Ludwik Fleck (1896 - 1961)

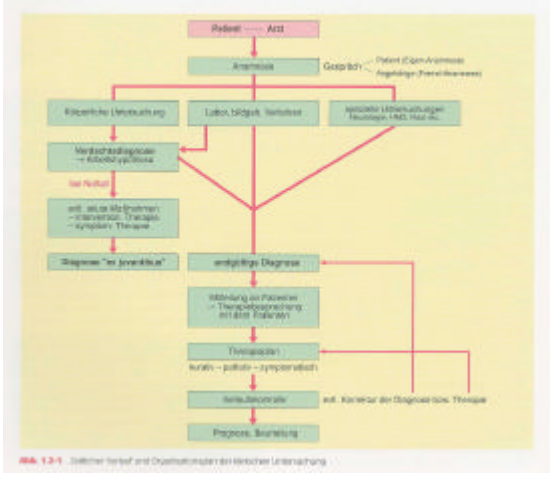
Entstehung und Entwicklung einer wissenschaftlichen Tatsache 1935

Über einige besondere Merkmale des ärztlichen Denkens 1927

„Das ärztliche Wissen, dessen Bereich so ausgedehnt wie seine Geschichte alt ist, hat zum Entstehen eines besonderen Stils geführt, die eigenen Probleme zu erfassen, einer besonderen Art, sich zu den ärztlichen Phänom enen zu verhalten, d. h. zu einem besonderen Denktyp."

„Während der Naturwissenschaftler typische, normale Phänomene sucht, studiert der Arzt gerade die nicht typischen, nicht normalen, krankhaften Phänomene. Und dabei trifft er auf diesem Weg sofort auf einen gewaltigen Reichtum und Individualität dieser Phänomene ... ."

Es entsteht ein riesiger Reichtum an Material. Die Aufgabe der Medizin ist, in diesem ursprünglichen Chaos irgendwelche Gesetze, Zusammenhänge, irgendwelche Typen höherer Ordnung zu finden."

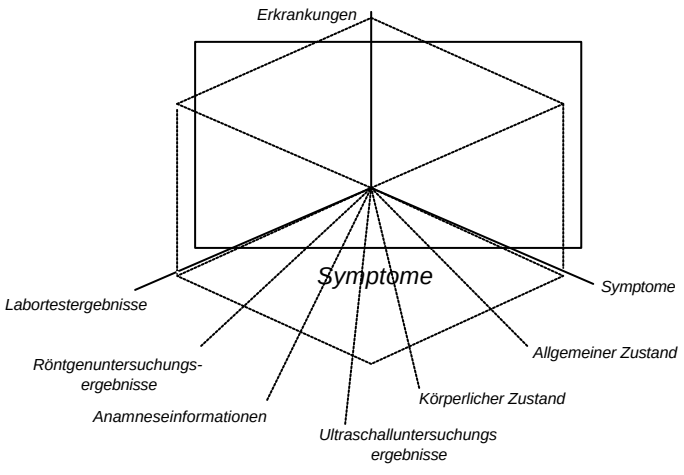


Classen/Diehl/Kochsiek: Innere Medizin, München, Wien Baltimore: Urban & Schwarzenberg, 4. Auflage 1998, S. 8.

How do you make a medical diagnosis?

First,	I obtain the case facts from the patient's history, physical examination, and laboratory tests.
Second,	I evaluate the relative importance of the different signs and symptoms. Some of the data may be of first-order importance and other data of less importance.
Third,	to make a differential diagnosis I list all the diseases which the specific case can reasonable resemble.
Then	I exclude one disease after another from the list until it becomes apparent that the case can be fitted into a definite disease category, or that it may be one of several possible diseases, or else that its exact nature cannot be determined.

R. S. Ledley, L. B. Lusted: Reasoning Foundations of Medical Diagnosis. In: *Science*, 3. July 1959, Volume 130, Nr. 3366, S. 9-21.



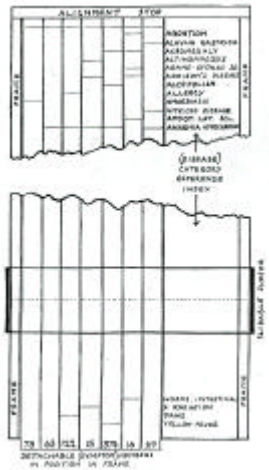
F. A. Nash, 1954

What happens in the doctor's mind when he is faced with a patient? This will depend on his experience, on his book knowledge, and on his mental endowment ...

1) ... subconscious process of immediate recognition ...

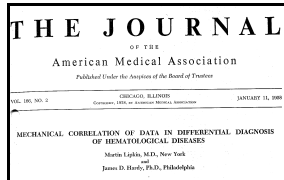
2) ... Recall descriptions from books or from memories of practice of several diseases that might fit the patient's story ...

3) The doctor may take a main or significant symptom or sign, and using it as an intellectual straw to cling to, or start from, in a sea of memories and observations ...



F. A. Nash: Differential Diagnosis. An Apparatus to Assist the Logical Faculties. *The Lancet*, 24. April 1954, S. 874f

Lipkin und Hardy, 1958



MECHANICAL CORRELATION OF DATA IN DIFFERENTIAL DIAGNOSIS OF HEMATOLOGICAL DISEASES

Martin Lipkin, M.D., New York
and
James D. Hardy, Ph.D., Philadelphia

TABLE 1.—*Coding of Data*

History	Item	Code No.
Sex	male	0
	female	1
Race	Negro	2
	White	3
Pregnancy		4
Age	less than 2 yr.	5
	less than 4 wk.	6
	more than 2 yr.	7
Family	history of hemolytic anemia	8
Indigestion	chronic illness, heartburn	8
	flatulence	8
Diarrhea	frequent bowel movements	8
Constipation		8
Burning	in rectum or vagina	8
Painful deglutition		8
Sore	sensitive tongue	8
Nausea	vomiting, anorexia	8
Stools	bulky, frothy	9
Family	history of bleeding disease in males	9
Hemorrhage	genital	10
	recurrent	10
	nose	10
	mouth	10
	some of blood out of proportion to injury	10
	gastrointestinal (hematemesis, melena)	10
	hemoptysis	10
	spontaneous or easy bleeding with tonsillectomy, tooth extraction, slight bruising, etc.	10
	genitourinary	10
	hematomas, ecchymoses	10
Vertigo	faintness, dizziness—spontaneous or change of posture	11
Fever		11
Weakness		11
Fatigue	easily, asthenia	11
Weight	loss	11
Excessive	sweating	11
Cough		11
Heartache		11
Chest	pain	11
Pain	behind eyes	11
Ringing	tones	11
Ataxia	incoordination	12
Numbness	and/or tingling of extremities, pares-thesias	12
Weakness	of extremity, paralysis	12
Tremors		12
Convulsions	epilepsy	12
Cranial	nerve palsy	12
Meningeal	signs	12

History	Item	Code No.
	Polydactylia, brachydactylia	13
	Leg ulcer(s)	14
Skin	blebs, bullae, urticarial wheals	13
	Erythema	13
	Swelling of hands, knees, elbows	13
Joint	swelling, tenderness, redness	16
Low	blood pressure, hypertension	17
Dilated	heart	17
Clubbing	of fingers, toes	17
Cyanosis	extremities, lips, ears	17
Puffiness	of face	17
Heart	murmurs, systolic	17
	diastolic	17
Pulmonary	rales	17
Edema	of extremities	17
Anasarca,	ascites	17
Phlebitis		19
Raynaud's	syndrome	19
Gangrene		19
Hyperemia	—papilledema	20
	vessels engorged, tortuous, deep purple	20
	hemorrhages, exudates	20
	optic atrophy	20
	lenticular opacities	20
	cherry red spot-macula	21
	white lines or nodules	22
Tremors		18
Weakness,	paralysis of extremity	18
Stiff	neck, meningeal signs	18
Cranial	nerve palsy	18
Decreased	vibratory sense	18
Ataxia		12
Positive	Chvostek or Trousseau sign	23
Incoordination,	ataxia	24
Red	tongue, glossitis	25
Papillary	atrophy of tongue	25
Distended	abdomen, spider angiomas, telangiectasis	26
Saber	shins	26
Tower	skull	26
Bone	tenderness	27
Joint	ankylosis	27
Skeletal	deformities	27
	genu valgum, varum, pelvic deformities	27
	bending and bowing of bones, beading of wrists and ankles, beading of ribs	27
Enlarged	spleen	28

Lipkin und Hardy, 1958

History	Item	Code No.
	Very dark urine, brown or black	13
	Severe hemorrhage prior to admission	14
Enlarged	abdomen since birth or infancy	15
Rh	negative mother, Rh positive father	16
Loss of	sexual potency	17
Back	pain	17
Abdominal	pain	17
Oliguria,	anuria	17
Mediterranean	racial background	17
Gallbladder	disease	17
Increased	sensitivity to cold, condition worsened by cold	18
Dyspnea,	palpitations, orthopnea, arrhythmias	18
Edema,	anasarca	18
Chronic	leg ulcer(s)	19
Anemia	in the past	20
Stunting	of growth, infantilism, mental retardation	21
Spontaneous	fractures	21
Pain	in extremities, muscle cramps, neuritic pains, claudication	22
Bone,	joint pain	22
Mental	depression, loss of memory, confusion, sleep	
	disturbances, hallucinations	28
Visual	disturbances—transient dimness, blindness, temporary	
	blindness, scotomas, diplopia, temporary eye muscle paralysis	24
Shock		25
History	of exposure to toxic agents, malaria, Barcelonella, septicemia, chemical agents, fava beans, snake venom, burns, blood transfusions (incompatible), X-ray	26
Gastric	resection, gastroenterostomy	27
Poor	iron intake in diet, hookworm infestation	27
Prematurity,	twin birth	27
Jaundice		28
Generalized	lymphadenopathy	29
Abnormal	lymph node enlargement in one area	29
Pigment		
	White	0
	Negro	1
Spleen	and liver below umbilicus in infant	2
Generalized	enlargement of lymph nodes, or excessive enlargement in one area	
Cachexia		3
	very emaciated, cachexia	4
Infantilism,	younger appearance than age, stunting of growth	5
Atrophied	muscles	5
Hypogonadism		5
Purpura		6
Petechiae		6
Hematomas		6
Excessively	bleeding gums	6
Koilonychia		7
Skin	dry, inelastic	7
Brown	pigmentation of skin	7
Mongoloid	facies	7
Greenish-yellow	sclerae	8
Jaundice	skin, sclerae	10
Deep red	mucous membranes	13

Peripheral blood examination	Code No.
Red blood cell count less than 4.2 x 10^6 per cu. mm.	29
4.2-6.2 x 10^6	30
greater than 6.2 x 10^6	31
Hemiglobin level less than 12 Gm. per 100 cc.	29
12-18 Gm.	30
greater than 18 Gm.	31
Hematocrit less than 37 cc. per 10^6 cc.	29
37-54	30
greater than 54	31
White blood cell count less than 5 x 10^3 per cu. mm.	33
5-10 x 10^3	34
greater than 10 x 10^3	35
greater than 60 x 10^3	36
Platelets less than 190 x 10^3 per cu. mm.	37
190-400 x 10^3	38
greater than 400 x 10^3	39
Mean corpuscular volume less than 82 cu. μ	1
82-92	2
greater than 92	3
Mean corpuscular hemoglobin less than 27 mi- micrograms	4
27-31	5
greater than 31	6
Mean corpuscular hemoglobin concentration less than 32%	7
32-36	8
greater than 36	9
Red blood cell morphology—poikilocytosis	13
anisocytosis	13
increased reticulocytes	13
basophilic stippling	13
polychromatophilia	10
target cells	10
macroblasts	10
normoblasts	10
microblasts—microcytes	24
ring cells, central pallor	14
spherocytes	15
sickle cell preparation immediately positive	16
over 50% positive after 24 hr.	16
less than 50% positive after 24 hr.	17
Rouleaux formation	28
White blood cell morphology—peripheral blood predominantly containing myelocytes	18
rare myeloblast or myelocyte	19
relative lymphocytosis	20
large, atypical lymphocytes	20
absolute lymphocytosis with peripheral blood predominantly containing small lymphocytes	21
absolute lymphocytosis with large atypical lymphocytes, with kidney-shaped nuclei or vacuolated cytoplasm	22
predominantly lymphoblasts	23
predominantly myeloblasts	23
large multinucleated polys	24, 25
increase in metamyelocytes	24
eosinophilia or basophilia	24, 26
majority of cells monocytes and/or monoblasts	25, 26

Lipkin und Hardy, 1958

TABLE 1.—*Coding of Data—Continued*

History	Item	Code No.
Platelets	abnormal, large	27
	abnormal, minute	27
	abnormal, deeply stained	27
Plasma cells	increased in peripheral blood	27, 28
Additional laboratory examinations		
Bleeding	time—elevated	1
Coagulation	time—elevated	2
Clot	retraction—delayed	3
Tourniquet	test—positive	4
Red blood cell	fragility to hypotonic saline—increased	5
	decreased	6
Prothrombin	time—elevated	7
Gastric	analysis after histamine—free hydrochloric acid absent	8
		9
Pancreatic	and/or biliary secretions—normal	10
Albumin-globulin	ratio—reversed	11
Total	proteins high	12
Abnormally	low fat rise in blood after fatty meal	12
Oral	gheose—flat sugar tolerance curve	13
Hemoglobinemia		13
Spinal fluid	—pressure increased	14
	red blood cells present	14
	sickling	14
	xanthochromia	14
	white blood cells present	14
	protein elevated	15
Ieteric	index—elevated	15
VandenBergh	—positive indirect	15
	positive direct	15
Stools	—elevated urobilinogen	15
Urine	—increased urobilinogen, urobilin	15
	contains bile	15
	hemoglobinuria, oxyhemoglobinuria	16
	methemalbumin	16
	positive iron stain on urine sediment	16

History	Item	Code No.
	Bence-Jones protein present	17
Stools	—excess fat as fatty acid crystals	18
Sedimentation	rate increased	19, 20
Sedimentation	rate decreased	19, 21
Serologic	test for syphilis positive	20, 21
BMR	elevated	20, 21
Blood	volume increased	19, 20
Total	proteins low	19
Serum	calcium low	19, 22
Serum	alkaline phosphatase low	19, 23
Nonprotein	nitrogen increased	20, 21
Coombs	test—positive	23
	Heterophil agglutination—Davidsohn, Paul-Bunnell tests positive	24
Bone marrow	examination	
	Megaloblasts present	25
	Hypercellular, hyperplastic	26
	Hypocellular or aplastic, granulocytes low	27
	Normoblastic series increased	28
	Megakaryocytes elevated, abnormal megakaryocytes	29
	Megakaryocytes decreased	30
	Shift to left of granulocytes	31
	Large atypical lymphocytes, vacuolated cytoplasm or kidney-shaped nuclei	22
	Reinnann-Pick cells	33
	Gaucher cells	34
	Myeloma cells or plasma cells increased	35
	Predominantly myelocyte	36
	Predominantly lymphocytic	37
	Eosinophilic/basophilic cells predominate	38
	Monocytic/monoblastic cells predominate	38
	Large abnormal multinucleated leukocytes	39
	Lymphoblastic cells predominate	0
	Myeloblastic cells predominate	0

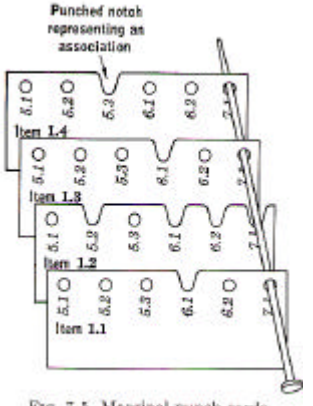
Lipkin und Hardy, 1958

TABLE 2.—*Distribution of Information to Marginal Punched Cards: History*

Disease	Code* 0	1	2	3	4	5	6	.7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Pernicious anemia	+	+	+	+			+	+	+		+	+	+	+				+	+	+	+		+	+	+	+	+	+	+	
Anemia, macrocytic of pernicious anemia type (nutritional or metabolic) and normocytic metabolic, due to sprue	+	+	+	+	+		+	+	+	+	+	+	+					+	+	+	+	+	+	+	+		+	+	
Simple chronic anemias	+	+	+	+			+		+			+	+					+	+	+			+	+	+		+		
Acquired hemolytic anemia	+	+	+	+	+		+		+		+	+	+	+				+	+	+			+	+	+	+	+	+	
Sickle cell anemia	+	+	+	+	+		+	+	+		+	+	+	+				+	+	+	+	+	+	+	+		+	+	+
Anemia due to acute blood loss	+	+	+	+	+		+	+	+		+	+	+	+	+			+	+	+			+	+	+		+		
Hypochromic microcytic anemia	+	+	+	+	+		+	+	+	+	+	+	+					+	+	+	+	+	+	+	+		+		
Hereditary leptocytosis	+	+	+	+	+		+	+	+			+	+					+	+	+	+	+	+	+	+		+	+	+
Hereditary spherocytosis	+	+	+	+	+		+	+	+		+	+	+	+				+	+	+	+	+	+	+	+		+	+	+
Hemolytic disease of the fetus and newborn	+	+	+			+		+	+		+	+	+			+		+	+						+		+	+	
Hypoprothrombinemia of newborn	+	+	+			+		+	+		+	+	+	+	+			+	+						+		+		
Hemophilia	+		+		+		+	+	+	+	+	+	+	+	+			+	+		+	+	+	+	+		+		
Idiopathic thrombocytopenic purpura	+	+	+	+	+		+	+	+		+	+	+	+	+			+	+	+			+	+	+	+	+		
Agranulocytosis	+	+	+	+	+		+	+	+		+	+	+					+	+	+			+	+	+	+	+	+	
Aplastic (hypoplastic) anemia	+	+	+	+	+		+	+	+		+	+	+					+	+	+			+	+	+	+	+	+	+
Acute leukemia (myeloblastic, lymphoblastic)	+	+	+	+	+		+	+	+		+	+	+	+	+			+	+	+			+	+	+	+	+	+	+
Granulocytic leukemia	+	+	+	+	+		+	+	+		+	+	+	+	+			+	+	+			+	+	+	+	+	+	+
Chronic lymphocytic leukemia	+	+	+	+	+		+	+	+		+	+	+	+	+			+	+	+			+	+	+	+	+	+	+
Monocytic leukemia	+	+	+	+	+		+	+	+		+	+	+	+	+			+	+	+			+	+	+	+	+	+	+
Eosinophilic (basophilic) leukemia	+	+	+	+	+		+	+	+		+	+	+	+	+			+	+	+			+	+	+	+	+	+	+
Plasma cell myeloma	+	+	+	+			+	+	+		+	+	+					+	+	+	+	+	+	+	+		+		
Lipid histiocytosis of kerasin type (Gaucher's disease)	+	+			+		+	+	+		+	+	+					+	+		+	+	+	+	+		+		+
Lipid histiocytosis of phosphatide type (Nelmann-Pick disease)	+	+			+	+		+	+			+	+			+		+	+		+		+	+	+				+
Infectious mononucleosis	+	+	+	+	+		+	+	+		+	+	+	+				+	+	+	+		+	+	+		+	+	+
Polycythemia vera	+	+	+	+			+	+	+		+	+	+					+	+	+	+		+	+	+		+	+	

* Plus sign indicates that triangular wedge has been punched into space corresponding to given code no. on marginal punched card for that disease.

Lipkin und Hardy, 1958



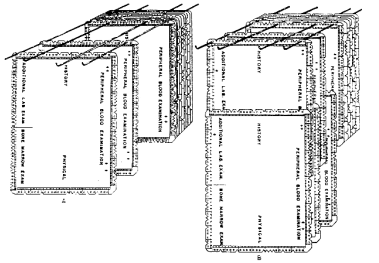


FIG. 7-5. Marginal-punch cards.

A, Diagram to illustrate sorting process using marginal punched cards; *B*, separation of cards when rods are raised.

3 July 1959, Volume 130, Number 3366

SCIENCE

Reasoning Foundations of Medical Diagnosis

Symbolic logic, probability, and value theory aid our understanding of how physicians reason.

Robert S. Ledley and Lee B. Lusted

The purpose of this article is to analyze the complicated reasoning processes inherent in medical diagnosis. The importance of this problem has received recent emphasis by the increasing interest in the use of electronic computers as an aid to medical diagnostic processes

fitted into a definite disease category, or that it may be one of several possible diseases, or else that its exact nature cannot be determined." This, obviously, is a greatly simplified explanation of the process of diagnosis, for the physician might also comment that after seeing a

ance are the ones who do remember and consider the most possibilities."

Computers are especially suited to help the physician collect and process clinical information and remind him of diagnoses which he may have overlooked. In many cases computers may be as simple as a set of hand-sorted cards, whereas in other cases the use of a large-scale digital electronic computer may be indicated. There are other ways in which computers may serve the physician, and some of these are suggested in this paper. For example, medical students might find the computer an important aid in learning the methods of differential diagnosis. But to use the computer thus we must understand how the physician makes a medical diagnosis. This, then, brings us to the subject of our investigation: the reasoning foundations of medical diagnosis and treatment.

Medical diagnosis involves processes that can be systematically analyzed, as well as those characterized as "intangible." For instance, the reasoning foundations of medical diagnostic procedures

Ledley und Lusted, 1959

Attribute eines Patienten, etwa das Anzeichen „Fieber“ oder die Krankheit„ Lungenentzündung“: Kleinbuchstaben $x, y, ...$,

Aussagen über das Attribut: Großbuchstaben $X, Y, ...$

Steht Y für die Aussage „Der Patient hat das Attribut y.“ ,

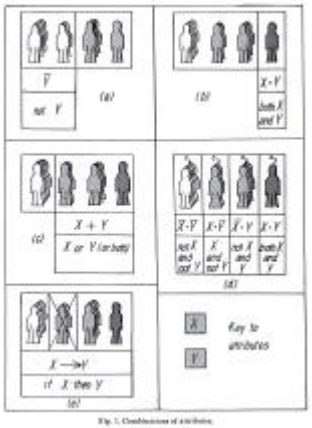
so ist deren ***Negation*** die Aussage $\emptyset Y$: „Der Patient hat nicht das Attribut y.“

„logisches UND“ $(X \cdot Y, X \wedge Y)$: „Der Patient hat die Attribute x und y.“ ,

„logisches ODER“ $(X+Y, X \vee Y)$: „Der Patient hat Attribut x oder Attribut y oder beide.“

„Implikation“ $X \Rightarrow Y$: „Wenn der Patient das Attribut x hat, dann hat er Attribut y.“

Ledley und Lusted, 1959



Betrachtung von Aussagen über das Vorliegen von Symptomen und deren Wahrheitswerte z. B.

- „Symptom S_1 liegt vor“, (wahr / falsch)
- „Symptom S_2 liegt vor“, (wahr / falsch)
- „Symptom S_3 liegt vor“, (wahr / falsch)

Eine Krankheit wird dann als ein bestimmter Ausdruck von Aussagen über Symptome aufgefasst.

Ledley und Lusted, 1959

Ledley and Lusted 1959 Examples

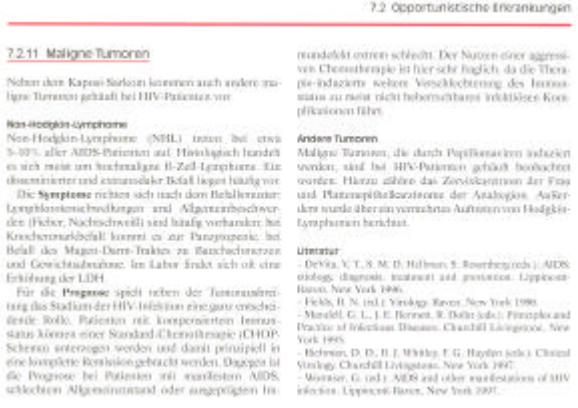
If a patient has disease 2,
he must have symptom 1 $D(2) \Rightarrow S(1)$

If a patient has disease 1 and not disease 2,
then he must have symptom 2 $D(1)\cdot\neg D(2) \Rightarrow S(2)$

If a patient has disease 1 and not disease 2,
then he cannot have symptom 2 $D(1)\cdot D(2) \Rightarrow \neg S(2)$

If a patient has either or both of the symptoms, then he must have
one or both of the diseases $S(1)+S(2) \Rightarrow D(1)+D(2)$

Medizinisches Wissen aus einem Lehrbuch



7.2 Opportunistische Erkrankungen

7.2.11 Maligne Tumoren

Neben dem Kaposi-Sarkom kommen auch andere maligne Tumoren gehäuft bei HIV-Patienten vor.

Non-Hodgkin-Lymphome

Non-Hodgkin-Lymphome (NHL) treten bei etwa 5–10% aller AIDS-Patienten auf. Histologisch handelt es sich meist um hochmaligne B-Zell-Lymphome. Ein disseminierter und extranodaler Befall liegen häufig vor.

Die **Symptome** richten sich nach dem Befallsmuster: Lymphknotenschwellungen und Allgemeinbeschwerden (Fieber, Nachtschweiß) sind häufig vorhanden; bei Knochenmarkbefall kommt es zur Panzytopenie; bei Befall des Magen-Darm-Traktes zu Bauchschmerzen und Gewichtsabnahme. Im Labor findet sich oft eine Erhöhung der LDH.

Für die **Prognose** spielt neben der Tumormanifestierung das Stadium der HIV-Infektion eine ganz entscheidende Rolle. Patienten mit kompensiertem Immunstatus können einer Standard-Chemotherapie (CHOP-Schema) unterzogen werden und damit prinzipiell in eine komplette Remission gebracht werden. Dagegen ist die Prognose bei Patienten mit manifestem AIDS, schlechtem Allgemeinzustand oder ausgeprägten Immundefekt extrem schlecht. Der Nutzen einer aggressiven Chemotherapie ist hier sehr fraglich, da die Therapie-induzierte weitere Verschlechterung des Immunstatus zu meist nicht beherrschbaren infektiösen Komplikationen führt.

Andere Tumoren

Maligne Tumoren, die durch Papillomaviren induziert werden, sind bei HIV-Patienten gehäuft beobachtet worden. Hierzu zählen das Zervixkarzinom der Frau und Plattenepithelkarzinome der Analregion. Außerdem wurde über ein vermehrtes Auftreten von Hodgkin-Lymphomen berichtet.

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Classen/Diehl/Kochsiek: Innere Medizin, München, Wien Baltimore: Urban & Schwarzenberg, 4. Auflage 1998, S. 433.

Diagnostik mittels zweiwertiger Aussagenlogik

Beispiel:

- Symptom S_1: Fieber, Gewichtsverlust, Nachtschweiß,
- Symptom S_2: LDH-Anstieg (Laktatdehydrogenase)
- Symptom S_3: Lymphknotenvergrößerung

Für eine bestimmte Kombination dieser Symptome könnte das hochmaligne Non-Hodgkin-Lymphom (NHL) (in erster Näherung) vorliegen:

- Ohne Lymphknotenvergrößerung keine positive Diagnose,
- Entweder Symptom 1 oder Symptom 2 müssen hinzukommen.

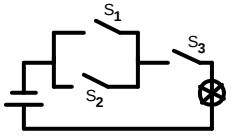
Diagnostik mittels zweiwertiger Aussagenlogik

Aussagen über das Vorliegen von Symptomen

S_1	S_2	S_3
0	0	0
0	0	1
0	1	0
1	0	0
0	1	1
1	0	1
1	1	0
1	1	1

Aussagen über das Vorliegen der Krankheit als logischer Ausdruck von Symptomen

$(S_1 ? S_2) ? S_3$
0
0
0
0
1
1
0
1



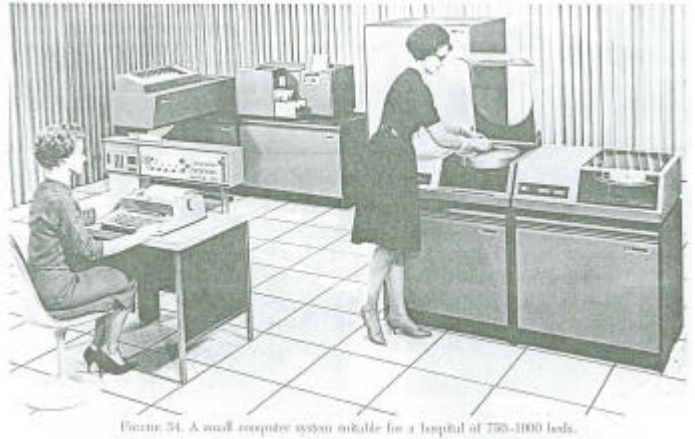


FIGURE 34. A small computer system suitable for a hospital of 750–1000 beds.

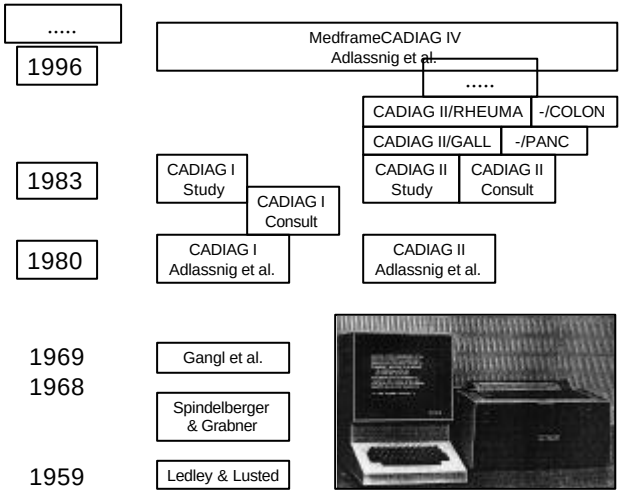
FIGURE 37. Computer system illustrating nursing station to pharmacy communication.

Lee Browning Lusted, 1965

„In a recent statement Professor L. A. Zadeh (1962) summed up the situation as follows:

»In fact, there is a fairly wide gap between what might be regarded as „animate" system theorists and „inanimate" system theorists at the present time, and it is not at all certain that this gap will be narrowed, much less closed, in the near future.

There are some who feel that this gap reflects the fundamental inadequacy of the conventional mathematics – the mathematics of precisely-defined points, functions, sets, probability measures, etc. - for coping with the analysis of biological systems, and that to deal effectively with such systems, which are generally orders of magnitude more complex than man-made systems, we need a radically different kind of mathematics, **the mathematics of fuzzy or cloudy quantities which are not describable in terms of probability distributions**. Indeed, the need for such mathematics is be-coming increasingly apparent even in the realm of in-animate systems, for in most practical cases the *a priori* data as well as the criteria by which the performance of a man-made system is judged are far from being precisely specified or having accurately-known probability distributions.«"



Computer Assisted Diagnostic System 1968

Lochkarte 1

KLKNR-KA 00151 WHO-NR 2.16.9.000030

DIAGNOSE / STADIUM

SJÖGREN-GOUGEROT-HOUWER-SYNDROM

Lochkarte 2

KLKNR-KA 00452 WHO-NR

DIAGNOSE /STADIUM (FORTSETZUNG)

Computer Assisted Diagnostic System 1968

Lochkarte 3

KLNR-KA 00153 WHO-NR. 2.16.9.000030 SEITE 1

01	SINNESWAECHE
02	UEBELKEIT
03	MAGEN / BESCHWERDEN
04	" / HYPACID
05	" / ACHYLISCH
06	XEROSTOMIE
07	HALS / SCHMERZEN
08	GLIEDER / "
09	TEMPERATUREN / SUBFEBRILE
10	SERUM EISEN / VERMINDERT
11	POLYARTHRITIS CHRONICA
12	SPEICHELSEKRETION / VERMINDERT
13	TRAENENSEKRETION / "
14	AAA (142 / 143)
15	BRONCHITIS SICCA
16	ANAEMIE HYPOCHROME
17	LEUKOPENIE
18	BLUTSENKUNG / ERHOEHT
19	SPEICHELDRUESE / VERGROESSERT / SEHR
20	BEGINN / SCHLEICHEND