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HEALTH COMMITTEE

RELEASING HEALTHCARE SYSTEM RESOURCES: TACKLING INEFFECTIVE SPENDING AND WASTE

Overview chapter of the Ministerial background report

To be held at the OECD Conference Centre, 2, rue André Pascal, 75016 Paris on 28-29 June 2016

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NOTE BY THE SECRETARIAT

1. This paper presents the **overview** of the background report prepared by the Secretariat for the 2017 Health Ministerial on "*Releasing Healthcare System Resources: Tackling Ineffective Health Spending and Waste*". The document introduces the framework developed for this report to identify and map waste. It summarises the main findings on wasteful clinical care, operational waste and governance-related waste. In particular, it provides further conceptual clarification and examples of waste, elaborates on the drivers, summarises available evidence on the magnitude of the problem, the challenges related to measuring it, and highlights strategies to release healthcare resources in order to deliver more high value care.

2. During the April 8, 2016 expert meeting, Delegates were presented with key elements of the report whose content and structure were broadly endorsed. Specific comments received on that occasion are being addressed in the various chapters and reflected in this synthesis. Following discussion by delegates at the Health Committee of this overview chapter, a complete draft of the report will be sent to countries early July 2016 for detailed comments.

3. Countries are invited to:

- **COMMENT** on the key findings of this project.

* The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

TABLE OF CONTENTS

NOTE BY THE SECRETARIAT 2

RELEASING HEALTHCARE SYSTEM RESOURCES: TACKLING INEFFECTIVE SPENDING AND WASTE OVERVIEW CHAPTER OF THE MINISTERIAL BACKGROUND REPORT 4

1. Framing the "waste" report: from a definition of the concept to policy options 5
2. Wasteful clinical care 7
   Care adding little value or even harmful is not rare 7
   Information and policy levers for promoting high value care 9
3. Operational waste 14
   Operational waste points to situations where care could be produced using fewer or cheaper resources 14
   Opportunities to spend less on pharmaceuticals 14
   Better targeting the use of hospital care 17
4. Governance–related waste 22
   Administrative expenditure in health 22
   Wasting with intention: fraud, abuse, corruption and other integrity violations in health 25
5. Summary and outline of the report 30

REFERENCES 32

ANNEX: CONCEPTUAL FRAMEWORK 39

   A pragmatic and operational definition of waste 39
   A typology of waste 39
   Information and policy levers to tackle waste 40

Tables

Table 1. Who, why and what to do? Summary of findings on wasteful clinical care 13
Table 2. Who, why and what to do? Summary of findings on operational waste 21
Table 3. Examples of integrity violations in health linked to potential perpetrators 26
Table 4. Who, why and what to do? Summary of findings on governance-related waste 29

Figures

Figure 1. Three categories of waste mapped to actors involved and drivers 6
Figure 2. Postoperative sepsis in abdominal surgeries, 2013 8
Figure 3. Trends in generic market shares in volume in OECD countries between 2003 and 2013 15
Figure 4. Diabetes admissions per 1 000 patients with diabetes, 2011 18
Figure 5. Delays in transferring patients from hospitals in four OECD countries 19
Figure 6. Administration as a share of current health expenditure by financing scheme, 2013 23
Figure 7. Percentage of the population which considers the sectors corrupt or extremely corrupt globally and among OECD countries 27

RELEASING HEALTHCARE SYSTEM RESOURCES: TACKLING INEFFECTIVE SPENDING AND WASTE

OVERVIEW CHAPTER OF THE MINISTERIAL BACKGROUND REPORT

4. Most people involved in the health system – as policymakers, managers, workers or even patients – have opinions on how additional resources could be used efficiently to deliver better health services. Health Technology Assessments points which new treatments are better than old ones. Operational data tells where services are over-stretched. It is a truth widely accepted that many opportunities to promote healthier lifestyles are missed due to lack of resources. Give a health minister an extra billion euros, or a hospital administrator an extra 10 million, or a GP an extra 10,000, and they will – probably – spend the money wisely and improve health services.

5. But it is a different matter when the same people are asked to take money *out* of the system. When faced with the need for budget cuts following the global economic crisis, the area of spending which was cut the most was public health – precisely the area where most commentators believe is great unexploited potential for improving health at low cost. Those governing health systems struggle to close down or merge hospitals in order to get the economies of scale which both improve quality and reduce costs. Department heads face enormous difficulties in cutting unnecessary procedures. Health workers understandably find it difficult to keep their knowledge up to date in a sector where what was thought to be best practice yesterday often is found to be ineffective today and will be outmoded by new technologies tomorrow.

6. Analyses – especially in the context of the recent response to the crisis – tend to establish a dichotomy between cost cutting measures and structural reforms (Clements et al., 2014). The former may have proven effective but can also be unsustainable or even detrimental to outcomes (for instance, cuts in public health expenditure which undermine efforts to prevent the onset of diseases or increases in co-payments with their impoverishing effects). Policy-makers should thus primarily focus on more transformative reforms which will increase efficiency and eventually bend the curve of public expenditure growth (Coady et al., 2014, OECD, 2015a). A focus on ineffective spending and waste helps identify quick and potentially significant savings while also putting the system on the right path for these necessary transformations.

7. Health systems should deliver care that represents good value for patients. And indeed, the vast majority of OECD citizens can access the care they need, in a timely way, without incurring disproportionate out-of-pocket costs. Life expectancy at birth is now over 80 years and OECD citizens are far less likely to die after a heart attack or stroke than they were a decade ago. Although the prevalence of chronic conditions like diabetes is rising, healthcare systems are getting better at effectively managing them and reducing harmful complications. Yet, a significant share of health spending makes only a modest contribution to improving patient outcomes. Worse, some health resources are not just being spent on low-value care, they are being wasted (Box 1 presents country-specific estimates). Acknowledging this may not be easy for actors of the health system but this report highlights the positive corollary to this difficult admission: opportunities most certainly exist to release resources - within the system - to deliver better value care.

Box 1: Country-specific estimates on potential savings from eliminating waste.

- A conservative estimate suggests that waste would represent more than 20% of total expenditure in the USA, with an upper bound nearing 50% (Berwick and Hackbarth, 2012);

- An investigation suggested that nearly one third of total health expenditure in Australia could be deemed wasteful (Swan and Balendra, 2015);

- A study in the Netherlands estimated that 20% of the budget for acute care could be saved by reducing overutilisation and increasing integration of care (Visser et al., 2012).

8. This chapter presents the overall framework and approach which guided the development of the report as well as its main findings. Starting with a simple and pragmatic definition of waste, section 1 identifies and groups various categories of waste. This framework will later help identify policy levers to tackle these different types of waste. The subsequent three sections provide an overview of the findings of the report regarding wasteful clinical care, operational waste and governance-related waste respectively. Section 5 briefly concludes and presents the organisation of the overall report.

1. Framing the "waste" report: from a definition of the concept to policy options

9. This introductory section defines waste and presents the three categories of wasteful activities identified by linking the actors of the healthcare system involved in generating waste to the reasons why they might do so. The section also explains how this approach helps identify policy options to tackle waste. A brief annex to this chapter presents the theoretical framework in more details.

10. Health care spending which could be reduced without undermining the achievement of health systems' objectives includes:

- services and processes which are either harmful or do not deliver benefits;
- costs which could be avoided by substituting cheaper alternatives with identical or better benefits.

11. Manifestations of waste are ubiquitous. Wasteful activities can be categorised by linking who is involved (patients, clinicians, managers – at all levels of the system - or the regulator) to four drivers: errors and suboptimal decisions (driven by cognitive biases, imperfect knowledge, habits, etc.), poor organisation and coordination, incentives which are misaligned with systems goals, and intentional deception.

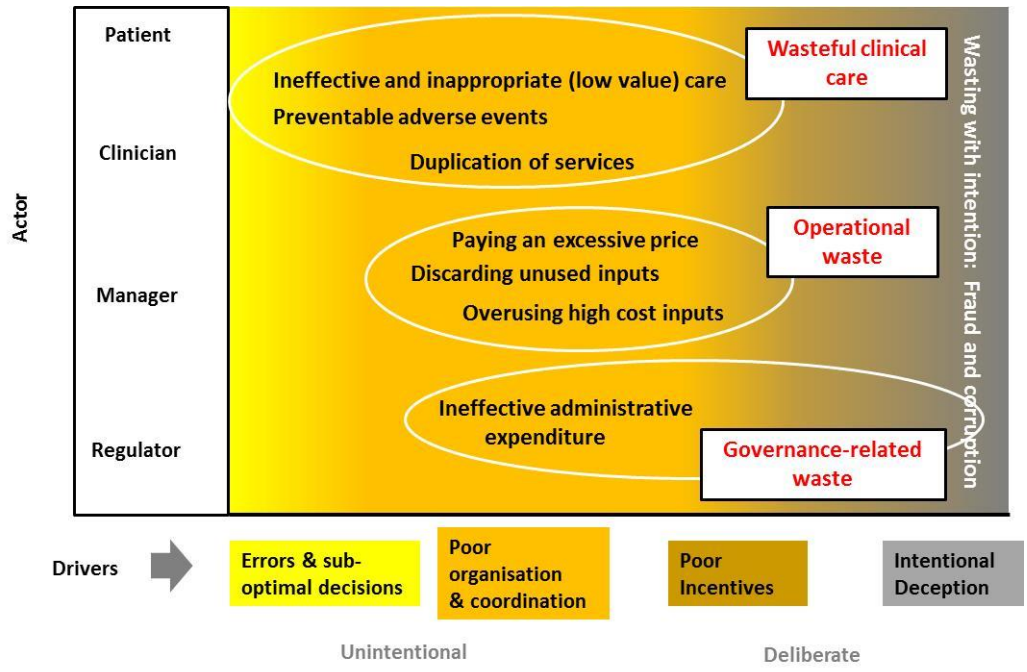
12. Linking actors and drivers, Figure 1 helps identify three categories: wasteful clinical care, operational waste, and governance-related waste.

- **Wasteful clinical care** covers instances when patients do not receive the right care. This includes preventable clinical adverse events, driven by human and organisational factors, notably poor coordination across providers. In addition, wasteful clinical care includes ineffective and inappropriate care – sometimes known as low-value care, mostly driven by human factors and poor incentives. Last, wasteful clinical care includes the unnecessary duplication of services.

- **Operational waste** is when care could be produced using fewer resources within the system while maintaining the benefits. Examples include situations where lower price could be obtained for the inputs purchased, where costly inputs are being used instead of less expensive ones with no benefit to the patient, or simply because inputs are discarded without being used. This type of waste mostly involves managers and reflects poor organisation and coordination.

- **Governance-related waste** pertains to resources which are not meant to directly contribute to patient care. It comprises two distinct types of waste. The first is administrative waste which can take place from the micro (manager) to the macro (regulator) level. Again, poor organisation and coordination are the main drivers. Second, fraud, abuse and corruption which divert resources from the pursuit of health systems' goals are also wasteful. Any of the actors can be involved in it, and in fact, a comprehensive analysis of the topic requires the inclusion of businesses/industries operating in the health sector in the discussion. In any case, what primarily distinguishes this last type of waste is the intention to deceive.

Figure 1. Three categories of waste mapped to actors involved and drivers



13. At a strategic level, there are broad options to tackle waste: i) **stop** doing things that do not bring value and; ii) **swap** when equivalent but less pricy alternatives of equal value exist[1]. Presenting evidence-based options for Government to release misspent resources is challenging. Countries' experiences and track-records in identifying, measuring, and explicitly dealing with the various types of waste reviewed are very uneven and not systematically documented. In order to fill this gap, a policy questionnaire was sent to OECD countries[2]. The report heavily draws on the countries' responses, as well as published documents from all OECD countries. In many instances though, evidence on impact of the policies remains limited or mixed and highly context-specific.

14. Addressing the waste agenda will require more generation, publication, and use of information. Generating and publishing indicators on medical errors, low-value care, or fraud and corruption is necessary to raise awareness of the problem and design potential solutions. Although some national and international initiatives are in place to collect data on these and other types of waste, they are rarely comprehensive and not generalised. Information is the basis of evidence-based leadership but also important to design specific policies which use other policy levers such as incentive-based payments.

15. In parallel, policies need to be developed which target the actors involved in the generation of waste and address the drivers. Four categories of policy levers are relevant:

- Economic and financial incentives, which seek to influence the behaviour of patients, clinicians or managers are most relevant when poor incentives are the root cause of the wasteful behaviour.

1. As further clarified in the Annex, at a system level, the report deal more with productive than allocative efficiency. So, all efficiency enhancing reforms are not reviewed (for instance investment in public health or hospital restructuring) as they do not immediately respond to a "waste" problem.

2. Fifteen countries provided responses: Australia, Belgium, Denmark, France, Germany, Israel, Japan, the Netherlands, Norway, Poland, Slovenia, Spain, Switzerland, United Kingdom, and The United-States.

- Behaviour change policies and information support - including education, persuasion, and training – address barriers to optimal decisions.

- Organisational changes include policies which modify the location, role, number, co-ordination and tools available to accomplish specific tasks of the various stakeholders.

- Regulation which mandates changes in behaviour, organisation, or information.

16. The following sections of this chapter will present the main findings of the report on wasteful clinical care, operational waste and governance-related waste in turn. Each section will further clarify and provide examples of waste, elaborate on the root causes, summarise available evidence on the magnitude of the problem, the challenges related to measuring it, and highlight strategies to tackle waste.

2. Wasteful clinical care

17. Wasteful clinical care refers to situations when patients are not receiving the right care for reasons that could be avoided. It comprises preventable adverse events as well as low-value care.

Care adding little value or even harmful is not rare

Adverse events are devastating for patients, wasteful for health systems and often preventable

18. Despite the best intentions of providers, preventable adverse events persist in health systems. The delivery of care inherently involves risk and, as such, may lead to adverse events. Some unexpected or undesirable outcomes are not avoidable and should not be defined as waste. However, adverse events are frequently preventable. The most striking occurrences of avoidable adverse events are the so-called "never events" or "sentinel events", which should never occur and are always preventable. These rare events include the failure to remove foreign bodies after surgery and operating on the wrong site of a patient's body, such as the removal of the wrong kidney. However, health care-associated infections, medication errors and post-operative complications such as blood clots are much more frequent and, to a large extent, preventable as well. Preventable adverse events often lead to morbidity and mortality in patients as well as costs to payers for additional health care services.

19. Available numbers suggest that the magnitude and costs of adverse events are significant:

- A recent report suggesting that medical errors might be the third cause of death in the US starkly calls attention to the problem (Makary and Daniel, 2016).

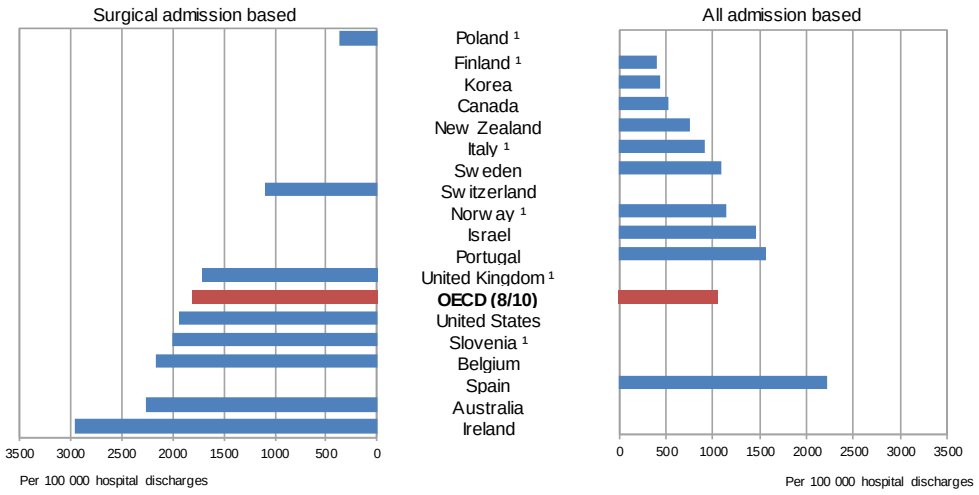
- International studies indicate that adverse events in hospitals add between 13% and 16% to hospital costs (Jackson, 2009) and that between 28% and 72% of them are considered avoidable upon expert examination (Brennan et al., 1991; Rafter et al., 2016 among others).

- Data on primary care is scarce, but the Primary Care International Study of Medical Errors showed that approximately 80% of errors could be classified as "process errors", the vast majority of which are potentially remediable (Makeham et al., 2002).

20. The OECD collects data on 4 adverse events (Figure 2). Numbers show close to a ten-fold variation in the reported rates across health systems. It is extremely unlikely that these figures reflect 'real' variations; rather they illustrate the enormous differences in the willingness of individuals in different systems to admit that mistakes have been made.

Figure 2. Postoperative sepsis in abdominal surgeries, 2013 (or nearest year)

1. The average number of secondary diagnoses is < 1.5.



Note: Rates have not been adjusted by the average number of secondary diagnoses.
Source: *OECD Health Statistics 2015* , Paris: OECD Publishing, http://dx.doi.org/10.1787/health-data-en.

21. Avoidable adverse events are driven by errors and sub-optimal decisions as well as organisational shortcomings that allow them to happen. Examples include failures to follow standard practice (negligence), which are not detected early enough, or organisation's failure to establish such practices and familiarise personnel with them. Similarly, failures in communication between medical staff can lead to adverse events but only in the absence of systems that make such failures visible and intercept them.

Low-value care can occur at all stages of the care pathway

22. The vast majority of clinicians strive to provide the best care possible and achieve optimal results for each patient. Low-value care refers to situations where these objectives are not met. It includes interventions which confer no or very little benefit to patients or situations when the benefit is disproportionally low compared to the costs. Low-value care comprises ineffective care, i.e. interventions which are not proven to bring clinical value, as well as interventions for which the risk of harm exceeds the likely benefit. It extends to inappropriate care: interventions which can be effective for specific patient groups but are performed in a way that either does not conform to evidence-based clinical guidelines or does not reflect patients' preferences. Low-value care also includes interventions which provide marginal or no health benefit over less costly alternatives and more broadly, care which is not cost-effective.

23. Low-value procedures can be found at all stages of the care pathway, starting with over-testing which refers - for instance - to the excessive or premature use of imaging (for lower back pain, headaches). It can lead to over-diagnosis – the diagnosis of a person with a condition that will not cause them harm. For instance, a Cochrane review found for every 2 000 women invited for breast cancer mammograms during ten years, one will have her life prolonged and ten healthy women will be treated unnecessarily (Gøtzsche and Jørgensen, 2013). Other instances of low-value care include unnecessary surgical interventions (e.g. C-sections, knee arthroscopy for osteoarthritis). An analysis of Australian hospitals revealed that five procedures not supported by clinical evidence took place more than 100 times a week. The five "do-not-do" procedures were: vertebroplasty for painful osteoporotic vertebral fractures, knee arthroscopy for osteoarthritis; laparoscopic uterine nerve ablation for chronic pelvic pain; removing healthy ovaries during a hysterectomy; and hyperbaric oxygen therapy for a range of conditions including cancer, Crohn's disease and cerebrovascular disease (Duckett et al., 2015). Medicines can also be involved. The prescription of antimicrobials is a perfect example of a life-saving treatment, whose inappropriate use is not only wasteful but poses a systemic threat to our health (Box 2).

24. Low-value care is nowhere fully quantified, but the extent of the problem is undeniable. Geographical variations in clinical patterns are the main and most powerful tool offering insights into the magnitude of waste due to low-value care. Indeed, the considerable variations observed in the quantity of care delivered to patients cannot be explained by demand factors such as morbidity and socioeconomic differences or by supply factors, such as accessibility of particular interventions or diagnostic tools. A 2014 OECD study reviews geographical variations within and between 13 countries for 10 procedures. Rates of cardiac procedures varied more than three-fold between countries and up to six-fold within-country. Rates of knee replacements also varied more than five-fold between different regions in Canada, Portugal and Spain (OECD, 2014). It is difficult to imagine that these variations reflect differences in need. Rather, individuals in some regions must be receiving interventions which in other regions would be considered unnecessary, or else there is severe under-provision of services in those regions with the lowest intensity of interventions.

25. The drivers of low-value care are primarily sub-optimal decisions interacting with incentives that are misaligned with health systems' goals. Discrepancies between how care should be delivered as prescribed by guidelines and what is realised in practice can be driven by a knowledge deficit, a cognitive bias, or a resistance to changing traditional practice, in spite of evidence that an old practice is outdated. The rise of defensive medicine, driven mainly by fear of missing a low-probability diagnosis and fear of litigation can also fuel overtreatment, notably ordering tests that are unnecessary. Patients' requests for additional treatments are also an important driver of low-value care. In the patient's mind, "doing nothing" or "doing less" may be indistinguishable from doing harm. The provision of low-value care is driven also by financial incentives, such as case-based payments or fee-for-service to providers or the coverage of procedures irrespective of the value they bring to patients. Insured patients and providers, represented by both clinicians as well as facilities' managers, who are paid for their services, have no incentive to avoid low-value care.

Information and policy levers for promoting high value care

More and better information is required to scope and curb the incidence of adverse events and low-value care.

26. The transparency and quality of reporting of adverse events remain limited on average. When it comes to adverse events, overcoming the instinct – or even incentives - to under-report incidents is complex. Moving to a culture of transparency requires trust – that the objectives of data collection are not to assign blame but to learn, and confidence – that lessons will be drawn and corrective actions to prevent future occurrences taken. Such changes require strong and sustained leadership so data collection improves with its use. Not all OECD countries have implemented adverse event reporting and learning systems and the systems usually do not capture adverse events outside inpatient hospital care – those occurring in outpatient care, nursing homes, or care at home. The culture of reporting and learning must be extended to other providers, as it the case in New Zealand, where ambulance services, hospices, and aged residential care organisations and other non-hospital providers are included (Health Quality & Safety Commission New Zealand, 2015).

27. In the domain of low-value care, substantial progress on data collection has been achieved. At least ten OECD countries use atlases to identify variations in health care activities and outcomes across geographical areas. Overall though, countries are at varying stages of developing indicators and there is a need for consensus on which indicators to use and how to standardise and interpret numbers. An additional constraint is that assessing the appropriateness of a specific procedure often requires information on conditions (disease codes) and other patient characteristics. Administrative databases seldom include enough details. The OECD is working with the *Choosing Wisely*® campaign (see below) to develop internationally comparable indicators of inappropriate care.

Box 2: Low-value care with high stakes: Tackling the over prescription of antimicrobials

The inappropriate use of antimicrobials has a detrimental impact

- Antimicrobial therapies play an essential role in modern medicine but their inappropriate use – a form of low-value care - is the most important factor responsible for increasing levels of antimicrobial resistance (AMR). Excess use in agricultural livestock constitutes another significant portion of the total inappropriate consumption of antimicrobials.
- In recent years, total antimicrobial consumption has stabilised or even decreased in some countries but it continues to grow in others, despite increasing concerns.
- Inappropriate use of antimicrobials represents about 50% of all antimicrobials consumption in the human sector (Wise et al., 1998). In long-term care and general practice, however, inappropriate consumption may be as high as 90% of all the prescriptions (Wang et al., 2014). Medical conditions at higher risk for inappropriate use include viral respiratory tract infections and urinary tract infections due to empiric prescribing.
- The economic consequences of irrational use of antimicrobials are significant. Large negative externalities are incurred to the society as a consequence of the development of AMR. Patients infected with AMR organisms suffer from prolonged and severe morbidity, and increased risk of mortality. In 2007, this expenditure summed to EUR 940 million in Europe while CDC calculated that in 2012 AMR costed USD 20 billion in the US (ECDC & EMEA, 2009; CDC, 2013). Modelling predicts that compared with a world with no AMR, the economic impact associated with current rates of AMR may reach 0.03% of GDP in 2020 and 0.16% of GDP in 2050 in the OECD countries, a cumulative loss of USD 2.9 trillion (Cecchini et al. 2015).
- Irrational antimicrobial consumption is predominantly driven by human factors underpinning behaviour of physicians (prescription habits) and patients (who insist on antimicrobial prescription or self-medicate). Organisational barriers, for instance insufficient availability of rapid diagnostic tests, might also result in inappropriate prescription of antimicrobials (Cabana et al., 1999).

A more rational antimicrobial consumption can be achieved by combining four policy levers.

- Interventions triggering behavioural changes in the actors involved which include:
  - The development and implementation of evidence-based clinical guidelines that allow clinicians to benchmark their prescribing in a larger framework of good medical practices and rationalisation of antimicrobial use.
  - Antimicrobial stewardship programs combining multi-disciplinary activities to regulate and persuade both the prescribers and the public towards appropriate use of antimicrobials. Activities can include guidelines, monitoring, education and campaigns. Well-designed stewardship programmes can decrease both antibiotic prescription rates (median change up to -40%) and AMR (median change up to -68% of resistance) (Davey et al., 2013). For example, the Kaiser Permanente group in the US has achieved a 45% decrease in some antibiotic prescriptions after the implementation of a multifaceted programme targeting prescribers (Epson, 2015).
  - Multimedia campaigns help inform care-seekers of the effects of irrational use of antimicrobials. Belgium implemented mass media campaigns targeting the general population as part of a broader strategy aimed at rationalising use of antimicrobials. Between 2000 and 2015 antibiotic use decreased by 39% producing cumulative savings of about EUR 642.2 million (Goossens et al., 2015).
- Organisational changes can help clinicians better target their antibiotic use for instance:
  - Mandating the use of rapid diagnostic tests whenever available allows physicians to make evidence-based judgement on the use, selection, and duration/dosage of antimicrobials, and to manage patient expectations on prescription of treatment. According to a Cochrane systematic review and meta-analysis, the use of point-of-care tests can reduce antibiotic prescription by 22% compared to empiric prescribing (Aabenhus et al., 2014). In France, the increase in use of rapid diagnostic tests by primary care doctors has produced a 39% decrease in antibiotic prescription (Michel-Lepage et al., 2014).
  - Reorganisation of procedures to enforce delayed prescription can be implemented for the primary care and outpatient setting to reduce prescribing for cases which can be managed without immediate antimicrobial use.
- Economic incentives targeting providers and care-seekers can steer appropriate antimicrobial consumption:
  - Perverse incentives, such as concurrent prescribing and sales by the physicians or pharmacists should be eliminated by dissociating these functions. Pay-for-performance schemes can motivate the adherence to specific, tangible and measurable good practice targets. In Sweden, a modest performance incentive closed a third of the gap between existing and targeted prescription rates (Anell et al., 2015).
  - Raising the out-of-pocket cost of antimicrobials to patients can also help, for instance an increase in co-payment, or restrictions on reimbursements for antimicrobials that are more likely to be used inappropriately. The introduction of a reimbursement cap for fluoroquinolones in Canada produced an 80% decrease in the number of prescriptions (MacCara et al., 2001).
- Finally, countries should continue to maintain and support the development of effective surveillance systems in two directions: the monitoring of the prevalence of AMR and trends of antimicrobial consumption. Policy-makers should understand how to interpret data depending on the collection strategy (sales *versus* drug reimbursement), and aim to obtain representative information on the volume, cost, and the temporal and geographical patterns of antimicrobial use across all relevant disciplines of healthcare.

28. Finally, better integrating patients' perspective in data systems, and ultimately in decision-making is needed. Identifying wasteful clinical care requires understanding and rating the benefit and negative outcomes of clinical procedures. This is traditionally done from a clinical perspective, but clinicians and patients may have different views and both should be incorporated in decision-making. Collecting data directly from patients in the form of Patient-Reported Experience Measures (PREMs), Patient-Reported Outcome Measures (PROMs) and Patient-Reported Incident Measures (PRIMs) can facilitate this. In the case of PREMs and PROMs, this information can be used to ensure that patients are getting care that is aligned with the outcomes that matter to them – which is fundamental to appropriate care. With PRIMs, patients can help assure the safety of their own health care.

29. Filling these information gaps is crucial for building awareness and subsequent development of evidence-based toolbox of policy levers and for bringing change about.

Changing incentives and better information can tackle wasteful clinical care

30. Soft policy levers designed to change behaviour include public reporting, audit and feedback, and providing doctors and patients with guidelines and information to encourage dialogue between them. For example, a combination of enhanced feedback and educational reminder messages was associated with a reduction of more than 20% in test ordering by doctors in Scotland (Thomas et al, 2006). Clinical guidelines have the potential to improve the process and outcomes of care, reduce the use of unnecessary interventions and save costs. For example, in the US, an evaluation of a programme for patients with non–small-cell lung cancer found outpatient costs were 35% lower for those who followed a programme using evidence-based guidelines compared to patients not in the programme (Neubauer et al., 2010).

31. Eliminating low-value care requires that clinicians' and patients' perceptions of inappropriate care be aligned. This can be achieved through intensive dialogue between them, which can be facilitated. Decision aids can help patients understand for instance, that the desire to detect harmful cancer early may result in harm due to unnecessary treatment of non-threatening cancers. Decision aids have been shown to improve decision-related outcomes for breast cancer treatment decisions including surgery, radiotherapy, endocrine therapy and chemotherapy (Zdenkowski et al., 2016).

32. The *Choosing Wisely*® campaign, initiated by clinicians, precisely aims to reduce low-value care by encouraging patient provider conversations about whether certain treatments add value. An analysis of early trends among seven services subject to *Choosing Wisely*® recommendations in the US found a modest decrease in the use of two services. Use of imaging for headache decreased from 14.9% to 13.4%. Cardiac imaging for low-risk patients decreased from 10.8% to 9.7%. However, there were increases in the use of two other services and the trends were stable for three other recommendations. This suggests that *Choosing Wisely*® should be used in conjunction with other interventions (Rosenberg et al., 2015).

33. In terms of safety, simple checklists have been widely used, as well as initiatives targeting health workers' hand hygiene to reduce health care-acquired infections. In audits of Australia's National Hand Hygiene Initiative, which encourages health care workers to practise hand hygiene, compliance rose from 63.5% in 182 participating hospitals in August 2009, to 83.2% in 890 participating hospitals in October 2015 (Hand Hygiene Australia, 2015). A US-based trial evaluated health workers' hand hygiene in an intensive care unit with the use of remote video auditing, with and without feedback. Cameras with views of every sink and hand sanitiser dispenser were used to record hand hygiene activity. During the 16 weeks before feedback, hand hygiene rates were less than 10%. In the 16 weeks after feedback, the rate rose to 81.6%. This increase was maintained 75 weeks later, at 87.9% (Armellino et al, 2012).

34. In addition to softer policy tools, modifications to the existing economic incentives as well as organisational changes can support delivery of high-value and safe care. Some OECD health systems have

been experimenting with different reimbursement approaches, including blended payment systems that add a pay-for-performance (P4P) element to the existing case-based payments or fee-for-service. In Denmark, under a pilot initiative, selected hospitals are reimbursed according to patient outcomes, instead of the diagnosis-related group (DRG) payment system. France sets financial sanctions for doctors who are outliers in prescribing practices and a P4P scheme in ambulatory care rewards appropriate prescribing of benzodiazepines. These initiatives have not been systematically evaluated yet. In the case of adverse events, some health systems have chosen to impose financial sanctions to encourage safer care. For example, Israel has defined four "never events" in which hospitals cannot bill health insurers. Financial incentives can also be directed at patients, in terms of introducing co-payments for care that is considered low-value or disinvesting from it.

35. Organisational changes include measures such as improved use of technology and improvements to care co-ordination. Computerised physician order entry (CPOE) helps clinicians with quick and effective search for information regarding a patient's treatment, instead of reviewing handwritten notes. A systematic review found that using CPOE was associated with improved compliance with guideline advice, fewer tests, a significant reduction in the median time to appropriate treatment and reduced cost (Georgiou et al., 2007). Many countries are working towards the implementation of electronic health records that will contain all relevant information about each patient. However, technical, legal and cultural challenges mean that in many cases, these systems are years from full implementation. In the meantime, some countries have established more targeted information-sharing systems, focused on medications (e.g. Germany and Denmark) or specific diseases (e.g. SveDem, the Swedish dementia registry).

36. These policy levers can be accompanied by more forceful regulatory measures. This may include requiring provider accreditation as a tool to limit adverse events caused by organisational shortcomings, as is the case with Australia. In the domain of low-value care, tools such as pre-authorisation for certain overused interventions have been tried in Israel. More importantly, disinvestment of obsolete technologies and the mandatory use of tools such as Health Technology Assessment (HTA) to gauge the effectiveness of interventions before they are funded through public means are needed. On another front, some countries have moved from a tort-based system to compensate medical harm to a government-funded no-fault system, to discourage low-value care driven by defensive medicine.

37. Table 1 summarises the findings on wasteful clinical care. For each category, it highlights actors involved and main drivers, greying the ones that are relatively less important. The "information" column points to information systems and data that can be used to better capture and monitor the problem. The next column provides a summary of policy options, organised around the four categories of policy levers. In the final two columns, examples of policy impact and good practice are given where possible.

Table 1. Who, why and what to do? Summary of findings on wasteful clinical care

Category of waste	Actors	Main Driver	Information systems required	Policy levers	Policy impact	Country examples
Preventable adverse events	 	Organisational shortcomings, sub-optimal decisions, poor incentives Organisational shortcomings, poor incentives	Adverse event reporting systems, PRIMs	**Behaviour change**: clinical guidelines, checklists, standards of practice, safety campaigns **Organisational changes**: improved coordination and use of ICT **Incentives**: Financial penalties for never events, change in tort law towards no-fault systems **Regulation**: Mandatory accreditation of providers	+ + + +	**Spain –** A five-point checklist is used in intensive care units to reduce catheter-related bloodstream infections **Germany, Denmark & Sweden** - More targeted information-sharing systems focused on medications or specific diseases **Israel –** Ministry of Health has defined four "never events" in which hospitals cannot bill health insurers **Australia** – All hospitals must meet ten national standards as part of mandatory accreditation
Low-value care	  	Sub-optimal decisions, poor incentives Sub-optimal decisions, poor incentives Poor incentives	Atlases of health care variation, PREMs & PROMs	**Behaviour change**: Audit and feedback, guidelines (do-not-do lists), campaigns promoting dialogue between patient and clinician (*Choosing Wisely* ®, advanced directives, decision aids), **Incentives**: Bundled, performance and value-based payments, patient co-payments for low-value interventions, disinvestment from low-value care, change in tort law towards no-fault systems **Regulation**: systematic HTA, pre-authorisation of certain procedures	+ ? +	**US, Netherlands, Italy, Canada, Australia, New Zealand, UK (and others) –** *Choosing Wisely* ® campaign **England** - Maternity Pathway Payment removing the financial incentive for caesarean section **US** – value-based programmes linking payment to quality and value **France** - rates of reimbursements for drugs based on their effectiveness for a given indication and condition severity **Israel** - Pre-authorisation centre for heart catheterisation has reduced unnecessary stenting.
Over-prescription of antimicrobials	 	Sub-optimal decisions, organisational shortcomings, poor incentives Sub-optimal decisions, poor incentives	Prescriptions monitoring systems	**Behaviour change:** guidelines, campaigns **Organisational change:** electronic prescriptions, improved use of ICT, rapid diagnostics tools **Incentives**: performance-based payments, patient co-payments	+ ++ ? +	**France** has implemented a CME programme for communicable diseases **Belgium** is one of the few countries that have carried out a full cost-benefit analysis of its mass media campaign. Stewardship programmes have been widely implemented and proved to be effective in the **US**, **France** and other countries.

 : Manager  : Clinician  : Patient +: some evidence of positive impact but limited and system-dependent ++: positive impact **?**: impact so far unknown

3. Operational waste

Operational waste points to situations where care could be produced using fewer or cheaper resources

38. Health care requires human and capital resources such as medical professionals, technology, pharmaceuticals, and other medical supplies. Operational waste occurs when:

- overly high prices are paid for these resources – for instance in the case of pharmaceuticals when brand drugs are used instead of cheaper generics;
- costly resources are used to treat patients when less expensive and equivalent alternatives exist - the key issue being the unnecessary use of specialised hospital care;
- purchased medical supplies, including pharmaceuticals, are not used and subsequently discarded.
- In contrast to the previous section, the care patients receive is the one they need but the same (or superior) benefit could be achieved using fewer resources.

Opportunities to spend less on pharmaceuticals

39. Across OECD countries, one out of every five health dollars goes on purchasing pharmaceuticals (Belloni et al., 2016). This section starts from the discussion of waste which occurs when purchased pharmaceuticals (or other medical supplies) are unused and discarded. Next, the section proceeds to the opportunities for substituting expensive originator medicines with cheaper and therapeutically equivalent generics. Finally, the discussion moves on to the complex issue of procurement.

Discarding of unused medical supplies: quantification, root causes and policy options

40. The value of discarded medical supplies is difficult to capture but probably underestimated since in most countries, only data on returns to authorised collection points are included. Even less is known about the value of medical supplies discarded by hospitals. Also, some discarding is inevitable because patients recover before the dispensed medicines have all been taken or therapies need to be changed. Nevertheless, approximately 50% of the value of discarded pharmaceuticals is likely to be avoidable cost (Trueman et al., 2010).

- In Australia, a 2013 audit revealed that the annual value of prescription medicines returned to collection points by patients is around AUD 2 million (Monash University, 2013).
- When prescription medicines discarded by patients at home are included, as is the case for the English NHS estimates, the annual cost could be as high as GBP 200 million (Trueman et al., 2010).
- Among large US academic medical centres, which represent 4% of all hospitals nationwide, every year at least USD 15 million worth of supplies are discarded despite being recoverable (Wan et al., 2015).

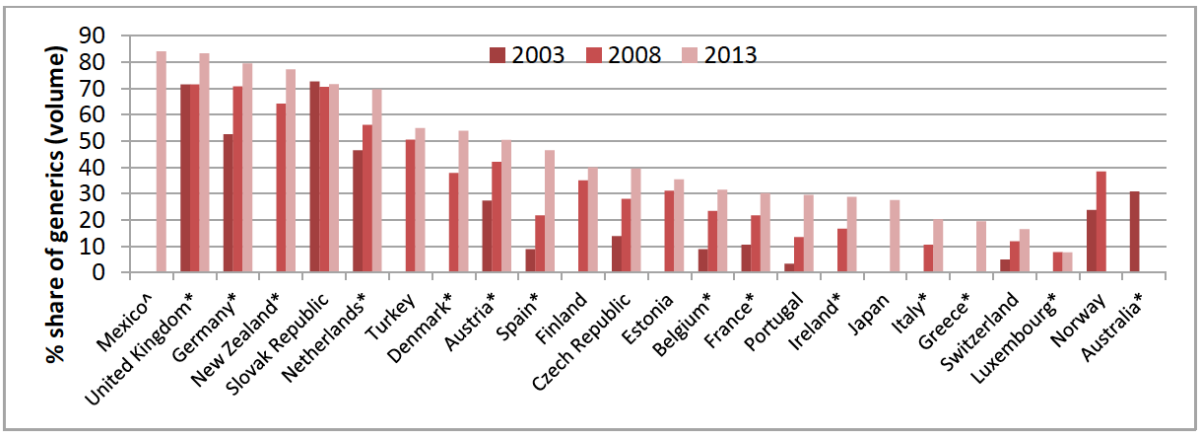
41. Patients and providers are primarily responsible for wasting medicines. For instance, excessive volumes are dispensed for repeated prescriptions which are not effectively reviewed. Also, some patients inappropriately follow their course of medication due to lack of knowledge, doubts, or simply confusion. Organisational shortcomings in management of supplies and stocks might play a role at health care facilities but has been less studied.

42. Tackling the problem requires changing behaviours through guidelines, education initiatives, and campaigns. In order to motivate health professionals and patients to prescribe/use medicines as cost effectively as possible, these tools must emphasise the benefits of medication rather than waste alone. Such strategy involves encouraging good communication between clinicians and patients, aimed at enabling as many patients as possible to resolve medication related concerns (Trueman et al., 2010). Trial based evidence from England suggests that providing face-to-face or telephone support to patients starting new treatments can cost-effectively reduce the volume of discarded medicines (Clifford et al., 2006). Also, e-prescription or other prescription review systems (Denmark, the UK) can improve the monitoring of dispensed medicines. The evidence on their effectiveness is, however, less clear.

Generic substitution: a potential still to be exploited

43. The use of generic drugs is a good opportunity for freeing up resources within healthcare systems. In the US, for instance, where the generic market is very dynamic, the price of a generic drug is on average 80 to 85% lower than that of the originator (IMS, 2013). Indeed, the shift to generic drugs and the so-called "patent cliff" (a large number of drugs losing patent protection) are responsible for the recent decline in overall pharmaceutical spending observed across OECD countries. Yet, some OECD countries do not fully exploit this potential (Figure 3) - the share of generics in pharmaceuticals covered by basic health benefits varies between 10 and 80% (Belloni et al., 2016).

Figure 3. Trends in generic market shares in volume in OECD countries between 2003 and 2013



Notes: * Data refer only to reimbursed pharmaceutical market, ^ data provided by COFEPRIS

Source: OECD Health Data 2015.

44. The use of generics can be hampered by human factors and regulatory obstacles. The former include the established practice of using the originator drug among clinicians and patients. The later exist when physicians are not allowed to prescribe using International Non-proprietary Name (INN), which is still the case in some OECD countries (Belloni et al., 2016). Moreover, entry-level legislation might delay launch of generics onto the market (Vogler, 2012).

45. Policies to promote the use of generics start with regulatory adjustments to increase opportunities for generic substitution. This includes allowing substitution for all classes of drugs where the option exists, and early-entry legislation allowing the generic producers to complete the regulatory requirements prior to the patent expiry of the originator. In addition, facilitating drug prescriptions using INN can enhance substitution of originator drugs with generics. Several OECD countries (Denmark, Finland, Spain and

Sweden) implemented also regulatory measures mandating pharmacists to substitute the medicine prescribed by the cheapest generic (Vogler, 2012).

46. These regulatory policies can be accompanied by financial incentives. For clinicians, France introduced a pay-for-performance scheme rewarding prescription of generics while Japan introduced bonuses linked to the share of generics in prescribed medicines. In most countries, patients are incentivised to choose generics through lower co-payment and internal reference pricing (Belloni et al., 2016).

47. Other measures targeting patients include information campaigns explaining generics' equivalence to originator drugs (Austria, Estonia, Portugal and Spain). In Norway, pharmacists have the obligation to inform patients about the possibility of a cheaper alternative (Belloni et al., 2016).

48. While no formal evaluation is available, these policies, associated with patent expiries, have certainly contributed to the significant increase in generic market share observed over the past decade in most countries (Figure 3).

Between and within country price variations are striking and at least partially unwarranted

49. Comparing prices of pharmaceuticals, especially across countries, is not straightforward. Prices can be measured at different stages (from ex-factory to retail); and differences in prices – which are in part determined by market forces – may also reflect the different value countries attach to health outcomes in relation to their income. Further, official and actual prices may differ, as manufacturers can provide discounts to countries subject to non-disclosure agreement. In sum, not all price differences are measurable or unwarranted. Yet, large variations within a country and between similar countries can be a sign of inefficient procurement.

- Prices of the same hospital pharmaceutical differ by up to 23% between geographical areas in Italy (Baldi and Vannoni, 2015).

- Price paid for simple patient identification wristband by different English NHS trusts varies more than two-fold (NHS, 2014).

- Studies in the past decade show that Germany, the US, Sweden, Switzerland, and Denmark tend to be high-priced countries for originator drugs, whereas prices for originator drug in Portugal, Spain, Mexico, Greece and, recently the UK, rank at the lower end. For example, for a number of cancer drugs, the differences in ex-factory prices between the highest and the lowest priced country varied between 28 and 388% (Vogler et al., 2016).

50. Relatively high prices can reflect passive procurement practices which do not fully exploit the potential for building market power through bulk purchasing. Indeed, in many OECD countries, individual health care providers, notably hospitals, or local government units carry out procurement separately. This does not allow for volume-related discounts and creates unnecessary task repetition by each buyer. Individual buyers have also limited leverage to negotiate more innovative contracts or, in case of tenders, develop more advanced product specifications and auction designs.

51. With the aim of improving procurement, several OECD countries (Denmark, Greece, Italy, Mexico, Norway, and UK) adopted various forms of collaborative procurement and report considerably reduced prices. Collaborative procurement (consortia buying, group purchasing, etc.) increases buyers' market power and supports lower prices, understood not only as price per item but also as better value for money. Collaborative procurement forms range from fully centralised and legally binding structures at

national or regional level, to hybrid forms, in which the collaboration is voluntary. The most recent examples include:

- A central procurement agency created in Mexico, which saved around USD 6 billion compared to the budget planned based on the performance of the former decentralised system (OECD, 2013);

- Italy, where the central purchasing agency (46 employees) paid on average 20-23% lower prices than the remaining decentralised buyers between 2009 and 2012 (Baldi and Vannoni, 2015);

- Greece, where centralisation of procurement in one agency (26 employees) created savings of EUR 180 million compared to the expected budget for 2011 (Kastanioti et al., 2013).

52. Transparent information sharing is also a powerful tool to promote better procurement. Countries should try to systematically capture and publish data on within country price variations, as is the case in the England. Consideration could also be given to sharing price information internationally. At the very least, the question should be asked whether any "private" discount a country receives is actually meaningful in light of the actual price other countries may pay.

Better targeting the use of hospital care

53. Hospitals should focus on their mission to provide highly technical services in the most efficient way and various opportunities exist to reduce instances when patients could be treated equally well without draining such expensive resources. In particular, effective treatment at the primary care level could replace a substantial share of the workload in emergency departments and prevent hospitalisations for chronic conditions. Furthermore, an increasing number of minor surgeries can be performed on a same-day instead of inpatient basis. There are also indications that some patients are discharged from hospitals with an unnecessary delay.

Emergency department visits, hospital admissions and length of hospital stay can be further reduced

54. A substantial portion of emergency department (ED) visits are inappropriate. Similarly, OECD data reveals large cross-country variations in hospital admissions for chronic conditions such as diabetes, congestive heart failure, COPD and asthma. For these diseases, early and appropriate primary care treatment has been proven to prevent hospital admissions (Longman et al., 2015) indicating the potential to reduce the use of hospital care. Finally, some patients are admitted as an inpatient when they could just as well be treated on a same-day basis. Advances in medical technologies have made it possible for an increasing number of surgical procedures to be on a day-care basis for most patients (Fischer and Zechmeister-Koss, 2014).

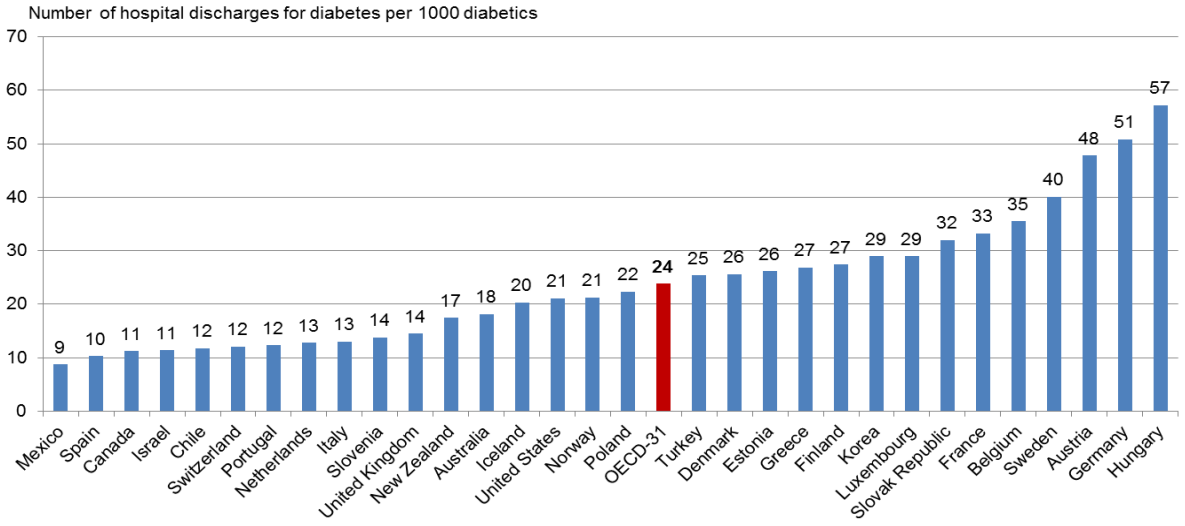
- Inappropriate ED visits account for nearly 12% of ED visits in the US and England, 20% in Italy and France, 25% in Canada, around 30% in Portugal and Australia, and 56% in Belgium (Berchet, 2015).

- In England the cost of inappropriate ED visits was estimated at nearly GBP 100 million between 2011 and 2012 (McHale et al., 2013) and in the US around USD 38 billion yearly (NEHI, 2010).

- Nearly six-fold cross-country variation exists in rates of hospital discharges per 1000 diabetics (Figure 4) (OECD, 2015b).

- Large cross-country variations exist in the share of minor surgeries delivered on a same-day basis. For example, on average 83% of cataract surgeries are provided on a same-day basis but the rates vary from 27% to 100% between countries (OECD, 2015c).

Figure 4. Diabetes admissions per 1 000 patients with diabetes, 2011 (or nearest year)



Source: OECD (2015b). Improved control of cardiovascular disease risk factors and diabetes: The central role of primary care.

55. Even when inpatient hospital admission is necessary, poor care coordination creates situations when patients who are ready to leave hospital cannot do so because ongoing care has not yet been arranged. Some countries (e.g. Canada, Denmark, Sweden, Norway and the United Kingdom) collect data on a situation when patients remain in hospital after a doctor has declared them ready to be discharged (Figure 5). The additional time spent in hospital is, according to the doctor's opinion, not beneficial for the patient – and it may even be harmful, if they could be treated more effectively in another setting – yet it has a significant cost. While data may not be strictly comparable, there appears to be significant variation: Denmark reports around 10 additional bed days per 1000 population in 2014 and England more than 30. Some countries have also seen notable changes over time: Norway saw a significant drop in 2012, which coincided with the introduction or reforms to improve care coordination; while England has seen an increase in delays since 2013, largely caused by people waiting for social care services to be arranged.

Drivers of hospital overuse

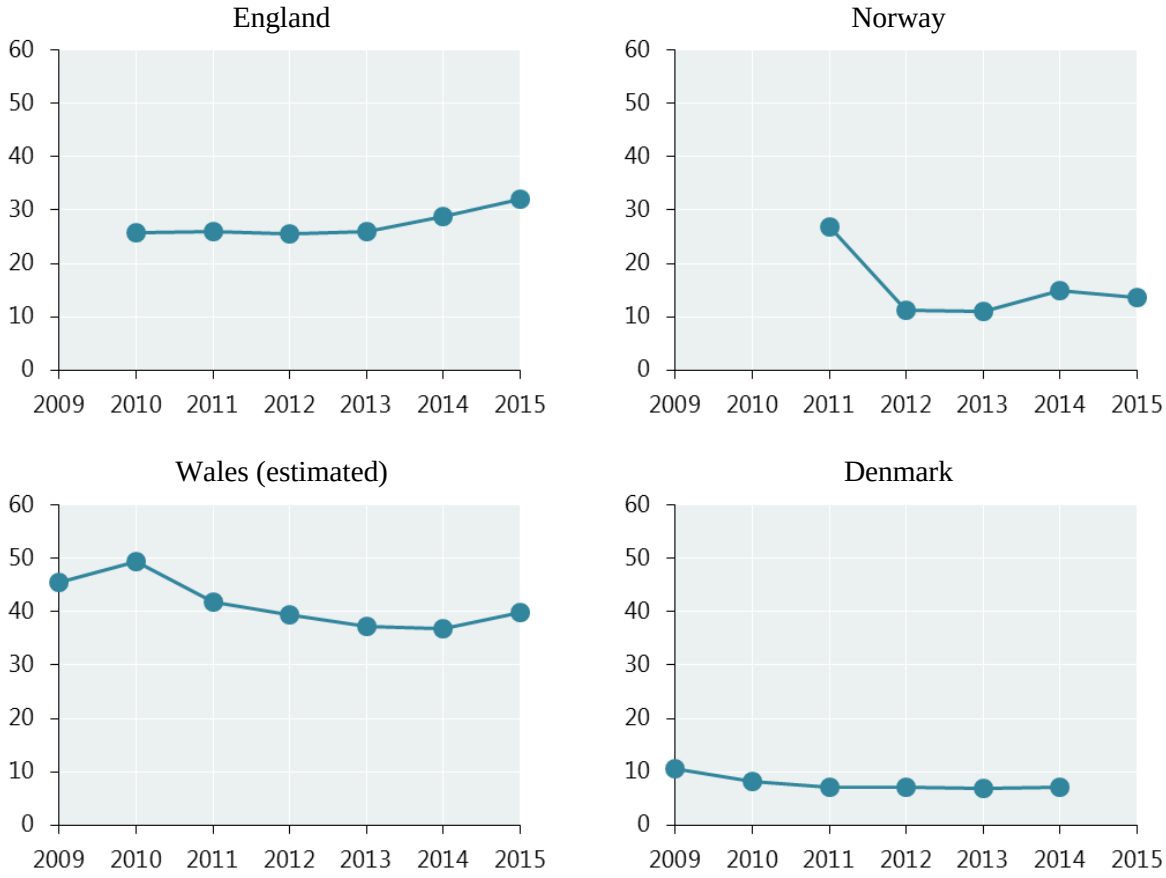
56. The complex and interlinked drivers of unwarranted use of hospital care include behavioural factors of clinicians and patients, financial incentives misaligned with system objectives, and shortcomings in organisation and coordination. The latter cover two sets of issues: a lack of alternatives to hospital care (such as primary care or community care) and failures in coordination of care between hospitals and other settings.

57. Lack of access to alternative options, in particular primary and community care, is a key driver of unnecessary hospital use. A significant proportion of patients face barriers in access to primary care either because of a lack of out-of-hours (OOH) services or because of long waiting times (Berchet and Nader, 2016). Others stay in hospital for longer than necessary due to lack of community care. However, even when alternative services do exist, poor communication and coordination between hospitals and other care settings can unnecessarily extend hospital stay. One reason for this may be a misalignment of financial

incentives between providers (often mirrored by a misalignment of the funding sources). For instance, typically, if the ongoing care provider (financed by the social care system) causes the delay, the cost is borne by the hospital (financed by the health authority).

58. Inappropriate ED visits and avoidable hospital admissions also relate to the quality of services delivered within primary care settings. Primary care provider variation from evidence-based care guidelines is associated with increased patient complication rates and inpatient admissions at hospitals. The evidence is particularly marked for chronic conditions where suboptimal monitoring has been shown to be a cause of preventable hospitalisations (Freund et al, 2013).

Figure 5. Delays in transferring patients from hospitals in four OECD countries



Source: OECD analysis of data from NHS England, the Norwegian Directorate of Health, the Danish Ministry of Health and the Welsh Government Please note that data from different countries may not be comparable.

59. On the patient side, co-payments for outpatient care create incentives to seek free care in EDs. This is the case in Greece and Portugal (Eurofound, 2014). Poverty, minority status, low educational attainment and lack of social support are additional factors positively associated with excess hospital admissions and ED visits (e.g. Nishino, Gilmour and Shibuya, 2015). Patient preferences for seeking emergency care have also been traditionally high because a full range of medical services are accessible 24 hours a day, seven days a week (Durand et al. 2012).

Policy levers to reduce hospital overuse

60. Policy options, which aim to change how patients move around the system, range from simple, incremental changes – such as putting a stop to wasteful activities – to transformative policies around system redesign and disease management. The discussion here purposely focuses on the first group of policies.

61. A first category of policies consists in availing the less costly option, including primary care, community care services, or intermediate care facilities, in the right place at the right time. In the Netherlands, large-scale organisations of OOH primary care, such as general practice cooperatives have been found effective to improve timely access to appropriate primary care services while increasing patient and physician satisfaction (e.g. Giesen et al, 2011).

62. Offering better primary care services within hospitals, particularly in emergency departments, helps redirect non-urgent patients to primary care settings and speed up their discharge. A first option is fast-track systems which involve treating patients with non-urgent conditions in a dedicated area by professionals with the competencies to make discharge decisions. In France, the UK, the US and Canada, fast-track systems has successfully reduced inappropriate use of cost-intensive EDs (Cour des comptes, 2014; Rogers et al., 2004). Another approach is to use primary care practitioners within EDs to filter and redirect patients with non-urgent problems. In the Netherlands and Switzerland the strategy has cost-effectively lowered the use of emergency services (Thijssen et al., 2013, Wang et al., 2013).

63. Evidence from Australia, Ireland, Italy and the US has shown that community care centres successfully reduce ED visits and limit hospitalisations (e.g. Bruni at al., 2013). A number of countries have developed or strengthened "intermediate care" facilities. Evidence from Norway suggests that intermediate care benefits patients and saves money relative to hospital care (Garåsen et al., 2007).

64. A shift in financial incentives can support the development or choice of the less resource-intensive care. In Japan, additional fees are provided to hospital EDs to encourage patient discharge to primary care clinics (Japanese Ministry of Health, 2014). Hungary reduced payments for inpatient admissions for minor surgeries to incentivise a greater uptake of day surgery. On the demand side, removing co-payments at the point of care for outpatient primary care visits improves patients access (as seen in Canada, Denmark, Italy, Poland, Spain, the United Kingdom, and Germany) (Berchet, 2015).

65. Financial incentives are also being used in some countries to target specific failures of coordination at the interface between hospital care and other services. In Norway, Denmark and England financial sanctions apply to local authorities in case of delays in discharging patients from hospital. In Norway, this approach significantly reduced delayed discharges (Figure 5).

66. Softer tools are also important to increase the quality of primary care and convince patients to change their care seeking habits. Evidence-based clinical practice guidelines support clinical decisions and reduce unwarranted variation in care, particularly for chronic conditions. Improved adherence to clinical practice guidelines for asthma, COPD or diabetes by primary care providers has been associated with fewer hospital admissions (AHRQ, 2001). For example, targeted incentives on the compliance to clinical practice guidelines had favourable effects on diabetes outcomes in the United Kingdom (Latham and Marshall, 2015). Education programmes and counselling can help patients develop a better understanding of their own health conditions, and the appropriate place to seek care.

67. Table 2 summarises the policy options to reduce operational waste.

Table 2. Who, why and what to do? Summary of findings on operational waste

Category of waste	Actors	Main Driver	Information systems required	Policy levers	Policy impact	Good practice examples
Discarded pharmaceuticals and other medical supplies		Sub-optimal decisions Organisational shortcomings Organisational shortcomings Inadequate regulation	Monitoring of patient adherence to medication, Monitoring of prescriptions, Monitoring of stocks in health care facilities	**Behaviour change:** guidelines, training, and campaigns; **Organisational changes:** e-prescription systems, improved management of stocks in health care facilities;	+ ? 	**England** - pharmacists providing face-to-face or telephone support to patients starting new treatments **Denmark, UK -** physicians receive periodical reviews of prescriptions
Expensive originator drugs used instead of generics		Inadequate regulation Inadequate regulation, poor incentives Sub-optimal decisions, poor incentives	Monitoring of prescriptions and the use of generics	**Regulation**: prescription by INN, early-entry legislation, mandatory substitution of a prescribed medicine with the cheapest generic; **Incentives**: pay for performance, patient co-payments, internal reference pricing; **Behaviour change**: guidelines, campaigns	? ? ? ?	**Denmark, Finland, Spain, Sweden** - mandatory generic substitution by pharmacists **France, Japan -** pay-for-performance for prescribers based on share of generics in prescribed medicines **Austria, Estonia, Portugal, Spain** – information campaigns on generics for patients
Overly high prices paid for pharmaceuticals		Organisational shortcomings Organisational shortcomings	Atlases of price variations, Market intelligence	**Organisational changes**: collaborative purchasing, advanced contracts and auction designs, user friendly e-procurement platforms, analysis of price variations	++	**Greece**, **Mexico -** central procurement agency replacing decentralised system; **Italy** - Collaborative procurement through central and regional agencies
High-cost hospital care used where less expensive alternatives exist		Organisational shortcomings, poor incentives Sub-optimal decisions Poor incentives, sub-optimal decisions Inadequate regulation	Monitoring of inappropriate and avoidable hospital admissions, Monitoring of variations in primary care practice	**Organisational changes**: development of OOH primary care, community and intermediate care services, improved co-ordination of services; better hospital discharge management. **Incentives**: bundled and performance-based payments, payments encouraging same-day surgery, co-payments (removing outpatient co-payments, charging for unnecessary use of emergency); **Behaviour change**: guidelines, patients' education and campaigns	++ ++ ++	**Norway –** larger primary care centres (intermediate care facilities) with 24-hour, 7-day a week access **United States** – stronger community care centres **France, UK, US, Canada** – fast-track systems for emergency services **Hungary** – removing budget caps for same-day surgery

 : Regulator  : Manager  : Clinician  : Patient **+**: some evidence of positive impact but limited and system-dependent **++**: positive impact **?**: impact so far unknown

4. Governance–related waste

Administrative expenditure in health

68. Spending on administration is often seen as one of the first areas from which to cut waste. Administrative costs are incurred at the regulatory (macro) level, as well as all levels of administration and management, including by individual healthcare staff at the micro-level. Administrative waste occurs when administrative tasks do not add any value, are unnecessarily repeated, or are performed in a way which is more expensive than required (for instance reporting obligations that do not translate into actual monitoring, duplication of competencies across agencies, physicians taking on administrative tasks that could be done by non-medical staff). In other words, administrative waste comprises of activities that can be either eliminated or executed using fewer and/or less expensive inputs.

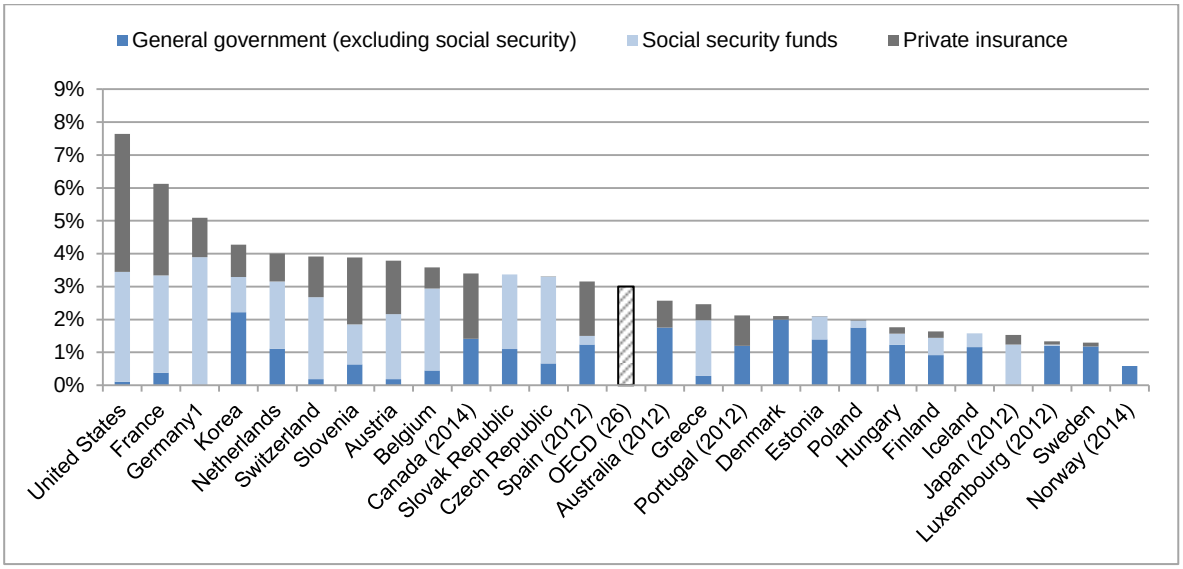
Administration represents a modest share of total expenditure but opportunities to increase efficiency exist

69. Administrative expenditure includes the resources that go into administration of the financing, governance, and service delivery of a health care system. At the system level, spending on administration takes up a modest share of overall health expenditure. The OECD average of health administration expenditure was 3% of total health expenditure in 2013. It was, however, double that level in France and even higher in the US. On the other hand, a number of countries report administrative expenditures below 2% of overall health spending, with Norway seemingly allocating the least, only 0.6% - Figure 6 (OECD, 2015d).

70. The level of administrative expenditure varies with the nature of health financing schemes across countries. Figure 6 suggests that systems with social security funds might generate higher administrative expenditure than those in which the general government manages coverage. Further mapping of the data to organisational features however shows that single payer systems (whether the payer is a social-security fund or a ministry) tend to have comparable levels of administrative spending, lower than those with multiple payer, especially when the payers compete and consumer can choose their source of coverage (Mossialos at al., 2002). Moreover, private insurance generates a relatively high share of total administrative expenditure, especially in light of its limited role in pooling in most countries. Partly, these variations across financing schemes can be explained by the differences in resources the schemes devote to specific administrative functions, such as the collection and pooling of funds, or marketing.

71. Differences in administrative expenditure at the level of individual healthcare organisations, such as hospitals and individual clinicians are less studied. Of nations where data allowed for a comparison of administrative costs in healthcare organisations, Scotland reported the lowest share at 11.6% of total hospital costs whereas this figure was more than double in the US (Himmelstein et al., 2014). It is, however, challenging to demarcate costs purely related to administration in healthcare facilities, because many functions have both an administrative and clinical purpose. Administrative costs of health providers also vary within countries. For instance, a recent report analysing variations in productivity and performance in NHS England finds that costs for corporate and administrative staff vary between 6 and 11% of total income among trusts. Regarding individual clinicians, observational studies conducted across settings in different countries found that physicians' time spent on 'documentation' ranges from 8 to 27%. (Ammenwerth and Spötl 2009, Mache et al. 2011, Arabadzhiyska et al. 2013, Westbrook et al. 2008).

Figure 6. Administration as a share of current health expenditure by financing scheme, 2013 (or nearest year)



Note: 1: Germany does not report data on administrative spending by the general government (excluding social security), resulting in an underestimation of total administrative expenditure.

Source: OECD (2015d).

72. Administrative expenditures are often seen as the first target areas when implementing austerity measures. The common view is that excessive bureaucracy and 'red tape' are burdensome (Morra et al., 2011, Cutler at al., 2012). Comparing how countries differ in the way they administer their health system can serve well in identifying policy pointers. However, simple international comparisons of the level of spending on administration can also be misleading, since such comparisons reflect the differences in governance and financing structures of healthcare, and only illustrate the costs, not the potential benefits of administrative expenditures.

73. Administration should not be seen as 'bad' spending *per se*. Paying for performance for instance can be expected to generate a higher administrative burden for providers and payers as it typically involves the reporting and analysis of additional data to evaluate progress in performance for a substantial number of indicators of health care quality (OECD and WHO, 2014). In the same manner, health technology assessments (HTA) generate costs but promote more informed decisions on coverage of new and current services. Likewise, elaborate follow-up of clinical recommendation adherence by inspectorates is not free of cost but it might improve clinical practice. What is important is to balance out the costs of the administrative activities against their potential benefits, which is difficult to measure.

74. Despite the complexities and difficulties in establishing the magnitude of administrative waste, the drivers behind it are relatively straightforward to conceptualise. Administrative waste can be caused by the usual organisational deficiencies and incongruous regulation, which lead to efforts being spent on tasks that bring no added value or duplication of activities. Additionally, poor co-ordination of administrative tasks between different actors within or between organisations leads to waste in a similar manner that poor co-ordination between different health care providers underpins operational waste.

System-specific investigations are required to identify possible administrative efficiency gains

75. At all levels of the system, strategies to reduce administrative waste are centred on organisational changes identified through detailed investigations of administrative activities. In particular, comprehensive

functional analyses of organisations or in-depth stock-taking of the administrative burden of health providers are promising approaches to identify areas where action is required to cut wasteful spending.

- Australia, for example, commissioned a functional and efficiency review of the Commonwealth Department of Health. Efficiency gains of around AUD 106 million were found in operations, partly by removing duplication of administrative activities.

- Germany and the Netherlands went a step further involving all major stakeholders, including at the provider level. In Germany, the review identified EUR 4.3 billion of administrative costs related to documentation and reporting and recommended 20 measures to improve administrative efficiency (Statistisches Bundesamt, 2015).

76. The key recommendations with regards to organisational changes emerging from these reviews are typically country- and system-specific and range from smaller adjustments to reorganisation of regulatory functions. They can broadly be clustered into the following categories:

- Making better use of IT in communication between payer and provider;

- Simplifying administrative procedures;

- Finding the right size of administrative bodies.

77. IT solutions can reduce paperwork in particular in the interaction between payers and providers. Up-front development costs can be high but efficiency gains are expected in the long-run. Measures of this kind have been taken in a number of countries, including Belgium, France, Norway, Slovenia and Switzerland. This can refer to electronic reporting of performance measures, the implementation of e-prescription and/or e-referrals, the development of electronic patient records or more generally using a digital platform to exchange information between providers and payers. In many cases, higher quality of data and improved patient safety is a secondary aim of the increased use of IT at the provider level. Regulatory processes can also be simplified with the help of IT. In Israel, for example, the move towards digitalised procedures for medical graduates to receive their medical licenses and to apply for compulsory clinical internships has sped up these processes considerably. It also led to a better matching of hospitals and interns who are now more likely to work in the hospital of their choice. Other simplification measures may include the streamlining of forms used by physicians for billing purposes or prescription forms.

78. Recommendations to improve administrative efficiency can include the merger or in other cases the separation of administrative institutions. Whether agencies are merged or separated depends on the country-specific context but countries are trying to find the most appropriate organisational size to achieve efficiency gains.

79. In addition, many countries try to improve administrative efficiency through a variety of regulatory levers. They vary a lot in their scope and range from measures increasing transparency to budget ceilings set for administrative spending. For example:

- Germany and the Netherlands introduced a legal requirement to estimate any additional administrative burden associated with each new piece of legislation discussed in parliament.

- Ceilings/efficiency targets have been defined to strengthen governance of health expenditures in Denmark and France (for the main public insurer CNAMTS).

- The Swiss Office of Public Health (FOPH), the oversight body for the statutory health insurance, surveys the financial records of health insurance companies and can directly require insurers to reduce their administrative costs below a defined limit in case they are deemed excessive.

- In the US, the Affordable Care Act (ACA) stipulates a Medical-Loss-Ratio requiring insurers to spend at least 80-85% of premiums on medical claims. Since its introduction in 2011, the share of non-medical overhead costs in net premiums decreased resulting in accumulated savings of USD 3.7 billion by 2013. It remains unknown, however, to what extent these savings can be attributed to the new regulation (McCue and Hall, 2015).

80. Finally, depending on their managerial autonomy, health care providers may themselves engage in reducing administrative costs without involvement of payers or the regulator. Like other industries, providers can strive for leaner management structures and more flexibility in staff sizes or better organisation of hospital management to cut administrative costs.

Wasting with intention: fraud, abuse, corruption and other integrity violations in health

81. The final category of waste reviewed in the report essentially comprises resources illegitimately and deliberately diverted from healthcare to serve the self-interest of a few. From the report's perspective, it is easy to conceptualise these behaviours as wasteful. Depending on the system and culture, they may be legally sanctionable, only morally reprehensible, or part of the normal way things work, small or large, rare or systemic. Terms to designate them, depending on the specific circumstances, include fraud, abuse, corruption, patronage, bribery, etc. In order to avoid semantic debates, the report coins them "integrity violations", an umbrella term for various types of dishonest behaviours that divert resources from their intended purpose. People or entities engaging in these behaviours may commit them in their own self-interest or in the interest of the business or even industry they work for. Finally, they can involve any of the key stakeholders listed in the waste framework (Figure 1). In addition though, they may involve any business operating in the health sector – to produce or distribute goods and services, which can be both specific to the sector (e.g. pharmaceuticals or medical equipment) or not (e.g. construction, software, insurance services, etc.).

82. Building on Savedoff (2006) who linked transactions which can be corrupt to various stakeholders in the sector, a comprehensive mapping exercise of integrity violations in health systems suggests that they take place in the context of: i) service delivery and financing; ii) procurement and distribution; or iii) the pursuit of general business objectives. Integrity violations in service delivery and financing mainly involve patients, payers, and providers. Problems in procurement and distribution involve suppliers or manufacturers at the expense of payers or providers and may even, in the case of counterfeit medicine, originate from criminal organisations and pose a threat to health in addition to being wasteful. The last category of integrity violations can involve any "business" operating in the health sector, including those of delivering services, of developing, producing or selling medicines, etc. All these operators have legitimate business objectives which some may, in practice, seek to achieve in unethical and ultimately wasteful ways. Table 3 provides some examples for each of these 3 categories.

Table 3. Examples of integrity violations in health linked to potential perpetrators

Service delivery and financing	
Patients	Fraud to obtain unjustified coverage; wrongful claims; bribery
Payers	Unjustified denial of coverage, benefits or payments; misuse of resources
Providers	Informal payments; overprovision; overbilling; phantom care; misuse of resources; absenteeism/ payroll fraud
Procurement and distribution	
Suppliers/Manufacturers	Inappropriate influencing of procurement processes; wrongful bidding; collusion
Suppliers	Counterfeiting; falsified or substandard medical products
Inappropriate business practices (in relation to legitimate business objectives)	
Businesses operating in the sector seeking to influence payer, regulator, prescriber or patient - directly - through other institutions (patients associations, research institutions, scientific journals, medical societies, opinion leaders.)	Inappropriate promotion of a business friendly regulatory environment: Revolving door; political corruption; financing of political campaigns, parties or candidates Inappropriate influence to gain market entry: Providing erroneous information (diploma/characteristics of facility); distorting evidence on safety, efficacy or effectiveness (clinical trial methodology, selective publication of results); exerting direct influence on decision-making authorities (inspectorates, advisory committees, etc.) Inappropriate methods to increase demand for products or services: Medicalising new health problems; inappropriate detailing, kick-backs, self-referrals

How much corruption is there in the health sector?

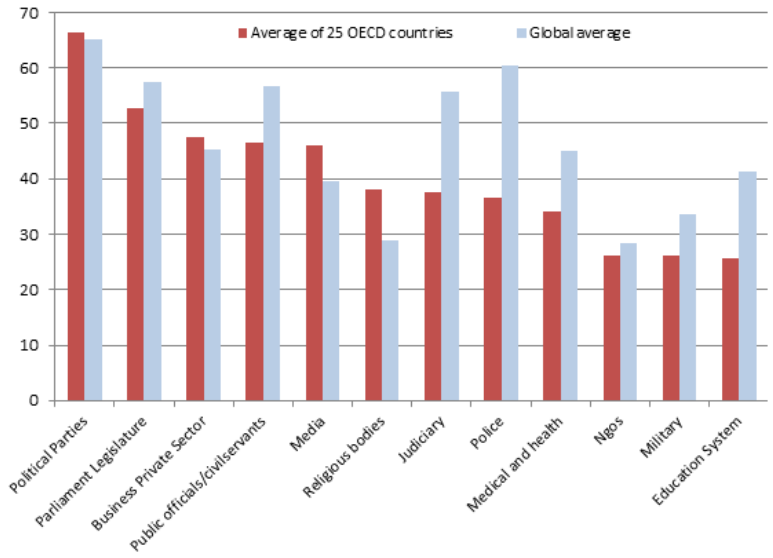
83. A number of theoretical considerations suggest why the health sector might be particularly prone to integrity violations (European Commission, 2013). In particular, and perhaps more than other sectors, health is characterised by a multiplicity of stakeholders with complex interrelationships, a high degree of uncertainty, and a vast range of transactions that are often based on the delegation of responsibilities between actors with diverging interest who have access to different information and knowledge. To give a few examples, healthcare providers have specialised knowledge to decide on the treatment of any given patients, patients may not share all the information about their health, industries have information about the cost of development of a new pharmaceutical product and its potential benefit, etc. The combination of these characteristics makes it difficult to standardise services, monitor behaviours and ensure transparency in the health system. Consequently, integrity violations might occur.

84. Integrity violations in health, though, like in any sector of the economy, are notoriously difficult to measure and compare across systems. A first reason is the lack of a uniform understanding of what may constitute fraud, abuse and corruption. More importantly, since most activities are reprehensible and some at least can be sanctioned, they naturally tend to be covert. Surveys capturing perceptions of corruption are among the only tools available to gage the scale of integrity violations in health. Transparency International (2013) provides a recent cross-country comparison of the perceived level of corruption across a range of sectors, including health. Figure 7 shows that although the health sector – in OECD countries – is ranked in the bottom third of corrupt institutions, a third of citizens nevertheless deem the sector as corrupt or extremely corrupt (45% globally).

85. When it comes to levels of spending wasted to integrity violations, published numbers tend to be quite low, if only because while detecting anomalies might be fairly simple, establishing intent often is a lengthy legal process. To give a couple of examples, the French CNAMTS recovered EUR 200 million lost in health care fraud in 2014, representing 0.1% of health insurance benefits. The Centers for Medicare and Medicaid Services (CMS) recovered USD 2.3 billion in restitution and recoupment for fraud in 2014 (HHS and DOJ, 2015), corresponding to 0.2% of the total amount of expenditures on these programs. But these numbers refer to detected and proven integrity violations, which are difficult to separate out from simple

errors. A yearly publication purportedly reporting data from methodologically sound measurement exercises subjected to external validation from 7 OECD countries estimates that the loss to fraud and error combined averages at 6% of related health expenditure, with most estimates ranging between 3 and 8% (Gee and Button, 2015). As countries are only able to recoup much lower percentages, there are reasons to improve measures that aim to prevent and tackle integrity violations in health within OECD-countries.

Figure 7. Percentage of the population which considers the sectors corrupt or extremely corrupt globally and among OECD countries



Source: Note: 107 countries are included. Among OECD countries, Austria, Iceland, Ireland, Netherlands Poland, Sweden are not included. Source: Transparency International 2013.

Policy levers to deal with integrity violations in health

86. This final section focuses on strategies to tackle integrity violations specific to the health sector. As public funding dominates health in most OECD countries and the sector is heavily regulated, the overall quality of governance, particularly public sector governance in domains such as public finance and budgeting, public financial management, public procurement, civil service management frames what happens in the health sector. A poor level of governance in a given country is likely to permeate the health sector. Conversely, if the civil service or public procurement is corrupt, the health sector is unlikely to be able to address the problem through sector-specific measures alone. With this in mind, the report focuses on two domains where at least some OECD countries have introduced sector specific interventions: service delivery and financing and inappropriate business practices.

A handful of countries have step-up specific systems to tackle integrity violations in service delivery and financing

87. OECD countries differ quite significantly in the level of effort they put into addressing integrity violations in service delivery and financing. The response is primarily organisational in the sense that it involves assigning the responsibility for detecting or tackling integrity violations in service delivery and financing and sometimes defining how it will be done. Survey responses identified 4 countries with dedicated central or government programs or institutions (Belgium (INAMI), Japan, Portugal, England); others delegate these responsibilities to payers, public ones – France, Germany, the US for Medicare and Medicaid - or private health insurance companies (Netherlands, Turkey). A number of OECD countries do

not have a health specific dedicated institution for tackling integrity violations, but rely on general counter-fraud and anti-corruption organisations instead[3]. Especially when counter-fraud responsibilities are placed in the hands of private organisations, additional legal obligations or incentives are required in order to guarantee efforts, as fraud detection can be costly and tackling integrity violations does not necessarily have a positive cost-benefit ratio.

88. Fraud detection activities can be more or less proactive. They can rely on simple audits, controls and/or the investigation of complaints and systems may or may not be in place to encourage the reporting of integrity violations – for instance through hotlines. More advanced countries use analytical tools to detect integrity violations, including data-mining.

89. When it comes to addressing integrity violations, practitioners highlight the importance of having a stepwise, comprehensive and credibly enforceable response. The first step relies on soft behavioural tools – it mostly consists in raising awareness about a specific type of problem (for instance over-prescription of specific tests, unusual frequency of repeated visits, etc.) by communicating information and data to all or subset of providers and – if needed and possible – by generating technical consensus around the fact that the behaviour is – under most circumstances - inappropriate. This alone can bring change in behaviours about (because the perpetrators know the behaviour is under observation or through peer pressure). If the problems persist and/or the scale of the issue requires it, the next step is to investigate specific cases and outliers, using forensic techniques and medical experts who can check facts and carry out investigations but need to be empowered to access medical information. The last step is to take - as feasible - administrative sanctions and/or initiate civil or criminal legal proceedings. Overall, efforts must go into engaging and communicating with health professionals, recognising that errors can happen and that special circumstances can dictate deviations from good practices.

Self-regulation probably remains the norm, but some countries have set limits to specific business practices

90. With regard to tackling inappropriate business practices, responses by countries are typically regulatory in nature and consist in limiting or banning certain practices. Little attention is paid to actively detecting these types of integrity violations. Instead, countries rely on whistleblowers reporting integrity violations or the investigation of and reaction to specific crisis, particularly when they have had detrimental consequences on health. The three main domains where some countries have introduced regulation seek to limit self-interested referrals by health providers and the means by which the pharmaceutical industry is allowed to promote sales – including sunshine regulation. Thirdly, the questions of how to ensure the integrity of research, particularly when it comes to clinical trials and conflict of interest are gaining increasing attention. In general though, self-regulation by industries remains the norm.

91. Overall, many OECD countries need to strengthen their efforts to curb integrity violations in health, not only to reduce waste and increase efficiency, but to enhance transparency, improve the integrity of the sector and contribute to patient safety as well.

3. Including: Austria, Czech Republic, Denmark, Estonia, Finland, Hungary, Ireland, Italy, Poland, Slovakia, Slovenia, Spain, and Sweden.

Table 4. Who, why and what to do? Summary of findings on governance-related waste

Category of waste	Actors	Main Driver	Information systems required	Policy levers	Policy impact	Good practice examples
Administrative waste		Organisational shortcomings, inadequate regulation Organisational shortcomings inadequate regulation Organisational shortcomings, inadequate regulation	Evaluation of costs and benefits of administrative activities; Collection and disclosure of information on administrative performance	**Organisational changes**: Merging/separating/sharing among administrative institutions, improved co-ordination of administrative activities within and between institutions, user guides and protocols, improved use of ICT; **Regulation**: Removal of administrative tasks, legislative principles, budget ceilings, simplification of procedures, standardisation of forms and reporting requirements	**?** **+** **?** **?**	**Australia –** functional and efficiency review of the Commonwealth Department of Health assessing the efficiency and effectiveness of the Department's operations, programmes and administrations **Israel** – simplified electronic procedure for medical graduates to receive physician licence and improved allocation of graduates to hospitals for internship **Germany, the Netherlands** – collaborative efforts of all stakeholders to quantify and agree on reduction of administrative reporting requirements that add little value **USA** – stipulating the share of premiums that private insurers have to spend on medical claims
Integrity violations in service delivery and payment		Intentional deception	Publication of estimates; Large-scale collection of treatment and billing data;	**Organisational changes**: Setting up/empowering dedicated institutions/programmes; Data mining **Behaviour change**: Reporting hotlines, feed-back to outliers; **Regulation**: Administrative and legal sanctions	**?** **+** **?** **?**	**Belgium** – INAMI (the national institute for health and disability insurance) uses data-mining to detect integrity violations and a step-wise strategy to deal with integrity violations, and can take administrative sanctions (fines) **USA** – CMS uses contractors to detect error and possible fraud. Zone Program Integrity Contractors are authorised to conduct investigations and coordinate with law enforcement The **European Healthcare Fraud and Corruption Network** (EHFCN) serves as a knowledge exchange platform for countries interested in tackling these integrity violations
Inappropriate business practices		Intentional deception	Disclosure of information on potential for conflict of interests; disclosure of clinical trial data	**Regulation**: Setting limits or banning specific practices (direct to consumer marketing, gifts and hospitality, self-interested referrals, etc.)	**?**	Countries with comprehensive and well-established Sunshine regulations include **Australia, France**, **the US**, **Portugal**, **Slovakia**

 : Industry  : Regulator  : Manager  : Clinician  : Patient **+**: some evidence of positive impact but limited and system-dependent **?**: impact so far unknown

5. Summary and outline of the report

92. Waste manifests itself in many different segments of OECD health systems and creates an unnecessary financial burden. To give a few examples:

- Adverse events in hospitals add between 13 and 16% to hospital costs, and between 28 and 72% of them are deemed avoidable, according to international studies.

- Examples of unnecessary or inappropriate care abound at all points of the care pathway, starting with over-testing, and over-diagnosis. Unnecessary use of surgical procedures is not an exception. For example, data collected by OECD reveals unwarranted variations across and within countries in rates of cardiac procedures (more than three-fold) and knee replacements (more than five-fold). Excessive use of medicines is also an issue and for instance, half of antimicrobial prescriptions are inappropriate.

- Between 12% and 56% of emergency hospital admissions are for conditions which could have been equally well or better treated in the less costly primary care setting.

- The potential for freeing up financial resources through the use of generic drugs is often not fully exploited - the share of generics in pharmaceuticals covered by basic health benefits varies between 10% and 80% in OECD countries.

- Administrative expenditure on health varies more than ten-fold across OECD countries. The cost depends on the design of the system. Increased complexity may bring about benefits and accountability for results, but duplication of competencies across agencies or reporting obligations which do not translate into actual monitoring are wasteful.

- Loss to fraud and error may average to 6% of payments for health care services.

93. Evidence is thus emerging that that a significant share of healthcare system resources can be released and put to better use by eliminating activities which do not contribute to improving outcomes and exchanging costly activities with cheaper alternatives with identical or better outcomes.

94. Although waste is pervasive, policy-makers can act upon it. But they need more information to set the relevant priorities. Data on adverse events, low-value care, un-necessary emergency hospital visits, inappropriate use of antimicrobials – and many other types of waste – are far from systematically available and yet, necessary to raise awareness, set priorities and design appropriate policies.

95. Strategic implications differ across categories of waste.

- Administrative waste or loss to fraud and corruption is present in all systems and should not be tolerated. Tackling them must be part of the policy agenda against waste and will certainly improve governance and transparency. Still, the magnitude of potential savings in OECD countries (given for instance that administrative costs represent on average 3% of expenditure) could be modest modest.

- Reducing avoidable adverse events and low-value care, on the other hand, could release significant amounts of resources. Sustainable progress towards better value from healthcare can only be achieved if patients and especially health care providers are on board, hence the importance of encouraging, emulating and learning from bottom-up initiatives such as local patient safety initiatives and *Choosing Wisely*®. Policy makers can also create an environment

which incentivises providing the right services rather than many of them – in other words moving towards payment systems that promote value for the patient across stages of care delivery. A more systematic use of health technology assessment would also help reduce low-value care.

- Eliminating operational waste, in other words, ensuing that the lower cost option to deliver a given benefit to patients becomes the natural or preferred option, is perhaps the most complex endeavour. In some cases (for instance when it comes to encouraging the use of generic drugs), pursuing available policy options is a matter of political priority and will. In others, for instance when it comes to reducing unwarranted use of hospital care, the reforms can become complex and require far-reaching reforms. Whether they can produce savings remains an open question. However, any change which contributes to hospitals focusing on their mission to deliver highly technical and specialised services rather than less resource-intensive care is worth pursuing. Indeed, it paves the way for efficiency-enhancing systemic changes, including hospital restructuring.

96. The present document constitutes the first chapter of the report which has three subsequent parts. The first part discusses wasteful clinical care. It focuses on preventable medical errors and low-value care (Chapter 2) and, as a case study of low-value care, discusses inappropriate antimicrobial prescription (Chapter 3). Chapter 4 and 5 cover operational waste and discuss prices and the utilisation of high cost inputs respectively. The governance-related waste part of the report includes administrative cost (Chapter 6) and integrity violations in health (Chapter 7).

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ANNEX: CONCEPTUAL FRAMEWORK

97. This brief annex presents the framework which guided the development of the report. First, a definition of waste is proposed. Second, the framework developed to group wasteful activities based on actors and root causes or driver is presented.

A pragmatic and operational definition of waste

98. Neither a definition of waste nor a list of domains of waste appears to be broadly accepted. Waste in health systems has already been the subject of several notable publications (e.g. New England Health Care Institute, 2008, Bentley et al., 2008, Berwick and Hackbarth, 2012). Few of them however attempt to provide a clear definition of waste. Most studies list types of wasteful activities – but do not systematically include the same ones. A number propose broad groupings of wasteful activities but these groupings vary and some types of wasteful activities are attributed to different groups by different authors. Finally, there is no agreement among authors about how waste and efficiency relate. Producing a report on "waste" required taking a position on some of these questions in order to define the boundaries of the work. This annex presents the results of a scoping exercise combined with expert discussions undertaken to reach this objective.

In this report, the approach is to deem wasteful:

- services and processes which are either harmful or do not deliver benefits;
- costs which could be avoided by substituting cheaper alternatives with identical or better benefits.

99. This characterisation covers health care spending which could be eliminated without undermining the achievement of health systems' objectives. At the level of the health system, this roughly corresponds to the notion of "productive efficiency", which describes a situation where a given result is obtained at the lowest possible cost. At the same time, reducing waste as defined here does not require rationing or reallocating resources from one category of patients to another or even from one category of care to another. As such, the report does not tackle the broader question of whether a different combination of inputs could bring better aggregate results (allocative efficiency and redistribution). In other words, for this report, waste is a type of inefficiency, not a synonym. Box A illustrates the proposed definition of waste by discussing whether specific inefficiencies can be deemed wasteful per the proposed definition.

Box A1. Is it waste or not? Illustrating the proposed definition's boundaries

- Wrong site surgery: yes.
- Robot-assisted surgery: yes - very costly but no evidence that it improves outcomes (Wright et al., 2013).
- Inpatient surgery when the outpatient option exists: yes, provided the cost is lower.
- Insufficient investment in public health: no – additional investment may increase efficiency in the long run, but this does not help identify activities which should be dropped or replaced with cheaper alternatives while maintaining results for specific patients.
- Insufficient coordination of care: it depends. Coordination can improve outcomes, but not all shortcomings in coordination are wasteful. Maintaining a patient in the hospital because no follow-on care is organised is a wasteful failure in coordination.
- Systematic imaging for low-back pain: wasteful in most cases. Longer term structural savings may require optimising the number and location of costly diagnostic equipment.

A typology of waste

100. The proposed definition covers a vast array of wasteful activities which involve different stakeholders in the healthcare system and occur for various reasons.

Using these two dimensions which characterise each type of wasteful activity, a framework is proposed which distinguishes three categories of waste.

101. Actors potentially involved in generating waste fall into four categories: **patients**, **clinicians**, **managers** (which operate at the level of a facility or at a more macro-level – e.g. in the administration of the health system), and the **regulator** of the system (this can be a single entity or many). These actors have different objectives and incentives but overall the healthcare system is meant to be organised in a way which aligns their behaviours so they contribute to achieving the health system's goals. Four main reasons can explain why individual actors might contribute to wasting resources.

- First, they do not know better: cognitive biases, knowledge deficits, risk-aversion, and habits lead to **suboptimal decisions and errors** and deviations from best practice.

- Second, they cannot do better: the system is poorly **organised**, managed and **coordination** is weak.

102. In these first two situations, for the most part, there is no intention to generate waste and actors are doing their best but the outcome is suboptimal.

- The third reason why actors might produce waste is that they could stand to lose by doing the right thing. It is the case when economic **incentives** are misaligned with systems goals, for instance when clinicians are paid for providing services irrespective of whether the services add value.

- Fourth, all categories of actors might generate waste **intentionally**, with the sole purpose to serve their self-interest. This last driver is in fact a variation on the third (poor incentives) but it more explicitly points to fraud and corruption.

103. Linking actors and drivers, Figure 1 (in the body of the chapter) groups the main types of waste into three categories: wasteful clinical care, operational waste and governance-related waste.

Information and policy levers to tackle waste

104. This typology, which captures actors and drivers, also helps to frame the discussion on the main policy options to reduce waste. Indeed, policy responses should target the actors involved in generating waste and use levers adapted to the drivers of waste, in line with the above framework. The main categories of policy levers relevant in the context of waste (adapted from Roberts et al., 2008) are:

- Economic and financial **incentives**, which seek to influence the behaviour of patients (reimbursement decisions), as well as clinicians or managers (payment methods), are most relevant when poor incentives are the root cause of the wasteful behaviour.

- **Behaviour change** policies - including education, persuasion, and training - address barriers to optimal decisions.

- **Organisational changes** include policies which modify the location, role, number, co-ordination and tools available to accomplish specific tasks of the various stakeholders.

- **Regulation** which mandates changes in behaviour, organisation, or information.

At the end of each section of waste, a table links the actors, drivers and relevant policy levers.