

Management of Radiation Toxicity

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Conflict of Interest Declaration

No conflicts of interest to declare

Objectives:

- To review common radiation side effects and their management
- To provide an overview of patient-reported outcomes and use in oncology

Tumour Control vs. Toxicity

Treatment Factors

- Total Dose
- Individual fraction sizes
- Duration of treatment
- Concurrent chemo
- Volume irradiated

Patient Factors

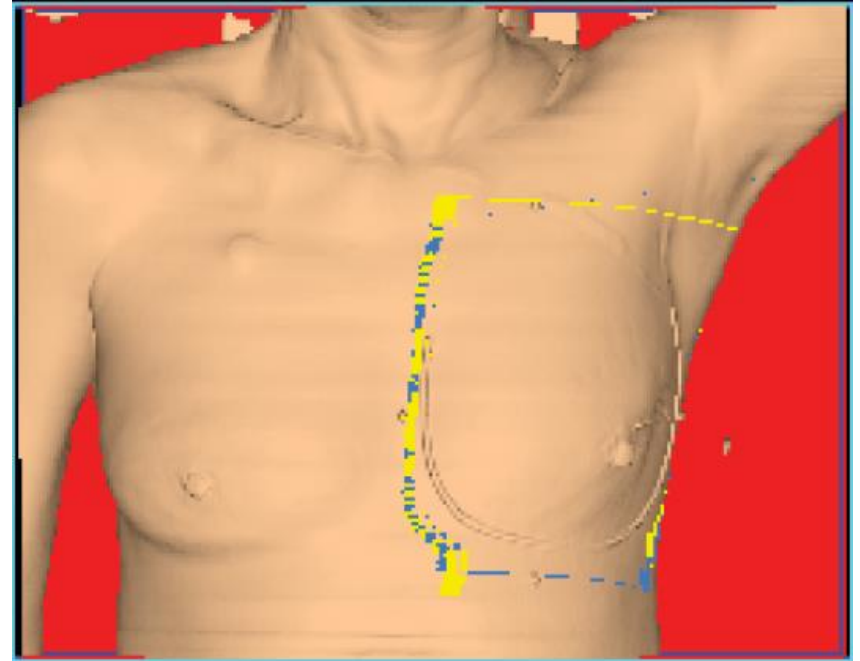
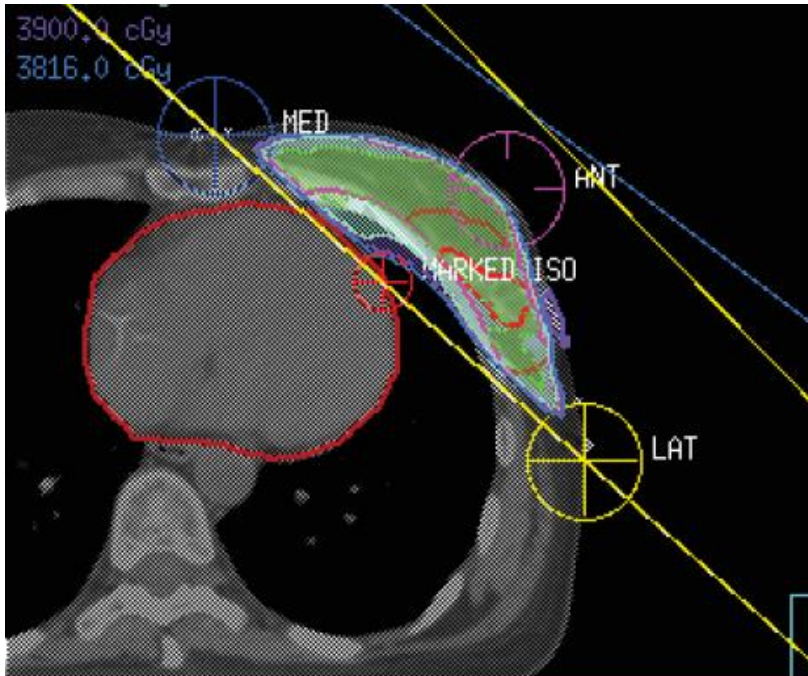
- Co-morbidities
 - Vascular disease
 - Connective tissue disease
 - Inflammatory bowel disease
- Smoking
- Previous surgery

Radiation Toxicity

- Radiotherapy = local treatment
- Side effects generally localized to area receiving radiation
 - Think anatomically
- Acute: until 90 days
- Sub-acute: 3-12 months
- Late: > 1 year



Breast Cancer



Skin

- Erythema, pruritus, dry/moist desquamation



Management

- Glaxol or Aveeno cream BID-TID daily
- Pruritus - Hydrocortisone 1% cream
- Dry desquamation - Saline soaks
- Moist Desquamation - Flamazine (Silver Sulfadiazine, topical antibiotic)
 - Sulfa allergy - use Fucidin



45yo F post left breast and regional nodal radiation 3 months ago, presents with cough and SOB/OE



Radiation Pneumonitis

- Rare; ~1% risk with regional nodal radiotherapy
- Symptoms:
 - dry cough, fever, SOB, pleuritic chest pain
- Onset:
 - 6 weeks - 6 months post RT
- Treatment:
 - Prednisone 50-60mg/day; taper over ~6 weeks
 - Watch for superimposed pneumonia, may require antibiotics
 - Refractory symptoms, refer to Resp - PFTs

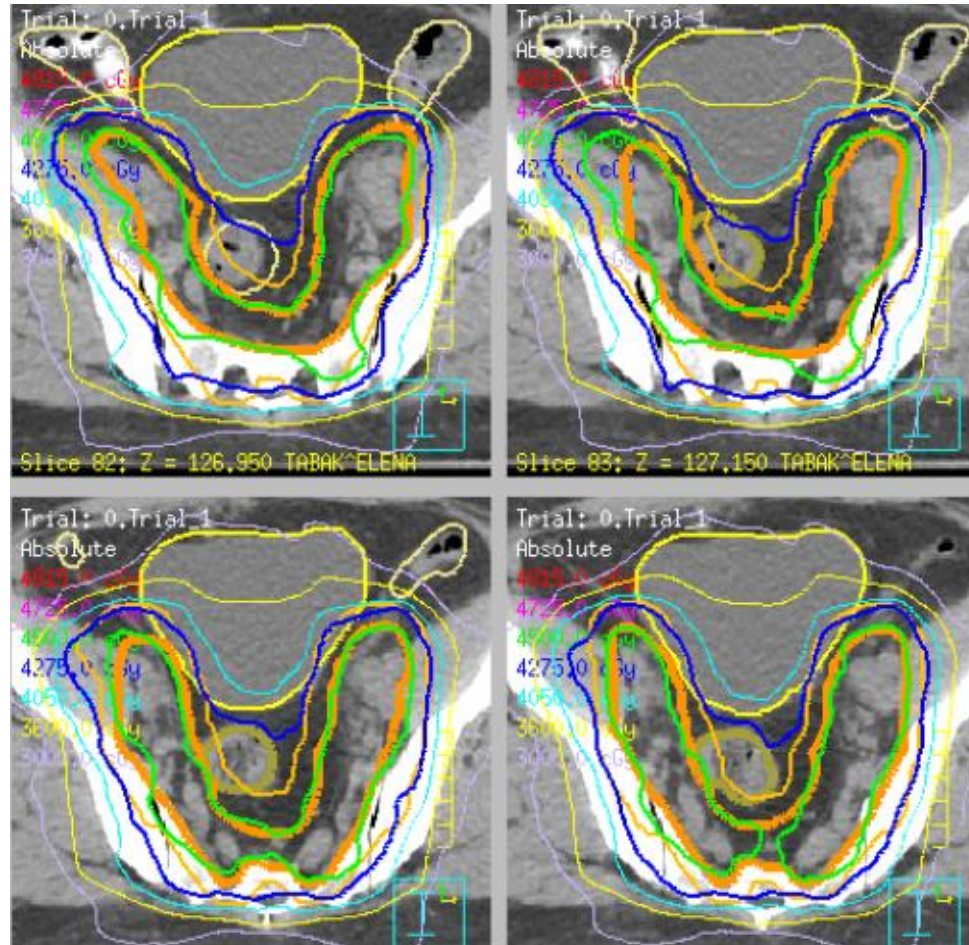


Lymphedema

- Dependent upon:
 - Type of axillary surgery: SLNB (~5%) vs ALND (~30%)
 - # of LNs removed
 - RNI: post SLNB (~10-15%) vs. post ALND (35-40%)
 - Systemic therapy
 - BMI
- Chronic pain, functional impairment, distress, decreased QoL
- Management:
 - Physio, massage
 - Garment/sleeves



Pelvic Radiotherapy: Gyne, GI, GU



79yo F FIGO 2B cervix cancer

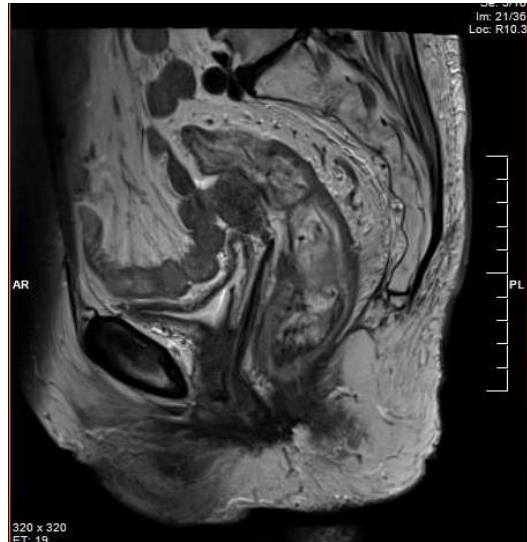
- Concurrent cisplatin + pelvic RT (45Gy/25 fxn) + Brachytherapy
- Complete response

- 18 months later - rectal bleeding requiring transfusions

- Work-up? Management?

RT Proctitis

- Colonoscopy: neovascularization from anal verge to 25cm, mucosal atrophy, bleeding
 - too extensive for Argon therapy
- CT: thickened bowel loops, no recurrence

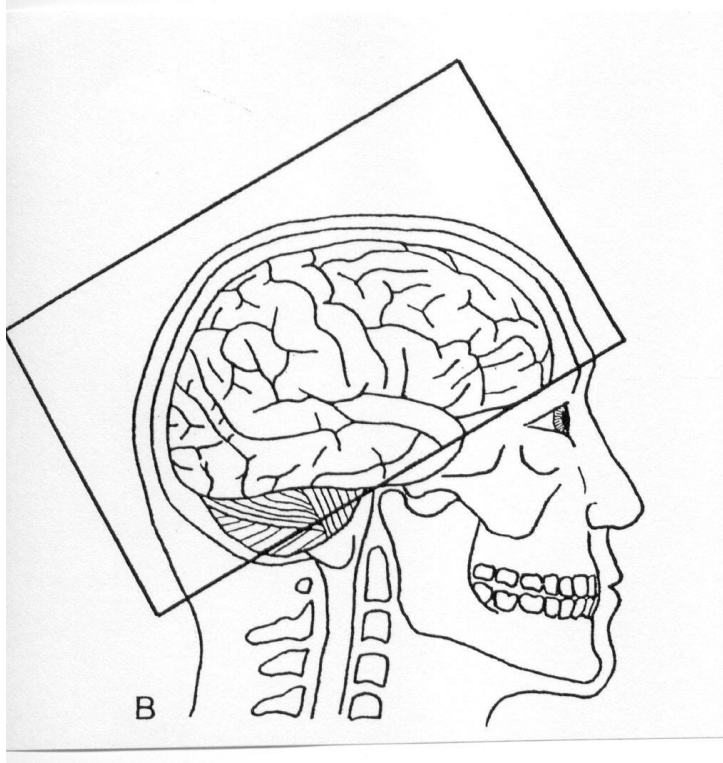


Management:

- Conservative management:
 - Steroid enemas, 5-ASA, Flagyl - limited response
- Anesthesia consult:
 - Hyperbaric oxygen - minimal response
- General Surgery consult:
 - Would require APR: decision against due to age, surgical risks a/w prior RT
- Currently: intermittent symptoms, transfusions prn



CNS – primary, brain mets



- Fatigue
- Hairloss/scalp irritation
- Headache
- Nausea/vomiting
- Seizure
- Focal neurological symptoms
- Ear (pain/pressure)

Management

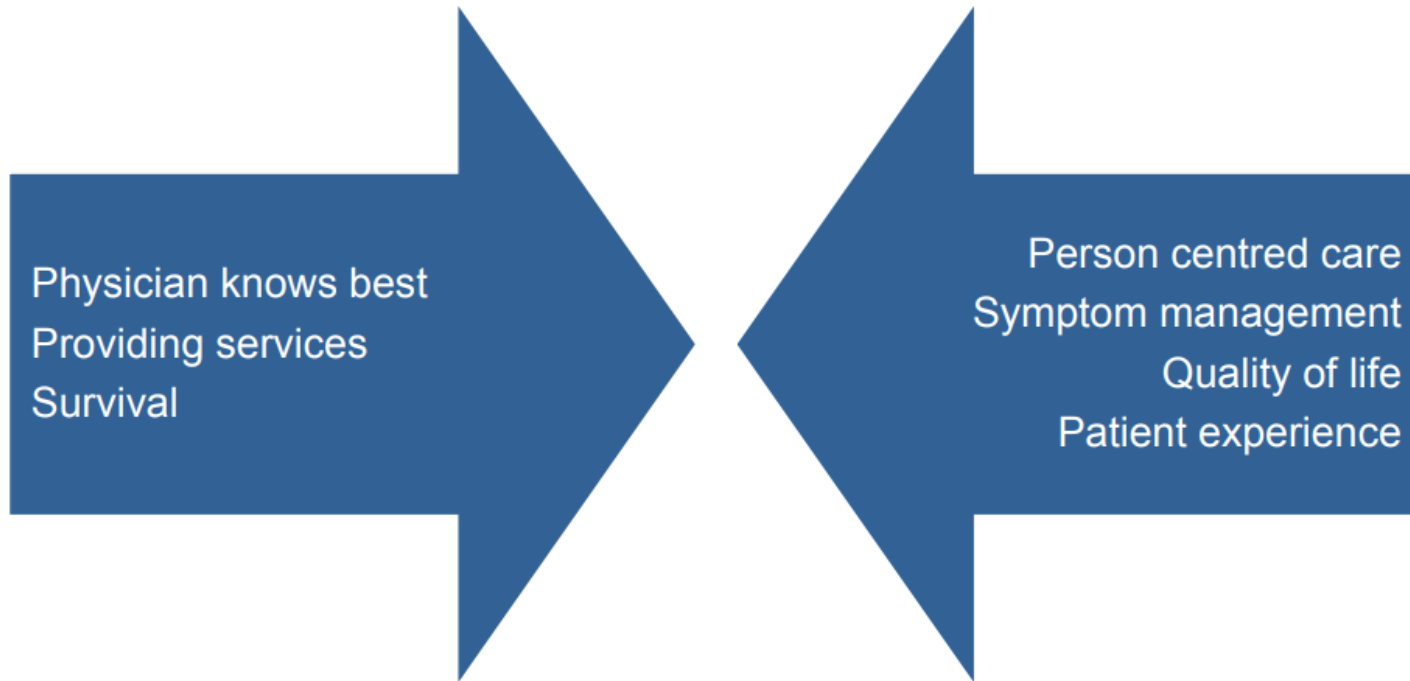
- Decadron/PPI: taper
- Anti-emetics: Zofran pre-RT, prn
- Anti-seizure medications if hx of seizures



Improving RT toxicity profiles

- Technological advances
 - Conformal therapy: intensity modulated RT (IMRT), volumetric arc RT (VMAT)
- High precision image guidance, such as cone beam CT
- Stereotactic RT: conformal, high doses, fewer fractions

Paradigm Shift



Radiation and Immunotherapy

- Not a new concept
 - 1970 – immune system contributes to the anti-tumour effects generated from RT
- RT thought to be a local treatment only; however, has the potential to generate out of field “abscopal” anti-tumour responses through immunologic mechanisms
- Therefore, IO may augment the locoregional benefits of RT and conversely, RT may prime the tumour environment enabling more effective systemic response from IO
 - Synergistic action

Timing of Radiation

- Constantly evolving field
- Balance safety and optimal timing of cancer treatments
- Multi-disciplinary discussion important
- Typically RT and IO are not concurrent
 - Ideal “wash-out” – likely unknown
 - Dependent on half-life of IO
- Until we know more: use best clinical judgement
 - minimize potential toxicities of RT/IO vs providing timely and comprehensive treatment



Burden of cancer

- Cancer diagnosis and treatment causes significant physical and emotional distress, which can:
 - decrease quality of life
 - be costly to health systems
- In Ontario, 40% of breast cancer patients undergoing adjuvant treatment visit the ER within the first 2 months of treatment
 - Multifactorial?
 - lack of systematic standardized symptom assessment measures can lead to inadequate symptom management and poor patient/clinician communication

What are PROs?

- capture the patient's perspective
- “any report of the status of a patient's health condition that comes directly from the patient, without interpretation of the patient's response by a clinician or anyone else”
- person-centered care



Generic: ESAS-r

- patient-reported distress
- validated in oncology populations
- screening mandated by CCO
- screening rates: indicator of programmatic performance

Cancer Care Ontario Action Cancer Ontario

Edmonton Symptom Assessment System:
(revised version) (ESAS-R)

Please circle the number that best describes how you feel NOW:

No Pain	0	1	2	3	4	5	6	7	8	9	10	Worst Possible Pain
No Tiredness (Tiredness = lack of energy)	0	1	2	3	4	5	6	7	8	9	10	Worst Possible Tiredness
No Drowsiness (Drowsiness = feeling sleepy)	0	1	2	3	4	5	6	7	8	9	10	Worst Possible Drowsiness
No Nausea	0	1	2	3	4	5	6	7	8	9	10	Worst Possible Nausea
No Lack of Appetite	0	1	2	3	4	5	6	7	8	9	10	Worst Possible Lack of Appetite
No Shortness of Breath	0	1	2	3	4	5	6	7	8	9	10	Worst Possible Shortness of Breath
No Depression (Depression = feeling sad)	0	1	2	3	4	5	6	7	8	9	10	Worst Possible Depression
No Anxiety (Anxiety = feeling nervous)	0	1	2	3	4	5	6	7	8	9	10	Worst Possible Anxiety
Best Wellbeing (Wellbeing = how you feel overall)	0	1	2	3	4	5	6	7	8	9	10	Worst Possible Wellbeing
No _____ Other Problem (for example constipation)	0	1	2	3	4	5	6	7	8	9	10	Worst Possible _____

Patient's Name _____
Date _____ Time _____

Completed by (check one):
 Patient
 Family caregiver
 Health care professional caregiver
 Caregiver-assisted

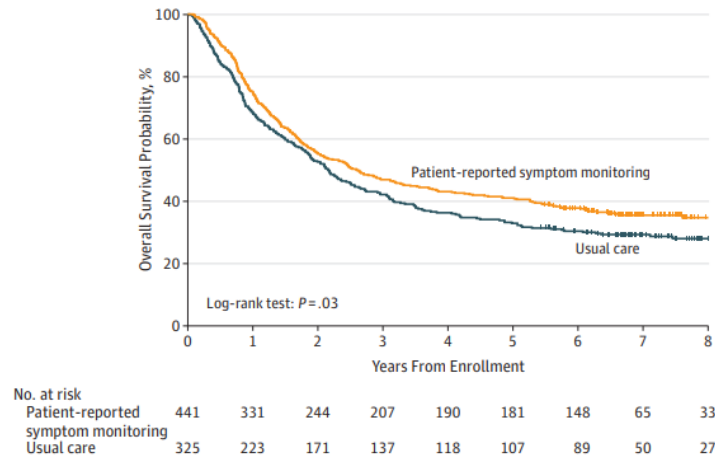
BODY DIAGRAM ON REVERSE SIDE

What is the evidence for PROs in Oncology?

- Improves patient-clinician communication,
- Improves patient satisfaction
- Complements physician-reported toxicities
- Improves symptom monitoring,
- Decreases emergency room admissions,
- Prolongs time on active treatments
- Improves health-related QoL
-

PROs improve OS: clinical trial setting

Figure. Overall Survival Among Patients With Metastatic Cancer Assigned to Electronic Patient-Reported Symptom Monitoring During Routine Chemotherapy vs Usual Care



- Integration of ePROs into the care of patients with metastatic cancer is associated with **↑** OS vs. usual care
 - ? earlier detection and intervention
 - Are these results translatable to the “real-world?”

PROs also improves OS: real-world

- Retrospective matched cohort study (Ontario Cancer Registry)
 - Patients “exposed” to ESAS vs. “control”

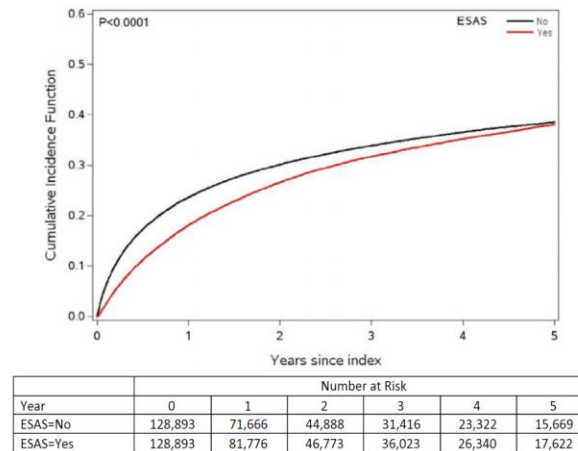


FIGURE 2 Cumulative incidence function of death for patients exposed and unexposed to ESAS

- ESAS exposure associated with improved OS in cancer pts
- Real work evidence for the impact of routine symptom assessment in cancer care

How can we use PROs?

- Research: endpoint in research studies (e.g. clinical trials)
- Clinical: individual level to inform an individual patient's care
 - symptoms can be identified and addressed
- Quality Improvement
- Collect vs. Act?
 - “busy-work” vs. meaningful change



Things to Consider

- The right tool at the right time for the right patient
- Scoring systems
 - The higher the better? The higher the worst?
- Workflow and Operations
 - Clinic integration
 - Technical implementation
 - Roles and responsibilities
 - Meaningful action

Conclusions:

- When making a decision to treat a patient with radiotherapy, we must balance benefits of treatment with risks of toxicity
- Modern RT techniques have improved toxicity profiles
 - Where IO fits in still remains unknown
- PROs within oncology have many proven benefits, although implementation has challenges

