




**Culture, Practice and Justification:
The Humanities/ Social
Sciences in Medical RP**

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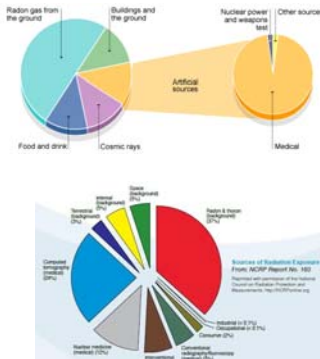


Medicine, RP and The Humanities


- Excavating the Culture
- Context: Medicine & RP
- Conclusions
- Dealing With Uncertainty

Context: Medicine, RP & The Humanities

- Largest source of Man-made Exposure
- Deliberate exposure each individual involved
- About 3bn examinations per annum
- Pregnancy, Non Medical Exposures



**Humanities and Medicine
(Medical Humanities)**



Medical Portals for Humanities:

- Family Medicine (GP)
- Psychology
- Psychiatry
- Public Health
- Related Social Services
- Health Services Management/Economics
- HTA
- Nursing
- Occupational Therapy
- Speech Therapy
- Medical Ethics

Humanities contributing to Medicine:

- Ethics
- Law
- Social Studies
- Health Economics
- Communication Studies/Journalism
- Cultural Studies
- Anthropology
- Ethnography
- Psychology
- History of medicine
- Literature
- The visual arts


Ethics, RP and Medical RP

ICRP Values

- ICRP system consists of:
 - (Incomplete) science
 - Value judgments
- ICRP purpose built; detached from theory and practice of MEDICAL ethics.
- ICRP system: LOW recognition in medicine.
- ICRP revisiting ethics: TG-94, IRPA Consultations.
- TG 94 draft Mainly Non Medical. Important medical nuance?? Little medical engagement


Medical Ethics and Society

- Medical Ethics; strong scholarship and research



Values necessary for ICRP System


No	Value Set
1	Dignity and Autonomy
2	Non Maleficence & Beneficence
3	Justice
4	Prudence (Precautionary Principle)
5	Honesty



Dealing With Uncertainty

Uncertainty, Epistemology, Medicine, Fraud, and Policy

- Uncertainty: Epistemology to Fraud
- Uncertainty in Communication
- Uncertainty and risk
 - 6 months to live
 - 20% chance of cure
 - Operation generally successful but 5% mortality during procedure. No operation?
- LNT Uncertainty. Professional angst and disagreement confuses
- Clear simple communication that includes the uncertainty
- Is there bad RP Research?



Reproducibility

(after Sonia van Gilder Cooke, New Scientist 2016, and Monya Baker, Nature, May 2016)

WHAT FACTORS CONTRIBUTE TO IRREPRODUCIBLE RESEARCH?

Many top-rated factors relate to intense competition and time pressure.

Factor	Always/often contribute	Sometimes contribute
Selective reporting	80%	20%
Pressure to publish	75%	25%
Low statistical power or poor analysis	70%	30%
Not replicated enough in original lab	65%	35%
Insufficient oversight/mentoring	60%	40%
Methods, code unavailable	55%	45%
Poor experimental design	50%	50%
Raw data not available from original lab	45%	55%
Fraud	40%	60%
Insufficient peer review	35%	65%
Problems with reproduction efforts	30%	70%
Technical expertise required for reproduction	25%	75%
Variability of standard reagents	20%	80%
Bad luck	15%	85%

IS THERE A REPRODUCIBILITY CRISIS?


1,576 researchers surveyed

Response	Percentage
No, there is no crisis	7%
Don't know	3%
Yes, a significant crisis	52%
Yes, a slight crisis	38%

Excavating the Culture:

Justification, Ethics and Law

- IAEA Vienna et al (2007-2016) IS THERE A PROBLEM WITH JUSTIFICATION?
- Cardiologist, Health Economist, Philosophers, Physicians, Physicists, Radiologist, Lawyer
- **Dignity and Autonomy**
- 2009 IAEA and EC Brussels Workshop *There is significant and systemic practice of inappropriate Examination in radiology.*



- Dosage Issues
- Doctor's Knowledge of Dose and Risk
- Practitioner's awareness of **appropriateness** and **guidelines**

Bonn Call

- Bonn 2012: IAEA and WHO
- Bonn Call for Action 2012
- **Suggest participation Vienna 17 (Vienna 2017)**



- Integration RP in Healthcare
- Rebalance research budgets (5.1).
- Culture of RP in medicine (8.1/3/4).
- Risk Dialogue/Analysis 7.4; 9.1/2
- Justification 3A, Bonn 1



BONN CALL FOR ACTION
10 Actions to Improve Radiation Protection in Medicine in the Next Decade

Cultural History and Text: RP in Medicine

- Medical engagement:
 - Stakeholder Involvement?
 - RP Institutions & Culture?
 - ICRP C3 and Ethics TG 94?
 - Freestanding?
- Where is Medical RP
 - Radiology Congresses
 - Medical Physics Cong
 - IAEA/EC/WHO



To Finish ----



ICRP, Medical RP and Ethics

Justification and the Humanities

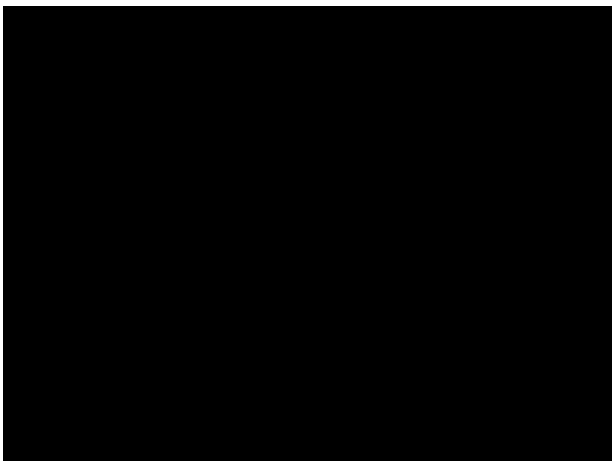
Medical Ethics, RP & Social Expectation

Medical Context

Dignity and Autonomy

Bonn Call and Vienna Dec 2011

Uncertainty



Scenario 5: Paediatric Patient

- Child (2y old boy), presents for whole body CT examination.
- Dr Browne, well qualified paediatric radiologist, assesses situation and believes examination is justified and should be performed immediately.
- Parents request information on cancer risks. Dr Browne states there is nothing to worry about. She deflects further questions, explaining her department is the best in the country for this type of case.
- Her reasons for doing so are that full explanation takes too much time, and a fear the parents may withdraw the child from a necessary examination.
- A technically excellent examination is performed.

Dignity Autonomy	Non Maleficence Beneficence	Justice	Prudence Precaution	Honesty Transparency
(Y)	(Y)	(Y)	(Y)	(-)
(N)	(-)	(-)	(-)	(N)

AAPM Position on Radiation Risks from Medical Imaging Procedures

The American Association of Physicists in Medicine (AAPM) acknowledges that medical imaging procedures should be appropriate and conducted at the lowest radiation dose consistent with acquisition of the desired information. Discussion of risks related to radiation dose from medical imaging procedures should be accompanied by acknowledgement of the benefits of the procedures. *Risks of medical imaging at effective doses below 50 mSv for single procedures or 100 mSv for multiple procedures over short time periods are too low to be detectable and may be nonexistent. Predictions of hypothetical cancer incidence and deaths in patient populations exposed to such low doses are highly speculative and should be discouraged. These predictions are harmful because they lead to sensationalistic articles in the public media that cause some patients and parents to refuse medical imaging procedures, placing them at substantial risk by not receiving the clinical benefits of the prescribed procedures.*

AAPM members continually strive to improve medical imaging by lowering radiation levels and maximizing benefits of imaging procedures involving ionizing radiation. (13 Dec 2111).

Issues around the ICRP recommendation that detriment arising from occupational exposure of medical staff be included in the overall detriment when risk benefits are assessed.

Scenario 3: IHA/Self Referral

- Dr Amber, Interventional Cardiologist. Private rooms with imaging facility.
- Explains the radiation (and other) hazards of procedures.
- Explains radiation risk is unproven.
- Accepts un-referred, worried well.
- Procedure on request with consent.
- Fee for consultation + for imaging.
- Dr Amber is shareholder in facility.

Dignity Autonomy	Non Maleficence Beneficence	Justice	Prudence Precaution	Honesty Transparency
(Y)	(-)	(-)	(-)	(Y)
(n)	(N)	(N)	(N)	(n)

Reproducibility in Science: Problems/Fixes

(after Sonia van Gelder Cooke, New Scientist 2016, and Monya Baker, Nature, May 2016)

- Wishful Thinking
- Burying Evidence
- Rewriting Hirstoy
- Tidying up data
- Pre Registration of Study/ Procedures
- Blindfolding
- Sharing
- Collaboration

