

aspire to an ideal of fully informed autonomy that is free from internal conflict and external pressure. Yet, in reality, most decisions at the end of life are messy and involve those who are physically and psychologically vulnerable. The option of assisted dying may in fact deny to some the gentle and easy death that would otherwise be theirs. What represents the greater injustice – not killing those who want it (and for whom alternatives are available), or killing those who do not really want it? Even in the Netherlands, which arguably has the most robust safeguards of any jurisdiction that allows assisted dying, the latest official survey concludes that the transparency envisaged by the Dutch law does not extend to all cases of euthanasia.³ It is then down to the arithmetic of suffering. How many patients dying under similar legislation, before they would otherwise have wanted, would be acceptable in order to provide for one particular version of a gentle and easy death?

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References

- Stephenson J. Assisted dying – a palliative care physician's view. *Clin Med* 2006;6: 374–7.
- General Medical Council. *Withholding and withdrawing life-prolonging treatments: good practice in decision-making*. London: GMC, 2002.
- Van der Heide A, Onwuteaka-Philipsen BD, Rurup ML *et al*. End-of-life practices in the Netherlands under the Euthanasia Act. *N Engl J Med* 2007;356:1957–65.

In response

I enjoyed Dr Stephenson's account of my many misdemeanours, but attacks *ad hominem* are usually a sign that one's opponent has nothing to air but his own prejudices. Of course I do not believe that euthanasia is the only way to a comfortable death. Of course I do not 'espouse the slippery slope' when I imply that inoperable cancer and intolerable suffering will be seen to be too narrow an indication as euthanasia comes to be acceptable in the future (and I provide a list you can argue about). And to go on the offensive, Dr Stephenson says that 'most decisions at the end of life are messy',

and in one of my previous articles I quoted a hospital nurse who said, 'You can't provide [the dying] with what they really want'. Perhaps Dr Stephenson and his colleagues should be doing something to clear up the mess – with the help naturally of patients who have made their own preparations for death. A final point that needs emphasising is that we are getting hot under the collar about a tiny number of people: only 171 requests were received in Orlando between 1998 and 2003 following legalisation of euthanasia.

But why are we arguing like this? I have said repeatedly that the views of both sides in emotive issues like euthanasia should be respected and accepted. If we do not, it is possible to envisage a much more dangerous slippery slope, from angry confrontation to public outcry, riots and even war.

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Never say die?

Editor – I must take issue with Alex Paton in regard to his use of language (*Clin Med* February 2008 pp 106–7). Despite its linguistic origins, euthanasia and 'a gentle and easy death' are not synonymous terms. Surely even the most vociferous opponent of euthanasia would not wish Dr Paton anything other than a peaceful end when his time comes. However, they would certainly question the suggestion that they should take steps to end his life before that time. I am also concerned at the use of statistics; Paton suggests that, although the great majority of those responding to the survey conducted by the Royal College of Physicians in 2006 were opposed to assisted dying, this is not a representative number – surely this must work both ways and so he can not infer that the silent majority would agree with his position. In attempting to counter any suggestion of 'slippery-slope' arguments, Paton refers to the figures for euthanasia from Holland and Oregon, however the accuracy of reporting in both jurisdictions is far from clear.

There is much more at stake here than the mere wishes of individuals 'who find the idea of assisted dying morally repugnant'. The doctrine of sanctity of life 'has long been recognised in most, if not all, civilised societies throughout the modern

world, as evidenced by its recognition in international conventions on human rights'. The principle of sanctity of life protects the most vulnerable in society and weakening its power would have far-reaching consequences. Paton describes 'horror stories' about aggressive care at the end of life. Respect for sanctity of life is not the same as vitalism, that is, believing that all attempts must be made to preserve life regardless of the cost. There is a 'time to die', and we must improve our ability to recognise that time, to recognise the limitations of our abilities, and hold back from distressing and unhelpful interventions. We must not, however, confuse our failings here with a need to hasten the end.

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How does the brain process music?

Editor – I read with interest the article reviewing music processing and the brain with evidence from many clinical studies where brain lesions lead to specific auditory processing defects (*Clin Med* February 2008 pp 32–6). I would like to add that in order to help understand how the brain processes music, there is helpful evidence provided from studies in physics and mathematics. We have come a long way in waveform analysis since a series of elegant experiments by Faraday and Maxwell in the 19th century.^{1,2} In sound analysis, there is one particular method of processing waves which is particularly important. This is the Fourier transform, which is now extensively applied in many practical situations involving sound processing, such as noise reduction in audio or electrocardiographic equipment.

Fourier, a 19th century mathematician, analysed the separation of waves into components of different frequencies. The ear and the brain formulate an analogy of the process demonstrated mathematically by a Fourier transform.³ In this process, the ear converts sound waves which come in a large packet or combination of waves into smaller individual wave components, thus allowing further analysis by the brain. In addition, experiments in artificial neural networks and the concept of nerve signal reinforcement (Markov processes)⁴ have shown that the network of nerves can select

a large number of these smaller components to form sensible combinations or patterns. This process of breaking down sound waveforms and reformulating into combination of nerve signals, allows the brain to distinguish the different frequencies of sound which form the individual notes, different pitches in music, music combinations (harmonics) or noise.

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References

- 1 Williams LP. *Michael Faraday: a biography*. New York: Basic Books, 1965.
- 2 Domb C. James Clerk-Maxwell: 100 years later. *Nature* 1979;282:235–9.
- 3 Bracewell RN. The Fourier transform. *Sci Amer* 1989;86:90.
- 4 Artificial neural network. http://en.wikipedia.org/wiki/Artificial_neural_network

Misuse of 'toxin'

The helpful article by Thanacoody and Waring on toxic effects on the cardiovascular system mistakenly described the substances involved as 'toxins' (*Clin Med* February 2008 pp 92–5).

For more than a century that term has been applied only to complex substances, almost always of biological, origin form plants, micro-organisms etc, and not to simple organic chemicals of the type discussed in that paper. The distinction is recognised in standard 'British' and 'American' English dictionaries, eg the Oxford English and Webster's dictionaries, in specialised dictionaries, such as Dorland's and Mosby's, and in the titles of many journals and monographs.

The specific term 'toxin' is valuable because it immediately alerts the reader to the general nature of the chemicals being considered and the likelihood of special features of their origins, properties and effects. The simpler, organic substances may be called 'toxic chemicals' as there is no single equivalent word other than the less familiar 'toxicant'.

Please let us maintain a helpful linguistic distinction in English and one that is also mirrored in many other languages.

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Clinical & Scientific letters

Letters not directly related to articles published in *Clinical Medicine* and presenting unpublished original data should be submitted for publication in this section. Clinical and scientific letters should not exceed 500 words and may include one table and up to five references.

A new differential for pyrexia of unknown origin?

I was recently involved in the care of a patient under investigation for pyrexia of unknown origin. He suffered from isolated spikes in temperature every evening and occasionally in the morning. During a ward round I noticed that an infrared ear thermometer was being used to take his temperature immediately after he removed headphones connected to his bedside television. On further questioning the patient reported that he had been using his headphones very frequently and he was often asked to remove them to have his temperature recorded. Having obtained the instruction leaflet for the thermometer I discovered that headphones should be removed a least 20 minutes before use. Could this be a new addition to the differential for pyrexia of unknown origin? If this is the case then a large number of admissions may have been unnecessarily prolonged.

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Poor communication: 'hot' dictation rather than pro formas?

The consultant post-take ward round (PTWR) is a critical time for reviewing the relevant history, examination and investigations and planning further investigation and treatment. Poor documentation is common and limits the benefits of consultant decisions on patient care. Pro formas have been proposed as a possible solution to this.

In support of this, a PTWR pro forma introduced locally in 2003 significantly improved PTWR documentation in four key areas: differential diagnosis, management plan, deep vein thrombosis (DVT) prophylaxis, and resuscitation status.¹ Pro formas, however, are not long lasting. Ho *et al* noted an initial improvement in surgical records by a clerking pro forma which had significantly declined only three years later.²

In 2007, PTWR pro forma documentation was reassessed (having anticipated that completion was poor) with added stringency of a PTWR consultant countersignature (in the hope this would improve completion). In the study, 75 clinical records were examined. Quality of the PTWR documentation was assessed for the same criteria used in the 2003 study (Table 1).¹ Three additional assessed parameters included clerking doctor bleep number and rank, and PTWR consultant countersignature.

The results from 2007 are shown in Table 1 (Fishers exact test, Graph Pad Prism version 4). Only 72 of the 75 examined records had a documented PTWR. There was a significant decline in three parameters (patient name, clerking doctor name and blood results). A less significant decline was observed in four other parameters (consultant name, differential diagnosis, management plan and electrocardiogram results). Significant improvements were noted in only two parameters (hospital number and DVT prophylaxis). Other parameters were unchanged. The supplementary parameters (bleep number, rank and consultant countersignature) were present in low proportions (33, 29 and 12% respectively).

These results have obvious serious implications on patient care. Although not measured in this audit, it is likely that similar problems in communication to primary care on the discharge papers occur for the same reasons. This increases the chance of hospital readmission as the general practitioner (GP) is unable to access sufficient information about recent admission.

This study confirms that the previous benefits of a PTWR pro forma on standards of documentation decline over four years despite the implementation of a consultant countersignature. Maintaining high quality clinical documentation remains