Multiple Myeloma Guideline Knowledge Assessment - Program

- Read the guideline and answer the multiple choice questions below which are based on two hypothetical cases using evidence based approaches outlined in the guideline.
- Please review the learning objectives prior to completing the program.
- Once complete, email answers to the Guideline Resource Unit (Cancer Control, Alberta Health Services) general email (guru@albertahealthservices.ca).
- Your answers will be graded and you will receive a follow-up email identifying any incorrect answers with an explanation of what evidence supports the correct answer.


This program should be completed in a MAXIMUM of 5 hours. Documenting your learning outcomes/proposed actions within the self-assessment templates on MAINPORT is required to submit a self-assessment learning activity for credit.

Please follow the link below to document your learning in MAINPORT: http://www.royalcollege.ca/portal/page/portal/rc/members/moc/about_mainport

Disclosure

Participation in the development of this guideline knowledge assessment tool has been voluntary and the authors have not been remunerated for their contributions. There was no direct industry involvement in the development or dissemination of this tool. CancerControl Alberta recognizes that although industry support of research, education and other areas is necessary in order to advance patient care, such support may lead to potential conflicts of interest. The developers of this program are acting members of the Celgene advisory board, however the developers of this tool are satisfied it was developed in an unbiased manner and the authors have full control over the topics, content and ensured the scientific validity and objectivity of the program content.
CASE 1: You are seeing a 54 year old male in your Hematology Clinic. The past medical history is significant for a right Medial Collateral Ligament repair with arthroscopic surgery at age 35 with no adverse sequelae. He is on no medication, has no significant chronic disease, and has no allergies to medication. He is a life-long non-smoker, who drinks 1-2 beer on the weekend occasionally. He is a carpenter with an older brother who has been treated for non-Hodgkin’s lymphoma 7 years prior. At his new worksite, he has been screened for life insurance as per his new benefit plan. A serum protein electrophoresis was ordered and noted to be abnormal with a IgA kappa 6 g/L peak.

Question 1: Which investigation is considered inappropriate at diagnosis of the monoclonal protein?
- Free light chain studies
- Quantitative immunoglobulin levels
- bone scan
- skeletal survey
- 24 hour urine protein electrophoresis

Question 2: With the IgA Kappa 6 g/L paraprotein being present, the rest of the workup was completed. No end organ damage was found. With the free light chain studies revealing kappa 80, lambda 5, ratio 16, what is the rate of progression expected over 20 years?
- 1%
- 3%
- 20%
- 21%
- 37%

Return to Case: For the workup of this patient’s monoclonal gammopathy, a bone marrow biopsy and aspirate is performed. In the aspirate and trephine, approximately 20% of cells are determined to be plasma cells, staining positively for CD138 and demonstrating kappa restriction.

Question 3: What added investigation is considered inappropriate with the above information?
- MRI total spine
- FDG PET-CT
- low dose, whole body CT scan
- SNP analysis for rs4553808 in the gene CTLA4

Back to case: The MRI (spine) and FDG-PET/CT was not indicative of myeloma and did not reveal any high risk features. This patient is followed every 3 months clinically and with laboratory investigations. Everything remains stable until 1 year after the diagnosis when the patient complains of sternal pain after lifting his tool box at work. Imaging reveals a sternal fracture with numerous lytic lesions on repeat skeletal survey. The serum protein electrophoresis reveals a IgA kappa 8 g/L peak, with normal hemoglobin, calcium, and urine protein electrophoresis. The albumen is 38g/L and beta-2-microglobulin is 3.2 mg/L. A repeat bone marrow biopsy is performed revealing 30% plasma cells with kappa restriction.
**Question 4**: Which cytogenetic lab investigation is not required?
- Conventional karyotyping of all chromosomes
- FISH for t(4;14)
- FISH for del 17/17p-
- Del 13q status

**Question 5**: Which upfront therapy should be avoided this patient?
- Vincristine, Adriamycin, dexamethasone
- Cyclophosphamide, bortezomib, dexamethasone
- Lenalidomide, dexamethasone, bortezomib
- Bortezomib, dexamethasone, thalidomide

**Question 6**: Which bisphosphonate is the least beneficial for skeletal related events in the therapy for this patient?
- Zolendronic acid 4mg IV q3-4 weeks.
- Pamidronate 90mg IV q 4 weeks
- Pamidronate 30 mg IV q4 weeks
- Clodronate 1600mg orally daily.

**Question 7**: What bone marrow transplant strategy should be utilized in this patient?
- Sibling typing with allogeneic stem cell transplant referral
- Tandem Autologous transplant
- Single autologous transplant with post-transplant assessment of response
- Avoidance of autologous stem cell transplant without achieving a CR prior to transplant
- Avoidance of autologous stem cell transplant upfront and its use in relapse given upfront availability of novel agents

**Return to case**: This patient had no FISH abnormality with no evidence of hyperdiploidy and no chromosomal 13 aberrancy. He underwent 4 cycles of induction chemotherapy with CyBorD to achieve a reduction in the M protein to 1 g/l. Zolendronic acid 4 mg IV q 4 weeks was provided to assist with bone pain. He underwent autologous stem cell transplant. 90 days post-transplant, the M protein disappeared with a negative Immunofixation in serum and urine. The FLC study was normal.

**Question 8**: Which post-transplant therapy strategy may have a beneficial effect on overall survival but a negative impact on quality of life?
- Lenalidomide
- Bortezomib
- Thalidomide
- Interferon
- Prednisone.

**CASE 2**: A 77 year old woman with a hemoglobin of 120, MCV 100, and normal calcium, presents to clinic with a creatinine of 200, CrCl 25 ml/min, with a biopsy proven kappa restricted Plasmacytoma arising from her left scapula. The skeletal survey reveal no major lytic areas, including at the left scapula. Her background past medical history is significant for hypertension, dyslipidemia, and type 2 diabetes, which has been better controlled in the last 5 years since her myocardial infarction requiring coronary artery bypass grafting with 2 vessels than the 10 years prior. The urine protein electrophoresis reveals a moderate kappa light chain peak with a significant albumen peak.
**Question 9:** What alternate disease that must be considered in this case, given the renal issue?
- [ ] Amyloidosis
- [ ] Light chain deposition disease
- [ ] Glomerulonephritis
- [ ] Cryoglobulinemia
- [ ] Acute interstitial nephritis

**Question 10:** For the workup solitary plasmacytomas, which investigations are not useful or indicated for the staging and diagnosis of this condition?
- [ ] Peripheral blood flow cytometry
- [ ] Bone marrow biopsy and aspirate
- [ ] MRI spine/pelvis
- [ ] CT of the area involving the Plasmacytoma
- [ ] FDG-PET

**Return to Case:** the bone marrow biopsy and aspirate reveal a 40% kappa restricted plasma cell population with a negative amyloid stain. Discussion with her nephrologist reveals that the albumen band has been present since the time of the bypass surgery, with an etiology of the diabetes but that the renal function has deteriorated over the last 6 months a significant reduction in renal function that would attributable to cast nephropathy. The beta2-microglobulin is 6.

**Question 11:** What is the prognosis of this patient as per the ISS?
- [ ] 62 months
- [ ] 29 months
- [ ] 41 months
- [ ] 8 months.

**Question 12:** For the initial therapy of this patient, what dose of weekly dexamethasone should be initially prescribed given the age?
- [ ] 0mg ie no dexamethasone
- [ ] 8 mg
- [ ] 12 mg
- [ ] 20mg
- [ ] 40mg

**Question 13** When considering maintenance therapy for this patient, you are considering the VMP versus VMP-VT trial as the basis of your maintenance therapy. What parameters were not statistically significantly higher in that trial in the maintenance arm?
- [ ] Overall Survival
- [ ] Progression free survival
- [ ] Complete response rate
- [ ] Grade 3 or 4 neutropenia
- [ ] Cardiologic events
**Return to case:** this patient achieves a very good partial response based on the serum and urine protein electrophoresis results with a reduction in size in the Plasmacytoma over 6 months of bortezomib based therapy, which reduces the creatinine to the baseline of 120. However, the serum parameter begins to grow with a new Plasmacytoma growing on her iliac crest with a second one along her skull at the top of the left frontal bone.

**Question 14:** with no alteration to her renal function and a Creatinine clearance now of 45 mL/min, you decide on Lenalidomide based therapy. With the MM009 and MM010 trials for the basis of your therapy, what is the median time to progression that you can provide to this patient in your discussion?

- □ 3 months
- □ 7 months
- □ 11 months
- □ 19 months
- □ 29 months

**Question 15:** This patient enjoys 2 years of response with the Lenalidomide and dexamethasone combination with reduction in the size of her plasmacytomas. Her diabetes has led to a development of neuropathy since her first visit at diagnosis. However, her urine protein electrophoresis shows growth of the kappa light chain to over 1 gr over a 2 month period after her 24th cycle. What drug options would be most beneficial to her at this point?

- □ Lenalidomide higher dose
- □ Dexamethasone high dose
- □ Thalidomide
- □ Bortezomib
- □ Pomalidomide