Cancer inequalities

with a focus on breast and cervical cancer

Marilys Corbex, PhD

WHO Europe (Copenhagen)

World Health Organization

INEQUALITIES ACROSS COUNTRIES

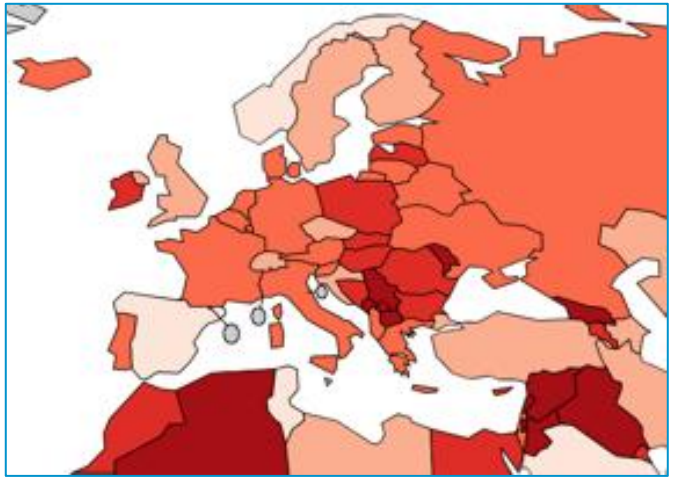
World Health Organization
REGIONAL OFFICE FOR Europe

Probability to develop cancer (%)

Probability to die from cancer (%)

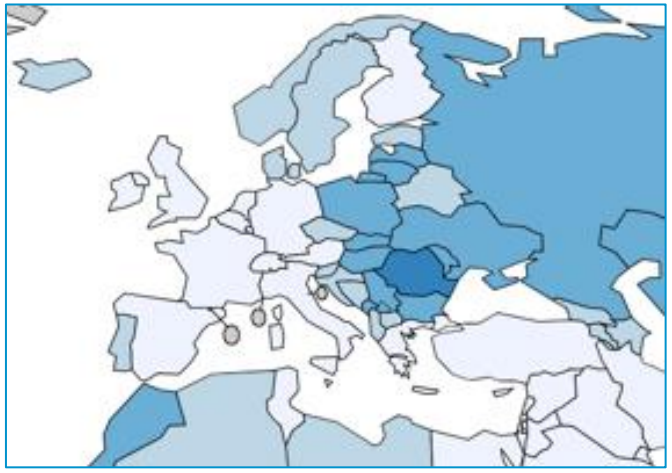
BREAST

Cum. risk
7.5–11.1
5.6–7.5
4.2–5.6
3.0–4.2
0.5–3.0

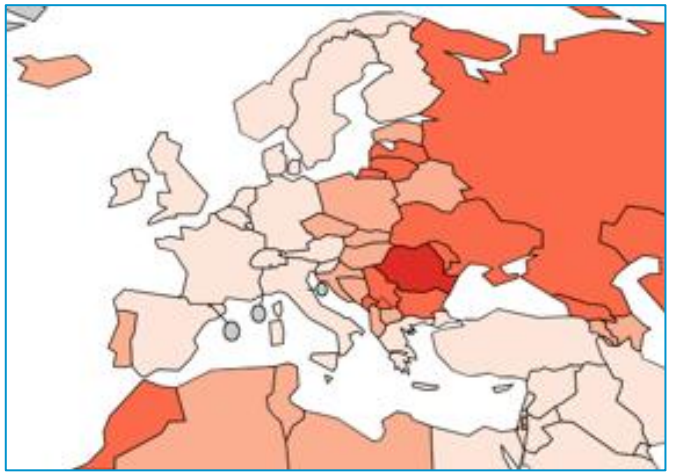


Cum. risk
2.1–4.2
1.7–2.1
1.5–1.7
1.2–1.5
0.3–1.2

CERVIX



Cum. risk
2.6–9.6
1.7–2.6
1.2–1.7
0.7–1.2
0.3–0.7



Cum. risk
1.8–6.9
1.0–1.8
0.6–1.0
0.3–0.6
0.1–0.3

Inequalities within countries: Cervical cancer

Low socio-economic status increase risk of developing cervical cancer by:

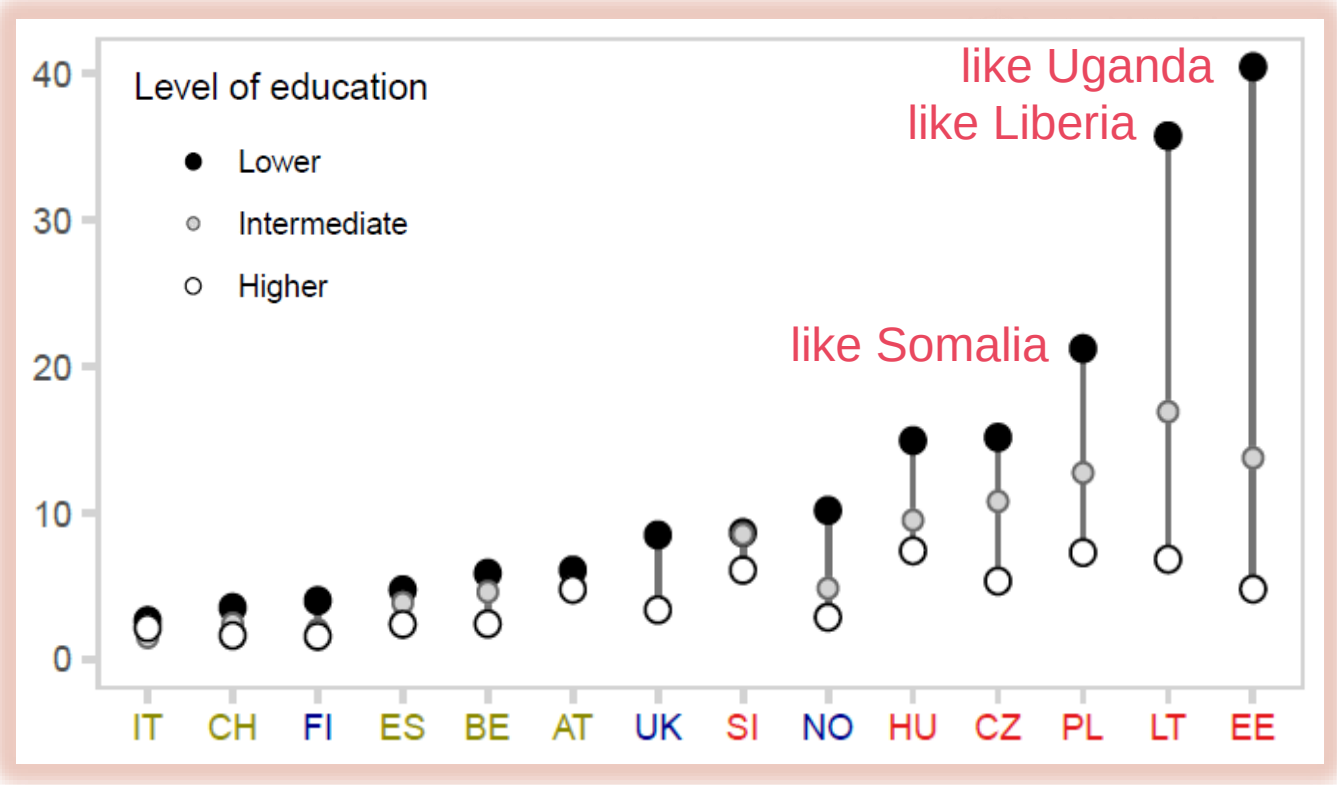
- **50%** in Western Europe
- **130%** in North America
- **200%** in Africa/Asia/South America

(Int J Cancer. 2003 Jul 10;105(5):687-91)

Low socio-economic status is associated with:

- Vaccine hesitancy, Tobacco, earlier/multiples pregnancies, etc
- Lower access to screening and to treatment

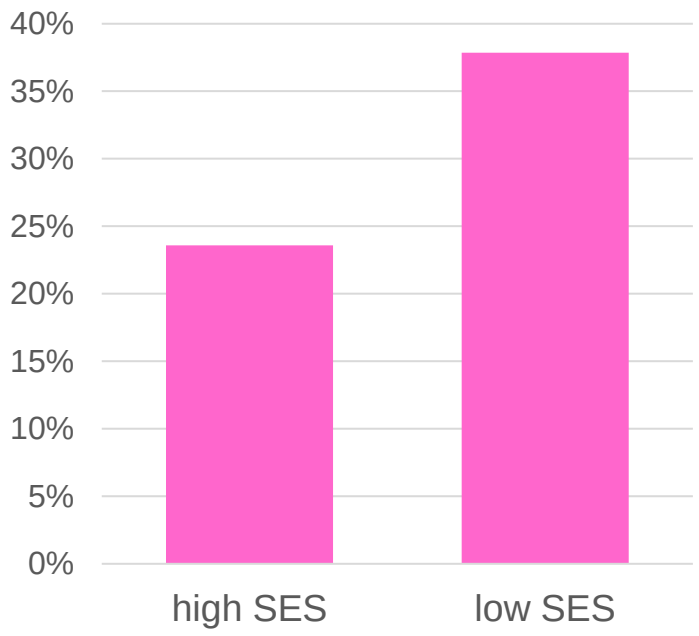
Cervical cancer mortality by level of education varies tremendously across the EU (ASR per 100,000 women)



Lancet Reg Health Eur. 2022 Nov 28:25:100551.

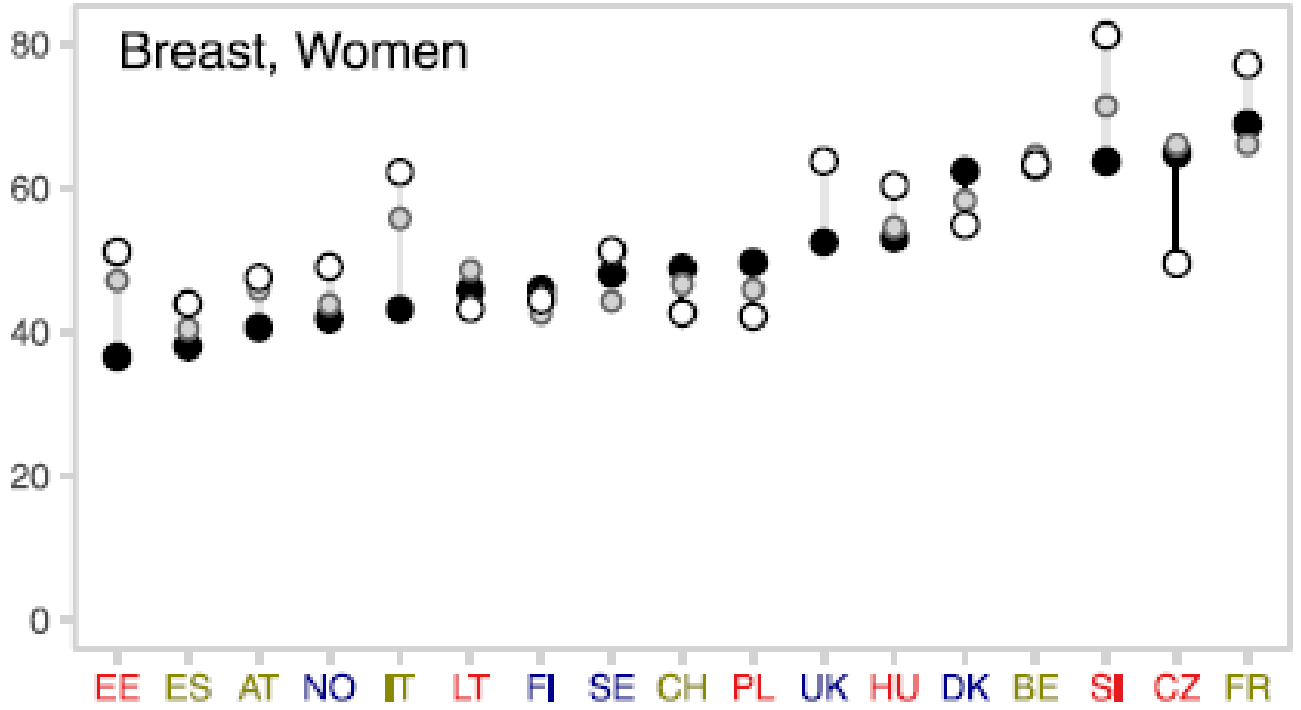
INEQUALITIES WITHIN COUNTRIES: BREAST CANCER

Late stage diagnosis of breast cancer by SES in France:



Europ Jour Pub Health, vol26, 3, June 2016, Pages 445

Breast cancer mortality by level of education
(ASR per 100,000 women)



Lancet Reg Health Eur. 2022 Nov 28:25:100551.

What to do against inequalities ?

World Health Organization
REGIONAL OFFICE FOR Europe

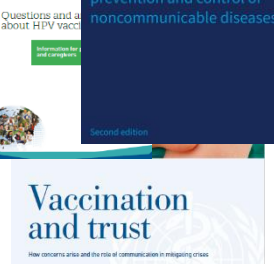
Actions along the whole cancer control continuum:

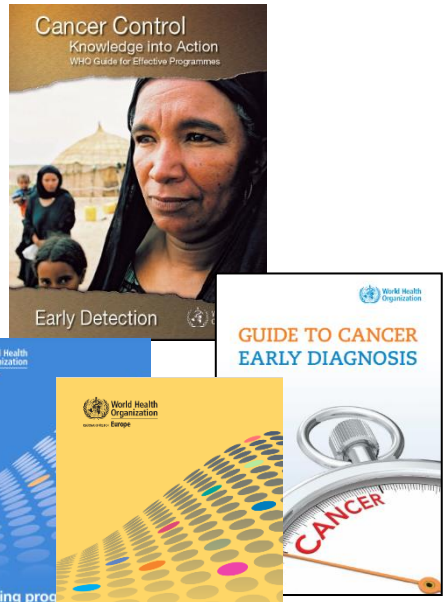
PREVENTION
- Cancer risk factors (tobacco, alcohol, obesity…)

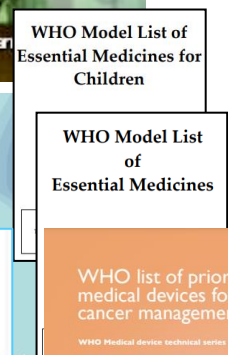
EARLY DETECTION
- Screening
- early diagnosis

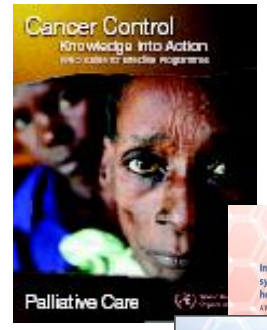
DIAGNOSIS & TREATMENT
- Cancer drugs
- Quality of care

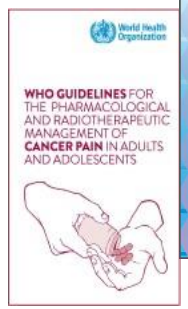
PALLIATIVE CARE
- Supportive care
- End of life care











WHO guidance on cervical and breast cancer

World Health Organization
REGIONAL OFFICE FOR Europe

CERVICAL CANCER

BREAST CANCER

What to do against inequalities ?

World Health Organization
REGIONAL OFFICE FOR Europe

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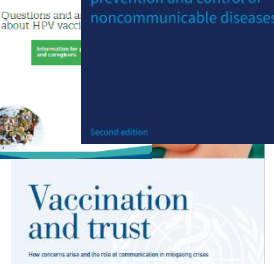
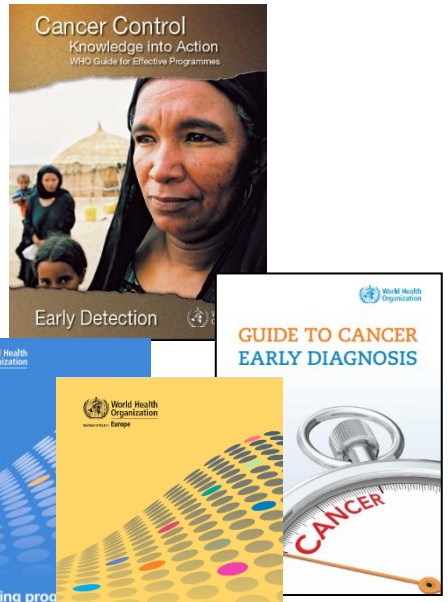
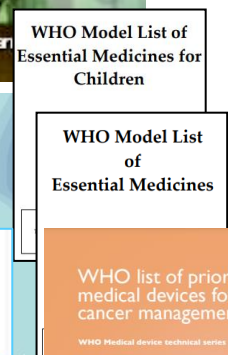
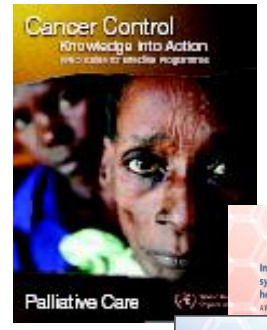
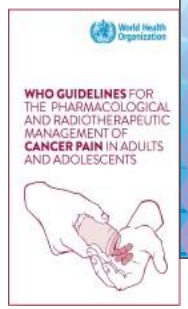




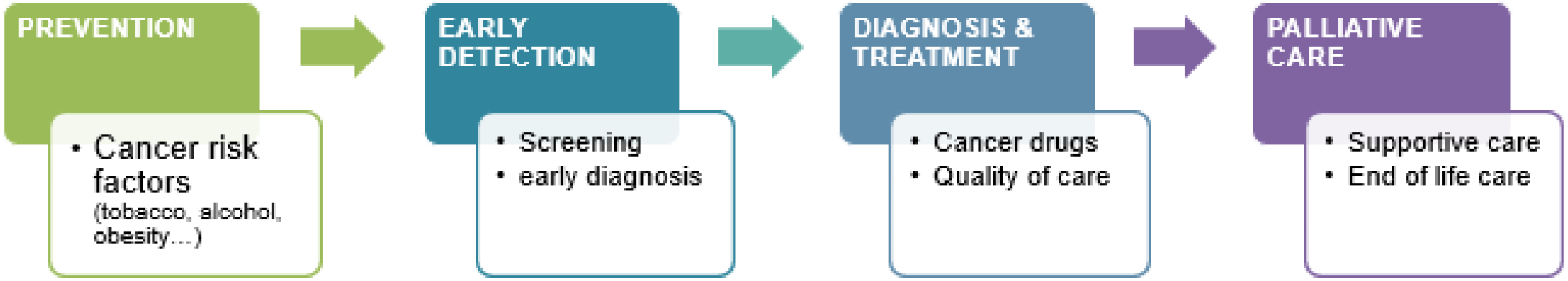






A major barrier: the commercial determinants of health

Definition: “The private sector activities that affect the health of populations” (positively or negatively)



INDUSTRIES:
tobacco, alcohol, processed food, oil, chemicals, tan, beauty, etc…

INDUSTRIES :
Pharmaceutical and medical device

OTHERS:
Any medical service providers subject to financial incentives (private hospitals, medical testing laboratories, private practitioners, etc)

Cancer: a frequent disease, a big market

1 European out of 3 will develop cancer in his/her life-time

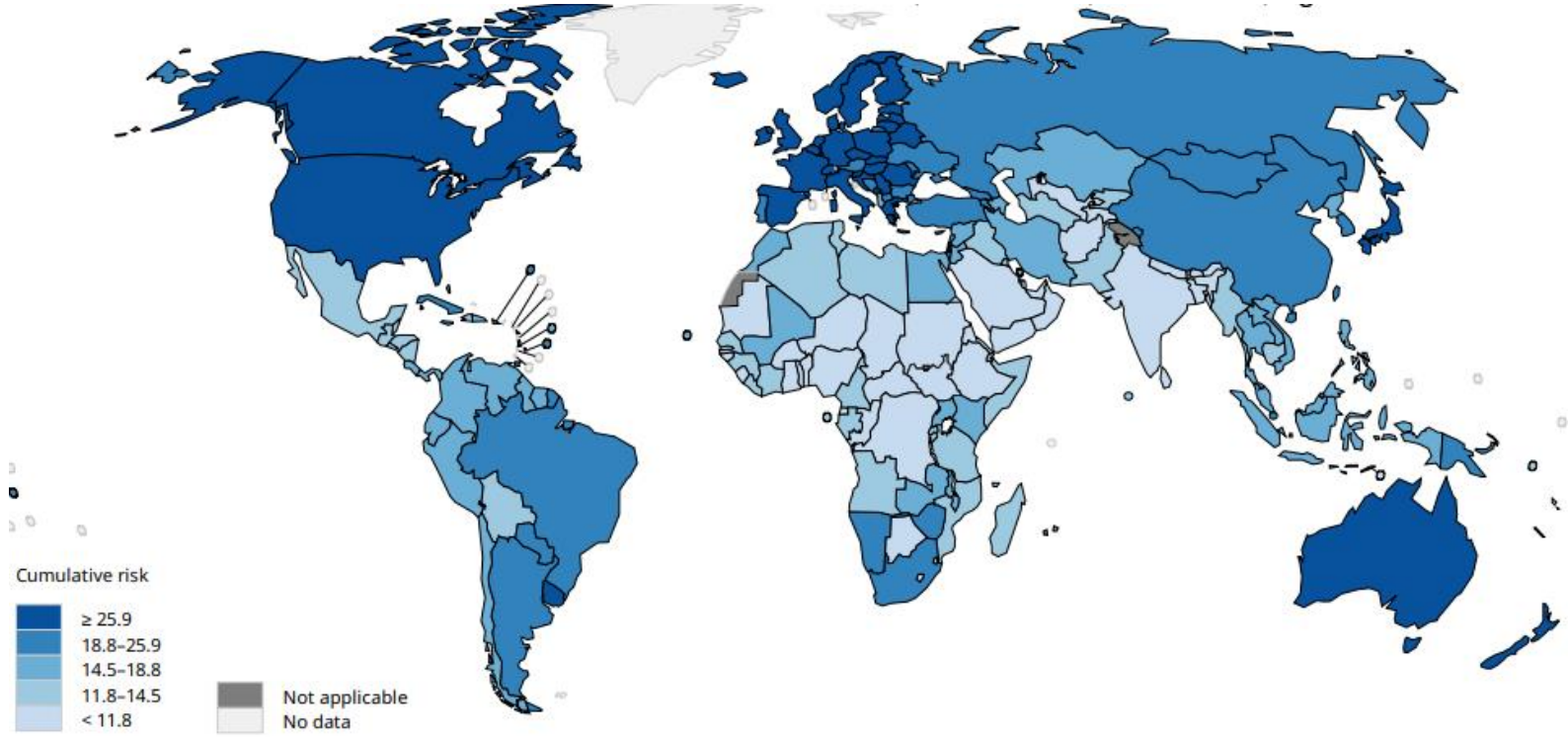
EU: 2.7M people/year

Globally: 19.3M people/year

“Screenable” people in the EU:

- Breast: 91 M women aged 45-75
- Cervix: 119 M women aged 25-65
- CRC: 121 M people aged 50-70
- Prostate: 59 M men aged 50-70

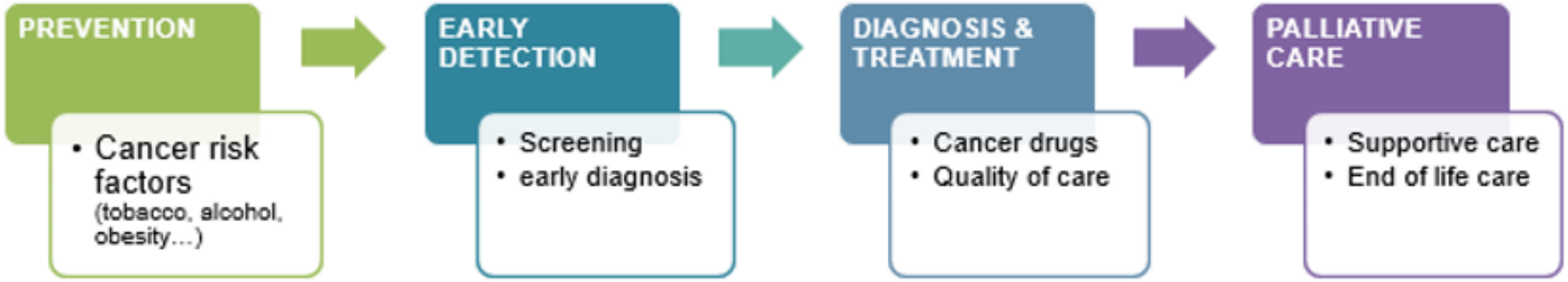
TOTAL: 390 M people



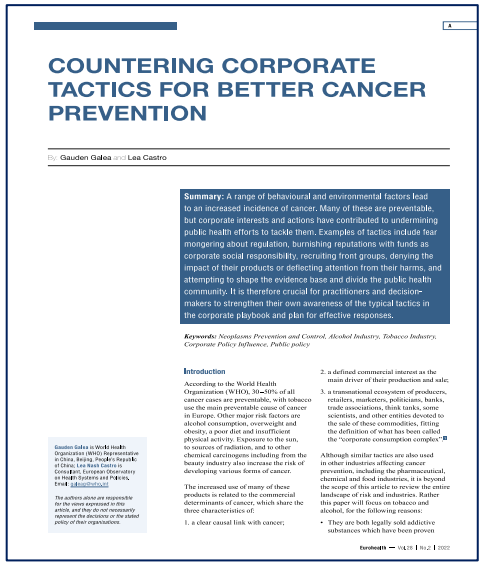
% of people who will develop cancer

EUROHEALTH special issue:
8 Articles

1. The dark side of the commercial determinants of cancer policy
2. Countering corporate tactics for better cancer **prevention**
3. The commercial drivers of cancer **screening**
4. **Non-pharmaceutical technologies** in cancer care
5. Commercial determinants of cancer **medicines**
6. Commercial and social determinants in **palliative care**
7. The **role** of governments and international agencies
8. **Ethical questions** surrounding the commercial determinants of health



PREVENTION



COUNTERING CORPORATE TACTICS FOR BETTER CANCER PREVENTION

By Gauden Galea and Lea Castro

Summary: A range of behavioural and environmental factors lead to an increased incidence of cancer. Many of these are preventable, but corporate interests and actions have contributed to undermining public health efforts to tackle them. Examples of tactics include fear mongering about regulation, burnishing reputations with funds as corporate social responsibility, recruiting front groups, denying the impact of their products or deflecting attention from their harms, and attempting to shape the evidence base and divide the public health community. It is therefore crucial for practitioners and decision-makers to strengthen their own awareness of the typical tactics in the corporate playbook and plan for effective responses.

Keywords: Neoplasms, Prevention and Control, Alcohol Industry, Tobacco Industry, Corporate Policy Influence, Public policy

Introduction

According to the World Health Organization (WHO), 30–40% of all cancer cases are preventable, with tobacco use the main preventable cause of cancer in Europe. Other major risk factors are alcohol consumption, overweight and obesity, a poor diet and insufficient physical activity. Exposure to the sun, to sources of radiation, and to other chemical carcinogens including from the beauty industry also increase the risk of developing various forms of cancer.

The increased use of many of these products is related to the commercial determinants of cancer, which share the three characteristics of:

1. a clear causal link with cancer;
2. a defined commercial interest as the main driver of their production and sale;
3. a transnational ecosystem of producers, retailers, marketers, politicians, banks, trade associations, think tanks, some scientists, and other entities devoted to the sale of these commodities, fitting the definition of what has been called the "corporate consumption complex"[1]

Although similar tactics are also used in other industries affecting cancer prevention, including the pharmaceutical, chemical and food industries, it is beyond the scope of this article to review the entire landscape of risk and industries. Rather this paper will focus on tobacco and alcohol, for the following reasons:

- They are both legally sold addictive substances which have been proven

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Industries: tobacco, alcohol, processed food, tan & beauty, chemicals, etc.

Industries tactics

1. Fear of bad impact on economy and employment, fear of lawsuit if infringing industry's economic freedom or intellectual property
2. Funds to politicians, media, sport, culture to gain support (pinkwashing, whitewashing)
3. Front groups that provide seemingly independent lobbying (*astroturfing* = creation of fake grassroot NGOs, such as smoker's right NGOs)
4. Denialism and Doubt:
   - deny/decrease the impact on health risk
   - fund alternative research creating multiple "expert opinions" benefiting the industry
5. Deflection: focus the prevention dialogue on consumer responsibility to divert attention from industry responsibility.

MEDICINES & MEDICAL DEVICES

Evidence that companies influence all the ecosystem: *research, market authorization, clinical guidelines, prescription practices*

- Companies disburse more on marketing and promotion than R&D
- Low bar for medical devices, decreasing ones for drugs → result in development of low value/low impact products

18 Commercial Determinants of Cancer Control Policy

COMMERCIAL DETERMINANTS OF
CANCER MEDICINES

By Christopher M. Booth, Ajay Aggarwal and Richard Sullivan

Summary: Europe is experiencing a 'value crisis' for cancer medicines. Whilst some therapeutic innovations have delivered substantial clinically meaningful benefits, many new cancer drugs benefits are marginal. At the same time prices (and overall costs) have dramatically increased. The reasons behind this are multifactorial. Multi-level intervention including changing the narrative of patient organisations, altering the clinical communities acceptance of poor quality clinical trials, integrating socio-economic studies, requiring a balanced portfolio approach from public funders, raising the regulatory requisites and embedding health technology assessment will all be needed to ensure valuable, sustainable and equitable cancer medicines.

Keywords: *Cancer Medicines, Public Investment, Health Technology Assessment, Value*

Introduction

In the last decade, cancer drugs have become the main focus of research, clinical care and health budget spending across Europe.[1] The molecularisation of cancer in terms of understanding it through molecular-level factors such as genes and hormone receptors rather than environmental or behavioural factors, has led not just to its pharmaceuticalisation [1] but also to medicines gaining a dominant position in the social psyche of cancer care.[2] Oncology as a domain has reversed decades of productivity decline in the biopharmaceutical industry, leading to extraordinary returns on investment. But this has come at a cost. Whilst a range of new cancer medicines, notably in the immuno-oncology class, have added substantial clinically meaningful benefit, many have not. Moreover, even among those medicines which do appreciably improve outcomes, their prices (and overall therapeutic costs – diagnostics, toxicity management, etc.) are posing inherent risks to a system which unduly rewards low value cancer drugs.[3,4]

Here we explore the concepts of value in cancer care, current spending on cancer medicines, lessons from trials and routine clinical practice. These concepts can provide insight into whether private sector commercial interests can co-align with public sector interests or whether their diverging trajectories pose a significant threat to Europe's future ability to deliver equitable and affordable cancer care.

The Problem with Value

The oncology community currently faces a crisis in the way the value of cancer medicines is interpreted. Clinicians conceptualise value as the relationship between magnitude of benefit (net of side effects) and costs.[5] The numerator (i.e. magnitude of benefit) represents the interface between the measure which

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NON-PHARMACEUTICAL TECHNOLOGIES IN CANCER CARE: FOR PROFIT OR FOR PATIENTS?

By Richard Sullivan, Christopher M. Booth and Ajay Aggarwal

Summary: Non pharmaceutical technologies (NPT) in cancer are a growing and significant burden on health system costs. This domain of technology in cancer covers a huge range of non-pharmaceutical areas from artificial intelligence, mHealth technologies, diagnostic testing platforms, imaging, radiotherapy and surgery, among others. These rapid advances are heavily driven by commercial incentives. However, for many NPT within cancer care systems we are rapidly hitting the "break-even point" when additional costs of providing new technologies with small benefit causes more harm than good by diverting resources and efforts from ensuring broad access to the interventions which are known to have large benefits.

Keywords: *Non-pharmaceutical Technologies, Robotics, Commercialisation, Cancer*

Rapid advance of technology in cancer research

The last two decades have witnessed an explosion of non-pharmaceutical technologies (NPT) in cancer care. These advances cover the full spectrum of domains from companion diagnostics (imaging, pathology) through to therapeutic innovations in applied surgery (robotics, minimally invasive, etc.) and radiotherapy (e.g. proton beam therapy, stereotactic body radiotherapy (SBRT)). A staggering 64% of cancer research papers from Europe in 2017 had some form of NPT at their core.[6] Meanwhile, in a recent review of the 150 most important cancer research questions, 149 concerned some form of NPT.[7] Research agendas driven by high income countries have led to an ecosystem which is dominated by 'high tech'.

This, of course, is in the context of an even greater surge in pharmaceutical technologies, i.e. new cancer medicines and associated biomarkers.

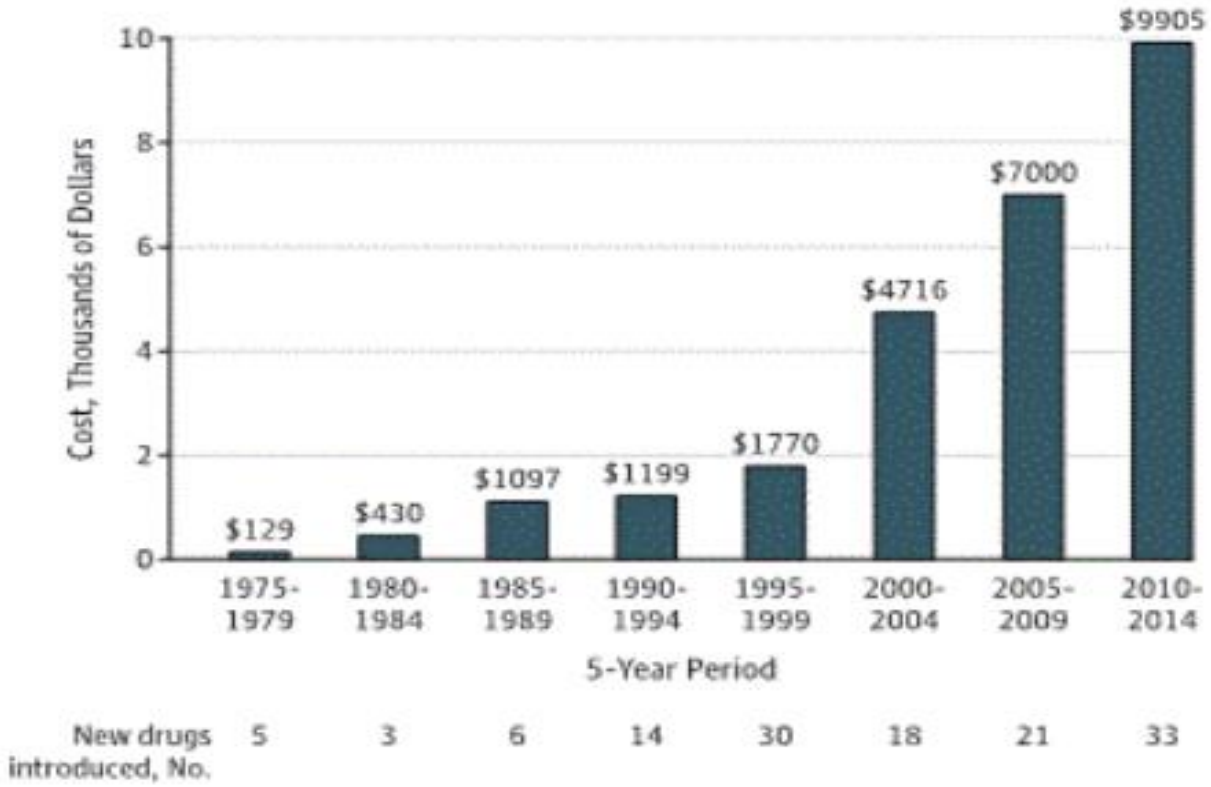
The latest review of future research innovations by the Cancer Moonshot 2020 program created a top 20 list of some of the most advanced technologies.[8] For example, liquid biopsies, Artificial Intelligence (AI)-coupled to imaging and radiotherapy planning, embedded sensors, as well as 'next generation' radiotherapy and robotics. The traditional hegemony of pharmaceuticals in the European technospace is now being challenged by precision surgery including iKnife (diagnostic surgical scalpel), nanorobotics and radical new applications of computing to cancer diagnostics (e.g. Google's DeepMind).

Cite this as: *Eurohealth* 2022; 28(2).

Richard Sullivan is Professor of Cancer and Global Health, King's College London and Director, Institute of Cancer Policy, United Kingdom; **Christopher M. Booth** is a Medical Oncologist and Health Services Researcher, Queen's University, Kingston, Ontario, Canada; **Ajay Aggarwal** is Associate Professor, London School of Hygiene and Tropical Medicine and King's College London, United Kingdom. Email: Richard.Sullivan@kcl.ac.uk

The cost of new cancer medicines increases

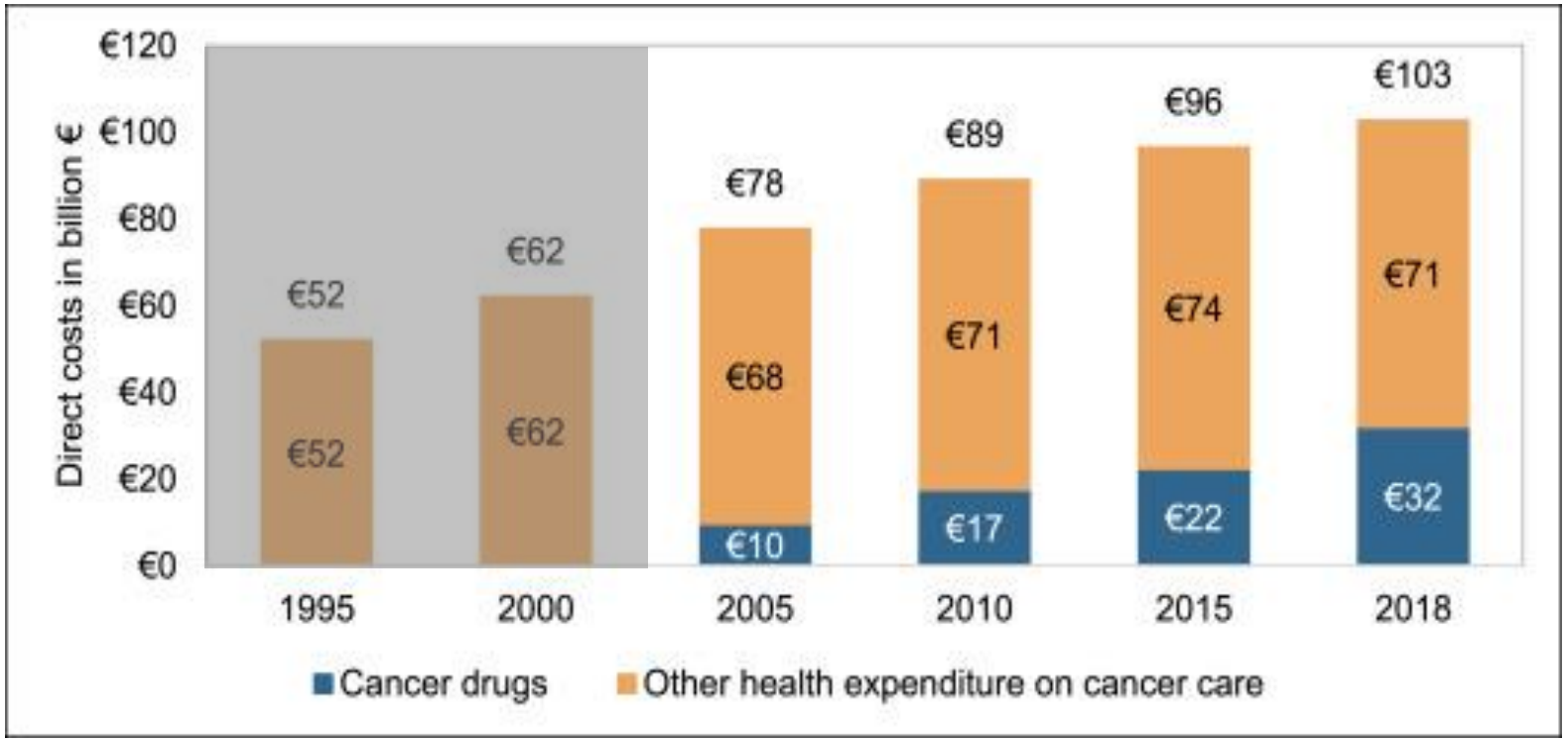
Median monthly cost of new cancer drugs (USA)



Little by little the pharma industry has gained the power to dictate the prices

Costs of cancer care become unsustainable

Direct costs in the EU (in **billion** €), 1995–2018



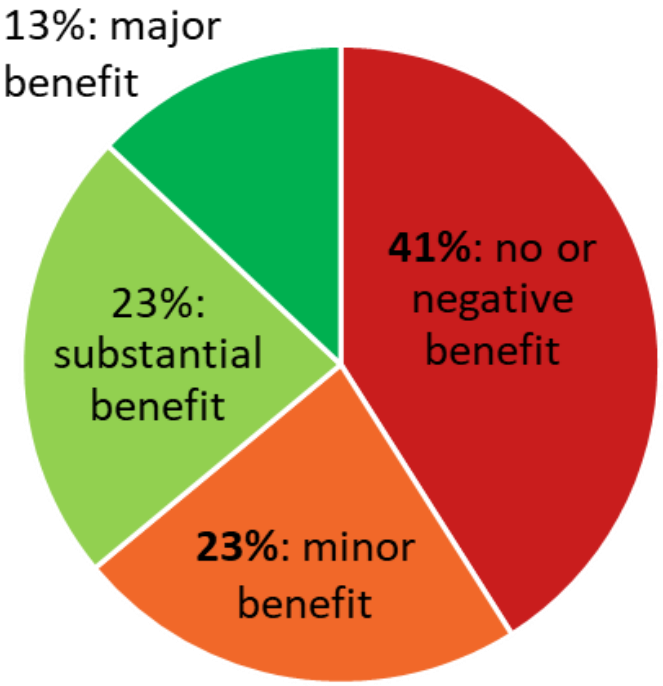
from 2005 to 2018 in EU:

- while cancer incidence increased by **25%**
- cancer drug costs increased by **220%**
- other cancer care costs increased by **4%** (important cuts in hospitals: HR, less beds, shorter stays)

Source: comparator report on cancer in Europe 2019. Swedish institute for health economics

The quality of cancer medicines decreases

Review of the 131 oncology drugs approved by EMA 1995-2022



thebmj

BMJ 2024; 384:e077391

Low & middle income countries more vulnerable to pharma marketing

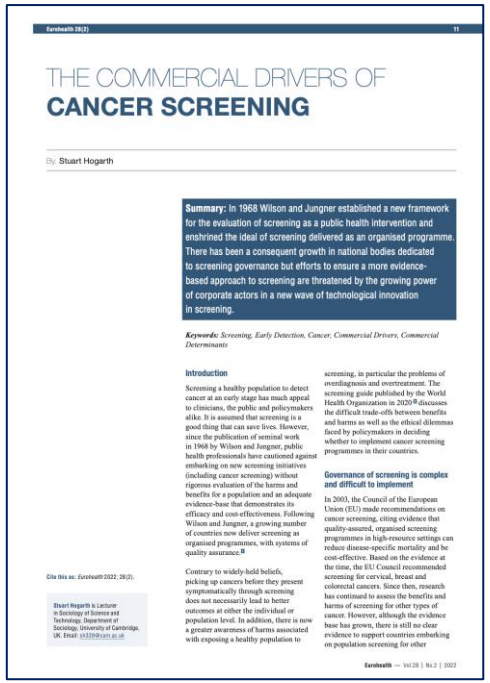
Ex: WHO analysis of reimbursed drugs in a Caucasian country:

- ***19%*** *of the drug budget ($7.5M) spent on "negative benefit" drugs*
- ***20%*** *on limited impact drugs*

SCREENING

Increased infatuation in screening partly due to:

- Companies promoting aggressively screening tests and machines, including direct-to-consumer tests to create demand
- Use of “pharma-like” methods (ghost-writers, publication bias, funding and astroturfing of NGOs/patient organizations to provide seemingly independent lobbying)
- Focusing the early detection conversation on screening, ignoring early diagnosis of symptomatic cases.
  - *In Denmark only 8% of all cancer are found thanks to screening (all screening program having participation above 80%)*



THE COMMERCIAL DRIVERS OF
CANCER SCREENING

By Stuart Hogarth

Summary: In 1968 Wilson and Jungner established a new framework for the evaluation of screening as a public health intervention and enshrined the ideal of screening delivered as an organised programme. There has been a consequent growth in national bodies dedicated to screening governance but efforts to ensure a more evidence-based approach to screening are threatened by the growing power of corporate actors in a new wave of technological innovation in screening.

Keywords: Screening, Early Detection, Cancer, Commercial Drivers, Commercial Determinants

Introduction

Screening a healthy population to detect cancer at an early stage has much appeal to clinicians, the public and policymakers alike. It is assumed that screening is a good thing that can save lives. However, since the publication of seminal work in 1968 by Wilson and Jungner, public health professionals have cautioned against embarking on new screening initiatives (including cancer screening) without rigorous evaluation of the harms and benefits for a population and an adequate evidence-base that demonstrates its efficacy and cost-effectiveness. Following Wilson and Jungner, a growing number of countries now deliver screening as organised programmes, with systems of quality assurance.[1]

Contrary to widely-held beliefs, picking up cancers before they present symptomatically through screening does not necessarily lead to better outcomes at either the individual or population level. In addition, there is now a greater awareness of harms associated with exposing a healthy population to screening, in particular the problems of overdiagnosis and overtreatment. The screening guide published by the World Health Organization in 2020[2] discusses the difficult trade-offs between benefits and harms as well as the ethical dilemmas faced by policymakers in deciding whether to implement cancer screening programmes in their countries.

Governance of screening is complex and difficult to implement

In 2003, the Council of the European Union (EU) made recommendations on cancer screening, citing evidence that quality-assured, organised screening programmes in high-resource settings can reduce disease-specific mortality and be cost-effective. Based on the evidence at the time, the EU Council recommended screening for cervical, breast and colorectal cancers. Since then, research has continued to assess the benefits and harms of screening for other types of cancer. However, although the evidence base has grown, there is still no clear evidence to support countries embarking on population screening for other

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More and more evidence against:

- opportunistic screening
- Non-evidence-based screening (ex: thyroid)
- Cancer screening at early age

BUT these practices increase…

Solutions?

- **Raised awareness**
  - among doctors: to better resist pharmaceutical promotion
  - among government & EU officials, NGOs: to better resist lobbying

- **Stricter regulatory standards** at all levels

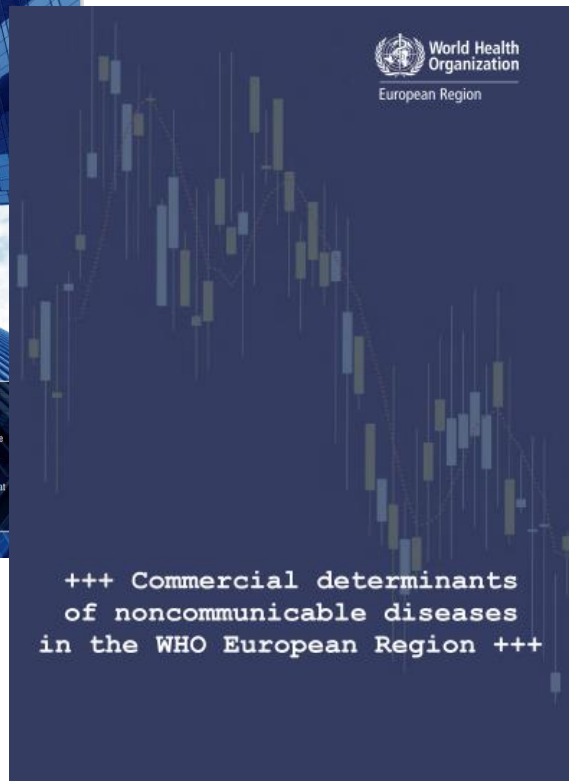
- **Transparency** about real benefit/harm of unhealthy products (ex:front-pack-labelling)
  about R&D costs of medicines

- **Better protection from influences** for public decision-making bodies
  - Protect public research agendas
  - Protect health insurance (ex: experts paid by industry in reimbursement commission)

  Stronger Conflict Of Interest rules,

  Regulation of lobbying (ex: EU lobby register is only voluntary)

WHO/Europe work on Commercial determinants



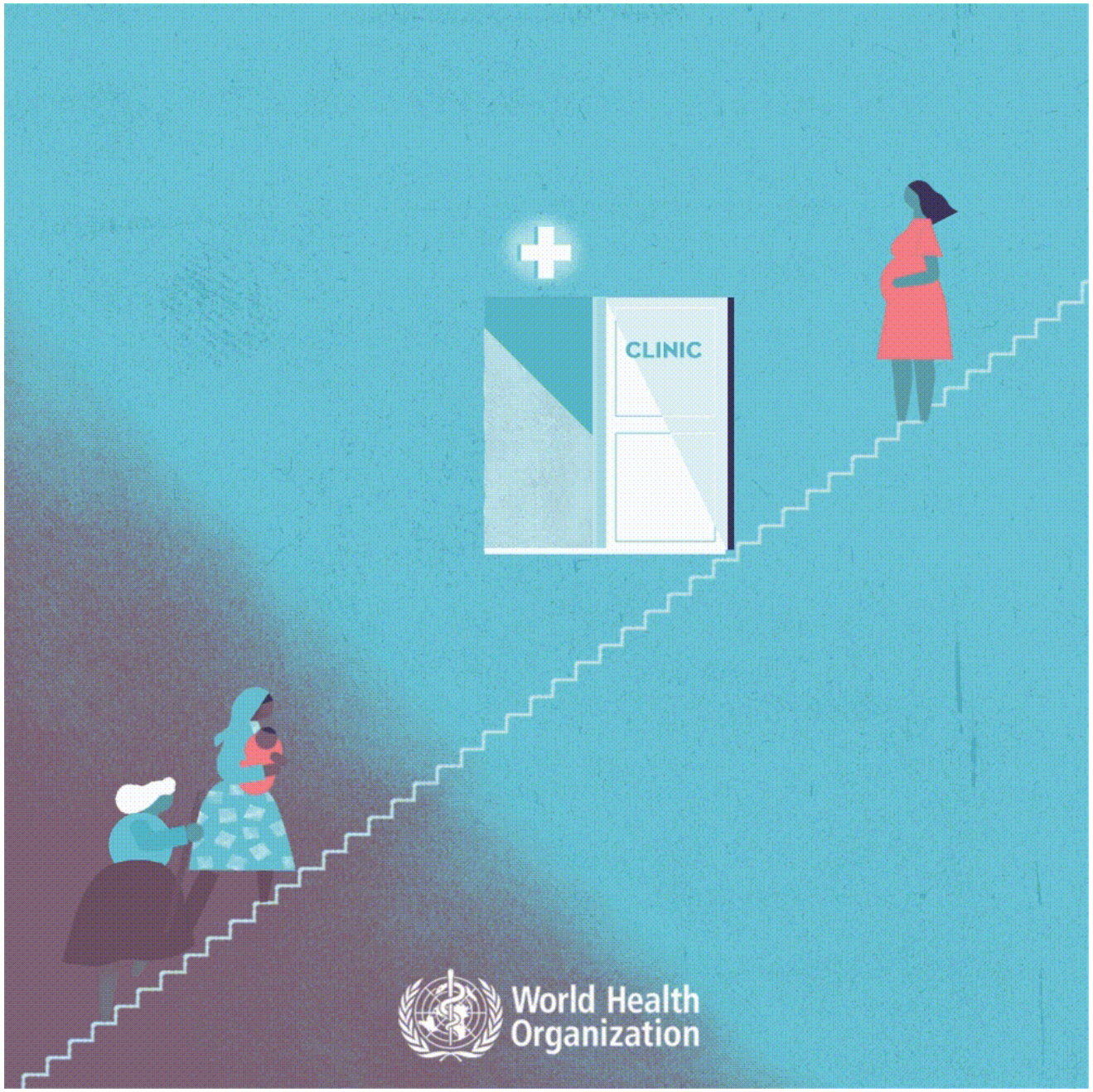
Objectives:

- Raise awareness of policy-makers, medical professionals and civil society on the influence of commercial determinants of cancer and NCDs.
- Propose solutions

✓ EuroHealth special issue (April 2022)

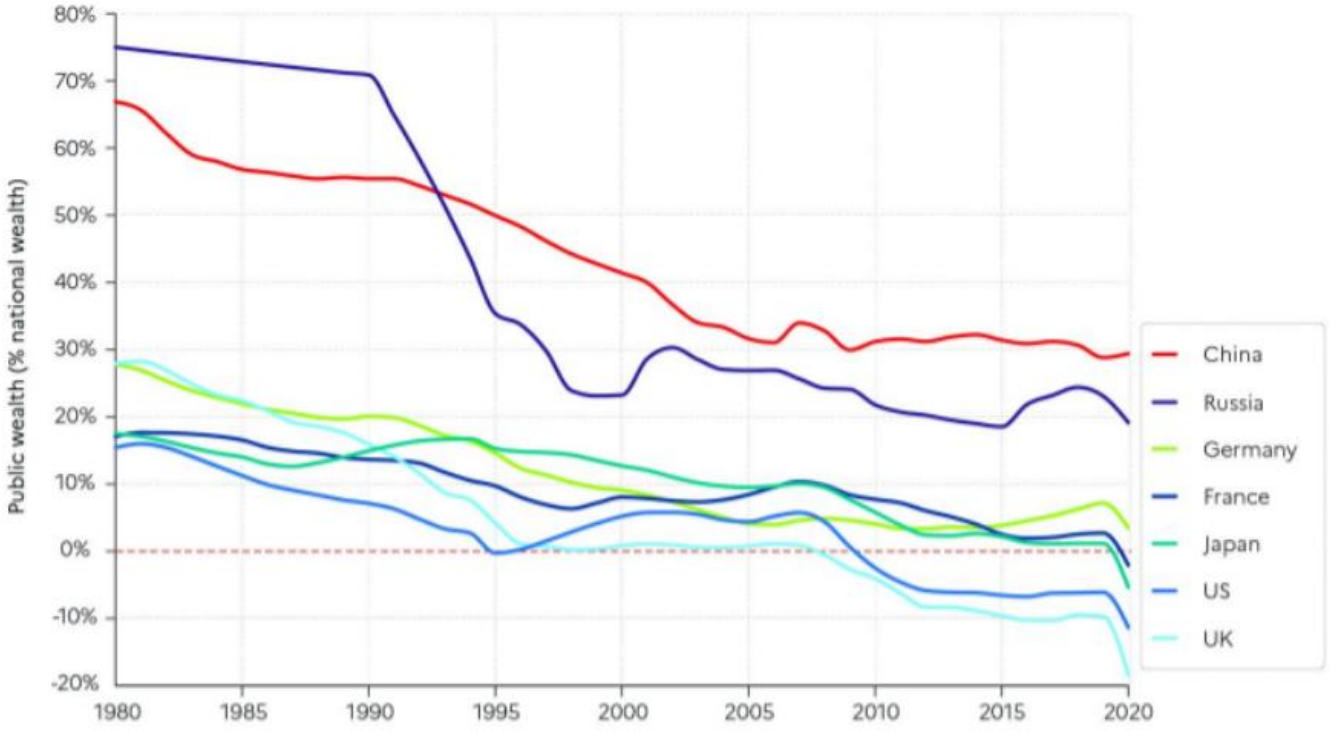
✓ Commercial determinant of NCD in Europe region (June 2024

THANK YOU



Power imbalance:
Poorer States, Richer Corporations

Figure 3.4 *The decline in public wealth in rich and emerging countries, 1980-2020*



Interpretation: *Public wealth dropped in the UK from 28% of national wealth in 1980 to -18% in 2020. Public wealth is the sum of financial and non-financial assets, net of debts, held by the governments.* ***Sources and series:*** *wir2022.wid.world/methodology, Bauluz et al. (2021) and updates.*

	Country/Corporation	Revenue (US$ bn)		Country/Corporation	Revenue (US$ bn)
1	United States	3363	51	General Electric (US)	140
2	China	2465	52	CSCEC (CN)	139
3	Japan	1696	53	AmerisourceBergen (US)	136
4	Germany	1507	54	Agricultural Bank of China (CN)	133
5	France	1288	55	Verizon (US)	132
6	United Kingdom	996	56	Chevron (US)	131
7	Italy	843	57	E.ON (DE)	130
8	Brazil	632	58	AXA (FR)	129
9	Canada	595	59	Indonesia	129
10	Walmart (US)	482	60	Finland	128
11	Spain	461	61	Allianz (DE)	123
12	Australia	421	62	Bank of China (CN)	122
13	State Grid (CN)	330	63	Honda Motor (JP)	121
14	Netherlands	323	64	Cargill (US)	120
15	South Korea	304	65	Japan Post Holdings (JP)	119
16	China Nat. Petroleum (CN)	299	66	Costco (US)	116
17	Sinopec Group (CN)	294	67	Argentina	116
18	Royal Dutch Shell (NL/GB)	272	68	BNP Paribas (FR)	112
19	Sweden	248	69	Fannie Mae (US)	111
20	Exxon Mobil (US)	246	70	Ping An Insurance (CN)	110
21	Volkswagen (DE)	237	71	Kroger (US)	109
22	Toyota Motor (JP)	237	72	Société Générale (FR)	108
23	Apple (US)	234	73	Amazon.com (US)	107
24	Belgium	232	74	China Mobile Comm. (CN)	106
25	BP (GB)	226	75	SAIC Motor (CN)	105
26	Mexico	224	76	Walgreens Boots Alliance (US)	104
27	Switzerland	216	77	HP (US)	103
28	Berkshire Hathaway (US)	211	78	Assicurazioni Generali (IT)	103
29	India	200	79	Cardinal Health (US)	103
30	Norway	200	80	BMW (DE)	102
31	McKesson (US)	192	81	Express Scripts Holding (US)	102
32	Russia	187	82	Nissan Motor (JP)	102
33	Austria	187	83	China Life Insurance (CN)	101
34	Turkey	184	84	J.P. Morgan Chase (US)	101
35	Samsung Electronics (KR)	177	85	Koch Industries (US)	100
36	Glencore (CH/JE)	170	86	Gazprom (RU)	99
37	ICBC (CN)	167	87	China Railway Eng. (CN)	99
38	Daimler (DE)	166	88	Petrobras (BR)	97
39	UnitedHealth Group (US)	157	89	Schwarz Group (DE)	97
40	Denmark	157	90	Trafigura Group (NL/SG)	97
41	EXOR Group (IT/NL)	154	91	Nippon Telegraph and Tel. (JP)	96
42	CVS Health (US)	153	92	Boeing (US)	96
43	General Motors (US)	152	93	Venezuela	96
44	Vitol (NL/CH)	152	94	China Railway Constr. (CN)	95
45	Ford Motor (US)	151	95	Microsoft (US)	94
46	China Constr. Bank (CN)	150	96	Bank of America Corp. (US)	93
47	Saudi Arabia	150	97	ENI (IT)	93
48	AT&T (US)	147	98	Greece	93
49	Total (FR)	143	99	Nestlé (CH)	92
50	Hon Hai Precision Ind. (TW)	141	100	Wells Fargo (US)	90