LETTERS TO THE EDITOR

DEAR SIR,

It is well established that functional residual capacity (FRC) is reduced by moving from the upright to the supine position. Craig and others (1971) showed that this reduction in FRC results in an increased tendency towards closure of small airways. Thus the supine position would cause a greater degree of intrapulmonary shunting than the upright one. The head-down and lithotomy positions are associated with even worse changes.

We accept these findings but consider the investigations incomplete. Before man adopted the upright posture, the natural position of activity was quadrupedal. Indeed, this posture is still adopted for certain forms of strenuous activity, such as riding a bicycle. Man has gained no physiological advantage by adopting the upright position and there are many penalties, for example, herniae and slipped discs. It may be then that the quadrupedal attitude is the more physiological one. Table I shows measurements of lung volume in eight healthy subjects in the standing and in the "all-fours" position. Table II shows the percentage changes in lung volumes which occur in moving from the bipedal to the quadrupedal position. Although there is no significant change in the total lung capacity or the residual volume, the tidal volume occurs at a greater lung volume in the quadrupedal position. On average, there is a 10 per cent increase in FRC. In one subject, the single breath ^{133}Xe test of closing volume was used. Seated, airways closure was demonstrable in the expiratory reserve volume, whereas in the quadrupedal position it was not seen at all.

Of course, we realise that the implication of these findings on the positioning of postoperative patients may not be universally acceptable.

TABLE I
A COMPARISON OF LUNG VOLUMES IN THE BIPEDAL (B) AND QUADRUPEDAL (Q) POSITIONS
(Lung Volumes in Litres)

Subject	Position	R.V.	F.R.C.	F.R.C. + Vt	T.L.C.
1	B	1.05	3.21	3.78	8.26
	Q	1.68	3.92	4.39	8.88
2	B	3.64	5.82	6.50	9.38
	Q	4.00	6.76	7.81	9.61
3	B	4.18	6.12	6.63	9.65
	Q	4.18	6.26	6.99	9.04
4	B	3.53	5.86	6.44	9.74
	Q	3.11	6.49	7.32	9.62
5	B	1.91	3.60	4.17	5.81
	Q	2.13	4.33	4.87	6.43
6	B	1.93	5.05	5.71	9.50
	Q	2.09	5.67	6.51	10.17
7	B	2.84	5.44	6.27	8.67
	Q	3.15	5.93	6.83	8.63
8	B	1.84	3.06	3.73	4.99
	Q	1.35	3.51	4.21	5.14

TABLE II
PERCENTAGE CHANGES IN LUNG VOLUMES ON MOVING FROM
THE BIPEDAL TO THE QUADRUPEDAL POSITION

Subject	R.V.	F.R.C.	F.R.C. + Vt	T.L.C.
1	16.0	12.2	11.6	10.8
2	11.0	11.6	12.0	10.3
3	0.0	10.2	10.5	- 6.3
4	-11.9	11.1	11.4	-11.3
5	11.2	12.2	11.7	11.1
6	10.8	11.2	11.4	10.7
7	11.1	10.9	10.9	0.5
8	-26.6	11.5	11.3	10.3
mean	2.7	11.4	11.4	4.5
s.e.m.	5.2	0.2	0.2	3.2
significance	N.S.	p 0.001	p 0.001	N.S.

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REFERENCE

CRAIG, D.B., WAHBA, W.M. & DON, H. Airway closure and lung volumes in surgical positions. *Canad. Anaesth. Soc. J.* 18: 92 (1971).

J. I. ALEXANDER AND W. HAMILTON
University Department of Anaesthesia
(Western Infirmary) 4 Lilybank Gdns
Glasgow G12 8RZ, Scotland

DEAR SIR:

I would like to comment on "Mendelson's Syndrome and its Sequelae" by M. Hedden and G. Miller, July, 1972, p. 351. My congratulations on the use of carbon monoxide diffusion studies. The use of carbon monoxide studies in the operating room during anesthesia would help fill gaps in our theories of lung function. As the authors mentioned on page 357, hydrocortisone should have been given immediately aspiration was *suspected*. I would recommend a higher dose of cortisone, 1 gram initially.

Cortisone has an effect on the human lung not generally appreciated. When working in the respiratory laboratory of Dr. Wilmot Ball at the Johns Hopkins Hospital six years ago, I noted that Prednisone not only improved the diffusing capacity of patients who had sarcoid and kept them alive, but that it produced supranormal diffusing capacity in asthmatics who started with a normal diffusing capacity.

Unfortunately, when I returned to clinical anesthesia, this work was not continued, nor has it ever been reported. The method of measurement was the steady state carbon monoxide diffusion method of Dr. David Bates.

I would suggest that a series of diffusion capacity tests with patients with completely normal lungs who are on cortisone for a nonpulmonary disease, such as regional enteritis, might verify this action.

The ability to create a super-normal diffusing capacity, suggests that cortisone could be of value, not only in sarcoid and asthma, and after aspiration, but in other pulmonary diseases from emphysema to hyaline membrane disease and pulmonary oedema.

When I was in Medical School, my professor, Dr. R. C. Dickson said medicine was passing from the age of antibiotics to the age of steroids. I am excited to have noted one more verification of his prophecy.

EDWIN J. GOLDMAN, M.D.
2207 Arden Road
Baltimore
Maryland 21209