Guidelines of Management of Patient with Radioactive Implant at HKSH

1 Objective
To provide a guideline for safe management of patient with radioactive implant who is admitted to the Hospital under the HKSH Medical Group.

2 Scope and Definition
2.1 Introduction:
Intraoperative radioactive implant is common for cancer treatment in Mainland China and other countries like USA. When complete surgical excision is not achievable, clinician may consider radioactive implant by insertion of radioactive seeds or suture with a mesh of seeds. They are most likely a permanent implant of radiation emitter (e.g. beta or gamma emitters etc.) of medium half-life from a few days to months. So the period of treatment takes a few weeks to years. The implant may contain 125I, 103Pd, 90Y, 198Au, 131Cs, etc. At the beginning, the radiation level may be high and may need to be hospitalized according to local regulatory requirement. When the radiation level decays to a certain low level, the patient could be discharged. Normally, the patient will be provided with instruction sheet of what implant is done, what restriction should be applied including the restriction in contact with the family member or public for the purpose of radiation protection.

2.2 Problems arise:
2.2.1 If patient with radioactive implants is admitted to HKSH without adequate assessment and safety precaution, the front-lined staff and nearby patients and their visitors may be at radiation risk.

2.2.2 The local regulation in Hong Kong is strict and the required radiation safety measures may be very different than the country where the implantation was performed. It is essential to ensure our clinical services provided to patients are in full compliance with the Hong Kong Radiation Ordinance CAP 303. One of the requirements of cremation of radioactive deceased body is less than 1 MBq for I-125 seed implant. For worst scenario, the deceased body may take 1.5 years for physical decay to this level. It causes difficulty in the mortuary of HKSH.
3 Responsibility
Doctor and front-line staff coordinate and implement the procedure in accordance with the provision in this guideline to comply with the local regulation.

4 Training and Qualification
Doctor signs the Undertaking in respect of Patient Management in Department of Radiotherapy (Attachment 7.1) when applying the Practising Privilege for Radiotherapy in HKSH Medical Group and follows the provision in the Undertaking.

5 Guideline Details
5.1 3 scenarios are encountered with guidelines as below:

5.1.1 HKSH is informed of the radioactive implant with full details before patient admission:

5.1.1.1 The referring doctor should provide full details of radioactive implant including type of radioisotope, total activity, site of implant, date of implant etc., at least 1 day before patient admission.

5.1.1.2 Medical Physics & Research Department (MPR) should be informed and provide radiation risk assessment on patient, staff and public. Compliance with our hospital license and radiation protection advice should be ensured/given before patient admission. In case it violates our license condition, HKSH will reject the request of admission at HKSH.

5.1.1.3 Patient can only be admitted to radiation isolation ward, under special arrangement is granted by HMC.

5.1.1.4 The referring doctor is responsible for taking out the radioactive implant from the deceased body in case the patient dies at HKSH.

5.1.1.5 The patient and the patient relatives should understand there may be additional charges in removing and storing the radioactive implant and agree with the arrangement.

5.1.1.6 The “Consent for Admission of Patient with Radioactive Implant” form (Attachment 7.2) must be signed by the referring doctor the patient and the patient relative before admission.

5.1.2 If HKSH does not receive the prior notice of the radioactive implant before patient admission; the patient is suspected to have radioactive implant by front-line staff upon admission:
5.1.2.1 In case of doubt, call MPR for advice (ext. 7000/7001/7002/7006/8970 or 63301808) and radiation safety assessment should be done.

5.1.2.2 MPR should provide recommendation and check for any violation of local licensing requirement. HKSH may reject the patient’s admission for any violation of licensing condition.

5.1.2.3 The referring doctor should be informed.

5.1.2.4 MPR should report to Radiation Safety Committee and HMC as soon as practicable.

5.1.2.5 The referring doctor is responsible for providing more relevant information and removing the radioactive implant if the patient dies at HKSH.

5.1.2.6 The patient and the patient relatives should understand there may be additional charges in removing and storing the radioactive implant and agree with the arrangement.

5.1.2.7 The “Consent for Admission of Patient with Radioactive Implant” form must be signed by the referring doctor the patient and the patient relative.

5.1.3 The patient has been admitted but later confirmed to have radioactive implant without prior notification:

5.1.3.1 Call MPR for advice (ext. 7000/7001/7002/7006/8970 or 63301808) and radiation safety assessment should be done. Dose estimation to staff, nearby patients and public should be assessed.

5.1.3.2 MPR should provide recommendation and check for any violation of local licensing requirement. HKSH may recommend discharging the patient for violation of licensing condition.

5.1.3.3 The referring doctor should be informed.

5.1.3.4 MPR should report to Radiation Safety Committee and HMC as soon as practicable.

5.1.3.5 The referring doctor is responsible of providing more relevant information and removing the radioactive implant if the patient dies at HKSH.

5.1.3.6 The patient and the patient relatives should understand there may be additional charges in removing and storing the radioactive implant and agree with the arrangement.

5.1.3.7 The “Consent for Admission of Patient with Radioactive Implant” form must be signed by the referring doctor the patient and the patient relative.
5.2 Procedure of removing the radioactive seeds from the deceased body:
5.2.1 To facilitate the removal of deceased body in compliance with the local regulation, the radioactive seeds must be removed before hospital discharge.
5.2.2 Prior information should be collected including the type of radioisotope, total activity, number of seeds, date of implant etc. The referring doctor shall provide all necessary assistance to obtain such information. The information could be verified by imaging if available.
5.2.3 The venue of the procedure takes place in the Mortuary at B2/HKSH or at the ward where the patient stayed.
5.2.4 The referring doctor is responsible for the whole procedure of taking out the radioactive implant with seeds.
5.2.5 The volume of removing tissue should be minimized to fit the specimen bottle with formalin for long term storage. Each specimen bottle can only accommodate about 60 cc of specimen.
5.2.6 HKSH staff including medical physicist and radiographer will assist the referring doctor if required.
5.2.7 The medical physicist is responsible for the radiation protection advice, radiation survey, and management of the radioactive waste and subsequent licensing issues in compliance with the local regulation.
5.2.8 The radiographer is responsible for the x-ray imaging verification of the number of seeds before and after removing the radioactive seeds.
5.2.9 After removing the implanted seeds, they should be stored in a specimen bottle with formalin prepared for long term storage (e.g. for 125I, the storage needs 1.5 years).
5.2.10 Suitable lead container will be recommended by medical physicist according to the radioactivity, emitted energy and available space in HKSH.
5.2.11 When the deceased body is confirmed to be radiation-free or below local regulatory control, the procedure will be stopped.
5.2.12 The medical physicist will monitor all involved staff to assess and confirm them to be radiation free. He/she will also monitor the mortuary to be radiation-free after relocation of all lead containers with radioactive implants.
5.2.13 Medical physicist will record the number of seeds, estimated total activity on the date of removal. He/she will recommend the date of disposal of the radioactive waste.
6 Record

<table>
<thead>
<tr>
<th>No.</th>
<th>Record</th>
<th>Retention Period</th>
<th>Retained by</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Undertaking in respect of Patient Management in Department of Radiotherapy</td>
<td>Indefinite</td>
<td>Designated staff of Hospital Administration</td>
</tr>
<tr>
<td>2</td>
<td>Consent for Admission of Patient with Radioactive Implant</td>
<td>As per medical record retention</td>
<td>In Medical Record</td>
</tr>
</tbody>
</table>

7 Attachment

7.1 Undertaking in respect of Patient Management in Department of Radiotherapy
7.2 Consent for Admission of Patient with Radioactive Implant

8 Reference Documents

8.1 Hong Kong Radiation Ordinance CAP 303
## Attachment 7.1

### Undertaking in respect of Patient Management in Department of Radiotherapy

<table>
<thead>
<tr>
<th>Name</th>
<th>(Block Letters)</th>
<th>(In Chinese)</th>
<th>(HKID No.)</th>
</tr>
</thead>
</table>

1. I have read the Protocol for Patient Management in Department of Radiotherapy ("Protocol") and Guidelines of management of patient with radioactive implant at HKSH ("Guidelines").

2. I agree to abide by the Protocol as stipulated in particular to the following:
   i. All consent forms shall be explained and signed by the clinical oncologist together with the patient.
   ii. All treatment plans must be approved, signed and dated by the clinical oncologist with the dose prescription clearly written on the treatment record. If the approval or prescription is sent to the Department of Radiotherapy by fax or email, the original must be received by the Department of Radiotherapy within 24 hours.
   iii. All radiation doses from previous radiotherapy treatment (if any) shall be documented and reviewed before treatment.
   iv. All planning simulator films/images must be signed and dated by the clinical oncologist before treatment.
   v. All treatment verification films/images of first treatment shall be signed and dated by the clinical oncologist within the first week of treatment.

3. I agree, as the referring doctor, to abide by the Guidelines as stipulated in particular to the following:
   i. The referring doctor should provide full details of radioactive implant.
   ii. Patient can only be admitted to radiation isolation ward.
   iii. The referring doctor is responsible for taking out the radioactive Implant from the deceased body in case the patient dies at HKSH.
   iv. The “Consent for Admission of Patient with Radioactive Implant” form must be signed by the referring doctor, the patient and the patient relative before admission.

Signature: ___________________________ Date: ___________________________
Attachment 7.2
Consent for Admission of Patient with Radioactive Implant

Guidelines of Management of Patient with Radioactive Implant at HKSH
HKSHV01 / 5 September 2018