

Ion Băhanrel,
d.h.ș.m.,prof.,univ., 2020

**IGIENA RADIAȚIILOR,
BAZELE RP,
PROBLEME ACTUALE IR**

Semnul pericolului radioactiv



IGIENA RADIAȚIILOR

- **Igiena Radiațiilor** - știința, care studiază particularitățile radiațiilor ionizante, acțiunea și efectele medico-biologice a lor asupra organismului uman, principiile și eficiența măsurilor adecvate de radioprotecție.

Scopul

- A acorda informația actuală necesară în domeniul Igienei Radiațiilor pentru pregătirea universitară și postuniversitară a medicilor

Obiectivele

- Bazele Igieniei Radiațiilor;
- Aspecte fizico-chimice ale radiațiilor ionizante,
- Efectele medico-biologice ale radiațiilor ionizante;
- Riscul asociat iradierii ionizante;
- Reglementarea igienică a expunerii organismului uman la radiații ionizante;
- Radioactivitatea naturală;
- Radioactivitatea artificială;
- Deșeurile radioactive;
- Aspecte ecologice ale poluării mediului ambiant cu radiații ionizante;
- Accidentele cu radiații și urgențele radiologice.

These are dangerous times for the well-being of the world. In many regions, some of the most formidable enemies of health are joining forces with the allies of poverty to impose a double burden of disease, disability and premature death on many millions of people. It is time for us to close ranks against this growing threat.

Reducing risks to health, the subject of this year's *World health report*, has been a preoccupation of people and their physicians and politicians throughout history. It can be traced back at least 5000 years to some of the world's earliest civilizations. But it has never been more relevant than it is today.

Virtually every major advance in public health has involved the reduction or the elimination of risk. Improvements in drinking-water supplies and sanitation during the 19th and 20th centuries were directly related to the control of the organisms that cause cholera and other diarrhoeal diseases.

Mass immunization programmes eradicated the scourge of smallpox from the planet and have reduced the risk to individuals and whole populations of infectious diseases such as poliomyelitis, yellow fever, measles and diphtheria by providing protection against the causative agents. Countless millions of premature deaths have been avoided as a result.

Legislation enables risks to health to be reduced in the workplace and on the roads, whether through the wearing of a safety helmet in a factory or a seat belt in a car. Sometimes laws, education and persuasion combine to diminish risks, as with health warnings on cigarette packets, bans on tobacco advertising, and restrictions on the sale of alcohol.

The result is that, in many ways, the world is a safer place today. Safer from what were once deadly or incurable diseases. Safer from daily hazards of waterborne and food-related illnesses. Safer from dangerous consumer goods, from accidents at home, at work or in hospital.

But in many other ways the world is becoming more dangerous. Too many of us are living dangerously – whether we are aware of that or not. I believe that this *World health report* is a wake-up call to the global community.

Reducing risks to health is the responsibility of governments – but not only of governments. It rightly remains a vital preoccupation of all people, in all populations, and of all those who serve them. In this *World health report* there is a message for everybody.

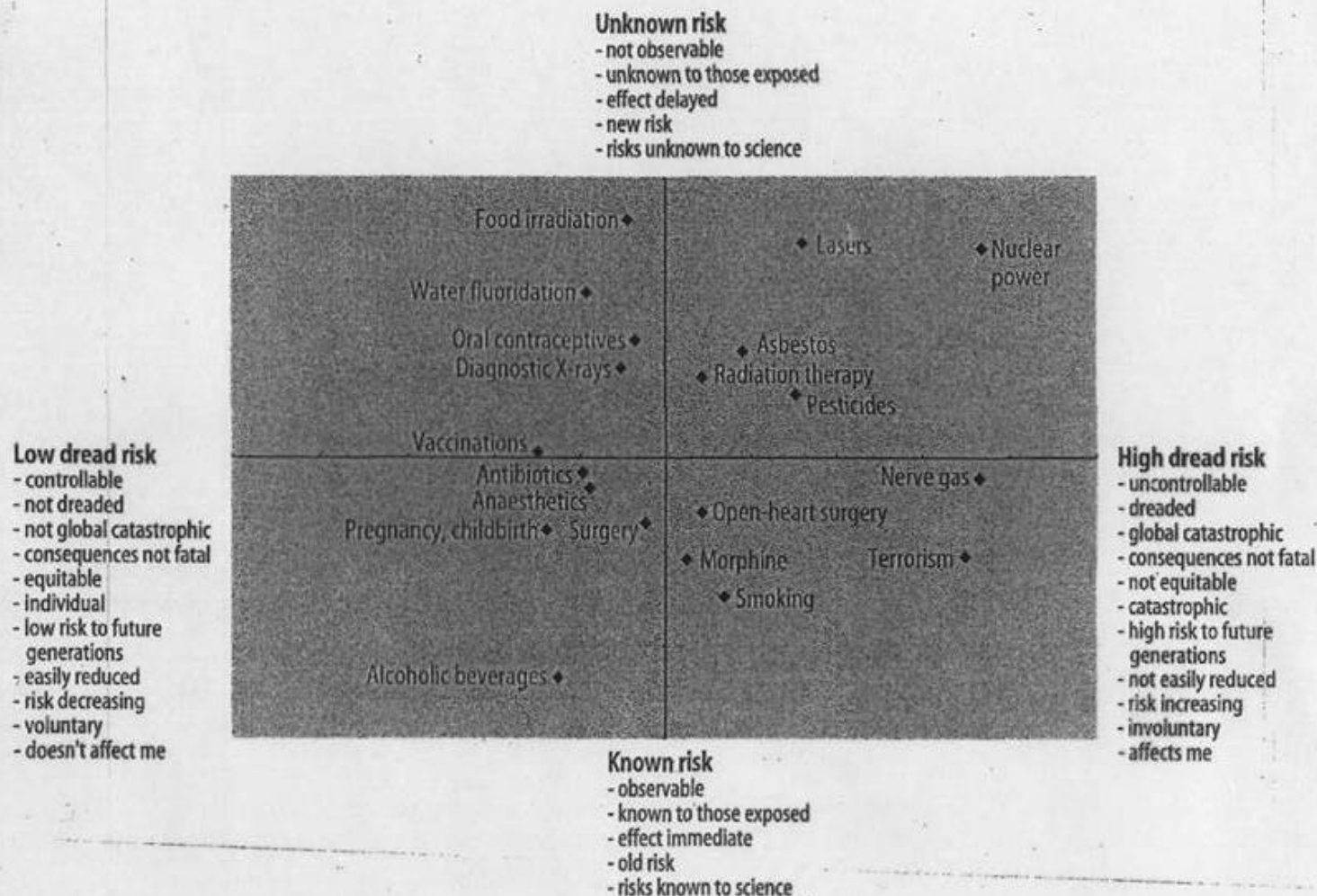


Dr Gro Harlem Brundtland

A handwritten signature in dark ink, reading "Gro H. Brundtland".

Gro Harlem Brundtland
Geneva
October 2002

e. * Hazards for dread and risk^a



^a Adapted from: Slovic P, Fischhoff B, Lichtenstein S. Facts and fears: understanding perceived risk. In: Schwing RC, Albers WA Jr, editors. *Societal risk assessment: how safe is safe enough?* New York: Plenum; 1980. Locations of 20 hazards – instead of 90 in the original – on factor 1 (dread) and factor 2 (unknown risk) of the three-dimensional figure derived from interrelationships of 18 risk characteristics. Factor 3 (not shown) reflects the number of people exposed to the hazard and the degree of their personal exposure.

CANCER RISK

Lethal cancer 5 - 10 % per Sv

If population dose is 10 000 manSv

→ 500 - 1000 extra cancer deaths

Cancer deaths without
radiation exposure

1 Sv	x	10 000	2 000
100 mSv	x	100 000	20 000
10 mSv	x	1 000 000	200 000

 Scăderea medie a duratei de viață

 (în zile) ca urmare a expunerii la

 unui factori moderni de risc

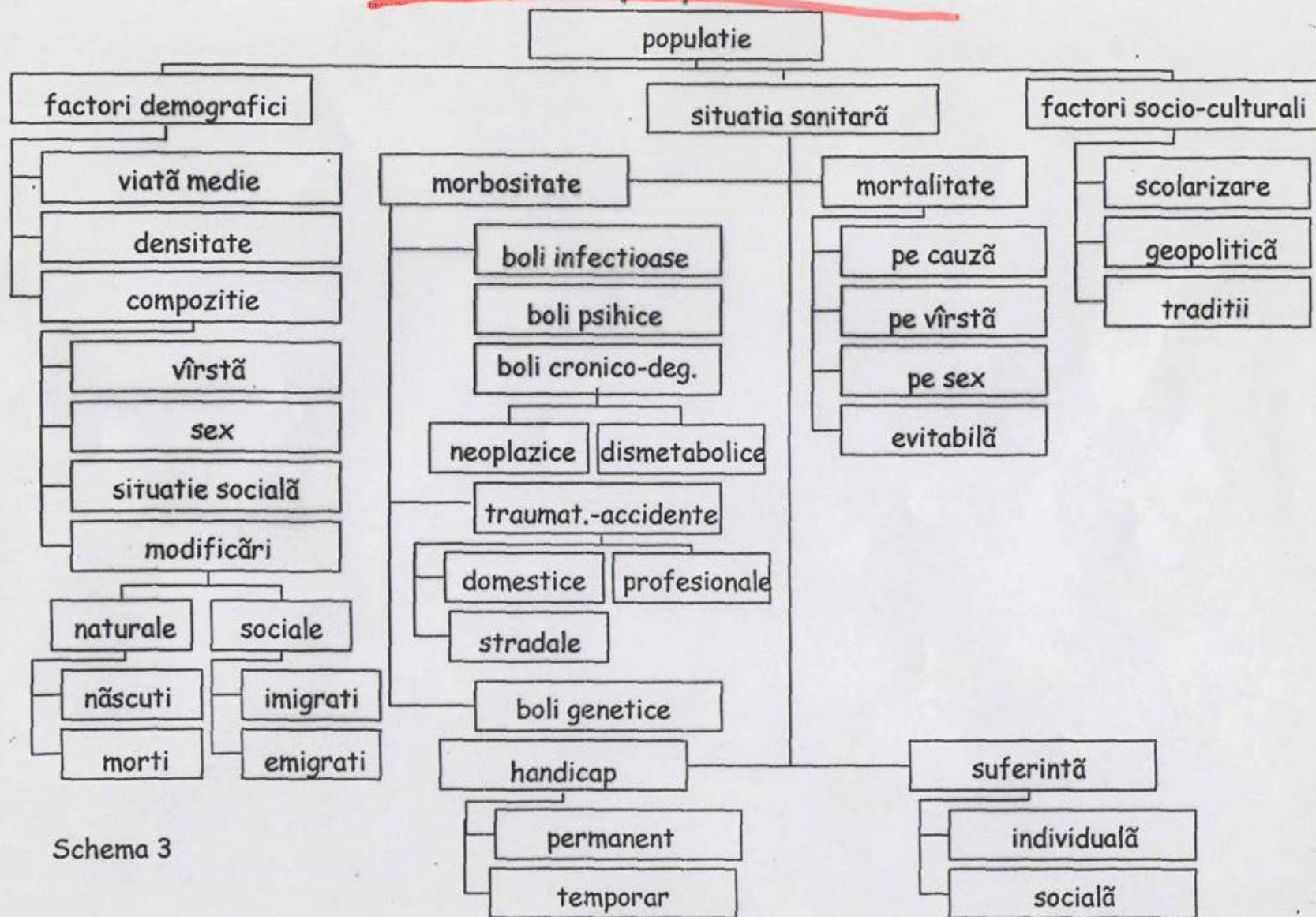
Bărbat necăsătorit	- 3500
Fumător	- 2250
Femea necăsătorită	- 1600
Greutate supraponderală	- 1300
Miner	- 1100
Fumătoare	- 800
Activități periculoase	- 300
Accidente rutiere	- 207
Alcool	- 130
Accidente casnice	- 95
Abuz de medicamente	- 90
Înec	- 41
Activități cu radiații ioniz.-	40
Incendii	- 27
Radiații naturale	- 8
Radiografii medicale	- 6
Cafea	- 6
Accidente de CNE	- 0,02

(după Cohen, R. and Lee, IS și V. Patrașcu, 1996)

Prioritățile în lume ?

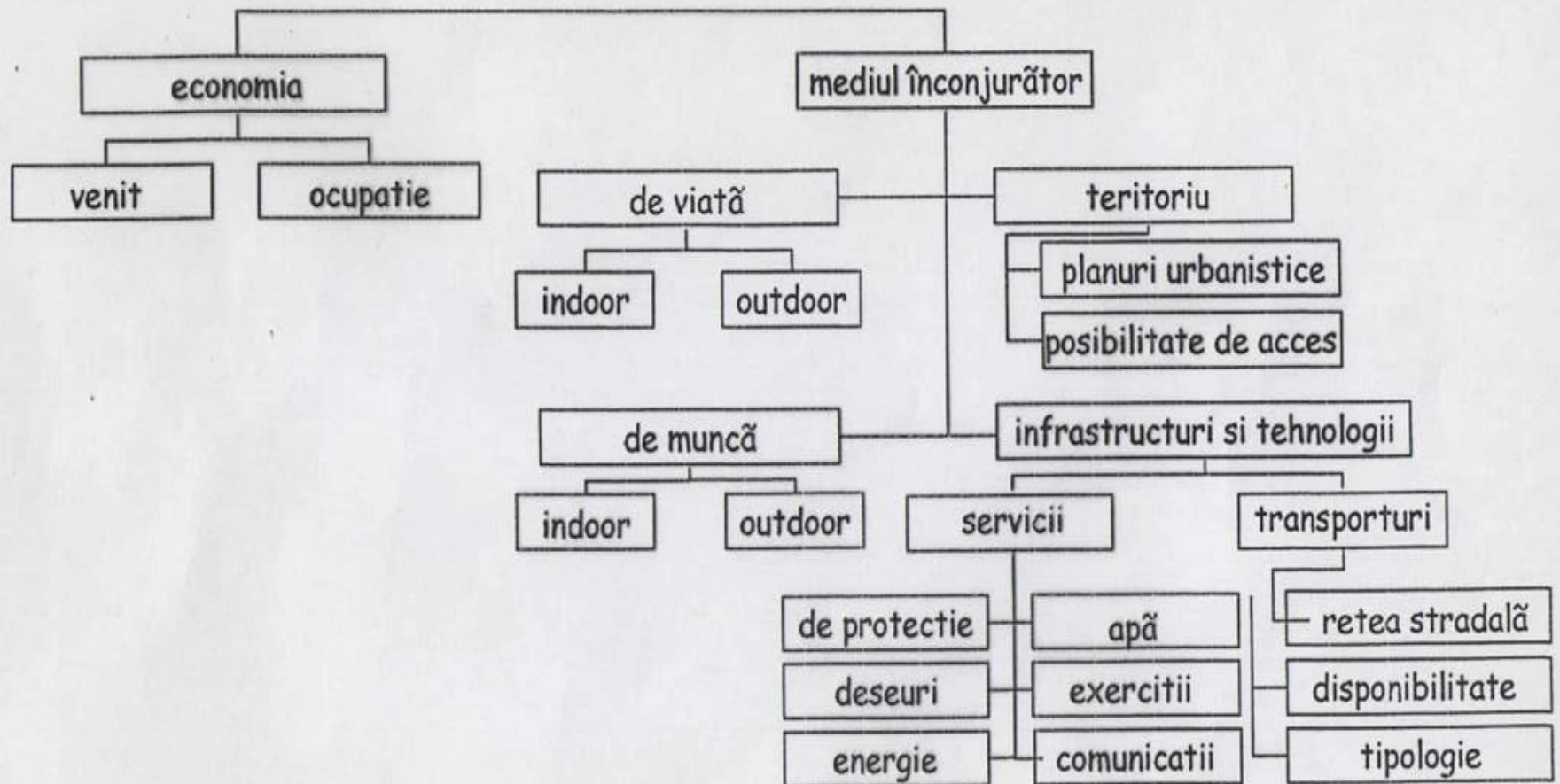
Educatia de bază pentru toti	6 miliarde \$ pe an
Cosmetice în SUA	8 miliarde \$
<u>Apă si conditii igienico-sanitare pentru toti</u>	<u>9 miliarde \$</u>
Consum de înghetată în Europa	11 miliarde \$
<u>Sănătate a reproducerii pentru toate femeile</u>	<u>12 miliarde \$</u>
Parfumuri în Europa si SUA	12 miliarde \$
<u>Sănătate de bază si alimentatie</u>	<u>13 miliarde \$</u>
Alimente animale de companie în Europa si SUA	17 miliarde \$
Distractii în Japonia	35 miliarde \$
Tigări în Europa	50 miliarde \$
Băuturi alcoolice în Europa	105 miliarde \$
Droguri narcotice în lume	400 miliarde \$
Cheltuieli militare în lume	780 miliarde \$

Factorii populationali



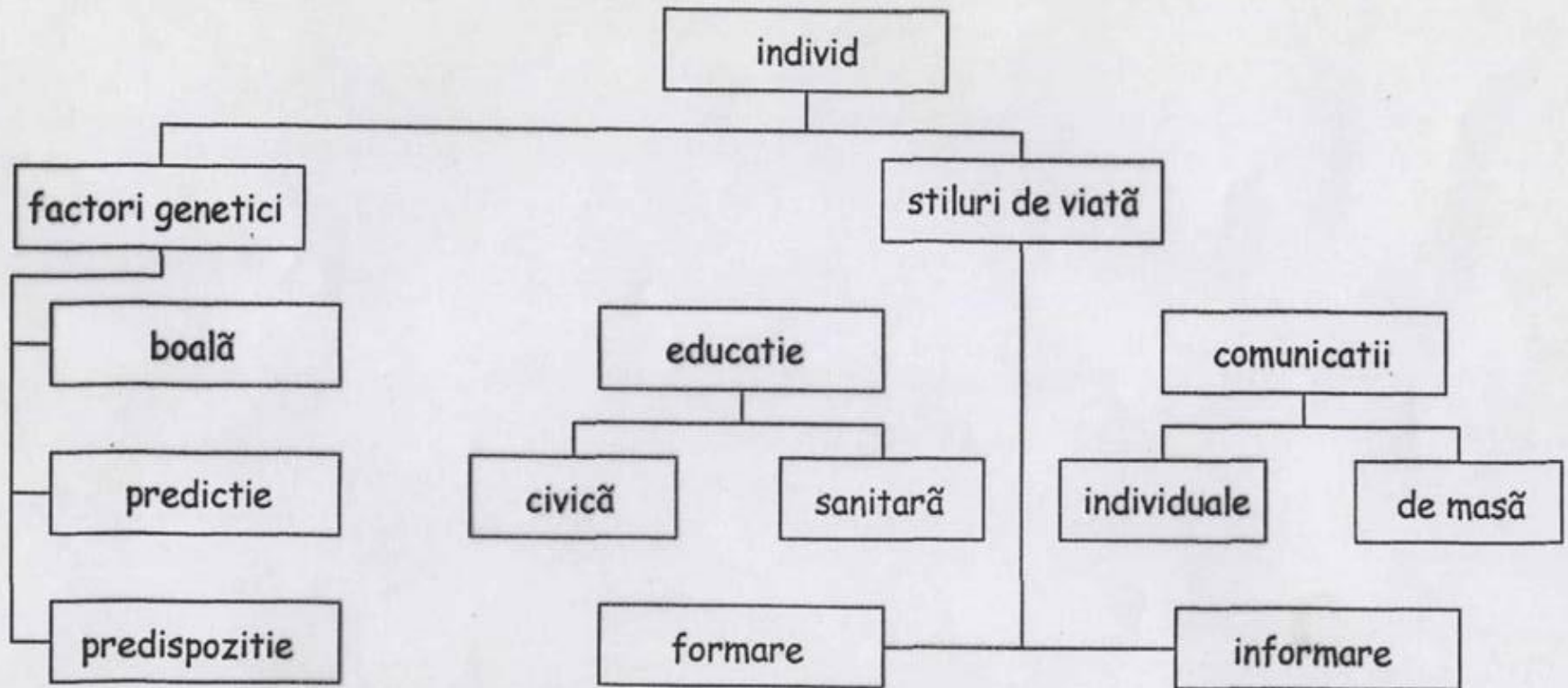
Schema 3

Factorii economici si de mediu înconjurător



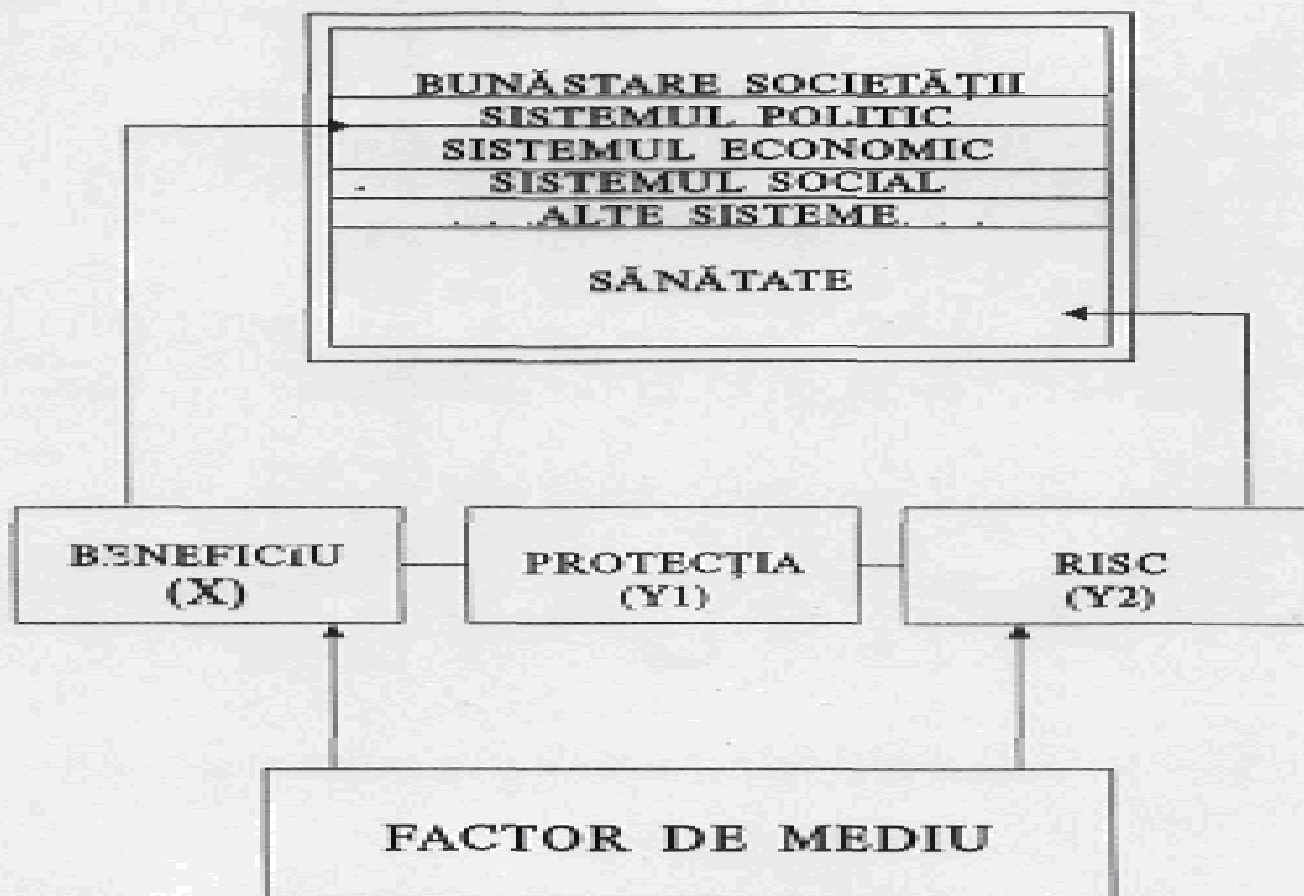
Schema 4

Factorii individuale



Schema 2

BALANȚA BENEFICIULUI – RISC



$$X - (Y1 \text{ \AA } Y2) > Z_{\max}$$