

Creating a department of medical physics: “The AZ Sint Lucas Gent experience”

dr. Jan Vandecasteele

BHPA



Disclaimer

The views and opinions expressed here in this presentation are the personal views of myself and do not necessarily reflect the official views of the Belgian Hospital Physicist Association (BHPA) or the AZ Sint Lucas Hospital where I am employed

Overview of the presentation

- *Introduction of myself and the AZ Sint Lucas Gent*
- *Department of medical physics in AZ Sint Lucas*
- *Challenges and successes*
- *What holds the future?*

Who am I?

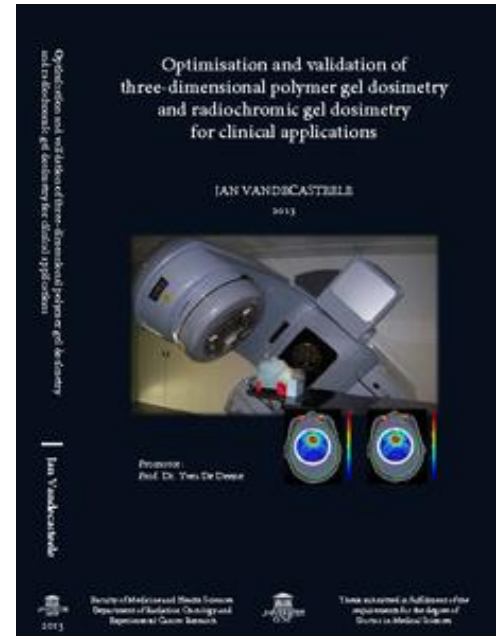
Professional career:

2008-2013: **PhD student** at Ghent University (dept. RT UZ Gent)

2013-2017: **Medical physicist Radiotherapy** at AZ Sint Lucas Gent

2017-present: **Head of radiotherapy physics** at AZ Sint Lucas Gent

→ 2021-present: **Head of the department of medical physics**



Who am I?

Professional union of medical physicists:

BELGIAN HOSPITAL
PHYSICISTS ASSOCIATION

BHPA

2015 - 2019: Board member BHPA

2019 - present: President of BHPA

Focus on legislation and professional matters:

- Actively involved in feedback on the RD on medical exposure
- Work towards official recognition of the medical physicists → Health Care Professional
- Attempt to upgrade of the medical physics education/internship in Belgium

Introduction of AZ Sint Lucas & Volkskliniek

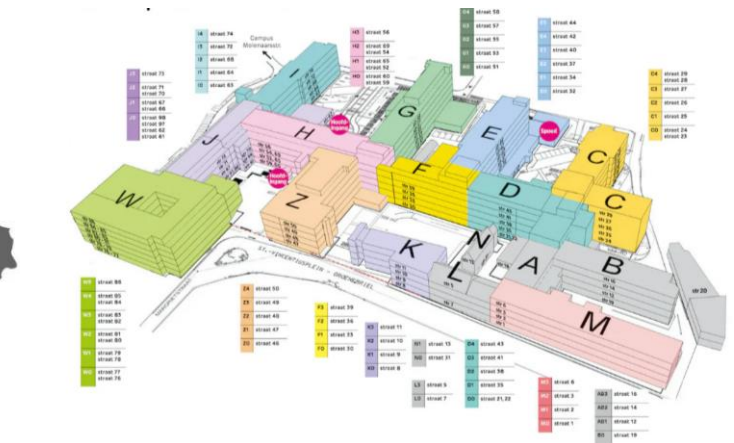
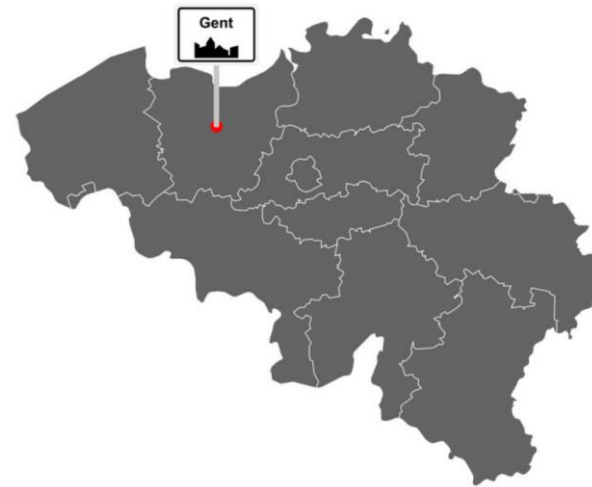
Located in the hart of the city of Ghent

779 + 122 hospital beds

68,000 admitted patients p.a.

2587 employees of which 237 MD's

2nd most beautiful parking lot in the world 😊



Introduction of AZ Sint Lucas & Volkskliniek

~ 60 X-ray devices at 3 sites in Gent, Aalter and Zelzate

Radiotherapy

- 3 linear accelerators, 1 HDR brachy therapy, 1 CT simulator, 50kV machine

Medical imaging

- 3 CT's, 3 tele rooms, 2 CBCT's, 2 mobile RX, 1 mammo, 2 interventional radiology machines

Nuclear medicine

- 1 PET-CT, 3 SPECT-CT, nuclear therapies: ^{131}I , ^{223}Ra , ^{90}Y , ^{166}Ho ,...

Operating theatre, day care hospital, urology, pain clinic

- 12 C-arms

Cardiovascular department

- 2 interventional cardiology machines

Dentist and maxillofacial surgery

- 3 OPG and 8 intra oral machines

Department of Medical Physics

Birth of the department of medical physics

February 2020 - July 2021: informal communication: few responses

August 2021: **initiative from hospital - Create official function:**



Collaboration of all 7 MPE's in the hospital with representation of all domains of competence

Final offer:

- 20% FTE as Head of the department
- Separate office
- Separate email address
- Limited financial remuneration

→ 2 candidates

→ Start October 1st 2021

	Diensthofd Medische stralingsfysica	
<ul style="list-style-type: none">• Development and implementation of an hospital-wide policy on medical radiation physics• Organization of medical radiation physics including identification of resources necessary to meet regulatory requirements• Promote multidisciplinary and integrated approach.		

Position of the department

Dosimetry has a dual responsibility (European BSS Directive 2013/59/Euratom)

MD

End-responsibility of medical exposure lies with practitioner and responsible for medical aspect of patient dosimetry

Functional structure

MPE

Responsible for physical and technical aspects of patient dosimetry
→ MPE's should be able to act independently

Hierarchical structure

→ Functional
→ Hierarchical

Department of Medical Physics

“Exploitant”



Head of the department of Medical Physics
Jan Vandecasteele

MKA, THK, Urologie, pijnkliniek, hart en vaatcentrum, OK, CDZ, poli Zelzate Aalter



Tim Gossye
Tom Goedgebeur (VCA)

Radiotherapy

Jan Vandecasteele
Joke De Rouck
Nathalie Deman
Bram Malfroy
Tim Gossye
Jelle Coppens (MPA)
Marianne Vandemoortele (MPA)



Medical Imaging

Tim Gossye
An De Hauwere (QCC)



Nucleair medicine / PET

Ann Van der Plaetsen
Tom Goedgebeur (VCA)
Tom Meylaers (VCA°)
Peter Immesoete (VCA)



Head of department
MKA, THK, Urologie, pijnkliniek, cardio, OK, CDZ, poli Zelzate en poli Aalter

Head of department
Radiotherapy

Head of department
Medical imaging

Head of department
Nuclear medicine / PET

Who is the exploitant?

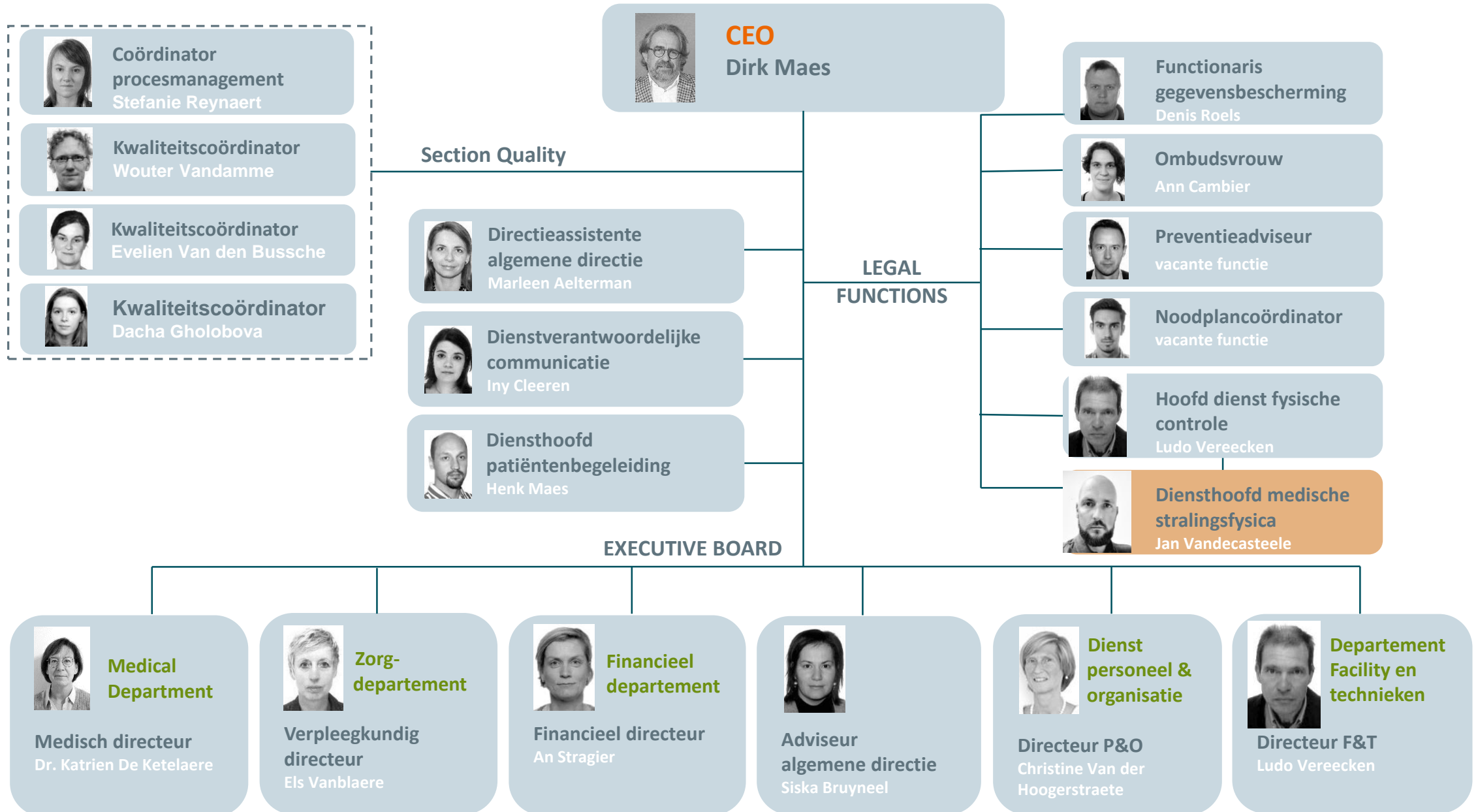


CEO
Dirk Maes

Who can legally act as representation of the “exploitant” ?

- **CEO**
 - **member of board of directors IF** explicitly mentioned in the bylaws of the non-profit organization that board members can act as representation of the exploitant (VZW/ASBL)
 - Director of facilities and techniques
 - Nursing director
 - Medical director
- Contradicts the former: to separate Medical and Radiophysical responsibilities

ORGANISATION AZ SINT-LUCAS



And so it begins...

1. **Lack of expertise** in the working of Medical Imaging and Nuclear Medicine dept.
Need to fill in the gaps (a lot!) → good network is necessary!
2. **Find new balance** in Radiotherapy dept.
Radiotherapy was well organized: but now loses 0.2 FTE
3. What does it mean: **20%FTE head of department and 100% responsible?**

Challenges for the department of medical physics

- Topics for which “exploitant” is responsible
- Topics for which practitioner (MD) is responsible
- Topics for which MPE is responsible

Challenges for the department of medical physics

Topics for which “exploitant” is responsible

- Organization of clinical audits

19/02/20 Technical Regulation
Since September 1st 2019

How do you define a department?

- A department with a specific code/identifier (FOD health care)
- A medical technical service
- A “heavy” medical technical service
- A department identified as such in the medical regulation

Minimal every 2 year in all departments where acts are performed under the responsibility of a practitioner licensed for the use of X-ray applications or nuclear medicine applications

- X-Ray applications: self-assessments
- Nuclear medicine: Internal audit

In AZ Sint Lucas
Cell Quality

Who will initiate this? Who will perform this? who will check this?

Challenges for the department of medical physics

Topics for which “exploitant” is responsible

- Training of Authorized personnel: “gemachteningen / personnes habilité”
 - RD Medical Exposures Art. 85 basic training radioprotection for the patient
 - RD Medical Exposures Art. 86 Continuous training

Who will coordinate and check this ?

In AZ Sint Lucas
Department of HR
+
Department of nursing

Challenges for the department of medical physics

Topics for which “exploitant” is responsible

- Art 12: determination and evaluation of patient doses or activities administered to the patient

Shared responsibility between “exploitant”, MD and MPE

- Patient doses must be able to be estimated retrospectively
- Appropriate system informing the practitioner about the relevant parameters for patient dose estimation
- Relevant dose parameters must be able to be exported to an appropriate PACS
- Medical exposure information is part of the examination or treatment report and patient record

Need of dose management system on hospital level, Belgian level, European level?

Challenges for the department of medical physics

Topics for which **practitioner (MD)** is responsible

- Perform only **justified** actions
- **Presence** during medical radiological procedures (physical, in the institution/service/room)
- **Written clinical procedure** for each medical radiological procedure:
 - minors;
 - pregnant women;
 - attendants and caregivers.
 - Interventional radiology: a written procedure regarding the **prevention or mitigation of skin effects**
- ...

Challenges for the department of medical physics



Topics for which MPE is co-responsible

Quality control

QC after maintenance/repair

→ Article 15§1 The “exploitant” is responsible for informing the head of the Medical Radiation Physics Service after each **maintenance, adjustment or repair** as referred to in Article 42 § 1, 47 § 1, and 52 § 1, or in his absence, the licensed expert in medical radiation physics.

How to do this in a meaningful way?

- Avoid administrative burdon
- Physical inventory as basis

Challenges for the department of medical physics



Topics for which MPE is co-responsible

Optimisation

1. Two documented optimisation projects per year per department

- Again: What is the definition of a department?
- MPE is part of optimization – “exploitant” is responsible for optimization
- Who will do this efficiently? List of meaningful projects?
- Ethical committee approval needed if dose to patient is affected ? MPE are **NOT** a **health care professional**

2. Give advice on medical ethics

Little response from ethical committee – MPE are **NOT** a **health care professional**...

**Recognition in Europe and Belgium!
Project of BHPA + EFOMP in 2023**

Successes

Create a **TEAM SPIRIT** of MPE's where there used to be islands

Better **visibility of medical physics** in dept. without internal MPE's

Constructive questions on **automatisation of dose reporting**

Constructive questions on **optimal use of equipment**

Better flow in **replacement of equipment** (tendering)

Better follow-up of MPE QC and preventive maintenance remarks

Give advice on legislation (medical exposure, MDR,...)

Make the hospital **aware** of all the medical radiological equipment and processes

What holds the future?

20/02/2023

All hospitals with CT or NM need to create a **department of Medical Physics**

Head of the department (when no MPE is employed)

- Employed by “exploitant”
 - Training as “gemachtigde / personne habilitée”
- } Not always as easy to find...

Personal opinion: Need for **strong local coordination** if we want this to be useful !

→ Via (in)formal **adjunct** ? (in case formal same requirements as head of department...)

→ But **not mandatory**... can it then be an independent MD? Broken hierarchical chain?

What holds the future?

Final thoughts:

What about the **size of departments, distance between sites** and the **workload** ?

Need for objective criteria. **What is the added value?**

Hospital fusion: What about 1 “exploitant” with e.g. 7 hospitals?

What about **integration** with the **hospital networks** ?

For the head of the department in hospitals without MPE employed, are the requirements as gemachtigde / personne habilitée the best?

→ **Bring symmetry back and introduce MPA in every domain of competence**

What holds the future?

BHPA should support the (adjunct) heads of medical physics

→ Create “**CHMP**”

“Committee of Heads of departments of Medical Physics”

Facilitate the **integration and recognition of medical physics** in health care legislation

Dept. Medical Radiation Physics should become **Dept. Medical Physics**

include MRI and Sonography,... → Need to join forces for the benefit of patient care

Thank you!