Right care 3

Drivers of poor medical care

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This is the third in a **Series** of four papers about right care

See **Comment** pages 101, 102 and 105

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The global ubiquity of overuse and underuse of health-care resources and the gravity of resulting harms necessitate an investigation of drivers to inform potential solutions. We describe the network of influences that contribute to poor care and suggest that it is driven by factors that fall into three domains: money and finance; knowledge, bias, and uncertainty; and power and human relationships. In each domain the drivers operate at the global, national, regional, and individual level, and are modulated by the specific contexts within which they act. We discuss in detail drivers of poor care in each domain.

Introduction

Papers 1 and 2 in this Series outline the scope of poor care from both overuse and underuse of medical services.

Drivers of poor care reside in three major domains: money and finance; knowledge, bias, and uncertainty; and power and human relationships. Drivers operate in specific contexts and contribute to the overall quality and quantity of care delivered. These contexts are best considered as different levels in an ecosystem of care delivery: global; national, legal, regulatory, and cultural; regional, institutional, and social; and the individual locus of the doctor–patient relationship.

Key messages

- The biomedical model of the past century has been valuable for some aspects of medicine and is a necessary, but not a sufficient, component for the proper care of patients
- The biological, psychological, and social needs of patients and informed preferences must define desirable outcomes and appropriateness of care
- Greed, competing interests, and poor information are universal drivers of poor care that occur across all systems and settings
- Inaccurate knowledge and information of all stakeholders regarding effective and ineffective care is a key driver of poor care
- The levers for knowledge dissemination and adoption of health technologies are too often distorted by a fascination with innovation, which is reinforced by vested interests
- Systemic factors, cognitive frameworks, and cultural influences, particularly regarding health, health care, science, and technology, are important drivers of care and have to be understood to improve health-care decisions at all levels
- The way in which each health system is organised and financed, and how resources are allocated towards facilities and workforce, allows each of these drivers to have more or less influence
- The substantial economic interests of the health-care industry and the alignment of incentive structures within health services are major drivers of potentially biased knowledge generation and health-care delivery worldwide
- Failure to reinforce professional ethics and protect the therapeutic relationship from financial concerns distorts medical care
- Regulatory capture, disempowerment of communities and citizens, and a political aversion to priority setting all drive poor care

Understanding these drivers and the various ways in which they act across systems provides opportunity to increase the social and individual value of care

Multiple drivers of poor care interact throughout this ecosystem. We aim to outline a navigational chart for addressing this fundamental problem of modern health care. Reducing poor care will require a well contextualised, multidimensional, and concerted effort by health-care professionals, policy makers, and the public. Previous definitions of quality of care have focused on evidence-based health outcomes of individuals and populations incorporating patient preferences.[1] Our conception of the right care extends this definition further by including the importance of stewardship in the distribution of societal resources through what inherently is a political process.

Drivers at the global level affect multiple actors across all societies—for example, the mass media and multinational corporations. At national, regional, and local levels, variation in legal and regulatory regimes, power relationships among stakeholders, and cultural norms and traditions, act differentially. Social networks—of patients and families on one side and professionals and delivery systems on the other—act as local mechanisms of transmission of all drivers. Provider stakeholders, such as professional societies, operate locally, nationally, and increasingly, globally, to convey standards of practice, even as they legitimate clinicians' professional autonomy.

The creation and dissemination of knowledge occurs at various levels via multiple actors. However, care itself is initiated at the individual level from the centre of the ecosystem, where up to 80% of health-care costs are initiated.[2] Here, the patient and the doctor sit, with their own individual and social identity, cultural and cognitive biases, and the cumulative influence of the forces surrounding them. These individuals also bring their experience, emotion, transference, and countertransference to the encounter.[3]

Numerous additional variables exist within this relationship, including the clinical calculation of benefits and harms, patient preferences, physician preferences, provider training and competence, available infrastructure, financial incentives, trust and understanding between patient and clinician, and the influences of others, both individually and through social networks. Clinical decision making emerges from this complex interaction. In this

Series paper, we describe the major drivers of care and how they operate.

Money, finance, and organisation

Health coverage, resource allocation, and the organisation of care delivery

Overuse and underuse of care exist in all types of health-care systems.[4–6] However, financing arrangements influence the relative strength of the various drivers and how they contribute to poor care (figure 1).

Inadequate health coverage is a primary cause of poor care. For example, people who are uninsured or underinsured often forego or are denied essential care because of an inability to pay.[6,7] Decisions about what is covered and accountability for appropriate clinical decisions influence health-care delivery.[7,8] When coverage focuses on truly effective or cost-effective care, it can encourage the use of appropriate care, but coverage decisions are a blunt instrument that have broad effects and lack precision, so cannot alone prevent poor care.[9,10]

Financing and configuration of health systems

The financing and configuration of health systems vary widely and are key drivers of care. At one extreme, market-based—systems rely on private insurers and self-employed providers, with public intervention limited to consumer protection and helping people at high risk of catastrophic illness or those with a low-income gain coverage.[8,11] At the other end are government-led schemes whereby entire populations are entitled to uniform health coverage and salaried providers deliver care.[12,13]

When health-care spending is publicly funded, governments often exert control over expenditures, but few distribute resources uniformly across regions or populations according to health needs. When they exist, allocation formulas usually combine crude indicators of health (eg, age, sex, prevalence of disability or mental disorders) with socioeconomic indicators of need (deprivation indices). Matching of needs and capacity is a continual concern.[14]

In both private and publicly financed systems, misallocation of resources, including the health workforce, can lead to both overuse and underuse.[8,15] For example, a high density of either general practitioners or specialists leads to an increased number of visits, often initiated by physicians.[16,17] Similarly, a high density of intensive care unit beds is associated with increased rates of admission.[18] By contrast, low availability of primary care professionals can lead to underuse of essential services and increased hospital admissions and specialty care.[19,20] In systems in which providers influence investment in capacity (eg, hospital beds per capita), especially if they have the ability to retain operating surplus, there is often overinvestment in high-margin revenue-enhancing capacity (eg, catheterisation laboratories), and underinvestment in less profitable services (eg, palliative care).[21–23]

Integration across levels of care

The degree of integration across levels of care is a key system feature that influences the quality of care. Many health-care systems' financial flows promote fragmentation: the poor coordination of services delivered to any individual patient often leads to duplication of services (eg, imaging tests) and failure to deliver needed services (eg, preventive or palliative care).[24,25]

Economic incentives can drive poor care

Influence on clinicians' behaviour

Systems of payment influence the behaviour of health-care professionals.[26,27] Fee-for-service or volume-based payments encourage the provision of covered services in contrast to capitation or salaries for health professionals that do not. Standards of professionalism alone cannot ensure that services delivered serve patients' interests.[26]

Physicians routinely act in conformity with their financial interests. Under fee-for-service payment, many specialties deliver higher volumes of services, distorted referral rates, and lower prevention activity than with fixed payment schemes, such as, capitation and salary.[28] Moreover, physicians react to fee reductions by increasing their activity and have incentives to induce demand—ie,

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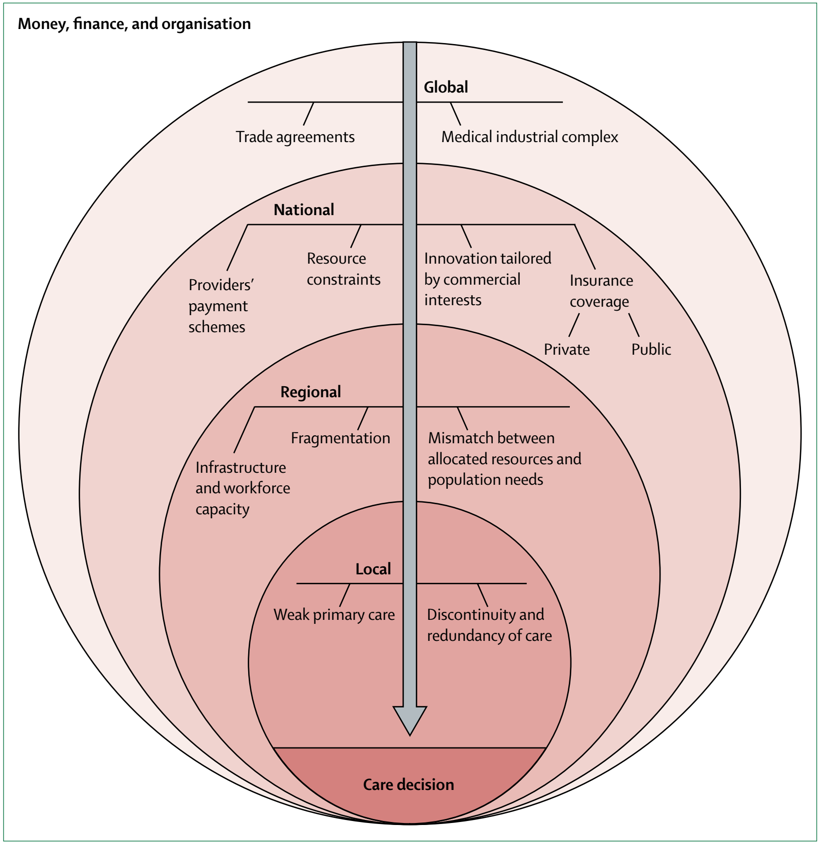

Figure 1: **Money, finance, and organisation affect health-care decisions at global, national, regional, and local levels**

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to provide services that a fully informed patient would not choose.[17,29]

Pay-for-performance schemes have been proposed to encourage evidence-based and preventive services through add-on payments linked to specific targets.[30] However, effects of these schemes on the quality of care are inconsistent,[31] and they can paradoxically encourage overprovision of unnecessary services and underprovision of needed services.[32] Another economic incentive that influences doctors' behaviour is ownership of ancillary services facilities, which encourages overuse.[33,34]

Influence on hospital behaviour

Payment per day to hospitals encourages long lengths of stay, and potentially, higher volumes of inpatient care;[35] conversely, hospitals under global budgets produce lower volumes of care, which can lead to underuse and long waiting times.[36,37] Many countries have switched to payment per case (known as diagnosis-related group [DRG]). Depending on the overall context and the initial payment method, this change increased (Australia, Denmark, England, France, Norway, Spain) or decreased (USA) service activity.[36]

Payments per case can incentivise hospitals to encourage more admissions if the price for that particular DRG is set high relative to production costs.[36] In France, DRG payments led to increases in the provision of cataract surgery and endoscopies, which were profitable for hospitals.[38] In contrast, incentives for provision of alternatives to conventional hospital admission seem to be on the rise following the financial crisis.[39] Thus, price setting, permitted profit margins, and the appropriateness of fee or reimbursement schedules are all key elements to promote the right levels of care. These elements are often hidden from public scrutiny.[40]

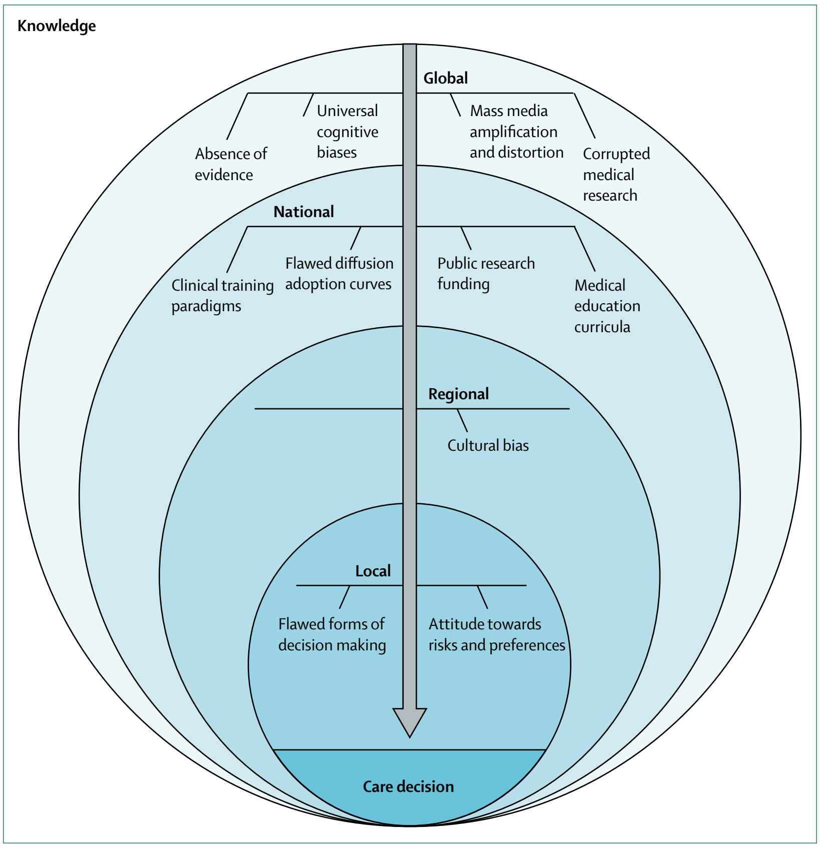

Figure 2: Production and dissemination of knowledge affects health-care decisions at global, national, regional, and local levels

Patients' behaviour

Patients' behaviour also responds to economic factors. Insurance enables the use of medical services; although, how much it increases use beyond necessary care is not clear. The theoretical risk of abuse has generally been addressed by private health insurers through user charges or copayments—which are much less common in national health services. The introduction of copayments reduces inappropriate use of services (ie, overuse).[41,42] However, it also reduces use of necessary or essential services.[9,43] Some studies show that increased cost-sharing on pharmaceuticals decreases compliance and increases use of non-pharmalogical interventions, such as potentially avoidable hospital admissions due to worsening of the condition, or emergency visits to obtain medication in acute episodes in patients with chronic diseases.[9,44] Copayments reduce demand for preventive services, because people tend to overestimate present costs and underestimate future health benefits.[45]

Commercial interests

Commercial interests shape the availability and use of novel therapies. Pharmaceutical and medical devices industries target their research, development, and marketing strategies towards the most profitable opportunities, typically the health problems of large populations that can pay, or rare life-threatening conditions affecting small numbers of patients in wealthy countries,[46–49] while often neglecting the health needs of poor populations.[50–52] This unequal distribution of purchasing power can embed a long-term structural stream of distorted care.[53,54]

Research activities, measured in randomised controlled trials, do not reflect the worldwide research needs as defined by the global burden of disease.[55] Industry focus on marketable medical interventions, coupled with the regulatory regime of a country and its health-care resources, constrain the therapeutics available to practitioners and patients, thereby exerting a considerable influence on the amount and type of care provided. After regulatory approvals, industry uses a range of strategies to sell products and expand markets and market share.[54,56] Such marketing efforts are often successful at increasing sales, but might not improve the health of either individual patients or populations.[54,56]

Intellectual property regimes legitimise monopoly pricing based on the need to encourage further investments in research and development, while holding out the promise of competition after patents expire.[57] Meanwhile, the rising prices enabled by such patents can strain budgets and force administrative or other forms of rationing, which can drive underuse.[58]

By contrast, subsidies can accelerate adoption.[59] How price is determined in health-care innovation varies widely, and is partly a policy choice.[60,61] In many countries, prices are regulated or determined by the largest purchaser, usually the national government. In countries with market-based pricing, where the seller has a monopoly and buyers have minimal power, often little direct association exists between price and value to patients; neither governments nor private health plans appear able to effectively negotiate a price, especially in the face of a political mobilisation of patients. Describing these prices as market-based is thus problematic. Sofosbuvir[62] and biologic cancer drugs[63] are recent examples of this point.

In reality, because truly novel compounds are rare and new drugs get approved in most countries without proof of superiority to incumbents, companies can compete for revenue share through marketing campaigns for pre-existing compounds more easily than they can invent new ones.[64] Hurdles for the approval of medical devices are lower than for pharmaceuticals, raising both safety and efficacy concerns.[65–67]

Knowledge, beliefs, assumptions, bias, and uncertainty

Thinking frameworks influence decision making

Thinking frameworks are determined by social and cultural contexts and the interplay between cognitive, emotional, and motivational thought processes.[68] Thinking frameworks lead to beliefs that strongly influence cognition, judgments, and decisions, and exert a powerful influence on decision making in health care. More is better, new is better, more expensive is better, and technology is good, are examples of deep and often intuitive beliefs about the benefit of interventions. These beliefs affect many areas: research agendas, product development, market opportunities, and regulatory control or tolerance (for example, an intracerebral stent system was provisionally approved because of biological plausibility, but without adequate safety data).[69,70] Together, these beliefs affect patients, their families, clinicians, administrators, policy makers, and political leaders, often leading to overestimation of benefit and underestimation of harm (figure 2).[71,72]

Panel 1 lists patients' and doctors' beliefs that can drive use of services. For example, many patients' false belief that chemotherapy can cure advanced cancer regularly leads to overuse of chemotherapy,[91] and some patients' fears of surgery will lead them to decline potentially beneficial procedures if not well informed, leading to underuse.[92]

Physicians' awareness of evidence and attitudes towards guidelines have been identified as shaping behaviour. Practitioners might disagree with guidelines, especially if evidence seems to contradict their preconceptions and experiences.[93] Such conflicts could be a result of imprinting during training,[60,83,94] which has a mixture of cognitive and emotional effects (the so-called hidden curriculum).

Panel 1: Beliefs and behaviours of patients and clinicians that contribute to poor decision making

Patients

- Medicine is based strictly on science[73–76]
- Testing, especially high-tech testing, is accurate (poor understanding of error rates and other limits in tests and treatments)[73,74,77]
- Unquestioning trust in the doctor's expertise[78]
- Fear of offending clinician by asking questions
- My neighbour, niece, coworker had this done, and they had a good outcome[79]
- Demand induced by providers and other commercial actors in the health-care industry
- More care is better care, especially in a system without a longitudinal relationship, whereby the measure of caring is by doing rather than by being present
- Misplaced assumptions and mistrust about financial motives of providers[80]
- Anxiety about uncertainty and adverse outcomes[81]

Clinicians

- Evidence contradicts training or practice experience[82,83]
- Physician innumeracy[84]
- Over-reliance on pathophysiological and anatomical reasoning and faith in surrogate outcomes[73]
- A so-called better to know bias that might not be warranted[85]
- Improper weighing of relative risk versus absolute risk[86,87]
- Regret of omission overriding regret of commission[86]
- Therapeutic or technological enthusiasm[84,88–90]
- Recent adverse outcome, rear-view mirror bias (a manifestation of the affect heuristic)[86]

Heuristics shape thinking frameworks

Beyond these general frameworks, psychological research has empirically identified strategies of cognition, termed heuristics, that influence decisions in situations of uncertainty.[92,95,96]

Because rapid, high-volume clinical decision making is part of the everyday routine of physicians, and requires combining and synthesising diverse data and performing complex trade-offs between benefits and risks,[97] such heuristics are probably important. These mostly unconscious mental shortcuts often lead to accurate results, but can also be dysfunctional and lead to skewed judgments.[98]

Several heuristics and biases have been described and investigated, but few studies have been done in medicine; a 2015 systematic review found 19 different types of

Panel 2: Examples of heuristics and biases in medicine

Availability heuristic

Relates to judgment on the basis of the ease with which information, such as a diagnosis, come to mind, rather than the validity or relevance of the information[79,86,99]—eg, thoracic pain in a 60-year-old patient interpreted as a thoracic spine problem by the orthopaedist and a heart problem by the cardiologist.

Representativeness heuristic

Describes the judgment of a clinical situation[79] on the basis of the similarity to a category, (eg, chest pain in a 34 year old), without regard to the underlying base-rate of myocardial infarction, thereby missing causes that could be more likely. Similarly, clinicians might overestimate the benefit of cancer screening in people aged 35–55 years, unaware of the low incidence of cancer in this age group.[99,100]

Confirmation bias

A tendency to search primarily for confirmatory information and generally giving more weight to information that confirms one's expectations than to contradictory information.[86] Confirmation bias is evident when authors with a conflict of interest relating to a certain drug judge this drug more favourably than authors without a conflict of interest. Tamiflu and rosiglitazone are recent examples.[101,102]

Commission and omission bias

Omission bias results from the belief that harmful intervention is worse than inaction, whereas commission bias results from the belief that prevention of harm requires active intervention.[86,103–105]

cognitive heuristics and biases in clinical decision making, four of which are presented in panel 2.[86]

Common assumptions of modern medical culture

Health care is assumed to be the main determinant of health. Although the contribution of health care to life expectancy and quality of life cannot be quantified precisely, improvements in living conditions and public health interventions have contributed more than medical intervention to the gains in health in the 20th century. Less than 20% of the health status of populations is attributable to health-care delivery systems.[106–112] However, assumptions to the contrary inflate expectations about health care and create market opportunities and political support for expansion of services, which potentially distorts the balance between health-care and social spending.[89,108,109]

Dominance of the biomedical model

Modern medicine has successfully applied biomedical science through a model that construes disease as the disruption or deviation of biological variables. This model shapes conceptions of diagnosis,[73] treatment, and prevention as ever more detailed understanding of ever smaller biological units,[113,114] which is one aspect of the proliferation of therapeutic options available for the care of patients, eg, with stable coronary disease.[115]

This model of disease has resulted in remarkable successes (antibiotics, vaccines, organ transplantation, heart surgery, cures for some cancers) as well as expensive, marginally useful, or even useless interventions.[116] The prestige earned by the successes of this model elicits a presumption of rigorous scientific efficacy from the public.[73,117] This illusion can drive suboptimal care when reductionist thinking, sometimes coupled with the commercial imperatives of product development, triggers a search for single optimum solutions that yield questionable benefits at increasing expense.[118]

This focus on deviations from biological norms instead of patients' needs is one of many factors that underpin the widespread lack of patient involvement in decisions and treatment goals.[72,119] Such a focus can lead to the neglect of patients' cognitive and emotional needs,[73] preferences,[120,121] underuse of counselling and behavioural therapies, and neglect of social and public health strategies for disease prevention.[108–110] Medical care—a visit to a physician, a day in hospital, or a surgical procedure—comes to be seen as an intrinsic good in itself rather than a means to help individuals achieve the goals important to them.[122–124] Failure to honour such goals can result in overuse of disease-focused treatments at the end of life, such as chemotherapy in advanced cancer, and stenting in stable coronary heart disease.[119,122,125–127]

The isolated clinical relationship

The isolated clinical relationship is assumed to be the sole driver of care, which ignores the effects of system configuration. This scenario can drive underuse through failure to adopt systems of reliability of care (such as reminders or checklists) or through lack of staff support. Patient care is further degraded when comprehensive primary care is weak, coordination is poor, and systems are fragmented.[25] Efforts to ensure the right care are usually left to practitioners and their professional societies. Specialty societies elaborate treatment protocols for diseases of their isolated organ system, while ignoring the eventual role played by other specialists in meeting patients' needs. Thus it is common for each specialist to add drugs or interventions to a long list; although each might seem sensible in isolation, as a combination they can be irrational, if not harmful, for a patient to follow.

Flawed production and dissemination of knowledge: the price of innovation

A core driver of both overuse and underuse is ignorance of the evidence and its failure to change practice.[120] The impact of evidence-based medicine campaigns has been hindered by the considerable volume of information production, and dilution of good studies by bad ones. Contradictory results increase confusion.[74,121]

Although medical science research is presumed to ask questions and examine areas of interest that matter to patients and citizens, 85% of the global investment in biomedical research—US$240 billion in 2010—is wasted on research that fails in that mission.[74,121,128] Many trials are underpowered; study endpoints chosen by professionals often are of low priority for patients; questions of functional, social, and emotional wellbeing, adverse reactions, and long-term outcomes are disregarded; and academia rewards short-term successes and newsworthy results at the expense of results that are meaningful to health.[74] Industry-sponsored trials might ask questions that are of little or no clinical value, or that are destined to yield results that are favourable to the sponsor's product.[75,129,130] These tendencies naturally lead researchers and industry to seek widened denominators (so-called indication creep) for tests or treatments proven effective in one disorder.

Such flawed knowledge can increase adoption rates of new practices beyond the factors such as relative advantage, compatibility with existing systems, and ease of learning that were documented by Rogers[131] in the 1950s; when coupled to revenue opportunities for the relevant actors (industry, physicians, hospitals), adoption accelerates, no matter how meaningless to patient outcomes, whereas important research conclusions, such as the efficacy of lumpectomy, sometimes diffuse slowly when the prospect for revenue is absent. Thus, flawed science and incentives can become powerful drivers of flawed adoption and of resistance to the de-adoption of useless interventions.[74,132–135]

Society has a legitimate interest in health-care innovation and technology development to the extent they carry an implicit promise of improved wellbeing. This outlook creates widespread public interest in the latest medical developments.[65,66,136] However, science and technology are frequently at odds with one another. Science essentially involves the ongoing refutation of error[73] whereas technology seeks a positive end, even if imperfect, and expects gradual improvement through product cycles.[66] This tussle plays out on a daily basis in the construction of narratives about health and medicine, whether in the pages of medical journals or newspapers, or on television and computer screens.[76]

Dissemination of knowledge depends on practitioners to read, absorb, understand, and critique studies; to separate high-quality and low-quality information; and to use this approach to change practice patterns. Systematic reviews and evidence-based guidelines are intended to help in this process, but have been only marginally successful, mitigated by the proliferation of guidelines from multiple authorities, many contradictory, and often influenced by conflicted stakeholders, sponsors, and authors.[137–139] Nevertheless, guideline development remains an important method of promoting the right care, provided certain crucial criteria are met.[140] A new effort to define appropriate use criteria has emerged in several specialties, implicitly acknowledging the inadequacy of outcomes of previous guidelines.[141] Efforts to include lay members on guideline panels are in their infancy.[142]

An additional issue in knowledge dissemination is the growing popularity of web-based searches, online decision-support tools, and social media advertising. These techniques not only affect patient knowledge and alter practice patterns in new and unpredictable ways that offer great opportunity, but also warrant considerable scrutiny. Such methods have the potential to substantially amplify both knowledge and errors in decision making.

Power and human relationships

Strength or weakness of the therapeutic relationship

At the centre of the ecosystem is the patient–clinician relationship at the point of care. The quality of that relationship is a central element of the clinical encounter and an independent driver of the quality of care (panel 3).[153] A poor relationship can drive both overuse and underuse. Adherence to proven, cost-effective therapy, although low in most studies of patient behaviour, is highly dependent on the relationship.[154–156] In the absence of mutual respect and trust, an inadequate history can facilitate suboptimal or even harmful treatment[157] (figure 3).

A mismatch in the worldview of the patient and clinician can cause problems.[144] For example, young people might not have the accumulated life experience to understand the reality of unintended harms, or they might allocate the value of quantity versus quality of life very differently: thus, a young clinician with an older patient could have very different assessments of risk and value. A patient with a low income could realistically have far greater concerns for the economic trade-offs of a course of action than would the well-to-do prescribing clinician. Results can be detrimental for both patients and physicians when trust is eroded.[158]

Collectively, most health-care systems have failed to optimise these factors, resulting in dissatisfaction among both professionals and the public that has led

Panel 3: Factors in the therapeutic relationship known to affect the quality of interaction and care

- Imbalances of power or trust can prevent shared decision making.[143]
- Providers do not have time to convey complex information in an understandable format, which precludes mutually respectful decision making and promotes a transactional culture.[144]
- Race, class, or other distinctions can lead to selective offering of tests and treatments, unrelated to insurance coverage or ability to pay.[108,109,145]
- Barriers including education, language, and cultural mismatches between providers and patients.[109,146–49] Increasingly common with global migrations across national borders, these barriers also occur with internal migrations in low-income and middle-income countries in the midst of the epidemiological transition.[150–152]

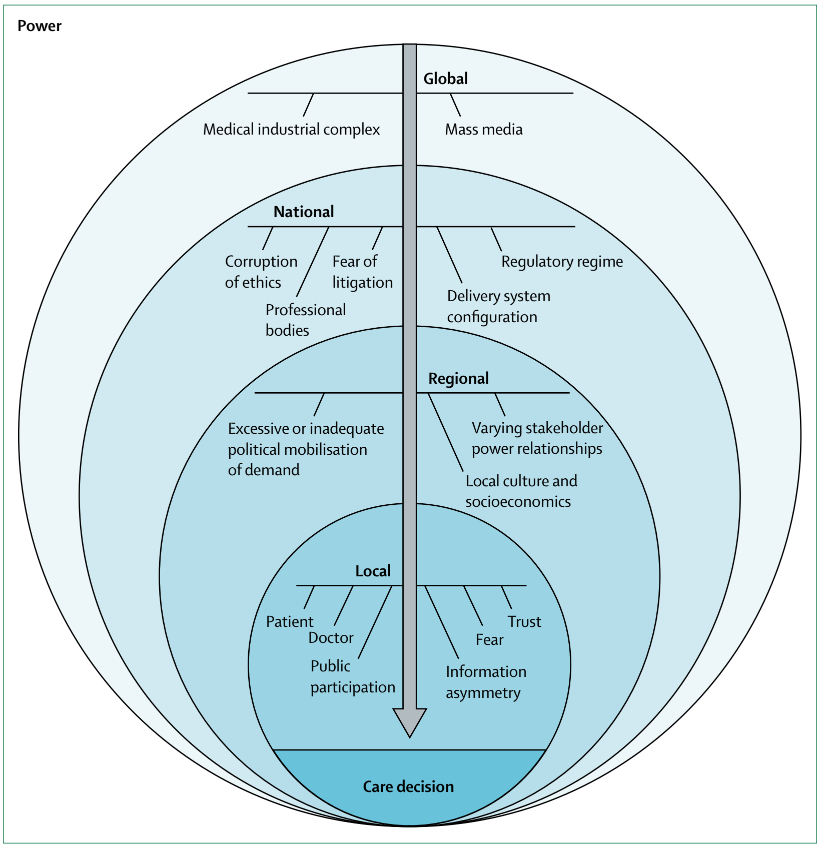

Figure 3: **Distribution of social and political power affects health-care decisions at global, national, regional, and local levels**

to the tremendous growth of so-called concierge medicine worldwide as a private sector solution to a clear human need.

Flawed decision making

The involvement of patients in treatment decisions is an ethical imperative that might be desired,[159,160] but the ability of practitioners to implement this step is still limited by time, their own resistance to changing power dynamics, and systemic constraints.[144,161]

Ideally, the consent of the patient is obtained after informing, explaining, deliberating, and considering the potential benefits and harms of various treatment choices.[162] If more than one option is available, a preference diagnosis, which incorporates the patient's values, has to be made.[120] In reality, patients are rarely involved in a shared decision-making process, even when the procedure in question is elective; often physicians act according to what they consider the patient's interest to be.[72,123,160,163] This scenario leaves ample space within which self-interested motives can influence decisions, however unconsciously, and subsequently overuse or underuse can result.[160,164]

Patients' sense of mutuality in decision making can drive both underuse and overuse. Poor decision quality reduces subsequent adherence to treatment plans.[165]

Poor decision quality also drives both underuse and overuse:[165] randomised trials of shared decision-making aids consistently find that, on average, 20% of elective procedures would be unwanted if patients had unhurried access to understandable, relevant clinical information.[166–168]

Contest for political control

Health and health care represent areas of contest for political control. Care delivery is the net result of the relative power of various stakeholders to influence the process of decision making in the doctor–patient relationship.

Professional societies, academic medical centres, commercial interests, patient advocates, and the scientific and mass media all shape the way citizens view health care. They do so by creating and reinforcing powerful categories of meaning, such as professional autonomy, self-regulation, innovation, science, value, individual patients' right to best care, while remaining silent on opportunity costs or marginal benefits and using loose definitions of life-saving treatments.[65,73,74,76,144,169] For example, the routine labelling of new technologies as innovation tags positive feelings and expectations to the product and distracts from the fact that the true benefit–risk profile is often unknown at the time of market introduction and often remains unknown long thereafter.[76]

The mass media convey these messages in the pursuit of their own interests (expanding the audience for their sponsors).[170] All actors then develop messaging efforts to defend their self-interest in the process of clinical decision making.[142,160,171]

Stakeholders with sufficient economic capital can use that ability to financially support and influence others, and reinforce terms most favourable to their interests. This contest occurs primarily in the process of establishing consensus on what represents the best scientific evidence. Regulatory and government agencies then hold, in theory, the power of compulsion, acting as principal agents of citizens and the common good.

However, selection of national policy leaders in health care is itself subject to the competing demands of stakeholders—ie, industry, hospitals, professional societies, health unions, and the general public—and once in positions of public power, they are influenced by other self-interested actors. For example, large hospital systems and pharmaceutical and device companies often capture regulators:[172–174] a career in health care at the highest positions might entail switching from one side of the table to the other. These personal relationships that naturally develop can advance private interests without coercion or bribery.[175]

Political mobilisation and demand for care

Excessive or inadequate political mobilisation can increase or decrease demand for care and thwart attempts to achieve the right care. Certain sectors, ideas, and messages can yield inordinate influence, particularly when they coincide with industry interests. Others that have fewer resources, such as public health institutions or advocates for addressing the social determinants of health, typically have a smaller voice and less power.[176,177] Because political and economic power are closely linked, effective mobilisation often depends on financial ability to influence mass media, affecting cultural norms and public policy.[178–181] Together, these processes drive both overuse of some services and underuse of others.[178] For example, mobilisation can influence regulatory and pricing negotiations, when companies fund patient groups that push to accelerate the availability of drugs unapproved for the market,[182] or when patient platforms are created ad hoc during negotiations with authorities to support inclusion of a drug in insurance benefits (hepatitis C and sofosbuvir in Spain).[62]

Where private insurance companies exist, they have enormous potential power within this ecosystem. In theory, these companies have an interest in reducing costs in the short term, potentially curbing overuse, but driving underuse. In the long term, their incomes rise with increasing health-care costs because their revenues are a percentage of the total premium, and their interest in curbing waste is therefore lessened. Moreover, like all stakeholders, the behaviours of private insurance companies are subject to the distribution of power in the system— for example, the ability of pharmaceutical companies to overcome insurers' imposition of copayments through patient assistance programmes.[183]

Similarly, other actors in the health-care sector maintain their own political mobilisation by creating alliances with key opinion leaders,[184] medical specialty societies, and patient groups, while participating in defining standards of care, widening definitions of diseases,[185] and creating new disease labels.[186–189]

In some countries (eg, New Zealand, USA) marketing involves direct-to-consumer advertising.[190,191] This approach encourages consumers to demand drugs and other medical products by increasing awareness (and concerns) about diseases—examples being erectile dysfunction (sildenafil), baldness (finasteride),[186] blood clotting (enoxaparin),[192] and atrial fibrillation (dabigatran etexilat).[193]

In countries where direct-to-consumer advertising is not allowed, companies sometimes promote new drugs through disease-awareness-raising campaigns, which are alliances between industry and consumer groups.[194] For example, self-help groups that are sponsored by pharmaceutical companies are associated with the uncritical support of drugs such as celecoxib, rofecoxib, and donepezil.[195]

These campaigns often inflate the prevalence of diseases, such as social anxiety disorder,[196] restless leg syndrome,[197] and female sexual dysfunction;[198] increase public fear of illness; and thus increase markets for manufacturers.[199]

Professional societies and other mediators

Professional societies, which have a privileged status in most countries, play a key role in defining disease, expanding definitions of disease, and defining appropriate treatment thresholds. These societies are viewed as authoritative sources of scientific medical judgment on the presumption that the public benefits, even though they primarily serve the interests of their members.[200,201] This dual role of medical societies creates conflicts of interest that can influence both overuse and underuse. An example is a professional society writing guidelines that advocate for a certain intervention on the basis of expert opinion, against or without existing evidence (eg, prostate cancer screening and treatment in France).[202]

Interaction between professional bodies, industry, and entrepreneurs is frequent and natural, because new technologies must pass through a process of validation and legitimation in which professional bodies play a crucial role.[200] However, such interaction creates opportunities for additional potential conflicts of interest, as relevant expertise is inevitably associated with opportunities to enhance income of individual members, sections, and the professional society itself.[64,184,189,200]

Many medical specialty societies accept support from industry and have become financially dependent to a considerable degree. In many countries, continuing medical education systems are funded largely by industry,[203] creating conflicts of interest that bias educational content.[204] Other effective means to influence physicians' practice are sales representatives, distribution of drug samples, and journal advertising.[205,206] These tactics tend to promote the use of more expensive brands over generics, often directly subverting practice guidelines and formulary policies.[207] Total promotional spending of the ten largest companies worldwide amounted to $98 billion in 2013, presumably realising a return on this investment.[208]

Given the outsized role professional societies can play in regulatory approvals and reimbursement decisions, whether directly or through informal networks of influence, they have become central domains for all actors seeking to influence medical practice.[200] Peer effects can amplify the wrong care, as doctors follow leaders, doing what everybody does, even if misguided.[189,209]

Fear of litigation

Fear of litigation is a recognised driver of overuse. A 2013 study[210] shows that physicians' fear of malpractice lawsuits, independent of actual risks or of tort reform, leads them to prescribe excessively advanced imaging tests to patients with headaches and back pain. However, estimates suggest only about 2% of care is attributable to defensive medicine.[211–213] Fear of litigation has not yet become a driver of underuse; however, this is theoretically possible.

Conclusion

The provision of care is initiated by decision making within the doctor–patient relationship, but is substantially influenced by the resources available for health care within the society, its social and political contract, the state of global and local scientific knowledge, the configuration and capacity of the delivery system, and financing mechanisms.[8,22,74,214] Achievement of the right care requires an understanding of and attentiveness to all these dimensions in the development of policy choices for promotion of care that is safe, effective, sensitive to personal preferences, and just.

Although no one factor results in the provision of right care, universal health coverage should be recognised as essential at the population level. Each factor can be deemed as equally necessary but equally insufficient by itself. Reducing the role of greed by structuring financial incentives to maximise true clinical benefits and social value is key. Ensuring vigilance against error and bias, broadening research aims, and a focus on meaningful outcomes are key goals in the production of knowledge. Therefore, re-addressing imbalances of knowledge and power, not only within the clinician–patient relationship but also within delivery systems, and more broadly in society, is equally crucial. There are potentially many levers to remedy poor care, but evidence of effectiveness is very modest.

Finally, as biological creatures conscious of our susceptibilty to injury, illness, and death, deep concerns about health are universal. Public support is therefore inevitably susceptible to manipulation for private gain. Active public education, engagement, and empowerment are crucial to ensure that the forces that shape health-care delivery worldwide are truly focused on delivering the right care.

Contributors

VS drafted the outline; all authors contributed to its redrafting. All authors led a section of the manuscript and cross-contributed to sections and examples throughout the paper, provided substantial revisions, and approved the final version of the manuscript.

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