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International comparisons of waiting times in health care – Limitations and prospects☆

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ABSTRACT

Long waiting times for health care is an important health policy issue in many countries, and many have introduced some form of national waiting time guarantees. International comparison of waiting times are critical for countries to improve policy and for patients to be able to make informed choices, especially in Europe, where patients have the right to seek care in other countries if there is undue delay.

The objective of this study was to describe how countries measure waiting times and to assess whether waiting times can be compared internationally. Twenty-three OECD countries were included. Information was collected through scientific articles, official and unofficial documents and web pages. Fifteen of the 23 countries monitor and publish national waiting time statistics and have some form of waiting time guarantees. There are significant differences in how waiting times are measured: whether they measure the "ongoing" or "completed" waiting period what kind of care the patient is waiting for; the parameters used; and where in the patient journey the measurement begins. Current national waiting time statistics are of limited use for comparing health care availability among the various countries due to the differences in measurements and data collection. Different methodological issues must be taken into account when making such cross-country comparisons.

Within the given context of national sovereignty of health systems it would be desirable if countries could collaborate in order to facilitate international comparisons. Such comparisons would be of benefit to all involved in the process of continuous improvement of health services. They would also benefit patients who seek cross-border alternatives for their care.

1. Introduction

Waiting times have been linked to inefficiencies in health care delivery, prolonged patient suffering and dissatisfaction among the public [1–4], they have become important policy issues in many OECD countries, where national waiting time statistics are routinely collected in various countries [5–7]. Some studies have compared waiting times between countries. Most of them collected data by means of surveys of the general public [8–16], hospitals [17], patient organisations [18], researchers [19]

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or questionnaires sent to administrative bodies [18,20,21]. No study has relied on routinely collected national waiting time statistics.

Waiting times arise as the result of the demand and supply imbalance. If demand exceeds supply, a queue forms [22,23]. Additionally the waiting time situation can also be difficult to improve long-term if the variation in supply does not adapt to variation in demand. Excess demand during a certain period of time generates queues, whereas temporary excess capacity cannot be saved up for future use [24]. Differences in waiting time for the same procedure can depend on differences in indication or clinical threshold for when the procedure is performed [25]. Thus, the fact that one care giver has a shorter queue for cataract surgery than another can be due to the fact that its waiting list threshold is higher. The speed at which patients are taken off the waiting list is affected by the frequency with which surgery is performed [26]. A newly published OECD report suggest a negative association between waiting times and the availability of curative care beds, and to a lesser extent, between waiting times and public health care spending per capita. However, supply is not solely the explanation to waiting times. There are some countries with high spending, beds or doctors that still have waiting times [27].

In a literature search of published articles and reports, we found limited documentation comparative studies of waiting times from regular reporting systems and routine efforts to reduce waiting times. Also, information of interest to the patients could not be found easily. International comparisons of waiting times are important for patients in Europe when making informed choices about cross-border care [19,28].

The objective of this study was to describe how countries measure waiting times and to assess whether waiting times can be compared internationally.

2. Materials and methods

Inclusion criteria: The study included 23 OECD countries with similar GDP per capita and health status namely: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, Sweden, the United Kingdom (divided into England, Scotland, Wales and Northern Ireland), Norway, Australia, Canada, New Zealand and the United States.

Data collection and analysis: The first phase of the study involved a detailed review of existing literature on waiting times. Scientific articles and official and unofficial documents were examined. PubMed, Google and Google Scholar were used to perform an extensive online search in English and other relevant languages on the terms “waiting time” and “waiting list” combined with for example “health care” and “country name”. Reference lists of retrieved articles and documents were searched manually for other relevant studies. The websites of international and national organisations, primarily ministries of health, were thoroughly studied and scanned for relevant documents.

Informal interviews were conducted with key informants in various countries when detailed explanations or additional information were needed beyond what was available in documents or online.

As the study aimed at assessing the comparability of different waiting time statistics, information was collected about whether or not various countries measure waiting times for health care. Later in the process, the aim was narrowed down to focus on somatic care, notably elective surgery, since it was the most commonly measured waiting time across the countries studied.

It was documented if, how and to what extent included countries measure waiting times, which parameters they use, and at what point of the episode of care the waiting time measurements start. A survey of the countries that have a national care guarantee, as defined by each country, was then carried out.

3. Results

Fifteen of the 23 countries included in the study monitor and publish national waiting time statistics. The 15 were Sweden, Denmark, Finland, Norway, England, Scotland, Wales, Northern Ireland, Ireland, Portugal, Spain, the Netherlands, Canada, New Zealand and Australia. All those countries also have some form of national waiting time guarantee (see Table 1).

The countries without national statistics on waiting times were then Austria, Belgium, France, Germany, Greece, Italy and Luxemburg. Some countries without national monitoring still measure waiting times at the regional level, for instance Italy. Statutory requirements for public reporting of waiting times at the provincial level have been proposed in Austria [29]. Hospitals in Germany measure waiting times, but waiting times are not monitored at the national level [30,31].

Most commonly, countries concentrate on appointments, examinations, diagnoses and/or treatment by specialists rather than family medicine/general practitioners. Some countries also measure telephone availability and/or waiting times to primary care appointments. Most countries summarise the results by specialty, such as gynaecology, orthopaedics or all elective surgery. Some also report specific interventions or operations, e.g. cataract surgery (see Table 1). In a few countries, e.g. Norway, Denmark and Scotland, waiting times are monitored at individual level by linking waiting time data to patient registers [32]. The type of health care facility monitored, such as private or public, hospitals or health centres, also vary among countries.

In this study, the main focus was on somatic care, notably elective surgery, since it was the most commonly measured waiting time across countries.

Waiting time monitoring for examinations, diagnostics and emergency care were found to be less frequent among the countries studied and was not included in the further analysis. Primary and specialist appointments were not included because there are substantial differences in referral processes between the countries.

Table 1 shows the countries that publish data on waiting times for elective surgery and the level of detail reported. The number of specialties and specific types of surgery that are monitored vary by country. Norway, for instance,

Table 1
Countries that monitor and publish national waiting time data for elective surgery and the degree of detail at which they do so, and whether they have national waiting time guarantees.

Monitor national waiting times	For elective surgery	By specialty	For specific types of operations	National waiting time guarantees in place
Sweden	X	X	X	X
Denmark	X	X	X	X
Finland	X	X		X
Norway	X	X		X
England	X (RTT & HES)	X (RTT & HES)	X (HES)	X
Scotland	X	X	X	X
Wales	X	X	X	X
Northern Ireland	X	X		X
Ireland	X	X	X	X
Portugal	X	X		X
Spain	X	X	X	X
Netherlands		X	X	X
Canada		X	X	X
New Zeeland	X	X		X
Australia	X	X	X	X
USA	Specific national monitoring[b]			
Austria	Legislative amendments in process			
Italy	Incomplete national monitoring (but striving towards it)	X		
Greece	No national monitoring			
France	No national monitoring			
Germany	No national monitoring			
Belgium	No national monitoring			
Luxemburg	No national monitoring[a]			

[a] Unconfirmed.
[b] Presents national statistics for: "Timeliness of primary, emergency, and hospital care: getting care for illness or injury as soon as wanted. In addition, two supporting measures are presented: Emergency department waiting times, and timeliness of cardiac reperfusion for heart attack patients" [53].

reports waiting times for four main specialities but not for specific procedures [33]. Denmark presents waiting time for different selected operations as well as waiting time for "all operations" comprising 50 different operations [34]. England presents a wide range of interventions and procedures using OPCS-4, a 4 character code [7]. It is not always clear on what type of operations were included in the general category of "elective surgery" in the reports. We interpret it as "all elective surgery for which waiting times have been measured".

England presents waiting time statistics that have been collected in two different ways: Referral to Treatment Times (RTT) and waiting times included in the Hospital Episode Statistics (HES) (see Table 1).

Three distinct types of waiting times were identified in the study; (1) "completed waits", i.e. a retrospective look

Table 2
Waiting time parameters for completed waits.

Completed waits						
Parameter used	Mean	Median	90th percentile	95th percentile	Number or percentage of completed waits in time intervals	Fulfilment of guarantees/maximum waiting times
Sweden					X	X
Denmark	X	X				
Finland		X				X
Norway	X					X
England	X[b]	X[b,c]		X[c]		X[c]
Scotland		X	X		X	X
Wales					X	X
Northern Ireland						
Ireland						X
Portugal	X					X
Spain						
Canada		X	X			X
New Zealand		[a]				X
Australia		X	X		X	(X > 365 days)
Netherlands	X					X

[a] No external reporting.
[b] HES.
[c] RTT.

Table 3
Waiting time parameters for ongoing waits.

Ongoing waits					
Parameter used	Number of patients waiting	Number of patients waiting in time intervals	Number of patients waiting per inhabitant	Median (mean) waiting time	Fulfilment of guarantees/maximum waiting times
Sweden	X	X[b]	X[b]		
Denmark					
Finland					
Norway					
England	X[a]				
Scotland	X	X			X
Wales	X	X			
Northern Ireland	X[c]	X			X
Ireland	X	X		X	
Portugal	X			X	X
Spain	X		X	(X)	X
Canada					
New Zealand					
Australia					
Netherlands					

[a] HES.
[b] No external reporting.
[c] Ongoing waits and completed waits.

at patients who have already received care. (2) "on-going waits" measures waits for patients who are currently on the waiting list and (3) "expected waiting time", i.e. a prognosis for new patients. Expected waiting times are not included in this study as they do not measure actual waiting times.

Waiting times are measured in different countries as mean, median, 90th percentile, 95th percentile, number of patients waiting, number of patients waiting per inhabitant, and number of patients waiting within a certain time interval. The parameters used by each country are shown in Table 2 for completed waits and Table 3 for ongoing waits.

Once an overview has been obtained of the services for which different countries measure waiting times, the types of waiting time they measure and the parameters used, next item of information to collect is where in the episode of care the measurements begin. This is illustrated in Fig. 1. The arrows in Fig. 1 show the point at which countries begin to measure waiting times for first contact with primary care, primary care appointments, specialist care appointments and treatment [35]. Fig. 2 focuses specifically on where the waiting time measurements for treatment start.

The review of the methods employed by various countries shows that the majority of countries begin measuring waiting time from the date of decision-to-treat. Of these countries, only Canada and England use the median measure for completed waits. The median may be a better way of measuring the typical waiting time for patient because it less sensitive to outliers, and waiting times generally have a small number of patients who have waited for a long time.

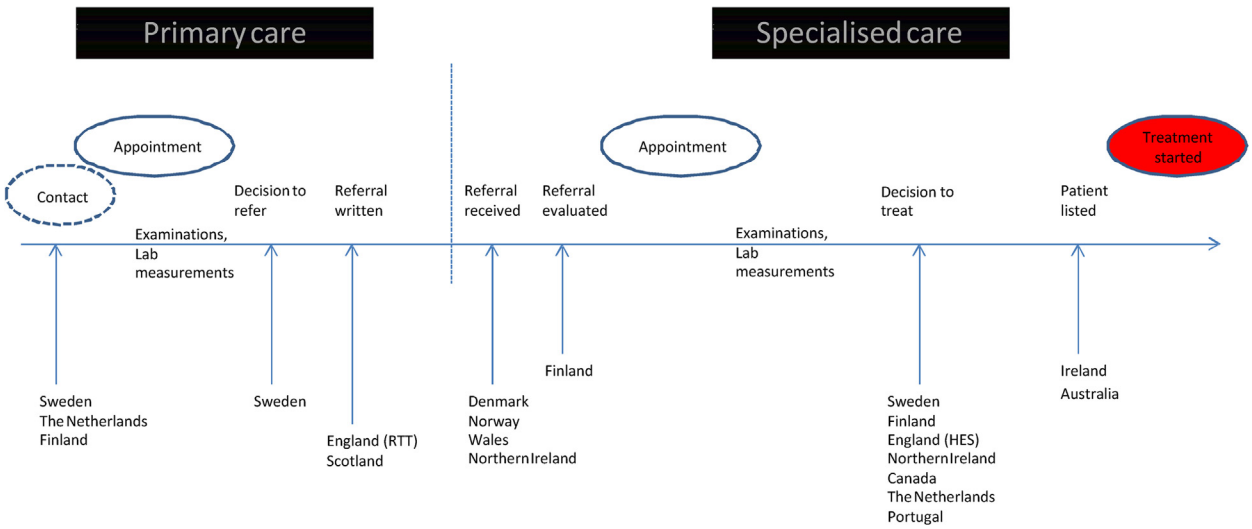

Fig. 1. Examples of starting points for measuring waiting times for contact, primary care appointments, specialist care appointments and treatment. Note that Sweden measure time to telephone contact as well as time to appointment in primary care.

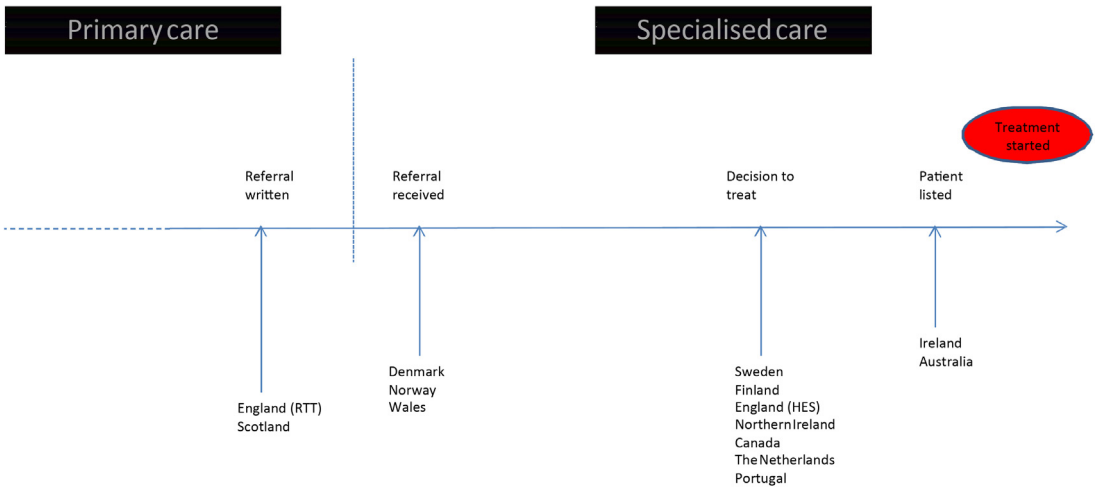

Fig. 2. Starting points for measuring waiting times specifically for treatment.

The analysis shows that it is difficult and challenging to make meaningful comparisons of officially published waiting times in the 15 countries studied due to the many methodological differences in measuring as described above.

International comparisons of waiting times requires considerable analysis and will until further need to be published with qualifying information on sources, collection methods and measures used. An attempt to get an overview of waiting times in different countries using national statistics was made stating information on starting point for measurement, whether mean or median has been used and whether the wait is completed or ongoing. The results are presented in Table 4 and Figs. 3–5. (See Table 4 for details and references and Figs. 3–5 for elective surgery, total hip replacement and cataract surgery, respectively.) Countries with data available for which nationwide measurements could be found have been included in the table, even if measurements were not performed regularly.

In Sweden waiting times are presented in intervals. Since waiting times of individual patients are not available, the point in the interval at which the median lies (red line at 45) has been estimated on the assumption that waiting times are normally distributed within the interval. (Waiting times due to the patient's own choice have been excluded)

4. Discussion

A majority of the countries studied monitor national waiting times and have some type of national waiting time care guarantee. This implies that waiting time is an issue of concern. In a study from 2003 of waiting times in OECD countries, Siciliani and Hurst concluded that "waiting times" is a serious health policy issue in 12 of the countries included in that study (Australia, Canada, Denmark, Finland, Ireland, Italy, Netherlands, New Zealand, Norway, Spain, Sweden, and the United Kingdom). Waiting times were not recorded administratively in a second group of countries (Austria, Belgium, France, Germany, Japan, Luxembourg, Switzerland, and the United States) but the authors wrote that they were anecdotally (informally) reported to be low [21]. Our study shows that eight years later, the same countries still record waiting times.

It cannot be concluded that if a country does not monitor waiting time that waiting times are not a problem. In countries where waiting times are not registered and reported, accessibility may still be an issue. France's lack of national monitoring is often cited as evidence that the country has no waiting time problems. However, the large regional differences in terms of services provided and number of doctors have led to inequities in access [38]. Greece suffers from long waiting times, and informal payments to "jump the queue" are common [50]. In Germany the debate has revolved around the fact that people who are privately insured have faster access to health care [30,31,51]. In Austria, researchers have found that privately insured patients have faster access and they have refuted the notion that the country has no waiting times [52]. In the United States, access to care also varies with socioeconomic status and geographic area [53].

Sweden has repeatedly been mentioned as a country with relatively long waiting times [10,18], but this cannot be confirmed, as it is not possible to compare to other countries using official national statistics.

The study shows the need for a more coherent approach to waiting times measurement, if international comparisons are to be made. Currently, there are wide differences in what countries measure and how they measure it, were they start the measurements and what measures are presented. Few international comparisons of waiting times have been published and none has solely relied on official national statistics [4,17,20–22]. A recent report from OECD on waiting time policies is however an example of that the work on international comparisons of waiting times is moving forward [27].

Apart from the methodological issues presented in this paper, some other consequences of differences in monitoring should also be mentioned.

Table 4
Waiting times in days to elective surgery.

Waiting time (completed wait in days unless otherwise stated)					
Country	• Waiting time parameter • Starting point for measurement	Elective surgery	Total hip replacement	Cataract	Comment and reference
Sweden	• The median is within this time interval • Decision to treat	31–60	31–60	31–60	Nov 2010 [36]
England	• Median • Decision to treat	35	78	18	HES Oct 2009–Sept 2010 [7]
Canada	• Median • Decision to treat		42 up to 178 depending on province	2 up to 88 depending on province	Apr–Sept 2009[37]
France	• Median • Unclear	33$^{\gamma}$		66$^{\alpha}$	"All specialities"$^{\gamma}$ "ophthalmologist"$^{\alpha}$ From EDPS report 2004, cited in [38]
Netherlands	• 'Mean' rounded to weeks • Decision to treat		49–56 (just over 7 weeks)	35–42 (just over 5 weeks)	2009 [39]
Portugal	• Mean • Decision to treat	86 (2.85 months)		70 (2.35 months)$^{\beta}$	"ophthalmology"$^{\beta}$ 2009 [40]
Denmark	• Median • Referral received	38	58	112	2009 [6]
Norway	• Mean • Referral received	75			Second four-month period of 2010 [33]
Scotland	• Median • Referral written	25			July–Sept 2010 [41]
Australia	• Median • Patient listed	34	100	84	2008–2009 (one year) [42]
Ireland	• Ongoing waits • Median • Patient listed	75 (2.5 months)	90 (3 months)	90 (3 months)	Nov 2010 [43]
Spain	• Ongoing waits • Mean • Unclear	61	86	60	30 Jun 2010 [44]

Note: for information on Finland [45], Northern Ireland [46,47], New Zeeland [48] and Wales [49] see the respective references provided.

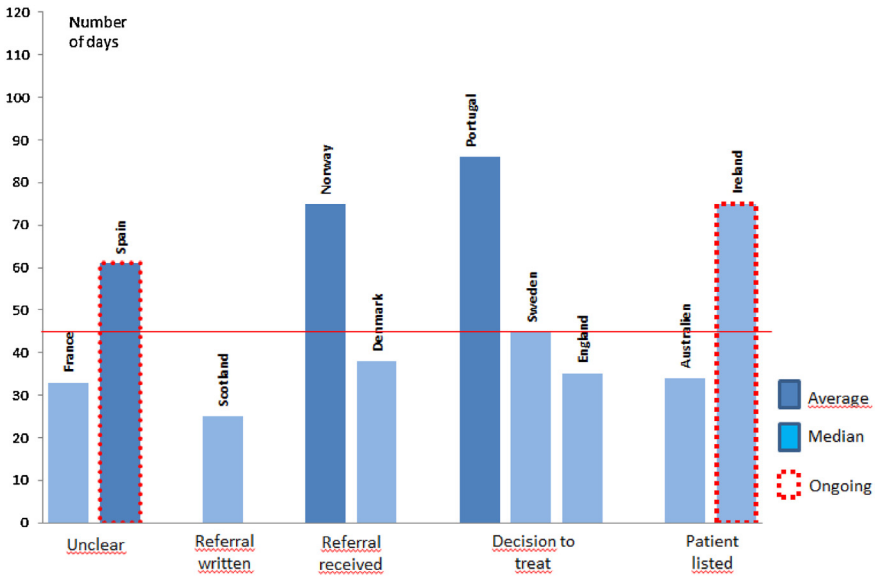

Fig. 3. Waiting times in days for all elective surgery. The countries have been grouped depending on where the starting point for measurement is (see Fig. 2). The darker shading denotes that the average waiting time is presented and the lighter shading denotes median. A dotted line signifies that ongoing wait is presented as opposed to completed wait.

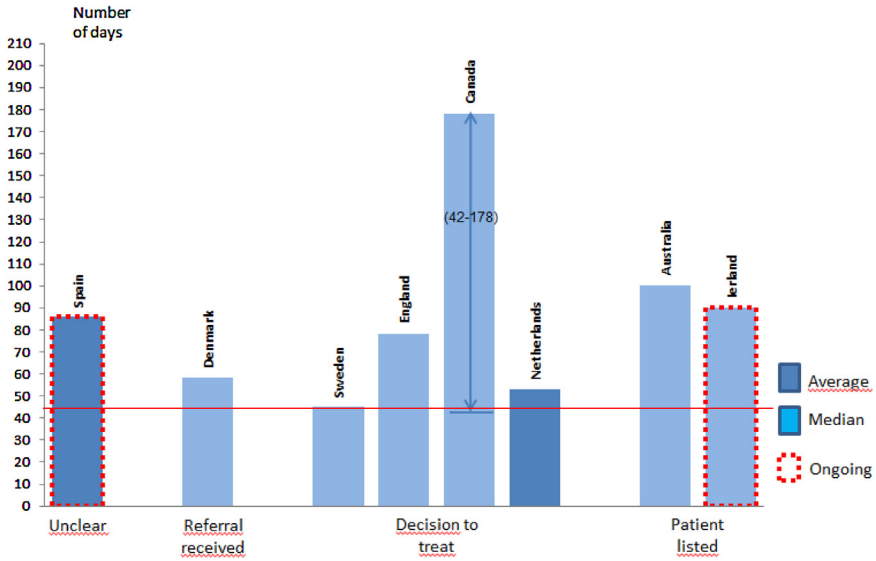

Fig. 4. Waiting times in days for total hip replacement surgery. The countries have been grouped depending on where the starting point for measurement is (see Fig. 2). The darker shading denotes that the average waiting time is presented and the lighter shading denotes median. A dotted line signifies that ongoing wait is presented as opposed to completed wait.

On-going waits, e.g. naturally generate an underestimate compared to completed waits since the patient is actually still waiting. Mean waiting time on the other hand typically generate an overestimate compared to median waiting time, because it is sensitive to outliers.

The latest statistics available online or otherwise presented to the researchers at the time of the study have been used for this study. The year and time period used for different countries therefore differ slightly, something that affects results.

Also, for countries in which similar definitions of the starting point for the measurement have been used, referral processes and patient journey after the measurement start may vary. There is no clear pattern in reported waiting times that could suggest that one system would be better than the other. However, this further illustrates the limitation of the current input data for an international comparison as attempted in this study.

National level data can hide inequity within a country. Some people might enjoy better availability than others

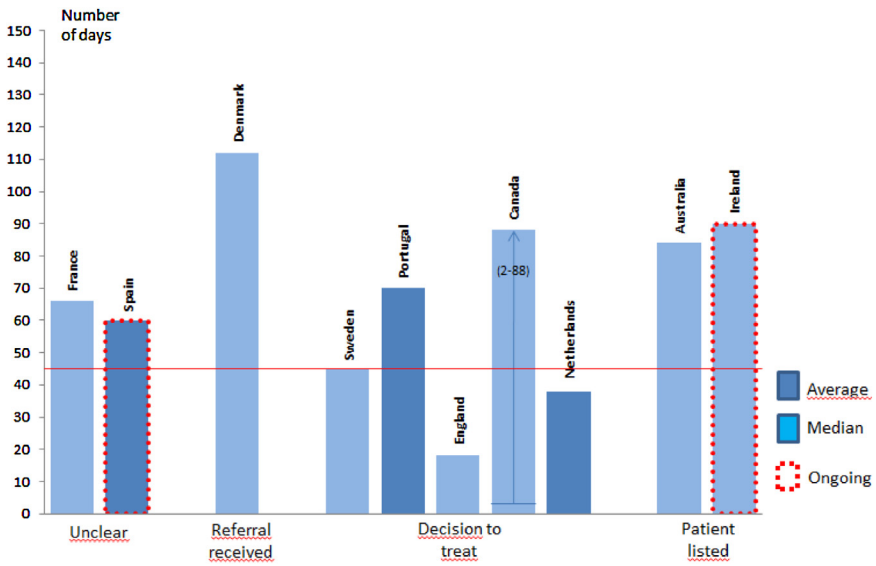

Fig. 5. Waiting times in days for cataract surgery. The countries have been grouped depending on where the starting point for measurement is (see Fig. 2). The darker shading denotes that the average waiting time is presented and the lighter shading denotes median. A dotted line signifies that ongoing wait is presented as opposed to completed wait.

based on geographic, gender-related, socio-economic or cultural factors [19].

5. Conclusions and recommendations

A majority of the studied countries measure waiting times and they have some type of national care guarantee. The establishment of such a guarantee suggests that healthcare availability is or has been an issue of concern. Current national waiting time statistics are of limited use for comparing health care availability among the various countries due to the differences in measurements and data collection. Different methodological issues must be taken into account when making such cross-country comparisons.

Within the given context of national sovereignty of health systems it would be desirable if countries could collaborate in order to facilitate international comparisons. Such comparisons would be of benefit to all involved in the process of continuous improvement of health services. They would also benefit patients who seek cross-border alternatives for their care.

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