



Canadian cost comparison of different forms of androgen ablative therapies prior and during the castration-resistant prostate cancer

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I have **no conflict of interest** to declare

Introduction

- Prostate cancer (PCa) is the most common cancer;
- 3rd leading cause of cancer mortality in Canadian men;
- Patients with advanced prostate cancer or those progressing after primary or salvage treatments for localised prostate cancer are managed with androgen deprivation therapies;
- Men dying of PCa do so after failing castration;
- Castration-resistant prostate cancer (CRPC) corresponds to the end-of-life period of men dying of PCa;

Introduction

The CRPC phase = rise in serum prostate-specific antigen (PSA) levels despite castrate levels of serum testosterone (obtained by surgical/medical castration).

Management of patients in pre-CRPC phase:

- Medical castration medication (ADT)
- Surgical castration: orchiectomy

Management of patients over CRPC phase:

1. Continuation of medical castration medication;
2. Supportive therapies (Bone-targeted therapy - indicated to decrease bone-related events : pathologic fractures and spinal cord compressions) ;

Introduction

Management of CRPC :

3. Primary therapies:

- Addition of an anti-androgen (AA) – second line hormonal manipulation;
- Anti-androgen withdrawal after relapse on maximum androgen blockade; (AAwd);
- Docetaxel (since 2004);
- Abiraterone post-docetaxel (since 2012);
- Cabazitaxel (since 2012);
- Enzalutamide (since 2014);
- Abiraterone pre-docetaxel (since 2014).

Objectives

Study objective:

To perform a cost comparison of different ADT forms, including luteinizing hormone releasing hormone agonists (LHRHa) medications and surgical castration, prior to and during the CRPC phase.

Perspective of Quebec's public health system;

Methods

A Markov model with Monte-Carlo microsimulations was developed in order to simulate the disease evolution/associated treatments duration and cost of ADT, in patients progressing after primary or salvage radiotherapy for localized prostate cancer (pre-CRPC and over CRPC phases).

Model is based on:

- results of clinical trials;
- Canadian clinical practice guidelines;
- The selection of clinical trials was based on the target population (patients initiating ADT after primary or salvage radiotherapy and patients in the CRPC phase receiving specific lines of treatment).

Methods

Pre-CRPC

Start of CRPC

End-of-life

ADT initiation

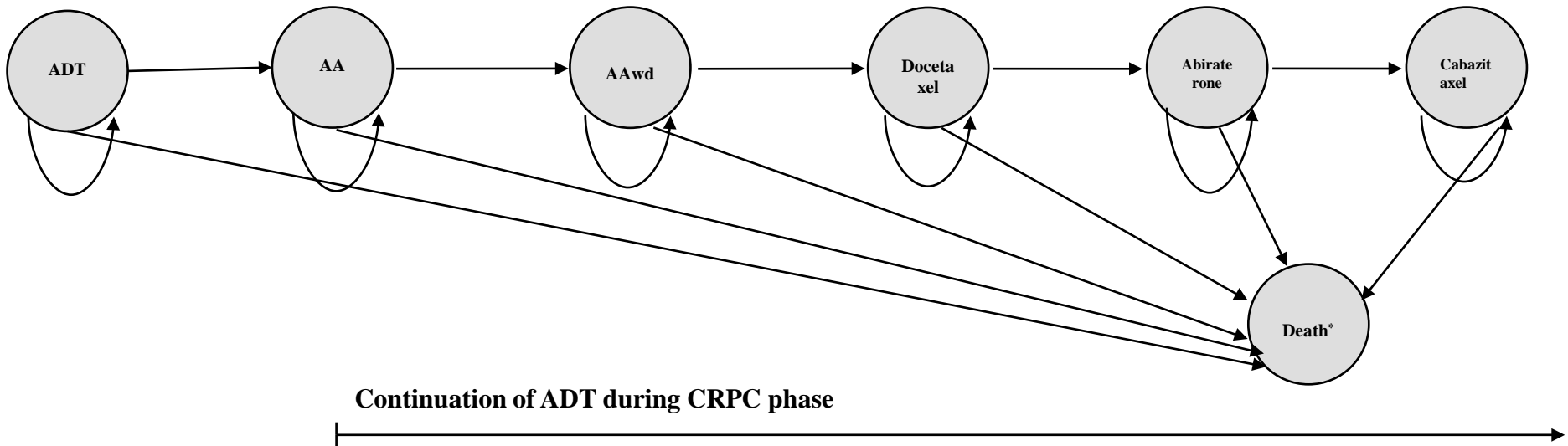
2nd HRT

2nd HRT wd

1st chemo/3rd HRT

3rd HRT/1st chemo

2nd chemo/OtherTx



Methods

Cost assignments

- Canadian dollars (\$) and estimated from the 2013 Quebec's public health system perspective;
 - The cost of ADT was estimated pre-CRPC and during the CRPC phase
 - Type of ADT:
 - surgical castration;
 - Leuprolide (Eligard);
 - Triptorelin (Trelstar);
 - Buserelin (Suprefact Depot);
 - Leuprolide (Lupron Depot);
 - Goserelin (Zoladex)
- } 3 months formulations

Results

ADT duration :

Pre-CRPC : mean = 109.2 months ; median = 102 months;

CRPC : mean = 28.1 months ; median = 25 months.

Overall Pre-CRPC and CRPC periods: mean = 136 months ; median = 130 months.

Results

Mean cost of ADT (pre-CRPC and CRPC periods) per patient

	mean duration	Leuprolide (Eligard)	Leuprolide (Lupron Depot)	Buserelin	Triptorelin	Goserelin	surgery
pre-CRPC	109.2	\$32,432	\$38,984	\$38,438	\$33,088	\$39,530	\$1,413
CRPC	28.1	\$8,346	\$10,032	\$9,891	\$8,514	\$10,172	
Total	137.3	\$40,778	\$49,016	\$48,330	\$41,602	\$49,703	

	mean duration	Leuprolide (Eligard)	Leuprolide (Lupron Depot)	Buserelin	Triptorelin	Goserelin	surgery
pre-CRPC	109.2	\$129,729,600	\$155,937,600	\$153,753,600	\$132,350,400	\$158,121,600	\$5,652,000
CRPC	28.1	\$33,382,800	\$40,126,800	\$39,564,800	\$34,057,200	\$40,688,800	
Total	103.2	\$163,112,400	\$196,064,400	\$193,318,400	\$166,407,600	\$198,810,400	
LHRH diff			\$32,952,000	\$30,206,000	\$3,295,200	\$35,698,000	
LHRH - surgery diff		\$27,730,800	\$34,474,800	\$33,912,800	\$28,405,200	\$35,036,800	



Limitations

- 1) Cost of ADT medications specific to Quebec;
- 2) Our results represent **predicted cost of ADT medications** in CRPC, rather than an **actual cost**.
- 3) Several **other management strategies** in CRPC are not considered by our study;
- 4) Limited information on the current ADT distribution; however Goserelin is the most used LHRH.

Conclusion

- Our study highlights the **important economic burden** related to ADT medications pre-CRPC and over CRPC periods;
- Important cost differences have been estimated between different LHRH and surgery;
- Increasing the use of least costly forms of ADT will result in potential cost savings;
- These cost savings could increase access to new medications.



Thank you

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