkins does note one retrospective comparison recorded in contemporary newspapers:

'In the late Epidemical Fever that raged amongst us, our trading News took notice from Several Places, how remarkable it was, that none who smoaked [*sic*], were infected' (p. 280).

'The same infected Woman': A natural experiment?

Atkins does, however, make one insightful comparison between patients that - in theory at least - constitutes a basic natural experiment. Here Atkins conveys a belief that the risk exposure was identical, leaving him baffled by differential clinical outcomes between patients. That Atkins dwelt upon this dilemma is revealed by the fact that he lends it three separate mentions:

'where two or three, with weaker or stronger Inclinations [degree of sexual vigour due to 'Lust'], lie with one and the same infected Woman, that one, perhaps shall be catch'd, and the others come off unhurt (p. 225).

'nothing is commoner than from two Men infected by the same Woman, to see the one cur'd in a few Days, when the other, perhaps, requires Months ; which can be from nothing sooner than their different Habits' (p. 233).

In the third, he appears surprised by differential outcome between the female and second male contact:

'Adepts [i.e. other clinicians who have considered this dilemma conclude that] it is not always necessary a Woman be clapp'd [i.e. infected with the 'Venereal Matter'] to give it to a Man, but that he may take off all the virulent Matter left in the Passage by a preceding Gallant [i.e. man], and she remain perfectly well' (p. 225).

Atkins attributes divergent treatment responses to different (presumably bowel) 'habits' and divergent levels of physical sexual vigour during intercourse. By deduction, he states that prevention was practised by reducing sexual vigour:

'That Lust also is a very necessary Adjunct for communicating Infection, and giving Force to the those virulent Miasms [*sic*] that are, as it were, darted by it from her, we judge by that particular Power and Influence Imagination is found to have in the Commotion in these Parts'. In this Case it is so much, that many infected Women avoid hurting their Husbands principally on the Moderation and Coolness of their Enjoyments...' (p. 225).

'Far more real service, than Mathematical Theorems': An absence of numerical assessments of outcome

Only rarely does Atkins employ numbers to represent clinical outcomes. For example, in a chapter on skin conditions such as verrucas. Here, however, he appears to be conveying a general impression rather than any formal measurement. The term 'hit' was used in contemporary English to convey 'a lucky chance' or a 'fortuitous event',⁶ suggesting that he means spontaneous cure:

'The Indications are Amuleta, Ligatura, Cauteria, Caustica, all of them having been used succesfully. Charms from some Hands I have known to hit Nine in ten Times; but when Medicines are to take place, it is generally Causticks [etc]. Those of a remisser Degree may be tryed first, and failing the stronger' (p. 271)

He again uses numbers to capture an overall impression where he discusses adverts for mercurial medicines (i.e. those that 'publicly invite Men to Safe and Speedy Cures' (p. 232). Here he appears to be pointing to the impact of personal financial interests upon prescribers and draws upon a contemporary poem:

'If one in twenty comes off unhurt (we will not say, cur'd) by a Specifick, or a Nostrum, a Certificate [of formal approval] is easy.

The Pictures which escape, they wisely keep: But where are those that perish in the Deep' (p. 232)

Furthermore, he criticises a physiological study by Dr Pitcairne about sweat productions exposes 'the Fallacy of Mathematical Demonstration' in physick'. Likewise he notes that careful observation is 'of far more real service, than Mathematical Theorems' (Preface). Atkins confirms (with good reason it appears from his description) the value of 'Evidence of Sense' (p. 346).

Atkins' lack of mathematical evidence is surprising as he clearly kept records aboard ship to document clinical outcomes:

'The next Thing to a Surgeon's doing his Duty on Board, is to keep a Journal by way of Proof, how and when such were slain, with a more particular Detail of the far greater Number that escape; Lediard calls it a Diary of his Practice...[Introduction]'

‘Works... by faith’: Atkins on placebo treatment

Atkins makes no mention of the word ‘placebo’ (literally, ‘I will please’). This term – in its medical sense – appears to have been first used by the Scottish physician Alexander Sutherland (who practised at Bath, Somerset, and died circa 1773)⁷ and in 1772 by William Cullen (1710–1790) of Edinburgh.⁸ Atkins, however, does state the importance of pleasing the mind in the context of treatment:

'Whenever the Mind can be proposed to be easy and pleased, there, making a little Allowance, the [bathing] Waters are best' (p320).

He also mentions ‘Medicines that have no sensible Operation’ (Preface). With regard to powder for dissolving bladder stones, he notes: '[the Effect of strong Faith as well as Wisdom, and steadily believed, may doubtless add as much Efficacy and Success' (p36). That he recognises the power of placebo by highlighting the power of faith in the following discussion of ‘analeptics’:

‘Amulets [charms, see Image 3] are of divers Sorts in divers Countries ; of very ancient and more general Use, where Physick is least in Fashion. Works orderly as Analeptick Bolus's do, most by Faith, either in the thing itself, bearing its own Reverence ; or from that of the Person who practices. Agues, Wharts, Toothaches, Cramp, Dysentery, Strangury, Tarantula's and mad Dogs, Poison &c. have all fell down before them (Preface).

The placebo and tonic nature of analeptics is emphasized in Samuel Johnson’s definition as ‘medicines cherish the nerves, and renew the spirits and strength’. Atkins also recognises ‘hope’ and spectacle as important (in this case for promoting the medicines of empiricists):

'Common People follow Cheats in Physick, on much the same Motive they do in Divinity, The Good that is promised... The Multitude have a strong Bias to Shew [i.e. spectacle] and Novelty, are easily led into any Belief that fixes their Hopes or removes their Fears... (p. 295).

Image 3 here [Amulet worn by a young woman in Guinea Bissau, West Africa. Image taken by MJF Cooper, Caio, Guinea Bissau 2004]

He describes the power of the exotic in enhancing the placebo effect, noting the following:

'the famous Anodyne Necklace... that has circulated with so much Advantage to the Proprietors, because the Doctor [Willis] .. prescribes the same Root for the Looseness, Fevers, and Convulsions, of Children breeding Teeth : Mixed (to make it the more wonderful) with some Elks-hoof' (p. 279).

Finally, a practical explanation for the benefits of amulets is cited:

'Lord [Francis] Bacon says, If a Mann were to wear a Bone Ring, or a Planet Seal, strongly believing he might by that obtain his Mistress, or it would preserve him unhurt at Sea or in Battle, it would probably make him more Active and Industrious upon all Dangers' (p. 275).

'Dignity in the smallest Things': Atkins the man

Three glimpses of Atkins suggest a compassionate, calm and courageous surgeon. First, he mentions the notion of 'tenderness' towards patients. This predates Robert Hamilton's entreaty for tenderness towards by regimental surgeons towards the soldiery⁹:

'I [Atkins, at the battle of Vaia Bay near Genoa in 1711] had watched two or three Nights with this Gentleman [Captain Galfridus Walpole, brother of Britain's first Prime Minister, Sir Robert Walpole], immediately succeeding the Operation [amputation of the arm], (though 40 wounded Men to look after;) supposing a Tenderness and Respect would engage his good Opinion ; consequently his Interest ; but not withstanding this, and all my future Fatigue and extra Work, he remained as calm and undisturbed after Recovery, as Burnet's Devotee ; never gave me a Glass of Wine, or Thanks for it' (p. 137)

Second, his professional advice hints at his own comportment. For example, under the subtitle 'There may be dignity in the smallest Things', Here Atkins offers the following advice for the what it means to 'enact the persona'¹⁰ of a surgeon: 'A Surgeon like a Prime Minister, must not appear in any Hurry or Concern...' (p. 189).

Finally, Atkins' sense of preparation, attention to detail and courage – personal and surgical - in battle is illuminating to the historical eye under the section 'Preparation for Action':

'in War, the Surgeon always should have Boxes of Dressings ready, Turnikets, some Tents, Pledgets, Buttons, and Dossils, in Sorts a great Number, without being armed ; Rowlers, Compresses, Bandages, Ferrulae, Laminae, of different Sizes ; and when the Ship is preparing for

Battle, to arm your Needles, to lay the Apparatus for Amputation particularly, and your instruments in order... the Ollop and Cable Tiers are cleared and spread with Canvas, for receiving your wounded Men, the Cockpit separated for Operations and dressing them... That every Thing may be in the best Readiness on your Side for their Reception, tear up your old Ensign for present Use, mix up a Bason of Astringent, and have two or three of your Caps spread with it... two Chests, and a round Stool, to rest your Wounded on for Operation, or Dressing ; round the Stanchion fix some Boards for a Dresser, and covering with a Piece of Bunting, lay your Pocket Instruments, and such light Preparations as are of immediate Call, (reserve the Bulk always in your Cabin...). On each Side the Stanchion, and round you, place some large Lights, in Sticking-Iron Candlesticks, as taking least Room, and undisturbed by the Motions of the Ship... and Snuffers' (p. 148).

Discussion: the 'Evidence of Sense'

This article has not set out to summarise Atkins' book but to consider his treatments and the origin of his knowledge for their effectiveness. The portions quoted, therefore, do not represent the whole. It has not been possible to compare across editions of his book. It is noticeable that certain clinical issues are not covered, not least problems such as scabies. At times, Atkins' language is difficult to comprehend.

Atkins was clearly inquisitive and an astute observer. His knowledge about clinical effects arise from: practical experience ('real service'), astute observation, 'experimentation' in the form of trial and error, the opinion of other authors, records of other Royal Navy surgeons, and his own experience as a patient.

Atkins beliefs and clinical practice were broadly consistent his day. This is evident in his advocacy of an 'exact regimen' for patients. In the case of 'large Bleeding' (for example), his regimen constituted:

'a quiet soft Position in Bed, a warm Air, keeping the Body soluble with... suppositories, Hypnoticks now and then...' (p. 169)

In contrast with many contemporaries, Atkins mentions patients in whom his treatment was unsuccessful. Through this, Atkins lays bare his struggles to tally observation with theory. This failure is likely to arise because treatment success drives learning and is influenced by dramatic cures, desperate cases, the play of chance and adherence to historic

wisdom. Further issues were his assumption of symptoms now known to have multiple causes, as well as an absence of simultaneous treatment comparisons and treatment alternation/randomisation.

Atkins thought he had found one fair comparison in the form of exposure from a shared sexual partner. Whilst this has theoretical value, variables obvious with historical hindsight confound the assumption including: order of exposure, multiple or different organisms (candidiasis, trichomoniasis, chlamydiosis etc), asymptomatic/delayed presentation and patient recall bias. One may, conversely, conjecture that the circumstances of Atkins' baffled enquiry were more controlled than a modern genitourinary medicine clinic. Atkins does not describe where he tested this 'philosophy' but comparison of exposure may have been more accurate due to military authority and sexual exposure being largely confined to times when a ship was in harbour. If true, this deduction could suggest that Atkins' comparison of treatment in these men was concurrent (i.e. at sea after a few days in port).

One issue appears to be that Atkins (like other 18th century clinicians) rarely tried any single medicine or treatment. As such, he could have heeded Noah Biggs' advocacy of 'simples', i.e. single medications. Combinations only appear to 'muddy' the clinical waters, rendering it difficult to make true comparisons. Atkins seems broadly to recognise this problem:

'The Parade of many internal Medicines bring more Reputation to the Physician, than Service to the Patient...' (p. 169).

Finally, Atkins was hindered by faith in dangerous treatment, especially mercury. He struggled to untangle the effects of medicines on the body. In this darkness, it is unsurprising that Atkins should arrive at the sensible advice to treat only in more severe cases and use of incremental treatment.

Conclusions

Atkins was certainly dedicated, inquisitive and an astute clinical observer. These remain important attributes of a doctor today. He sought to share his own clinical experience and to present it alongside the opinion of others. In so doing, he bequeaths the embryo of a modern medical literature review. He struggled to tease apart cause and effect in the complex clinical conditions before him. Unlike James Lind (another Royal Navy surgeon), Atkins presents no direct evidence that

he sought to compare treatments simultaneously. In contrast to Lind's seminal research on scurvy, Atkins often seems to be tackling clinical presentations without a single cause amenable to being isolated and controlled for. Atkins also made almost no attempt to quantify clinical presentations, treatments and outcomes. This is in contrast to other 18th century British practitioners, notably Thomas Nettleton (1683–1742), Francis Clifton (died 1736) and William Cheselden (1688 – 10 April 1752).¹¹ Through no fault of his own, Atkins was practising medicine 'in the dark'.⁹ He clearly endeavoured to fight this confusion but he does not appear to move from Bacon's notion of 'ordinary' to 'ordered' experimentation.¹¹ If he were alive today, Atkins would undoubtedly point to his enormous challenges. These include clinical uncertainty, desperate circumstances, overwhelming demands, and personal danger. Undoubtedly, he would also emphasise that medicine is rarely black and white, as is evident in the ongoing practice of bloodletting for treating polycythaemia. Atkins serves as an important reminder that valuable clinical knowledge can be acquired from the 'evidence of sense', especially in the context of busy clinical settings.

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