**Haematology audit template**

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| **Date of completion**  | (To be inserted when completed) |
| **Name of lead author/participants** | (To be inserted) |
| **Specialty** | Haematology |
| **Title** | **An audit of compliance with the British Society for Haematology guideline on the** **diagnosis, investigation and initial treatment of myeloma** |
| **Background** | The British Society for Haematology (BSH) has published guidance on the diagnosis, investigation and initial treatment of myeloma. This audit will review compliance with some of the level 1 recommendations made. |
| **Aim & objectives** | To review whether patients with newly diagnosed myeloma are: 1. undergoing correct diagnostic and staging investigations
2. receiving appropriate treatments, including where applicable haemopoietic stem cell transplantation.
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| **Standards & criteria** | 100% or, if not achieved, there is documentation in the case notes that explains the variance (standards 5–13 relate to subgroups of patients only).1. Monoclonal light chains should be investigated with serum free light chains rather than urinary Bence Jones protein.
2. Bone disease should be assessed by cross-sectional imaging, ideally functional (i.e. PET-CT or diffusion-weighted whole-body MRI), not skeletal survey.
3. All patients should undergo cytogenetic analysis on CD138-selected cells at diagnosis using interphase fluorescent in situhybridisation (FISH) to probe for t(4;14), t(14;16), t(11;14), 17p−, 1q+, 1p−, with testing considered for t(14;20) and hyperdiploidy.
4. The revised International Staging System (ISS) should be calculated on all newly diagnosed patients.
5. Transplant-eligible patients should receive a proteasome inhibitor (PI; bortezomib or carfilzomib) and steroid-based induction regimen, with the addition of an immunomodulatory drug (IMiD; e.g. VRD, VTD, KRD) preferred to cyclophosphamide (e.g. VCD, KCD) if a triplet regimen is used as recommended to deepen response.
6. Autologous stem cell transplantation (ASCT) should be carried out at first remission after novel agent induction in those considered fit enough after work up.
7. Mobilisation with Cyclo-G or GCSF alone +/− plerixafor is recommended, aiming for enough stem cells for two procedures where possible in those considered of an age to undergo a second procedure.
8. Conditioning with high-dose melphalan (HDM) at 200 mg/m2 is recommended, with consideration given to dose reduction to 140 mg/m2 in those with a glomerular filtration rate (GFR) <30 ml/min or aged over 65.
9. Maintenance therapy with lenalidomide, rather than thalidomide, is recommended post-ASCT.
10. Non-transplant eligible patients with high-risk cytogenetics should receive a bortezomib/steroid-based regimen if possible; a lenalidomide-based, non-PI containing regimen is acceptable and may be preferable for those without high-risk cytogenetics.
11. Frailty assessment including the use of objective scoring systems should be carried out for older and less fit patients.
12. Dose modifications should be considered for all frailer, less fit patients.
13. Bortezomib should normally be given subcutaneously on a weekly regimen.
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| **Method** | **Sample selection:** All patients who presented with myeloma in the preceding 1–2 years, aiming for a minimum sample of 20 and maximum 50 consecutive patients**Data to be collected on proforma (see below).** |
| **Results** | (To be completed by the author)The results of this audit show the following compliance with the standards.

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| **Investigation** | **% compliance** |
| Monoclonal light chains were investigated with serum free light chains rather than urinary Bence Jones protein |  |
| Bone disease was assessed by functional cross-sectional imaging (i.e. PET-CT or diffusion-weighted whole-body MRI), not skeletal survey |  |
| All patients underwent cytogenetic analysis on CD138-selected cells at diagnosis using interphase FISH to probe for t(4;14), t(14;16), t(11;14), 17p−, 1q+, 1p−, with testing considered for t(14;20) and hyperdiploidy |  |
| The revised ISS was calculated  |  |
| Transplant-eligible patients received a PI (bortezomib or carfilzomib) and steroid-based induction regimen, with the addition of an IMiD (e.g. VRD, VTD, KRD) preferred to cyclophosphamide (e.g. VCD, KCD) if a triplet regimen was used  |  |
| ASCT was carried out at first remission after novel agent induction in those considered fit enough after work up |  |
| Mobilisation was performed with Cyclo-G or GCSF alone +/− plerixafor, aiming for enough stem cells for two procedures where possible in those considered of an age to undergo a second procedure |  |
| Conditioning with HDM was given at 200 mg/m2, or a dose reduction to 140 mg/m2 for those with GFR <30 ml/min or aged over 65  |  |
| Maintenance therapy with lenalidomide, rather than thalidomide, was given post-ASCT |  |
| Non-transplant eligible patients with high-risk cytogenetics received a bortezomib/steroid-based regimen if possible; and those without high-risk cytogenetics received either a PI-containing or lenalidomide-based regimen  |  |
| Frailty assessment including the use of objective scoring systems was carried out for older and less fit patients |  |
| Dose modifications were considered for all frailer, less fit patients |  |
| Bortezomib was given subcutaneously on a weekly regimen |  |

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| **Conclusion** | (To be completed by the author) |
| **Recommend-ations for improvement** | Present the result with recommendations, actions, and responsibilities for action and a timescale for implementation. Assign a person(s) responsible to do the work within a time frame.**Some suggestions:*** highlight areas of practice that are different
* present findings.
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| **Action plan** | (To be completed by the author – see attached action plan proforma) |
| **Re-audit date** | (To be completed by the author) |
| **Reference** | Sive J, Cuthill K, Hunter H, Kazmi M, Pratt G, Smith D. Guidelines on the diagnosis, investigation and initial treatment of myeloma: a British Society for Haematology Guideline. *Br J Haematol* 2021;193:245–268.<https://onlinelibrary.wiley.com/doi/epdf/10.1111/bjh.17410> |

**Data collection proforma for patients with newly diagnosed myeloma**

**Audit reviewing practice**

Patient name:

Hospital number:

Date of birth:

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| Standard | **1****Yes**  | **2****No** | **3** If **Yes** not ticked, was there documentation to explain the variance?**Yes/No** plus free-text comment | **4** Compliant with guideline if **Yes** ticked or an appropriate explanation from column 3. **Yes/No**(Record if standard not applicable) |
| **For all newly diagnosed patients**  |
| **1**  Underwent serum free light chain analysis, not urinary Bence Jones protein, to investigate monoclonal light chains  |  |  |  |  |
| **2**  Underwent functional cross-sectional imaging (i.e. PET-CT or diffusion-weighted whole-body MRI), not skeletal survey, to assess bone disease |  |  |  |  |
| **3**  Underwent cytogenetic analysis on CD138-selected cells at diagnosis using interphase FISH to probe for t(4;14), t(14;16), t(11;14), 17p−, 1q+, 1p−, with testing considered for t(14;20) and hyperdiploidy |  |  |  |  |
| **4**  The revised ISS was calculated |  |  |  |  |
| **For transplant-eligible patients**  |
| **5**  Received a PI (bortezomib or carfilzomib) and steroid-based induction regimen, with the addition of an IMiD (e.g. VRD, VTD, KRD) preferred to cyclophosphamide (e.g. VCD, KCD) if a triplet regimen was used |  |  |  |  |
| **6**  For those considered fit enough after work up, ASCT was carried out at first remission after novel agent induction  |  |  |  |  |
| **7**  Mobilisation was carried out with Cyclo-G or GCSF alone +/− plerixafor, aiming for enough stem cells for two procedures where possible if considered of an age to undergo a second procedure |  |  |  |  |
| **8**  Received conditioning with HDM at 200 mg/m2, or a dose reduction to 140 mg/m2 if GFR was <30 ml/min or they were older than 65  |  |  |  |  |
| **9**  Received maintenance therapy with lenalidomide, rather than thalidomide, post-ASCT |  |  |  |  |
| **For non-transplant-eligible patients** |
| **10**  Patients with high-risk cytogeneticsreceived a bortezomib/steroid-based regimen if possiblePatients without high-risk cytogenetics received either a PI-containing regimen or lenalidomide-based regimen  |  |  |  |  |
| **11**  Frailty assessment including the use of objective scoring systems was carried out  |  |  |  |  |
| **12**Dose modifications were considered  |  |  |  |  |
| **13**  Patients given bortezomib received bortezomib subcutaneously on a weekly regimen |  |  |  |  |

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| **Audit action plan**An audit of compliance with the British Society for Haematology guideline on the diagnosis, investigation and initial treatment of myeloma |
| **Audit recommendation** | **Objective** | **Action** | **Time scale** | **Barriers and constraints** | **Outcome** | **Monitoring** |
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