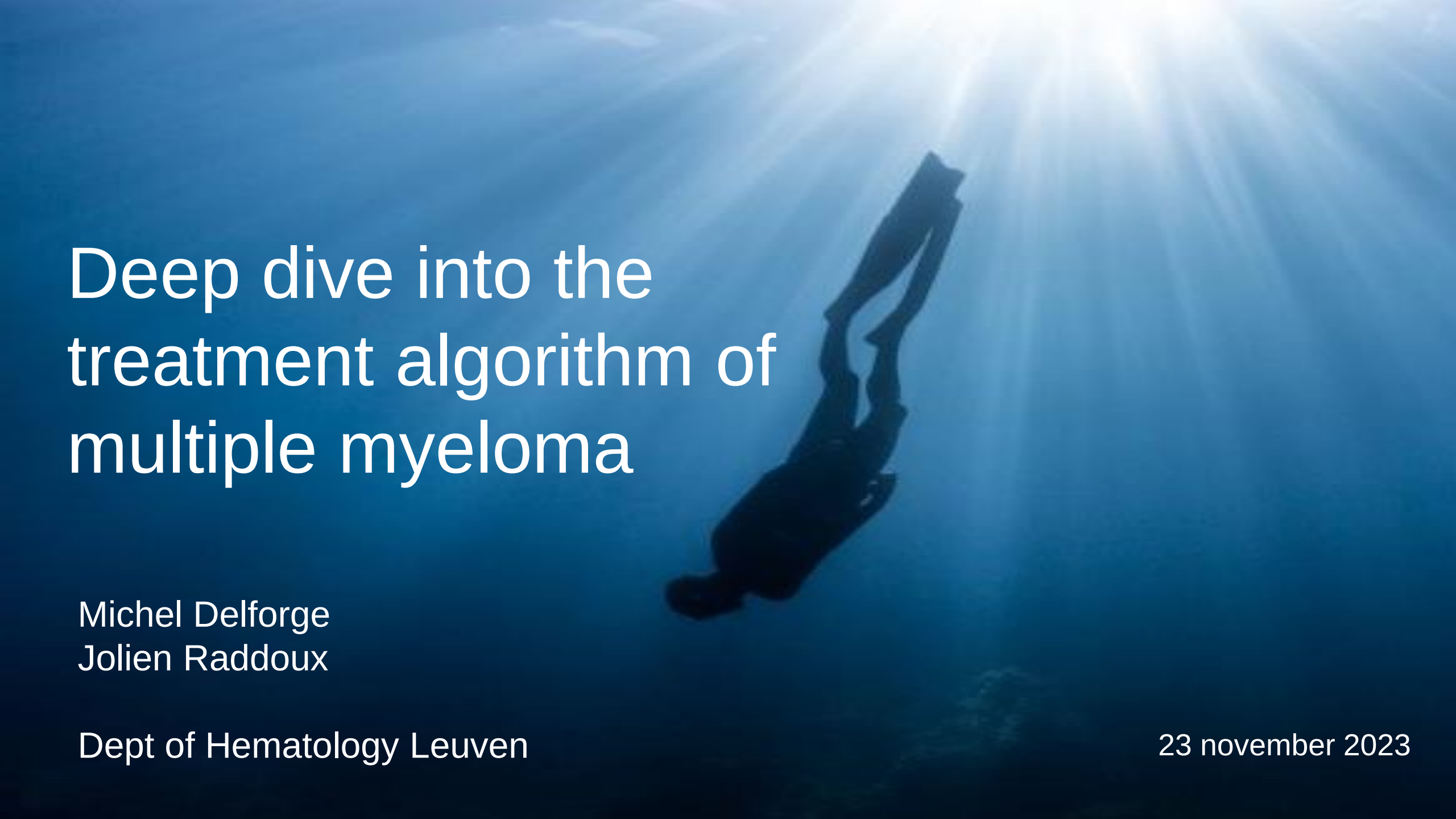


Deep dive into the treatment algorithm of multiple myeloma

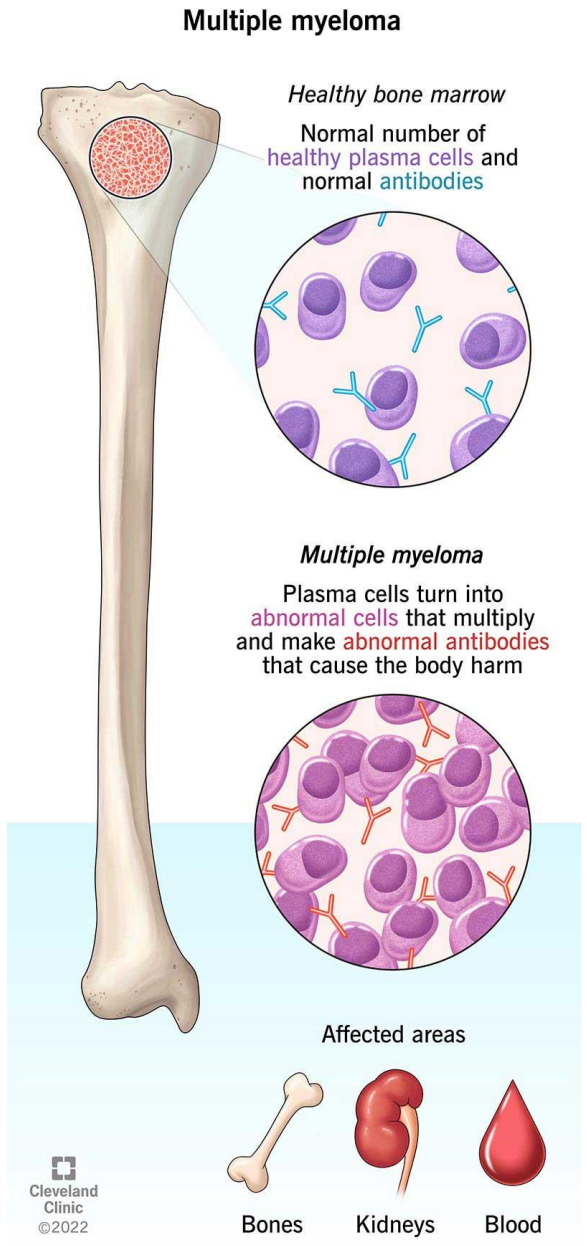
Michel Delforge
Jolien Raddoux

Dept of Hematology Leuven

23 november 2023

Multiple myeloma

- Second most common hematological cancer
- Therapeutic innovation has transformed multiple myeloma from an acute life threatening cancer to a more chronic disease in the majority of patients
- However, many treatment options generate complexity in the treatment-decision algorithm



https://my.clevelandclinic.org/health/diseases/6178-multiple-

Multiple myeloma: signs and symptoms

Calcium

High levels of calcium in the blood

Thirsty, loss of appetite, nausea or constipation, confusion

Renal failure

Kidney damage caused by abnormal proteins

Frequent urination or no urination at all over a longer period of time

Anemia

Too few red blood cells

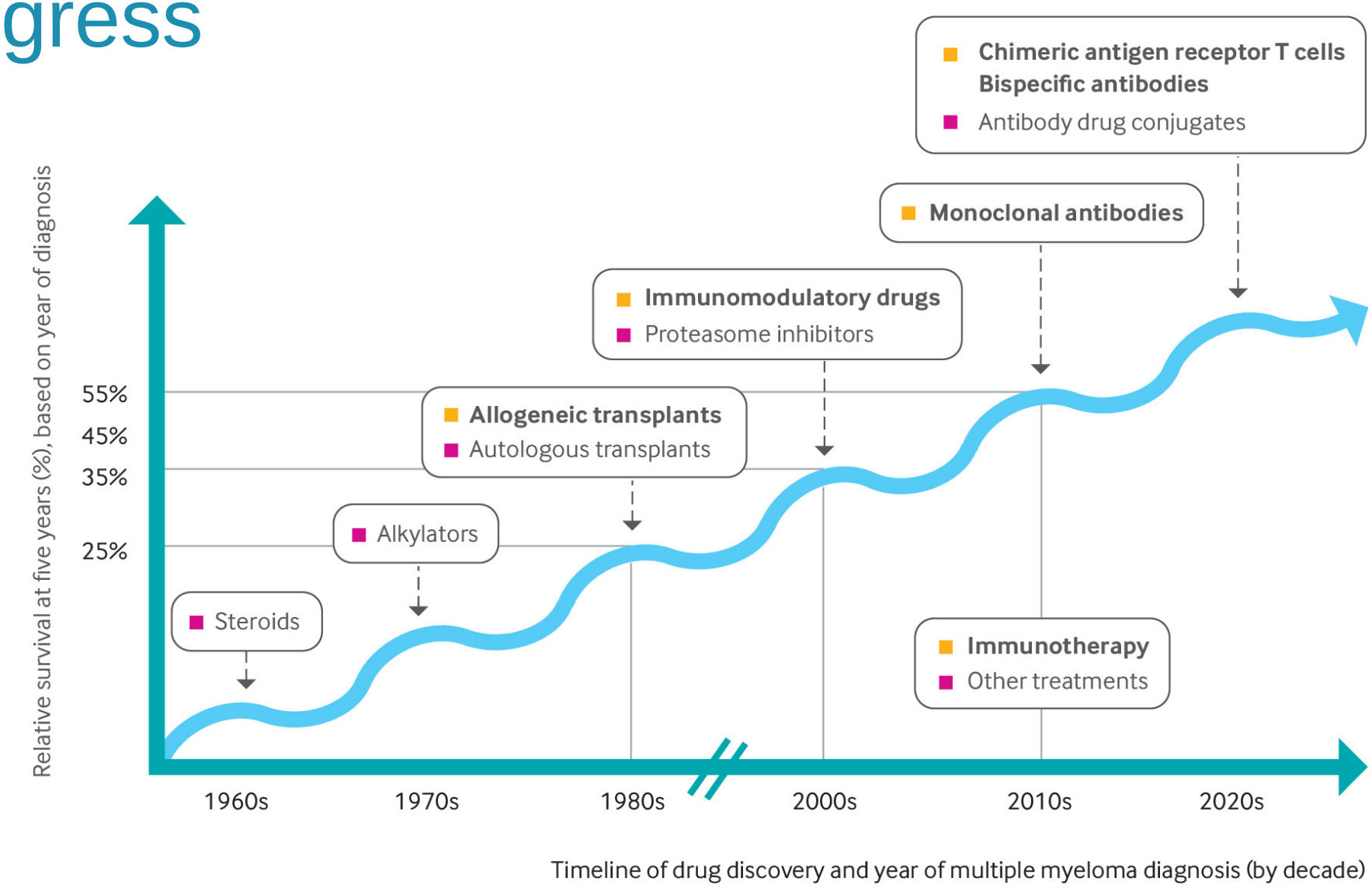
Fatigue and weakness, shortness of breath

Bone lesions

Osteolytic bone disease

Bone pain

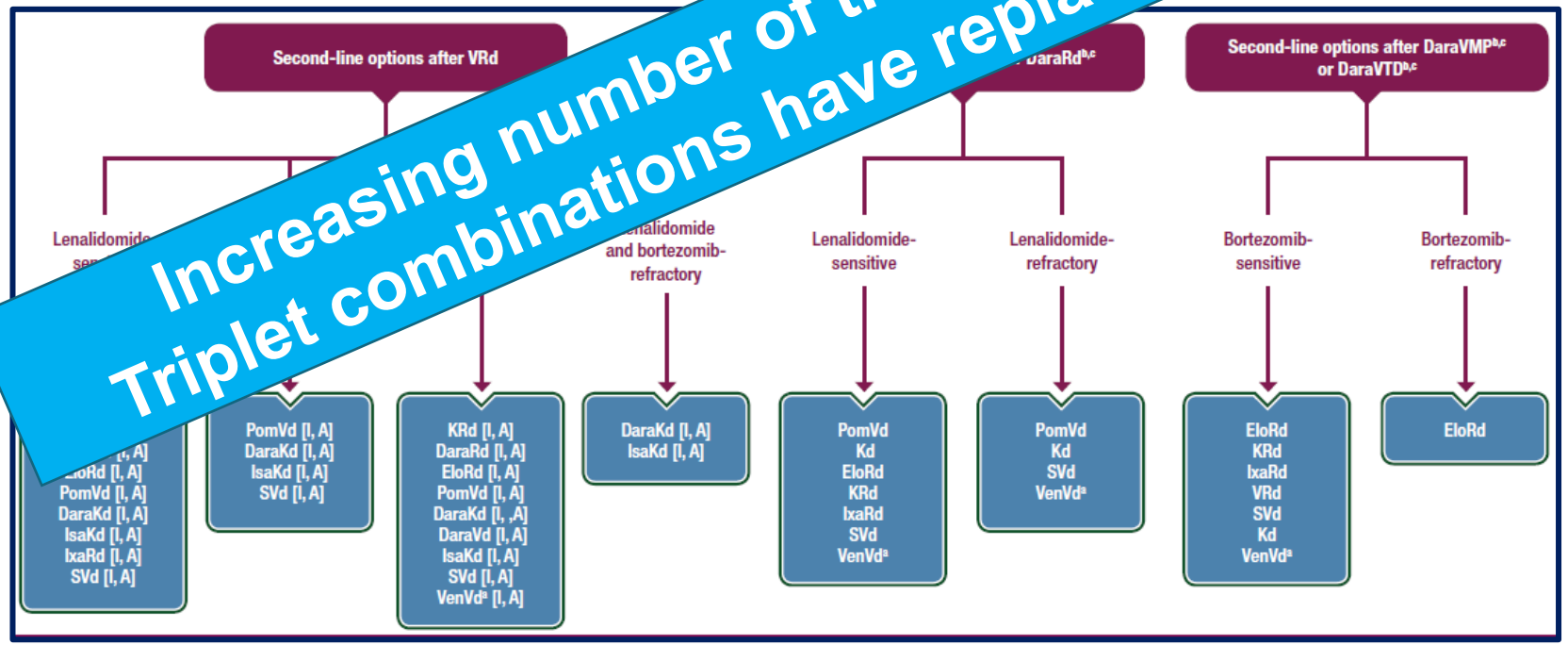
Multiple myeloma: unprecedented therapeutic progress



Shah U A, Mailankody S. Emerging immunotherapies in multiple myeloma *BMJ* 2020; 370 :m3176 doi:10.1136/bmj.m3176

Treatment options at first relapse: EHA-ESMO guidelines

2017[1]



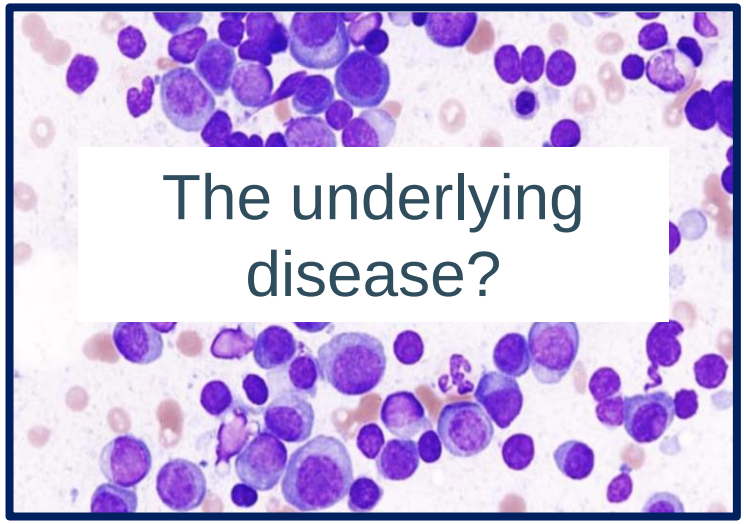
2021[2]

Increasing number of treatment options
Triplet combinations have replaced doublets

C, cyclophosphamide; d/D, dexamethasone; Dara, daratumumab; Elo, elotuzumab; IMiD, immunomodulatory drug; Isa, isatuximab; Ixa, izaxomib; K, carfilzomib; M, melphalan; P, prednislone; Pano, panobinostat; Pom, pomalidomide; R, lenalidomide; S, selinexor; T, thalidomide; V, bortezomib; Ven venetoclax.

1. Moreau P, et al. Ann Oncol 2017;28:iv52–iv61; 2. Dimopoulos MA, et al. Ann Oncol 2021;32:309–322.

How to guide the therapeutic choice at relapse?[1]



How to tailor the treatment for multiple myeloma patients based on data ?

Development of patient specific treatment algorithm, depending on:

- genetic risk stratification
- fit or frail status
- comorbidities

Searching for predictive factors (disease and patient-related) for therapeutic response

Contributions of Athena

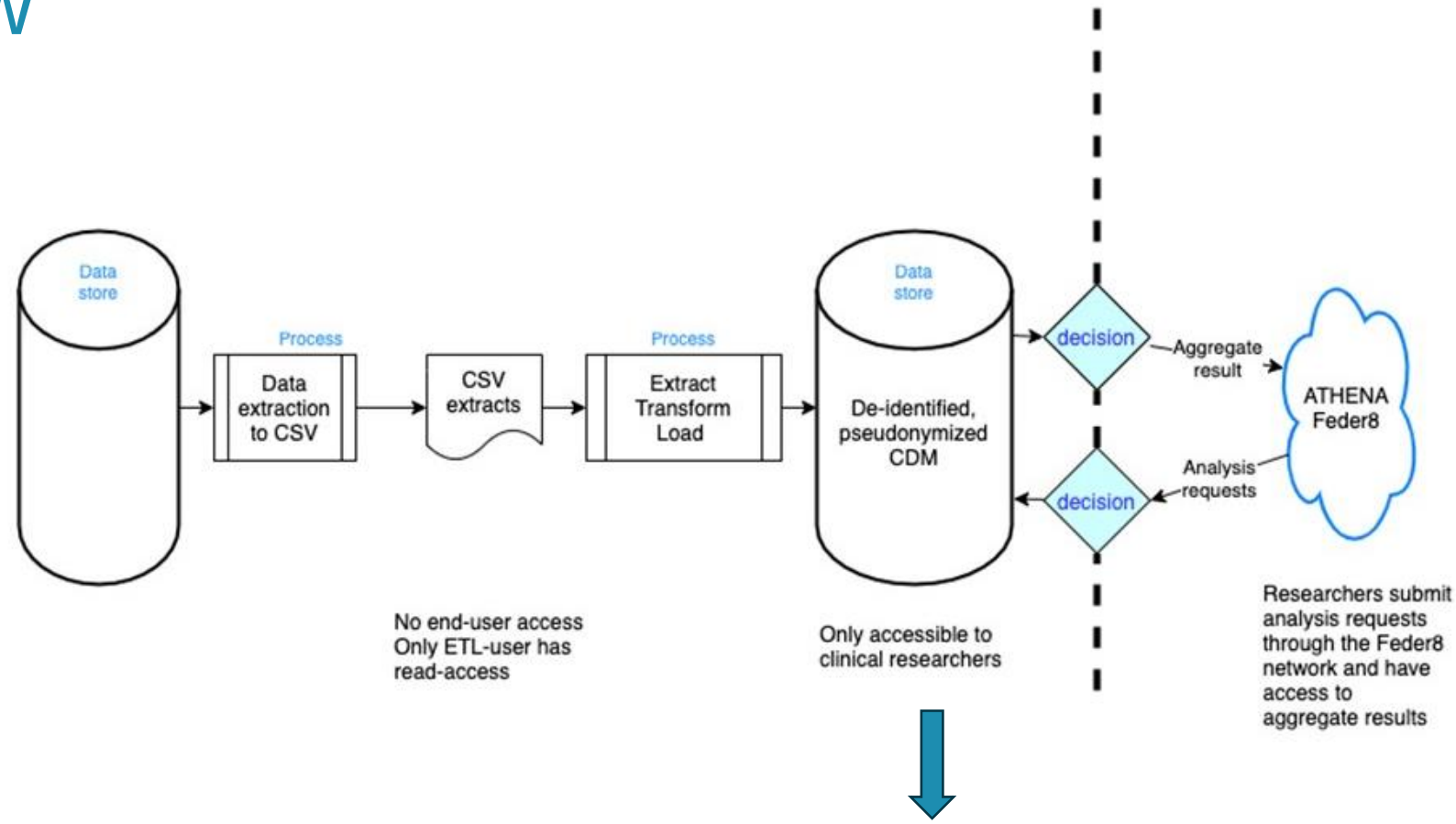
Development of multiple myeloma explorer tool which allows :

- easy visualisation of data: descriptive data at different timepoints, outcome analysis (OS, TTNT) and treatment analysis/ treatment transitions (= ‘nodes’ in the treatment pathway)
- Fast answers to research questions by creating different cohorts

Development of legal and ethical framework for building a federated network

Development of a network to connect with other hospitals

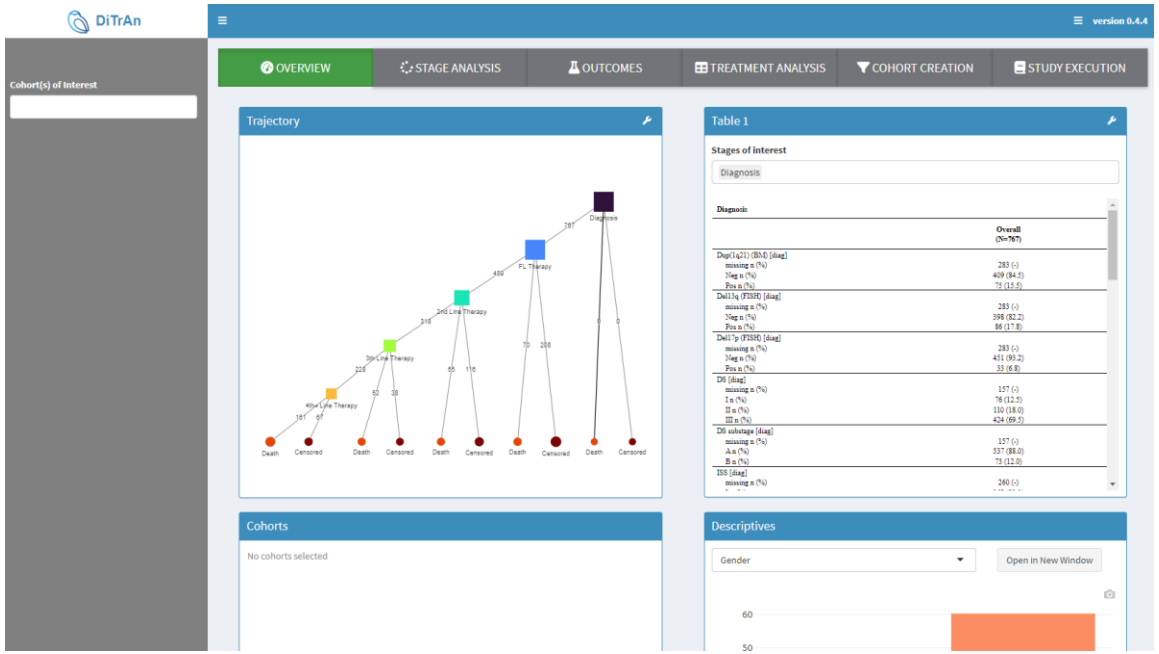
Data flow

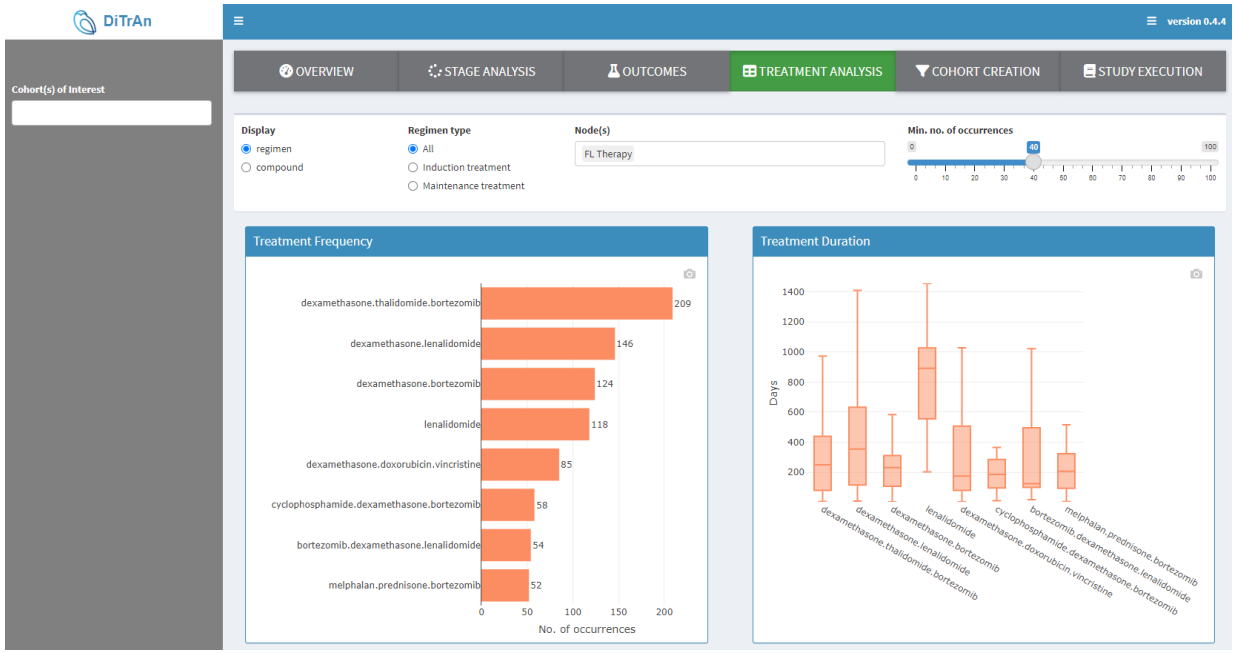


DiTrAn tool

CSV: Comma-seperated values
ETL: Extract – Transform – Load
CDM: Common Data Model

DiTrAn tool

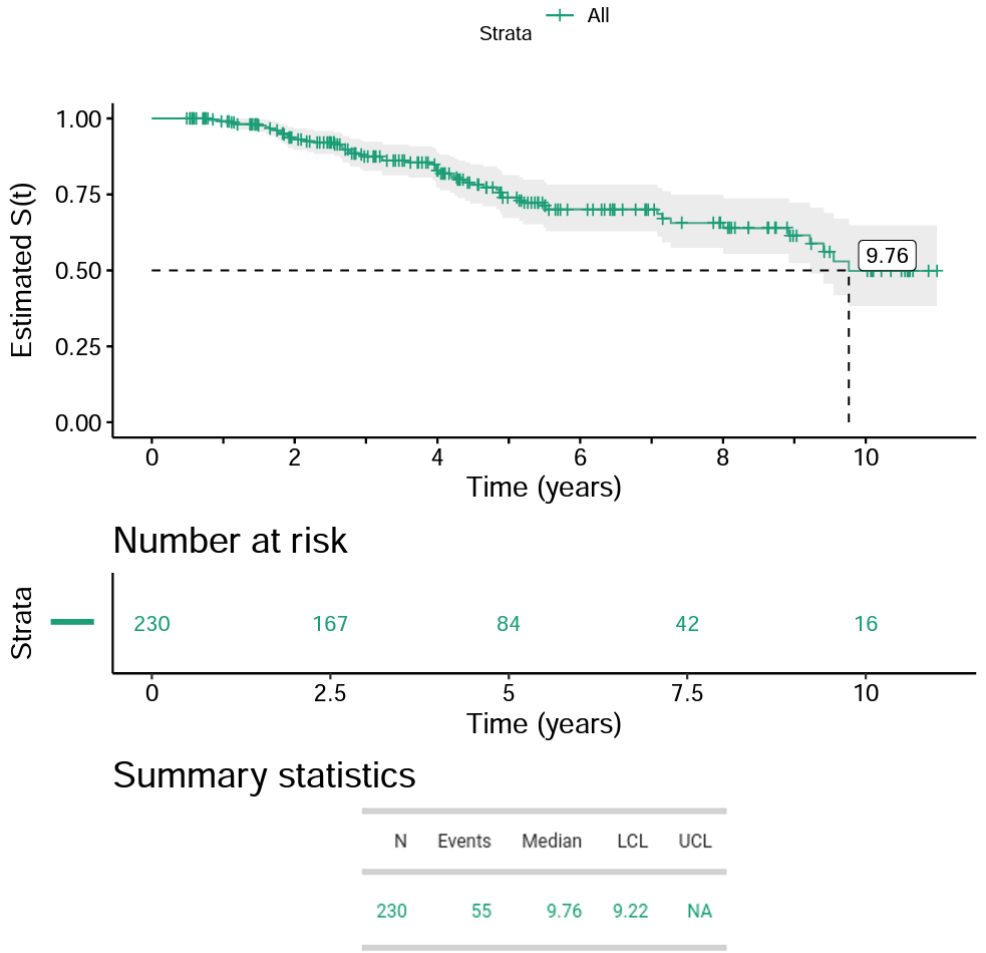

DiTrAn
version 0.4.4
Cohort(s) of Interest
OVERVIEW
STAGE ANALYSIS
OUTCOMES
TREATMENT ANALYSIS
COHORT CREATION
STUDY EXECUTION
Trajectory
Table 1
Stages of interest
Diagnosis
Cohorts
No cohorts selected
Descriptives
Gender
Open in New Window


DiTrAn
version 0.4.4
Cohort(s) of Interest
OVERVIEW
STAGE ANALYSIS
OUTCOMES
TREATMENT ANALYSIS
COHORT CREATION
STUDY EXECUTION
Display
regimen
compound
Regimen type
All
Induction treatment
Maintenance treatment
Node(s)
FL Therapy
Min. no. of occurrences
Treatment Frequency
dexamethasone.thalidomide.bortezomib 209
dexamethasone.lenalidomide 146
dexamethasone.bortezomib 124
lenalidomide 118
dexamethasone.doxorubicin.vincristine 85
cyclophosphamide.dexamethasone.bortezomib 58
bortezomib.dexamethasone.lenalidomide 54
melphalan.prednisone.bortezomib 52
No. of occurrences
Treatment Duration
Days

Athena as a tool to benchmark real world evidence with clinical trial data

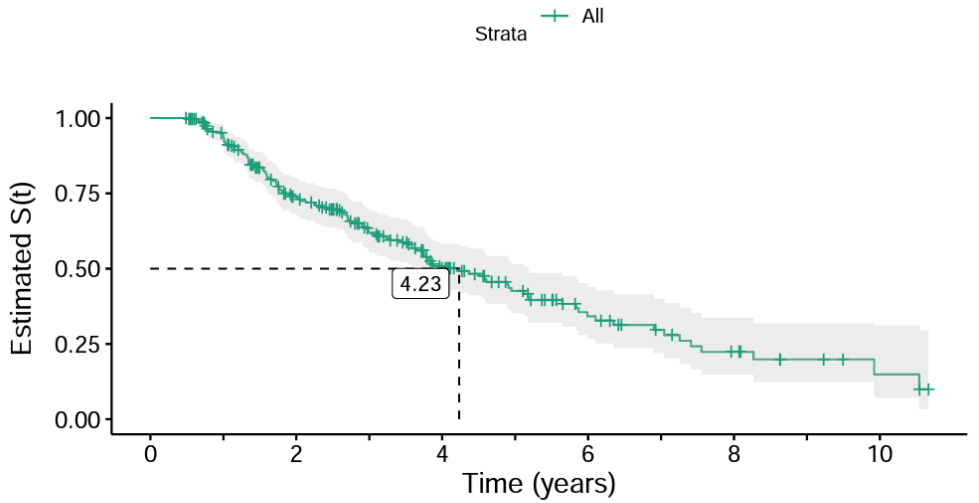
Overall survival of MM patients receiving autologous stem cell transplantation

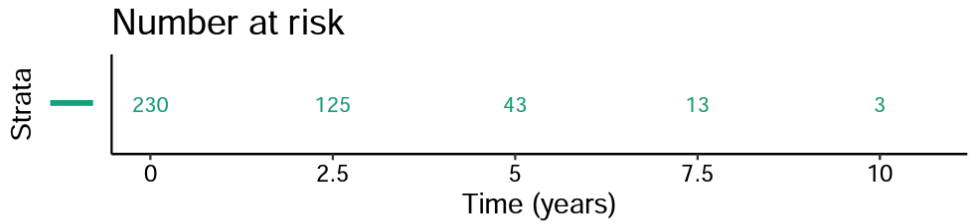
Overall survival from 1st line treatment for patients with autologous stem cell transplantation between 2010 and 2022



Time to next treatment of MM patients receiving autologous stem cell transplantation

TTNT from 1st line treatment for patients with autologous stem cell transplantation between 2010 and 2022



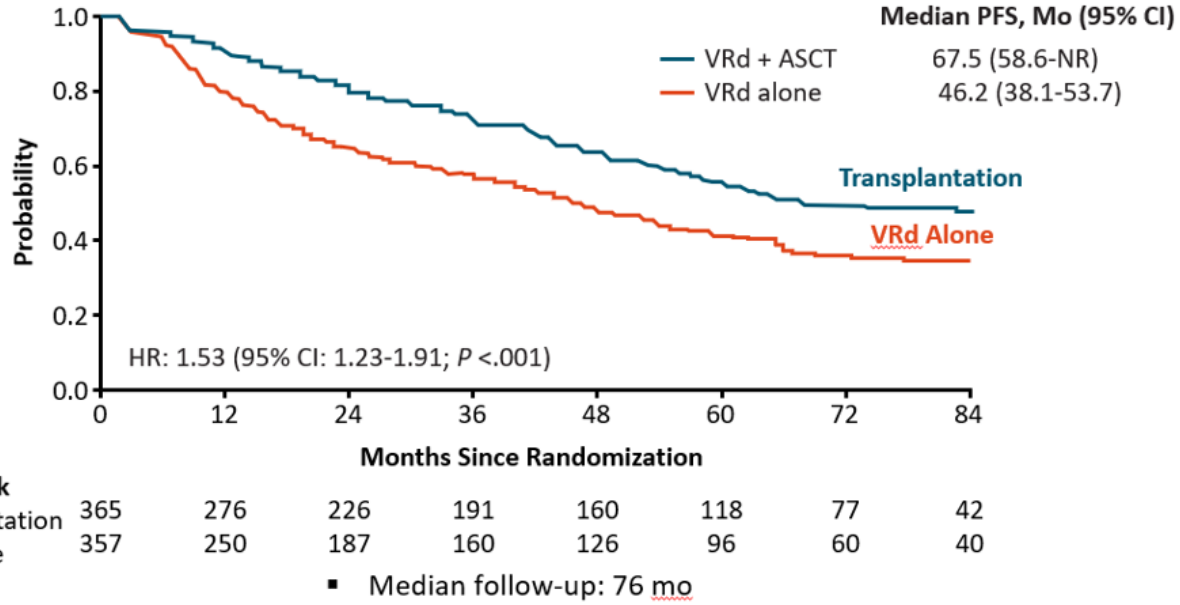


Summary statistics

N	Events	Median	LCL	UCL
230	117	4.23	3.59	5.18

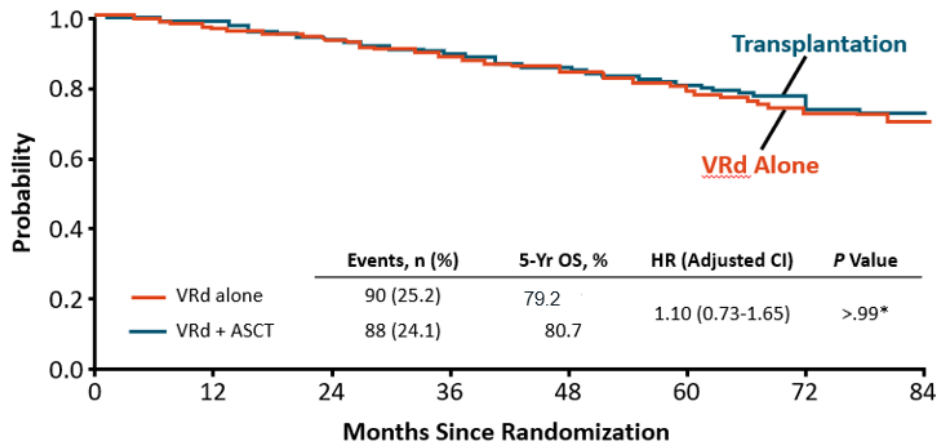
Transplantation plus lenalidomide: raising the bar

Progression-free survival



- Median follow-up: 76 mo

Overall survival

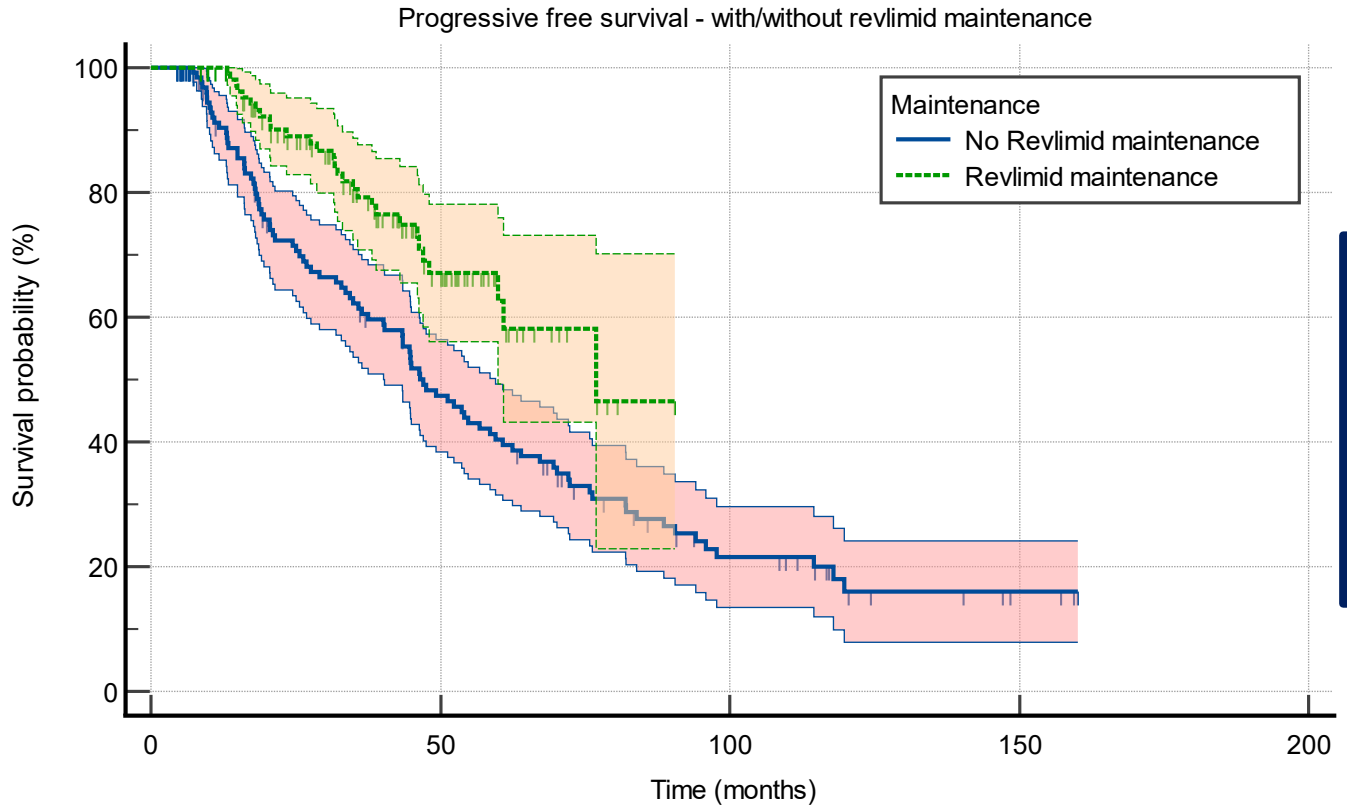


	Events, n (%)	5-Yr OS, %	HR (Adjusted CI)	*P* Value
VRd alone	90 (25.2)	79.2	1.10 (0.73-1.65)	>.99*
VRd + ASCT	88 (24.1)	80.7		

No. at Risk								
Transplantation	365	353	324	300	275	228	165	95
VRd alone	357	332	313	285	258	214	143	88

*CI and *P* value adjusted using Bonferroni correction to control for overall family-wise error rate for secondary outcomes.

Transplantation plus lenalidomide: real-world evidence



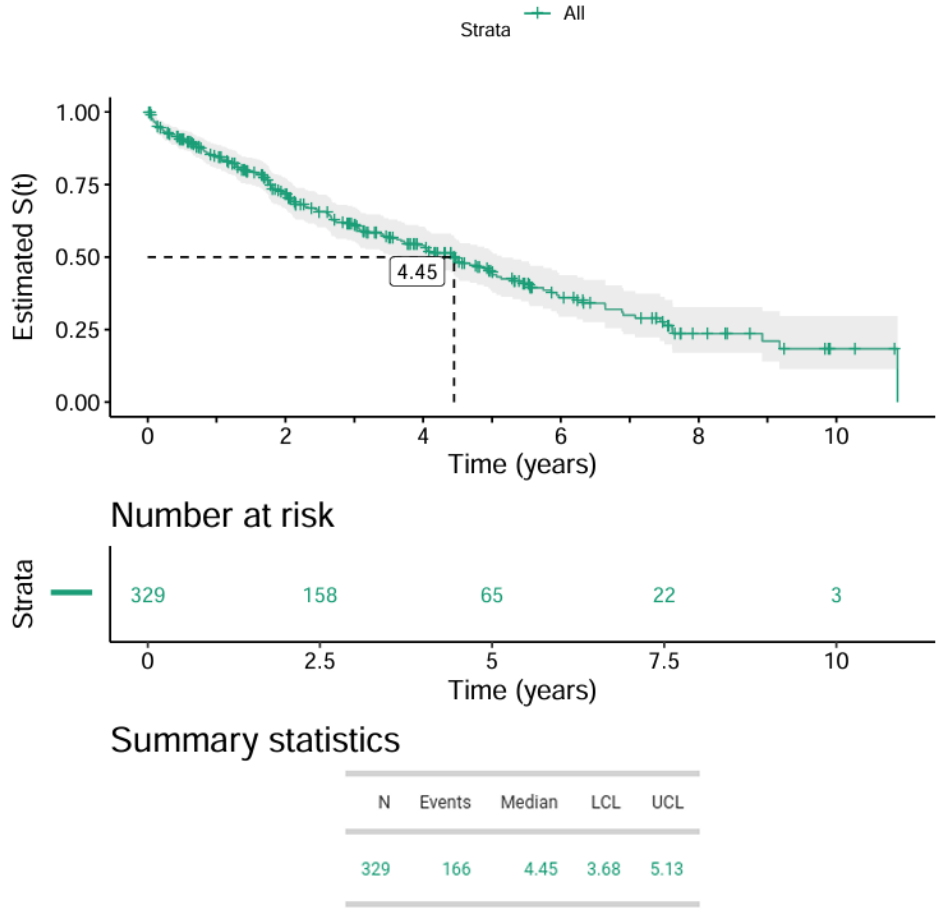
Number at risk

Group: No Revlimid maintenance				
140	54	17	3	0
Group: Revlimid maintenance				
110	33	0	0	0

Median follow-up: 56 mo
Mediane PFS without lenalidomide maintenance: **47** mo
Mediane PFS with lenalidomide maintenance: **77** mo
Comparison of survival curves: p=0,0008

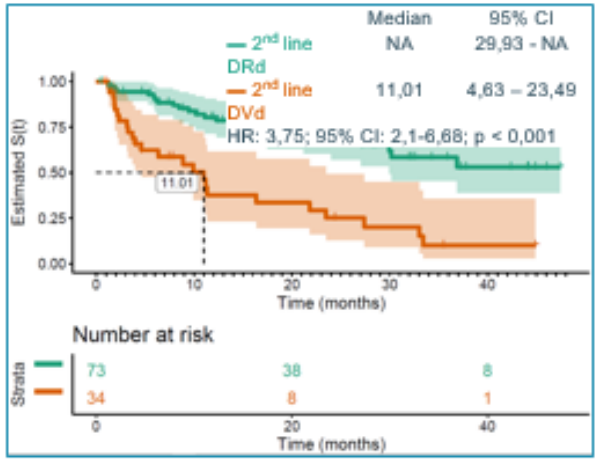
Overall survival of MM patients *not* receiving autologous stem cell transplantation

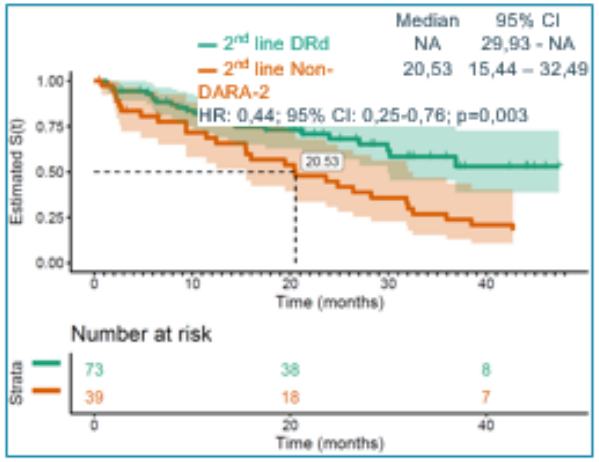
Overall survival from 1st line treatmentfor patients *without* autologous stem cell time time frame: 2010 to 2022



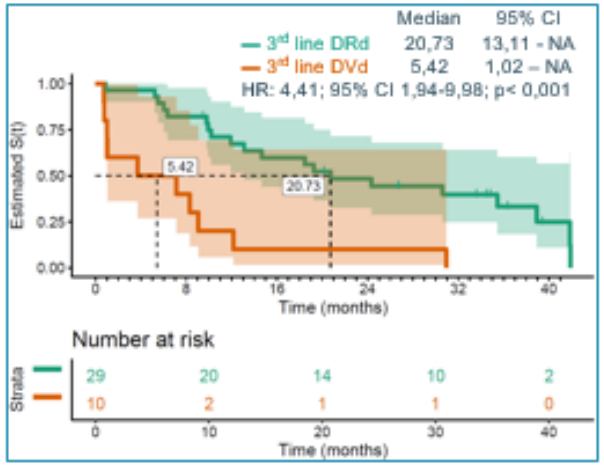
Optimizing the use of daratumumab in relapsed MM

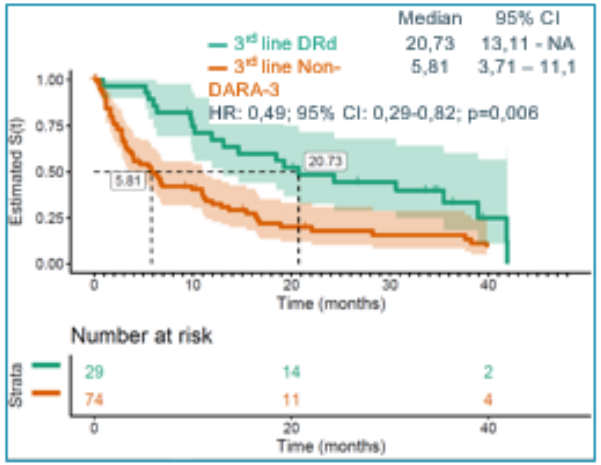
TTNT2 of DRd versus DVd in the DARA-2 cohort and of DRd versus the non-DARA-2 cohort:





TTNT3 of DRd versus DVd in the DARA-3 cohort and of DRd versus the non-DARA-3 cohort:





TTNT: Time to next treatment

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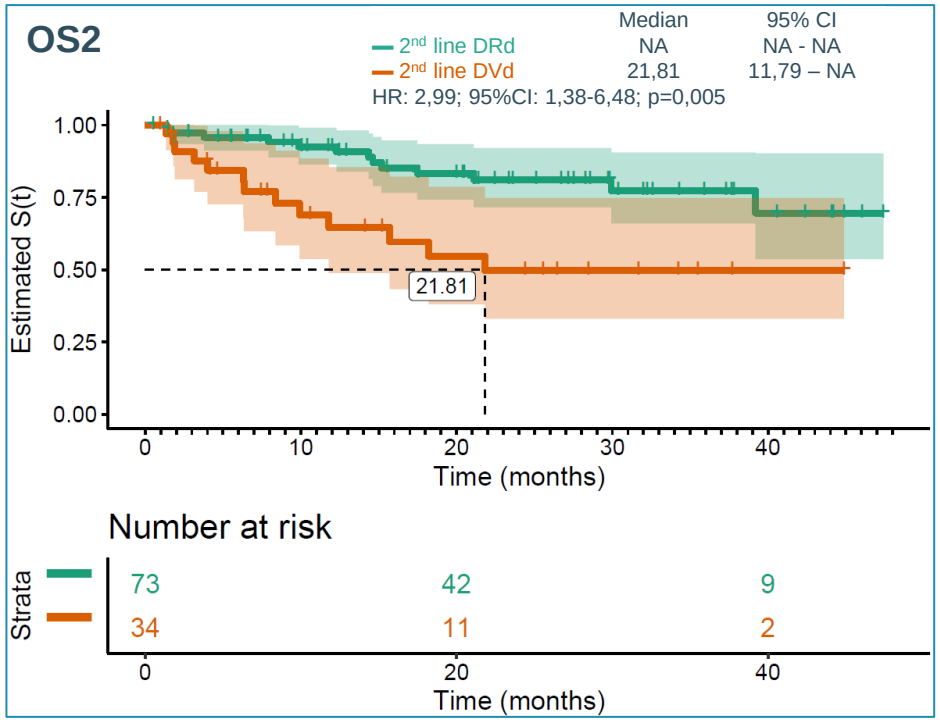
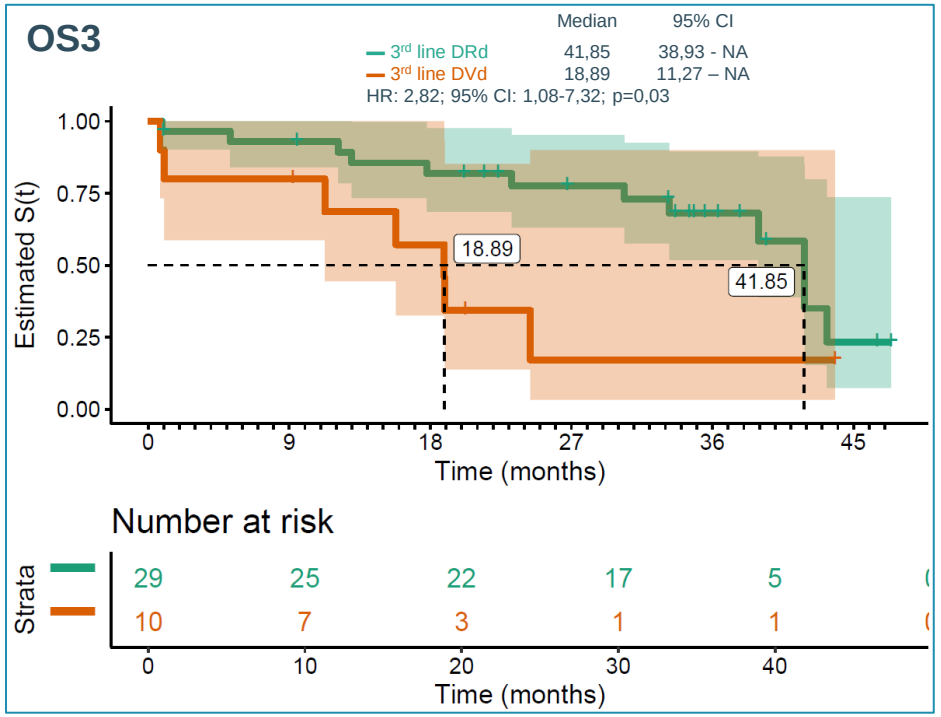
Optimizing the use of daratumumab in relapsed MM (2)





OS2 and OS3 of DRd versus DVd in the DARA-2 and DARA-3 cohort:

OS: Overall survival

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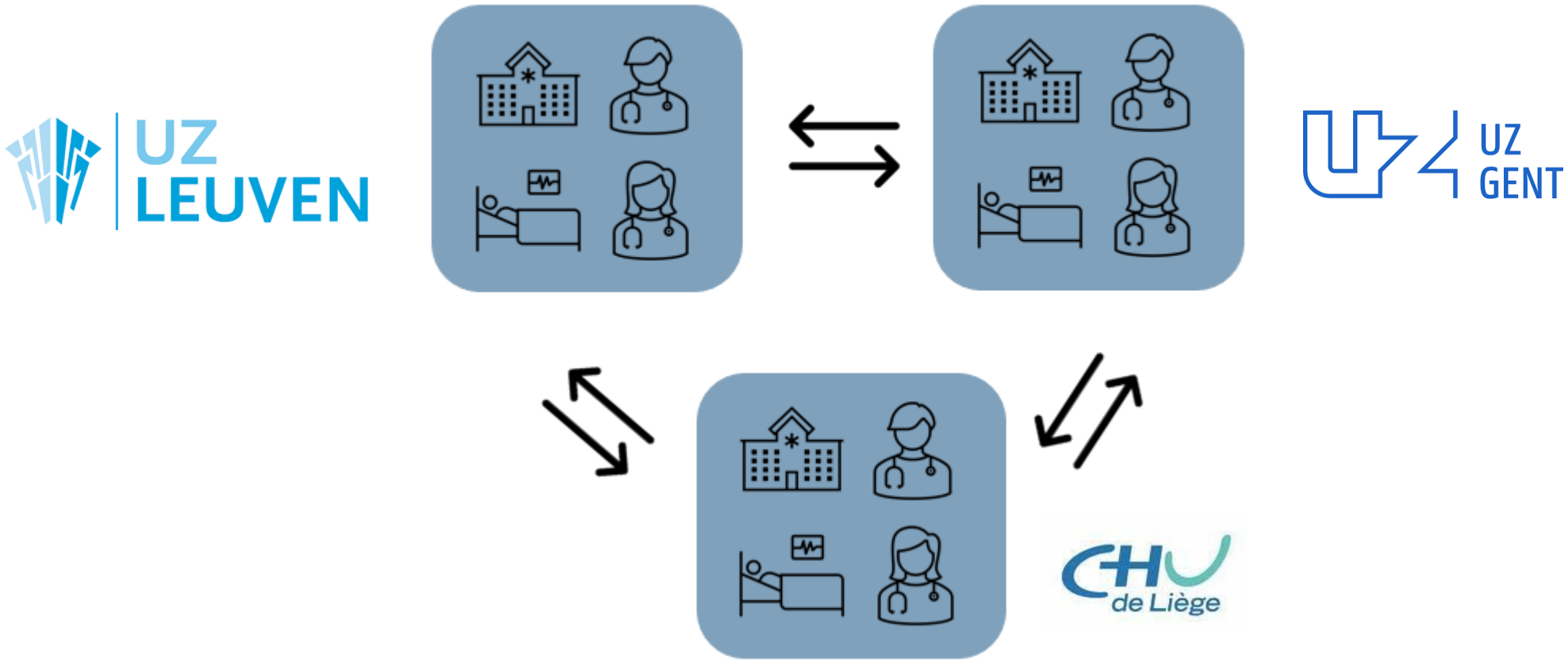
Athena as a tool for national networking in MM



Athena as a tool for international networking in MM

Conclusions

Many new therapeutic options in MM have increased the need for patient-specific treatment pathways to improve outcome and optimize therapeutic choice

In diseases like multiple myeloma there is a high unmet need to use structured data from the medical files to better guide the therapeutic challenges

Athena has paved the path towards a more comprehensive and faster analysis of large sets of patient data answering specific research questions

The contribution of Athena is not limited to a single-center, but facilitates national and international collaborations