

## SYSTEMATIC REVIEWS AND META-ANALYSIS

# Waiting times for prostate cancer: A review

Giacomo Lazzeri,<sup>1,2</sup> Gianmarco Troiano,<sup>3</sup> Barbara Rita Porchia,<sup>2</sup> Federica Centauri,<sup>2</sup> Vincenzo Mezzatesta,<sup>2</sup> Giorgio Presicce,<sup>2</sup> Daniela Matarrese,<sup>4</sup> Roberto Gusinu<sup>5</sup>

<sup>1</sup>Department of Molecular and Developmental Medicine, University of Siena

<sup>2</sup>Hospital Direction, Azienda Ospedaliera Universitaria Senese

<sup>3</sup>University of Siena

<sup>4</sup>Director of the Hospital Network, Azienda USL Toscana Centro

<sup>5</sup>Medical Chief Director, Azienda Ospedaliera Universitaria Senese, Italy

## Abstract

Prostate cancer is one of the most common diagnosed cancers in men and the waiting time has become an important issue not only for clinical reasons, but also mostly for the psychological implications on patients. The aim of our study was to review and analyze the literature on waiting times for prostate cancer. In February-March 2019 we performed a search for original peer-reviewed papers in the electronic database PubMed (MEDLINE). The key search terms were “prostate cancer AND waiting list”, “prostate cancer AND waiting times”. We included in our narrative review articles in Italian, English or French, published in 2009-2019 containing original data about the waiting times for prostate cancer. The literature search yielded 680 publications. Finally, we identified 8 manuscripts eligible for the review. The articles were published between 2010 and 2019; the studies involved a minimum of 16 to a maximum of 95438 participants. Studies have been conducted in 6 countries. The waiting times from cancer suspicion to histopathological diagnosis and to treatment had an important reduction in the last years, and this constant decrease could lead to an increase of patients’ satisfaction.

## Introduction

Prostate cancer is the second most common diagnosed cancer in men, after the lung cancer.<sup>1</sup> In the last years the number of men who received a diagnosis of prostate cancer has increased: the most important reason of this increase is the longer life expectancy.<sup>2</sup> In fact, the risk of developing prostate cancer increases with age, and it is very rare in men younger than 50 years old.<sup>3</sup> Surely the second most important reason is the introduction and diffusion of prostate-specific antigen (PSA) screening that led to a major number of prostate tumors diagnosis, in particular those at the initial stage, compared to the advanced ones.<sup>2,4</sup> The advent of PSA testing and subsequent biopsy, led to an extraordinary change of

the epidemiology of this tumor: now, up to 80% of diagnosed prostate cancer are at an initial stage, posing small risk of morbidity or mortality during patients’ lifetime.<sup>5,6</sup> Moreover, as reported in a recently published review, advances in the diagnosis and treatment of prostate cancer have improved the ability to stratify patients by risk and allowed clinicians to recommend therapy based on cancer prognosis and patient preference.<sup>7</sup>

On the basis of several definitions in the literature, the WHO definition of quality of care is “the extent to which health care services provided to individuals and patient populations improve desired health outcomes. In order to achieve this, health care must be safe, effective, timely, efficient, equitable and people-centred”.<sup>8,9</sup>

Patient satisfaction is an important measure of healthcare quality and is correlated with important outcomes, such as superior compliance, decreased utilization of medical services, less malpractice litigation and better prognosis.<sup>10</sup>

Waiting times are important for patient satisfaction and, in many jurisdictions, the improvement in their reduction (especially for cancer diagnosis and treatment) has become a priority.<sup>11</sup> For example, the Swedish Government had initiated a project to reduce these waiting times by introducing national standardized clinical pathways.<sup>12</sup> Similarly, England and Wales started the so called ‘two weeks wait’ programme, whilst in Denmark appeared the national cancer pathways.<sup>13,14</sup> Waiting times are relevant not only for clinical reasons, but mostly for the psychological implications on patients: several studies conducted on other types of cancer, in fact, have analyzed the relation between perceived waiting times and patient satisfaction, although most of them focused only on parts of the perceived waiting time, namely, family physician referral to specialist visit<sup>15</sup> and diagnosis to treatment.<sup>16</sup>

In literature there are several reported experiences about how long patients with suspected prostate cancer have to wait to receive a biopsy or treatment, so the aim of our narrative review was to analyze the studies published on this topic in order to have an overview.

## Significance for public health

*The improvement in the reduction of the so-called “Waiting Times” for diagnosis and treatment of cancer has become a priority for several countries. In fact, the “Waiting times” are relevant not only for clinical reasons, but mostly for the psychological implications on patients and for their satisfaction, which is recognized as a key indicator of healthcare quality. Our narrative review focused on the waiting times for prostate cancer that is one of the most common diagnosed cancers in men.*

## Methods

In February-March 2019 we performed a search for original peer-reviewed papers in the electronic database PubMed (MEDLINE). The key search terms were “prostate cancer AND waiting list”, “prostate cancer AND waiting times”. The inclusion criteria that we chose for our narrative review were: i) type of article (original articles, but also letters to the editor or short communications if containing original data); ii) date of publication between 2009 and 2019; iii) language (Italian, English or French); iv) availability of information about country, study period, source of the data, number of participants, waiting times. Other interesting data have also been reported.

Studies were selected in a 3-stage process. First we analyzed the titles; then the abstracts from electronic searches. Finally we collected and read the full manuscripts to select the eligible manuscripts according to the inclusion criteria.

## Results

The literature search yielded 680 publications. The titles of these manuscripts were screened, resulting in 12 studies considered potentially eligible for abstract analysis (18 were duplicate, 76 were review, 249 were published before 2009, 312 were not in line with the aim of our study, 13 were in other languages – 1 Chinese, 4 German, 5 Spanish, 1 Dutch, 1 Norwegian, 1 Hungarian).

After abstract analysis 2 studies were further excluded because not in line with the aim of our study, so the full texts analysis was conducted on 10 manuscripts. Finally, after this exclusion we identified 8 manuscripts eligible for the review (2 excluded because not in line with the aim of the study) (Figure 1).<sup>11,12,17-22</sup>

The articles were published between 2010 and 2019; the studies have been conducted from 1996 to 2015; they involved a minimum of 16 to a maximum of 95438 participants. Studies have been conducted in Poland, Canada, Sweden, South Africa, United Kingdom (UK) and France.

The principal results of our review are shown in Table 1.

In some examined studies the waiting time for prostate cancer has been divided in subgroups: from cancer suspicion to histopathological confirmation, and from cancer diagnosis to the start of treatment; other studies described the total waiting time from cancer suspicion to treatment.

### Waiting time from cancer suspicion to treatment

Two studies reported this datum:<sup>17,22</sup> although settled in different countries we observed (after almost 10 years) a clear reduction of this time from 247 days to 18.7 weeks (almost 130 days).

### Waiting time from cancer suspicion to histopathological confirmation

Four studies reported this datum:<sup>11,17,21,22</sup> we observed a substantial stable trend during the years of this ‘time’ (53 days in 2003; 7.7 weeks in 2014-15). The results described by Singh and by Mathews are not totally comparable.

### Waiting time from cancer diagnosis to the start of treatment

Seven studies reported this datum:<sup>12,17-22</sup> also for this datum we observed a net reduction of this ‘time’ from almost 1200-1400 days (referred to chemotherapy) or 200 days (referred to surgery or radiotherapy) in 2002 to 8.7 weeks in 2015 (almost 60 days).

## Other findings

Two authors reported that high-risk patients had shorter waiting times; one author<sup>17</sup> reported a significantly higher waiting time for patients who underwent radiotherapy, however this time has diminished in the years as reported by Rastpour *et al.*<sup>19</sup>

One author observed no differences in survival on the basis of the time of surgery (immediate, or after 4-6 months).<sup>20</sup>

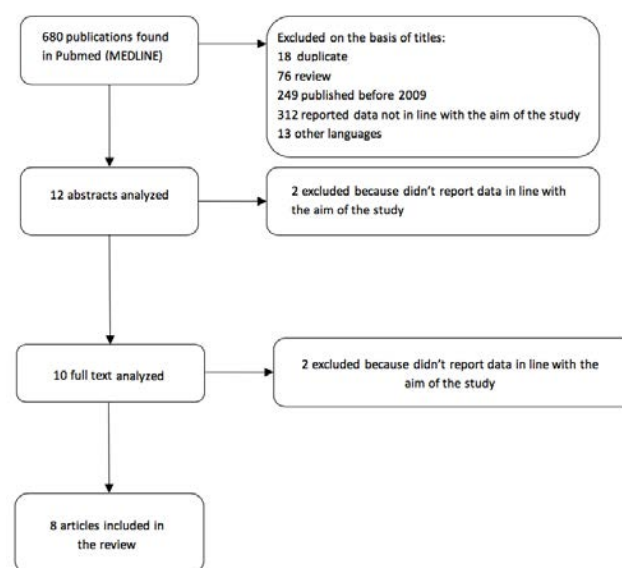
## Discussion

The topic of “waiting times” has been investigated for several cancers. Already in 2017, Labbè *et al.* focused on lung cancer that is the most frequently diagnosed cancer worldwide and the leading cause of cancer-related mortality. In their study they affirmed that reducing wait times should be a goal, because shorter waits might influence important variables such as quality of life, cost of care, access to therapies.<sup>23</sup>

Our study was focused on waiting times for prostate cancer and the analysis of the literature highlighted a reduction of these times during the years. However, as reported by Robertson *et al.*, men with prostate cancer had substantially longer waiting times than patients with other kinds of cancer.<sup>12</sup>

Some limitations should be considered: first of all, our review was not systematic, but it could be considered a narrative review conducted on a single database. Moreover, the literature is limited to some countries (specifically six countries), so it is difficult to have a complete overview of this topic able to represent the worldwide situation. Substantial differences among countries are actually impossible to define.

Another weakness of our study is the not-total comparability of the data retrieved by the analyzed articles.



**Figure 1. Flow diagram for identifying studies included in our non-systematic (narrative) review.**

Table 1. Selected characteristics of the studies included in the review.

Author, year	Country	Study period	Involved centers	Data source	Participants	Age (years)	Waiting time from cancer suspicion to treatment	Waiting time from cancer suspicion to histopathological confirmation	Waiting time from cancer diagnosis to the start of treatment	Other findings
Osowiecka, 2019 <sup>17</sup>	Poland	2014-2015	5	Questionnaire	123	- median 65 - range 53-87	18.7 weeks (IQR 10.6-26.9 weeks)	7.7 weeks (IQR 4.0-16.1 weeks)	8.7 weeks (IQR 4.6-14.1 weeks)	A significant longer waiting time for patients who began treatment with radiation therapy ( $p < 0.001$ )
Rastpour, 2018 <sup>19</sup>	Canada	2002-2012	n/r	Retrospective administrative data	95438	n/r	n/r	n/r	- From diagnosis to chemotherapy 1200/1400 days (in 2002) – 400 days (in 2012) - From diagnosis to radiotherapy or surgery almost 200 days	- Increasing trend in median waiting time per year for surgery (2.6 days) - Decreasing trend in median waiting time per year for radiotherapy (-2.8 days) - Decreasing trend in median waiting time per year for chemotherapy (-84.0 days)
Robertson, 2017 <sup>12</sup>	Sweden	2013	n/r	Data furnished by National Board of Health and Welfare	1955	n/r	n/r	n/r	172 days	The median waiting time for men with high-risk prostate cancer was 26 days shorter than for men with intermediate-risk prostate cancer
Singh, 2015 <sup>21</sup>	South Africa	2013	1	Retrospective folder review	106 (52 had confirmed adenocarcinoma)	- mean 67.6 years - standard deviation 7.51		100 days**** (****number of days a patient waited to receive a histological diagnosis, and for treatment options to be discussed or instituted)	100 days****	- Median period to receive biopsy after suspicion: 55 days - Median period of histological processing time: 36 days
Mathews, 2015 <sup>11</sup>	Canada	n/r	n/r	Interviews (conducted either in-person or by phone)	16	- <65 years (50%) ->65 years old (50%)	n/r	84.0 days (range 5-642)** (**authors refer to the time from the first visit to diagnosis)	n/r	n/r
Redaniel, 2013 <sup>20</sup>	UK	1996-2009	n/r	Dataset furnished by South West Public Health Observatory (SWPHO)	17043	-15-54 years (11.68%) -55-64 years (51.86%) ->65 years (36.46%)	n/r	n/r	95 days (IQR 70-125 days)	No differences were observed in the survival among patients who underwent surgery at time 0-3 and at time 4-6 months
Pourcel, 2013 <sup>18</sup>	France	2012	n/r	Medical records	4207	- Mean 68.0 years -SD 8.8	n/r	n/r	- Mean 36.5 days (SD 26.5) from pathologist diagnosis to treatment proposal - Mean 45.2 days (SD 30.1 or 38) from proposal to the start of treatment (non surgical or surgical)	n/r
Stevens, 2010 <sup>22</sup>	Canada	2003	1	Semi-structured interview	41	- median 70 - range 41-77	247 days* (*from suspicion to the first fraction) of RT	53 days (Sub-intervals: - from suspicion to consultation with an urologist = 40 days - from consultation to biopsy = 26 days)	127 days*** (***from biopsy to first fraction of RT)	From diagnosis to start of RT, intermediate and high-risk patients had shorter wait times compared to low-risk patients (124 vs. 178 days; $p = 0.041$ ) 70% of participants perceived a delay in their prostate cancer pathway

IQR, interquartile range; RT, radiotherapy; n/r, not reported; SD, standard deviation.

As for the “waiting times from cancer suspicion to treatment”, although we observed a clear reduction of this time during the years, it should be specified that Stevens *et al.* in their article specifically refer to radiotherapy, whilst Osowiecka *et al.* generically refer to all the available treatments.

As for the “waiting times from cancer suspicion to histopathological confirmation” the only studies that reported comparable data are those of Osowiecka and Stevens: in fact the results described by Singh and by Mathews are quite different. In particular, Singh reported the number of days that a patient waited to receive a histological diagnosis, and for treatment options to be discussed or instituted; Mathews, instead, reported the time from the first visit to diagnosis, but it is not clear if this visit is from a general practitioner or a specialized doctor.

As for the “waiting time from cancer diagnosis to the start of treatment”, Osowiecka, Robertson, and Redaniel, Singh did not specify the type of treatment; whilst Pourcel and Stevens focused on surgical/non surgical treatment and on radiotherapy respectively. Stevens *et al.* reported an interesting datum regarding patients perception of waiting times: in their study 70% of participants perceived their “waiting time” as a delay in their prostate cancer pathway.

Surely, as demonstrated in studies conducted on colorectal cancer, shorter waiting times are correlated with higher levels of patients’ satisfaction;<sup>24</sup> however, in many cases, patients with longer waiting times generally had less advanced disease and better survival, so the typical delays are not of clinical significance.<sup>25</sup> Wanis *et al.* confirmed these evidences reporting that, despite longer median colon cancer treatment waiting times from diagnosis to surgery (exceeding 30 days or 2-3 months), no adverse impact on survival has been observed.<sup>26</sup>

In our study, Redaniel *et al.* confirmed these evidences for prostate cancer observing no differences in the survival among patients who underwent surgery at time 0-3 and at time 4-6 months. In fact, among men with low-risk prostate carcinoma, a treatment delay of several months does not appear to compromise long-term oncologic results following definitive treatment.<sup>27</sup> Also considering only radiotherapy as treatment, the delay does not affect outcomes in low-risk patients.<sup>28</sup>

The only reported side effect is that treatment delay between biopsy and prostatectomy in patients with a high risk may result in more extensive periprostatic tissue resection and may adversely affect postoperative continence and erectile function.<sup>29</sup>

## Conclusions

Concluding, prostate cancer is one of the life threatening and most frequent case of disorders and a proper treatment and other control strategies are fundamental to manage it.<sup>30</sup> Our review, although with some limitations due to the choice to use only one biomedical database, demonstrated that the “Waiting time from cancer suspicion to treatment”, the “Waiting time from cancer suspicion to histopathological confirmation” and the “Waiting time from cancer diagnosis to the start of treatment” are constantly diminishing. Although not of clinical significance, this reduction could be positively felt by patients, and could lead to an increase of patients satisfaction, recognized as a key indicator of health care quality, especially in oncology.<sup>31</sup> Since a recent study has found a negative association between diagnostic delay and patient satisfaction in gynecologic cancer patients,<sup>32</sup> it is therefore conceivable that, also for prostate cancer, a delay and a longer waiting time could lead to a lower satisfaction level.

**Correspondence:** Gianmarco Troiano, Department of Molecular and Developmental Medicine, University of Siena, 2 Via A. Moro, 53100 Siena, Italy.

E-mail: gianmarco.troiano@student.unisi.it or gianmarco-89@hotmail.it

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