Re-irradiation -- a pattern of practice survey of radiation Oncologists in Canada

Dear colleague,

We would like to invite you to participate in a survey-based study to review the pattern of practice of re-irradiation among Radiation Oncologists across Canada. The study is being conducted at the Cross Cancer Institute (CCI), Edmonton by Dr. Kurian Jones Joseph and Dr. Zahid Al-Mandhari. Co-investigators are Dr. Nadeem Pervez (CCI), Dr. Matthew Parliament (CCI), Dr. Wilf Levin (Princess Margret Hospital) and Dr. Jackson Wu (Tom Baker Cancer Center, Calgary).

The following are the main objectives of the study:

A). Determine indications of re-irradiation.
B). Identify different dose fractionations and techniques used
C). Outcome measures of re-irradiation.

The survey should require about 10 minutes of your time. Your responses will remain confidential. The information collected from the survey will be used to generate information to meet our study objectives.

Thank you for taking the time to review and respond to our request.

Sincerely

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I. Practice Details (Please mark the appropriate).
1. Your institution ...........................................................
2. Years in practice-------------------------------------------
3. Common sites of practice: Which tumor sites do you treat
(More than one answer possible)
☐ Central Nervous System
☐ Head And Neck
☐ Lung
☐ Breast
☐ Gastrointestinal Tumors
☐ Gynecological Tumors
☐ Genitourinary
☐ Palliative
☐ Other (please specify)---------------------------------------------

4. Average number of new pts seen by you per year----------

5. Approximate number of patients per year with in- field cancer recurrence after radiotherapy seen by you---------------------------------------------

6. Patient Characteristics (Please mark the appropriate).

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Don't Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are these patients generally willing to undergo re-treatment?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you ever consider re-irradiation for these patients?</td>
<td></td>
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</tbody>
</table>

7. Do you have a particular interest in re-RT?
☐ Yes
☐ No
☐ Don't Know

8. Does your department have any initiatives in re-RT?
☐ Yes
☐ No
☐ Don't Know

II. Referral Patterns & Indications (Please mark the appropriate).

9. The MOST COMMON reason that patients with in field failures are seen (in your personal or departmental practice) is?
☐ As first line salvage treatment
☐ When other options are not available/not favored
☐ Symptom control
☐ Other (please specify)---------------------------------------------

10. General Indications for re-irradiation: What are the common indications in your practice for offering re-irradiation? (Please mark the appropriate).

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Don't Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curative intent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loco-regional control</td>
<td></td>
<td></td>
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<tr>
<td>Improve Quality of life-symptom control</td>
<td></td>
<td></td>
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<tr>
<td>Part of clinical study</td>
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11. Any Other General Indications for re-irradiation (Optional)
III. Do the following Factors influence your decision to re-treat with Radical intent? Do the following Factors influence your decision to re-treat with Radical intent?

12. Age?
   □ No
   □ Yes, what is the limit in terms of age? -------------------------------

13. Performance status (Karnofsky/WHO/ECOG/)
   □ No
   □ Yes, what is the limit in terms of performance status? -------------------------------

14. Life expectancy?
   □ No
   □ Yes, what is the minimum life expectancy required? -------------------------------

15. Infield recurrence only; no distant mets
   □ No
   □ Yes
   □ Don't Know

16. Interval since previous treatment?
   □ No
   □ Yes, what minimum interval would you consider necessary (in months)? ---------

17. Any Other pre-requisites for re-irradiation? -------------------------------

IV. Treatment Planning

18. Do you think metastatic work up is necessary?
   □ Yes
   □ No
   □ Don't Know

19. How do you decide on the amount of residual normal tissue tolerance?
   □ Volume of tissue irradiated
   □ Clinical Judgment
   □ Previous Dose
   □ Calculating BED
   □ Other (please specify)-----------------------------------------------

20. How would you decide on the dose that you could safely give to normal tissues with re-irradiation? (More than one answers possible)
   □ Previous Dose
   □ Calculating BED
   □ Volume of tissue irradiated
   □ Clinical Judgment
   □ Other (please specify)-----------------------------------------------

21. Will you always calculate the BED to decide the re-irradiation dose?
   □ Yes
   □ No

22. Would you use concurrent chemotherapy?
   □ Yes
   □ No
Don't Know

23. Once embarked on treatment what factors determine whether a patient continues to the prescribed dose?
- Early Onset of side effects
- Disease progression despite treatment
- Discovery of distant mets
- Other (please specify)

V. Response to treatment

24. Will you review those patients after completion of re-irradiation to assess the response to radiotherapy?
- Yes
- No

25. How do you assess response and toxicity? (Please mark the appropriate).

| Review once only after treatment and then follow up with family doctor | Yes | No |
| Regular follow up to assess the outcome |  |  |
| Response assessed clinically |  |  |
| Response assessed by imaging |  |  |
| Quality of life questionnaire |  |  |

26. Other means to assess response and toxicity? 

VI. Site Specific Questions.

27. The Following section contains case scenarios relevant to specific sites.

Only choose sites applicable to YOU
- Central Nervous System
- Head And Neck
- Lung
- Breast
- Gastrointestinal Tumors
- Gynecological Tumors
- Genitourinary
- Palliative

8. Central Nervous System

28. Sixty one year old female presented with head ache and dizziness. She has a history of metastatic brain disease from breast cancer and has received 30 Gy/10 fr/2 weeks to the whole brain about 6 months ago. A recent MRI scan of the brain shows multiple scattered new lesions largest of which was 1 cm. Patient has a performance status of 70 %. Patient was restarted on dexamethasone by the palliative care team with symptomatic improvement. A Radiation oncology consult
for considering re-irradiation was received.

Would you re-irradiate?

☐ Yes
☐ No, uncertainty about whole brain tolerance after 30 Gy/10#
☐ No, uncertain of value (likelihood of response) of reirradiation in this situation
☐ No, life expectancy < 3 months
☐ No, other reasons (please specify)

29. If yes, what Re-irradiation technique?

☐ Conventional
☐ 3D-CRT
☐ IMRT
☐ Stereotactic Radiosurgery (Single)
☐ Stereotactic RT (Fractionated)
☐ Other (please specify)

30. Re-irradiation regimen, Dose and Fractionation?

31. Fifty Five year old farmer with a history of a right frontal lobe anaplastic astrocytoma treated with complete resection followed by radiation therapy 2 years ago. He received 60 Gy/30F/ 6 weeks. 12 months later patient develop local recurrence, treated with surgical resection followed by adjuvant Temozolomide. Recently he presented with headache and a single episode of grand mal seizure. MRI brain demonstrates infield recurrence measuring 2.5 x 3 cm. Biopsy confirmed recurrent disease. His KPS is 70 % and a decision was made to treat him with radiotherapy with curative intent.

Do you agree with the decision?

☐ Yes
☐ No. Why?

32. If yes, what Re-irradiation technique?

☐ Conventional
☐ 3DCRT
☐ IMR
☐ Stereotactic Radiosurgery (Single)
☐ Stereotactic RT (Fractionated)
☐ Other (please specify)

33. Re-irradiation regimen, Dose and Fractionation?

34. Seventy two year old farmer with a background of metastatic prostate cancer received 30 Gy/10f/2 weeks to the T5-T10 vertebral levels, 13 months ago for bone pain. He had an excellent symptomatic response. He presented recently to the family physician with lower limb weakness, but was still able to walk with a cane. An MRI showed infield recurrence with early spinal cord compression. Neurosurgery review offered only dexamethasone and referred him to the radiation oncology service for
further radiation. Patient has a reasonable performance status.
What would you offer?

☐ Supportive care alone
☐ Re-irradiation

35. If you will offer re-irradiation, what is your dose and fractionation?

36. If initial dose was 20Gy/5#/1 week what will be your re-irradiation dose/fractionation?

37. Choose Site of Practice for relevant Questions or done to complete the survey

9. Head and Neck

38. 45 year old gentleman has a background of T2 N1 M0 Nasopharyngeal ca for which he underwent radical chemo/rads 3 years ago. He received a total dose of 70Gy / 35f / 7 weeks to the Nasopharynx and 54 Gy to neck nodes. Recently he presented with unilateral nasal blockage. Investigations including biopsy confirmed a small 3x2 cm local recurrence confined to the nasopharynx without skull base or parapharyngeal extension. His performance status is excellent. His case is discussed in the RO rounds and offered reirradiation
Do you agree with this decision?

☐ Yes
☐ No, Normal tissue tolerance limits meaningful dose.
☐ No Why?

39. If yes, what Re-irradiation technique?

☐ Conventional
☐ 3D-CRT
☐ IMRT
☐ Stereotactic
☐ Brachy
☐ Other (please specify)

40. Re-irradiation regimen, Dose and Fractionation?

41. Will you offer concurrent Chemotherapy?

☐ Yes
☐ No

42. 55 yr old gentleman was treated with cisplatin and 3DCRT for a T3, N1, M0 laryngeal carcinoma 3 years ago. He received 70 Gy / 35 f / 7 weeks to the larynx and max dose to spinal cord was 48 Gy. He presented a year later with local recurrence for which he underwent total laryngectomy with clear margins. Recently he presented with bloody discharge from the stoma site. ENT assessment confirmed local recurrence at the stoma site measuring 2 x 3 cm, with multiple enlarged level II/III lymph nodes on the lt side of neck. Staging work up was negative for distant mets. Considering the patient’s younger age and good performance status; he was
offered re-irradiation with chemotherapy.

Do you agree?

☐ Yes
☐ No, Normal tissue tolerance limits meaningful dose.

☐ No, Chemotherapy alone is a better option.
☐ No Why? -----------------------------------------------

43. If yes, what Re-irradiation technique?

☐ Conventional
☐ 3D-CRT
☐ IMRT
☐ Other (please specify)-----------------------------------

44. Re-irradiation regimen, Dose and Fractionation?


45. What will be your accepted Total cord dose?


46. Choose Site of Practice for relevant Questions, or done to complete the Survey


47. 63 year old gentleman presented to the GP with history of hemoptysis of 3 weeks duration. He has a background of stage IIIA NSCLCa for which he has received cisplatin containing chemotherapy and concomitant radical radiotherapy 16 months ago. He has received 3DCRT in to the central tumor and mediastinum to a total dose of 50Gy/25f/5 weeks followed by a boost to the central tumor of 10Gy/5f/2 weeks. The Max dose to the Spinal cord was 49 Gy. He has a Karnofsky performance status of 80 %. Chest CT, bronchoscopy and biopsy confirmed visible tumor recurrence. Co-morbidities limited him from further chemotherapy.

Would you re-irradiate him?

☐ Yes
☐ No, Normal tissue tolerance limits meaningful dose.
☐ No, Other reasons (please specify)-------------------------

48. If Yes, what will be your re-irradiation technique (More than one answer possible)

☐ Conventional
☐ 3D-CRT
☐ IMRT
☐ Lung only
☐ Lung and mediastinum
☐ Other (please specify)-----------------------------------

49. Re-irradiation regimen, Dose and Fractionation?


50. What would be your dose limit to spinal cord if any? (Dose & Fractionation)


51. Suppose he developed recurrence after 6 months (instead of 16 months) of initial treatment, would you re-irradiate?

☐ Yes
52. Suppose this patient earlier presented with Stage IIIB and was treated initially with 30Gy/10F/2 weeks, what would be your dose and fractionation now?

53. Choose Site of Practice for relevant Questions, or done to complete the Survey

54. Fifty Two year-old bank employee who underwent right modified radical mastectomy followed by chemotherapy and chest wall/regional nodal irradiation 7 years ago for T2 N1 Mo invasive ductal cancer. She received total dose of 50Gy/25f/5 weeks to the chest wall (tangents, no skin bolus) and nodes (POP). She recently presented with ulcerative scar recurrence measures 4x3 cm and underwent surgical excision of the lesion with positive microscopic deep resection margin. Re-resection was thought not to be feasible by the surgeon. Restaging work up was negative for distant mets. Case was discussed in the breast rounds and given that this patient refused further chemotherapy due to poor tolerance, a decision was made to treat her with hormone manipulation and to re-irradiate the chest wall with curative intent.

Do you agree with the decision?

☐ Yes
☐ No, reirradiation with curative intent will exceed normal tissue tolerance
☐ No, local recurrence risk may be reduced by hormonal therapy alone
☐ No, systemic recurrence risk main concern in the long term
☐ No, other reasons (please specify)

55. If yes, what Re-irradiation technique?

☐ Conventional
☐ 3D-CRT
☐ IMRT
☐ Brachytherapy LDR/HDR/PDR
☐ Electron
☐ Other (please specify)

56. Re-irradiation regimen, Dose and Fractionation?

57. Will you re-irradiate if a boost of 10 Gy/5f/1 week, was given earlier?

☐ Yes
☐ No

58. If a hypo-fractionated regimen (eg 40 Gy/15F) was used initially would you still re-irradiate with curative intent?

☐ Yes
☐ No

59. If yes, what would be your reirradiation dose? Technique, Total dose/No. of fractions.

60. Choose Site of Practice for relevant Questions, or done to complete the Survey
12. Gynecological Tumors
61. 46-year-old stage 1B ca cervix patient with MRI evidence of bilateral iliac lymphadenopathy was treated with combined chemorads 14 months ago. Patient received 40Gy/ 20# to para aortic nodes and 50Gy in 25# to pelvis followed by LDR brachytherapy 40 Gy to point A. She recently presented with mild lymphedema of the right foot. MRI showed a 5.9 x 2.3 x 2.0 cm right pelvic side wall mass. No residual cancer on the cervix and the previously documented left iliac nodes were no longer visible. It was decided to re-irradiate with curative intent considering younger age and good performance status.
Do you agree with approach?
☐ Yes
☐ No, Not curable by radiotherapy with or without chemotherapy
☐ No, Exceeds tolerance of adjacent structures
☐ No, other reasons (please specify)
62. If yes, what Re-irradiation technique?
☐ Conventional
☐ 3D-CRT
☐ IMRT
☐ Other (please specify)-----------------------------------------------
63. If yes what would be your Regimen, Dose/Fractionation?
---------------------------------------------------------------------
64. If concurrent chemotherapy is used, what would be your dose/fractionation?
---------------------------------------------------------------------
65. 56 year old female ca cervix stage 1B treated with radical hysterectomy. Histology showed pelvic node involvement and lymphatic vessel involvement. She was given post operative pelvic rads (no chemotherapy) 45Gy in 25 fractions using a 4 field pelvic technique. 12 months later she presented with low volume vaginal vault relapse involving a deep left vaginal pouch (in the lateral aspect of the vaginal suture line).
Would you offer re-irradiation?
☐ Yes
☐ No Why? -----------------------------------------------
66. If yes, what Re-irradiation technique?
☐ Conventional
☐ 3D-CRT
☐ IMRT
☐ Other (please specify)-----------------------------------------------
67. If yes, what would be your regimen, dose/ fractionation?
---------------------------------------------------------------------
68. Choose Site of Practice for relevant Questions, or done to complete the Survey
13. Gastrointestinal Tumors
69. Sixty Six year old gentlemen with T3N0M0 low rectal tumor underwent neoadjuvant chemo rads 50.4 Gy/28#/5.5 weeks, followed by anterior resection with clear margins in October 2003. Since January 2006 he started complaining progressive vague pain in the sacral area and recently presented with left foot drop. PET/CT confirmed recurrence in the presacral area measuring 3 x 4 cm.
He has reasonable performance status and staging work up was negative for distant Mets. Chemotherapy and surgery were not feasible due to recent comorbidities including an MI 3 months ago. His case was discussed in the RO rounds and a decision was made to proceed with local radiation. Would you re-irradiate?

- Yes
- No, Normal tissue tolerance limits meaningful dose
- No, This is not curable with re-irradiation
- No, other reasons (please specify)

70. If yes, what Re-irradiation technique?
- Conventional
- 3D-CRT
- IMRT/ Tomotherapy
- Stereotactic
- Other (please specify)

71. Re-irradiation regimen, Dose and Fractionation?

72. Choose Site of Practice for relevant Questions, or done to complete the Survey

14. Genitourinary

73. Seventy two year old farmer with a background of metastatic prostate cancer received 30 Gy/10f/2 weeks to the T5-T10 vertebral levels, 13 months ago for bone pain. He had an excellent symptomatic response. He presented recently to the family physician with lower limb weakness, but was still able to walk with a cane. An MRI showed infield recurrence with early spinal cord compression. Neurosurgery review offered only dexamethasone and referred him to the radiation oncology service for further radiation. Patient has a reasonable performance status. Would you offer re-irradiation?

- Yes
- No, Normal tissue tolerance limits meaningful dose.
- No Why?

74. If yes, what will be your Dose & fractionation?

75. If the initial dose was 20Gy/5F/1 week, what will be your re-irradiation dose?

76. Seventy four year old gentleman with a background of T3N0M0 prostate cancer received 3DCRT to the pelvis 46Gy/23/4.5 weeks followed by 24Gy/12f/2.5 weeks to the prostate gland and SV about 7 years ago. He presented with biochemical failure about 2 years ago and was started on total androgen blockage. He was doing excellent until recently when he presented with dysuria and haematuria of 6 week duration. He underwent cystoscopy and partial excision of the local tumor recurrence. He was then referred back for consideration of radiation since haematuria persists. Would you re-irradiate?

- Yes
- No, Normal tissue tolerance limits meaningful dose.
- No Why?
77. If yes, what Re-irradiation technique?
   - Conventional
   - 3D-CRT
   - IMRT/ Tomotherapy
   - Stereotactic
   - Other (please specify)

78. If yes, what would be your regimen, dose/fractionation?

79. Choose Site of Practice for relevant Questions, or done to complete the Survey
15. Palliative
Note If you have done these questions in other sections (namely GU and CNS), then please skip this section by answering the last question only

80. Seventy two year old farmer with a background of metastatic prostate cancer received 30 Gy/10f/2 weeks to the T5-T10 vertebral levels, 13 months ago for bone pain. He had an excellent symptomatic response. He presented recently to the family physician with lower limb weakness, but was still able to walk with a cane. An MRI showed infield recurrence with early spinal cord compression. Neurosurgery review offered only dexamethasone and referred him to the radiation oncology service for further radiation. Patient has a reasonable performance status.
Would you offer re-irradiation?
   - Yes
   - No, Normal tissue tolerance limits meaningful dose.
   - No Why?

81. If yes, what will be your Dose & fractionation?

82. If the initial dose was 20Gy/5F/1 week, what will be your re-irradiation dose?

83. Sixty one year old female presented with head ache and dizziness. She has a history of metastatic brain disease from breast cancer and has received 30 Gy/10 fr/2 weeks to the whole brain about 6 months ago. A recent MRI scan of the brain shows multiple scattered new lesions largest of which was 1 cm. Patient has a performance status of 70 %. Patient was restarted on dexamethasone by the palliative care team with symptomatic improvement. A Radiation oncology consult for considering re-irradiation was received.
Would you re-irradiate?
   - Yes
   - No, uncertainty about whole brain tolerance after 30 Gy/10#
   - No, uncertain of value (likelihood of response) of reirradiation in this situation
   - No, life expectancy < 3 months
   - No, other reasons (please specify)

84. If yes, what Re-irradiation technique?
   - Conventional
   - 3D-CRT
   - IMRT
   - Stereotactic Radiosurgery (Single)
Stereotactic RT (Fractionated)
Other (please specify)

85. Re-irradiation regimen, Dose and Fractionation?

86. Choose Site of Practice for relevant Questions or done to complete the survey

VII. Thank You

87. Thank you for your time
Any Comments