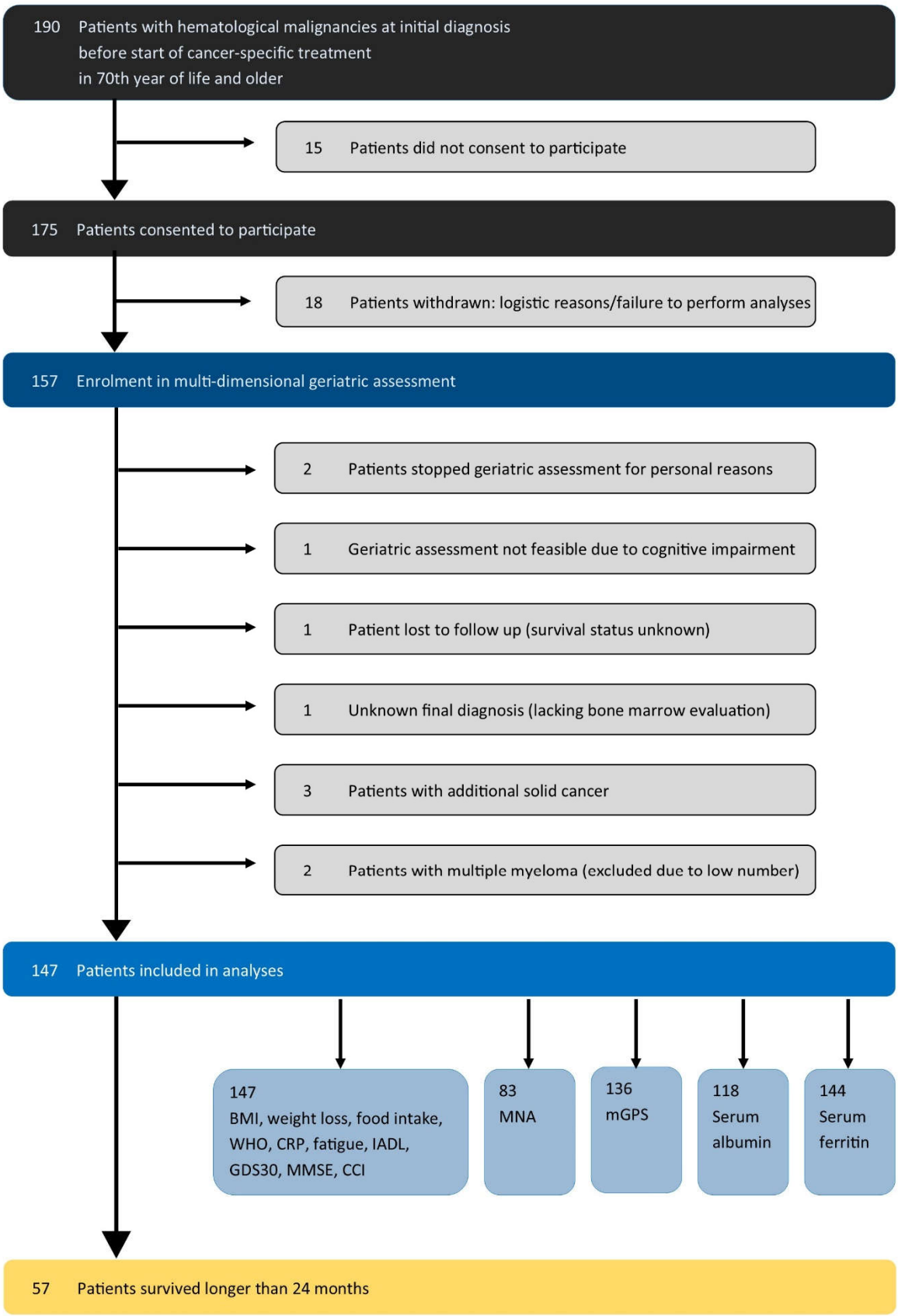
**Supplement 1:**

Diagram to describe enrolment of patients and parameters included in the analyses



**Supplement 2: Classification of tumor entities and disease-specific treatment**

**Therapy decisions – standard therapy versus attenuated therapy**

In the table below, we provide an overview of the classification of haematological malignancies and the different treatment modalities. The classification of treatment into standard vs attenuated was based on the definition by Hamaker et al. 2016. It is important to realise that this classification was performed for each entity and for each therapy separately. If no therapy was required at presentation, this watch-and-wait approach was considered as a standard therapy.

**Decision-making**

A minimum of two board-certified haematologists with over 10 years of clinical experience made the initial treatment decision. Decisions were based on treatment guidelines combined with clinical judgment regarding the patient's ability to tolerate treatment as well as the opinion and wishes of the patient and/or relevant proxies. Complex cases were also discussed within the internal hematological tumor board according to standard procedures of our institution.

**Reference**

Hamaker ME, Augschoell J, Stauder R. Clinical judgement and geriatric assessment for predicting prognosis and chemotherapy completion in older patients with a hematological malignancy. Leuk Lymphoma. 2016;57(11):2560-2567

## Classification of tumor entities and disease-specific treatment

| *Disease* | *Treatment – standard versus attenuated* |
|---|---|
| NHLi: Chronic lymphoid leukaemia | Standard: Rituximab-bendamustin or chlorambucil standard dose<br>Attenuated: Chlorambucil reduced dose or BSC |
| NHLI: Diffuse large B-cell lymphoma | Standard: R-CHOP or R-COMP or rituximab-bendamustin( 90mg/m2 d1,2)<br>Attenuated: Rituximab-bendamustin (≤70mg/m2 d1,2) or R-COMP (≤75% dose) or rituximab monotherapy |
| NHLi: Lymphoplasmacytic NHL (Waldenström macroglobulinemia) | Standard: Rituximab-bendamustin or chlorambucil standard dose<br>Attenuated: Chlorambucil reduced dose or BSC |
| NHLi: Small lymphocytic lymphoma | One patient received an attenuated treatment with Leukeran. |
| NHLi: MALT-Lymphoma | One patient with an extranodal marginal zone lymphoma of mucosa-associated lymphoid tissue (MALT lymphoma), was classified as unfavourable based on an advanced Ann Arbor stage 4 and received a standard therapy including rituximab and cladribine within a clinical study.<br>Another patient had Ann Arbor stage 1 and were classified as favourable. One patient received standard therapy with R-COMP |
| NHLi: Hairy cell leukaemia | One patient with hairy cell leukaemia was classified as favourable and received a standard therapy using cladribine. |
| NHLa: Mantle cell non-Hodgkin lymphoma | Two cases of mantle cell NHL were classified as unfavourable based on an Ann Arbor stage 4.<br>One patient received standard dose rituximab-Bendamustin (90mg/m2, d1,2), One patient was treated by reduced dose (60mg/m2, d1,2). |
| NHLa: B-cell prolymphocytic leukaemia | One patient with B-cell prolymphocytic leukaemia was classified as unfavourable and received an attenuated therapy with rituximab-bendamustin (60mg/m2, d1,2). |
| NHLa: T-cell non-Hodgkin lymphoma | Based on the biology of the disease two cases of T-cell non-Hodgkin lymphoma (anaplastic large cell T-NHL, peripheral T-NHL, not otherwise specified, intestinal T-NHL, secondary T-NHL from Mycosis fungoides) were classified as unfavourable.<br>One patient received a standard therapy with COMP, whereas the other one received an attenuated therapy with alemtuzumab-COMP (75%). |
| MPN: Chronic myelomonocytic leukaemia (myeloproliferative-subtype) | Standard: Hydroxyurea or full-dose azacytidine #<br>Attenuated: BSC only |
| MPN: Chronic myeloid leukaemia | One chronic myeloid leukaemia patient was classified as favourable based on an intermediate Sokal-score; this patient received a standard dose therapy using imatinib 400mg/d. |
| MPN: Myelodysplastic syndrome – myeloproliferative neoplasm | One patient with a myelodysplastic syndrome – myeloproliferative neoplasm unclassifiable was classified as unfavourable based on complex cytogenetic aberrations and received a palliative, attenuated therapy with hydroxyurea. |
| MDS: Myelodysplastic syndromes IPSS low-risk | Standard: ESFs in anemic patients or Lenalidomide in del 5q-<br>Attenuated: BSC only |
| MDS: Myelodysplastic syndromes IPSS high-risk | Standard: Full-dose azacitidine #<br>Attenuated: Azacitidine dose <66% or BSC only |
| AML: Acute myeloid leukaemia | Standard: Standard induction (including anthracycline and cytarabine) or full-dose azacitidine #<br>Attenuated: Low-dose cytarabine or hydroxyurea or BSC only |

Legend: BSC, best supportive care; ESFs, erythropoieseis-stimulating factors; IPSS, international prognostic scoring system; IPI, international prognostic index; AML acute myeloid leukaemia, NHL, Non-Hodgkin lymphoma; R-CHOP rituximab cyclophosphamide, doxorubicine, vincristine, prednisone; R-COMP rituximab cyclophosphamide, liposomal doxorubicine, vincristine, prednisone. # Full-dose azacitidine is defined as 75mg/m2/ d for 7 days (d1-7 or d5-2-2)

**Supplement 3**

**Principal component analyses (PCA, see Figure 1) – association between parameters and PCA axes**

Supplementary Table1 shows which parameters are strongest summarized by the individual principal components. The first two components gain significance in a bootstrapped broken stick test and are depicted as PCA Axes 1 and 2 in Figure 1. The explanatory power of the total variance of patient for the axes is 17% for PCA Axis 1, 10% for Axis 2, 9% for Axis 3, and 7 % for Axis 4. The **higher a parameter scores on an axis, in absolute values, the stronger the parameter is reflected by the axis**, with a potential range of the scores from 1 to -1. Please note that positive versus negative scores along one axis reflect opposing trends (e.g. serum albumin versus WHO score on PCA Axis 1). In the table below, any parameter scoring over 40% (i.e. cut-off >0.4 or <-0.4, respectively) is highlighted. Those parameters scoring over 0.4 (positively loading on axes) are marked in red, and those scoring less than -0.4 (negatively loading on axes) in blue, with the parameters associated with PCA1 additionally marked in bold, and PCA2 additionally marked in bold blue. Parameters not strongly associated with any axes ("undefined") are in grey.

**Supplementary Table S1: Parameters included in the principal component analyses (PCA) and their association with the principal components 1, 2, 3, and 4.**

| Axis | Parameter | PCA 1 | PCA 2 | PCA 3 | PCA 4 |
|---|---|---|---|---|---|
| **Axis 1** | **serum albumin** | **-0.66** | -0.01 | -0.04 | -0.19 |
| **Axes 1 & 2** | **IADL** | **-0.63** | **0.40** | -0.16 | 0.17 |
| **Axes 1 & 2** | **no decrease in food intake** | **-0.58** | **-0.48** | 0.25 | -0.12 |
| **Axis 1** | **MMSE** | **-0.46** | 0.34 | -0.38 | -0.19 |
| **Axes 2 & 3** | **male** | 0.20 | **-0.65** | -0.60 | -0.01 |
| **Axes 2 & 3** | **no weight loss** | -0.36 | **-0.47** | 0.47 | 0.04 |
| **Axis 2** | **BMI** | -0.08 | **-0.37** | -0.12 | -0.20 |
| Axis 3 | age | 0.12 | -0.30 | 0.41 | 0.22 |
| Axis 3 | NHLi | -0.18 | 0.01 | 0.46 | -0.19 |
| **Axis 2** | **MPN** | -0.14 | **0.38** | -0.07 | -0.08 |
| **Axes 2 & 3** | **moderate decrease in food intake** | 0.18 | **0.46** | -0.14 | 0.46 |
| **Axis 2** | **lost 1-3 kg** | -0.05 | **0.46** | 0.06 | -0.32 |
| **Axes 2 & 3** | **female** | -0.20 | **0.65** | 0.60 | 0.01 |
| **Axes 1 & 3** | **lost >3kg** | **0.35** | 0.11 | -0.60 | 0.17 |
| **Axes 1 & 4** | **CCI** | **0.39** | -0.07 | -0.02 | -0.52 |
| **Axis 1** | **CRP** | **0.56** | 0.00 | 0.23 | 0.31 |
| **Axis 1** | **severe decrease in food intake** | **0.57** | 0.12 | -0.17 | -0.37 |
| **Axes 1 & 4** | **GDS_30** | **0.58** | 0.07 | 0.22 | -0.45 |
| **Axis 1** | **mGPS** | **0.65** | -0.05 | 0.16 | 0.34 |
| **Axis 1** | **Fatigue** | **0.65** | 0.20 | 0.04 | -0.31 |
| **Axis 1** | **WHO** | **0.72** | 0.04 | 0.29 | -0.15 |
| undefined | weigth loss unknown | 0.17 | -0.04 | 0.05 | 0.14 |
| undefined | NHLa | 0.22 | -0.13 | -0.24 | 0.05 |
| undefined | MDS | -0.18 | 0.07 | -0.23 | -0.20 |
| undefined | serum ferritin | 0.19 | 0.28 | -0.11 | 0.30 |
| undefined | AML | 0.17 | -0.18 | 0.17 | 0.33 |

## Supplement 4: Figure 2: number of patients at risk and number of events

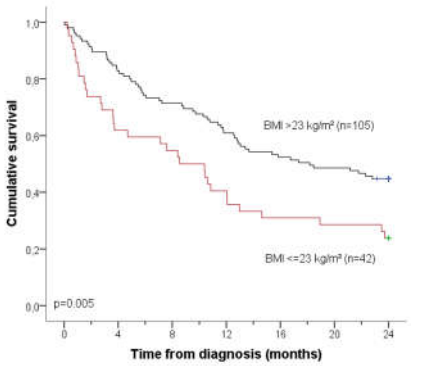
### BMI

Patients at risk at months from diagnosis

| time | 0 | 4 | 8 | 12 | 16 | 20 | 24 |
|---|---|---|---|---|---|---|---|
| Patients at risk | | | | | | | |
| ≥23 kg | 105 | 87 | 75 | 64 | 55 | 51 | 46 |
| < 23kg | 42 | 26 | 23 | 17 | 13 | 12 | 10 |

Number of events at months from diagnosis (no patient lost to follow up)

| time | 0 | 4 | 8 | 12 | 16 | 20 | 24 |
|---|---|---|---|---|---|---|---|
| number of events | | | | | | | |
| ≥23 kg | 0 | 18 | 12 | 11 | 9 | 4 | 5 |
| < 23kg | 0 | 16 | 3 | 6 | 4 | 1 | 2 |



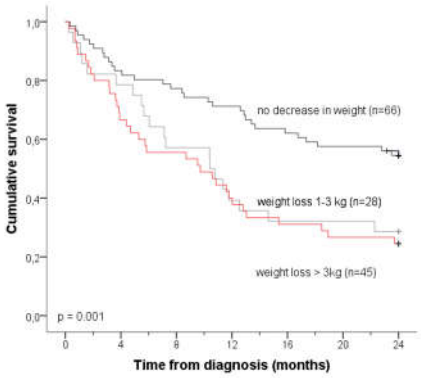

### Weight Loss

Patients at risk at months from diagnosis

| time | 0 | 4 | 8 | 12 | 16 | 20 | 24 |
|---|---|---|---|---|---|---|---|
| Patients at risk | | | | | | | |
| no decrease | 66 | 55 | 51 | 47 | 41 | 38 | 35 |
| 1-3 kg | 28 | 22 | 16 | 11 | 9 | 9 | 8 |
| >3 kg | 45 | 30 | 25 | 18 | 14 | 12 | 11 |

Number of events at months from diagnosis (no patient lost to follow up)

| time | 0 | 4 | 8 | 12 | 16 | 20 | 24 |
|---|---|---|---|---|---|---|---|
| number of events | | | | | | | |
| no decrease | 0 | 11 | 4 | 4 | 6 | 3 | 3 |
| 1-3 kg | 0 | 6 | 6 | 5 | 2 | 0 | 1 |
| >3 kg | 0 | 15 | 5 | 7 | 4 | 2 | 1 |



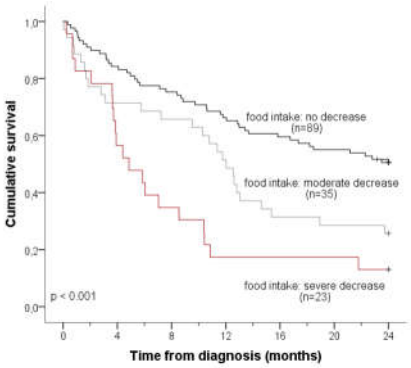

### Food Intake

Patients at risk at months from diagnosis

| time | 0 | 4 | 8 | 12 | 16 | 20 | 24 |
|---|---|---|---|---|---|---|---|
| Patients at risk | | | | | | | |
| no decrease | 89 | 75 | 67 | 59 | 53 | 49 | 44 |
| moderate dec. | 35 | 25 | 23 | 18 | 11 | 10 | 9 |
| severe dec. | 23 | 13 | 8 | 4 | 3 | 3 | 3 |

Number of events at months from diagnosis (no patient lost to follow up)

| time | 0 | 4 | 8 | 12 | 16 | 20 | 24 |
|---|---|---|---|---|---|---|---|
| number of events | | | | | | | |
| no decrease | 0 | 14 | 8 | 8 | 6 | 4 | 5 |
| moderate dec. | 0 | 10 | 2 | 5 | 7 | 1 | 1 |
| severe dec. | 0 | 10 | 5 | 4 | 1 | 0 | 0 |




### mGPS

Patients at risk at months from diagnosis

| time | 0 | 4 | 8 | 12 | 16 | 20 | 24 |
|---|---|---|---|---|---|---|---|
| Patients at risk | | | | | | | |
| mGPS 0 | 85 | 73 | 65 | 52 | 45 | 42 | 37 |
| mGPS 1 | 39 | 29 | 26 | 23 | 18 | 17 | 15 |
| mGPS 2 | 12 | 6 | 3 | 2 | 1 | 1 | 1 |

Number of events at months from diagnosis (no patient lost to follow up)

| time | 0 | 4 | 8 | 12 | 16 | 20 | 24 |
|---|---|---|---|---|---|---|---|
| number of events | | | | | | | |
| mGPS 0 | 0 | 12 | 8 | 13 | 7 | 3 | 5 |
| mGPS 1 | 0 | 10 | 3 | 3 | 5 | 1 | 2 |
| mGPS 2 | 0 | 6 | 3 | 1 | 1 | 0 | 0 |