



World Health  
Organization

# WHO Global Initiative on Radiation Safety in Health Care Settings

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Department of Public Health and Environment



***13th European ALARA  
Network Workshop***

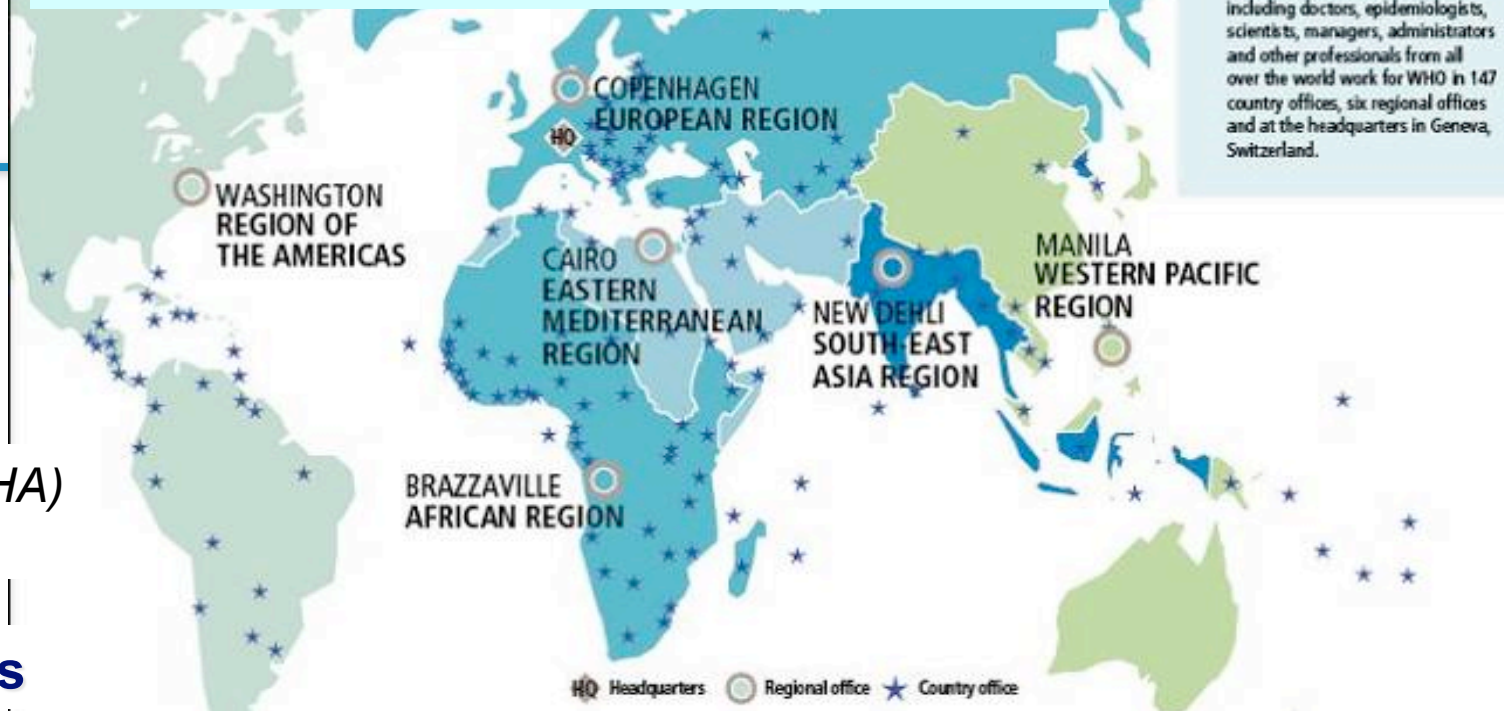
*Oscarsborg Fortress, Norway  
7-10th June 2011*

## World Health Assembly



*The World Health Assembly (WHA)  
is the WHO governing body*

**193** Member States, **6** Regional Offices, **147**  
Country Offices and HQ



## WHO's Core Functions

- Providing **leadership** on matters critical to health and engaging in **partnerships** where joint action is needed;
- Shaping the **research agenda** and stimulating the generation, translation and dissemination of valuable knowledge;
- Setting **norms and standards** and promoting and monitoring their implementation;
- Articulating **ethical and evidence-based policy options**;
- Providing **technical support**, catalysing change, and building sustainable **institutional capacity**; and
- Monitoring the **health situation** and assessing **health trends**.



# WHA resolutions

## *The WHA has requested WHO to:*



- "study the **optimum use of ionizing radiation in medicine** and the **risks to health of excessive or improper use**"(WHA 24.31)
- "**cooperate** with IAEA, UNSCEAR and other international organizations in evaluating the world situation as regards the **medical use of ionizing radiation** and the **effects** of radiation on populations (WHA 25.57)
- "...develop plans and curricula for the **training** of students and personnel in **radiation medicine** and **radiation protection**...." (WHA 25.57)
- "to establish and strengthen science-based systems, necessary for **improving patients' safety** and the **quality of health care**" (WHA 55.18)
- "... to draw up **guidelines to ensure the quality, safety and efficacy of medical devices**, and where appropriate to participate in **international harmonization**." (WHA 60.29).







## Programmes and projects

## WHO/Chris de Bode


[Read more about cancer](#)

[Find out more about the rational use of medicines](#)

Annual report on global public health and key statistics



An African woman looking out the window. She is receiving treatment for breast cancer at a cancer institute in the United Republic of Tanzania

 Local intranet

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**Good health services**  
are those which  
deliver **safe** and  
**effective** health  
interventions to those  
that need them, when  
and where needed,  
with minimum waste of  
resources

***"...Over 50% of all medicines  
are prescribed, dispensed or  
sold inappropriately..."***



WHO | Medicines: rational use of medicines - Microsoft Internet Explorer provided by WHO

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Address <http://www.who.int/mediacentre/factsheets/fs338/en/index.html> Go Links

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Fact sheet N°338  
May 2010

## Medicines: rational use of medicines

### KEY FACTS

- More than 50% of all medicines are prescribed, dispensed or sold inappropriately, and half of all patients fail to take medicines correctly.
- The overuse, underuse or misuse of medicines harms people and wastes resources.
- More than 50% of all countries do not implement basic policies to promote rational use of medicines.
- In developing countries, less than 40% of patients in the public sector and 30% in the private sector are treated according to clinical guidelines.
- A combination of health-care provider education and supervision, consumer education, and an adequate medicines supply is effective in improving the use of medicines, while any of these interventions alone has limited impact.

Rational use of medicines refers to the correct, proper and appropriate use of medicines. Rational use requires that patients receive the appropriate medicine, in the proper dose, for an adequate period of time, and at the lowest cost to them and their community.

### Incorrect use of medicines

WHO estimates that more than half of all medicines are prescribed, dispensed or sold inappropriately, and that half of all patients fail to take them correctly. This incorrect use may take the form of overuse, underuse and misuse of prescription or non-prescription medicines.

Common problems include:

- polypharmacy (use of too many medicines);
- overuse of antibiotics and injections;
- failure to prescribe in accordance with clinical guidelines;
- inappropriate self-medication.

In developing countries, the proportion of patients treated according to clinical guidelines for common diseases in primary care is less than 40% in the public sector and 30% in the private sector. For example:

- less than 60% of children with acute diarrhoea receive necessary oral rehydration therapy yet more than 40% receive unnecessary antibiotics;

### Related links

- [Rational use of medicines](#)
- [Medicines use in primary health care in developing and transitional countries \[pdf 3.46Mb\]](#)
- [Promoting rational use of medicines: core components](#)

Done Local intranet

***"Overuse" of medical procedures, unjustified health interventions, unnecessary doses, this reflects a broader problem.***

**This goes beyond the boundaries of radiation protection...**

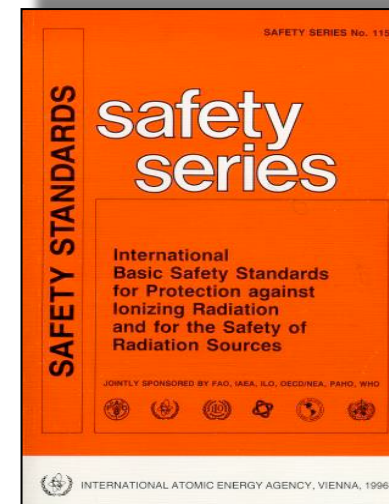
**This involves  
GOOD MEDICAL  
PRACTICE**



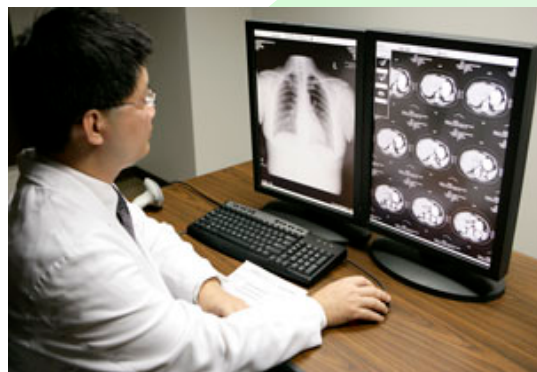
# International Basic Safety Standards (BSS)



- The International Basic Safety Standards (**BSS**) are the culmination of efforts towards global harmonization of benchmarking **radiation safety** requirements.
- WHO is a co-sponsor of the **BSS**, actively involved in the **BSS** revision process recently concluded.
- The involvement of the health sector in the **BSS** implementation is still weak. There is a need to mobilize them towards safer and effective use of radiation in medicine.



# WHO Global Initiative on Radiation Safety in Health Care Settings



**Diagnostic radiology**



**Interventional radiology**

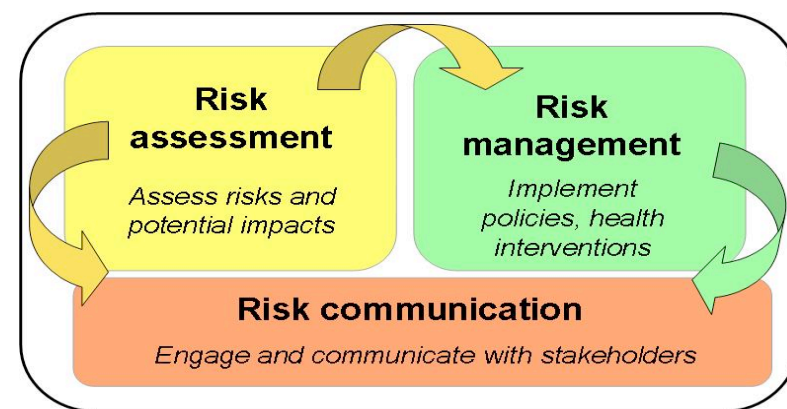


**Radiotherapy**



**Nuclear Medicine**

*Focusing on **Public Health** aspects related to the risks and benefits of the use of radiation in health care*



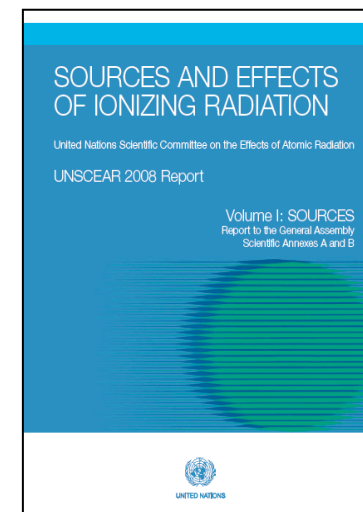


# The GI: areas of work

<b>Risk assessment</b>	<ul style="list-style-type: none"> <li>● <i>Assessing population dose distribution due to the use of radiation in health care (collaboration with UNSCEAR)</i></li> <li>● <i>Shaping a global research agenda on health effects of medical radiation exposure (focusing on children)</i></li> </ul>
<b>Risk management</b>	<ul style="list-style-type: none"> <li>● <i>Reducing unnecessary radiation exposures (justification of medical examinations and optimization of protection)</i></li> <li>● <i>Promoting occupational health in health care settings</i></li> <li>● <i>Addressing health workforce needs</i></li> <li>● <i>Preventing accidental and unintended exposures, promoting reporting and learning systems</i></li> <li>● <i>Fostering cooperation between health authorities and regulatory bodies</i></li> </ul>
<b>Risk communication</b>	<ul style="list-style-type: none"> <li>● <i>Implementing a communication strategy (information to patients and health workers)</i></li> </ul>

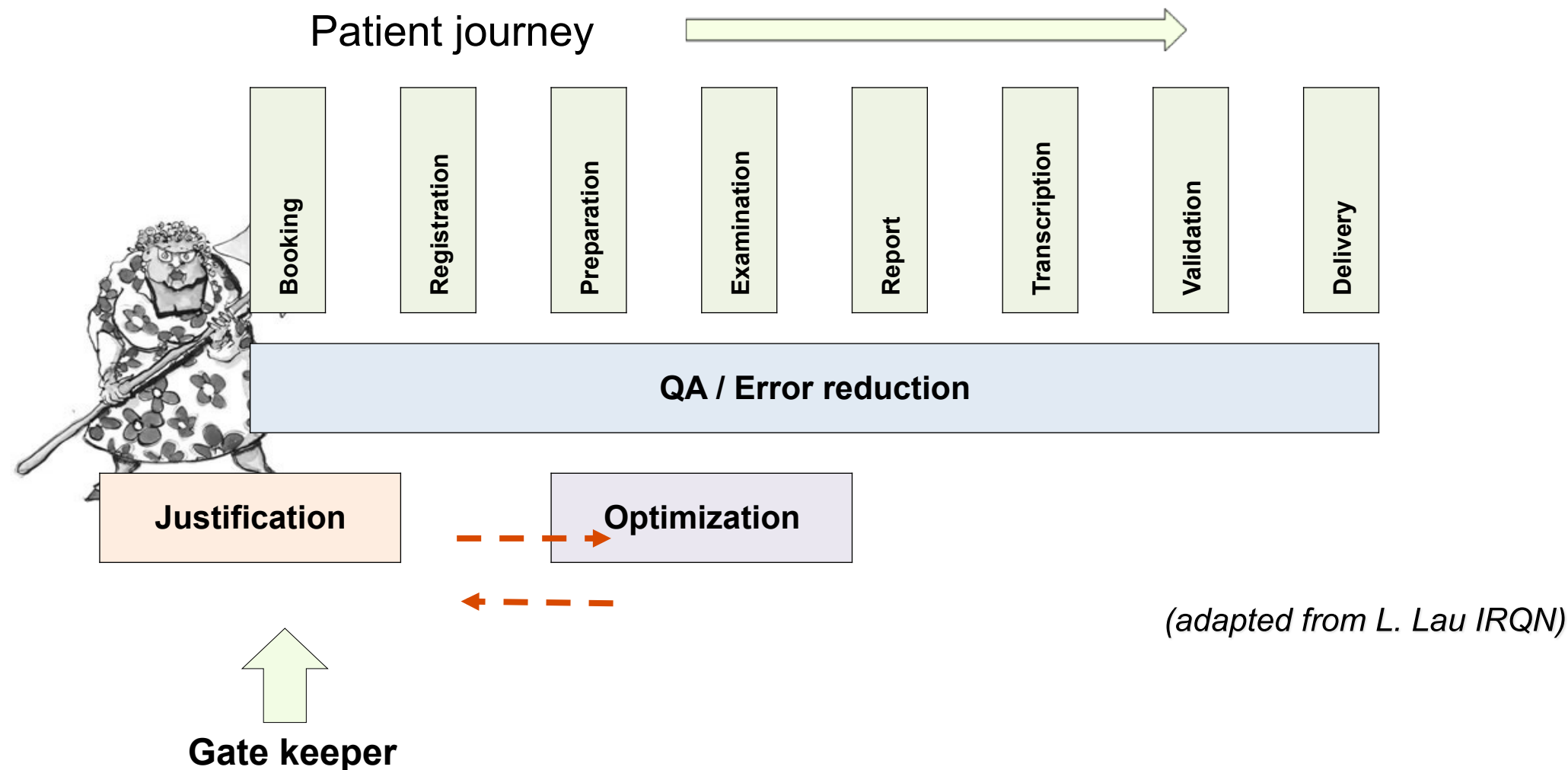
# Risk assessment

- UNSCEAR-WHO collaboration.
- Tripartite MoU under preparation to improve **data collection on medical exposures** (UNSCEAR, WHO, IAEA).
- WHO Workshop on "Radiation Risks Assessment in Pediatric Imaging" (J. Radiol. Prot. 30:105-110, 2010).
- To promote a **global research agenda** on health effects of medical radiation exposures.
- Collaboration with EC in the Multidisciplinary European Low Dose Initiative (**MELODI**).



*Photo: UNSCEAR, IAEA, ICRP, IARC, WHO*

# Appropriate Use of Radiation in Medical Imaging





The two principles of radiation protection in medical exposures are implicit in the concept of "First do no harm"

"Primum non nocere"

*Hippocrates (460 BC - 377 BC)*





# JUSTIFICACION



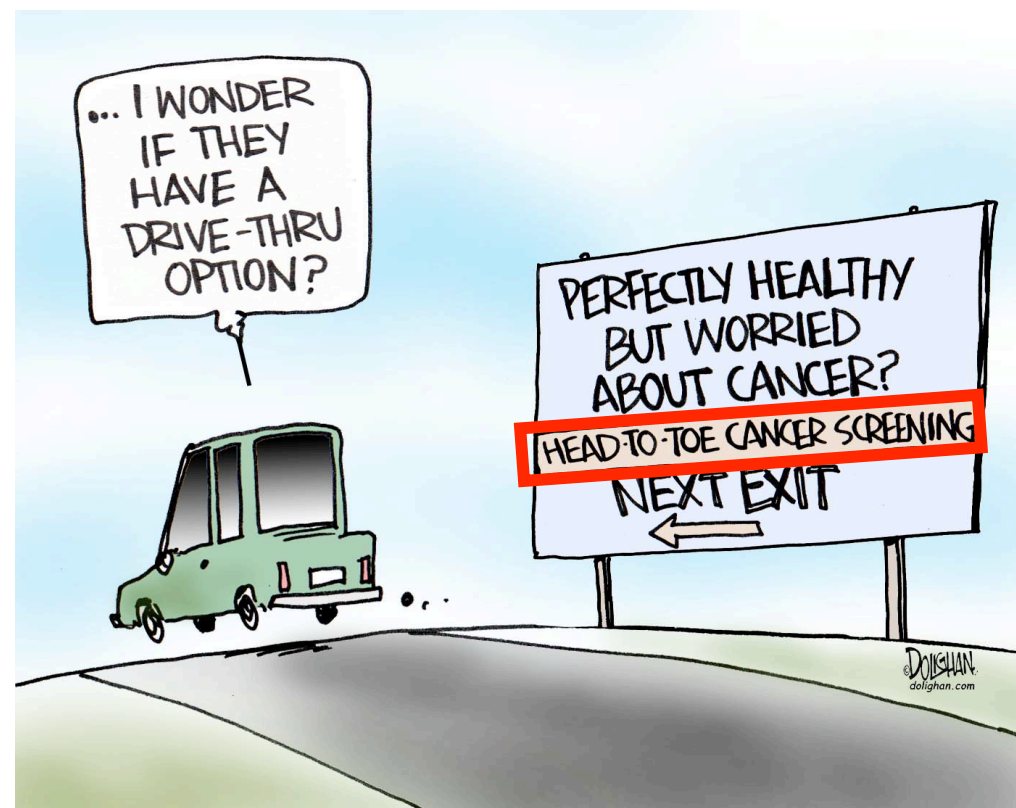
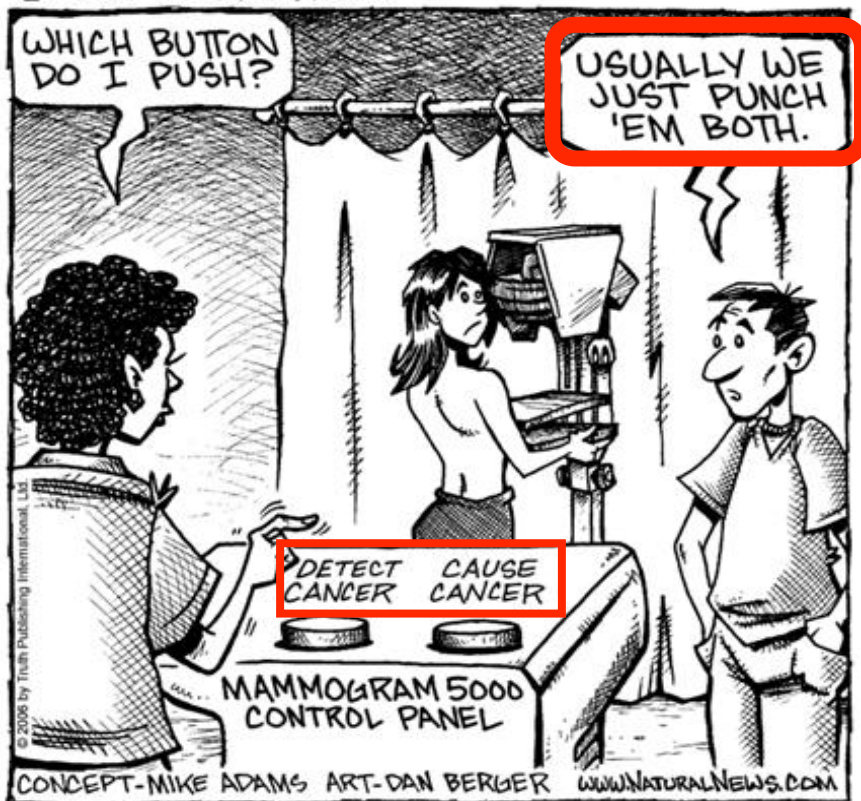
RISKS

BENEFITS

BENEFITS

RISKS

## COUNTERTHINK



# OPTIMIZACION

- Optimization of protection in medical exposures requires the management of the **radiation dose** to the patient to be **commensurate with the medical purpose.**
- Methods for **dose reduction** should be applied and protocols should be tailored according to patient size and level of acceptable noise for **a given clinical condition**
  - Which is the **clinical question** that the imaging procedure is expected to answer? (particularly important in paediatric CT).
  - This will have an impact on the **risk/benefit** balance implicit in the justification process.
- The diagnostic reference levels (**DRLs**) are tools for optimization.

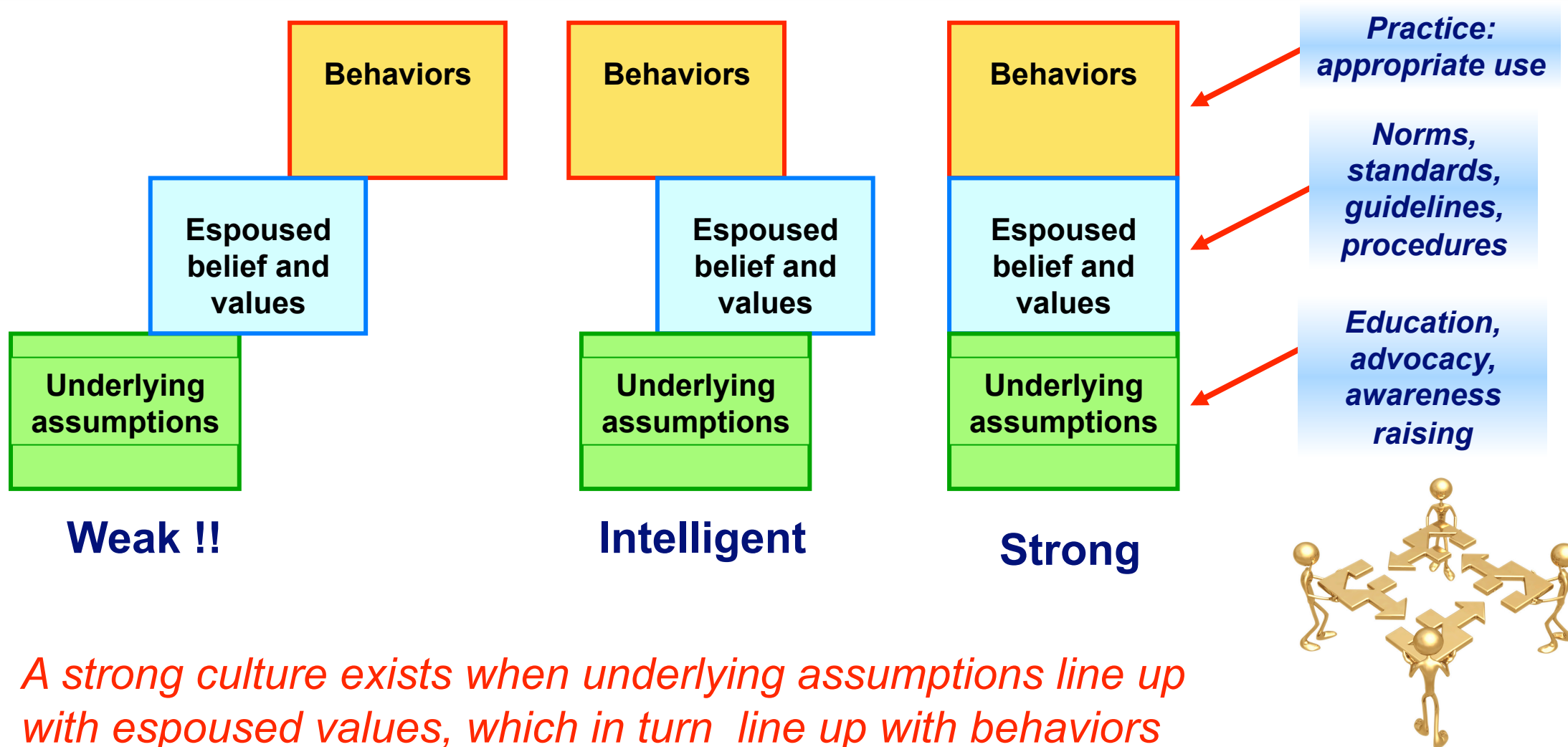


# Diagnostic Reference Levels

- Neither individual dose limits nor individual dose constraints are applicable to patients.
- Diagnostic Reference Levels (DRLs) for a particular procedure are used to ensure that doses do not deviate significantly from those achieved at peer departments for that procedure (unless there is a known, relevant, and acceptable reason for the deviation).
- DRLs apply in radiodiagnosis, nuclear medicine, interventional radiology, to **groups of patients** rather than individual patients.
- Although their numerical values are **ADVISORY**, the implementation of the DRL concept is a basic safety standard requirement to be considered by the regulatory bodies.



# Improving radiation protection culture



WHO works on human resources for health and health workforce strengthening, a topic that has again been prominent at the World Health Assembly held in Geneva a few weeks ago

## The Lancet Commissions



# THE LANCET

Health professionals for a new century: transforming education to strengthen health systems in an interdependent world



*Lancet* 2010; 376: 1923–58

*Julio Frenk\*, Lincoln Chen\*, Zulfiqar A Bhutta, Jordan Cohen, Nigel Crisp, Timothy Evans, Harvey Fineberg, Patricia Garcia, Yang Ke, Patrick Kelley, Barry Kistnasamy, Afaf Meleis, David Naylor, Ariel Pablos-Mendez, Srinath Reddy, Susan Scrimshaw, Jaime Sepulveda, David Serwadda, Huda Zurayk*





# Education of health professionals

- Adopt **competency-driven** approaches. Match/adapt these competencies to rapidly changing local conditions (**patient and population priorities**);
- Promote **inter-professional** and **trans-professional** education and enhance collaborative and non-hierarchical relationships in effective teams (*e.g. referrers, radiologists, radiographers, medical physicists...*);
- Exploit the power of **information technology** (IT) for learning and strengthen educational resources;
- Promote a **new professionalism** that uses competencies as objective criteria for classification of health professionals and that develops a common set of values around social accountability.



## Different patients



## Different protocols

**Every patient and case is different**, so perform only necessary imaging exams, make sure it's the right scan for the indication and optimize the radiation dose delivered to each patient.

Radiation safety in adult imaging is vital to quality patient care. Take the pledge today at [imagewisely.org](http://imagewisely.org).



Visit [IMAGEGENTLY.ORG](http://IMAGEGENTLY.ORG) for pediatric protection information.



**IMAGE WISELY™**

Radiation Safety in Adult Medical Imaging

RSNA News, February 2011

13<sup>th</sup> European ALARA Workshop, 7-10 June 2011



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# Need for guidelines in health care

- Evidence based medicine means integrating (i) the **best available external clinical evidence** from systematic research with (ii) the **individual clinical expertise**, to consider what may be applicable to or appropriate for an individual patient.
- How could clinicians face in keeping abreast of all the medical advances reported in primary journals ? (i.e. to read ~ 20 articles per day !!!)
- Referral guidelines are **decision-support tools** systematically developed to assist practitioners on decision about appropriate healthcare for specific circumstances.



"..Inappropriate use of diagnostic imaging carries another concern –patient safety- particularly in relation to unnecessary exposure to radiation"

"It is more critical than ever that **clinical decision supports** are in place to **assist family physicians in making the best decisions**"

September 2010


## Decisions,Decisions: Family Doctors as Gatekeepers to Prescription Drugs and Diagnostic Imaging in Canada



September 2010

As the first point of contact with the health care system for many Canadians, the decisions of family physicians affect patients' treatment, but also impact the health system as a whole. How do physicians' decisions affect health care services in Canada?

*Decisions, Decisions: Family Doctors as Gatekeepers to Prescription Drugs and Diagnostic Imaging in Canada*, calls for better management of prescription drugs and diagnostic imaging services in this country. The report examines the increasingly complex role of family physicians and the effects of their decisions on usage of Canada's health care services.

 [Decisions, Decisions: Family Doctors as Gatekeepers to Prescription Drugs and Diagnostic Imaging in Canada](#)

 [Watch Video Trailer](#)



# **WHO Consultation on Referral Guidelines for Appropriate Use of Radiation Imaging**

**1-3 March 2010**

**WHO HQ, Geneva**

*35 participants from 23  
international, regional  
and national  
organizations (including  
EC and IAEA)*

## **Medical imaging specialists call for global referral guidelines**

Key representatives of the world's leading medical imaging societies have recommended that a common set of global referral guidelines for appropriate use of medical imaging be produced, in the first such global meeting of experts convened under WHO auspices in nearly two decades.

Experts from international, regional and national professional societies as well as the International Atomic Energy Agency and the European Commission, met in the WHO-hosted consultation in Geneva, 1-3 March, 2010. The consultation, "Referral Guidelines for Appropriate Use of Radiation Imaging", was held in the context of the WHO Global Initiative on Radiation Safety in Health Care Settings (Global Initiative), launched in December 2008.

Their call comes in the wake of trends that have seen diagnostic imaging and interventional radiology procedures being used more and more to accurately diagnose a wide range of illnesses and injuries and provide life-saving treatment.

At the same time, however, appropriate use of such technologies is becoming an important health policy concern, particularly since medical radiation exposure constitutes the main source of radiation exposures in many countries and inappropriate use can lead to unnecessary exposures.

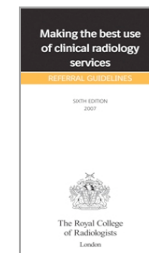
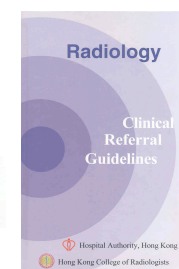
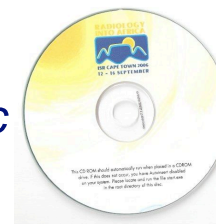
The 36 experts, representing 23 agencies and professional societies from across WHO's six regions, agreed upon a roadmap to develop an international set of evidence-based referral guidelines and facilitate their implementation. Plans also call for monitoring the use and evaluation of the impact of the use of such guidance in different clinical settings.

The consultation recommended development of a global set of referral guidelines under the umbrella of WHO, and in collaboration with other relevant international bodies. This would include review, adaptation and expansion, as necessary, of evidence-based guidelines that exist nationally and regionally.

"Reduction of unnecessary radiation exposure by justification of radiological medical procedures is a major goal for the Global Initiative. Such a referral tool developed in collaboration with major expert agencies and institutions will contribute to that goal", says Dr Maria Neira, Director of WHO's Department of Public Health and Environment (PHE).

# Referral guidelines project

- Core Group **WHO-IRQN**, Referral Guidelines Development Group (**RGDG**) with representatives of the professional societies participating in the project.
- Special Interest Groups (**SIGs**):
  - central nervous system, ear nose and throat, respiratory system, cardiovascular system, breast, gastrointestinal system/abdomen, obs/gynaecology, urology, muscular-skeletal, pediatrics, neglected tropical diseases, radiation protection.
- Review of existing guidelines: initial set **consensus guidelines** for 45 clinical conditions sent to SIGs in April 2011.
- Draft **introductory chapter** with supporting information about basic radiation protection concepts, radiation doses and risks, protection of children and fetuses (to be sent to RP SIG in June 2011).
- Compliance with the WHO Guidelines Review Committee (**GRC**)'s requirements (adoption, adaptation and expansion of existing referral guidelines).
- Plan to pilot in the six WHO regions (**feedback on format, media, content**).



# Risk communication in medical imaging

## To empower medical professionals and patients to make informed decisions

- To develop practical tools to assist health care providers in communicating radiation risks
- A priority: **tool** to communicate risks in paediatric imaging
- Future work: to build a **tool kit** for radiation risk communication in pediatric health care (other resources).
- Including training packages and other capacity building tools.





# Workshop on Radiation Risk Communication in Paediatric Imaging

Held in WHO HQ Geneva on 20-22 September 2010, it gathered representatives of **key stakeholders** (radiologists, pediatricians, family doctors, radiographers, nurses, parents, regulators, researchers) with the participation of communication experts, representatives of the IAEA, EC and professional societies,

To :

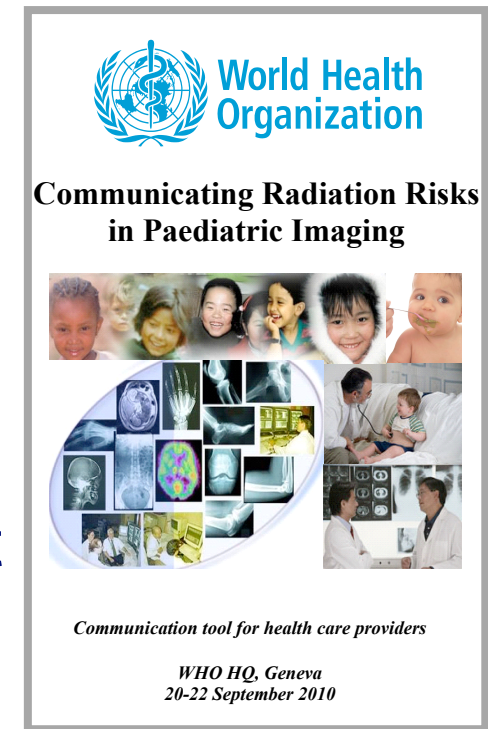
- map out existing guidance and tools for radiation risk communication in paediatric imaging, identify gaps and needs
- collect stakeholders feedback, questions and concerns
- develop key messages for effective communication
- produce a first draft tool





# Tool for radiation risk communication in pediatric imaging

1. Trends in medical imaging
2. Facts and numbers
3. Appropriate use of radiation in PI
4. Creating a dialogue in the medical community
5. Explaining the risks and benefits: the do's & don't
6. Consent/assent and other ethical considerations
7. Appendixes: glossary, case studies, references, resources to learn more



# Informed decision-making process

## ● Information →

- *both benefits and risks*
- *uncertainties are part of this process*
- *capacity to make an informed decision*

## ● Dialogue →

- *health care providers, parents, child*
- *tailored according to each situation (paediatrician, family doctor, radiographer, radiologist, ...)*
- *capacity to make a free decision*
- *responsibility (autonomy should not mean isolation in decision-making)*

## ● Decision →

- *modality of the process according to the procedure*
- *not necessarily a written document, cultural considerations*
- *transparency of the process*
- *assent + parents' consent, possibility to withdraw at any time*





**World Health  
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**Patient Safety**

A World Alliance for Safer Health Care

## **Patients for Patient Safety News** **November 2010**

***Newsletter of the  
international network  
"Patients for Patient Safety"***

Welcome to the latest edition of PFPS News, which features highlights from the ISQua Conference in Paris, PFPS Champion activities in Egypt, Ireland and Mexico, and much more!

### **Communicating Radiation Risks in Paediatric Imaging**



Susan Sheridan, Patients for Patient Safety Expert Lead, was invited to participate in a WHO meeting on Radiation Risk Communication in Paediatric Imaging, from 20 to 22 September 2010, at WHO headquarters, Geneva.

The use of paediatric imaging is rapidly increasing worldwide, largely as a result of the increase of paediatric computed tomography (CT). Imaging has become an increasingly important component of the clinical evaluation of paediatric patients and technological advances are making non-invasive evaluation of a wide range of paediatric diseases possible.





17th WONCA Europe, Family medicine- practice, science and art, 8-12 September 2011, Warsaw, Poland WHO-WONCA Workshop on Radiation Risk Communication in Pediatric Imaging.

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