

**Verslag van het college van geneesheren  
RADIOTHERAPIE-ONCOLOGIE  
contract 1 januari 2009 – 31 december 2009**

**Rapport du collège de médecins  
RADIOTHERAPIE- ONCOLOGIE  
contrat 1 januari 2009 – 31 decembre 2009**

**prof. dr. Pierre Scalliet**  
**Voorzitter-Président**

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**DEEL 1**

**WERKING VAN HET**

**COLLEGE VAN RADIOTHERAPIE-ONCOLOGIE**

**A/ Inleiding**

De commissie Peer Review voor radiotherapie-oncologie werd, op initiatief van het Ministerie van Volksgezondheid, in 1995 opgericht en bestaat uit radiotherapeuten en fysici. De doelstelling van deze commissie is de kwaliteit van de bestralingsbehandelingen trachten te verbeteren door het organiseren van peer review activiteiten.

In mei 2000 werd het college van geneesheren radiotherapie geïnaugureerd.

In september 2000 werd overgegaan tot een formele integratie van het door het ministerie benoemde college enerzijds en de reeds sinds 1995 bestaande commissie Peer Review voor radiotherapie-oncologie anderzijds.

In juli 2003 werd een nieuw college geïnstalleerd, na verschijnen in het staatsblad (KB 30-7-2003).

In 2006 werd opnieuw een nieuw college samengesteld (KB 15-12-2006), de samenstelling vindt u onder B/.

In **2009** aan verschillende projecten gewerkt:

- 1. Prostaatbrachytherapie**
- 2. Quality indicator**
- 3. On site visits: behandeling van prostaatca**
- 4. Procure**
- 5. Incident Report Systems**
- 6. IMRT**

De stand van zaken van deze verschillende projecten vindt U in deel 2 van dit verslag.

In maart 2009 ging de jaarlijkse vergadering van het college en de diensthouders van alle Belgische radiotherapiecentra door. Op deze vergadering zijn ook de fysici aanwezig. Feedback werd gegeven over de uitgevoerde projecten, en de planning voor 2009-2010 werd voorgesteld en besproken.

**B/ Samenstelling van het college van radiotherapeuten-oncologen****Leden van het college in de periode 2000-2003 (KB 10/6/1999):**

prof. dr. P. Vanhoutte (voorzitter)  
dr. P. Huget (ondervoorzitter)  
prof. dr. C. Weltens (contactpersoon en secretaris)  
dr. G. Demeestere  
dr. W. De Nneve  
dr. D. Marchal  
prof. dr. P. Scalliet  
dr. K. Vandeputte

**Leden van het college in de periode 2003-2006 (KB 30/7/2003)**

dr. P. Huget (voorzitter)  
prof. dr. P. Scalliet (ondervoorzitter)  
prof. dr. C. Weltens (contactpersoon en secretaris)  
prof. dr. J.M. Deneufbourg  
dr. D. Marchal  
dr. P. Spaas  
dr. K. Vandeputte  
dr. L. Vanuytsel

**Huidige samenstelling van het college (KB 15/12/2006)**

prof. dr. P. Scalliet (voorzitter)  
dr. P. Spaas (ondervoorzitter)  
prof. C. Weltens (contactpersoon en secretaris)  
dr. C. Mitine  
dr. K. Vandeputte  
dr. D. Van den Weyngaert  
dr. L. Vanuytsel († 30-8-2008)

Naast de door het ministerie aangestelde leden, wordt het college sinds zijn installatie verhoogd door experts (fysici, verpleegkundigen en radiotherapeuten).

In 2009 was de samenstelling van de commissie van experts als volgt:

**radiotherapeuten**

prof. dr. P. Vanhoutte  
dr. J. Vanderick  
dr. P. Huget  
prof. dr. Y. Lievens (voorzitter VBS)  
prof. dr. P. Coucke (voorzitter BVRO)

**fysici**

A. Rijnders  
M.T. Hoornaert  
M. Van Dijcke  
prof. dr. D. Verellen  
K. Feyen (voorzitter BVZF/BSPH)

**Verpleegkundigen**

G. Vandevelde  
P. Bijdekerke  
S. D'Haese (voorzitter VVRO)

**C/ Plenaire vergaderingen**

Volgende plenaire vergaderingen werden gehouden in 2009:

<b>DATUM</b>
13-01-2009
03-03-2009
16-06-2009
29-09-2009
01-12-2009

De verslagen van bovenstaande vergaderingen zijn in dit jaarverslag geïnccludeerd, u vindt ze op de volgende pagina's.

## **Minutes of the meeting of 13-01-2009**

*Present:*

*College:* P. Spaas, D. Van den Weyngaert, K. Vandeputte, P. Scalliet, C. Weltens.  
*Experts radiation oncologists:* J. Vanderick, P. Van Houtte, P. Huget  
*Experts physicists:* A. Rijnders, D. Verellen, MT. Hoornaert, M. Vandijcke

*Invited:* G. Vandevelde, S. D'haese, P. Bijdekerke, Y. Lievens

Apologized: C. Mitine, W. De Neve

### **1) Apologies:**

C. Mitine, W. De Neve

### **2) Approval of the minutes of the previous meeting**

OK

### **3) Report of the activities of the BVRO and the VBS**

BVRO: -

VBS: negotiations A3

### **4) Report of the meeting with the FOD on December 2th**

- budget for 2009 unchanged
- end 2009: symposium 10 year college
- begin 2009: all colleges will individually be invited to meet Mr. De Coster.

### **5) Incident reporting**

#### **Rosis**

Is an interesting system, pioneer, exhaustive, dedicated to radiotherapy. However the future is unclear (quid funding). Therefore, this is not a reliable basis for incident reporting in Belgium.

#### **HICT**

Health Information Communication Technology is an independent company that provides a "blame free" incident reporting system. Representatives of HICT will be invited and the next meeting of the college will be dedicated to incident reporting.

### **6) "BBT" (bijzondere beroepstitel) for nurses and technologists in Radiotherapy**

A delegation from the VVRO (Sven D'Haese) presents data on the need for the development of a "BBT" for radiotherapy nurses and technologists.

The college supports the request for both the development of a BBT and an adapted education. A recommendation letter will be written and addressed to minister Onckelinx.

### **7) Quality criteria (P. Scalliet)**

EBIT made a website for online registration of the different Quality Indicators by the different departments. The cost is about 8.110 euro. Departments can enter their own data and receive in return feedback on their evolution in time and bench marking with the other departments. The BVRO website will be used (alternatively the BVZF website can be used depending on the cost). This project will be presented to the heads of the different departments at the annual meeting in March.

### **8) Norms (P. Spaas)**

The accompanying letter will be translated from Flemish to French by Katia Vandeputte, and the mailing to the heads of the departments will follow asap.

**9) FANC (P. Scalliet-A. Rijnders)****1. Permanent office for external quality audit**

Level 1: This office should be responsible for basic external audit of all (about 80) linacs in Belgium within a period of 3 years. In response to the public tender, a joint project between the BVZF and the Xios Hogeschool Limburg was entered.

Level 2: Scientific project: audit of complex set-ups

This project will be sponsored for a limited time by the FANC. The public tender for the scientific project (more complex dosimetry) is in preparation and will shortly be available.

**2. Incident reporting**

Cf point 5): HICT and ROSIS

**3. Recommendations for quality assurance procedures**

In the cancer plan of Minister Onkelinx, funding is foreseen to pay a full or half time equivalent to set up a quality system in each department. The college agrees that setting up a quality system is not feasible without adequate funding.

**10) On site visits for prostate project (K. Vandeputte)**

The on site visits (quality of the patient file) have started. Already 3 departments have been checked and the final results are foreseen for the autumn of 2009.

**11) Procure**

Funding from Procure, the "Stichting tegen kanker" and the college allow to install the Acquilab software in all departments for free. The cost for maintenance remains at the expense of the departments (+/- 3.000 €/year). The evaluation of the contours will be performed by a dedicated dosimetrist. The project in its new form will be proposed to the heads of the different departments at the annual meeting in March.

**12) Physics projects****1. Alanine dosimetry (D. Verellen)**

The work of B. Schaecken is supported by the college and Xios Hogeschool. The measurements are ongoing.

**2. Patterns of care in prostate cancer to**

Postponed to next meeting.

**13) Prostate brachytherapy.**

The online registration is ongoing.

**14) Varia**

breast cancer project

The online questionnaire has been forwarded, and ½ of the departments answered within 1 week, a reminder will be sent. The results will be presented at the next meeting.

**15) Next meeting:**

Tuesday March 3th 2009 at 19:00.

This meeting will be dedicated to the project of incident reporting, HICT;

C. Weltens 16-2-2009



## Minutes of the meeting of 03-03-2009

*Present:*

*College:*, D. Van den Weyngaert, K. Vandeputte, P. Scalliet,  
*Experts radiation oncologists:* J. Vanderick  
*Experts physicists:* A. Rijnders, M. Vandijcke

*Invited:* G. Vandavelde, S. D'haese, P. Bijdekerke, Y. Lievens,  
M. Legrand and his colleague (HICT)

Apologized: C. Weltens

### **1) Approval of the minutes of the previous meeting**

OK

### **2) Incident reporting : HICT**

The independent company HICT (Health Information Communication Technology) proposes their "blame free" incident reporting system. Their presentation: see attachment.

Price:

- 27000 euro once for the initial software.
- Service contract 5000 euro annual. Upgrades are included
- Hosting of the central PC: 1160 euro / month
- 

C. Weltens, Y. Lievens and P. Scalliet will explore other concepts and a visit at Maastricht is planned.

### **3) "BBT" (bijzondere beroepstitel) for nurses and technologists in Radiotherapy**

The "nationale raad" does not agree to defend a separate "BBT" for radiotherapy nurses and technologists. It does not even agree to defend the radiotherapy "beroepstitel" under the "beroepstitel" oncologie. Proposition to sign a lettre defending the "beroepstiel" at the next meeting for the head of the departments (13 march).

### **4) 13 March: Meeting for the head of the departments .**

- Aquilab : Ph. Spaas
- Report 2008 : C. Weltens
- Recognition of the nurses and technologists of the RT Departments
- Norms : Ph. Spaas
- Presentation of the "Kankerinstituut" as new stakeholder, dr. Arbijn proposes het "kankerplan"

**5) Varia**

1. M. Van Dyck proposes a questionnaire with the physicists about the IMRT use in Belgium.
2. Fritz Van Clemen will replace S. D'Haese
3. BELDart project needs 2 representatives of the college for the steering committee.

**6) Next meeting:**

Tuesday March 3th 2009 at 19:00

This meeting will be dedicated to the project of incident reporting.

K. Vandeputte 14/03/09

## Minutes of the meeting of 16-06-2009

### *Present:*

*College:* C. Weltens, P. Spaas, D. Van den Weyngaert, K. Vandeputte, P. Scalliet

*Experts radiation oncologists:* P. Van Houtte, P. Huget,

*Experts physicsists:*, A. Rijnders, M. Van Dijcke, D. Verellen

### *Invited:*

A. Dehaene and colleague for ADHECO

B. P. Bijdekerke, Guy Vandevelde, Fritz Van Clemen for the VVRO

Apologized: C. Mitine, Y. Lievens, P. Coucke, Sven D'haese, MT. Hoornaert J. Vanderick

### **1) Apologies**

### **2) Approval of the minutes of the previous meeting**

Correction of the apologies.

### **3) Adheco: incident management system**

An incident management system used for incident registration and benchmarking is proposed by Adheco (<http://www.adheco.be/>). The proposed system is the "GreCom" system. In this system both the analysis and classification of the incidents are performed by trained personnel of the department itself, but benchmarking with other departments (national, international) is also possible.

### **4) Physics**

A new survey is proposed, the topic is IMRT & QA. A draft will be proposed at the next meeting.

### **5) College**

Normally, the composition of the college has to change every 3 years: members are appointed for 6 years, and every 3 years half of the college is replaced. The actual college was installed in 2006. CW will make an overview of the composition of the college since its installation in 2000.

### **6) Norms**

Since the actual text of the norms has been approved during the meeting of the heads of department on March 13<sup>th</sup>, the text will be send to the "nationale raad", P. Spaas will contact P. Coucke to organize this.

Next meeting: 29-09-2009

Cw, 28-09-2009

## Minutes of the meeting of 29-09-2009

*Present:*

*College:* P. Scalliet, C. Weltens, P. Spaas, D. Van den Weyngaert, C. Mitine, K. Vandeputte

*Experts radiation oncologists:* ---

*Experts phycisists:*, A. Rijnders, D. Verellen, MT. Hoornaert

*Invited:*

C. P. Bijdekerke, Guy Vandevelde for the VVRO

D. Jo Praet, Renaat Van den Broeck for the HUB

Apologized: Y. Lievens, P. Coucke, J. Vanderick, P. Van Houtte, P. Huget, M. Van Dijcke

### **Apologies**

Y. Lievens, P. Coucke, J. Vanderick, P. Van Houtte, P. Huget, M. Van Dijcke

### **Approval of the minutes of the previous meeting**

OK

### **Briefing BVRO, VBS, College oncologie**

Nothing to be mentioned.

### **HUB: Hogeschool Universiteit Brussel and “technoloog medische beeldvorming”**

Summary of the presentation given by J. Praet, director, and R. Van den Broeck, docent.

*HUB*

- → studiegebied “gezondheidszorg”

- → 4 professionele bachelors:

1. Ergotherapie

2. Verpleegkunde

3. Optiek en Optometrie

4. Medische beeldvorming

“Technoloog Medische Beeldvorming”: TMB

3 jaar

*Start 1998*

*Nu 86 studenten in eerste jaar*

*Houdt in:*

- *beeldkennis*
- *Brede basis straling*
- *Initiatie radiotherapie*

*Niche is te klein om opleiding in de radiotherapie alleen te organiseren, daarom Opleiding radiotherapie op 2 vlakken:*

*geïncorporeerd in TMB*

*ofwel 3 jaar TMB + 1 jaar BanaBa radiotherapie*

*ofwel ingebouwd TMB opleiding, 4 jaar, - → TMB-RT*

*postgraduaat radiotherapie voor verpleegkundigen*

*Opgelet: de hoge raad voor paramedische beroepen moet dan wel een uitbreiding van de bevoegdheid van de TMB voorzien zodat ze in de diensten radiotherapie kunnen werken (toevoegen aan het beroepsprofiel KB 20 juli 1997)*

*Conclusion: the colleges agrees that a complementarity exists between nurses and technologists (TMBs) employed in the radiotherapy departments, and that TMBs are needed in the radiotherapy departments, because of their skills and because of a shortage of nurses. The college supports the adaptation of the radiotherapy norms in order to allow both nurses and TMBs to work in radiotherapy departments.*

### **Prostate treatments survey**

Katia and Daniel visited all belgian radiotherapy centres except 4. Data analysis will be performed in collaboration with a statistician (cf. P. Scalliet)

### **Quality indicators in radiotherapy**

The website is now open on [www.collegeofradiotherapy.be](http://www.collegeofradiotherapy.be). A password will be given to the heads of department. Then, they will be asked to enter the data of their department.

### **Physics**

1. Alanine dosimetry: results will be shown in the spring of 2010, during the next meeting with the heads of department
2. To have a representative of the bureau of the BVZF/SBPH in the college, Karen Feyen will be invited to attend the meetings of the college. Since MT Hoornaert informed us that she plans to stop her activities in the Peer Review/College somewhere next year, she will then be replaced by Karen Feyen. In the mean time, temporarily 5 expert physicists will be invited to attend the meetings of the college.
3. MT Hoornaert presents a new questionnaire on IMRT TREATMENTS IN BELGIUM. This questionnaire will be distributed by the BVZF/SBPH.

### **Norms**

The text of the norms has been send to the "nationale raad", P. Spaas and P. Coucke will contact the cabinet of the minister, because this is probably a way to accelerate the process.

### **Procare**

The first 4 systems will be installed in UCL, KUL, Sint Elisabeth and Middelheim. The other hospitals will follow: they will get the system, training the personnel and access to a help desk.

**Next meeting: December 1th 2009, 19.00**

Cw, 02-10-2009

## Minutes of the meeting of 01-12-2009

*Present:*

*College:* P. Scalliet, C. Weltens, P. Spaas, D. Van den Weyngaert, C. Mitine, K. Vandeputte

*Experts radiation oncologists:* J. Vanderick, P. Huget

*Experts phycisists:*, A. Rijnders, M. Van Dijcke

*Invited:*

- A. P. Coucke for the BVRO
- B. K. Feyen for the BVZF
- C. P. Bijdekerke, Guy Vandevelde for the VVRO

Apologized: Y. Lievens, P. Van Houtte, D. Verellen, MT. Hoornaert

**Apologies and Welcome of Karen Feyen, BVZF**

Y. Lievens, P. Van Houtte, D. Verellen, MT. Hoornaert

**Approval of the minutes of the previous meeting**

OK

**Briefing BVRO, VBS, College oncologie**

1. The BVRO has organized a brain storming meeting with young radiation oncologists on the future of the organization and the speciality itself.
2. The BVRO and the BVZF wrote a letter concerning the problem of the satellite centres, this letter has not been forwarded yet since consensus has not been obtained yet.

**Prostate treatments survey**

Katia and Daniel visited all belgian radiotherapy departments and presented preliminary data. In each department, 15 prostate cancer radiotherapy files were analysed.

Furhter data analysis will be performed in collaboration with a statistician (cf. P. Scalliet).

The results will be presented at the meeting of the heads of department AND on the Spring Meeting of the BVRO on March 19<sup>th</sup> 2010.

**Quality indicators in radiotherapy**

The website is now open on [www.collegeofradiotherapy.be](http://www.collegeofradiotherapy.be). A password will be given to the heads of department. Then, they will be asked to enter the data of their department.

## Physics

### **B L-dART**

1. Alanine dosimetry:  
P. Scalliet reports that this project will, in 2009-2010-2011, be financed by the “national cancer plan”, on condition that the college is on a regular(1x/3 months) base informed on the progression and the results of the measurements. Results will be shown on March 19th, during the next meeting with the heads of department.
2. IMRT TREATMENTS IN BELGIUM. This questionnaire will be distributed by the BVZF/SBPH.  
The questionnaire has been send, responses are requested before January 15 th 2010.

## Norms

The text of the norms has to be adapted; will be discussed in the college (P. Scalliet).

## Procare

The first 2 systems have been installed in UCL and KUL. Sint Elisabeth and Middelheim are still waiting. The other hospitals will follow: they will get the system, training the personnel and access to a help desk. However, it is not clear what the specifications of the hardware are that has to be provided by the departments themselves, moreover, the specifications delivered by Acquilab are outdated! P. Scalliet suggests that the departments contact Acquilab for further information. The departments have also to “order” the software and to pay for it, before being reimbursed!

## Varia

1. K. Vandeputte asks when a new college will be installed. The present college has been installed in 2006, therefore normally 4/8 members have to be replaced. Prof. Deneufbourg and Dr. Vanuytsel have also to be replaced. In the past initiatives to change the composition of the college have come from the ministry itself, up to now the ministry did not contact the college on this subject and K. Vandeputte and P. Spaas raise the question whether or not the college itself has to undertake action.
2. Prof. Lievens informs the college that the VBS would like to collect data on the number of radiation-oncologists prescribing chemotherapy (eg in day hospitals, ...).

**Next meeting: MARCH 2TH 2010, 19.00**

Cw, 02-12-2009

**DEEL 2:**  
**RESULTATEN**



<b>1. WERKGROEP PROSTAAT BRACHYTHERAPIE</b>
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**P. SPAAS**

Belgian Working Group Prostate Brachytherapy

Zie apart verslag in addendum!

### PARTICIPATING CENTRES

AZ Sint-Maarten DUFFEL
Sint-Elisabethziekenhuis TURNHOUT
AZ Sint-Augustinus WILRIJK
AZ Middelheim ANTWERPEN
UZ LEUVEN
UCL St-Luc BRUXELLES
Europaziekenhuis BRUSSEL
CHIREC BRUXELLES
Clinique Générale St-Jean BRUXELLES
AZ Sint-Jan BRUGGE
AZ Groeninge KORTRIJK
Heilig Hartziekenhuis ROESELARE
AZ Sint-Lucas GENT
CHU CHARLEROI
Hôpital de Jolimont HAINE ST PAUL
Sart-Tilman LIEGE
Limburgs Oncologisch Centrum
Clinique St-Elisabeth NAMUR

## 2. QUALITY INDICATORS

### P. SCALLIET

Quality indicators in radiotherapy have not been developed until recently. The process of diagnosis, radiotherapy indication and treatment is not easily captured in numbers.

On the other hand, the use of high energy equipment and the proportion of curative treatments with 3D conformal radiotherapy and IMRT has progressively emerged as an indicator that good quality of radiotherapy is present.

A publication of the Italian Institute of Public Health (Cionini L et al. *Radiother Oncol* 2007, 82: 191-200) has paved the way towards the definition of clear quality indicators.

Therefore, the college proposed to the radiotherapy community a collective web-based database in which every department can input its yearly statistics. This database borrowed most of the quality indicators defined by the Italian Institute of Health. A few of them, however, were not relevant to Belgium like, f.i. the waiting lists (these do fortunately not exist in Belgium) or patient satisfaction index (patients are notoriously dissatisfied by the Italian health service).

The company EBIT was asked to prepare the interactive website, with all the confidentiality requirements. It entered in production in 2009.

**3. ON SITE VISITS: RADIOTHERAPIE VOOR PROSTAATCA**

**Katia Vandeputte**

**Danielle Van den Weyngaert**

**Doel van het project:**

- 1. door middel van een enquête de huidige bestralingindicaties voor prostaatcarcinoma in de belgische radiotherapiecentra in kaart brengen**
- 2. door middel van on site visits de kwaliteit van de patiëntendossiers van patiënten die in behandeling zijn voor prostaatkanker evalueren**

**Stand van zaken:**

**Alle centra werden bezocht, de data worden in 2009 genalyseerd.**

**De resultaten werden voorgesteld op het ESTRO congres in Barcelona.**

**Poster zie volgende pagina.**

**A federal audit of the Belgian radiotherapy departments for prostate cancer radiotherapy treatment. Katia Vandeputte<sup>a</sup>, Danielle Vandeweyngaert<sup>b</sup>, Luc VanUytsel<sup>c</sup>, Pierre Scalliet<sup>d</sup>, The Belgian Federal College of Radiotherapy**

*a Department of Radiation oncology, Cl. St. Elizabeth, Namur, Belgium, b Department of Radiotherapy UZA –ZNA, Antwerpen, Belgium c Department of Radiation oncology Heilig Hart Ziekenhuis, Roeselare, Belgium, d, Department of Radiation oncology, University Hospital Saint Luc, Université Catholique de Louvain Brussels, Belgium*

**Purpose:** On behalf of the Belgian Federal College of Radiotherapy, an external audit of 375 prostate cancer patients (pts) files treated with external beam radiotherapy (EBRT) only or postoperatively was performed in all of the 25 Belgian radiotherapy centres.

**Methods:** Between May 2008 and October 2009 two experienced radiation oncologists from different centres site-visited all 25 departments . The verified items were : age of the patients; tumour staging (clinical and pathological); risk groups according to D’Amico; use of hormonal therapy (HT); dose-, volume prescription and quality control of the radiation treatment; type of surgery if performed; delay between surgery and start of EBRT postoperatively.

**Results:** 375 files were examined of which 236 (63 %) were treated with EBRT only and 139 (37%) received EBRT postoperatively. Mean age in EBRT only group was 72 yrs (range 49 –87) and 66 years (range 45-80) in the postoperative group. A pathological nodal staging was noted in 8.4 % of the EBRT only files by a lymphadenectomy pre-EBRT and in 45 % of the EBRT postoperative files.

Within the EBRT only group 11% were low risk patients, 30 % intermediate risk and 48 % high risk. The data of 11 % of the patients were insufficient to assess their risk. In the EBRT postoperative group, the preoperative risk assessment was low for 4 % , intermediate for 15%, high for 19% and 62 % was not assessable .

**EBRT only group**

In the postoperative EBRT group 33.8% of the pts received **adjuvant radiotherapy, (A-RT)** within 4 months after surgery with a mean PSA of 0.38 ng/ml (range 0.01 -4) at the start of radiotherapy. The A-RT started 15.8 weeks (range 3-54) after surgery. **Salvage EBRT (S-RT)** for rising PSA, was performed in 60.4 % of the pts with a mean PSA of 1.29 ng/ml (range 0.01 -11,31) and the mean interval between surgery and start of EBRT was 170.2 weeks (range 12-800 ). **RT for clinical local recurrence** was performed in 5.8 %. Mean PSA in that group was 3.88 ng/ml (range 3.5 -12.50) and the mean interval between

surgery and diagnosis of local recurrence and start of EBRT was 460.3 weeks (range 52-780).

In the postoperative EBRT group the **dose prescription** was respectively 65.8 Gy (range 60 –73.8 ) for A-RT group, 67.9 Gy (range 60 –74.4 ) for S-RT group and 69.5 Gy (range 64 –74 ) for the clinical local recurrence group.

**EBRT postoperative group:**

In the EBRT only group, no significant difference in prescribed total **dose to the prostate** was seen between the different risk groups. The average prescribed dose to the prostate was 72.5Gy. However, important fluctuations between minimum and maximum prescribed dose was noted, from 54Gy ( aT4, palliative RT) to 83.6 Gy. The variability in dose prescription is much larger for the **dose to the seminal vesicles** which varies from 53 Gy to 60.12 Gy. The minimum and maximum prescribed dose varies from 45 Gy to 83.6 Gy.

The indication of **lymph node irradiation** varies between the different centers and was performed in 17 of the 25 centers. In the EBRT only group, a total of 157 pts (42 %) received **hormonotherapy** concurrently with the radiation treatment: 6/26 (23 %) of low risk pts, 35/70 (50 %) of intermediate risk pts, 107/113 (95%) of high risk pts and 9/27 (33%) of pts with undeterminable risk.

**Conclusion:** There was a high degree of conformity in most of the Belgian radiotherapy centers with the minimal requirements for documentation of radiotherapy prescription and administration. For the exclusive radiotherapy indications, variations in dose prescription are especially seen for seminal vesicles and pelvic lymph nodes. There is a clear trend for concomitant hormonal treatment for more aggressive tumors.

Postoperative radiotherapy is very well established and is commonly started as soon as PSA is rising.

A multidisciplinary approach is essential to keep clinical habits adapted to the current medical standards

**Barcelona ESTRO 2010**

# A federal audit of the Belgian radiotherapy departments for prostate cancer radiotherapy treatment.

Katia Vandeputte<sup>a</sup>, Danielle Vandeweyngaert<sup>b</sup>, Luc VanUytsel<sup>†c</sup>, Pierre Scalliet<sup>d</sup>,  
The Belgian Federal College of Radiotherapy

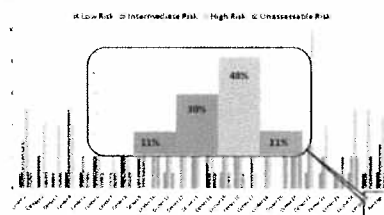
<sup>a</sup> Department of Radiation Oncology, CH St. Elisabeth, Middelkerke, Belgium; <sup>b</sup> Department of Radiotherapy, CHA - ZNA, Antwerpen, Belgium; <sup>c</sup> Department of Radiation Oncology, Hôpital Erasme, Brussels, Belgium; <sup>d</sup> Department of Radiation Oncology, Université Hospital Saint Luc, Université Catholique de Louvain, Brussels, Belgium

**Purpose:** On behalf of the Belgian Federal College of Radiotherapy, an external audit of 375 prostate cancer patients (pts) files treated with external beam radiotherapy (EBRT) only or postoperatively was performed in all of the 25 Belgian radiotherapy centres.

**Methods:** Between May 2008 and October 2009 two experienced radiation oncologists from different centres site-visited all 25 departments. The verified items were: age of the patients; tumour staging (clinical and pathological); risk groups according to D'Amico; use of hormonal therapy (HT); dose-, volume prescription and quality control of the radiation treatment; type of surgery if performed; delay between surgery and start of EBRT postoperatively.

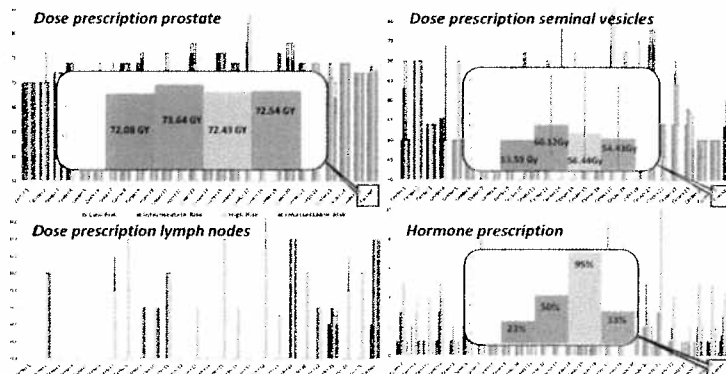
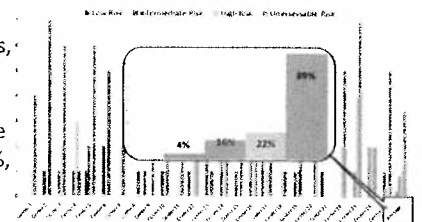
**Results:** 375 files were examined of which 236 (63 %) were treated with EBRT only and 139 (37%) received EBRT postoperatively. Mean age in EBRT only group was 72 yrs (range 49 – 87) and 66 years (range 45-80) in the postoperative group. A pathological nodal staging was noted in 8.4 % of the EBRT only files by a lymphadenectomy pre-EBRT and in 45 % of the EBRT postoperative files.

## EBRT only group



Within the EBRT only group 11% were low risk patients, 30 % intermediate risk and 48 % high risk. The data of 11 % of the patients were insufficient to assess their risk. In the EBRT postoperative group, the preoperative risk assessment was low for 4 % , intermediate for 15%, high for 19% and 62 % was not assessable .

## EBRT postoperative group:

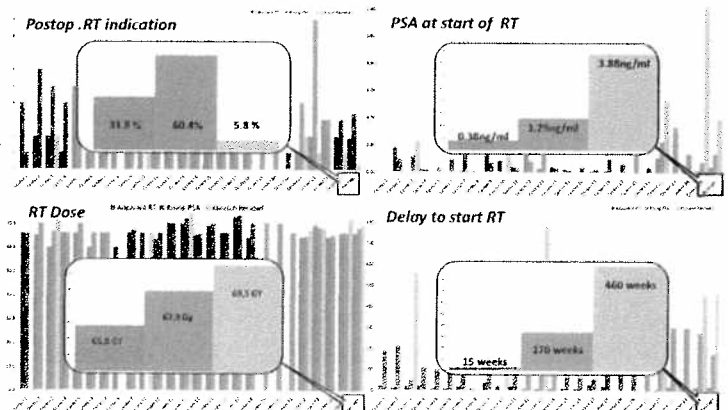


In the EBRT only group, no significant difference in prescribed total **dose to the prostate** was seen between the different risk groups. The average prescribed dose to the prostate was 72.5 Gy. However, important fluctuations between minimum and maximum prescribed dose was noted, from 54Gy ( aT4, palliative RT) to 83.6 Gy. The variability in dose prescription is much larger for the **dose to the seminal vesicles** which varies from 53 Gy to 60.12 Gy. The minimum and maximum prescribed dose varies from 45 Gy to 83.6 Gy.

The indication of **lymph node irradiation** varies between the different centers and was performed in 17 of the 25 centers. In the EBRT only group, a total of 157 pts (42 %) received **hormonotherapy** concurrently with the radiation treatment: 6/26 (23 %) of low risk pts, 35/70 (50 %) of intermediate risk pts, 107/113 (95%) of high risk pts and 9/27 (33%) of pts with undeterminable risk.

In the postoperative EBRT group 33.8% of the pts received **adjuvant radiotherapy, (A-RT)** within 4 months after surgery with a mean PSA of 0.38 ng/ml (range 0.01 -4) at the start of radiotherapy. The A-RT started 15.8 weeks (range 3-54) after surgery. **Salvage EBRT (S-RT)** for rising PSA, was performed in 60.4 % of the pts with a mean PSA of 1.29 ng/ml (range 0.01 - 11,31) and the mean interval between surgery and start of EBRT was 170.2 weeks (range 12-800) . **RT for clinical local recurrence** was performed in 5.8 %. Mean PSA in that group was 3.88 ng/ml (range 3.5 -12.50) and the mean interval between surgery and diagnosis of local recurrence and start of EBRT was 460.3 weeks (range 52-780).

In the postoperative EBRT group the **dose prescription** was respectively 65.8 Gy (range 60 – 73.8 ) for A-RT group, 67.9 Gy (range 60 – 74.4 ) for S-RT group and 69.5 Gy (range 64 –74 ) for the clinical local recurrence group.



**Conclusion :** There was a high degree of conformity in most of the Belgian radiotherapy centers with the minimal requirements for documentation of radiotherapy prescription and administration. For the exclusive radiotherapy indications, variations in dose prescription are especially seen for seminal vesicles and pelvic lymph nodes. There is a clear trend for concomitant hormonal treatment for more aggressive tumors.

Postoperative radiotherapy is very well established and is commonly started as soon as PSA is rising.

A multidisciplinary approach is essential to keep clinical habits adapted to the current medical standards

**4. PROCARE****P. SCALIET**

PROCARE stands for PROject on CANcer of the REctum. It is a multidisciplinary Belgian project with the aim to improve the outcome of rectal cancer treatment in Belgium. The targets are an R0-resection in >60% of the patients, an abdominoperineal resection rate of <30%, postoperative mortality <4%, a local recurrence rate (LRR) of <10% at two years, an overall two year survival of 80% after R0, and an improved survival also in advanced disease i.e. in metastatic rectal cancer.

The year 2009 has seen intense negotiations between the college and the company AQUILAB, the only one able to create a complete interdepartmental network. The total cost was submit to strong reduction, as the available budget from RIZIV-INAMI was not sufficient to cover the total expenses (160.000€).

A complement of 100.000€ was offered by the Fondation contre le Cancer/Stichting tegen Kanker on the basis of the PROCARE radiotherapy project, allowing for a rounding of the entire enterprise.

During the fall of 2009, installation of the network started in the Cliniques Universitaires Saint Luc and the UZ Gasthuisberg. The installation continues in several radiotherapy departments of Belgium early in 2010.

## 5. INCIDENT REPORT SYSTEMS

### P. SCALLIET

#### HICT

The independent company HICT (Health Information Communication Technology) proposes their "blame free" incident reporting system. Their presentation: see attachment.

#### Price:

- 27000 euro once for the initial software.
- Service contract 5000 euro annual. Upgrades are included
- Hosting of the central PC: 1160 euro / month

C. Weltens, Y. Lievens and P. Scalliet will explore other concepts and a visit at Maastricht is planned

#### ADHECO

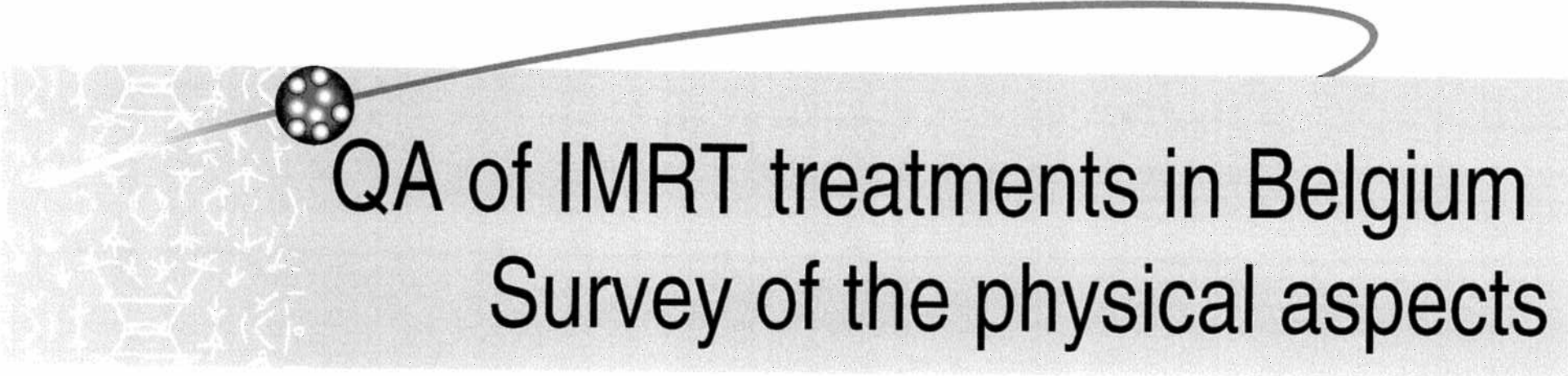
An incident management system used for incident registration and benchmarking is proposed by Adheco (<http://www.adheco.be/>). The proposed system is the "GreCom" system. In this system both the analysis and classification of the incidents are performed by trained personnel of the department itself, but benchmarking with other departments (national, international) is also possible.



**6. IMRT**

**M. VAN DIJCKE**


**MT. HOORNAERT**



# QA of IMRT treatments in Belgium Survey of the physical aspects

Marie-Thérèse Hoornaert  
Michel Van Dycke

College radiotherapie - réunion chefs de  
service 19/03/2010



# Introduction

- ✿ Purpose : overview of the situation in Belgium regarding QA programs for the physics part of IMRT
- ✿ Diffusion : Website BHPA to the members



# Introduction

- ❖ Questionnaire divided in three parts :
  - General information
  - Specific IMRT QC on treatment machines
  - Patient related QA

# Preliminary results

- ☼ Answers : 15 / 25 centres
  - 14 doing IMRT
  - 1 not
- ☼ Incomplete questionnaires
- ☼ 1 centre, 2 questionnaires

# General information from 14 centres

Type	Modality	First treatment	% IMRT	localisation
StepShoot: 7	7 Varian 1 Novalis	1 in 1995 Others :	2 – 63%	Prostate, HN,
Dynamic : 8	4 Elekta 2 Siemens	2001 to 2009	• > 50% : 2 • (20-50)% : 1 • (10-20%) : 4	Brain, Breast (?)
Rapid Arc : 2	3 Tomo		• < 10% : 5 • no answer : 3	Gyn .....
Tomo : 3				

# QC treatment machines

Specific tests performed	Type	Performed by	Periodicity	Time spent
12 yes 2 no 1 ?	Machine + type IMRT dependant: Ex DMLC : Garden fence Sweeping gap	Physicist	D, <u>W</u> ,M,	11 answers : 10 min – 3h (mean 47 min) Equipment dependant



# Patient related QA

## ✧ Before start of treatment :

- individual field fluence
  - $0^\circ$
  - treatment gantry angle
- global dose distribution

## ✧ During treatment



# Patient related QA before treatment

Performing	Each patient	Time spent	MU check	Who
14 yes 1 ?	12/14 (85.7%)	15 min (1) Up to 4h Mean 92 min	7 (50%)	Physicist 100% (1 +other)

# Patient related QA

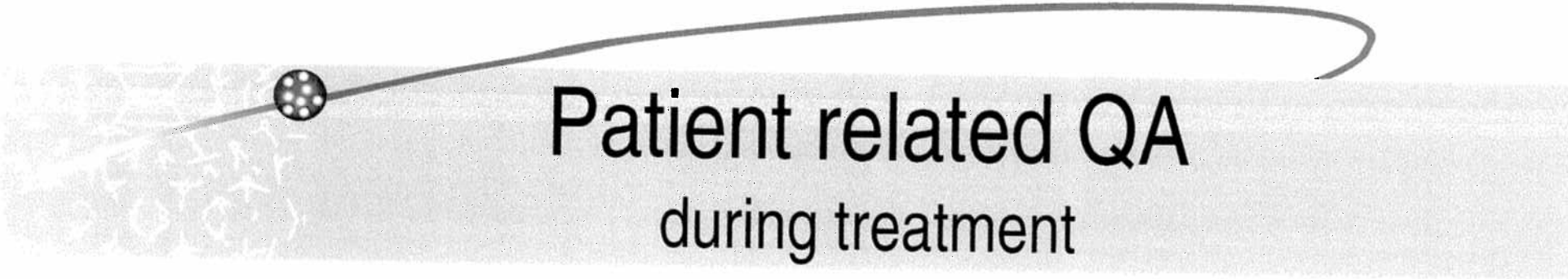
## before treatment

Individual fields	Detectors	Analysis	Acceptation criteria	Protocole
12 yes 2 no 1 ?	Films : 3 2D array: 11 IC : 6 (some) EPID : 7	$\gamma$ 3mm,3% : 11	95% pts $\gamma < 1 : 8$ Missing answers	ESTRO draft : 3

# Patient related QA

## before treatment

Global	Detectors	Analysis	Acceptation criteria	Each patient
12 yes 2 no 1 ?	Films : 6 2D array: 4 IC : 7 (some)	$\gamma$ 3mm, 3% Dose : 3-5%	90-95% pts $\gamma < 1$ Missing answers	9 yes 3 no 1 ?



# Patient related QA during treatment

## ⌘ Performed by 4 centres only

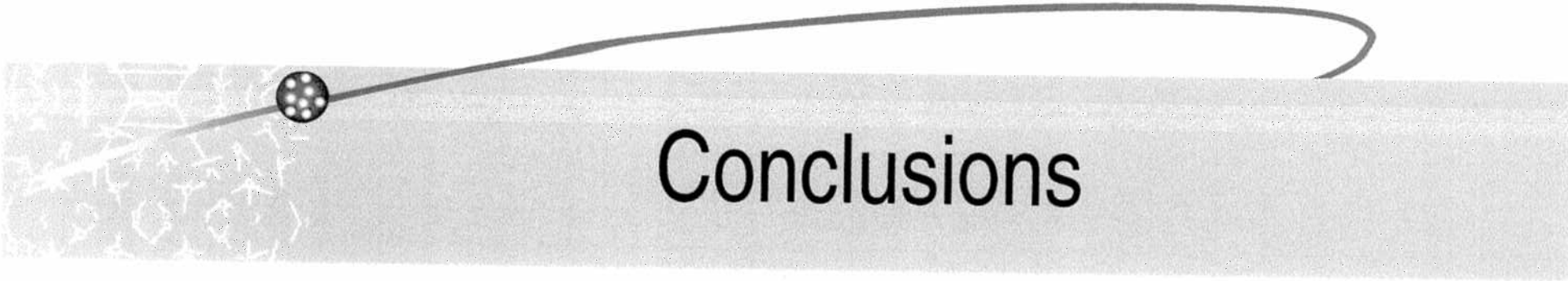
- In vivo : TLD, transit dosimetry, diode
- Other methodology :
  - analysis of delivered fluence
  - Measured sinograms from CT det



## Patient related QA MU

### ✂ total MU for 2 Gy :

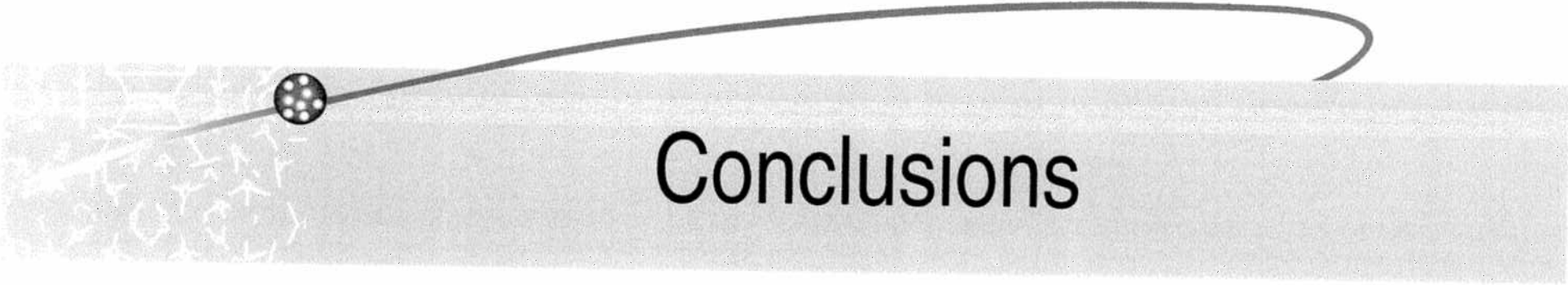
- ont répondu : prostate 11  
                                    head and neck 8
- prostate : min 300 (mean linac 432)  
                                    max 1050 (mean linac 734)
- Head Neck : min 390 (mean linac 673)  
                                    max 1500 (mean linac 1200)
- Difference tomo/SMLC/DMLC



# Conclusions

## ✦ Preliminary results :

- missing answers from centres performing IMRT
- one answer/centre → one answer/machine
- incomplete answers : acceptance criteria
- difficult analysis :
  - small numbers
  - different configuration
- Complementary informations to be asked to some participants



# Conclusions

## ☀ Comparison with other studies:

- IAEA →
- Dutch (In Holland IMRT school)
- .....

## IMRT TREATMENTS IN BELGIUM

Dear Colleagues ,

The “Collège of Radiotherapy” has decided to realize a survey dedicated to the quality control of the physical aspects of IMRT techniques used in Belgium .

The purpose of this study is to get a “picture” of what is done today in our country (and also to obtain an overview of the different fluences control techniques used in the different radiotherapy Centers).

We would greatly appreciate your help to realize this survey. Please fill in the questionnaire and send it **before 31/01/2010** by post, fax or **E-mail (preferably)** to Marie-Thérèse Hoornaert or Michel Van Dycke.

The results will be published in a anonymous way in the annual report of the College.

A part of this survey is based on the IAEA questionnaire sent to you by our Colleague Stefaan Vynckier at the beginning of this year.

We thank you very much in advance.

Best regards.

Michel Van Dycke

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# Physical aspects of IMRT techniques used in Belgium

## 1) General information

Center :

Questionnaire filled in by (local contact) :

Position: e-mail :

Are you performing IMRT:  YES  NO

If no, do you foresee it within the coming 3 years:  YES  NO

Remark :

Modality : standard linac : if yes manufacturer :

dedicated linac :  Tomotherapy   
Cyberknife

Technique : SMLC (Step and Shoot)  – DMLC (Dynamic)  – rotational therapy

When did your centre start IMRT clinical treatments :

Estimate percentage of IMRT treatments with respect to total yearly number of treatments of the centre (can be based on the 2008 treatment numbers):

Estimate percentage of treatment per localisation with respect to total number of IMRT treatments per modality:

head and neck:

prostate:

brain:

lung:

breast:

gynaecological:

other:

## **2)QC dedicated to the treatment machine**

Are you performing specific controls before IMRT treatments on your machine ?  YES  NO

(We consider here specific daily , weekly or monthly controls not included in the patient treatment QA procedure or during the periodic QC after maintenance)

If YES :

Type of IMRT :  SMLC  DMLC  Rotational therapy  Tomo

List and short description of the test(s) :

For each test: Periodicity : Daily  Weekly  Monthly  Other :

Tolerance and action levels :

For each test, performed by : Physicists :  Nurses :  Other :

Is a protocol used : specific to the centre :  national or international (please specify which one)

For each test : detectors used :  ionisation chamber  EPID  2DArray  Film  Other

Tests performed at different gantry angles ? :  YES  NO

Estimated time to perform AND analyze these tests :

## **3) Patient related controls**

### **A) QC before starting the treatment**

Do you perform patient related QA :  : YES  : NO

For each patient ? :  : YES  : NO

If NO For a fixed or random percentage of patients, which?:

*Time spent per patient* (Total time including acquisition and analyze) :

*After the optimization calculation ( optimal fluence) , do you perform :*

A smoothing of the fluences for each field ?  Yes  No

A control of the total number of Monitor Units used for each session ? (control in relation with the MU used for similar IMRT cases) :  Yes  No

A control of the calculated MU with another software ?  YES  NO

if yes, with a commercial software or a home made software ?

commercial wich one :

home made

*Patient QA performed by* :  Physicists  Nurses  Other

### 1) Individual Fields Fluences Control :

*Films* :  EDR2 Films  GafChromic Films  Other

film reader:

Analyzing software :

Parameters used for the analysis :  $\gamma$   DTA :  %dose difference :

Other :

Tolerances and action levels: *short description of your acceptance levels*

based on which protocol? or home made

*Ionization Chambers Array*:  2DArray PTW 729  Matrix  Other :

*Analyzing software* :

Parameters used for the analysis :  DTA  %dose difference

$\gamma$  (which values)  Other

Tolerances and action levels: *short description of your acceptance levels*: based on which protocol? or home made :

**IMPORTANT** : When you perform the comparison are you using the local difference in % or a difference weighted by a normalisation value (this to increase the accepted difference for low dose points) ?

Local       weighted      if weighted :  on max value       mean value

*Ionization chamber for selected points* :      type of chamber :

Phantom :  water       PMMA       Other

How many points ? :

Points in homogeneous dose region

in non homogeneous region

both :

Tolerances and action levels: *short description of your acceptance levels* :

based on which protocol? or home made

*Portal Dosimetry* :      Type of EPID :

Resolution :

Analyzing Software :

Parameters used for the analysis :

$\gamma$  (which values)      DTA:      Dose Diff%:

Other :

Tolerances and action levels: *short description of your acceptance levels* :

based on which protocol? or home made

*Other methodology* :

2) Global Fluences Control :

Collège de Radiothérapie – Peer Review

M-Th Hoornaert - M. Van Dycke

Controls realized by irradiation of a phantom and analyse of the global dose distribution.

Do you perform this type of QC :  YES  NO

If YES

for :  each patient  some patients

Phantom : type and manufacturer

Dosimeter :  Single ionisation chamber Type :

2D Array system Type :

Film Type :

Tolerances and action levels: *short description of your acceptance levels :*

based on which protocol? or home made

### **B) QC during the treatment :**

Tests realized during the treatment of the patient to control the reproductibility of the dose distributions in the different fields.

Are you performing this type of control ? :  YES  NO

If YES : for :  each patient  some patients

Methodology :  delivered fluence measurement at the collimator ?  software analysis of delivered fluence

in vivo measurement (if yes type of detector, position and methodology)

Other

Short description of the methodology :

Tolerances and action levels: *short description of your acceptance levels :*

based on which protocol? or home made

### **MONITOR UNIT VALUES**

Total number of monitor units to deliver a dose of 2 Gy.

Prostates IMRT : minimum : maximum :

Head and Neck IMRT : minimum : maximum :

Many thanks for your cooperation.

Marie-Thérèse Hoornaert and Michel Van Dycke

**DEEL 3:**  
**ADDENDUM**



Belgian Cancer Registry

## Feedback Project Prostate - Brachytherapy

### Version Control

Description	Feedback project Prostaat-Brachytherapie English translation
Document Classification	EXTERNAL

Revision	Date	Author
1.0	28/07/2010	EVV
1.1	18/08/2010	EVV
1.2	01/09/2010	EVV
2.0	21/09/2010	EVV

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## 1. Introduction

This feedback document gives an overview of the data collected for the project Prostate-Brachytherapy since the start of the project until the 15<sup>th</sup> of September 2010. Although data of procedures performed in 2010 are also included, please keep in mind that for this year of application data will not be complete.

### **History of the project**

The project Prostate-Brachytherapy was launched in 2005 to evaluate the quality of the brachytherapy procedure.

During the initial period of the project, registrations were solely made on paper registration forms; this period is also referred to as the paper circuit.

The Belgian Cancer Registry was contacted in 2007 to participate in the project and start with the development of an online registration module. This registration module became available for the participants of the project mid 2008 and introduced the start of the online circuit for the project Prostate-Brachytherapy.

To centralize all available data in one database, the previously collected paper registration forms (originating from the paper circuit) were introduced in the online registration module by coworkers of the Belgian Cancer Registry.

During one year, online registration and registration on paper co-existed to give the radiotherapy centers enough time to make the change from paper to online registration.

As from July 2009, registrations on paper were no longer accepted and the participating radiotherapy centers were responsible for the online registration of their brachytherapy data.

### **Anonymity**

This feedback document is fully anonymous; names of participating radiotherapy centers are never mentioned. In addition to this document, the Belgian Cancer Registry will send every radiotherapy center two individual graphs and the reference number needed to identify their own radiotherapy center in this document. The reference numbers of other radiotherapy centers will not be communicated.

To ensure the anonymity of the participating radiotherapy centers the number of registrations by center is only mentioned at the beginning of this document. The order in which the radiotherapy centers are listed in chapter 2.2 differs from the order used in the further parts of this document.

### **Processing of the data**

Outliers were verified and if possible corrected.

### **New dataset**

As from 15 September 2010, the dataset for the project Prostate-Brachytherapy has been modified. These modifications were made to meet new developments in scientific literature and to facilitate participation in the project.

This document is solely based on the original dataset.

**Contact details**

For more information on this feedback document, the project Prostate-Brachytherapy or the new dataset, please contact the Belgian Cancer Registry

Belgian Cancer Registry

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Dr. Liesbet Van Eycken (Director)

Karen Vos (Manager)

Elke Van Vaerenbergh (Datamanager)



## 2. General

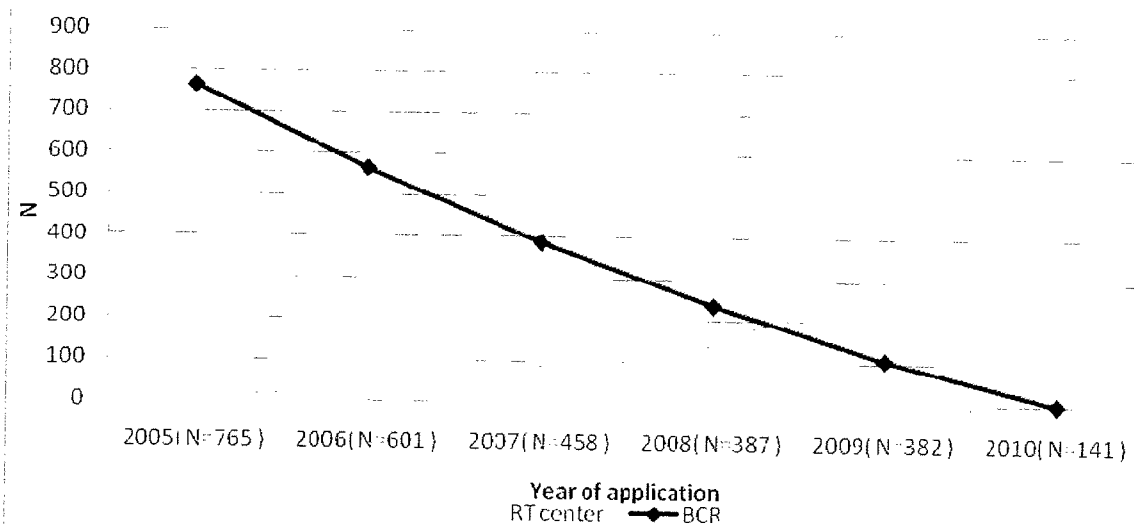
### 2.1. Number of registrations

The figures in this document are based on 2.746 registrations. 2.068 (75,3%) registrations originated from paper registrations introduced in the online application by collaborators of the Belgian Cancer Registry and 678 (24,7%) were introduced by the radiotherapy centers themselves. Since the paper circuit was abandoned in 2009, no new registrations were introduced by the Belgian Cancer Registry in 2010.

Please note that the data for year of application 2010 are not yet complete.

**Table 1: Number of registrations introduced by BCR and the radiotherapy centers by year of application.**

Year of application	RT center		BCR		N total
	N	%	N	%	
2003	0	0,0	1	100,0	1
2004	0	0,0	11	100,0	11
2005	0	0,0	765	100,0	765
2006	36	6,0	565	94,0	601
2007	72	15,7	386	84,3	458
2008	152	39,3	235	60,7	387
2009	277	72,5	105	27,5	382
2010	141	100,0	0	0,0	141
<b>Total</b>	<b>678</b>	<b>24,7</b>	<b>2.068</b>	<b>75,3</b>	<b>2.746</b>



**Figure 1: Evolution in number of registrations ( $N_{tot}=2.734$ ) by year of application – year of application 2003 – 2004 not included due to low numbers ( $N_{2003-2004}=12$ ).**



**Table 2: Evolution in number of participating centers.**

Year of application	Number of participating centers
2003	1
2004	2
2005	18
2006	13
2007	11
2008	8
2009	9
2010	9

At the start of the project 25 radiotherapy centers were contacted and invited to participate in the project. In total 18 RT centers (72 %) participated at some point in the project.

## 2.2. Number of registrations by radiotherapy center

**Table 3: Number of registrations by radiotherapy center.**

RT center	N registrations
RT A	66
RT B	568
RT C	38
RT D	15
RT E	169
RT F	239
RT G	18
RT H	401
RT I	59
RT J	70
RT K	341
RT L	192
RT M	16
RT N	8
RT O	48
RT P	356
RT Q	22
RT R	120
<b>Total</b>	<b>2.746</b>

**Remark:** the order in which the radiotherapy centers are listed in table 3 differs from the order used in the rest of this document



### 3. Patient data

#### 3.1. Number of registrations by age category

Table 4: Distribution by age category.

Age category	N	%
40-49	18	0,7
50-59	350	12,7
60-69	1.053	38,3
70-79	1.233	44,9
80-89	92	3,4
<b>Total</b>	<b>2.746</b>	<b>100,0</b>

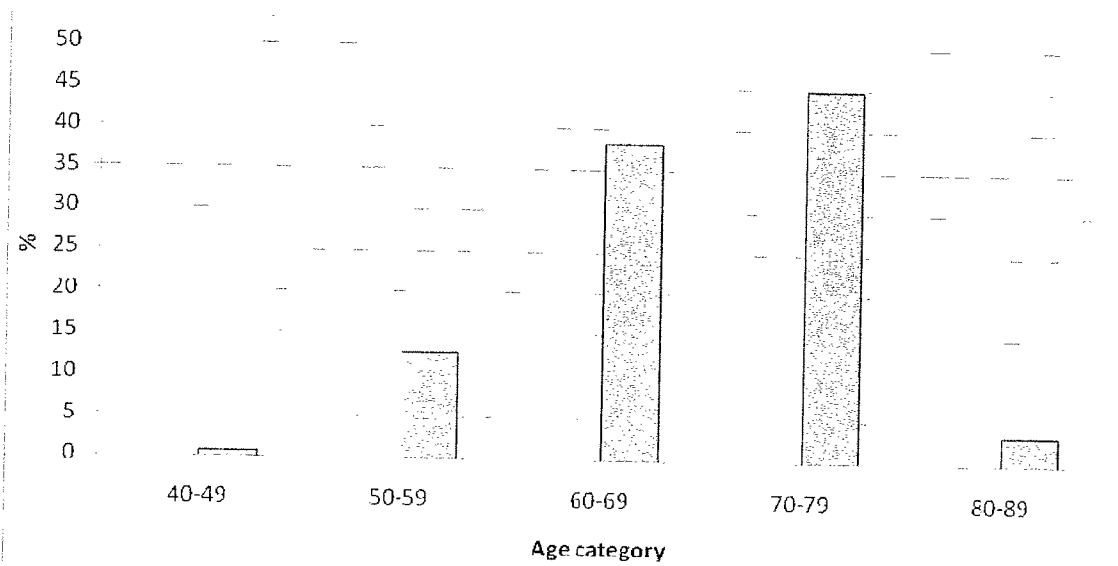


Figure 2: Percentage of registrations by age category ( $N_{tot}=2.746$ ).



Splitting the above data by year of application gives following results:

Table 5: Age distribution by year of application.

Year of application	Age category										N total
	40-49		50-59		60-69		70-79		80-89		
	N	%	N	%	N	%	N	%	N	%	
2003	0	0,0	0	0,0	1	100,0	0	0,0	0	0,0	1
2004	0	0,0	0	0,0	4	36,4	7	63,6	0	0,0	11
2005	8	1,0	115	15,0	286	37,4	331	43,3	25	3,3	765
2006	3	0,5	74	12,3	256	42,6	252	41,9	16	2,7	601
2007	2	0,4	57	12,4	184	40,2	192	41,9	23	5,0	458
2008	4	1,0	49	12,7	134	34,6	185	47,8	15	3,9	387
2009	1	0,3	40	10,5	136	35,6	194	50,8	11	2,9	382
2010	0	0,0	15	10,6	52	36,9	72	51,1	2	1,4	141
<b>Total</b>	<b>18</b>	<b>0,7</b>	<b>350</b>	<b>12,7</b>	<b>1.053</b>	<b>38,3</b>	<b>1.233</b>	<b>44,9</b>	<b>92</b>	<b>3,4</b>	<b>2.746</b>

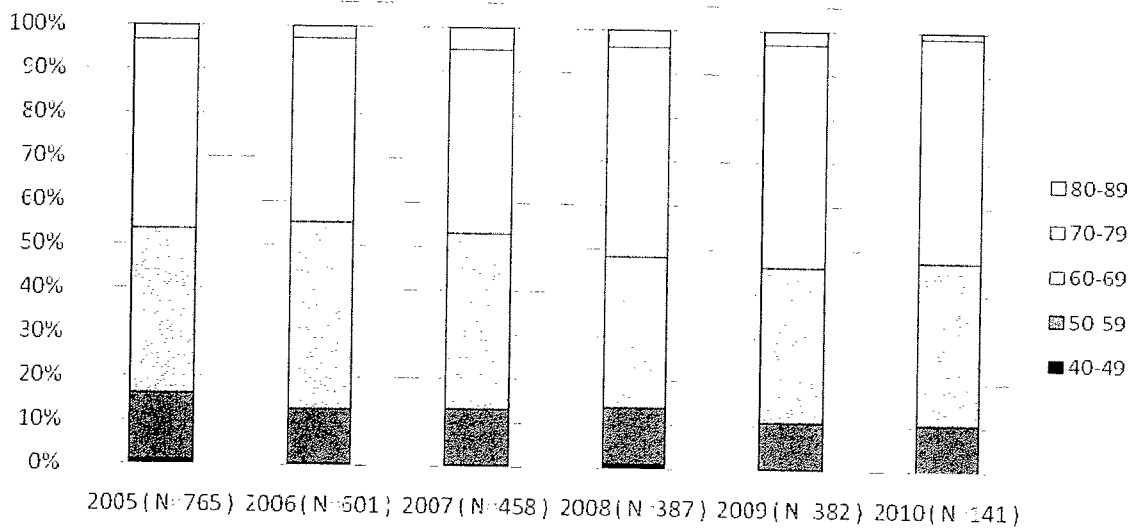


Figure 3: Age distribution by year of application ( $N_{tot}=2.734$ ) – year of application 2003 – 2004 not included due to low numbers ( $N_{2003-2004}=12$ ).

When other age categories ( $< 65$  and  $\geq 65$ ) are used, the graph looks as follows:

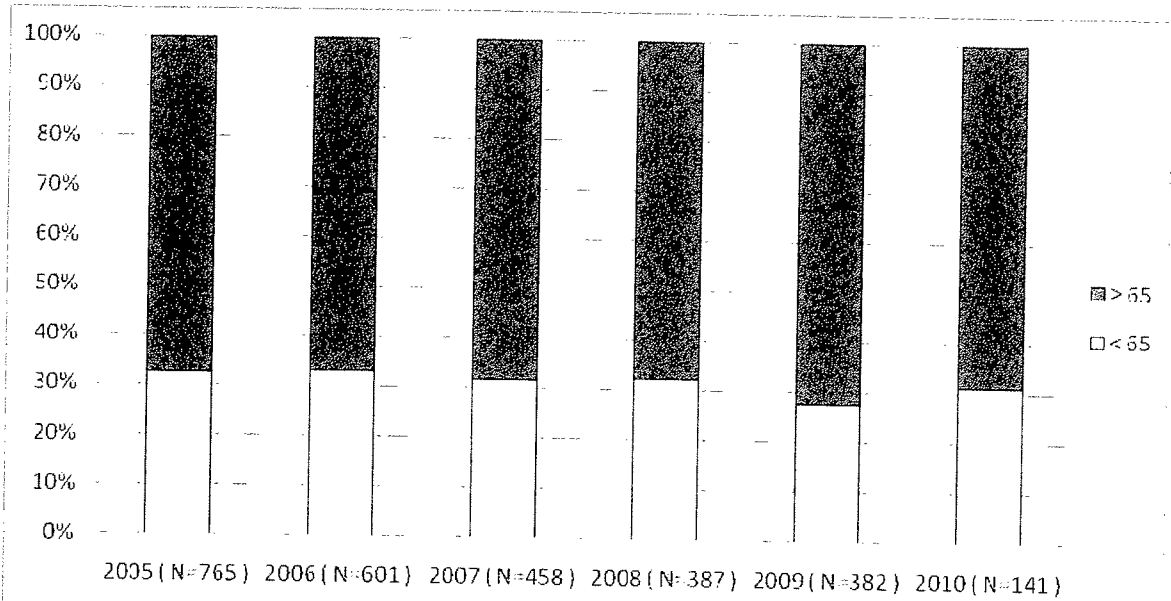


Figure 4: Age distribution by year of application (age categories < 65 and ≥ 65) – year of application 2003 – 2004 not included due to low numbers (N<sub>2003-2004</sub>=12).

#### 4. Pre op data

##### 4.1.Previous TURP

Table 6: Distribution of previous TURP by year of application.

Year of application	TURP		N total
	N	%	
2003	0	0,0	1
2004	0	0,0	11
2005	20	2,6	765
2006	41	6,8	601
2007	30	6,6	458
2008	42	10,9	387
2009	29	7,6	382
2010	18	12,8	141
<b>Total</b>	<b>180</b>	<b>6,6</b>	<b>2.746</b>

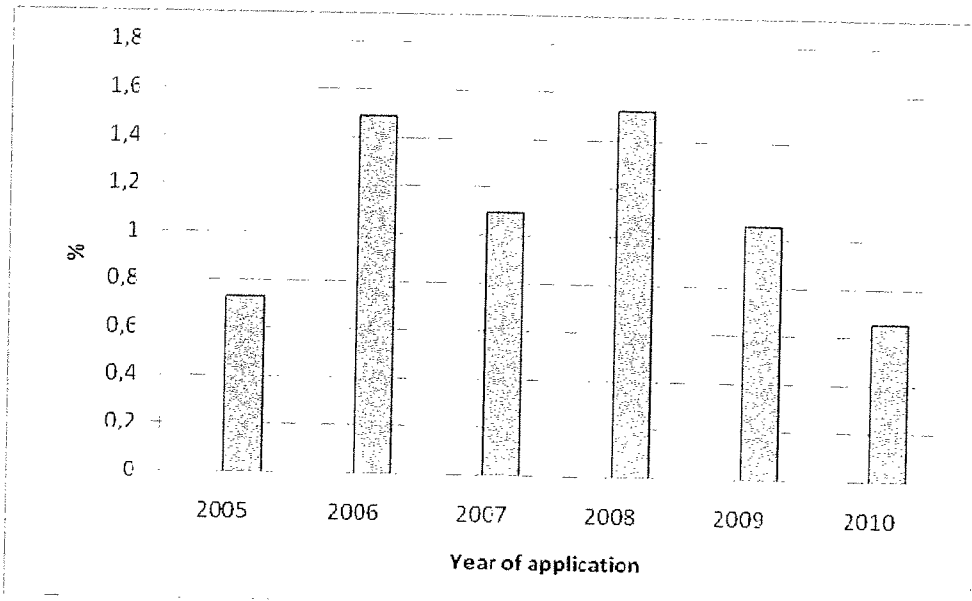


Figure 5 Percentage of previous TURP by year of application ( $N_{tot}=180$ ).

The percentage of previous TURP seems to increase in 2010. However, keep in mind that for year of application 2010 the number of participating radiotherapy centers has reduced to 9 (compared with 18 participating centers in 2005).





## 4.2. Hormone therapy

Table 7: Hormone therapy.

Hormone therapy performed					
N	%	Average duration (month)	Minimum duration (month)	Maximum duration (month)	N total
584	25,8	5,61	1	120	2.746

## 4.3. IPSS score

Table 8: Number and percentage of times the IPSS score was mentioned in the registration.

IPSS mentioned		
N	%	N total
958	34,9	2.746

### 4.3.1. Distribution of IPSS score

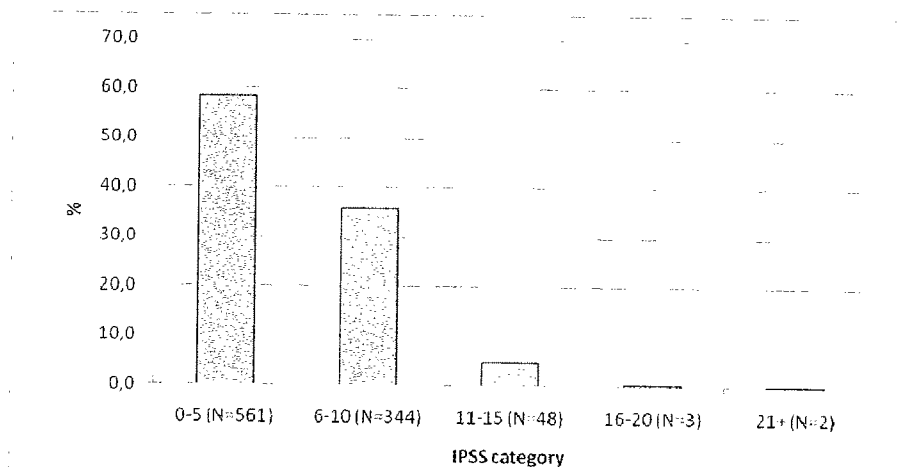


Figure 6: Percentage of registrations by IPSS category (N<sub>tot</sub>=958).

According to the ESTRO/EAU/EORTC recommendations on permanent seed implantation<sup>1</sup> patients with an IPSS score in the range 0 to 8 have the lowest risk of urinary morbidity after a brachytherapy procedure. Patients with an IPSS score  $\geq 20$  have 30 to 40% more risk for developing urinary complications.

<sup>1</sup> Ash D, Flynn A, Batterman J, de Reijke T, Lavagnini P, Blank L. ESTRO/EAU/EORTC recommendations on permanent seed implantation for localized prostate cancer. Radiotherapy and oncologie 57 (2000) ; 315-321.



#### 4.4.Qmax

Table 9: Number and percentage of times Qmax was mentioned in the registration.

Qmax mentioned		N totaal
N	%	
544	19,8	2.746

#### 4.5.Residual volume

Table 10: Number and percentage of times the residual volume was mentioned in the registration.

Residual Volume mentioned		N total
N	%	
469	17,1	2.746

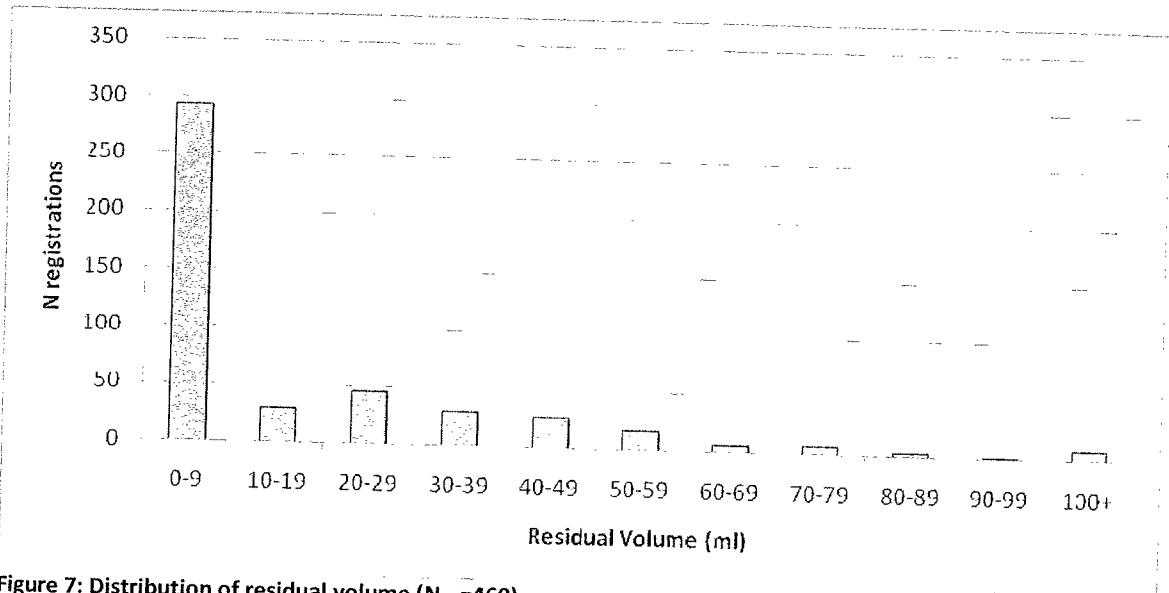


Figure 7: Distribution of residual volume (N<sub>tot</sub>=460).



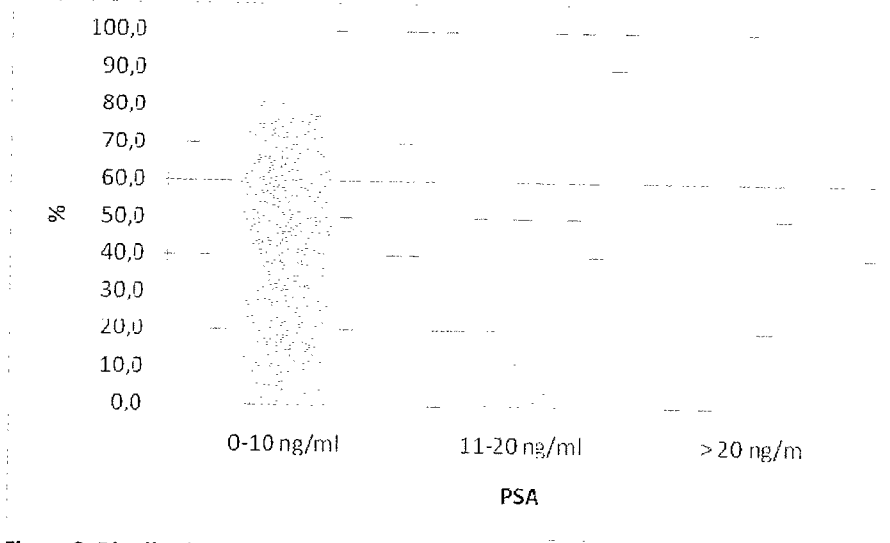
#### 4.6. Initial PSA

The ESTRO/EAU/EORTC recommendations<sup>1</sup> state that pre-treatment PSA should be recorded for all patients, as the initial PSA is one of the most significant prognostic factors. In this dataset, the pre-treatment PSA value was recorded in 2.691 of the 2.746 registrations (97,99%).

The ESTRO/EAU/EORTC recommendations also state that patients with a PSA of less than 10 ng/ml benefit from brachytherapy. If the PSA value is higher than 20 ng/ml the risk of biochemical failure within two years increases. Patients with a PSA value of greater than 50 are unlikely to benefit from radical local treatment.

**Table 11: Distribution of initial PSA.**

PSA	N	%
0-10 ng/ml	2.230	82,9
11-20 ng/ml	449	16,7
> 20 ng/ml	12	0,4
<b>Total</b>	<b>2.691</b>	<b>100,0</b>



**Figure 8: Distribution of initial PSA ( $N_{tot}=2.691$ ).**



#### 4.7. Gleason score

The Gleason score was mentioned in 2.642 of the 2.746 registrations (96,2%).

Table 12: Distribution of Gleason score.

Gleasonscore	N	%
2	8	0,3
3	39	1,5
4	196	7,4
5	321	12,1
6	1.494	56,5
7	576	21,8
8	4	0,2
9	2	0,1
10	2	0,1
<b>Total</b>	<b>2.642</b>	<b>100,0</b>

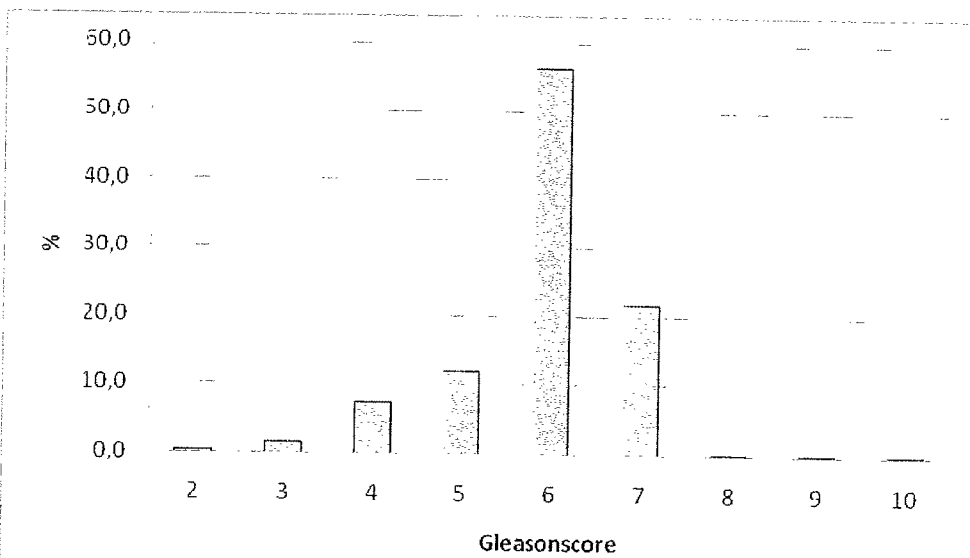


Figure 9: Distribution of Gleason score ( $N_{tot}=2.642$ ).



## 5. Application data

### 5.1. Activity of the seeds

Table 13: Average activity/seed (mCi) by radiotherapy center.

RT center	Average activity/seed (mCi)
RT 01	0,45
RT 02	0,43
RT 03	0,42
RT 04	0,46
RT 05	0,40
RT 06	0,50
RT 07	0,38
RT 08	0,41
RT 09	0,48
RT 10	0,47
RT 11	0,43
RT 12	0,47
RT 13	0,40
RT 14	0,44
RT 15	0,36
RT 16	0,35
RT 17	0,46
RT 18	0,40
<b>Total</b>	<b>0,44</b> <b>2.677</b>

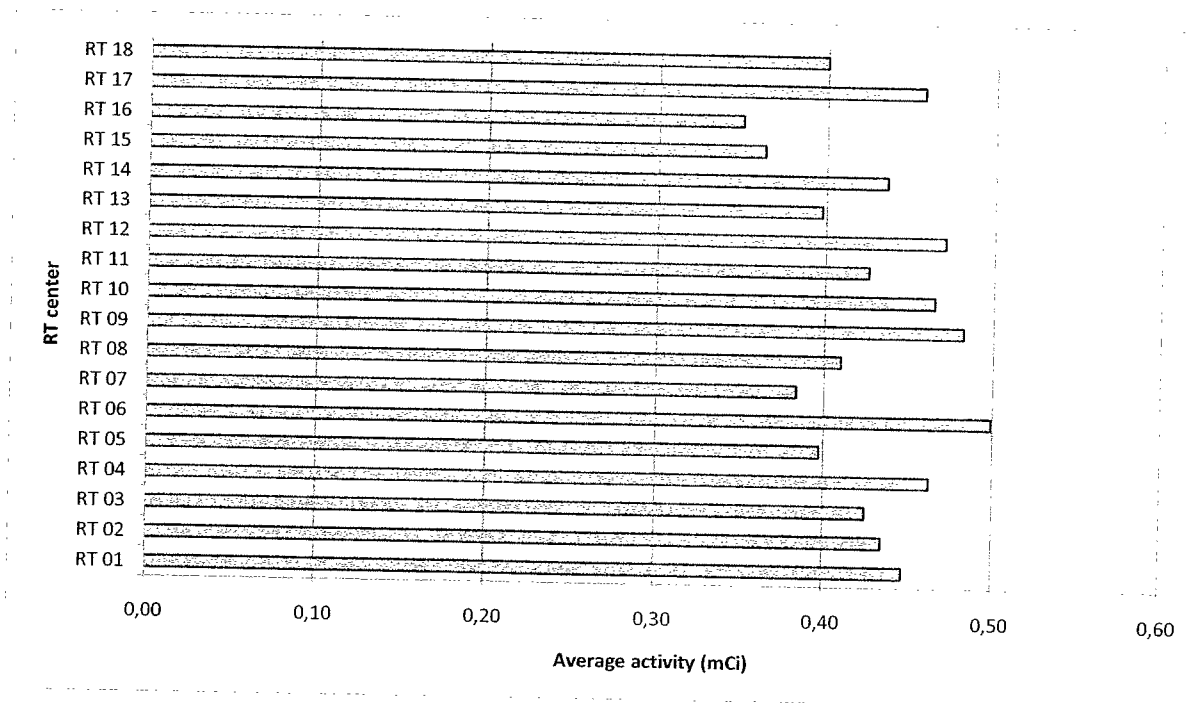


Figure 10: Average activity/seed by radiotherapy center ( $N_{\text{tot}}=2.677$ ).



## 5.2. Number of needles used

Table 14: Median number of needles used by radiotherapy center.

RT center	Median number of needles
RT 01	23
RT 02	22
RT 03	23
RT 04	21
RT 05	24
RT 06	19
RT 07	24
RT 08	20
RT 09	20
RT 10	21
RT 11	20
RT 12	21
RT 13	21
RT 14	29
RT 15	20
RT 16	32
RT 17	25
RT 18	20
<b>Total</b>	<b>22</b> <b>N total = 2.644</b>

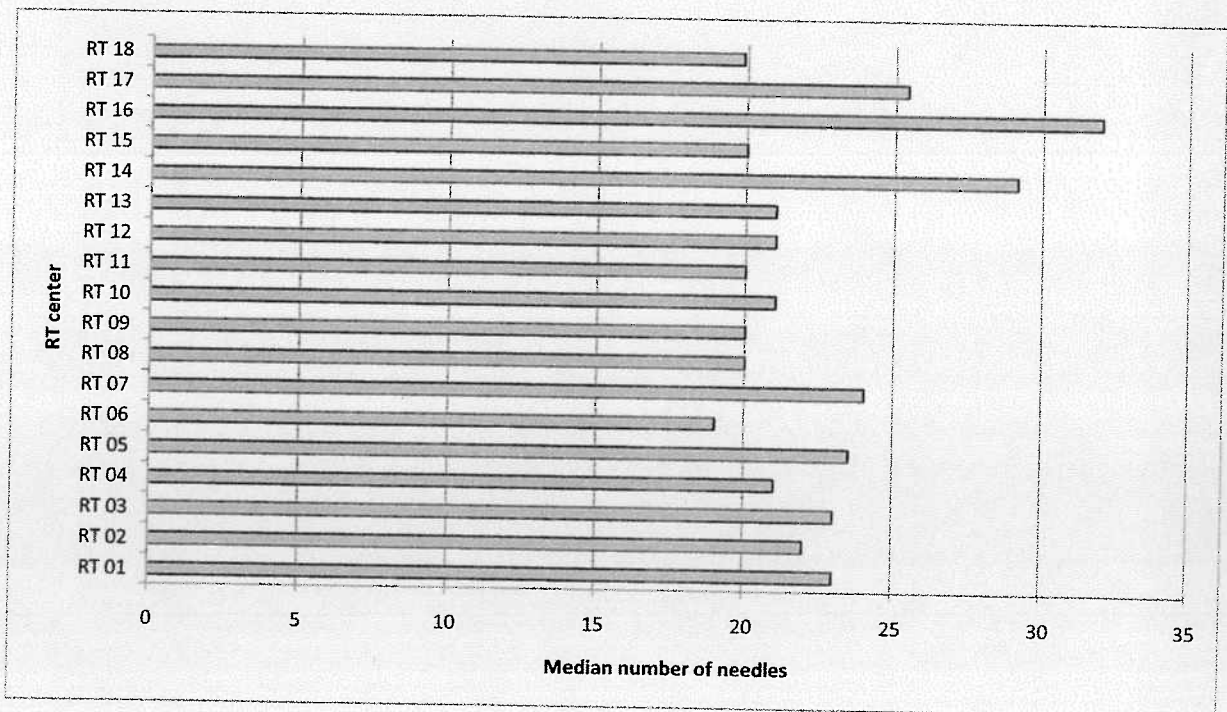


Figure 11: Median number of needles used ( $N_{\text{tot}}=2.644$ ).

###

### 5.3. Number of seeds implanted

Table 15: Median number of seeds implanted

RT center	Median number of seeds
RT 01	5
RT 02	63
RT 03	63
RT 04	61
RT 05	64
RT 06	61
RT 07	73
RT 08	76
RT 09	61
RT 10	57
RT 11	64
RT 12	58
RT 13	57
RT 14	84
RT 15	61
RT 16	86
RT 17	59
RT 18	72
<b>Total</b>	<b>61</b>

**N total = 2.728**



Belgian Cancer Registry

## 5.4. Initial and inop prostate volume

### 5.4.1. Relationship between initial and inop prostate volume

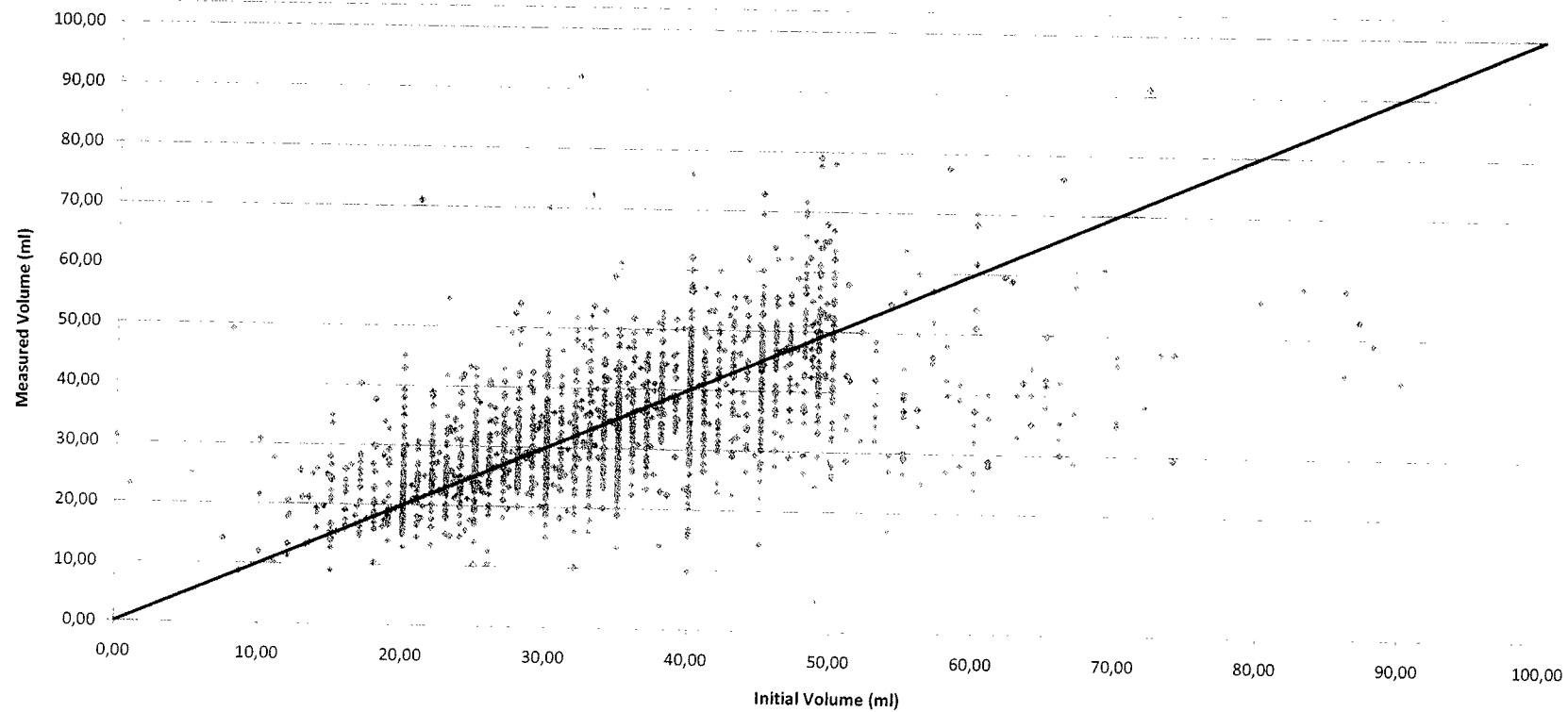


Figure 12: Relationship between initial and inop prostate volume (ml)( $N_{tot}=2.319$ ).





#### 5.4.2. Distribution of initial prostate volume

According to the ESTRO/EAU/EORTC recommendations<sup>1</sup> patients with an initial prostate volume of 35 ml or less have the lowest risk on urinary morbidity after the procedure. If the initial volume is higher, this risk increases. For patients with an initial volume greater than 50 to 60 ml it is advised to give hormone therapy to reduce their risk of morbidity before they qualify for a brachytherapy procedure.

**Table 16: Distribution of initial prostate volume.**

Initial volume (ml)	N	%
0-35	1.396	59,4
36-50	850	36,2
> 50	103	4,4
<b>Total</b>	<b>2.349</b>	<b>100,0</b>

For 89 of the 103 cases (86,4%) in which the initial prostate volume was higher than 50 ml, hormone therapy was used.

**Table 17: Distribution of initial prostate volume by radiotherapy center.**

RT center	Category Initial Volume (ml)			
	0-35	36-50	> 50	
	%	%	%	
RT 01	66,7	32,5	0,8	
RT 02	43,8	41,4	14,8	
RT 03	67,2	31,1	1,6	
RT 04	59,8	38,9	1,3	
RT 05	/	/	/	
RT 06	54,5	36,4	9,1	
RT 07	66,2	33,8	0,0	
RT 08	37,5	56,3	6,3	
RT 09	25,0	66,7	8,3	
RT 10	45,8	40,5	13,7	
RT 11	55,1	40,3	4,7	
RT 12	55,6	39,3	5,1	
RT 13	90,0	10,0	0,0	
RT 14	60,0	40,0	0,0	
RT 15	25,0	50,0	25,0	
RT 16	78,6	14,3	7,1	
RT 17	64,1	33,1	2,8	
RT 18	72,7	27,3	0,0	
<b>Total</b>	<b>59,4</b>	<b>36,2</b>	<b>4,4</b>	<b>N total = 2.349</b>

For RT 05 no data were available.



### 5.4.3. Distribution of inop prostate volume

Table 18: Distribution of inop prostate volume by radiotherapy center.

RT centrum	Category Measured volume (ml)		
	0-35	36-50	> 50
	%	%	%
RT 01	73,1	24,4	2,5
RT 02	59,8	37,9	2,4
RT 03	65,6	32,8	1,6
RT 04	56,1	34,7	9,2
RT 05	88,9	11,1	0,0
RT 06	50,0	40,9	9,1
RT 07	55,4	38,5	6,2
RT 08	31,3	50,0	18,8
RT 09	47,2	44,4	8,3
RT 10	67,3	26,2	6,5
RT 11	47,0	37,7	15,4
RT 12	56,7	40,0	3,3
RT 13	90,0	10,0	0,0
RT 14	33,3	40,0	26,7
RT 15	87,5	12,5	0,0
RT 16	36,2	60,3	3,4
RT 17	65,0	32,6	2,4
RT 18	47,9	41,7	10,4
<b>Total</b>	<b>60,4</b>	<b>32,9</b>	<b>6,7</b>

**N total = 2.713**



## 5.5. DVH-Information

### 5.5.1. Inop prostate D90

Table 19: Average inop prostate D90 (Gy) by radiotherapy center.

RT center	Average Inop prostate D90 (Gy)
RT 01	177,66
RT 02	177,41
RT 03	168,89
RT 04	185,41
RT 05	181,89
RT 06	176,36
RT 07	172,53
RT 08	167,55
RT 09	172,83
RT 10	162,61
RT 11	171,93
RT 12	177,63
RT 13	150,79
RT 14	181,33
RT 15	154,91
RT 16	165,76
RT 17	168,14
RT 18	156,09
<b>Total</b>	<b>171,78</b>

N total=2.715

### 5.5.2. Inop prostaat V100

Table 20: Average inop prostate V100 (%) by radiotherapy center.

RT center	Average inop prostate V100 (%)
RT 01	96,57
RT 02	95,42
RT 03	86,70
RT 04	97,25
RT 05	99,06
RT 06	no data available
RT 07	98,32
RT 08	95,29
RT 09	87,86
RT 10	67,52
RT 11	97,07
RT 12	96,49
RT 13	92,10
RT 14	97,08
RT 15	92,66
RT 16	97,86
RT 17	96,84
RT 18	88,01
<b>Total</b>	<b>91,90</b>

N total = 2.678



## 6. Post-implant dosimetry

The section "Post-implant dosimetry" was completed for 2.267 of the 2.746 (82,6 %) registrations.

### 6.1. Postop prostate D90

**Table 21: Average postop prostate D90 (Gy) by radiotherapy center.**

RT center	Average postop prostate D90 (Gy)	
RT 01	151,94	
RT 02	165,40	
RT 03	155,89	
RT 04	169,18	
RT 05	130,47	
RT 06	139,51	
RT 07	167,35	
RT 08	171,85	
RT 09	166,56	
RT 10	164,16	
RT 11	171,63	
RT 12	156,84	
RT 13	102,54	
RT 14	no data available	
RT 15	no data available	
RT 16	157,51	
RT 17	136,51	
RT 18	152,97	
<b>Total</b>	<b>155,86</b>	<b>N total=2.267</b>

### 6.2. Postop prostate V100

**Table 22: Average postop prostate V100 (%) by radiotherapy center.**

RT center	Average postop prostate V100 (%)	
RT 01	89,09	
RT 02	89,98	
RT 03	83,40	
RT 04	91,24	
RT 05	84,54	
RT 06	no data available	
RT 07	96,55	
RT 08	93,63	
RT 09	90,32	
RT 10	69,36	
RT 11	96,06	
RT 12	91,56	
RT 13	71,21	
RT 14	no data available	
RT 15	no data available	
RT 16	93,71	
RT 17	84,60	
RT 18	86,60	
<b>Total</b>	<b>85,78</b>	<b>N total = 2.242</b>



## 7. Conclusion

At the start of the project Prostate-Brachytherapy, 25 radiotherapy centers were contacted and invited to participate in the project.

Since the start; 18 centers participated delivering a total of 2.746 registrations. A great part of these registrations (75,3%) were sent through the paper circuit to the Belgian Cancer Registry. This paper circuit has been left in 2009, the centers are now responsible for sending their own registrations through the online application WBCR.

Nine centers are currently active in the project.