

Template for reporting of Multiple Myeloma.

## **WHOLE BODY MRI EXAMINATION.**

Indication: for primary diagnosis of myeloma / response assessment

Technique: Myeloma protocol, additional sequences

Date of previous examination:

Findings:

Evaluation of bones: Spine and then head to thigh in descending order.

Measurement of up to 5 focal lesions and pattern of marrow infiltration: Normal / focal/ focal on diffuse/ diffuse/ micronodular

Paramedullary or extramedullary sites: Site with measurement

Vertebral fractures: Document presence and benign / malignant

Response assessment Categories (RAC) for each anatomic region: Cervical / thoracic / lumbar spine, pelvis, long bones, skull, ribs.

Posterior iliac crest: Is trephine likely to be representative?

Incidental findings:

### **Conclusion:**

Summary statement, RAC score according to anatomical regions, heterogeneity, recommendations including for investigation of equivocal findings.

State level of concern regarding incidental findings.

## **MY-RADS response assessment categories**

Response assessment category (RAC) description:

### 1: Highly likely to be responding

Return of normal fat containing marrow in areas previously infiltrated by focal or diffuse myelomatous infiltration

Unequivocal decrease in number or size of focal lesions

Conversion of a packed bone marrow infiltrate into discrete nodules, with unequivocal decrease in tumour load in the respective bone marrow space

Decreasing soft tissue associated with bone disease

Emergence of intra-or peritumoral fat within/ around focal lesions ( fat.dot or halo signs)

Previously evident lesion shows increase ADC in from  $\leq 1400$  microm square /sec to  $>1400$  microm square /sec

$\geq 40\%$  increase in ADC from baseline with corresponding decrease in normalized high b value signal intensity; morphologic findings consistent with stable or corresponding disease

For soft tissue disease, RECIST version 1.1 criteria for PR/CORONA RADIATA

### 2: Likely to be responding

Evidence of improvement but not enough to fulfil criteria for RAC 1. For example:

Slight decrease in number / size of focal lesions

Previously evident lesions showing increase in ADC from  $\leq 1000$  microm square /sec to  $<1400$  microm square /sec

$>25\%$  but  $<40\%$  increase in ADC from baseline with corresponding decrease in high b value signal intensity:

Morphologic findings consistent with stable or responding disease

For soft tissue disease, RECIST version 1.1 not meeting requirement for PR

### 3: Stable

No observable change

### 4: Likely to be progressing

Evidence of worsening disease, but not enough to fulfil criteria for RAC 5

Equivocal appearance of new lesion (s)

No change in size but increasing signal intensity on high b value ( with ADC values <1400 microm square /sec ) consistent with possible disease progression

Relapsed disease : reemergence of lesion (s) that previously disappeared or enlargement of lesion (s) that had partially regressed / stabilized with prior treatments.

Soft tissue in the spinal canal causing narrowing noted associated with neurological findings and not requiring radiation therapy

For soft tissue disease, RECIST version 1.1 not meeting requirement for PD

#### 5: Highly likely to be progressing

New critical fracture(s) / cord compression requiring radiation / surgical intervention ; only if confirmed as malignant with MRI signal characteristics

Unequivocal new focal (> 5 to 10mm ) / diffuse area (s) of infiltration to regions of previously normal marrow

Unequivocal increase in number/ size of focal lesions

Evaluation of focal lesion to diffuse neoplastic pattern

Appearance / increasing soft tissue associated with bone disease

New lesions / region of high signal intensity on high b-value images with ADC value between 600-1000 microm square /sec

#### **Reference:**

Christina Messiou, Jens Hillengass, Stefan Delorme, et al. Guidelines for acquisition, interpretation, and reporting of whole-body MRI in myeloma: Myeloma response assessment and diagnosis system (MY-RADS) Radiology 2019;291(1):5-13.