

Ethics for radiation protection in radiotherapy

Case based examples

Ethics for Radiation Protection in Radiotherapy

- **The starting point**
 - What is radiation protection in radiotherapy?
 - Focus of radiotherapy – to deliver a high dose to the tumour with minimum dose to the nearby normal tissue and sensitive organs
 - It is intrinsically different to radiation protection in diagnostic imaging
 - Fundamental problem with legislation under the blanket term “Radiology” covering all activities in medicine using radiation
 - Case studies are based on this differentiation
 - Using the principles of justification and optimization
 - Considering the ethical aspects
 - Following the patient clinical pathway from diagnosis to follow up

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- **Referral to radiotherapy**

- Anna Fortuna – recurrent malignant melanoma on her ankle
 - Third resection resulting in open wound that isn't healing
 - Very anxious patient not accepting the reality of her situation
 - Referred by the surgeon for radiotherapy
 - What was the evidence basis for this decision?

- **Ethical evaluation**

| | dignity/ autonomy | beneficence/ non-maleficence | prudence/ precaution | justice/ solidarity | transparency/ accountability/ honesty | inclusiveness/ empathy |
|----------------|----------------------|---------------------------------|-------------------------|------------------------|---|---------------------------|
| Compliance | 😊 | 😊 | - | - | 😊 | 😊 |
| Non-compliance | 😞 | 😞😞 | 😞😞 | - | 😞 | 😞 |

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Dignity/Autonomy

- The value and respect that every person has and deserves regardless of her/his age, sex, health, social condition, ethnic origin, religion, etc., protected by the Universal Declaration of Human Rights
- The capacity of individuals [or groups] to act freely, decide for themselves, and pursue a course of action in their lives

- Have we discussed the role the patient wishes to take in decision-making?
- Have we respected patient confidentiality?
- Has the patient's health information been shared only as necessary for their care? Within the scope of the purposes for which it was collected?
- Have we understood and addressed barriers to the patient making the right choice for them?
- Have we disclosed the information the patient would want for their medical decisions?
- What are the patient's goals of care?
- Is the benefit of the procedure consistent with the patient's own goals of care?
- Is there stigma or biases about patients, families, or colleagues influencing our reactions or choices in the scenario?
- Has the patient's privacy been respected? (e.g. shielding, physical location of treatment, and of sensitive discussions)

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- **New treatment options**

- Emma Chestnut– paediatric referral for proton therapy after partial tumour resection
 - Diffuse brain glioma – poor prognosis
 - Family with modest means and limited health insurance
 - Local department with high energy treatment locally could start immediately
 - Oncologist felt obliged to discuss the option of protons

- **Ethical evaluation**

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Beneficence/Non Maleficence

- The duty to promote or do good, and to avoid harm
- The requirement to balance benefits and risks

- Does the procedure provide a medical benefit? Have we considered the psychological benefit after an imaging procedure? (And even when it is not clearly indicated in an imaging guideline if a patient is really worried?)
- Have risks of harms been minimized?
- Does the risk outweigh expected benefit? Are risks and benefits well-balanced?
- Is the procedure aimed at prevention, cure, palliation, rehabilitation, or improvement in quality of life? Does it address psychosocial concerns?
- Is it consistent with clinical guidelines? Are there particularities of the patient that the guidelines don't take into account?
- Is there a risk of medicalizing, over-diagnosing, or over-treating the patient?
- Will the additional information provided by the test change the treatment approach?
- Have the potential harms of too much diagnostic scrutiny been taken into account?
- Is there a conflict between what the medical team thinks is the best course of action and what the patient would like? Is there conflict among the medical team? Between the patient and their family/caregivers?
- Are we ordering tests to avoid conflict, manage perceived legal risk, or to persuade patients to accept treatment recommendations?
- Are we educating the patient or caregivers about the limitations of testing?

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- **Inappropriate use of new technology**

- Jane Pink a 70 year old frail lady with a tumour of her larynx
 - Unfit for surgery referred for radiotherapy
 - Department had recently been upgraded with two new linear accelerators with multileaf collimation (permitting more tailored treatment approaches)
 - Tender did not include accessory equipment – no immobilisation equipment
 - Staff had limited training and no experience with the new equipment
 - Complex plan produced with five fields

- **Ethical evaluation**

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Accountability and transparency/honesty

Obligations to answer for decisions and actions to those who are affected and to accept the consequences

Accessibility of information about the deliberations and decisions, and the honesty with which this information is shared

Honesty is the professional and personal commitment to candid and truthful sharing of information

- Have the effects of ionising radiation been shared with the patient?
- **Have we discussed additional information that would help the patient for their personal care and life decisions? For their self-understanding?**
- Is there information we are reluctant to disclose? Why? If we disclosed this information, do we think the patient might make a different decision than the one we think is best?
- Have we provided patients with information about relevant alternatives outside our scope of practice? Have we facilitated necessary referrals for patients to understand alternative approaches?
- In cases of adverse events and near misses, has the patient and/or family been informed of the event? Of the steps taken to address the event for the patient and future patients?
- What steps can we take to re-establish trust? To manage the residue of mistrust?
- Are we making an honest attempt to help the patient understand their prognosis, or are we delaying an uncomfortable conversation?
- Do we have a conflict of interest, such as financial interests or health system pressures, that are influencing professional judgment?

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- **Non-reproducible treatment position**

- Mark Gentian – 50 year old man with early stage prostate cancer – excellent prognosis
- Referred for curative treatment (high dose intensity modulated radiotherapy (IMRT))
 - Exact repetition of the patient position is essential
 - First treatment patient set up: trousers and underwear pulled down to the level of his upper thighs exposing the pelvic area (comfort and minimizing patient embarrassment)

- **Ethical evaluation**

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Prudence/Precaution

- Making informed and carefully considered choices without the full knowledge of the scope and consequences of an action
- Preventing or reducing risk in the absence of scientific certainty

- Are we ready to make a decision or do we need more information? To take other dimensions into account?
- **Do we have enough knowledge about uncertainty and the level of evidence that we have? (For example, inferring risk of internal dose from evidence of external dose.)**
- Is the decision proposed sensitive to the many dimensions of the dilemma?
- Have we accepted appropriate standards of evidence for risks of serious harm where evidence is incomplete?
- Have we excluded concerns just because we have no high-quality evidence for them?
- Are we discussing uncertainty with the patient or family?
- **Have we considered the unintended consequences of our choices, in medical and non-medical domains?**

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- **Failure of open disclosure**

- Aisling White appointed as a physicist to a radiotherapy clinic
 - no practical experience in HDR brachytherapy (attended lectures)
 - Colleague out sick Aisling asked to plan an HDR treatment
 - Reluctantly planned the treatment and patient treated
 - Two days later realised she had made a basic mistake leading to mistreatment
 - Afraid what her colleagues might think of her she decided error was not significant and she didn't need to report it

- **Ethical evaluation**

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Justice/Solidarity

Upholding what is right, equitable, and fair

Distributive: Fairness in distribution of limited resources

Restorative: Repairing harms

Social: Rights to equitable treatment and equal access

Solidarity: Common good and structures supporting interpersonal recognition, reciprocity and support

- If resources are limited, are we following a justified allocation rule (equality, priority, need, potential to benefit)?
- Is our process for allocating resources procedurally fair?
- Are clinical loyalties, personal relationships, the patient's status and influence, or social judgments and biases swaying our distribution of resources?
- Is some group or person receiving an unfair share of benefits? Of harms?
- Are there environmental costs to our practices and how should they be addressed?
- Are our practices and technologies environmentally sustainable?
- Are our practices and technologies financially sustainable for patients, for the health care system, and for society?
- What are the opportunity costs of our resource use?
- Have steps been taken to level the power relation between health professionals and patients, so the patient can communicate their concerns?
- Are there social determinants of health affecting the patient?
- Is there a historical mistrust between health professionals and this specific patient populations? What can we do to be worthy of and restore trust?
- Are there aspects of the patient's context that are barriers to their receiving and benefiting from care? How can we address them?

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- **Conclusion**

- Ethics for Radiation protection in radiotherapy is complex
 - Five of ten scenarios were selected and discussed in the context of the value pairs.
 - **Sensitising questions**
 - were used to explore specific elements of the scenario described
 - Most or all values could be applied to the any of the scenarios
 - Help to give a moral assessment of the practice and the ethics that underpin decisions taken

Ethical analysis is key to shared decision making and inclusivity and is a patient focused approach

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- **Publications**

- ICRP 2023: Draft Report of TG-109 on Ethics in Radiological Protection for Medical Diagnosis and Treatment. Available for comment at: https://icrp.org/docs/report_tg109_for_public_consultation.pdf
- Malone J, Zolzer F, Meskens G, Skourou C (2019). Ethics for radiation protection in medicine. Free download at: <https://www.routledge.com/Ethics-for-Radiation-Protection-in-Medicine/Malone-Zolzer-Meskens-Skourou/p/book/9780367570712#sup>
- WHO, 2022. Ethics and Medical Radiological Imaging: A Policy Brief (WHO, Geneva). Available at: <https://www.who.int/publications/i/item/9789240047785> Accessed 31 May 2022.
- F. Bochud, M.C. Cantone, K. Applegate, M. Coffey, J. Damilakis, M. del Rosario Perez, F. Fahey, M. Jesudasan, C. Kurihara-Saio, B. Le Guen, J. Malone, M. Murphy, L. Reid and F. Zolzer. Ethical aspects in the use of radiation in medicine: update from
- ICRP Task Group 109. 2020. Annals of ICRP. 49, 143-153. DOI: 10.1177/0146645320929630

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