chemical formulas. It is therefore not surprising that Demerol possesses mild atropine-like properties. Of greater interest, however, was the unexpected finding that the drug had a morphine-like effect on the central nervous system of animals. Definite analgesia comparable to that of morphine without the occurrence of a striking depression of the central nervous system has been reported. While close chemical similarity of morphine and Demerol is difficult to visualize in a flat plane, it is possible with molecular models to discern similarities involving particularly the piperidine ring. . . . Demerol possesses three main actions: analgesia, spasmolysis and sedation. . . .

"With the exception of the production of cough and diarrhea, Demerol has been found to be a satisfactory therapeutic substitute for morphine. It appears to possess the following clinical advantages over morphine: Its spasmolytic action makes it ideal for the relief of conditions due to smooth muscle spasm, in which morphine is pharmacologically contraindicated. Its rapid dissipation tends to offset undesirable cumulative effects such as respiratory depression and urinary retention. Prolonged use of Demerol may lead to the development of habituation, but it appears to possess a lesser liability than morphine for the development of physical dependence. In order to avoid the dangers of habituation, physical dependence and undue cerebral irritability, amounts greater than 150 mg. every three hours should not be given. . . . If this amount will not meet the clinical need, increasing the dose and shortening the interval not only may not have any additional therapeutic value but is apt to result in serious consequences." 35 references.

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NEWHOUSER, L. R., AND LOZNER, E. L.: *Practical Considerations in the Therapeutic Use of Blood Derivatives.* New England J. Med. 228: 671–674 (May 27) 1943.

"Albumin should not be considered a substitute for plasma, and certainly not for whole blood. It represents a relatively stable concentrated solution of that fraction of the plasma proteins mainly responsible for the maintenance of the colloid osmotic pressure of the blood, and its chief advantages exist where storage or transportation space is at a premium. . . . The chief dangers in the use of human serum albumin arise from the facts that it represents but one of the serum proteins, and that it is extremely hypertonic and supplies practically none of the fluid that may be needed in the treatment of traumatic shock, burns or hemorrhage. . . . In burns, citrated plasma should follow albumin as soon as possible, and arrangements should be made to transport the patient promptly to an area where this is feasible or to transport plasma to the patient. In traumatic shock, albumin must be considered solely as an emergency first-aid measure. . . . It is quite evident, from the experience acquired to date, that plasma, when prepared by a closed method with scrupulously aseptic technic, may be preserved in liquid state at room temperature in a medical establishment in the temperate zone for at least as long as fourteen months. . . . When liquid plasma, prepared by the same closed and scrupulous technic, is frozen within twenty-four hours after preparation at a temperature below —20° C., it may be preserved indefinitely, if stored below —15° C. . . . Thawing must be done in a water bath at body temperature (37° C.) with occasional shaking, and should not take longer than thirty minutes per bottle of plasma. . . . Once accidental thawing has occurred,

it is absolutely imperative that a good filter be used in the final administration set. . . . If the refrigerator is operating, the plasma may be refrozen immediately, or thawing may be allowed to continue at 37° C. and the plasma stored as liquid plasma from that time on, or it may be then refrozen. In any event, much of the prothrombin and complement will be lost, and this advantage of preservation in the frozen state will therefore no longer exist. . . .

"The standard Army-Navy package of dried plasma can survive a wider range of temperature variation without denaturing or precipitating protein than can any of the other blood derivatives or forms of preservation. The package should not be permitted to freeze, nor should it be permitted to stand for any length of time above 55° C. . . . Every medical officer who is expected to use plasma should familiarize himself with the directions of the restoration and administration of the standard Army-Navy package of dried plasma and follow them explicitly. . . . The Subcommittee on Blood Substitutes of the National Research Council has recently recommended, and the Division of Biologics Control of the National Institute of Health has approved, the substitution of 0.1 per cent citric acid for the 0.1 per cent sodium chloride in the pyrogen-free distilled water used at present to restore dried plasma. . . . A review of the results obtained from the plasma prepared at the Naval Medical School, and of the entire literature, has led us to the conclusion that the dangers from properly prepared pooled human plasma are practically nil. . . . The experience in this war with the use of blood derivatives in the prevention and treatment of shock due to trauma or burns has confirmed, beyond all question, the wisdom of administering an adequate amount early, preferably before the onset of symptoms of shock. . . . Five hundred to 1000 cc. of plasma or 25 to 50 gm. of albumin is an advisable initial dose following a severe injury or burn. . . . In burns, a rough but useful rule for estimating the first day's dosage is to administer 100 cc. of plasma for each 1 per cent of the body surface burned, up to a maximum of 4000 or 5000 cc. Estimation of the area involved should be by Berkow's chart. . . . The use of whole-blood transfusions supplementing plasma or albumin may be of extreme importance in determining the prognosis of a wounded patient. The need for red cells may be masked initially by hemoconcentration. In burns, moderate anemia is prone to develop and is affected apparently only by blood transfusions. The rate of administration of these derivatives should not exceed 10 cc. per minute for plasma or 5 cc. per minute for albumin unless clinical shock is present. In that eventuality it may be advisable to administer the material with double this speed. . . . In all medical establishments that prepare rubber tubing and glassware for drawing blood and administering blood, plasma, albumin or other solutions, the personnel detailed to such preparation should be thoroughly conversant with the so-called 'pyrogen-free' technic. Unless such technic has been scrupulously followed, it is impossible to evaluate properly untoward reactions following intravenous infusions." 12 references.

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POWELL, C. E.; LEE, H. M., AND SWANSON, E. E.: *Barbituric Acid Derivatives: Relationship Between Action on Smooth Muscle and Frog's Heart, and Chemical Structure.* J. Am. Pharm. A., Scient. Ed. **32**: 128–133 (May) 1943.

"In a previous communication, it was observed that there is an obvious relationship between the pharmacological action and the chemical struc-