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Motion Management Questionnaire

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This questionnaire addresses your institution's ability to participate in clinical trials that require accounting for intra-fraction lesion motion. Please complete the following questionnaire in sufficient detail so that the methodology you are using for managing respiratory motion is clear. The questionnaire is not protocol specific; it will suffice for all protocols requiring management of lesion motion due to respiration.

Institution: _____

Address: _____

City: _____

State: _____ Zip Code: _____ Country: _____

RTF#_____

Person completing this questionnaire: _____

☐ Physicist ☐ Radiation Oncologist ☐ Dosimetrist

Telephone: _____ Fax: _____

Email: _____

I. Experience:

What is the general category of technique that you use to manage the effects of respiratory motion? (e.g., gated to spirometer readings)

_____

How many patients have you treated using techniques for managing respiratory motion?

_____

For which target volume sites have you employed respiratory motion management?

☐ Lung ☐ Liver ☐ Pancreas Other: Please list: _____

What criteria do you use to select patients for respiratory motion management?

_____

What immobilization do you use?

_____

How do you verify accurate setup positioning of the patient?

_____

What accelerator do you use for these treatments?

_____

What is the beam energy? _____MV

If using a MLC, what is the leaf width? _____

What treatment planning system is used for planning these treatments? _____

II. Overall Technique

A. What is your method of <u>assessing</u> motion of the lesion with respiration?

_____Fluoroscopy
For 2D motion (one fluoro angle) _____
Or 3D motion (two or more fluoro angles) _____

_____4D CT

_____Inspiration/expiration fast-CT scan

_____Other: Please describe:

_____

B. What type of CT scan is used for treatment planning?

_____Standard CT scan

_____4D CT

_____Inspiration/expiration fast-CT scan

_____Slow-CT scan (multiple respiration cycles per slice)

_____Other: Please describe:

_____

C. What is your method of <u>managing</u> motion of the lesion with respiration?

- ☐ Nothing other than increased margins for PTV definition
- ☐ Forced shallow breathing using abdominal compression
- ☐ Gating of treatment with breathing cycle
  - ☐ Active breathing control (ABC)
  - ☐ Self-held breath-hold with respiratory monitoring (e.g., RPM)
  - ☐ Gating during free breathing using external monitors or implanted fiducials
  - ☐ Other: Please describe:

_____

- ☐ Tracking motion by:
  - ☐ Moving the beam (e.g. Cyberknife)
  - ☐ Moving the MLC's
  - ☐ Moving the patient to follow the target

III. Specifics of the Assessment of Motion due to Respiratory Motion

Is assessment performed for every patient? ☐ Yes ☐ No

How frequently is assessment performed?

- ☐ Only prior to treatment planning
- ☐ Other: Please specify: _____

What is used to assess the motion?

- ☐ Lesion itself
- ☐ Anatomic correlates
  - ☐ Diaphragm
  - ☐ Chest wall
  - ☐ Other please specify: _____

- ☐ Implanted fiducial markers

  How many? _____ What size _____ mm

  What material? _____
- ☐ Other. Please specify: _____

Who analyzes and assesses the amount of motion?

_____Radiation Therapist (or simulator technologist)
_____Radiation Oncologist
_____Radiation Oncology nurse
_____Physicist/dosimetrist
_____Other: Please specify: _____

What, if any, patient training is provided before the assessment?

_____

Who provides the training?

_____Radiation Therapist (or simulator technologist)
_____Radiation Oncologist
_____Radiation Oncology nurse
_____Physicist/dosimetrist
_____Other: Please specify: _____

IV. Specifics of the Management of Motion due to Respiratory Motion

Please answer the section(s) below that are applicable to your institution

A. If after measuring the motion you do nothing other than increase margins for PTV definition

Who determines the margin to be added to account for the motion? _____

Are these margins assessed in 3 dimensions?

_____Yes _____Usually _____No

Are the margins the same in all directions?

_____Yes _____Usually _____No

B. If you use <u>forced shallow breathing using abdominal compression</u>

Describe the system you use for abdominal compression:

_____

What pressure do you usually apply? _____ lbs/sq inch

What is the sensor used to monitor the pressure? _____

C. If you use active breathing control (ABC):

Do you use a commercially available system? ☐ Yes ☐ No

If yes, which one? _____

For your device, how is a breathing trace acquired?

☐ Mechanical spirometer

☐ Temperature sensor

☐ Other. Please specify: _____

How frequently is the calibration of airflow performed?

_____

How frequently is the calibration of volume performed?

_____

How frequently are emergency procedures reviewed?

_____

D. If you use self-held breath-hold with respiratory monitoring:
(e.g., Varian RPM system)

Prior to simulation, how are patients evaluated for their ability to comply?

_____

What aids do you use to help compliance?
(e.g. audio commands (from tapes), visual guides)

_____

Are the thresholds used for beam off the same for all patients?

☐ Yes ☐ No

E. If you use <u>gating during free breathing with external monitors or implanted fiducials</u>

If you use a commercial system, which one is it?

_____

Do you use

☐ External monitors (eg, Varian RPM system)?

☐ Implanted fiducials?

How is the planning CT acquired?

☐ Gated CT scan

☐ 4D CT scan

Is the gating

☐ Amplitude based?

☐ Phase based?

F. If you <u>track the motion of the target during treatment</u>

What commercial system do you use?

_____

What do you track?

☐ Fiducial markers

☐ Anatomic correlates (e.g. diaphragm, chest wall)

☐ Other. Please describe: _____

Please save and submit to IROC RI QA Center via sFTP.

Or

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