流行病学与因果推断

战义强

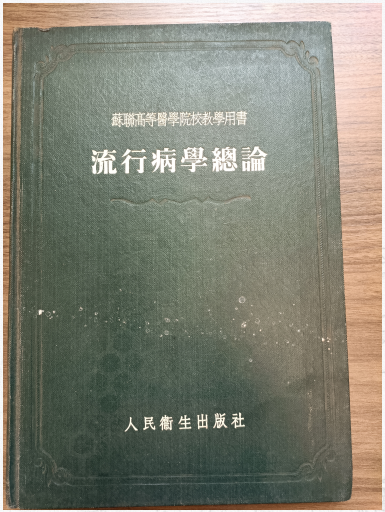
中山大学公共卫生学院（深圳）

2025 年春季学期

流行病学简史

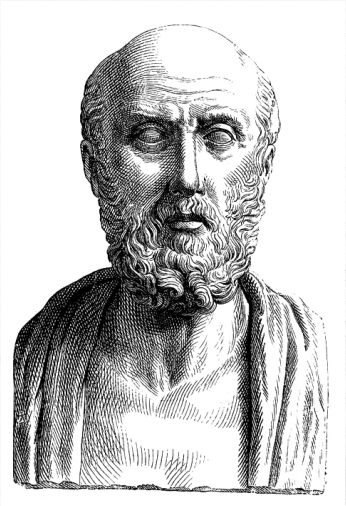
主要内容

- 18 世纪之前：学科形成前期
- 18 世纪末-20 世纪初：学科形成期
- 20 世纪 40/50 年代至今：学科发展期（现代流病学时期）



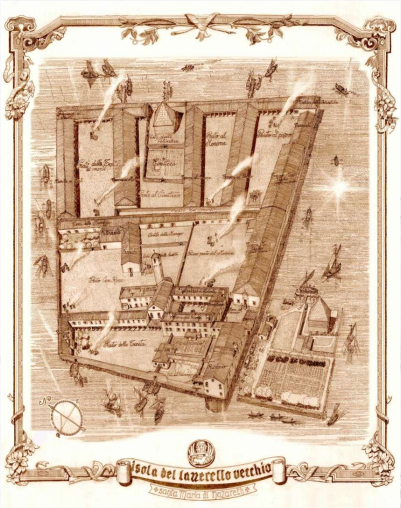
学科形成前期

- Hippocrates (460—377 BC)
- 第一个流行病学家
- 主要的流行病学著作：Epidemic I、Epidemic III、On Airs, Waters and Places



学科形成前期

- 意大利威尼斯——最早的检疫
- 14 世纪, 外来船只必须在港外停留检疫 40 天 quadraginta (拉丁语，意思为 40) → quarantine
- 1423 年成立了首家传染病隔离医院: 威尼斯附近 Lazzaretto Vecchi

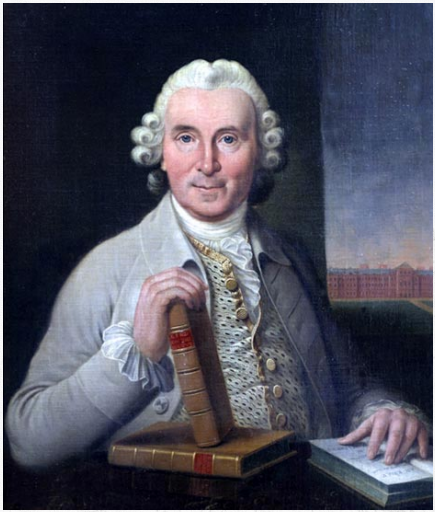


学科形成前期

- John Graunt (1620—1674)
- 利用死亡数据进行死亡分布及规律性研究
- 创制了第一张寿命表，计算期望寿命
- 用生存概率和死亡概率来概括死亡经历
- 提出设立比较组的思想
- 将统计学引入流行病学领域

学科形成期

- James Lind (1716—1794)
- 坏血病 1747
- 开创了流行病学临床试验的先河



学科形成期

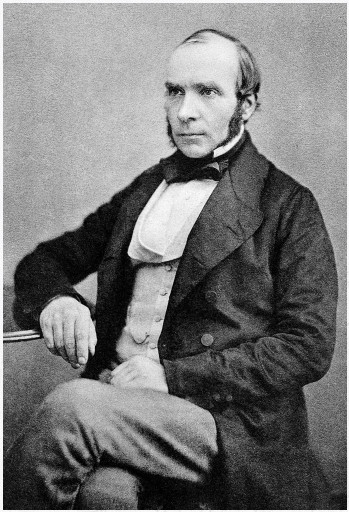
- Edward Jenner (1749—1823)
- 接种牛痘、预防天花 (1796)
- 开创了主动免疫的先河

学科形成期

- William Farr (1807—1883)
- 在英国首创人口和死亡的常规资料收集
- 提出许多流行病学的重要概念：标化死亡率、人年、剂量反应关系、患病率
- 患病率 = 发病率 × 病程

学科形成期

- John Snow (1813—1858)
- 伦敦宽街: 霍乱暴发
- 标点地图法
- 霍乱是水传播
- 流行病学现场调查、分析与控制的经典实例



学科形成期


GREAT MARLBOROUGH STREET
D'ARBLAY STREET
BERWICK STREET
WARDOUR STREET
DEAN STREET
Soho
BROADWICK STREET
KINGLY STREET
BEAK STREET
GREAT PULTENEY STREET
GOLDEN
BRIDLE LANE
GREAT


JOHN SNOW

学科形成和发展期

- Louis Pasteur (1822—1895)
- 微生物理论 (germ theory)
- 开发了鸡霍乱、炭疽、猪丹毒疫苗
- 减毒的微生物可以用作免疫
- 提出狂犬病是由一种显微镜看不到的物质传播的（即病毒），并开发疫苗治疗和预防狂犬病
- 巴斯德杀菌法

- Robert Koch (1843—1910)
- 确定了结核杆菌和霍乱弧菌
- 1905 年诺贝尔生理学或医学奖
- 确定了水净化在疾病预防过程中的重要性

学科形成和发展期

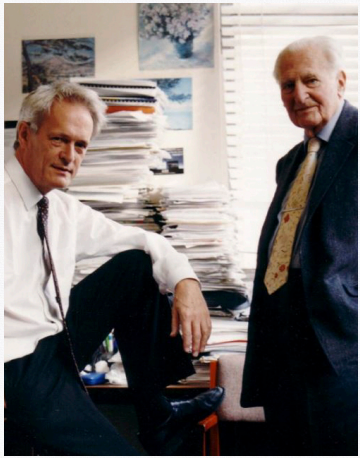
- London Epidemiological Society (1850)
- 全世界第一个流行病学学会
- 标志着流行病学学科的形成
- Hanover Square, 1850 年 3 月 6 号
- 目前已是英国皇家医学会的一部分
- 然而，约 1870 年起进入了细菌时代——流行病学的低迷时期

学科复兴

- Joseph Goldberger (1914—1930)
- 糙皮病-饮食缺乏 (烟酸缺乏，维生素 B3)，而非传染病

- 非传染性疾病
- 第一阶段 (20 世纪 40 ∼ 50 年代)
- 第二阶段 (20 世纪 60 ∼ 80 年代)
- 第三阶段 (20 世纪 90 年代 ∼ 至今)

- 第一阶段
- Richard Doll & Austin Bradford Hill
- 吸烟-肺癌
- 开创了生活方式的研究领域
- 开辟了慢性病病因学研究的新天地



BRITISH MEDICAL JOURNAL

LONDON SATURDAY SEPTEMBER 30 1950

SMOKING AND CARCINOMA OF THE LUNG

PRELIMINARY REPORT

BY

RICHARD DOLL, M.D., M.R.C.P.

Member of the Statistical Research Unit of the Medical Research Council

AND

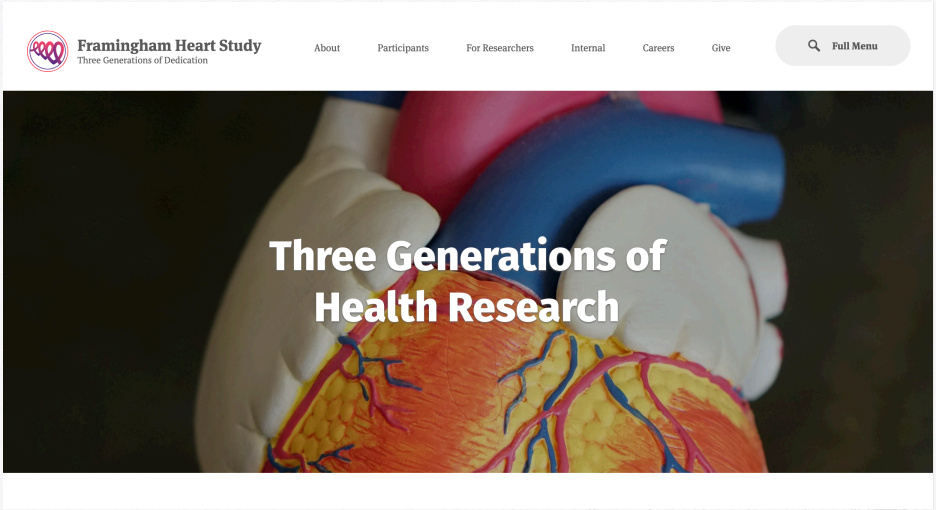
A. BRADFORD HILL, Ph.D., D.Sc.

Professor of Medical Statistics, London School of Hygiene and Tropical Medicine; Honorary Director of the Statistical Research Unit of the Medical Research Council

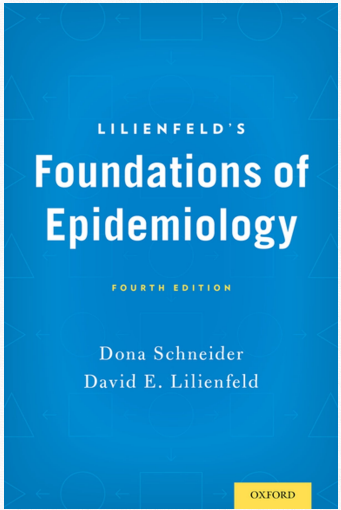
In England and Wales the phenomenal increase in the number of deaths attributed to cancer of the lung provides one of the most striking changes in the pattern of mortality recorded by the Registrar-General. For example, in the quarter of a century between 1922 and 1947 the annual number of deaths recorded increased from 612 to 9,287, or roughly fifteenfold. This remarkable increase is, of course, out of all proportion to the increase of population—both in total and, particularly, in its older age groups. Stocks (1947), using standardized death rates to allow for these population changes, shows the following trend: rate per 100,000 in 1901–20, males 1.1, females 0.7; rate per 100,000 in 1936–9, males 10.6, females 2.5. The rise seems to have been particularly rapid since the end of the first world war; between 1921–30 and 1940–4 the death rate of men at ages 45 and over increased sixfold and of women of whole explanation, although no one would deny that it may well have been contributory. As a corollary, it is right and proper to seek for other causes.

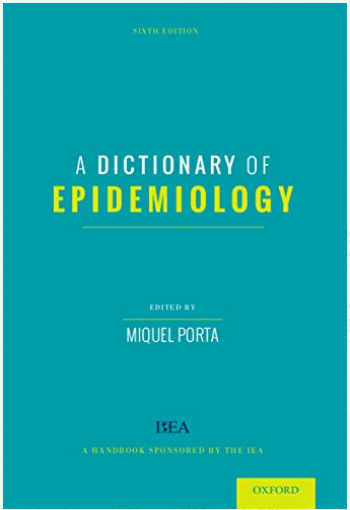
Possible Causes of the Increase

Two main causes have from time to time been put forward: (1) a general atmospheric pollution from the exhaust fumes of cars, from the surface dust of tarred roads, and from gas-works, industrial plants, and coal fires; and (2) the smoking of tobacco. Some characteristics of the former have certainly become more prevalent in the last 50 years, and there is also no doubt that the smoking of cigarettes has greatly increased. Such associated changes in time can, however, be no more than suggestive, and until recently there has been singularly little more direct evidence. That evidence, based upon clinical experience and


Framingham Heart Study
Three Generations of Dedication
About
Participants
For Researchers
Internal
Careers
Give
Full Menu
Three Generations of
Health Research

方法学发展迅速


LILIENFELD'S
Foundations of Epidemiology
FOURTH EDITION
Dona Schneider
David E. Lilienfeld
OXFORD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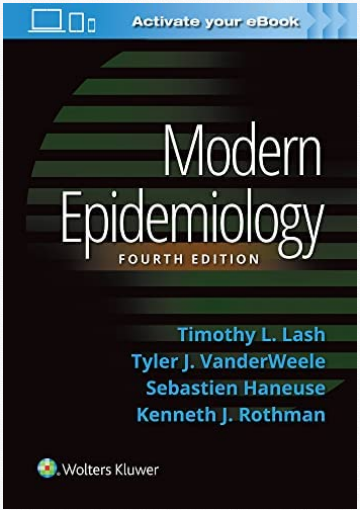
方法学发展迅速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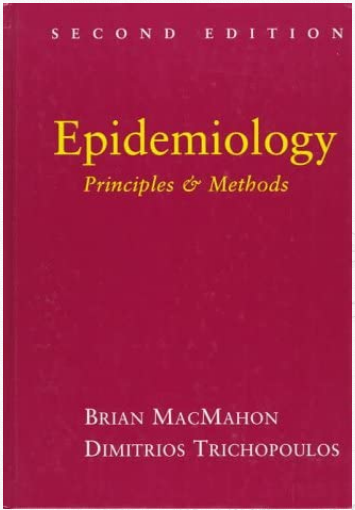

SECOND EDITION
Epidemiology
Principles & Methods
BRIAN MACMAHON
DIMITRIOS TRICHOPOULOS

流行病学应用领域进一步扩大

- 临床流行病学
- 随机对照临床试验
- Meta 分析
- 循证医学
- …

- 分子流行病学
- 遗传流行病学
- 伤害流行病学
- 肿瘤流病学
- …

我国流行病学发展简史

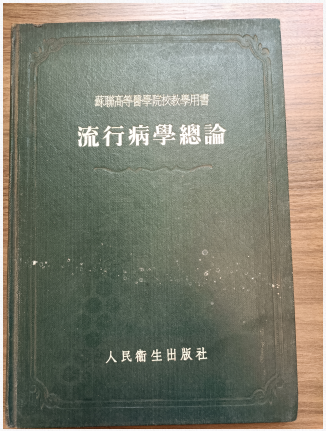
1949 年之前

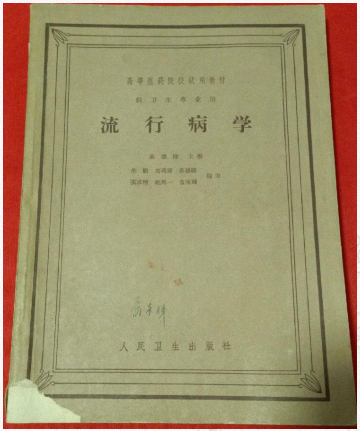
- 流行病学学科不成体系
- 伍连德（1879-1960）成就瞩目
- 1910/1920 年东北鼠疫
- 堪称流行病学的先驱和奠基人

新中国成立之后

- 1949 年，哈尔滨医科大学成立流行病学教研室
- 1951 年，北京医学院成立流行病学教研室
- 开设流行病学课程，标志着我国流行病学学科体系的初步建立

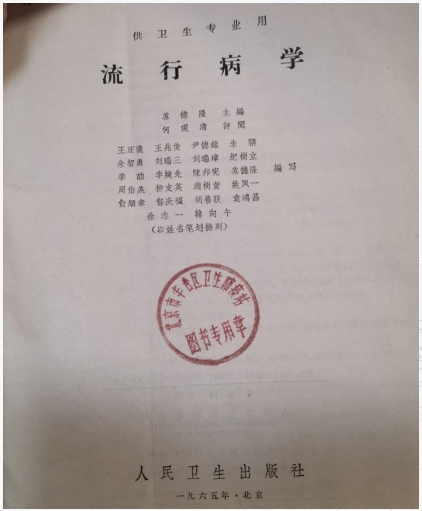
新中国成立之后





教材非常有限，以译著为主

新中国成立之后



1960 年、1965 年，苏德隆《流行病学》，标志着流行病学的教学体系的形成

新中国成立之后

苏德隆（1906 年～1985 年），南京市人，汉族，医学教育家，一级教授，中国流行病学奠基人之一，上海第一医学院（现复旦大学上海医学院）副院长

新中国成立之后

- 文革 10 年，发展停滞
- 1978 年，卫生部在颁发的高等医学院校 7 个专业（医学、中医、儿科、口腔、卫生、药学、中药）教学计划方案中，明确将流行病学作为必修课
- 同年，北京协和医学院、四川医学院、山东医学院的流行病学教研室被正式批准为硕士学位授予点，我国流行病学学科进入飞速发展时期
- 1980 年，流行病学学会成立
- 1981 年，供卫生专业使用的规划教材《流行病学》在人卫社出版、《中华流行病学杂志》创办，标志着我国流行病学学科体系的发展和完善
- 疾病谱发生改变 $\rightarrow$ 慢性病 $+$ 传染病，疾病分布时代 $\rightarrow$ 病因学时代，具备方法论的性质

- 北京医科大学、上海医科大学等陆续将公共卫生（预防医学）系 → 公共卫生学院
- 1986 年第一批流行病学博士学位点，走向成熟
- 1997 年，国家二级学科目录调整，流行病学与卫生统计学合并，公共卫生与预防医学的二级学科
- 2002 年，北京大学、复旦大学、山东大学的流行病与卫生统计学学科称为国家重点学科
- 研究范畴也由疾病扩展到疾病、健康、卫生政策
- 之后，临床流行病学、循证医学等各个分支不断涌现
- 为预防医学、临床医学、卫生政策等学科提供技术支撑

全国部分高校流行病与卫生统计学硕士授予点

时间	学校
1978	协和、四川医学院、山东医学院
1979	大连医学院、哈医大
1981	北京医学院、上海医学院、中山医学院
1982	第一军医大、湖南医科大
1984	西安医学院、南京铁道医学院、同济医科大
1985	河南医科大
1986	安徽医大、苏州医学院、山西医学院

全国部分高校流行病与卫生统计学博士学位授予点

时间	学校
1983	哈医大
1984	协和
1985	中山医科大
1986	北医、上医、同济
1993	第四军医大
1995	华西医大
1998	山东医大
2000	山西医大
2001	浙江大学
2003	南京医大、第一军医大、中南大学、西安交大、安徽医大

流行病学学会的建设与发展

- 1978 年，魏承毓、耿贯一、吴系科、钱宇平等 12 位教授撰写了一份《关于加强流行病学工作的几点建议》的报告，着重提出建设中华医学会流行病学学会、《中华流行病学杂志》，呈送卫生部和中华医学会
- 1979 年，苏德隆、耿贯一、吴系科在北京专程拜会了中华医学会和卫生部
- 1980 年，哈尔滨，中华医学会第一次全国流行病学学术会议暨流行病学学会成立大会，哈尔滨
- 前身是严镜清教授领导的中华医学会公共卫生学会的一个学组
- 1987 年，中华预防医学会成立
- 1991 年，成都，第三次全国流行病学学术会议，中华预防医学会流行病学学会
- 1992 年，中华预防医学会流行病学分会
- 第 1-4 届：苏德隆、钱宇平、魏承毓、郑锡文
- 第 5-7 届：李立明
- 第 8-9 届：詹思延

流行病学的定义

定义：20 世纪上半叶

- Clare Oswald Stallybrass (1931)
- 流行病学是关于传染病的科学–它们的主要原因、传播蔓延以及预防的学科

THE PRINCIPLES OF EPIDEMIOLOGY
AND THE PROCESS OF INFECTION

BY
C. O. STALLYBRASS

LONDON
GEORGE ROUTLEDGE & SONS, LTD.
BROADWAY HOUSE: 68-74 CARTER LANE, E.C.
1931

Obituary

CLARE OSWALD STALLYBRASS
M.D. Lond., M.D. Lpool, D.P.H.

Dr. C. O. Stallybrass was a member of the medical staff of the public-health department of the city and port of Liverpool for over thirty years. But he never allowed administration to take first place or to make him anything less than Locke's "whole, sound, round-about man." First and foremost he was a good doctor, and he was never cribbed and confined in his chosen field of public health. He loved medicine, and his work was done in the fertile atmosphere of that tradition.

He was born in 1881, son of the late Rev. W. C. Stallybrass, of Wallasey. From Birkenhead School he entered the University of Liverpool in 1898 and he took the Conjoint qualification in 1905, graduating M.B. Lond. with honours two years later. During his house-appointments at Liverpool Royal Infirmary and the Maternity Hospital he had already become interested in preventive medicine, and after a year as R.M.O. at Parkhill Fever Hospital he took his D.P.H. In 1909 he became assistant medical officer in the Liverpool port medical service. He started a campaign of rat-searching and rat-proofing of ships, and his methods have since been copied throughout the world. In 1910 he took his M.D. Lond. in State medicine.

[Liverpool Daily Post

During the 1914–18 war Stallybrass's career at Liver-

Clare Oswald Stallybrass, 1881-1951

C. O. STALLYBRASS, M.D., D.P.H.

Dr. C. O. Stallybrass, until 1948 deputy medical officer of health of the city and port of Liverpool, died at the Clatterbridge Hospital, Cheshire, on January 28, aged 69.

Clare Oswald Stallybrass was born in Wallasey, the son of the Rev. W. C. Stallybrass, and was educated at Birkenhead School and the University of Liverpool. He qualified in 1905, and graduated M.B., B.S. at London University two years later. After serving as house-surgeon and house-physician at the Liverpool Royal Infirmary, he occupied a resident post at the Maternity Hospital, where in 1907 he established a medical clinic for infants on their discharge. Early on in his career he began to display an interest in preventive medicine which was to prove the predominating enthusiasm of his life: this showed itself when he accepted a post at the Parkhill Fever Hospital in 1908 and was appointed assistant medical officer in the Liverpool port medical service in 1909. He proceeded M.D. in State Medicine in the following year. His career in Liverpool was interrupted during the 1914-18 war, when he served in the R.A.M.C. For distinguished service to the Serbian Army during a severe epidemic of typhus in that country he was awarded the Order of St. Sava. Returning to England at the end of the war, Stallybrass was appointed, in 1919, an assistant medical officer of health in the Liverpool public health department, and he then began his long career of service to the city which was destined to last for more than 30 years.

We are indebted to Professor W. M. Frazer for the following account of Dr. Stallybrass's work in Liverpool: For a considerable time Stallybrass shared a room at the municipal offices with Dr. A. A. Mussen and the late Dr. W. Hanna. These three, under Professor E. W. Hope, who died a few months ago, formed a very strong and enthusiasm which he always brought to bear upon his public health duties were devoted to the improvement of the Liverpool hospitals and their associated services. In this work he was helped by his many contacts among the medical profession of Liverpool and by the great esteem and affection in which he was held by all classes of the community. The success of his labours was clearly shown between 1939 and 1945 in the great part played by the Liverpool hospitals in the war effort.

Stallybrass's interests were very wide, and he could (and often did) discourse upon archaeology, geology, astronomy, philately, mountaineering, psychology, music, and many other topics. He had an immense love of and concern for humanity. More than most men he might justifiably have echoed the saying of Terence—*Homo sum; humani nihil a me alienum puto.* During the many years of his interesting life in Liverpool, filled with every diverse kind of intellectual pursuit, he became a member, or treasurer, or president, at one time or another of most of the city's learned societies. His interest in them, once gained, never flagged. His abiding interest, for more than 40 years, was in the Liverpool Medical Institution, of which he was president in 1935, and in the many activities, both central and local, of the British Medical Association, in which he held many offices, including that of Representative of his Division at many Annual Meetings. He was a member of the Public Health Committee and of the committee which drew up the *Charter for Health*, and at the Annual Meeting of the Association last year he was president of the Section of Geriatrics. At this same Meeting he was selected to give the public lecture, and he chose as his subject "Epidemics Old and New" (reported in the *Journal* of July 29, 1950). In this he paid a moving tribute to those who in the past had fought to reduce the ravages of epidemic disease, and finished with a stirring appeal for an all-out attack on tuberculosis. For many years a member of the Society of Medical

Br Med J: first published as 10.1136/bmj.1.4701.303 on 10 February 1951. Downloaded from http://
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定义：20 世纪上半叶

- 前苏联《流行病学总论教程》(1936)
- 流行病学是关于流行的科学，它研究流行发生的原因、规律及扑灭的条件，并研究与流行作斗争的措施

定义：20 世纪中后叶

- MacMahon(1970): 流行病学是研究人类疾病的分布及决定疾病频率的决定因子的科学
- Lilienfeld(1980): 流行病学是研究人群群体中疾病表现形式（表型）及影响这些表型的因素
- 苏德隆 (1964)：流行病学是医学中的一门学科，它研究疾病的分布、生态学及防制对策
- Last(1983): 流行病学研究在人群中与健康有关状态和事件的分布及决定因素，以及应用这些研究以维持和促进健康的问题
- 人民卫生出版社教材：流行病学是研究人群中疾病与健康状况的分布及其影响因素，并研究防制疾病及促进健康的策略和措施的科学