Rees referred to spontaneous pneumothorax, an entirely different condition.[1] While admitting that the noble Scottish salmon rarely delivers more than a nasty suck, we would like to add our suggestions to the questions posed.

(1) What advice should have been given to the nurse over the radio?

(e) None of the above.

Use a big wound dressing and tape three sides.[2] (What was the military physician thinking? Pre-BATLS [British advanced trauma life support], obviously.)

(2) Would it have been safe to fly him out and, if so, to what altitude?

Yes, at 305 m. With a needle at the ready, a three way tap is unnecessary—and probably unavailable.

(3) How stupid was it to leave his wound uncovered...?

Not stupid at all for two main reasons.

Firstly, the patient was well. You should never miss a photo opportunity that is an aid to medical education.

Secondly, once a barracuda has had its filthy way with you, a little sea breeze can only be of benefit.

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1 Berger D. A fish induced pneumothorax: dilemmas in the remote management of a sucking chest wound. (With commentary by J Rees.) *BMJ* 1996;313:1617-8, (21-28 December.)
2 American College of Surgeons. *ATLS core course manual.* Chicago: ACS, 1989.

Childhood leukaemia in US may have risen due to fallout from Chernobyl

EDITOR—Although numerous reports have uncovered a sharp rise in the incidence of childhood thyroid cancer starting five years after the accident at Chernobyl nuclear power plant in 1986, no increases have been documented for childhood leukaemia. Children aged under 15 years in Belarus, Finland, and Sweden—countries hit badly by fallout from the disaster—have shown no significant increases in leukaemia after April 1986.[1-3]

A recent report based on statistics from Greece, which received relatively low level fallout from Chernobyl, uncovered a significant excess of leukaemia in children aged under 1 year exposed to fallout in utero—that is, those born in 1986 and 1987—on the basis of 12 cases. However, no leukaemia excess exists for this birth cohort between the ages of 1 and 4 years.[4]

Twelve American states and cities with active cancer registries in 1980, representing over 19% of all births in the United States, confirm patterns uncovered by the Greek researchers. The leukaemia rate among children aged under 1 year born in 1986-7 (62 cases) was 30% higher ($P<0.09$) than among other children born during the decade (table 1). The excess for children born in 1986-7 at age 1-4 years was only 6%, an insignificant difference ($P<0.44$). Radiation levels in Greece were about 100 times greater than in the United States.[5]

Although a precise "dose" to Americans affecting their risk of developing leukaemia is difficult to calculate, the cited European studies used caesium-137 fallout levels as a rough proxy. ^{137}Cs, with a half life of 30 years, has been termed "the most important nuclide in the fallout."[5] In May and June 1986, as fallout from Chernobyl entered the American environment, there was an average of 0.33 Bq of ^{137}Cs per litre of pasteurised milk, up from 0.10 in the same period of 1985. Recorded ^{137}Cs concentrations remained raised in the springs of 1987 and 1988 (0.24 Bq and 0.16 Bq respectively), before returning to the concentrations that existed before the accident at Chernobyl, according to data from the United States Environmental Protection Agency.

Studies of health effects in children since the accident at Chernobyl continue to yield new findings. Although any increases in leukaemia are likely to fall short of the sharp rises in thyroid cancer, possibly because elements like caesium were released in smaller quantities than iodine, more precise analyses should be pursued. Rises in disorders such as leukaemia may occur only many years after the accident or affect certain segments of the population. Specifically, children aged under 5 years are most vulnerable to radiation exposure.[5]

Attention to population size is also crucial in obtaining significant results. For example, the combined populations of Belarus, Finland, Greece, and Sweden (about 26 million) is only about half of the 12 American states and cities used in this report.

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Table 1 Children of specified birth cohorts who developed leukaemia in seven states and five metropolitan areas in United States* before and after accident at Chernobyl, with comparisons in percentage change with Greece

		Aged <1 year			Aged 1-4 years		
Birth cohort (years born)	Liveborn	Cases	Rate†	% Change in US (Greece)	Cases	Rate†	% Change in US (Greece)
Unexposed (1980-5, 88-90)	6 540 759	214	32.7	30 (160)	1497	76.2	6 (10)
Exposed (1986-7)	1 462 631	62	42.4		355	80.9	

*States: Connecticut, Hawaii, Iowa, New Mexico, New York, Utah, and Wisconsin; cities: Atlanta, Denver, Detroit, San Francisco, and Seattle.
†Per 10^5 person years.

1 Ivanov EP, Tolochko G, Lazarev VS, Shuvaeva L. Childhood leukaemia after Chernobyl. *Nature* 1993;365:702.
2 Auvinen A, Hakama M, Arvela H, Hakulinen T, Rahola T, Suoniela M, *et al.* Fallout from Chernobyl and incidence of childhood leukaemia in Finland, 1976-92. *BMJ* 1994;309:151-4.
3 Hjalmars U, Kulldorff M, Gustafsson G, on behalf of the Swedish Child Leukaemia Group. Risk of acute childhood leukaemia in Sweden after the Chernobyl reactor accident. *BMJ* 1994;309:154-7.
4 Petridou E, Trichopoulos D, Dessypris N, Flytzani V, Haidas S, Kalmanti M, *et al.* Infant leukaemia after in utero exposure to radiation from Chernobyl. *Nature* 1996;272:357.
5 Anspaugh LR, Catlin RJ, Goldman M. The global impact of the Chernobyl reactor accident. *Science* 1988;242:1513-9.

How to minimise factitious hyperkalaemia in blood samples from general practice

EDITOR—Up to 30% of blood samples from general practice have serum potassium concentrations reported as above the quoted reference range. The most common cause of hyperkalaemia is factitious and occurs because of delay in separating red cells from serum.[1,2] Genuine hyperkalaemia is an unusual but potentially fatal condition which requires immediate medical intervention. General practitioners must therefore decide how much credence to give to a high serum potassium concentration; some ignore all reported serum potassium concentrations whereas others pursue an abnormal result with vigour.

An internal audit showed that almost all samples from health centres arrive at the laboratory at St Thomas's Hospital within four hours of being taken from the patient. This should be soon enough to avoid factitious hyperkalaemia caused by delay in separation. Why, then, was hyperkalaemia so common? Investigation showed that many samples were being placed in a refrigerator to await collection. Cooling blood to 4°C accelerates the rate at which potassium leaks out of red cells.[1,2] General practitioners who use St Thomas's facilities have now been given the following guidelines for phlebotomy:

(1) Use a 21 gauge (green) needle

(2) Transfer blood into collection tubes in the following order: tube destined to be used for potassium assay first, then the other tubes in any order. (This is because anticoagulants may contain potassium in high concentration—for example, potassium-EDTA for full blood—which may be transferred from one tube to the next on the tip of the needle)

(3) Leave the sample destined for assay of serum potassium concentration at room temperature.

We now find that about 15% of samples from general practice have raised serum potassium concentrations and that these fall within the range 5.1-5.5 mmol/l. This is because samples have been left overnight in the general practitioner's surgery to await collection—that is, unavoidable delay in centrifugal separation of red cells from serum. Leaving samples destined for chemical pathology analysis at room temperature may not eradicate the problem of factitious