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Principles of Epidemiology

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The objective of these exercises is to provide an introductory framework of experience in epidemiologic methods of study.

This exercise is concerned with a) premature birth arranged to provide for experience in the importance of clear definitions of the health state being studied; b) the importance of classificatory systems on epidemiological studies.

EXERCISE I (a) Concerning the Definition of "Premature Birth"

The Sixth Revision of the International Lists of Diseases, Injuries, and Causes of Death (1948) refers to infants weighing 2500 grams (5-1/2 pounds) or less at birth as being "premature" or "immature." A weight criterion has thus been accepted for practical purposes as a measure of a baby's maturation at birth.

The period of gestation is also related to the maturity of the infant at birth and the length of pregnancy is an additional criterion of prematurity used by many. Pregnancies of less than 37 completed weeks are regarded as premature.

The figures in Table I indicate the birth weight and period of gestation of all live births in one community.

TABLE I  
The Birth Weight (A) and Period of Gestation (B) of All Live Births in One Community

A		B	
Birth Weight (in Grams)	Number of Babies	Period of Gestation (x) (in weeks)	Number of Babies
1000 grs. or less	320	Under 28 weeks	406
1001 - 1500	407	28 - 31	602
1501 - 2000	921	32 - 35	1,454
2001 - 2500	3,346	36	5,580
Total 2500 or less	4,994	Total 36 and under	8,042
Total over 2500	66,719	37 and over	63,671
All Births	71,713	All Births	71,713

(x) The Period of Gestation refers to the number of completed weeks that have elapsed between the first day of the last menstrual period and the date of birth of the child.

Question I. Comment on the above with reference to the definition of the condition and the problems this may present in an epidemiological study of prematurity.

Continuation Sheet of Exercise I(a)

Question II. What further information would you like to have about these babies?

TABLE 2

The Birth Weight in Relation to the  
Period of Gestation of All Live Births Included in Table I A & B

<u>Birth Weight</u>	<u>Total Births</u>	<u>Under 28</u>	<u>28-31</u>	<u>32-35</u>	<u>36</u>	<u>37 and over</u>
1000 grams or less	320	242	58	11	2	7
1001 - 1500	407	112	161	87	15	32
1501 - 2000	921	26	198	323	126	248
2001 - 2500	3,346	6	110	489	551	2,190
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Total 2500 or less	4,994	386	527	910	694	2,477
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Total Over 2500	66,719	20	75	544	4,886	61,194
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All Births	71,713	406	602	1,454	5,580	63,671

Question III. Calculate the prematurity rates from Table 2, with "premature" defined -

- (1) as weighing 2500 Gm. or less
- (2) as being of less than 37 weeks gestation
- (3) as being both less than 2500 Gm. or less in weight and being of less than 37 weeks gestation
- (4) as being either 2500 Gm. or less in weight or being of a gestation period of less than 37 weeks.

How do these different definitions affect the conclusions that may be drawn from this table?

Question IV. Which is the best definition of "premature"?

Why?

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EXERCISE I (b)

Suppose you were given a table describing 100 consecutive infections requiring hospital admission, to a particular hospital, and the table looked like this:

Bacterial Infections	40
Viral Infections	60
Localized Infections	23

Question V. Is this a useful classification? Why or why not?

It is immediately apparent that any given data may be classified in a number of ways depending on the usefulness of the classification for the purposes at hand.

Question VI. Give several different ways of classifying the above mentioned infections. Under what circumstances would each of these be useful?

Similarly, classification of most health states may be made from the points of view of:

- 1) Morphological (Anatomic) changes
  - 2) Physiological (functional) changes
  - 3) Psychological changes
  - 4) Sociological changes
  - 5) Etiology
  - 6) Degree of incapacitation
  - 7) Type of treatment
- etc.

Question VII. Each of these serves a useful purpose under given circumstances. Discuss a few.

The Sixth Revision of The International Statistical Classification of Diseases, Injuries, and Causes of Death lists the following major (3 digit) classification of diseases of the circulatory system:

- (400-402) Rheumatic Fever
- (410-416) Chronic Rheumatic Heart Disease
- (420-422) Arteriosclerotic and Degenerative Heart Disease
- (430-434) Other Diseases of the Heart
- (440-447) Hypertensive Disease
- (450-456) Diseases of Arteries
- (460-468) Diseases of Veins and other diseases of  
Circulatory System.

Question VIII. Discuss this classification.