

Figuring out what makes populations sick: unraveling disease mysteries

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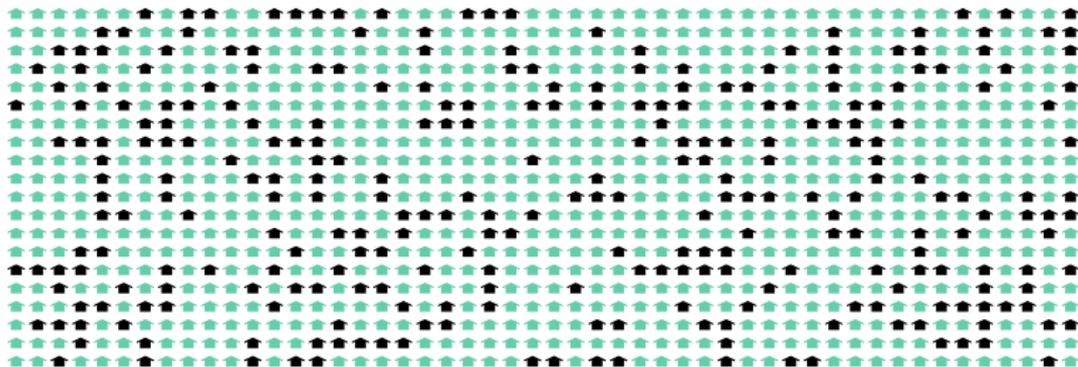
Outline

- The **practice** of **community** vs. **clinical** medicine
- **Epidemiological Research** → knowledge for the practice of community medicine (public health)
- **Research challenges:** people; timescales; safety/scale
- **Population-level epidemiological research: examples:**
 - 18th&19th century: smallpox; cholera; puerperal fever
 - 20th&21st: birth defects; illnesses of childhood & adulthood
 - hospital-acquired infections (MUHC)
 - The biggest-ever public health experiment

334 Deaths In First 4 Weeks of 1854 Epidemic

Death
Rate

286 in 40,000 houses supplied with water taken from River



13

:

1

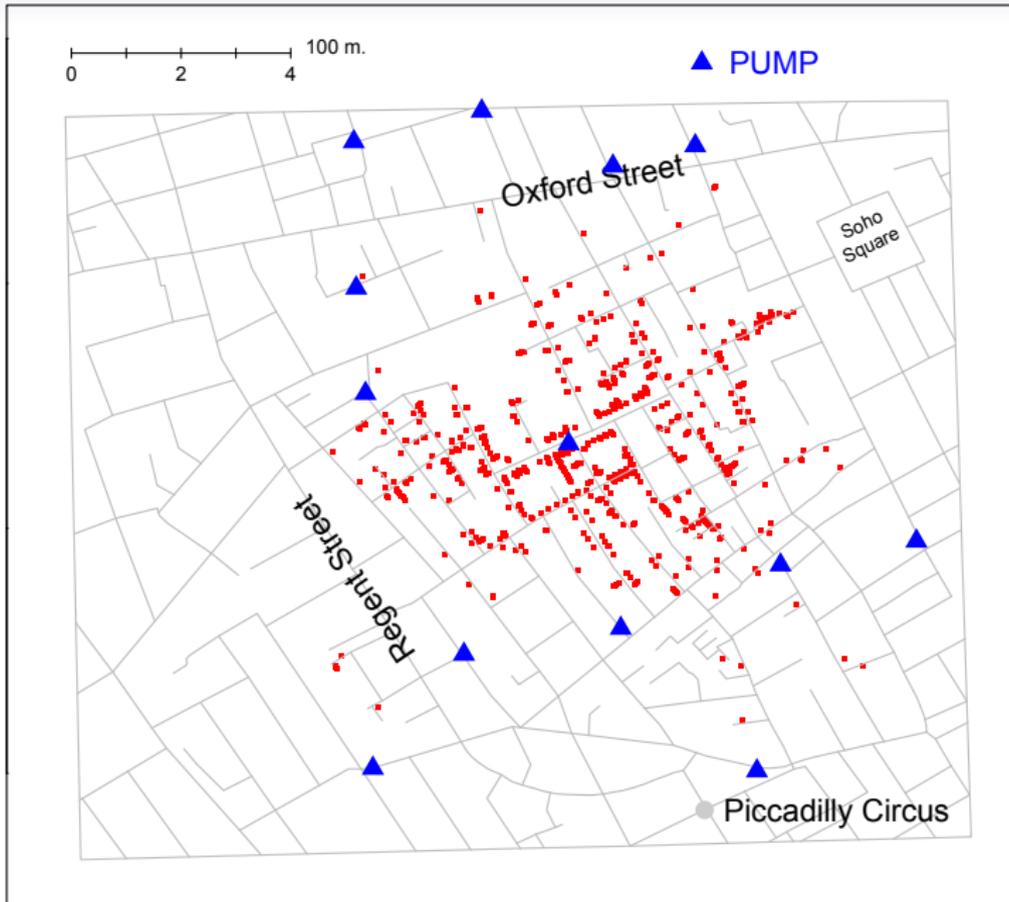
14 in 26,000 houses supplied with water taken from Up-River

34 in houses that obtained drinking water from drains, directly from River, etc

★ = 40 houses
★ = 1 cholera death

Meanwhile, starting night of Thursday Aug. 31, in Soho district

Situation of deaths in and around Broad Street



20th CENTURY

Birth Defects

Defect	Agent	Counter-measure
Eyes, ears, heart ['41]	1st trimester rubella	Vaccination ['69→]
Limbs ['61]	Thalidomide	Withdrawn from market
Central nervous system ['65]	Folate deficiency	Supplements, fortification †

† White flour & bread ['98→]

Infancy / youth / ...

Sickness	Agent	Counter-measures
Poliomyelitis	Virus	Vaccination
Dental Caries	Fluoride [†]	Paste/supplements/drinking water
Vaginal Cancer	In utero DES	Avoidance

[†] Preventive

TOOLS

1941

CONGENITAL CATARACT FOLLOWING GERMAN MEASLES IN THE MOTHER.

By N. McALISTER GREGG,
Sydney.

In the first half of the year, 1941, an unusual number of cases of congenital cataract made their appearance in Sydney.

The total number of cases included in this review is seventy-eight.

In all but ten cases in this series the history of "German measles" infection is present.

THALIDOMIDE AND CONGENITAL ABNORMALITIES

SIR,—Congenital abnormalities are present in approximately 1.5% of babies. In recent months I have observed that the incidence of multiple severe abnormalities in babies delivered of women who were given the drug thalidomide ('Distaval') during pregnancy, as an anti-emetic or as a sedative, to be almost 20%.

These abnormalities are present in structures developed from mesenchyme—i.e., the bones and musculature of the gut. Bony development seems to be affected in a very striking manner, resulting in polydactyly, syndactyly, and failure of development of long bones (abnormally short femora and radii).

Have any of your readers seen similar abnormalities in babies delivered of women who have taken this drug during pregnancy?

Hurstville, New South Wales.

W. G. McBRIDE.

FOLIC ACID METABOLISM AND HUMAN EMBRYOPATHY

RESULTS OF FIGLU EXCRETION TESTS IN 98 MOTHERS OF MALFORMED INFANTS

Mothers	FIGLU excretion test		Total	% FIGLU-positive
	Positive	Negative		
<i>Of all malformed infants..</i>	61	37	98	62
<i>Of all infants with C.N.S. malformations</i>	48	25	73	66
<i>Matched pairs:</i>				
Mothers of malformed infants	35	19	54	65
Mothers of normal infants	8	46	54	17
Mothers of infants with C.N.S. malformation	24	11	35	69
Mothers of normal infants	6	29	35	17

ADENOCARCINOMA OF THE VAGINA***Association of Maternal Stilbestrol Therapy with Tumor Appearance in Young Women**

ARTHUR L. HERBST, M.D., HOWARD ULFELDER, M.D., AND DAVID C. POSKANZER, M.D.

Abstract Adenocarcinoma of the vagina in young women had been recorded rarely before the report of several cases treated at the Vincent Memorial Hospital between 1966 and 1969. The unusual occurrence of this tumor in eight patients born in New England hospitals between 1946 and 1951 led us to conduct a retrospective investigation in search of factors that might be associated with tumor appearance. Four matched controls were established for each patient; data were obtained by personal interview. Results show maternal

bleeding during the current pregnancy and previous pregnancy loss were more common in the study group. Most significantly, seven of the eight mothers of patients with carcinoma had been treated with diethylstilbestrol started during the first trimester. None in the control group were so treated (p less than 0.00001). Maternal ingestion of stilbestrol during early pregnancy appears to have enhanced the risk of vaginal adenocarcinoma developing years later in the offspring exposed.

Summary of Data Comparing Patients with Matched Controls.

CASE No.	MATERNAL AGE (YR)		MATERNAL SMOKING		BLEEDING IN THIS PREGNANCY		ANY PRIOR PREGNANCY LOSS	
	CASE	MEAN OF 4 CONTROLS	CASE	CONTROL	CASE	CONTROL	CASE	CONTROL
1	25	32	Yes	2/4	No	0/4	Yes	1/4
2	30	30	Yes	3/4	No	0/4	Yes	1/4
3	22	31	Yes	1/4	Yes	0/4	No	1/4
4	33	30	Yes	3/4	Yes	0/4	Yes	0/4
5	22	27	Yes	3/4	No	1/4	No	1/4
6	21	29	Yes	3/4	Yes	0/4	Yes	0/4
7	30	27	No	3/4	No	0/4	Yes	1/4
8	26	28	Yes	3/4	No	0/4	Yes	0/4
Total Mean	26.1	29.3	7/8	21/32	3/8	1/32	6/8	5/32
Chi square (1 df)*			0.53		4.52		7.16	
p value			0.50		< 0.05		< 0.01	
	(N.S.)†		(N.S.)					

* Matched control chi-square test used as described by Pike & Morrow.⁹

† Standard error of difference 1.7 yr (paired t-test); N.S. = not statistically significant.

Summary of Data Comparing Patients with Matched Controls.

CASE No.	MATERNAL AGE (YR)		ESTROGEN GIVEN IN THIS PREGNANCY		BREAST FEEDING		INTRA-UTERINE X-RAY EXPOSURE	
	CASE	MEAN OF 4 CONTROLS	CASE	CONTROL	CASE	CONTROL	CASE	CONTROL
1	25	32	Yes	0/4	No	0/4	No	1/4
2	30	30	Yes	0/4	No	1/4	No	0/4
3	22	31	Yes	0/4	Yes	0/4	No	0/4
4	33	30	Yes	0/4	Yes	2/4	No	0/4
5	22	27	No	0/4	No	0/4	No	0/4
6	21	29	Yes	0/4	No	0/4	No	1/4
7	30	27	Yes	0/4	Yes	0/4	No	1/4
8	26	28	Yes	0/4	No	0/4	Yes	1/4
Total			7/8	0/32	3/8	3/32	1/8	4/32
Mean	26.1	29.3						
Chi square (1 df)*			25.22		2.35		0	
p value			< 0.00001		0.20			
	(N.S.)†				(N.S.)		(N.S.)	

* Matched control chi-square test used as described by Pike & Morrow.*

† Standard error of difference 1.7 yr (paired t-test); N.S. = not statistically significant.



Framingham Heart Study

A Project of the National Heart, Lung, and Blood Institute and Boston University

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Original Cohort

The Original Cohort of the Framingham Heart Study consisted of 5,209 respondents of a random sample of 2/3 of the adult population of Framingham, Massachusetts, 30 to 62 years of age by household, in 1948. Exam 28 for the Original Cohort ended in December of 2005. Exam 30 for the Original Cohort began in May of 2008 and ends in February of 2010.

AGE-SEX DISTRIBUTION AT ENTRY (1948)

	Age	29-39	40-49	50-62	Totals
Men		835	779	722	2,336
Women		1,042	962	869	2,873
Totals		1,877	1,741	1,591	5,209

The Nurses' Health Study



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The Nurses' Health Studies are among the largest and longest running investigations of factors that influence women's health. Started in 1976 and expanded in 1989, the information provided by the 238,000 dedicated nurse-participants has led to many new insights on health and disease. While the prevention of cancer is still a primary focus, the study has also produced landmark data on cardiovascular disease, diabetes and many other conditions. Most importantly, these studies have shown that diet, physical activity and other lifestyle factors can powerfully promote better health.

Please choose from the links across the top of the page or the navigation menu on the left to find out more about the Nurses' Health Studies.

Join NHS3!

The Nurses' Health Study is recruiting 100,000 female RNs, LPNs, and nursing students for NHS3. Become part of the next generation of NHS! [Join NHS3!](#)



POLIOMYELITIS CASES

STUDY GROUP	STUDY POPULATION	Paralytic	
		No.	Rate

All areas: Total	1,829,916	685	37
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Placebo control areas: Total	749,236	270	36
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Vaccinated	200,745	33	16
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Placebo	201,229	115	57
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Not inoculated*	338,778	121	36
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Observed control areas: Total	1,080,680	415	38
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Vaccinated	221,998	38	17
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Controls**	725,173	330	46
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Grade 2 not inoculated	123,605	43	35
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Source: Adapted from Francis (1955), Tables 2 and 3.

* Includes 8,577 children who received one or two injections of placebo.

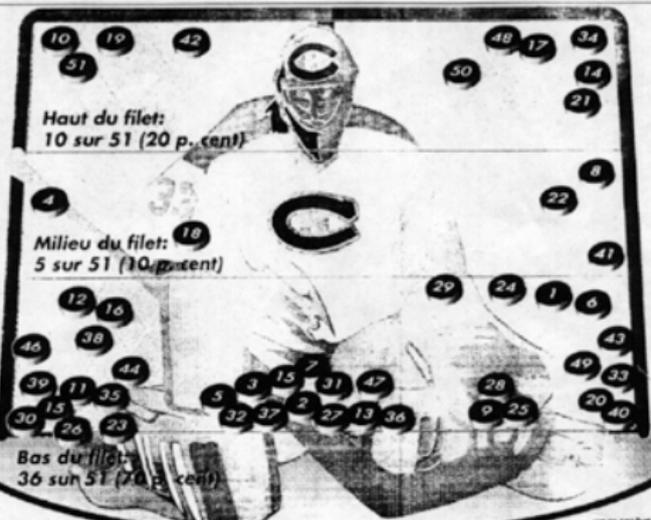
** First- and third-grade total population.

(Rates per 100,000)

La Presse
Sports

**Sutter a trop parlé;
 personne ne va
 toucher à Roy,
 foi de Carbo**

Page 2 à 5



Pour battre Roy, mieux vaut lancer bas...

Quand on me demandait que les gens des Bruins de Boston ne soient pas malade
 romagnols. On évitait surtout Roy en lançant dans le haut du filet, comme il n'est
 lui aussi, les Bruins perdent leur temps. Le joueur, le graphique publié ci-dessus
 Au cours des cinq matches, des séries éliminatoires disputées en janvier, le
 Canadien a accordé 51 buts (16 contre les Nordiques, 12 face aux Sabres, 11 et
 12 face aux Islanders et aux Kings). Des 51 buts accordés par le meilleur gardien de
 monde, 25, soit 72 p. cent d'entre eux, ont eu la rampe descendante dans la partie

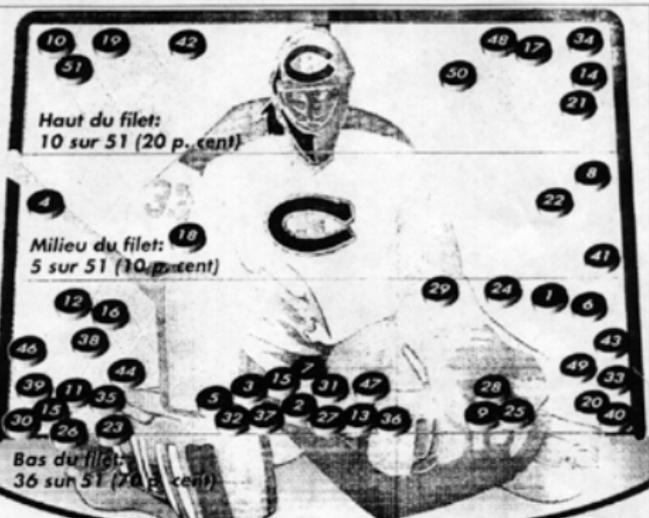
inférieure du filet, à 46 la queue comme on dit. Soit en fait 72 p. cent des
 succès ont été dans la partie supérieure du filet. La seule fois où le gardien
 Roy réussit finalement à catcher les tacles par l'arrière, c'est quand il a réussi
 son seul sauvetage sur les épaules, on en sait plus. Plus en détail, le graphique
 Roy dans la Presse d'her au coloré par rapport aux Bruins et Islanders, et
 continuer à lancer haut. Que j'arrête de le faire!

AU 45 15 11 12 14 5

La Presse
Sports

**Sutter a trop parlé;
personne ne va
toucher à Roy,
foi de Carbo**

Page 2 à 3



Pour battre Roy, mieux vaut lancer bas...

Quand même étonnant que les gens des Bruins de Boston ne soient pas plus nombreux. En évitant Sutter Roy ne saurait dans le haut du filet, comme il l'a fait lui-même, les Bruins perdent leur temps. Le joueur de l'équipe de Boston ne doit pas se laisser impressionner par les statistiques. On en sait assez sur le joueur de Boston Roy dans la Presse d'été au printemps puisqu'il a été nommé meilleur joueur de la ligue. Des 51 buts marqués par le meilleur gardien de monde, 25, soit 70 p. cent d'entre eux, ont été la victoire personnelle dans la partie inférieure du filet. Il est la preuve ultime de son efficacité. Sutter, qui a été nommé meilleur joueur de la ligue, a réussi à empêcher de garder les tacles par l'arrière. Les joueurs de Boston ont bien remarqué sur les statistiques, on en sait assez. Plus encore, la Presse Roy dans la Presse d'été au printemps puisqu'il a été nommé meilleur joueur de la ligue. Que dans le haut. Que dans le haut.

Numbers of Goals

10

5

36

51

La Presse
Sports

**Sutter a trop parlé;
personne ne va
toucher à Roy,
foi de Carbo**

Page 2 et 3



Pour battre Roy, mieux vaut lancer bas...

Quand même étonnant que ces gens des Sports ne soient pas plus intéressés. On va peut-être Roy en un seul coup de... (text continues with commentary on the article)

Numbers of Goals SHOTS

10 ????

5 ????

36 ????

51

La Presse
Sports

**Sutter a trop parlé;
personne ne va
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Page 2 et 3



Pour battre Roy, mieux vaut lancer bas...

Quand même étonnant que les gens des Sports ne soient pas plus intéressés. On va voir battre Roy en cinq jours à huis clos, comme à son tour, au moins pendant un temps. Le hockey, en particulier, peut-il donner au court des yeux quelques-uns des autres éléments de la saison? Le hockey, à l'échelle de la saison, est un jeu de hasard. Les 51 buts sont répartis par le meilleur joueur au monde. Il y a 51 buts en tout, mais on les trouve dans les buts.

Numbers of
Goals SHOTS shots

10		17 x 10
5		11 x 10
36		32 x 10
<hr/>		
51	600	60 x 10