**ANSWER KEY**

**PRESENTATION 1: Cervical Cancer**

**QUESTION 1**

What is the maximum recommended duration of time required to finish all radiation treatment based on retrospective studies showing a decrease in survival with prolongation of treatment?

<table>
<thead>
<tr>
<th>Option</th>
<th>Discussion RE: Answer Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 5 weeks</td>
<td>Answer D. The recommended maximum duration of treatment is 56 days, beyond which survival decreases approximately 0.1%/day on average. Slide 36</td>
</tr>
<tr>
<td>b. 6 weeks</td>
<td></td>
</tr>
<tr>
<td>c. 7 weeks</td>
<td></td>
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<tr>
<td>d. 8 weeks</td>
<td></td>
</tr>
<tr>
<td>e. 9 weeks</td>
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</tr>
</tbody>
</table>

**REFERENCE FOR QUESTION 1**


**QUESTION 2**

When reviewing a plain radiograph of your tandem and ovoid implant, which of the following factors does NOT impact either disease-free survival or local recurrence?

<table>
<thead>
<tr>
<th>Factor</th>
<th>Discussion RE: Answer Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Appropriateness of packing</td>
<td>Answer: D Slides 37-40</td>
</tr>
<tr>
<td>b. Symmetry of ovoids to tandem</td>
<td></td>
</tr>
<tr>
<td>c. Displacement of ovoids in relation to cervical os</td>
<td></td>
</tr>
<tr>
<td>d. Position of Tandem in Mid- Pelvis on Lateral Film</td>
<td></td>
</tr>
<tr>
<td>e. Placement of a tandem with ovoids</td>
<td></td>
</tr>
</tbody>
</table>

**REFERENCES FOR QUESTION 2**


**QUESTION 3**

A prospective trial from France (STIC trial) has shown that CT-based contouring and treatment planning, when compared to plain radiographic film imaging for cervical cancer, has:

<table>
<thead>
<tr>
<th>Effect</th>
<th>Discussion RE: Answer Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Worse survival rates</td>
<td>Answer: E Slides 51, 53-54</td>
</tr>
<tr>
<td>b. Increased the normal tissue doses surrounding the applicator</td>
<td></td>
</tr>
<tr>
<td>c. Shorter time requirements for contouring and planning</td>
<td></td>
</tr>
<tr>
<td>d. Broader lateral width dimensions of the cervix on MR compared to CT cervical contours</td>
<td></td>
</tr>
<tr>
<td>e. Reduced normal tissue toxicity</td>
<td></td>
</tr>
</tbody>
</table>

T2 weighted MR provides good visualization of the gross tumor, whereas CT dose not. CT contours are wider than MR contours. The STIC trial, in patients that received chemoradiation, showed a reduction in normal tissue toxicity from 22% to 2.7%.
ANSWER KEY

REFERENCES FOR QUESTION 3


PRESENTATION 2: Endometrial Cancer

QUESTION 4
The PORTEC-2 trial demonstrated:

a. Pelvic RT reduced the rate of vaginal recurrence when compared with pelvic radiation therapy.

b. The survival rate of women with deeply invasive grade three endometrial cancer was the same for women treated with pelvic radiation therapy or vaginal brachytherapy.

c. Pelvic RT reduced the rate of pelvic recurrence when compared with pelvic radiation therapy.

d. Vaginal brachytherapy increased the risk of bowel toxicity

Discussion re: Answer Options

Answer C

The PORTEC-2 trial was a randomized trial comparing postoperative pelvic radiation therapy versus vaginal cuff brachytherapy in 427 women who had “high intermediate-risk” endometrial cancer found at hysterectomy. The authors reported a decreased rate of pelvic recurrence but no differences in the rates of vaginal recurrence or survival. Patients who had deeply invasive grade 3 disease were not eligible for the trial.

Slides 13-18

REFERENCE FOR QUESTION 4

QUESTION 5
The MRC ASTEC trial demonstrated that a routine lymphadenectomy

a. Did not improve survival

b. Improved distant control

c. Did not add morbidity

d. Shortened the operating time

e. Did improve relapse free survival

Discussion re: Answer Options

Answer A

Slide numbers 24-25

The MRC ASTEC trial was a randomized trial of 1408 patients with intermediate to high risk Stage I endometrial carcinoma with the primary objective to see if lymphadenectomy improved survival. There was no benefit found in overall or relapse free survival although morbidity was increased.

REFERENCE FOR QUESTION 5

QUESTION 6
GOG 122, which randomized Stage III and IV patients between whole abdominal radiation therapy and chemotherapy, demonstrated that

a. There is role for chemotherapy in advanced uterine carcinoma

b. That whole abdominal radiation is more toxic

Discussion re: Answer Options

Answer A

Slide 47

GOG 122 was a study that randomized Stage II and IV endometrial carcinoma patients to whole abdominal radiotherapy or adriamycin/cisplatin chemotherapy. Survival
DISCUSSION

**ANSWER KEY**

c. That survival was improved in the radiation arm than chemotherapy

d. That radiation had a lower pelvic control rate than chemotherapy

e. That taxol, adriamycin and platinum were more efficacious than carboplatin and taxol

and progress free survival was improved with chemotherapy but pelvic control was better in the radiotherapy arm (21% vs 26% any pelvic failure). Gastrointestinal toxicity was worse in the chemotherapy arm (20% chemotherapy vs 13% RT).

**REFERENCE FOR QUESTION 6**


**PRESENTATION 3: Techniques: IMRT / Brachytherapy**

**QUESTION 7**

Brachytherapy is significantly better than IMRT or SBRT for a boost for cervical cancer for the following reasons except:

- IMRT increases the integral dose given to the surrounding normal tissues
- IMRT requires continual replanning
- SBRT provides as much desired inhomogeneity, with the highest regions of dose in the center of the tumor, as brachytherapy
- Brachytherapy moves with the patient
- Brachytherapy provides high regions of dose in the center of the tumor

**DISCUSSION RE: ANSWER OPTIONS**

Answer C. SBRT does not provide the high regions of dose (up to 500% of prescription) as brachytherapy does in the center of the tumor.

Slide 36-39

**REFERENCE FOR QUESTION 7**


**QUESTION 8**

Which of the following applicators is not routinely used for locally advanced cervical cancer brachytherapy:

- Tandem and ovoid
- Tandem and ring
- Tandem and cylinder
- Tandem and interstitial
- Vaginal cylinder

**DISCUSSION RE: ANSWER OPTIONS**

Answer: E

Slides 44-47

**REFERENCE FOR QUESTION 8**


**QUESTION 9**

What are some of the standard indications for interstitial brachytherapy?

- Vaginal extension of cervical cancer

**DISCUSSION RE: ANSWER OPTIONS**

Answer D

Slide 48
| ANSWER KEY |
|-----------------|--------------------------------------------------|
| b. Large cervical mass with no evident cervical os |
| c. Fistulization into bladder or bowel due to stage IVA cervical cancer |
| d. Post-operative vaginal cuff treatment for stage IA disease |
| e. Recurrent vaginal disease after a hysterectomy |
| Post-operative vaginal cylinder brachytherapy may be indicated for early stage disease, but interstitial brachytherapy is not. |

**REFERENCE FOR QUESTION 9**

**QUESTION 10**
The difference between CT and MR-based contouring of the cervix in 3D planned image-guided tandem/ring brachytherapy is most pronounced when contouring the:

<table>
<thead>
<tr>
<th>a. cervix</th>
<th>b. bladder</th>
<th>c. rectum</th>
<th>d. sigmoid</th>
<th>e. femoral heads</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Answer:</strong> A Slide 64-67</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**REFERENCE FOR QUESTION 10**

**QUESTION 11**
When utilizing 3D imaging to optimize treatment planning to the cervix, one will notice the following about reporting point A:

| a. point A lies outside of the contoured cervix when the cervix is greater than 5 cm |
| b. point A lies outside of the contoured cervix when the cervix is less than 3 cm |
| c. point A lies inside the contoured cervix when the cervix is less than 3 cm wide |
| d. the dose to point A remains a constant regardless of where the prescription line surrounding the cervix lies |
| e. the dose to point A will vary based on the number of days between fractions |
| **Answer:** B Slide 70 |

When contouring, the physician will delineate the cervix based on its visualized dimensions. If the cervix is greater than 4 cm, point A will lie inside the contours. If the cervix is less than 4 cm, point A will lie outside of the contours. If one utilizes the D90, the prescription line will cover the cervical contour, and the dose to point A will vary. The dose to point A will not vary based on the number of days between fractions.

**REFERENCE FOR QUESTION 11**