

HERCA MedInspector Workshop, November 6-8, 2018
Stockholm, Sweden

EANM initiatives related to radiation protection in nuclear medicine

Kristoff Muylle

EANM President 2017-2018

EANM & Radiation Protection (1)

- Multi-stakeholder Meeting on Justification & Optimisation in the Medical Field, 10th of March 2016
- DoMoRe track at the EANM Congress, plenary sessions, guidelines,...
- EANM Internal Dosimetry Task Force > Manual on Dosimetry (Vienna 2017)
- Radiation Protection Committee founded in 2016
- EURAMED (European Alliance on Radiation protection in Medicine)
 - Joint initiative EANM, ESR, EFOMP, EFRS and ESTRO
 - Founded in 2016 as a joint initiative
 - Legal entity since 2017
- Medirad Proposal accepted in 2017

EANM & Radiation Protection (2)

- Basic Safety Standards Directive > publications
 - The conflict between treatment optimization and registration of radiopharmaceuticals with fixed activity posology in oncological nuclear medicine therapy, C. Chiesa et al
 - Dosimetry in clinical radionuclide therapy: the devil is in the detail, F. Giammarile et al.
 - ...
- New EANM Board position: Scientific Liaison Officer
- Pipeline: Accreditation for Quantitative SPECT (EARL), Innovation on Instrumentation Platform,...
- European Commission DG Energy, Meeting of the Working Party on Medical Exposures (WP MED), 13 November, 2018
- European Nuclear Medicine Guide > optimisation
- EANM referral Guidelines / clinical decision support > justification

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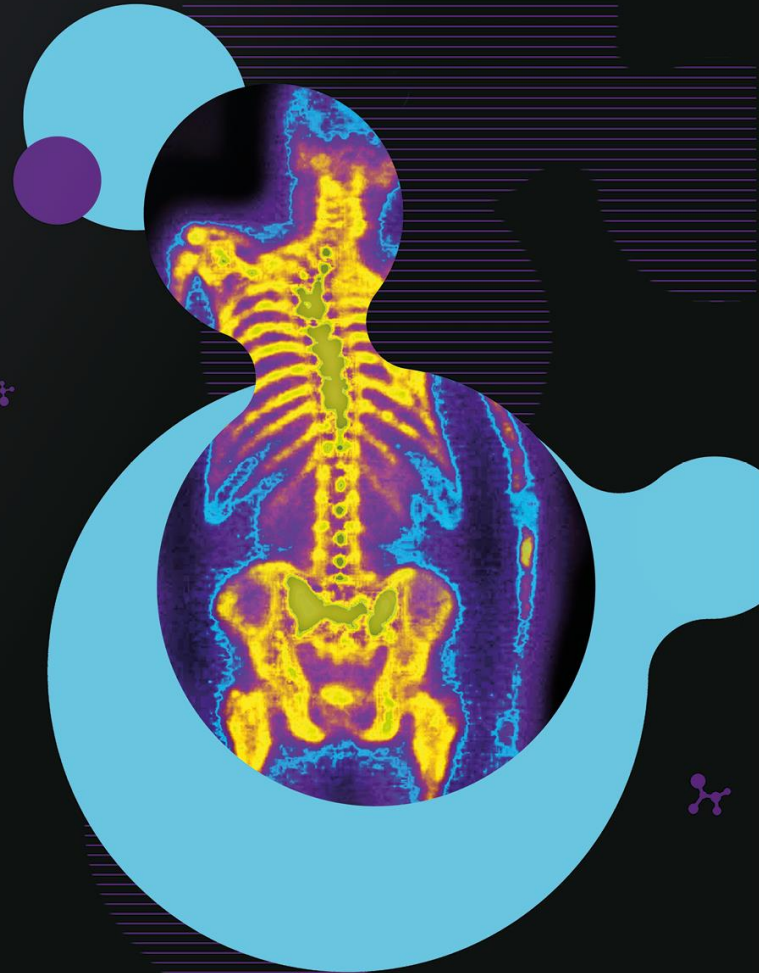
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European Nuclear Medicine Guide

This guide is a joint project by the European Association of Nuclear Medicine (EANM) and the Nuclear Medicine Section of UEMS and European Board of Nuclear Medicine (EBNM). It is based on the UEMS/EBNM Training Requirements for the Specialty of Nuclear Medicine.

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Chapter 1. Biology for Nuclear Medicine Physicians

Introduction

Knowledge of fundamental biological processes is essential for effective clinical practice in nuclear medicine and to inspire future developments in our discipline. This chapter provides a very concise description and explanation of selected biological processes that are mainly explored by nuclear medicine. The authors are aware that many biological themes and concepts are not addressed in the chapter due to space constraints. Cell proliferation and apoptosis are included, since they regulate physiological growth and homeostasis of all organs and their alterations promote the pathogenesis of many diseases. Angiogenesis, hypoxia, and glucose metabolism are related to delivery of nutrients, oxygen, and energy production in normal and cancer cells. The interaction of cell surface receptors with their natural ligands triggers a number of cellular response to external stimuli in both normal and pathological tissues. Finally, metastatic dissemination and immune evasion of cancer cells may provide targets for innovative diagnostic and therapeutic approaches in nuclear medicine.

Cell cycle

Replication of normal cells occurs through a series of temporally ordered events that constitute the cell cycle. In the presence of growth-promoting signals, cells leave the quiescent phase (G0) and enter the first phase of the cell cycle (G1) during which they prepare for DNA replication. In the following S phase, DNA replication occurs, and the correct duplication and assembly of DNA is ensured in the subsequent G2 phase. Finally, cells enter the fourth phase of mitosis (M) that leads to cell division and formation of two identical daughter cells. Cell cycle progression is regulated by positive and negative feedback loops involving cyclin-dependent kinases (CDKs), cyclins, CDK inhibitors, and CDK substrates (1). Cyclins are key regulatory proteins that are expressed and degraded at specific times during each cell cycle. They bind to and activate CDKs that in turn trigger phosphorylation of distinct sets of substrates and allow cell cycle progression. This process is negatively regulated by CDK inhibitors that bind to CDK-cyclin complexes and inhibit their protein kinase activity. The

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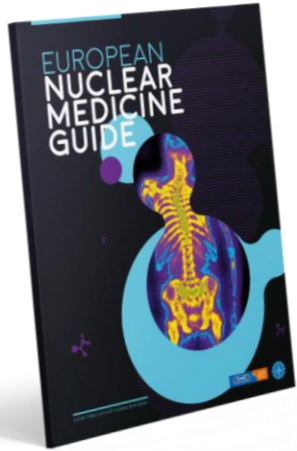
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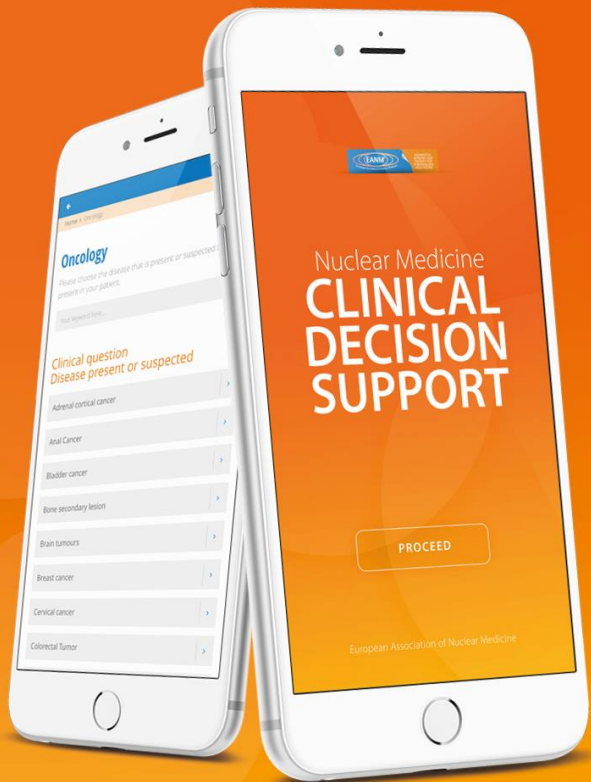
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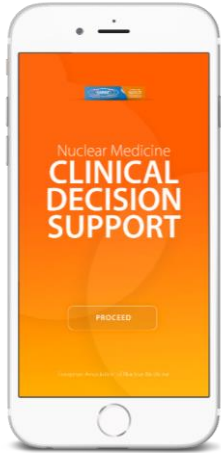
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Nuclear Medicine Clinical Decision Support

Assisting your referring physicians in choosing the right nuclear medicine procedure

- Target group: referring physicians, authorities
- User-centred approach
 - Starting from the clinical perspective
 - Search by categories and free text search
 - Book mark & rating option
 - Concise & relevant content
 - Link to the EANM-UEMS/EBNM Nuclear Medicine Guide





I am examining a patient with suspected lung cancer – which is the most suitable nuclear medicine procedure for diagnosis?

Home

EANM NucMed CDS

The first nuclear medicine clinical decision support system. Assists you in choosing the right nuclear medicine procedure.

Your keyword here...

Navigate by category

- Cardiovascular system
- Central nervous system
- Digestive system
- Endocrine system
- Genito-urinary system
- Hematopoietic/Lymphatic system
- Inflammation & Infections
- Musculoskeletal system
- Oncology
- Respiratory system

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Home > Oncology

Oncology

Your keyword here...

Clinical Setting

Please choose the system/condition you are examining in your patient:

- AIDS-associated opportunistic infections, associated tumours, and other conditions
- Adrenal cortical cancer
- Anal Cancer
- Bone secondary lesion
- Brain tumour
- Breast cancer
- Cancer of unknown primary tumour (CUP)
- Cancer of unknown primary tumour (CUP) with known secondary site
- Cervical cancer
- Colorectal Tumor
- Endometrial cancer
- Gallbladder cancer

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Home > Oncology > Lung Cancer

Lung Cancer

Please choose the clinical evaluation:

- Diagnosis
- Post-treatment evaluation
- Radiation Therapy Planning
- Staging
- Suspicion of relapse

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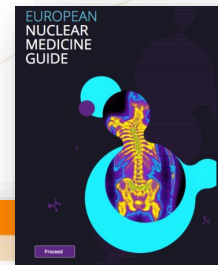
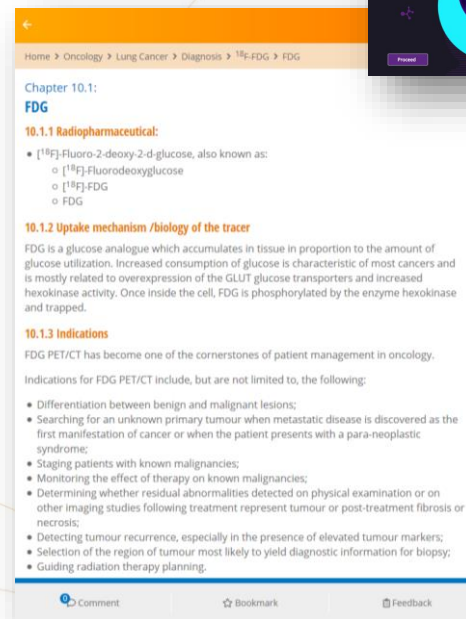
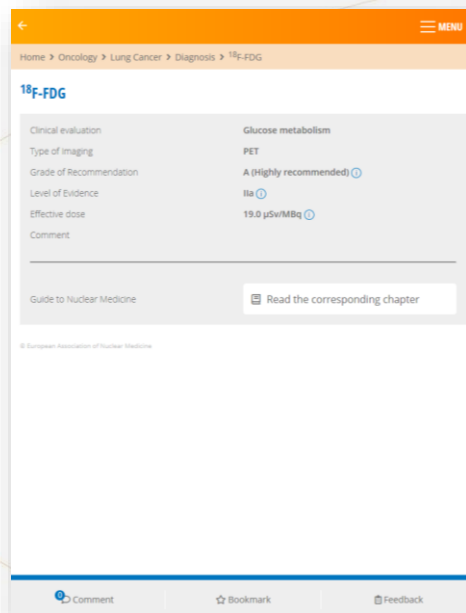
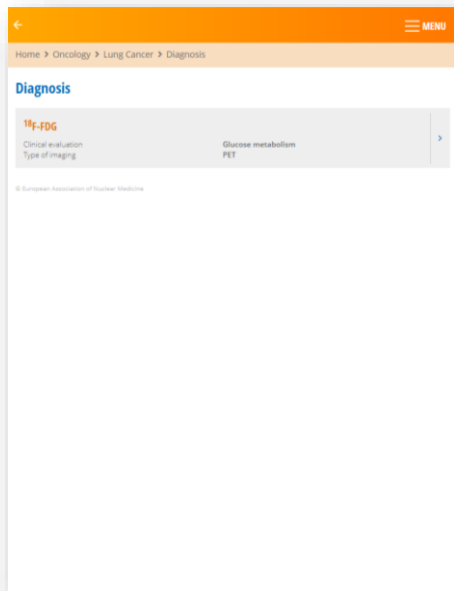
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Diagnosis

¹⁸F-FDG

Clinical evaluation	Glucose metabolism
Type of imaging	PET

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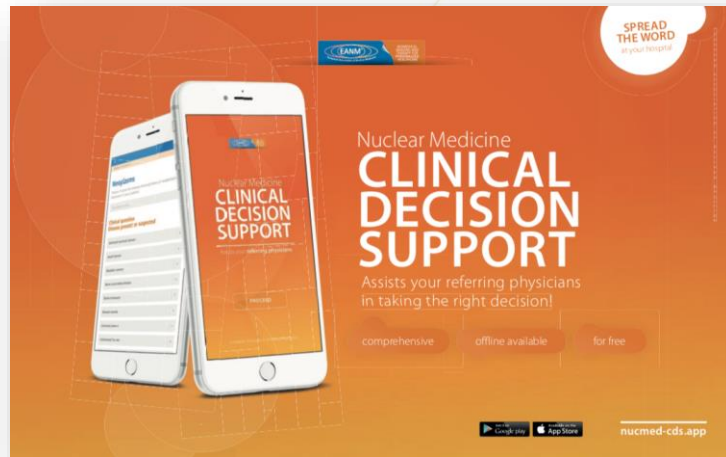


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