

persistent vomiting, diminishing gains or loss of body weight, and other symptoms, were generally from two to three times as high under low than under high humidity.

Finally, the mortality of premature infants was found to be greatly affected by humidity. In Table 2 is given the net mortality according to the humidity in which the derangement of body function began. In the old nurseries, prior to the installation of the air conditioning system, the death rate from acute and chronic infections was 26.5 per cent as compared with 9.7 per cent in the conditioned nurseries under low humidity and 0.0 per cent under high humidity.

Summarizing the conclusions of these studies, the best chances for life in premature infants are created by maintaining a relative humidity of

TABLE 2. NET MORTALITY OF PREMATURE INFANTS ACCORDING TO HUMIDITY^a
Infants Hospital, Boston, Mass.

CAUSE OF DEATH	UNCONDITIONED NURSERIES (1923-1925)	CONDITIONED NURSERIES (1926-1929)	
	NATURAL HUMIDITY	RELATIVE HUMIDITY	
		25-49 Per Cent	50-75 Per Cent
	Per Cent Mortality	Per Cent Mortality	Per Cent Mortality
Acute and chronic infections.....	26.5	9.7	0.0
Congenital deformities.....	1.2	0.0	0.7
Unclassified.....	1.2	4.8	0.0
All causes.....	28.9	14.5	0.7

^aExcluding cases with multiple congenital anomalies incompatible with life, and also deaths occurring within 48 hours after admission to the hospital.

65 per cent in the nursery and by providing a uniform environmental temperature just sufficiently high to keep the body temperature within normal limits. Medical and nursing care are, of course, factors of equal and sometimes of greater importance.

Air Conditioning Equipment: Most of the installations now in use are of the central station type providing for filtration, for humidification and heating in cold weather, and for cooling and dehumidification in hot weather. A high ventilation rate, between 15 and 25 air changes, is desirable to remove odors and maintain uniformity of temperatures in extremes of weather. Recirculation is not used extensively in these wards owing to odors and the possibility of infection.

AIR CONDITIONING IN FEVER THERAPY

Artificial production of fever in man is an imitation of nature's way of overcoming invading pathogenic organisms. The action may be direct and specific by obliteration or destruction of the invading organism within the safe limit of human fever temperature; or an indirect one in case of heat resistant organisms, through general mobilization of the defensive

mechanisms of the body, by means of which the activity of pathogenic bacteria and their toxins may be retarded or neutralized.

The limits of induced systemic fever are usually between 104 and 107 F (rectal), and the duration from 3 to 6 hours at a time. The total period of fever treatment varies with the type of the organism involved from a few hours to 50 hours or more.

The diseases reported to respond favorably to artificial fever are: gonorrhea, neurosyphilis, chorea, asthma, peripheral vascular diseases, ocular gonorrhea and syphilis. There are a number of other conditions in which the usefulness of artificial fever is not yet settled. The most striking results are seen in gonorrhea in which various strains of organism can be killed by artificial fever within the limits of tolerance of man.

Equipment for the Production of Systemic Fever

Various means have been tried for producing artificial fever, including injections of various crystalloid or colloid substances; a number of physical methods, such as hot baths, radiant heat, diathermy, radiotherapy, and, in the last few years, an air conditioned chamber. The relative advantages and disadvantages of these various methods were discussed in recent papers.⁹ The results by the use of air conditioned cabinets have not been fully explored, and it is therefore difficult to determine the advantages and disadvantages of the value of air conditioning at this time. Under certain conditions a combination of systemic fever and additional local heating by diathermy or other means is claimed to yield better results than systemic fever alone by reducing considerably the killing time of the organism and rendering the treatment less trying to both patient and attendants.¹⁰

The air conditioned chamber¹¹ consists of an insulated cabinet approximately 6 ft long, 3 ft wide, and 2.5 ft high, containing in a small rear compartment, electric air heaters, a water pan for humidification, a centrifugal fan, and controls. The nude patient lies on an air mattress inside the front compartment with his head protruding outside the front end through a rubber collar. Warmed air at 130 to 150 F and 30 to 50 per cent relative humidity is blown upon the body of the patient, and the rectal temperature rises to 105 F usually in from 40 to 60 min. The heat is then turned low and adjusted so as to maintain the desired body temperature in each individual case.

More recently a heat cabinet was described¹² in which saturated air between 100 and 120 F in temperature is used for elevating the patient's body temperature. This gives a rapid rise of body temperature with a relatively low air temperature; it eliminates skin burns, and the room in which the heat box is located is not overheated unduly.

⁹Fever Therapy for Gonococcal Infections, by A. U. Desjardins, L. G. Stuhler and W. C. Popp (*Journal American Medical Association*, 106:690, 1936).

Artificial Fever Therapy as a Therapeutic Agent, by H. P. Doub (*Radiology*, 25:360, 1935).

¹⁰The Treatment of Gonorrheal Arthritis by Means of Systemic and Additional Focal Heating, by W. Bierman and C. Levenson (*American Journal Medical Science*, 191:55, 1936).

¹¹Artificial Fever Therapy of Syphilis, by W. M. Simpson (*Journal American Medical Association*, 105:2132, 1935).

¹²Fever Therapy Induced by Conditioned Air, by F. C. Houghton, M. B. Ferderber and Carl Gutberlet (A.S.H.V.E. JOURNAL SECTION, *Heating, Piping and Air Conditioning*, February, 1937, p. 115).