It is worth mentioning that the word pharmacy is derived from pharmaki, the Ancient Egyptian's word means 'that procures security'.

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References

1 Pahor AL. Ear, nose and throat in Ancient Egypt, Part I. *J Laryng Otol* 1992;**106**:677-87

Medico-legal reports

I read Mr Warren's letter (November 1992 *JRSM*, pp 712-13) with interest and also the article by Drs Cornes and Aitken on the subject of medical reports (June 1992 *JRSM*, pp 329-33). May I, however, draw attention to some points in Mr Warren's letter which I think require comment. In his second paragraph he comments on the behaviour of certain insurance companies and 'a leading firm of solicitors' who appear to instruct its clients not to discuss any of the circumstances surrounding the accident, etc.

If my instructing solicitors hand on such an instruction from the Plaintiff's solicitors, I insist upon being able to discuss the mechanism of the accident with the Plaintiff. The Statement of Claim is usually available and contains the details one wants.

Mr Warren makes the statement: 'inevitably the doctor compiling the medical report is acting FOR one side or the other . . .'

This, unfortunately is common practice. The medical expert, however, is there to advise the court on the medical aspects of the claim and not to indulge in adversarial practices. It is important to base one's report on as much evidence as one can obtain (i.e. the general practitioner's notes from 5 years before the accident to the present date, and all the hospital notes and X-rays). Doctors are not in the position in the courts of having to do 'their best for their client', they have no client, they are there to assist the court.

The outlook adopted by Michael Foy and Phillip Fagg in *Medicolegal reporting in orthopaedic trauma*, is entirely correct . . .

> The clinician should display the facts and the evidence as presented, and may then hazard an opinion on the medical aspects of the case . . . The clinician should at all times aim to produce a report which is fair and balanced and which can be disclosed with one object alone - - that of clarifying the case so that, within the limits of human fallibility, justice may be done . . .[1]

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References

1 Foy M, Fagg P. *Medicolegal reporting in orthopaedic trauma.* London

Exclusion diets

In his letter Manson (February 1993 *JRSM*, p 121) kindly commented on my discussion paper on food sensitivity (September 1992 *JRSM*, p 556). He suggested that items should be excluded separately. This method was used by early researchers, but is not practical in these days of junk food. I do sympathize with his concern about wheat withdrawal.

The discovery of my wheat sensitivity was indeed traumatic. In the early 60s when I smoked 40 cigarettes and an ounce of pipe tobacco a day I diagnosed my smoker's cough as obstructive, and it was indeed relieved by bronchodilator. I also began to be increasingly troubled with epigastric pain which was relieved by the generous antacid donations of drug company representatives.

In Rhodesia (now Zimbabwe), I was the only doctor within 20 miles and I ignored periodic melaena. I continued praising myself for my successful management for 20 years, because I remained 'perfectly fit'. I returned to UK in 1969.

When I first introduced patients to the Stone Age diet, the good old public school spirit directed that I should do it myself. I considered myself a martyr because I was 'perfectly fit'. What I missed most of all was toast for breakfast, so, when the time came for re-introduction, I undertook two rapturous slices of dry wholemeal toast. Alas, half way through the second slice, bliss was replaced by acute asthmatic seizure accompanied by intense abdominal pain. I had not previously noticed that during diet I had not needed any of my 20 year medication, but I now treated myself to an overdose of both and was, fortunately, able to attend surgery half an hour later, a bit shaken but definitely wiser.

I therefore abandoned all wheat products including biscuits, pastries, cakes and batter. Common whiskies are also made from wheat. I ceased to need pills or potions.

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Botulinum toxin: dangerous terminology errors

The introduction of botulinum toxin-A has revolutionized the management of patients with inappropriate muscle spasms, and has provided a new tool for interventional neurology[1]. This treatment has received support from the American Academies of Ophthalmology[2,3], Neurology[4], Otolaryngology[5] and the National Institutes of Health[6]. Anderson[7] reviewed the UK experience using local injections of botulinum toxin in successfully treating cervical dystonia (torticollis). The terminology they used in their detailed report is confusing and potentially dangerous. The report by Anderson *et al.* (September 1992 *JRSM*, p 524) deals solely with the product manufactured by Porton Downs in the UK, marketed under the name DYSPORT®. However, they refer to this product with the term BOTOX, which refers to the product manufactured and sold by Allergan Inc., in the USA. These products are distinct, and dosing is significantly different so that if one administers the same number of DYSPORT® units as when delivering BOTOX®, serious side effects may occur.

Prior to Allergan's acquisition of the toxin, the term BOTOX was coined by several investigators at Columbia University in our original communications[7,8]; and we[9] and other clinicians[10] have also used BTX or BT[11]. Our basic science colleagues have used BoNT, Botx, BoTX and BoTx as abbreviations[12]. In 1990, Allergan Incorporated (Irvine, California, USA) adopted the term BOTOX as a trademark for their product, botulinum toxin type-A, which is distinct from DYSPORT® or other similar products. Then, in 1992, the trademark was registered by Allergan as BOTOX®. Now that the name represents that Allergan is the sole source of their product, continued use of the word in the generic capacity can be misleading and potentially dangerous.

Neither I, nor my colleagues at Columbia University, nor the institution itself receives any royalties or other compensation from Allergan for the use or distribution for BOTOX. Therefore, our concern relates directly to the safe and effective use of botulinum toxin(s) in medical conditions.

By review of the literature, it is very difficult to calculate the relationship between BOTOX® and DYSPORT® from published reports. (1) In Quinn's report[13,14], it is implied that the DYSPORT® nanogram is 16 times more potent than the BOTOX® nanogram. (2) Rather than using a measurement unit of weight (nanograms), the unit of measurement for this product is a unit of bioactivity or potency, the mouse unit (MU). This uniform unit of measurement, when determined according to published specifications[15], has advantages in that it is standardized. However, for unknown reasons, the US mouse unit is not equivalent to the UK mouse unit. The prescribing information that accompanies DYSPORT® recommends a standard dilution of 2.5 ml saline in a 500 unit vial, or 200 units/1.0 ml solution. Sample standard injection doses for the two products are shown in Table 1. These data imply that the DYSPORT® unit is less potent than the BOTOX® unit. Nevertheless, this would appear to be a contradiction because the unit is defined as a biological unit. There have been no published guidelines or standards for converting between the

Table 1. Standard injection doses

Muscle	*DYSPORT®*	*BOTOX®*[1,17]
Sternomastoid	200-300	40-60 Units
Splenius capitus	300-500	15-75 Units
Trapezius	300-400	55-100 Units

two products. From a discussion with our European colleagues, we suspect that one BOTOX® unit is approximately equivalent to four to five DYSPORT® units.

Anderson uses the name BOTOX as a generic or slang, as it was initially used. It is clear from Table 1 that injecting 200-300 units BOTOX®, the proper dose of DYSPORT®, into a sternocleidomastoid would not be advised, and is potentially dangerous.

A standard terminology has been proposed[16], employing either BTX (pronounced Bee-TOX) or BoNT as a generic, but in all cases, specifying the source manufacturer of the toxin in professional communications. Serotypes can be indicated as a modifier, such as BTX-A, BTX-F, or BoNT-A, BoNT-F. The term BTX, is easier to pronounce and is preferred in the clinical setting. In multi-authored volumes, the manufacturer of the toxin can be specified: BTX-A (Port) or BTX-A (Agn).

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References

1 Brin MF. Interventional neurology: treatment of neurological conditions with local injections of botulinum toxin. *Arch Neurobiol* 1991;**54**(Suppl 3):7-23
2 AAO Statement. Botulinum-A toxin for ocular muscle disorders. *Lancet* 1986;**i**:76-77
3 AAO Statement. Botulinum toxin therapy of eye muscle disorders. Safety and effectiveness. American Academy of Ophthalmology. *Ophthalmology* 1989;**Part 2**(Sept):37-41
4 American Academy of Neurology. The clinical usefulness of botulinum toxin-A in treating neurologic disorders. Report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. *Neurology* 1990;**40**:1332-6
5 American Academy of Otolaryngology-Head and Neck Surgery Policy Statement: Botox for spasmodic dysphonia. *AAP-HNS Bull* 1990;**9**:8
6 NIH Censensus Development Conference Consensus Statement. Clinical use of botulinum toxin. *NIH Cons Dev Conf* 1990; **8**:12-14
7 Brin MF, Fahn S, Moskowitz CB, Blitzer A, Friedman A, Shale HM, *et al.* Injections of botulinum toxin for the treatment of focal dystonia. [abstract] *Neurology* 1986;**36**(Suppl 1):120
8 Blitzer A, Brin MF, Fahn S, Lange D, Lovelace RE. Botulinum toxin (BOTOX) for the treatment of 'spastic dysphonia' as part of a trial of toxin injections for the treatment of other cranial dystonias [letter]. *Laryngoscope* 1986;**96**:1300-1
9 Lange DJ, Warner C, Brin MF, List T, Fahn S, Lovelace R. Botulinum toxin therapy: Distant effects on neuromuscular transmission [abstract]. *Muscle Nerve* 1985;**8**:624
10 Sanders DB, Massey EW, Buckley EC. EMG monitoring of botulinum toxin in blepharospasm. [abstract] *Neurology* 1985;**35**(Suppl 1):272
11 Lorentz IT, Subramaniam SS, Yiannikas C. Treatment of idiopathic spasmodic torticollis with botulinum toxin A: a double-blind study on twenty-three patients. *Mov Disord* 1991;**6**:145-50
12 DasGupta BR, ed. *Botulinum and Tetanus neurotoxins: neurotransmission and biomedical aspects.* New York: Plenum, 1992
13 Quinn N, Hallett M. Dose standardisation of botulinum toxin [letter]. *Lancet* 1989;**i**:964
14 Quinn NP, Hallett M. Dose standardisation of botulinum toxin - published erratum correction. *Lancet* 1989;**i**:1989
15 Sellin LC. The action of botulinum toxin at the neuromuscular junction. *Med Biol* 1981;**59**:11-20
16 Brin MF, Blitzer A, Stewart C, Pine ZM, Borg-Stein J, Miller J, *et al.* Disorders with excessive muscle contraction: Candidates for treatment with intramuscular botulinum toxin ('botox'). In: DasGupta BR, ed. *Botulinum and tetanus neurotoxins: neurotransmission and biomedical aspects.* New York: Plenum, 1993
17 Greene P, Kang U, Fahn S, Brin M, Moskowitz C, Flaster E. Double-blind, placebo-controlled trial of botulinum toxin injections for the treatment of spasmodic torticollis. *Neurology* 1990;**40**:1213-18

The authors reply below:

Brin and Blitzer raise a most important point concerning terminology. Our paper on the treatment of spasmodic torticollis with botulinum toxin was submitted and accepted for publication by the *JRSM* in 1991, at a time when terminology was in a state of flux. This is likely to get more complicated as other companies manufacturing botulinum toxin enter the market. There is an urgent need to standardize generic terminology for botulinum toxins internationally. As was made quite clear in our article, we used botulinum toxin supplied by Porton Products Ltd under the name of DYSPORT.

There also is the second issue of the relative potency of different preparations of botulinum toxin. We agree that the correct unit of measurement for such products should be the unit of bioactivity or potency, the mouse unit. Why the US mouse unit is not equivalent to the UK mouse unit is a mystery, which requires urgent clarification. From our own experience, we agree with Brin and Blitzer that one BOTOX unit (Allergan) is approximately equivalent to 4-5 DYSPORT units (Porton). The huge success of botulinum toxin treatment for a variety of conditions means that these matters must be resolved as soon as possible.

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The medical geography of air pollution

Dr Maynard's paper, 'Air pollution: should we be concerned about it?' (February 1993 *JRSM*, pp 63-4), is timely and welcome, and there will be general agreement with his conclusion that 'further research on the effects of air pollution upon health in the UK is needed'. However, when he asserts that it is hard to prove the harmfulness of air pollution, he seems to me to overlook the evidence of medical geography. In 1976, as part of the work of a Royal Society study group, Howe published maps of the distribution of various disease conditions in Britain[1]. He showed that the maps for bronchitis, and for cancer of the trachea, lung and bronchus, gave a good areal correspondence with a map of the *in*frequency of epiphytic lichens. As I later observed[2], they also correspond with a map of the relative frequency of melanic forms of the peppered moth, *Biston betularia*[3]. Both lichen *in*frequency and melanic frequency are good indicators of atmospheric pollution. The correspondence is specific for the respiratory diseases: stomach cancer, for instance, has a quite different distribution. In the same Royal Society study, Rose reported that

> there is evidence that children who are re-housed from an area of higher to an area of lower pollution can subsequently lose much of their bronchitic tendency. By later in life, however, a great deal of irreversible damage has occurred.[4]

None of these observations tell us *how* air pollution affects respiratory health, and Maynard rightly calls for further research in this direction. But surely this body of evidence provides what the lawyers call a *prima facie* case for Howe's conclusion that atmospheric pollution does 'have an adverse effect on the health and well-being of millions . . . and its control is now one of the most important tasks of our day'[1].

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