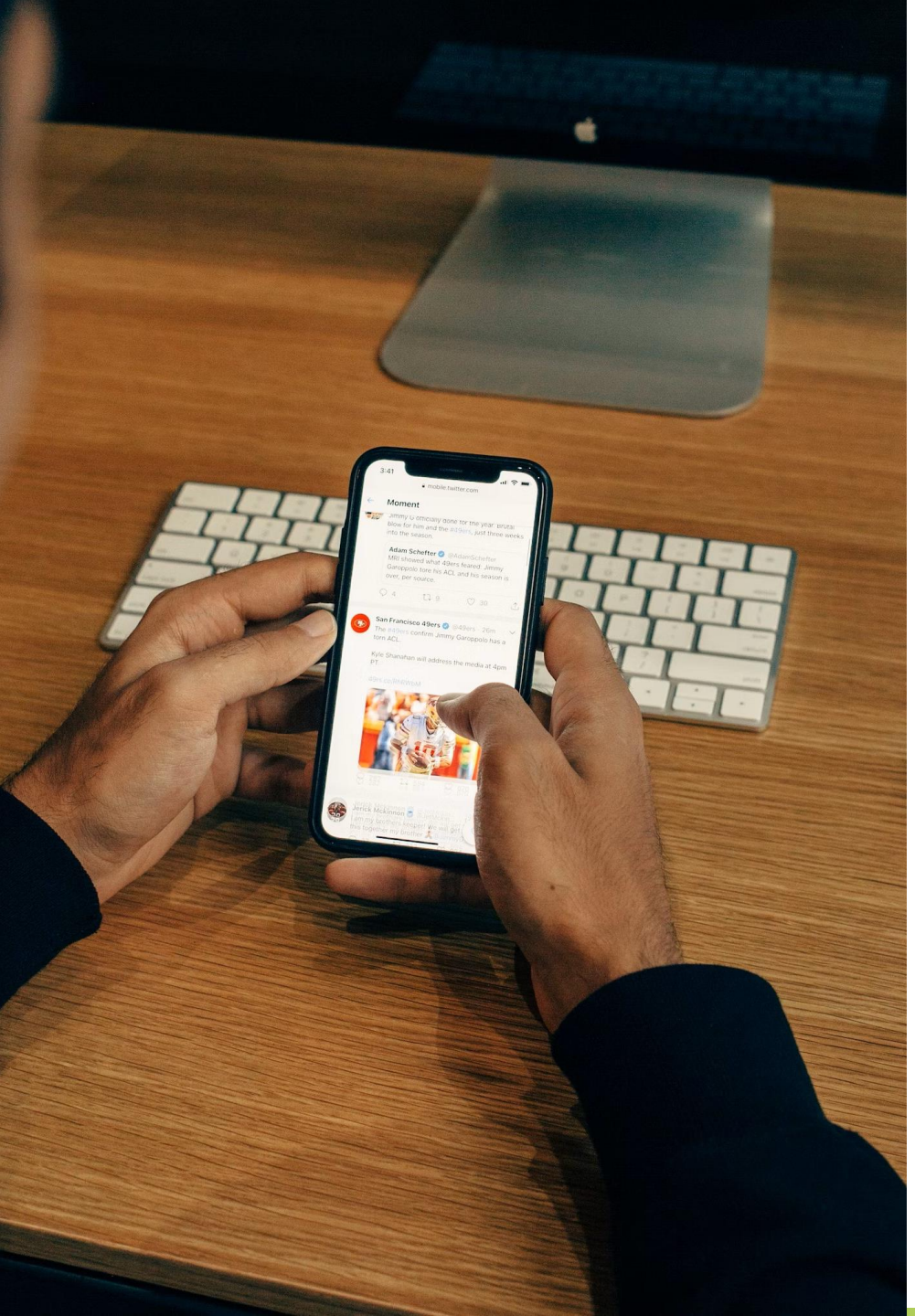


SMML newsletter

February 2023

Based on data from December 2022

Monthly updates around multiple myeloma

MMsyndiTrack™

Objectives

The goal of this newsletter is to give an overview of what is happening around multiple myeloma in terms of medical developments. This is achieved by monitoring news articles, PR releases and scientific reports on one hand. Conversations from HCPs, digital opinion leaders and other influencers attending congresses, offering their opinion on treatments and commenting on new developments on the other hand.

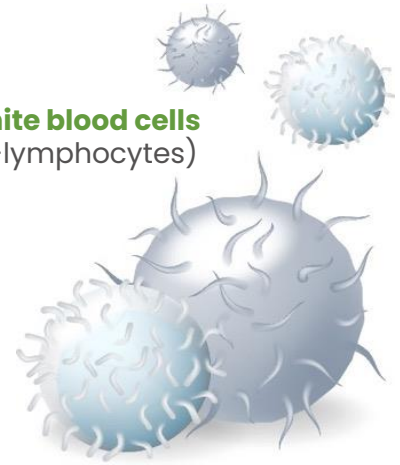
Who will benefit from this newsletter?

Any professionals interested in keeping up with developments around multiple myeloma:

- Marketers
- Business Analysts
- But also HCPs who want to anticipate the future landscape of MM management

Introduction on Multiple Myeloma

What is Multiple Myeloma?



White blood cells
(B-lymphocytes)

70
YEARS

■ 5 year survival rate ~50%

Read more on Multiple Myeloma:

MSD MANUAL
Professional Version

→ Professional version in English

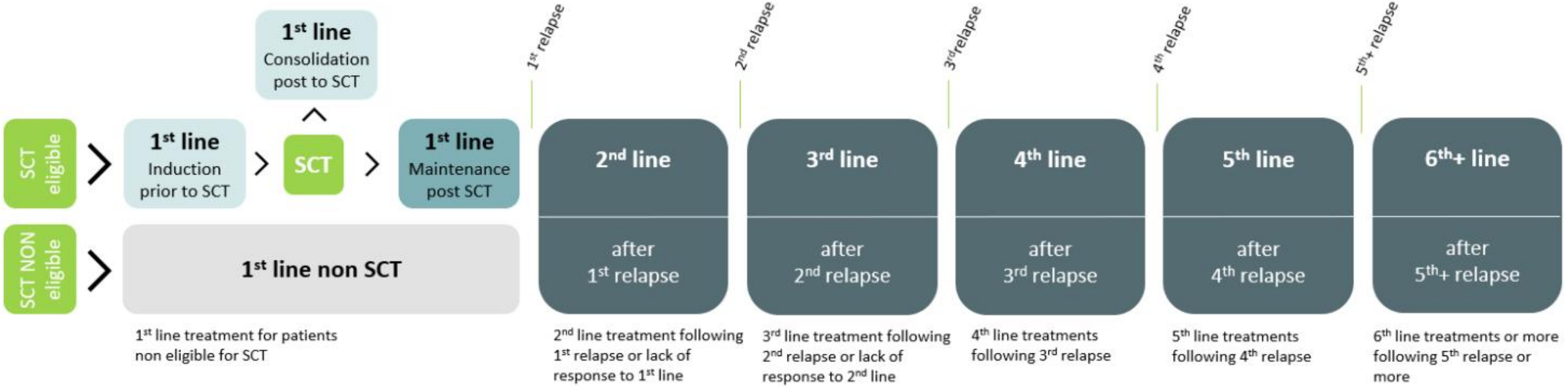
→ Professional version in French

MSD MANUAL
Consumer Version

→ Consumer version in English

→ Consumer version in French

MM lines of therapy based on to the following definitions



1st line Induction prior SCT

For stem cell candidates, the first step to gain a response to reduce the tumor burden before SCT.
Please note that patients who received more than one SCT are considered to be in "1st line prior to stem cell transplant" for the latest SCT procedure planned. For instance, should a patient receive an induction treatment prior to a 2nd SCT, he should be considered as a 1st line transplant patient.

1st line Consolidation post SCT

1st line therapy **after** stem cell transplant to **deepen the response** achieved by adding a **short course** of full dose therapy.

1st line Maintenance post SCT

1st line therapy **after** stem cell transplant to **sustain the quality of the response** achieved by adding a long course – from several months up to disease progression – of reduced dose therapy.

Drugs approved by European Medicines Agency (EMA)

Brand name	Active substance	Manufacturer	Class of therapy	EMA Date of authorisation	Line of treatment	Product Monograph
Revlimid®	lenalidomide	BMS	Immunomodulating agents (IMiDs)	14/06/2007	All lines	Click here
Thalidomide BMS® / Thalomid® (US)	thalidomide	BMS	Immunomodulating agents (IMiDs)	16/04/2008	All lines	Click here
Imnovid® / Pomalyst® (US)	pomalidomide	BMS	Immunomodulating agents (IMiDs)	05/08/2013	2L+ (after Revlimid and Velcade)	Click here
Pepaxti® / Pepaxto® (US)	melflufen	Oncopeptides AB	Peptide conjugated alkylator	17/08/2022	Triple class exposed / 3L+ / 4L+ / 5L+	Click here
Velcade®	bortezomib	Janssen	Proteasome inhibitors (PIs)	26/04/2004	1LSCT / 1LNSCT	Click here
Kyprolis®	carfilzomib	Amgen	Proteasome inhibitors (PIs)	19/11/2015	2L+ / 3L+	Click here
Ninlaro®	ixazomib	Takeda	Proteasome inhibitors (PIs)	21/11/2016	2L+	Click here
Farydak®	panobinostat	Novartis + (Secura Bio)	Histone deacetylase inhibitors (HDACis)	28/08/2015	2L+ Relapsed / Refractory	Click here
Darzalex®	daratumumab	Janssen	Monoclonal antibody against CD38 (Mabs)	20/05/2016	All lines	Click here
Empliciti®	elotuzumab	BMS + (AbbVie)	Monoclonal antibody against SLAMF7 (Mabs)	11/05/2016	2L+ / 3L+	Click here
Sarclisa®	isatuximab	Sanofi	Monoclonal antibody against CD38 (Mabs)	30/05/2020	2L+ / 3L+	Click here
Tecvayli®	teclistamab	Janssen	BiTE	21/07/2022	2L+ / 3L+	Click here
Blenrep® / Belamaf® (US)	belantamab mafodotin-blmf	GSK	Antibody-drug conjugates (BCMA)	25/08/2020	2L+ (4L+ after P, IMiD and MAB (L5+ in Italy)	Click here
Nexpovio® / Xpovio® (US)	selinexor	Karyopharm Therapeutics	Nuclear export inhibitor (SINE)	26/03/2021	Penta-refractory (2xPI + 2xIMiDs + 1 Mab)	Click here
Venclyxto® / Venclexta® (US)	venetoclax	AbbVie	B-cell lymphoma 2 (BCL-2)	04/12/2016	2L+ (already used in CLL / AML treatments)	Click here
Abecma®	idecabtagene vicleucel	BMS	Cell-based gene therapy (CAR-T)	18/08/2021	Triple class exposed / 3L+ / 4L+ / 5L+	Click here
Carvykti®	ciltacabtagene autoleucel	Janssen	Cell-based gene therapy (CAR-T)	25/05/2022	L3 / L4+ / L5+	Click here
Aredia®	pamidronate	Novartis	Bisphosphonates for bone disease	31/10/1991	Supportive care / Long-term use (5+ years)	Click here
Zometa®	zoledronate	Novartis	Bisphosphonates for bone disease	20/03/2001	Supportive care / Long-term use (5+ years)	Click here
Prolia® + Xgeva®	denosumab	Amgen	Bisphosphonates for bone disease	26/05/2010 - 13/07/2011	Supportive care	Prolia® / Xgeva®
Mozobil®	plerixafor	Genzyme	Stem cell mobilazor	30/07/2009	Supportive care	Click here

MM treatment history timeline

- IMiDs
- PIs
- IMS
- Mabs
- HDACi
- SINE
- BCMA
- CAR-T

1844 — *"Rhubarb & orange peel, strengthening plaster to the chest, a pound of blood removed & leeches applied for maintenance therapy".*

1947 — Urethane

1958 — Melphalan

1962 — Corticosteroids

1983 — Autologous transplantation

1984 — Vincristine + Adriamycin + Dexamethasone

1999 — thalidomide

2002 — bortezomib (Velcade®)

2005 — lenalidomide (Revlimid®)

2010 — bendamustine (Levact®)

2012 — carfilzomib (Kyprolis® US)

2013 — pomalidomide (Imnovid®/Pomalyst®)

2015 — panabinostat (Farydak®); carfilzomib (Kyprolis® EU)

2016 — elotuzumab (Empliciti®); daratumumab (Darzalex®); ixazomib (Ninlaro®)

2020 — belantamab mafodotin (Blenrep® EU Belamaf ® US); selinexor (Nexpovio® EU Xpovio® US); isatuximab (Sarclisa®)

2021 — idecabtagene vicleucel (Abecma®)

2022 — melflufen (Pepaxti® EU Pepaxto® US); ciltacabtagene autoleucel (Carvykti®); teclistamab (Tecvayli®) ★

20?? — marizomib, anetumab ravtansine, venetoclax, oprozomib, talquetamab, elranatamab

MM studies at APLUSA

16+ YEARS

17+ COUNTRIES OVER TIME

UP TO 90 HCPs per wave per country

UP TO 4 WAVES per year

4,5k PATIENTS CHARTS per wave

18k PATIENTS CHARTS per year (in EU5)

What's new MMsyndiTrack™

Launching of a US pilot wave, Why ?

- Needs from Pfizer and GSK for MM US data
- MM US market changing fast
- US market specificities for inclusion of US market (treatment gap / ethnic disparities)
- PDS helps to secure the US pilot wave

→ Co-funding with GSK for Q4 2022

APLUSA's added value

- Quarterly + month to month data collection (our competitors → only quarterly data)
- Patient's full treatment history
- Unique back data for EU5 for + than 16 years
- Deliverables with Power BI DID
- Market adaptability: adjusting our questionnaires and updating the list of treatments by including market trends on a monthly basis → **new CAR-Ts + BisAbs**

December 2022

(Focus on ASH 2022)

CONTENTS

SCOPE

The scope of the analysis is focused on mentions coming **worldwide**.*

There were a total of **44K** mentions from patients recorded during the listening period from **December 1st 2022** to **December 31st 2022**.

A majority of mentions came from **Twitter (56%), News (36%), Instagram (5%), Forums (1%), Blogs (1%), and Reddit (1%).**

A total of **13K** unique authors were identified.

: Myeloma OR multiplemyeloma OR #Mmsm OR #Myeloma OR #Curemyeloma* OR #Mmmrd OR #mmsm OR title: ("multiple myeloma" OR myeloma)

Social media listening period: December 2022
Scope: worldwide in English

Methodology

WEB

*Extraction**

Filtering

43 640 Mentions

Also includes:
- patient testimonies
- associations
- financial/market news
- Articles/press release not focusing solely on multiple myeloma

: Myeloma OR multiplemyeloma OR #Mmsm OR #Myeloma OR #Curemyeloma* OR #Mmmrd OR #mmsm OR title: ("multiple myeloma" OR myeloma)

Phase II and III clinical trials

- Phase II: 1019 articles
- Phase III: 455 articles

Exclude:
- *Financial/market news*
- *Phase I/II clinical trials*
- *Articles non-focusing solely on phase II or III developments*

HCPs

4 743 Mentions

Twitter, Reddit, or forums users self-referencing as healthcare professionals in their bio/flags

Press releases

2 677 Mentions

Articles flagged as being press releases

Social media listening period: December 2022
Scope: worldwide in English

Drugs in clinical trials (Phase II) monitored during the listening period

Molecule name	Commercial name	Class	Manufacturer	Trial names + link (ctrl + right click) / line of treatment / Combination being studied
lenalidomide	Revlimid®	immunomodulatory drugs (IMiDs)	BMS	GRIFFIN (ND): daratumumab, lenalidomide, bortezomib, and dexamethasone (D-RVd) FORTE (ND): carfilzomib, lenalidomide, daratumumab, dexamethasone NCT02969837 (ND): elotuzumab, carfilzomib, lenalidomide, dexamethasone MASTER (???): dexamethasone, lenalidomide, daratumumab, carfilzomib
pomalidomide	Imnovid® / Pomalyst® (US)	immunomodulatory drugs (IMiDs)	BMS	NCT03590652 (RR): daratumumab, ixazomib, pomalidomide, dexamethasone ELOQUENT-3 (RR): elotuzumab plus pomalidomide, and dexamethasone
Bortezomib	Velcade®	Proteasome inhibitors	Takeda	GRIFFIN (ND): daratumumab, lenalidomide, bortezomib, and dexamethasone (D-RVd) NCT03314181 (RR): Venetoclax, Daratumumab and Dexamethasone (With and Without Bortezomib)
carfilzomib	Kyprolis®	Proteasome inhibitor	Amgen	FORTE (ND): carfilzomib, lenalidomide, daratumumab, dexamethasone NCT02969837 (ND): elotuzumab, carfilzomib, lenalidomide, dexamethasone MASTER (???): dexamethasone, lenalidomide, daratumumab, carfilzomib Cardamon (???) : cyclophosphamide, dexamethasone, carfilzomib
daratumumab	Darzalex®	Monoclonal antibody anti-CD38	Janssen	GRIFFIN (ND): daratumumab, lenalidomide, bortezomib, and dexamethasone (D-RVd) FORTE (ND): carfilzomib, lenalidomide, daratumumab, dexamethasone NCT03590652 (RR): daratumumab, ixazomib, pomalidomide, dexamethasone REBUILD (RR): Monotherapy NCT03314181 (RR): Venetoclax, Daratumumab and Dexamethasone (With and Without Bortezomib) MASTER (???): dexamethasone, lenalidomide, daratumumab, carfilzomib
elotuzumab	Empliciti®	Monoclonal antibody SLAMF7	BMS/AbbVie	ELOQUENT-3 (RR): elotuzumab plus pomalidomide, and dexamethasone NCT02969837 (ND): elotuzumab, carfilzomib, lenalidomide, dexamethasone
isatuximab	Sarclisa®	Monoclonal antibody anti-CD38	Sanofi	NCT05123131 (ND): isatuximab, bortezomib, lenalidomide, dexamethasone NCT03590652 (RR): daratumumab, ixazomib, pomalidomide, dexamethasone
belantamab mafodotin, (GSK2857916)	Blenrep®	Antibody drug–conjugate (ADC)	GSK	DREAMM-2 (RR): Monotherapy
Ciltacabtagene (cilta cel, JNJ 68284528)	Carvykti®	CAR T-Cell Therapy Anti-BCMA	Janssen	CARTITUDE (RR): Monotherapy CARTITUDE 2 (RR): Monotherapy
idecabtagene vicleucel (ide cel)	Abecma	CAR T-Cell Therapy Anti-BCMA	BMS	KarMMa-2 (RR): Monotherapy (one arm with lenalidomide)
Zevorcabtagene autoleucel (zevor cel)	N/A	CAR T-Cell Therapy Anti-BCMA	CARsgen Therapeutics	LUMMICAR-2 (RR): Monotherapy
C-CAR088	N/A	CAR T-Cell Therapy Anti-BCMA	Cellular Biomedicine	NCT05521802 (RR): Monotherapy
teclistamab	Tecvayli®	Bispecific Antibody anti-BCMA	Janssen	MajesTEC-1: (RR): Monotherapy
talquetamab	N/A	Bispecific antibody T-cell redirecting	Janssen	MonumenTAL-1 (RR): Monotherapy
elranatamab (PF-06863135)	N/A	Bispecific Antibody anti-BCMA x Anti-CD3	Pfizer	MagnetisMM-9 (RR): Monotherapy MagnetisMM-3 (RR): Monotherapy

Phase II Line 1: Quadruplet Therapies: Daratumumab regimen confers health-related quality of life benefit in multiple myeloma

Headlines/Hot off the press

“Daratumumab regimen confers health-related quality of life benefit in multiple myeloma”

“Adding daratumumab to bortezomib, lenalidomide and dexamethasone led to improved health-related quality of life for transplant-eligible patients with newly diagnosed multiple myeloma, study results showed.” Click here to read the full article

Sponsor

Janssen

GRIFFIN
Ctrl + click to access clinical trial:
NCT02874742

“Study Comparing Daratumumab, Lenalidomide, Bortezomib, and Dexamethasone (D-RVd) Versus Lenalidomide, Bortezomib, and Dexamethasone (RVd) in Subjects With Newly Diagnosed Multiple Myeloma”

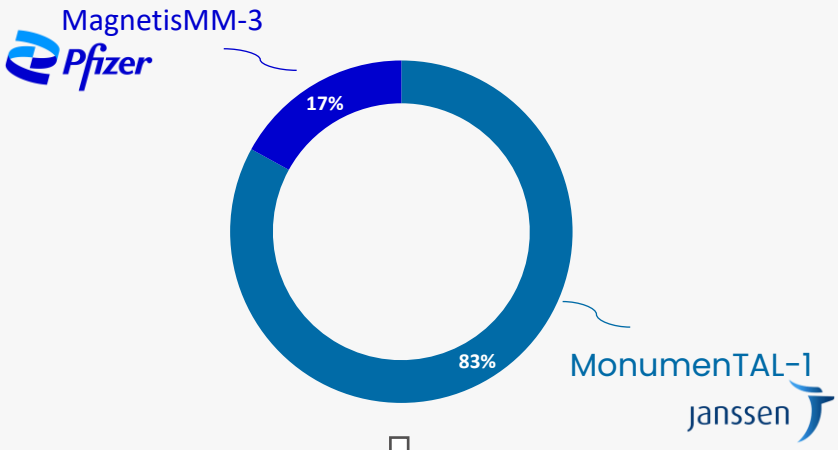
Combinations

daratumumab + lenalidomide + dexamethasone + bortezomib

Phase II GRIFFIN N= 30 mentions
Social media listening period: December 2022
Scope: worldwide in English

Phase II Relapse/Refractory Bispecific therapies: Antibody Treatment Makes Inroads Against Multiple Myeloma

Clinical trial mentioned/Sponsor



MonumenTAL-1
Ctrl + click to access clinical trial:
NCT04634552

"The purpose of this study is to evaluate the efficacy of talquetamab in participants with relapsed or refractory multiple myeloma at the recommended Phase 2 dose(s) (RP2Ds) (Part 3)."

MagnetisMM-3
Ctrl + click to access clinical trial : NCT04649359

"Study Of Elranatamab (PF-06863135) Monotherapy in Participants With Multiple Myeloma Who Are Refractory to at Least One PI, One IMiD and One Anti-CD38 mAb"

Headlines/Hot off the press

"Antibody Treatment Makes Inroads Against Multiple Myeloma"

An experimental immunotherapy appears highly effective in attacking bone marrow cancer, with nearly three in four patients responding to the treatment, new clinical trial results show. Click here to read the full article

"Janssen Submits Biologics License Application to U.S. FDA for Talquetamab for the Treatment of Patients with Relapsed or Refractory MM"

The Janssen Pharmaceutical Companies of Johnson & Johnson today announced the submission of a Biologics License Application (BLA) to the U.S. Food and Drug Administration (FDA) for talquetamab for the treatment of patients with relapsed or refractory multiple myeloma." Click here to read the full article

"Pfizer Presents Updated Favorable Elranatamab Data from Pivotal Phase 2 MagnetisMM-3 Trial"

"Data showed high objective response rate of 61% in RRMM patients with no prior BCMA-targeted treatment, with 84% probability of maintaining the response at nine months Results showed early and deep responses, and a manageable safety profile for elranatamab in heavily pretreated patients with advanced multiple myeloma"
Click here to read the full article

Molecules

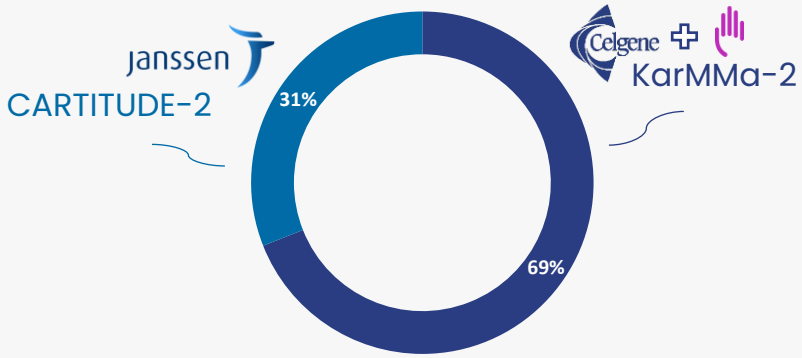
Talquetamab

Elranatamab

Phase II Relapse/Refractory bispecific therapies N= 571 mentions
Social media listening period: December 2022
Scope: worldwide in English

Phase II Relapse/Refractory: CAR-T: Bristol Myers Squibb Announces First Disclosures and New Data at ASH 2022

Clinical trial mentioned/Sponsor



KarMMA-2
Ctrl + click to access the clinical trial : NCT03601078

"An Efficacy and Safety Study of bb2121 in Subjects With Relapsed and Refractory Multiple Myeloma and in Subjects With High-Risk Multiple Myeloma (KarMMa-2)"

CARTITUDE-2
Ctrl + click to access clinical trial : NCT04133636

"A Study of JNJ-68284528, a Chimeric Antigen Receptor T Cell (CAR-T) Therapy Directed Against B-cell Maturation Antigen (BCMA) in Participants With Multiple Myeloma"

Headlines/Hot off the press

"Bristol Myers Squibb Announces First Disclosures and New Data at ASH 2022, Demonstrating Commitment to Raising Standards in Treatment Through Broad Multiple Myeloma Portfolio"

"Bristol Myers Squibb (NYSE: BMY) today announced the first disclosure of results and presentation of new research from its multiple myeloma portfolio across targets and molecular approaches at the 64 th American Society of Hematology (ASH) Annual Meeting and Exposition, underscoring the company's commitment to raising standards to transform multiple myeloma outcomes for every patient. " Click here to read the full article

"Cilta-Cel Shows Efficacy and Tolerability in Multiple Myeloma, Potentially Filling Unmet Need in Early-Line Therapy"

"CAR-T cell therapy ciltacabtagene autoleucel has expanded options for adult patients with relapsed/refractory multiple myeloma after 4 or more lines of prior therapy in the United States, and has continued to display promising efficacy in patients with multiple myeloma following early relapse."
Click here to read the full article

Molecules

idecabtagene vicleucel

JNJ-68284528

Phase II Relapse/Refractory: CAR-T N= 112 mentions
Social media listening period December 2022
Scope: worldwide in English

Drugs in clinical trials (Phase III) monitored during the listening period

Molecule name	Commercial name	Class	Manufacturer	Trial names + link (ctrl + right click) / line of treatment / Combination being studied
lenalidomide	Revlimid®	immunomodulatory drugs (IMiDs)	BMS	DETERMINATION (RR): lenalidomide (Revlimid), bortezomib (Velcade), and dexamethasone (RVD) MAIA (ND): daratumumab in combination with lenalidomide and dexamethasone ATLAS (Maintenance): Lenalidomide, Carfilzomib, Dexamethasone DRAMMATIC (??): Lenalidomide, Daratumumab EQUATE (ND): daratumumab, bortezomib, lenalidomide and dexamethasone POLLUX (RR): Daratumumab, Lenalidomide, and Dexamethasone TOURMALINE (RR): Ixazomib Plus Lenalidomide and Dexamethasone Myeloma XI (ND): cyclophosphamide, dexamethasone plus lenalidomide with or without carfilzomib AURIGA (Maintenance): Daratumumab Plus Lenalidomide
pomalidomide	Imnovid® / Pomalyst® (US)	immunomodulatory drugs (IMiDs)	BMS	ICARIA-MM (RR): Isatuximab, Pomalidomide, Dexamethasone
bortezomib	Velcade®	Proteasome inhibitors (PIs)	Takeda	DETERMINATION (RR): lenalidomide (Revlimid), bortezomib (Velcade), and dexamethasone (RVD) BOSTON (RR): selinexor plus bortezomib (Velcade) plus low-dose dexamethasone (SVd) EQUATE (ND): daratumumab, bortezomib, lenalidomide and dexamethasone CASTOR (RR): Daratumumab, Bortezomib and Dexamethasone Bellini (RR): venetoclax plus bortezomib and dexamethasone DREAMM 7 (RR): Belantamab Mafodotin, Bortezomib and Dexamethasone
carfilzomib	Kyprolis®	Proteasome inhibitors (PIs)	Amgen	IKEMA (RR): Isatuximab, Carfilzomib And Dexamethasone ATLAS (Maintenance): Carfilzomib, Lenalidomide, Dexamethasone Myeloma XI (ND): cyclophosphamide, dexamethasone plus lenalidomide with or without carfilzomib
ixazomib	Ninlaro®	Proteasome inhibitors (PIs)	Takeda	OPTIMUM (RR): Ixazomib, Lenalidomide TOURMALINE (RR): Ixazomib Plus Lenalidomide and Dexamethasone
Bb2121, Idecabtagene vicleucel	Abecma®	CAR T-cell therapy	BMS	KarMMa-3 (RR): Monotherapy
ciltacabtagene	Carvykti®	CAR T-cell therapy BCMA-directed	Janssen	CARTITUDE-4 (RR): Monotherapy
daratumumab	Darzalex®	Monoclonal antibody anti-CD38	Janssen	MajesTEC-3: (RR): Teclistamab in Combination With Daratumumab Subcutaneously (SC) (Tec-Dara) MAIA (ND): daratumumab in combination with lenalidomide and dexamethasone DRAMMATIC (??): Lenalidomide, Daratumumab EQUATE (ND): daratumumab, bortezomib, lenalidomide and dexamethasone CASTOR: (RR): Daratumumab, Bortezomib and Dexamethasone POLLUX (RR): Daratumumab, Lenalidomide, and Dexamethasone MagnetisMM-5 (RR): Monotherapy or doublet therapy with daratumumab AURIGA (Maintenance): Daratumumab Plus Lenalidomide
isatuximab	Sarclisa®	Monoclonal antibody anti-CD38	Sanofi	IKEMA (RR): Isatuximab, Carfilzomib And Dexamethasone ICARIA-MM (RR): Isatuximab, Pomalidomide, and Dexamethasone
belantamab mafodotin-blmf	Blenrep® / Belamaf® (US)	Antibody-drug conjugates (BCMA)	GSK	DREAMM-3 (RR): Monotherapy DREAMM 7 (RR): Belantamab Mafodotin, Bortezomib and Dexamethasone DREAMM 8 (RR): Belantamab Mafodotin Plus Pomalidomide and Dexamethasone

Phase III Line 1 Triplet Therapy: Janssen Presents Efficacy and Subgroup Analyses from MAIA Study Showing Long-Term Results of DARZALEX® (daratumumab)-based Regimen in Newly Diagnosed, Transplant-Ineligible Multiple Myeloma

Headlines/Hot off the press

Janssen Presents Efficacy and Subgroup Analyses from MAIA Study Showing Long-Term Results of DARZALEX® (daratumumab)-based Regimen in Newly Diagnosed, Transplant-Ineligible Multiple Myeloma

"Updated analyses report on progression-free survival, minimal residual disease negativity, overall response and overall survival across patient types, regardless of age or cytogenetic risk"
Click here to read the full article

Sponsor

Janssen

MAIA
Ctrl + click to access clinical trial:
NCT02252172

"Study Comparing Daratumumab, Lenalidomide, and Dexamethasone With Lenalidomide and Dexamethasone in Participants With Previously Untreated Multiple Myeloma"

Combinations

Daratumumab + Lenalidomide + Dexamethasone

Phase III MAIA N= 134 mentions
Social media listening period:December 2022
Scope: worldwide in English

Phase III Maintenance Quadruplet therapy: How Long Should Myeloma Patients Continue Lenalidomide After AutoSCT?

Headlines/Hot off the press

How Long Should Myeloma Patients Continue Lenalidomide After AutoSCT?

"Data from a large phase III trial presented at the 2022 American Society of Hematologyopens in a new tab or window (ASH) annual meeting examined the relationship between minimal residual disease, progression-free survival, and overall survival in patients randomly assigned to lenalidomide maintenance or no maintenance at 3 months after autologous stem-cell transplant."
Click here to read the full article

Sponsor

University of Leeds

Myeloma XI
Ctrl + click to access clinical trial:
NCT01554852

"The purpose of this study is to compare a standard chemotherapy regimen of cyclophosphamide, dexamethasone plus thalidomide with a newer regimen of cyclophosphamide, dexamethasone plus lenalidomide with or without carfilzomib. "

Combinations

cyclophosphamide + lenalidomide + dexamethasone ± carfilzomib

Phase III Myeloma XI N= 11 mentions
Social media listening period: December 2022
Scope: worldwide in English

Phase III Relapse/Refractory Doublet Therapy: FDA Seeks to Withdraw Melphalan Flufenamide for Relapsed/Refractory Multiple Myeloma

Headlines/Hot off the press

"FDA Seeks to Withdraw Melphalan Flufenamide for Relapsed/Refractory Multiple Myeloma"

"Oncopeptides AB announced December 7, 2022, that the FDA has asked the company to withdraw melphalan flufenamide (Pepaxto) from the US market. The company stopped marketing the peptide-drug conjugate in the United States as of October 22, 2021." Click here to read the full article

"Oncopeptides presents new scientific data at the Annual American Society of Hematology Meeting ASH"

"The clinical abstract evaluated patients with multiple myeloma who were refractory to prior alkylators in the phase 3 OCEAN study. Data shows that melflufen is a safe and effective therapy in patients who are alkylator refractory, regardless of whether they received a prior autologous stem cell transplant or not." Click here to read the full article

Sponsor

oncopeptides

OCEAN
Ctrl + click to access clinical trial:
NCT03151811

"A Study of Melphalan Flufenamide (Melflufen)-Dex or Pomalidomide-dex for RRMM Patients Refractory to Lenalidomide"

Combinations

Melphalan Flufenamide + Dexamethasone

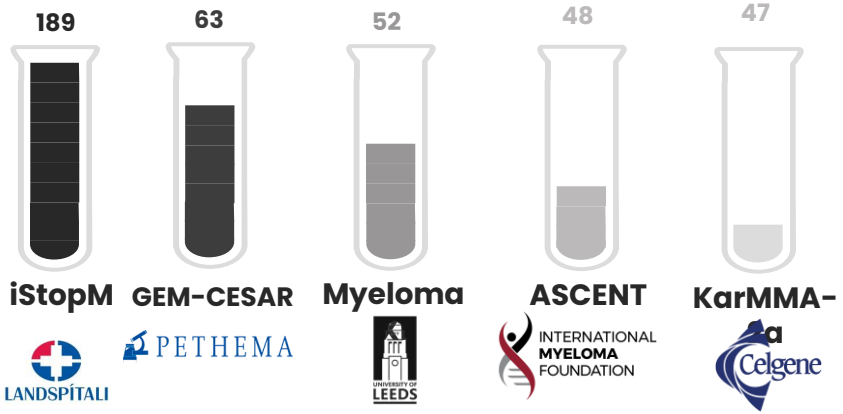
Phase III OCEAN N= 208 mentions
Social media listening period: December 2022
Scope: worldwide in English

Focus on ASH 2022 HCPs' online conversations: the main topic of discussion for the period were centred around the ASH 2022 meeting (American Society of Hematology), that took place from December 10th to December 13th.

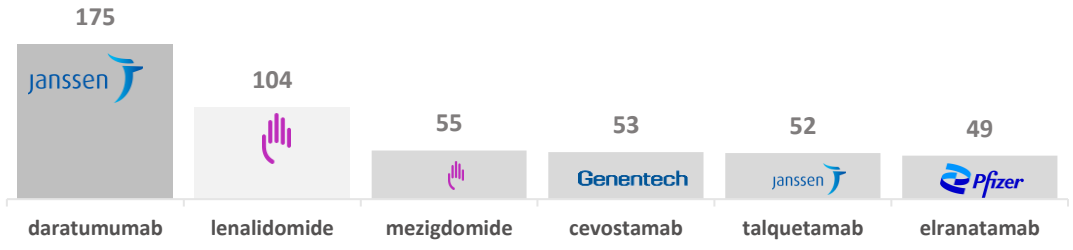
Encouraging results from trials (**iStopMM, GEM-CESAR** and **ASCENT**) focusing on multiple myeloma precursors **SMM** and **MGUs** were put forth.

Apart from this, the spotlight was put on bispecific antobodies with **talquetamab**, **elranatamab** and **cevostamab** generating interest.

Most mentioned clinical trials



Most mentioned molecules



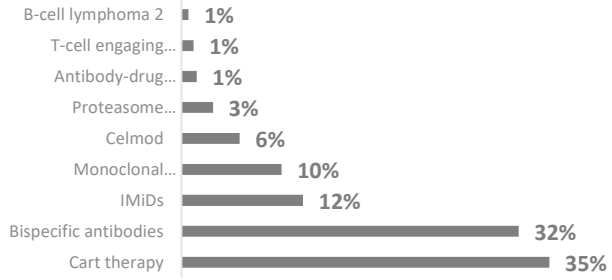
Volume of mentions

Ash 2021
3,754
mentions

+23

Ash 2022
4,650
mentions

Topics of discussions (type of treatment)



Top posts from HCPs per engagement

Vinay Prasad MD MPH @VPrasadMDMPH

A Twitter Battle on Treating HR Risk Smoldering Myeloma
I break down the debate and arguments
A 3 part video series just in time for #ASH22
(a clearer video uploading to Youtube, will post link at end of video)
@Plenary_Session @AaronGoodman33
PART 1 - The battle starts
Traduire le Tweet

Vincent Rajkumar @VincentRK

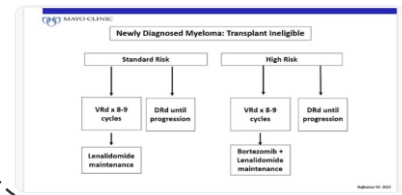
I'll never forget what Jesus SanMiguel said at the IMWG breakfast today at #ASH22 to myeloma investigators:

"A team is not people who can just play together. A team is people who trust each other. We are a team. That's why we are making such incredible progress in myeloma".

Vincent Rajkumar @VincentRK

Updated Myeloma Treatment Algorithms presented at @IMFmyeloma @CCO_Education symposium today at #ASH22

1. Newly diagnosed transplant ineligible. Either VRd or DRd is OK. Maintenance varies by risk stratification.
Traduire le Tweet



HCPs multiple myeloma ASH 2022 universe N= 4,650 mentions
Social media listening period: November 26th, 2022, to December 27th, 2022
Scope: worldwide in English

Focus on ASH 2022 HCPs' online conversations : Key clinical trial iStopMM

The **iStopMM** trial (Iceland Screen, Treats, or Prevents Multiple Myeloma), described as the largest scientific study conducted in Iceland, aim is to study the overall survival of individuals with MGUS receiving follow-up compared to those not receiving any follow-up within the study after 5 years of follow-up. Updates from this trial generated **interest** and **enthusiasm** from HCPs who deemed them **practice-changing.** The abstract "**Predicting the Need for Upfront Bone Marrow"** particularly stood out.

Multiple myeloma (MGUS & SMM)

LANDSPÍTALI

From most mentioned to least mentioned

Amongst the **10 iStopMM abstracts** presented at ASH22, the following were the most mentioned:

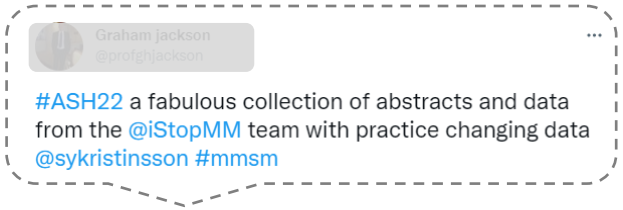
"Predicting the **Need for Upfront Bone Marrow** Sampling in Individuals with MGUS: Derivation of a Multivariable Prediction Model" link

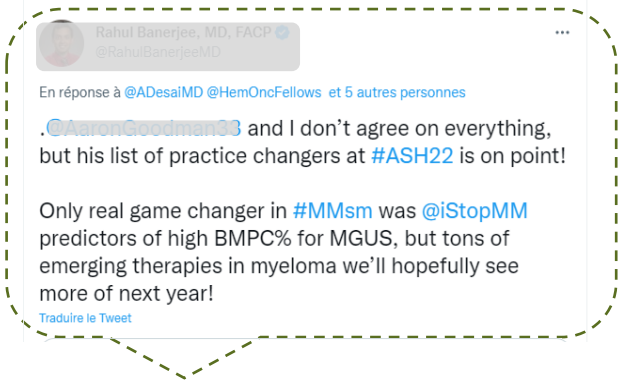
"Sars-Cov-2 **Vaccinations Do Not Lead to** Progression of Monoclonal Gammopathy of Undetermined Significance" link

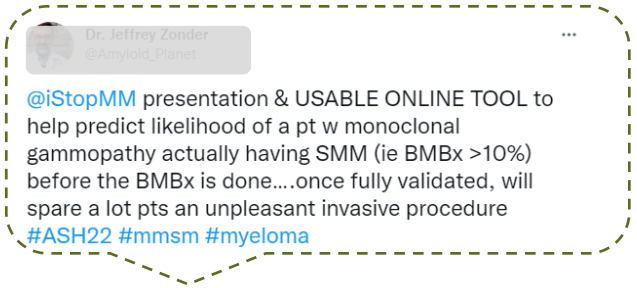
"Autoimmune Diseases **Are Not Associated** with Monoclonal Gammopathy of Undetermined Significance" link

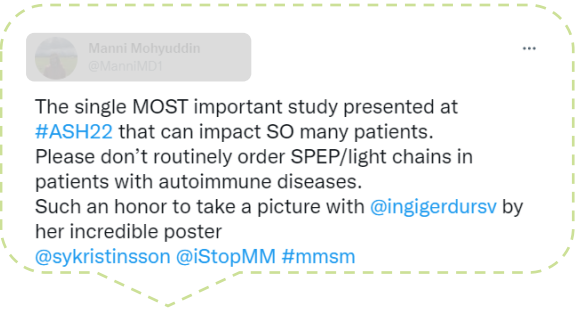
"**Transient M-Proteins**: Epidemiology, Causes, and the Impact of Mass Spectrometry" link

"Determining **Hemodilution** in Diagnostic Bone Marrow Samples in Multiple Myeloma and Its Precursors By Next-Generation Flow Cytometry" Link









View from the expert

According to Dr. Blin, our in-house expert, the most memorable iStopMM abstract touched upon the use of **molecular biology** for more **precise diagnosis**. Another abstract of interest was the use of mass spectrometry. Though providing a potential additional MRD methodology, Dr. Blin notes that this is an analytical tool difficult to implement and needs more research for MM. Ultimately, for our expert, those results show that one day MM treatment could evolve towards more **personalized protocols** in line with individual **genomic signatures**.

Dr. Blin shared with us that while overall interesting, results from iStopMM are not necessarily practice-changing, at least not in the short term.

HCPs multiple myeloma ASH 2022 iStopMM universe N= 189 mentions
Social media listening period: November 26th, 2022, to December 27th, 2022
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Focus on ASH 2022 HCPs' online conversations : bispecific antibodies developments in multiple myeloma; non-BCMA targeted bispecifics are highlighted, giving yet another set of potential tools to combat multiple myeloma

talquetamab

Results from the **Monumental-1** trial showed that Talquetamab, a **novel** targeting the **GPRC5D antigen** in Participants With Relapsed or Refractory Multiple Myeloma demonstrated an ORR > 70% while being **well tolerated**.

Joseph Mikhael
@jmikhaelmd

master presenter Ajai Chari presenting Talquetamab a bispecific antibody targeting GPRC5D. Amazing 74% ORR and even more remarkable low infection rates grade 3/4 at 17% and 12%. This is remarkable and may likely be the next bispecific and First GPRC5D available #ASH22 #MedIQ22ASH

Teresa Miceli, ❤️&🎗️4🌎
@IMFnurseMyeloma

ADC with other targets. Talquetamab is GPRC5DxCD3 targeted. Also showing great promise with toxicity as expected, but additional off-target AE of skin/hair/nail and dysgeusia. Management will be key. #ASH22 @IMFMyeloma #IMFASH22 #mmsm

Chandler Park MD FACP 🌎
@CParkMD

⭐Incredible! Just published NEJM. Myeloma patients treated w/ Talquetamab 👉 ORR > 70% in phase 1/2 MonumenTAL-1 study.
👉Whopping 70.6% patients prior treated w/ CAR T-cell,
👉35.3% received prior bispecific antibody #ASH22 @OncoAlert

cevostamab

Results from a **phase I study** showed that Cevostomab, a **FcRH5** bispecific antibodies in combination with Tocilizumab can significantly reduce the risk of developing TDB-induced CRS without an apparent impact on anti-myeloma activity. Those results were deemed **encouraging** by HCPs for both cevostamab and potentially bispecifics as a class.

Teresa Miceli, ❤️&🎗️4🌎
@IMFnurseMyeloma

The block of IL-6 does not reduce efficacy of #Cevostamab. Median time to response was similar in Toci & nonToci groups.
Is this transferable to other Bispecifics? Could be a game changer.
#ASH22 @IMFMyeloma #IMFASH22 #mmsm

Mohamad Mohty
@Mohty_EBMT

an ounce of prevention is worth a pound of cure #ASH22 Cevostamab making its way smoothly into the crowded bispecific myeloma space! @TheIACH @Mohty_EBMT

Shonali Midha, M.D.
@ShoMidha

Encouraging results of pre-treatment tocilizumab with cevostamab (FcRH5DxCD3 BiTE @genentech) presented by Dr. Suzanne Trudel @pmcancercentre decreasing CRS rate from 90.9% to 38.7%!
🔼 rates of neutropenia, infection and G-CSF use, but did not affect efficacy #ASH22 #mmsm

HCPs multiple myeloma ASH 2022 multiple myeloma universe N= 4,650 mentions
Listening period: November 26th, 2022, to December 27th, 2022
Scope: worldwide in English

Focus on ASH 2022 HCPs' online conversations : CART developments in multiple myeloma; while impactful developments around CART therapies were overall sparse, results from the FasTCAR and KarMMa-2a studies stood out

Ben Derman
@bdermanmd

GC012F for newly diagnosed high risk MM. 69% extramedullary dz; Remarkable that CRS rate was so low (25%). Now we have to see how long this therapy lasts, but intriguing as we see other CAR T-cell approaches moving to the frontline setting in randomized designs. #ASH22 #mmsm

Raj Chakraborty
@rajshekharucms

Dual BCMA/CD19 CAR in newly diagnosed high-risk #MultipleMyeloma show phenomenal responses. Small number and need to see long-term data, but impressive given the potential for long-term treatment-free remissions #ASH22 #mmsm

Teresa Miceli, ♥&🍀4🌎
@IMFnurseMyeloma

Next, CART therapy, with focus on first line use with BCMA/CD19 product, with FasTCAR, reducing manufacturing time to days instead of weeks, more & better quality T-Cells.
#ASH22 @IMFMyeloma #IMFASH22 #mmsm

FasTCAR

Results from a **phase I** trial studying a dual CART approach targeting BCMA and CD19 showed intriguing results in terms of **ORR** and **MRD** as well as **faster CART manufacturing** turnaround in transplant eligible **newly diagnosed** high risk patients.

Results from **FasTCAR** are from a very early phase I study done on 13 participants

ide-cel

Updates from **KarMMa** cohort 2a, a trial studying high-risk multiple myeloma patients with early relapse after frontline ASCT were deemed somewhat **disappointing** by some in terms of **PFS** and **mDOR** while others **applauded** the results in terms of **ORR.**

Sairah Ahmed MD
@sairah_ahmed

👉 @DrKrinaPatel with a wonderful presentation of the KarMMa cohort 2 data -> ORR 83% in high risk MM. Meaningful results and MRD negativity in 70%! @szusmani @MDAndersonNews #ASH22 #MMSM @MMTrials @WomeninOnc

Samer Al Hadidi, MD,MS,FACP
@HadidiSamer

#ASH22 #mmsm
In KARMMA-2a, mPFS of less than 1 year is not what we like to see- more work to be done for this subset of patients 👇

Manni Mohyuddin @MannIMD1 · 11 déc. 2022
En réponse à @bdermanmd

I do commend the authors too- but to be honest this is disappointing, and ide-cel failed to correct the natural history of this aggressive disease. Perhaps other products may do better for this population. #ASH22

Ben Derman
@bdermanmd

Karmma-2a cohort of ide-cel in pts with early relapse in #mmsm. This is a tough group of patients - kudos to investigators for enrolling! PFS and DOR seem fairly similar to later lines. We need to do better for this population! #ash22

View from the expert

While some HCPs reacted online somewhat negatively to the results of the KarMMa 2a cohort, our in-house expert Dr. Blin has a more nuanced view. Some of the results presented actually offer an improvement upon what exists today, namely **CRR (complete response rate)** of 45,6% in KarMMa 2a versus around 20% for the existing therapy, DARA-KD. While other endpoints might not appear encouraging at first, this cohort concerns **very difficult-to-treat** patients that might still see benefits.

HCPs multiple myeloma ASH 2022 multiple myeloma universe N= 4,650 mentions
Listening period: November 26th, 2022, to December 27th, 2022
Scope: worldwide in English

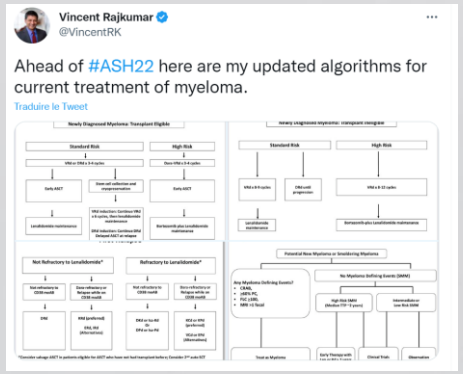
As expected, the ASH 2022 event is largely reflected in the posts receiving the most engagement.

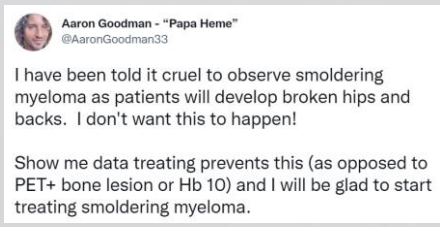
Dr Vincent Rajkumar is once again present with a post pertaining to a recap of the current treatment in multiple myeloma.

Other posts focused on the treatment of smoldering multiple myeloma and how to avoid side effects during treatment. This thread is in response to another Twitter conversation that ignited some controversies around the best course of treatment advisable. The most liked post from highlighted the announcement of a new multiple myeloma focused research institute.

Most engagement

Most retweeted, liked and replied to (Ctrl + right click to access tweets)





Top 5 influencers

1. 
Vincent Rajkumar
@VincentRK
76,1 K followers

2. 
Samer Al Hadidi
@HadidiSamer
2,7 K followers

3. 
Saad Z. Usmani
@szusmani
8,8 K followers

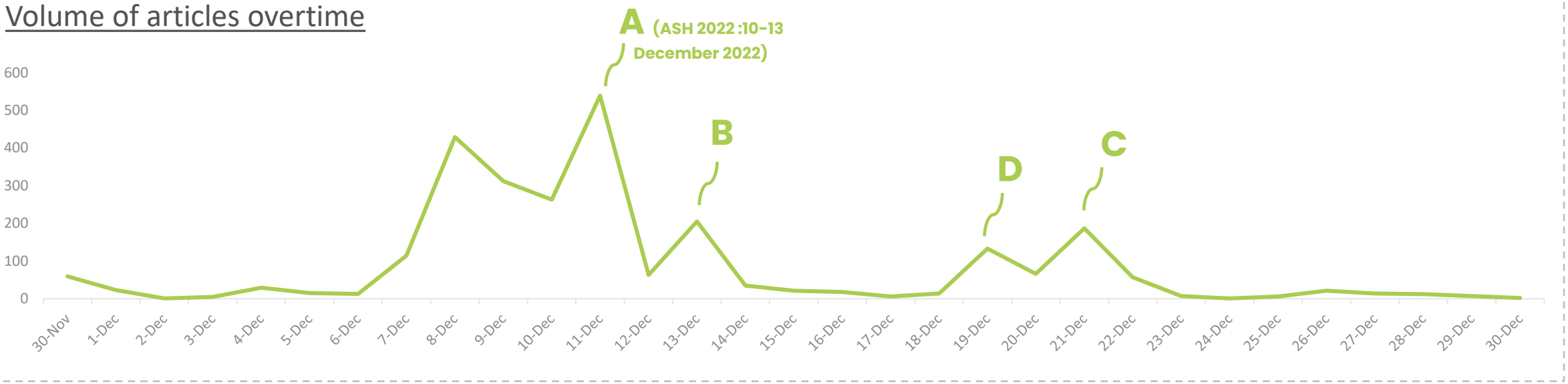
4. 
Noopur Raje
@NoopurRajeMD
8,6 K followers

5. 
Al-Ola A Abdallah
@Abdallah81MD
2,7 K followers

HCPs conversation N= 4743 mentions
Social media listening period: December 2022
Scope: worldwide in English

Media (press releases): volume and articles per peak

Volume of articles overtime



A

- Janssen Presents New Data for **Talquetamab**, a First-in-Class GPRC5DxCD3 Bispecific Antibody, Suggesting Durable Responses in Patients with Heavily Pretreated Multiple Myeloma LINK
- Janssen Submits Biologics License Application to U.S. FDA for **Talquetamab** for the Treatment of Patients with Relapsed or Refractory Multiple Myeloma LINK
- **Novel drug** shows early promise in treating multiple myeloma LINK
- Janssen Presents Efficacy and Subgroup Analyses from **MAIA** Study Showing Long-Term Results of DARZALEX® (**daratumumab**)-based Regimen in Newly Diagnosed, Transplant-Ineligible Multiple Myeloma LINK

A (continued)

- Gracell Biotechnologies Presents Clinical Data for **FasTCAR-T GC012F** for High Risk, Newly Diagnosed Multiple Myeloma Demonstrating 100% Overall Response Rate LINK
- Arcellx and Kite Announce Strategic Collaboration to Co-Develop and Co-Commercialize Late-Stage Clinical **CART-ddBCMA** in Multiple Myeloma LINK
- Arcellx Announces Continued Robust Long-Term Responses from its **CART-ddBCMA** Phase 1 Expansion Trial in Patients with Relapsed or Refractory Multiple Myeloma and Additional Pipeline Progress LINK

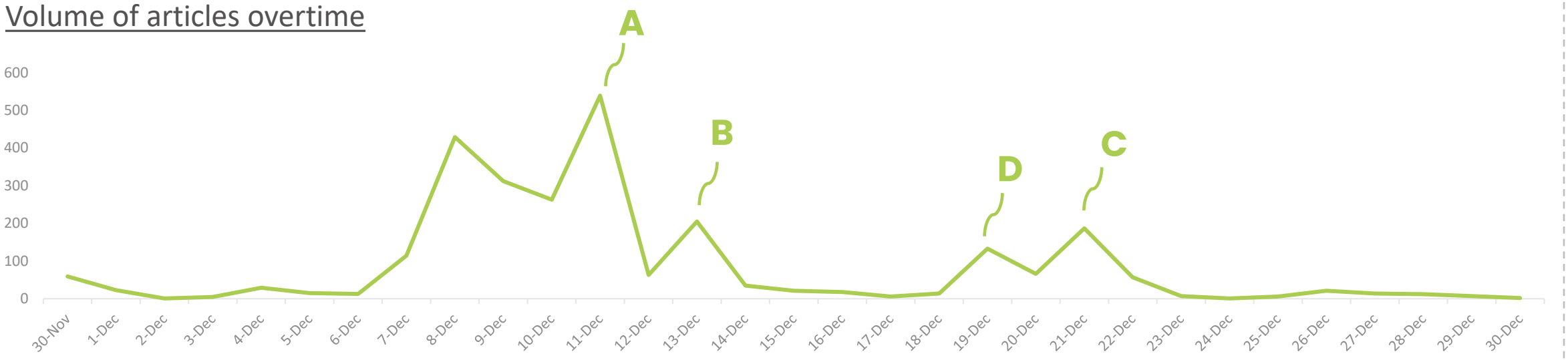
A (continued)

- **Gilead to co-develop Arcellx's multiple myeloma drug** LINK
- Janssen Presents First Data from MajesTEC-2 Trial of TECVAYLI™ (**teclistamab-cqyv**) in Combination with DARZALEX FASPRO® (daratumumab and hyaluronidase-fihj) and Lenalidomide in Relapsed or Refractory Multiple Myeloma LINK
- World-Renowned Myeloma Expert, Dr. Ivan Borrello, Joins TGH Cancer Institute to Lead Its Bone Marrow Transplant (BMT)and Cell Therapies Program LINK
- Pfizer Presents Updated Favorable **Elranatamab** Data from Pivotal Phase 2 MagnetisMM-3 Trial LINK

Media (press release, excluding financial news) N= 2677 mentions
Listening period:December 2022
Scope: worldwide in English

Media (press releases): volume and articles per peak (continued)

Volume of articles overtime



B

- Circulating Tumor Cell detection by Menarini Group's CELLSEARCH® System leading to **genomic profiling of myeloma cells shows potential for non-invasive management of Multiple Myeloma patients at early stages of disease** LINK

- Immix Biopharma in-licenses **NXC-201, BCMA-targeted Next-Generation CAR-T Therapy** Demonstrating High Complete Response Rate in Heavily Pre-Treated Multiple Myeloma (71% Complete Responses) and AL Amyloidosis (100% Complete Responses) LINK

C

- ORIC Pharmaceuticals Announces Clinical Development Collaboration with Pfizer for **ORIC-533** in Multiple Myeloma and Concurrent $25 Million Equity Investment by Pfizer LINK

- U.S. **FDA** Approves Clinical Trial Application for **IASO Bio's BCMA CAR-T CT103A** for Relapsed/Refractory Multiple Myeloma LINK

D

- Renal Impairment Linked to Worse Prognosis in IgD Multiple Myeloma LINK

- **Ruxolitinib** and **methylprednisolone** for treatment of patients with **relapsed/refractory multiple myeloma** LINK

Media (press release, excluding financial news) N= 2677 mentions
Listening period:December 2022
Scope: worldwide in English

Articles per theme

Antibody–cytokine fusion protein

- **Novel drug** shows early promise in treating multiple myeloma LINK

Bispecific antibody

- Janssen Presents New Data for **Talquetamab**, a First-in-Class GPRC5DxCD3 Bispecific Antibody, Suggesting Durable Responses in Patients with Heavily Pretreated Multiple Myeloma LINK
- Janssen Submits **Biologics License Application** to U.S. FDA for **Talquetamab** for the Treatment of Patients with Relapsed or Refractory Multiple Myeloma LINK
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- Pfizer Presents Updated Favorable **Elranatamab** Data from Pivotal Phase 2 MagnetisMM-3 Trial LINK

CAR T-cell therapy

- Gracell Biotechnologies Presents Clinical Data for *FasTCAR-T GC012F* for High Risk, Newly Diagnosed Multiple Myeloma Demonstrating 100% Overall Response Rate LINK
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HCPs

- World-Renowned Myeloma Expert, Dr. Ivan Borrello, Joins TGH Cancer Institute to Lead Its Bone Marrow Transplant (BMT)and Cell Therapies Program LINK

Monoclonal antibody

- Janssen Presents Efficacy and Subgroup Analyses from **MAIA** Study Showing Long-Term Results of DARZALEX® (**daratumumab**)-based Regimen in Newly Diagnosed, Transplant-Ineligible Multiple Myeloma LINK

New technologies

- Circulating Tumor Cell detection by Menarini Group's CELLSEARCH® System leading to genomic profiling of myeloma cells shows potential for non-invasive management of Multiple Myeloma patients at early stages of disease LINK

Oral JAK1/2 inhibitor

- **Ruxolitinib** and **methylprednisolone** for treatment of patients with relapsed/refractory multiple myeloma LINK

Small Molecule CD73 Inhibitor

- ORIC Pharmaceuticals Announces Clinical Development Collaboration with Pfizer for **ORIC-533** in Multiple Myeloma and Concurrent $25 Million Equity Investment by Pfizer LINK

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