

not oxygen consumption in dogs after hemorrhage. Blood volume expansion decreased temperature and oxygen uptake. Acute hematocrit changes did not affect CO or oxygen consumption. The hematocrit in the LMDX group dropped to 12 per cent, whereas in the LMDX-plus-blood group it was 35 per cent. The effects of treatment observed were not caused by the particular flow properties of LMDX but rather by volume expansion, which was comparable in the two treated groups. (Smith, L. L., and others: *Effect of Low Molecular Weight Dextran on Circulatory Dynamics and Oxygen Consumption in Experimental Hemorrhagic Shock*, *Surgery* 66: 782 (Oct.) 1969.)

### Respiration

**HYPOXIA** EEG findings during hypoxia in dogs showed that the phylogenetically youngest cells of the cerebral cortex were the most sensitive to hypoxia, while the deeper structures were affected only by prolonged hypoxia. (Kulcsar, A.: *EEG Studies during Central Ischemia*, *Der Anaesthetist* 18: 278 (Aug.) 1969.)

**OXYGEN THERAPY** Effects of breathing two different concentrations of oxygen (20 per cent and 50 per cent) on oxygen uptake ( $V_{O_2}$ ), arterial blood pH,  $P_{CO_2}$  and  $P_{O_2}$  were studied in ten patients (five patients with postoperative atelectasis and five with septic shock) and ten mongrel dogs rendered hypoxic by inflation of a bronchial balloon which caused atelectasis of one lung. All patients had low  $Pa_{O_2}$  values while breathing room air. Increasing the inspired concentration of oxygen to 50 per cent caused an increase in average  $Pa_{O_2}$  but no increase in  $V_{O_2}$ . Similar findings were obtained in dogs with induced atelectasis. Since tissue oxygen utilization (expressed in terms of oxygen uptake) did not change with increases in  $Pa_{O_2}$ , complicated respiratory resuscitative measures (e.g., tracheostomy and mechanical ventilation) should not be initiated solely on the basis of low  $Pa_{O_2}$  values but after complete assessment of the condition of the patient. (Groves, A. C., and others:

*Oxygen Consumption after Oxygen Therapy for Hypoxemia*, *J. Thorac. Cardio. Surg.* 58: 842 (Dec.) 1969.)

**OXYGEN THERAPY DEVICES** The relative degrees of efficacy of ten techniques of oxygen administration were evaluated in healthy volunteers. Each individual received oxygen by each technique at flow rates of 5 and 10 l/min and after ten minutes arterial  $P_{O_2}$  was measured. Control values for each patient were established during inhalation of room air before and at several intervals during the experimental period. Devices having reservoir bags were most effective. The nasal cannula and catheter techniques were also quite effective, with the former being more comfortable for the patient, particularly at high flow rates. These studies also demonstrated the importance of proper baffling in mask-type devices not utilizing reservoir bags. (Shulman, M., Schmidt, G., and Sadove, M. S.: *Evaluation of Oxygen Therapy Devices by Arterial Oxygen Tensions*, *Dis. Chest* 56: 356 (Oct.) 1969.)

**POSTOPERATIVE RESPIRATORY FAILURE** Respiratory failure has been diagnosed arbitrarily when  $Pa_{CO_2}$  is greater than 60 and  $Pa_{O_2}$  is less than 60 mm Hg. The carbon dioxide electrode provides the best available information about alveolar ventilation. Absence of traditional danger signals is an insufficient basis for assuming that respiratory homeostasis is present. Of 40 patients who were considered to be progressing satisfactory in the recovery room following a variety of surgical procedures, four had  $Pa_{O_2}$  values below 60 mm Hg and one of those had a  $Pa_{CO_2}$  value above 60 mm Hg. Upper abdominal operations commonly are associated with respiratory complications, particularly in patients with chronic pulmonary disease. When carbon dioxide retention is present, mechanical assistance of ventilation is necessary. For periods of five days or less, in adults, properly maintained nasal tubes are effective and usually preferable to tracheotomy. (Didier, E. P., and Sessler, A. D.: *Postoperative Respiratory Failure*, *Surg. Clin. N. Amer.* 49: 1071 (Oct.) 1969.)