




Building a Cell and Gene Therapy Program to Close Health Equity Gaps

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Boston Medical Center
HEALTH SYSTEM

- 
1. Describe healthcare inequities in access to cell and gene therapies
 2. Review the key components of developing a cell and gene therapy program
 3. Discuss challenges and key learning throughout the planning and implementation phases to help accelerate building program and improve access

No conflicts

Boston Medical Center
HEALTH SYSTEM

We are a large IDN Health System providing over 1M visits annually and provide insurance for more than 750K members

>750,000
MEMBER
HEALTH PLAN

MORE THAN
7,200
EMPLOYEES

>80%
OF PATIENTS
PUBLICLY
INSURED OR
UNINSURED

570
BED TEACHING
HOSPITAL

CENTER
**BOSTON
MEDICAL**

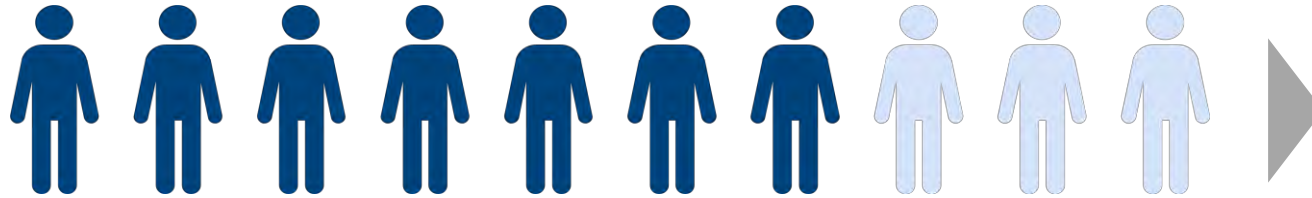
LARGEST
PROVIDER OF
TRAUMA AND
EMERGENCY
SERVICES IN NEW
ENGLAND

NEW
ENGLAND'S
LARGEST
SAFETY-NET
HOSPITAL

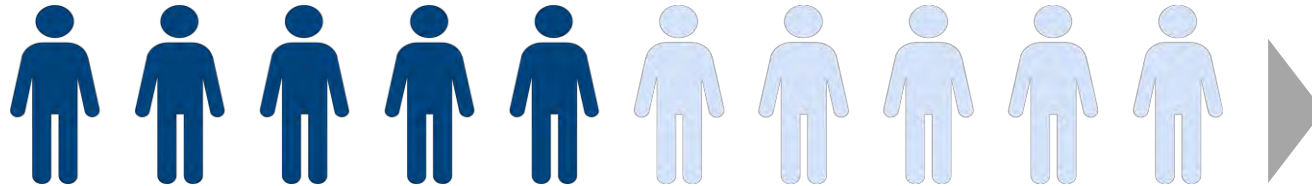
PRIMARY
TEACHING
HOSPITAL OF
BU SCHOOL OF
MEDICINE

>1 Million
OUTPATIENT
VISITS PER
YEAR

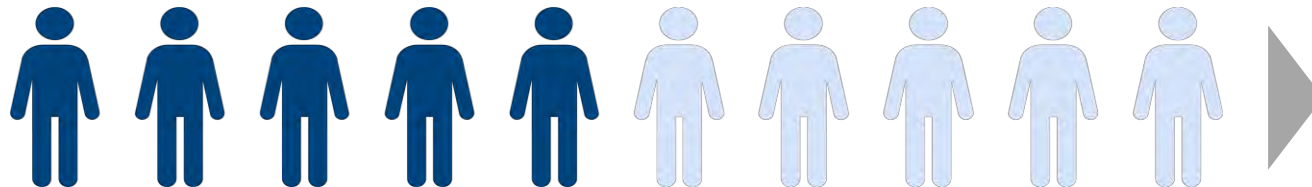
About Boston Medical Center (BMC)



~70% of our hospital patients identify as **people of color**



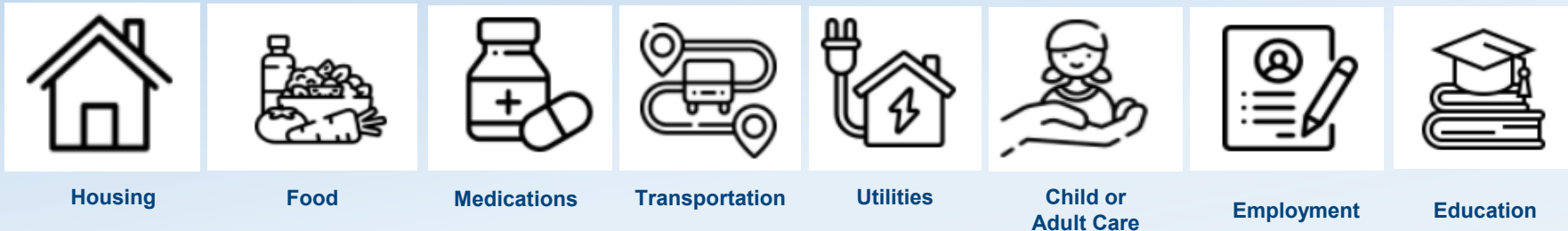
~50% of our hospital patients live at or **below the federal poverty level**



~50% of our Health Plan members have a **mental health and/or substance use disorder**

Our patient population is racially, culturally, and linguistically diverse, making the promotion of health equity a system imperative

Screening/Intervention for Social Determinants Of Health in MM

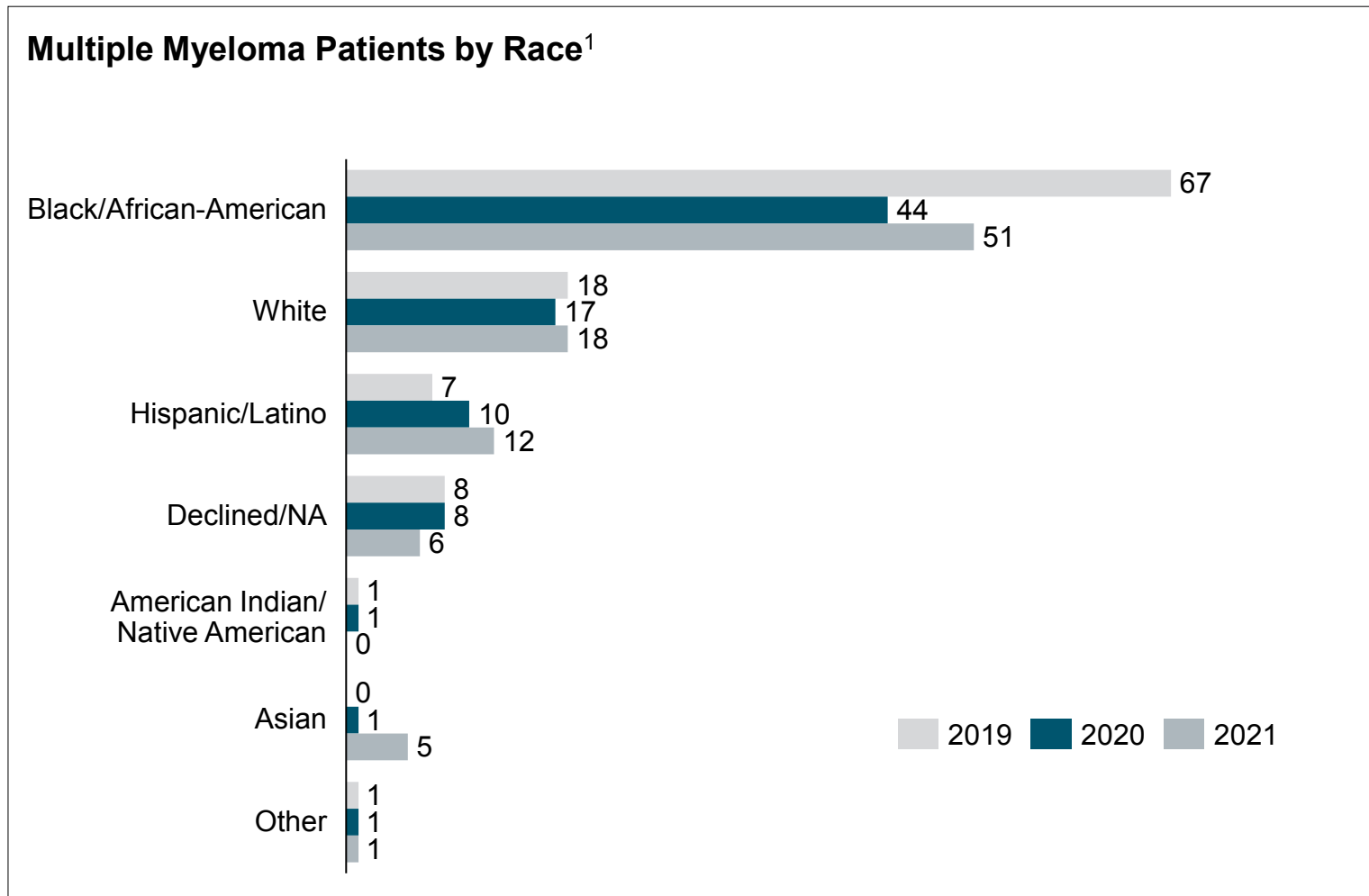


BMC Rooftop Farm



Date range: Sep 2017 to March 2021

Across the unique Multiple Myeloma patients seen at BMC annually, more than 73% are from ethnic minority groups and more than half are African American



... and the local access issues we observed are also present at a national level, where disease burden does not match access to definitive therapies like CAR-T

There is a systemic problem with minority populations accessing care and novel therapies across the US...

Patient Demographics

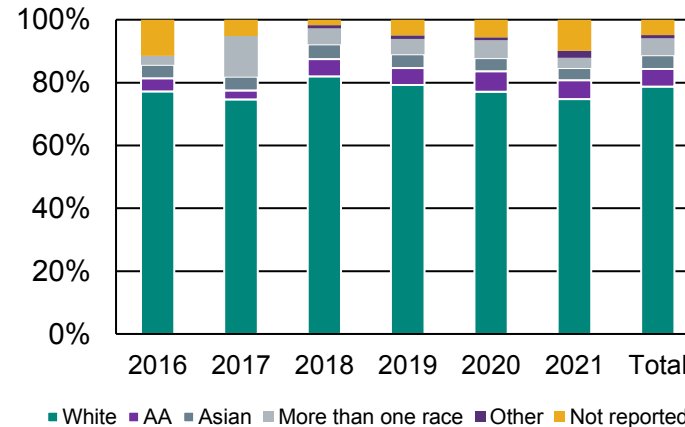
African Americans

Have a **twofold increased risk** of Multiple Myeloma compared with Caucasian American¹
Make up **20%** of all cases of Multiple Myeloma in the US¹

Are **50% less likely** to undergo a stem cell transplantation²

Only account for **3-6%** of all patients in clinical trials³

Treatment Demographics











- **79% of recipients of CAR-T therapies were white** in the US
- Minority groups, specifically AAs, remain significantly underrepresented as CAR-T recipients.

... and we had the same experience at Boston Medical Center

- BMC referred out **4 Multiple Myeloma patients (all POCs)** over the past year, and **none of them** received treatment.
- The same barrier was identified by manufacturers - according to Gilead & Kite CEO, at the first launch in B cell lymphoma, only **2 out of 10 patients** received the drug, while 4 of 10 are referred patients in clinical trials.

In the past, there was limited access points for CAR T- Cell Therapies in MA for underserved patient populations due to treatment complexities and high drug costs...

- From 2017 to 2022, access to CAR T-Cell Therapies was extremely limited to non-inclusive institutions, such as MGH, BWH and BID, especially for underserved patient populations (eg, POCs, low socio- economic status)

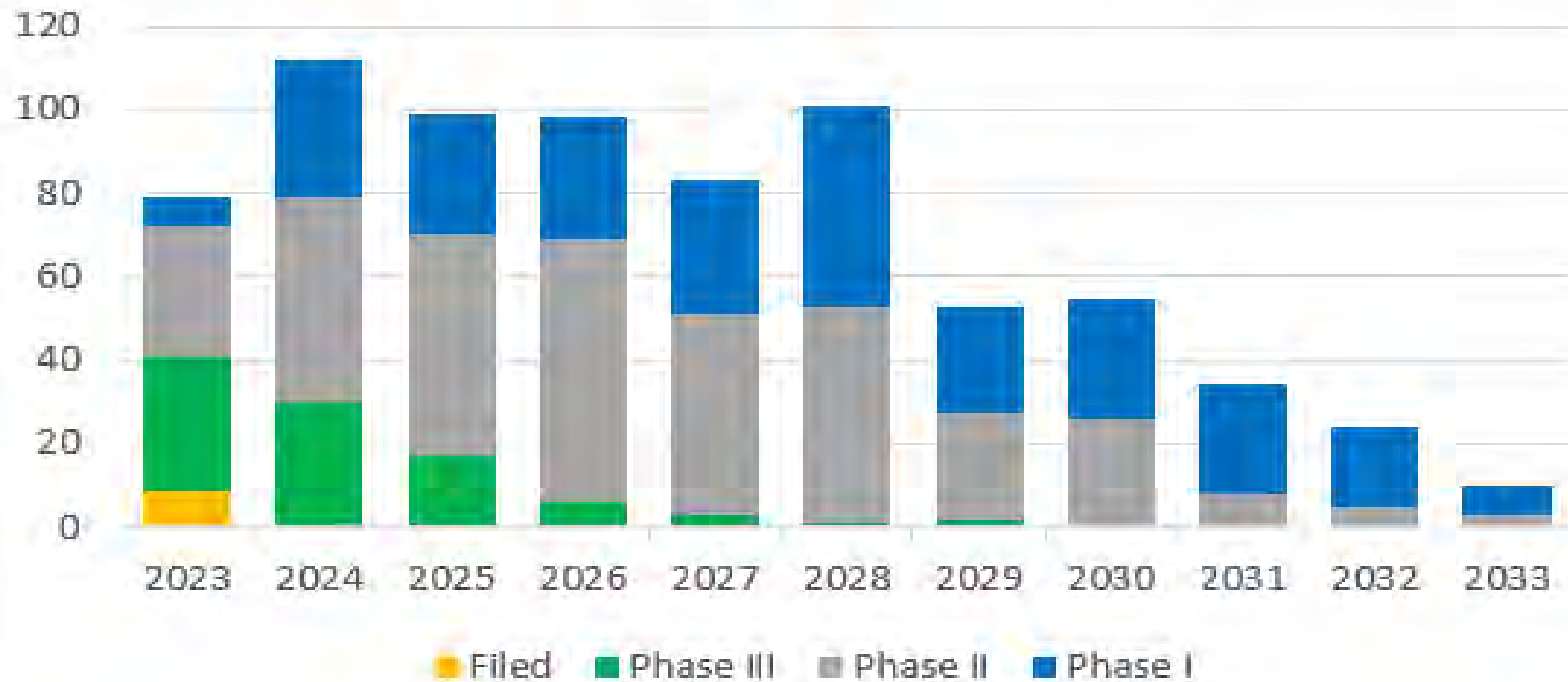
 Racial Inclusivity National Ranking ¹	Drug	Kymriah		Yescarta	Tecartus	Breyanzi	Abecma	Carvykti
	Manufacturer	Novartis		Kite Pharma	Kite Pharma	Bristol Myers Squibb	Bristol Myers Squibb	Janssen Oncology/Legend Biotech
	Indication	ALL*	Lymphoma: DLBCL & FL*				MM*	MM
#1185	 MASSACHUSETTS GENERAL HOSPITAL	-	X	X	X	X	X	X
#3080	 BRIGHAM AND WOMEN'S HOSPITAL	-	X	X	X	X	X	X
NA	 Boston Children's	X	-	-	-	-	-	-
#2901	 Beth Israel Lahey Health Beth Israel Deaconess Medical Center	-	X	X	X	X	X	X
#270	 Tufts Medical Center	X	X	-	-	-	-	-
#2	 BOSTON MEDICAL CENTER	-	-	-	-	-	-	-
No ranking	 DANA-FARBER/BRIGHAM AND WOMEN'S CANCER CENTER	X	X	X	X	-	-	-

1. The Lown Institute Hospitals Index

*ALL: Acute Lymphocytic Leukemia; *MCL: Mantle Cell Lymphoma; *DLBCL: Diffuse Large B Cell Lymphoma; *MM: Multiple Myeloma, *FL: Follicular Lymphoma

Predicted FDA approvals for cell and gene therapies

(Active trials at Dec. 2022, not risk adjusted)



Why do significant barriers exist for access to CGT?

- Access points are limited, even some of the most prestigious institutions are still grappling with how to build these programs (ex: Kaiser, Geisinger)
- Lack of cell and gene therapy expert to build out program
- High cost and high financial risk in current environment
- High operational and clinical resources are required (both logistically burdensome processes, requiring significant amount of resource alignment across (bed control, nursing, lab, pharmacy, finance, ED)
- Manufacturers may prioritize only select sites for access to their Cell and Gene therapies
- Site activation can take anywhere from 6-12 months

Why aren't patients getting access to CGT when they are referred for these therapies?

-Many institutions have internal politics about which treatment patient should be offered (ex: disagreement between transplant team and CAR- T team)

Insurance bias (ex: do not want to take medicaid)

Take on too many referrals, which could impact patient activation

Only has finite # of manufacturing slots each month (ex: Carvykti)

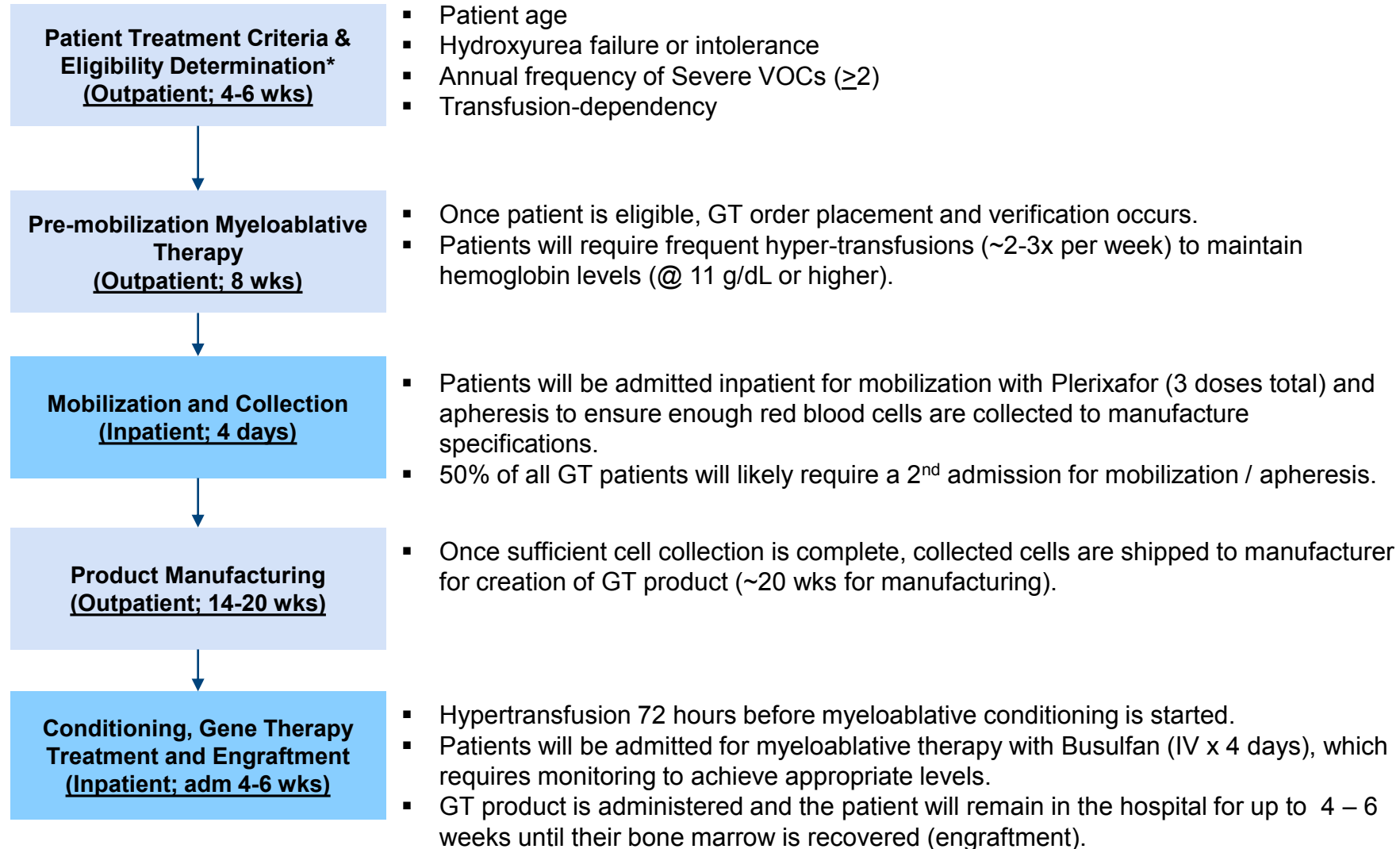
Prioritization of internal patients based on available resources (bed, apheresis slots, existing volume at capacity)

Do not have access to all the CAR-Ts (example only has access to 5 out of 6)

A multidisciplinary effort is needed to ensure a well-thought-out implementation plan and team's readiness to provide the treatment

Stakeholder	Scope
Pharmacy	<ul style="list-style-type: none"> ▪ Negotiate agreements and coordinate with manufacturers ▪ Develop SOPs ▪ Organize manufacturer-specific training
Hematology / Oncology	<ul style="list-style-type: none"> ▪ Determine patient eligibility and selection criteria ▪ Design patient care plan and develop SOPs for coordinating patient throughput and manage multiple inpatient admissions ▪ Provide expertise in C/G therapy
Nursing	<ul style="list-style-type: none"> ▪ Nurse education and training ▪ Assess nursing staffing needs ▪ Participate in patient care plan design
Bed Control	<ul style="list-style-type: none"> ▪ Assess inpatient bed access for C/G pts
Lab	<ul style="list-style-type: none"> ▪ Develop SOPs for processing pt stem cell collection, storage and handling and QA
Revenue Cycle / Contracting	<ul style="list-style-type: none"> ▪ Direct negotiation with insurers ▪ Confirm contracting and billing details
Finance	<ul style="list-style-type: none"> ▪ Review and further validate financial forecast ▪ Incorporate C/G initiatives into FY24 budget
IT	<ul style="list-style-type: none"> ▪ Support and build treatment plan in EPIC for GT pts in similar fashion to CAR-T IT build
Project Management	<ul style="list-style-type: none"> ▪ Facilitate and track project progress ▪ Manage implementation timeline

GT administration is a long and complex treatment journey, likely requiring three separate inpatient admissions.



*Actual eligibility will vary depending on GT product type.

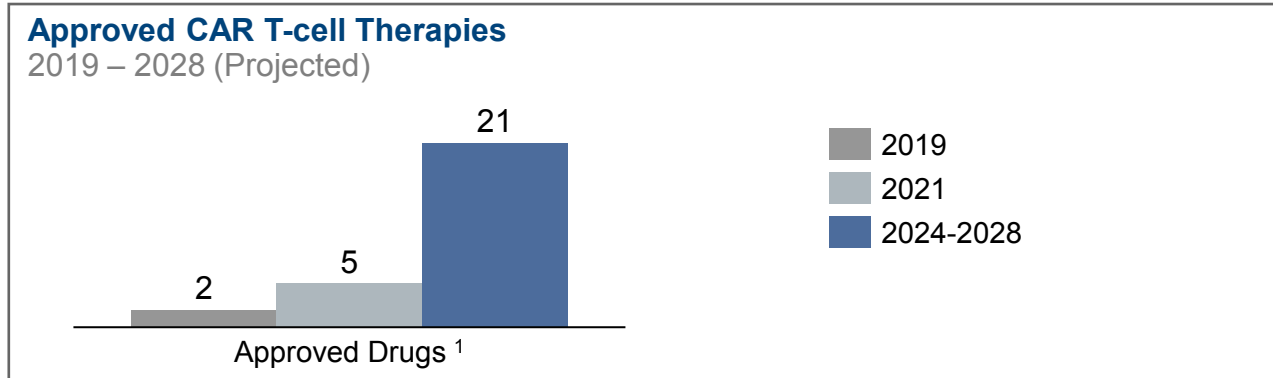
BMC has access to 6 FDA-approved CAR T-cell therapies and 4 FDA-approved gene therapies for hemoglobinopathies with plans to expand to auto immune disorders, ATTR-CM, etc...

CAR T-Cell Therapies

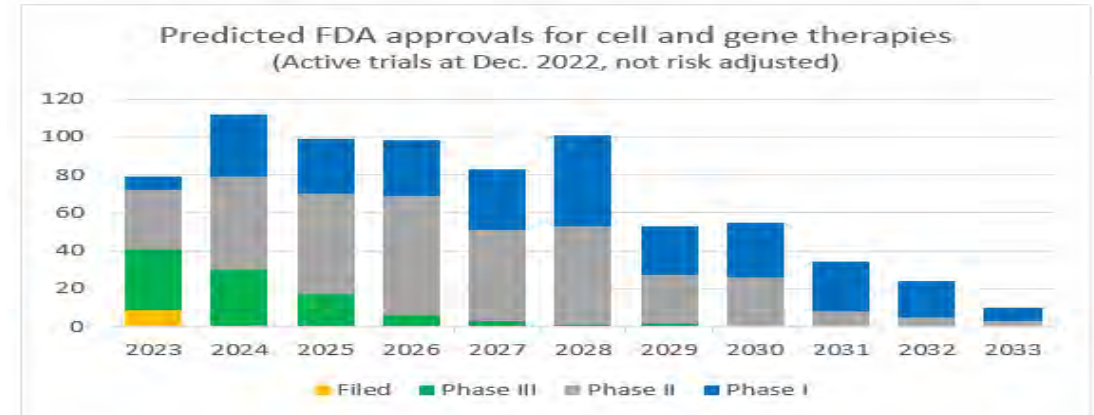
Drug Name	Manufacturer	Approval Year	Target Diseases*	Drug Cost (WAC)	Treatment Centers in US
Kymriah	Novartis	2017	ALL	\$456-581k	168 (6 in Mass)
		2018	DLBCL		
Yescarta	Kite Pharma	2017	DLBCL	\$424K	120+ (6 in Mass)
		2020	FL		
Tecartus	Kite Pharma	2020	MCL	\$462K	100 (6 in Mass)
Breyanzi	Bristol Myers Squibb	2021	DLBCL	\$447K	106 (4 in Mass)
			FL		
Abecma	Bristol Myers Squibb	2021	MM	\$457K	106 (4 in Mass)
Carvykti	Janssen Biotech + Legend Biotech	2022	MM	\$500K	63 (3 in Mass)

Gene Therapies








Drug Name	Manufacturer	Approval Year	Target Diseases*	Drug Cost (WAC)	Treatment Centers in US
Zynteglo	Bluebird Bio	2022	TDT	\$2.8M	22 (2 in Mass)
Lyfgenia	Bluebird Bio	2023	SCD	\$3.1M	17 (1 in Mass)
Casgevy	Vertex Pharmaceuticals	2023	SCD	\$2.5M	9 (1 in Mass)
		2024	TDT		



1. Driving the next wave of innovation in CAR T-cell therapies, McKinsey & Company, 2019



...but now, after starting a cell therapy program at BMC, access points for CAR T- Cell Therapies in MA for underserved patient populations has improved drastically

Racial Inclusivity National Ranking ¹	Drug	Kymriah		Yescarta	Tecartus	Breyanzi	Abecma	Carvykti
	Manufacturer	Novartis		Kite Pharma	Kite Pharma	Bristol Myers Squibb	Bristol Myers Squibb	Janssen Oncology/Legend Biotech
	Indication	ALL*	Lymphoma: DLBCL & FL*			MM*	MM	
#1185		-	X		X	X	X	X
#3080		-	X		X	X	X	X
NA		X	-		-	-	-	-
#2901		-	X			X	X	X
#270		X	X		-	-	-	-
#2		-	X		X	X	X	Feb 2024
No ranking		X	X		X	X	X	X

1. The Low Institute Hospitals Index

We remained focused on the guiding principle that CAR-T therapy at BMC is “personal”... we are doing this to serve the community we care about

REWRITING HEALTHCARE STORIES OF BOSTON MEDICAL CENTER

How do you think BMC is rewriting healthcare?

I think they are rewriting healthcare by making care accessible to everyone. That means no one is getting treated differently because of who they are or the color [of] their skin or where they live. They all treated me like a person and not like a chart that they read. They really got to know me.

“ no one is getting treated differently because of who they are or the color [of] their skin or where they live

I was very surprised that CAR T was available here. You would think it would only be at Dana Farber or Mass General — you know, places like that. But for it to be right here in our community, it was a wonderful thing because it really works. I can't believe I don't have cancer today.

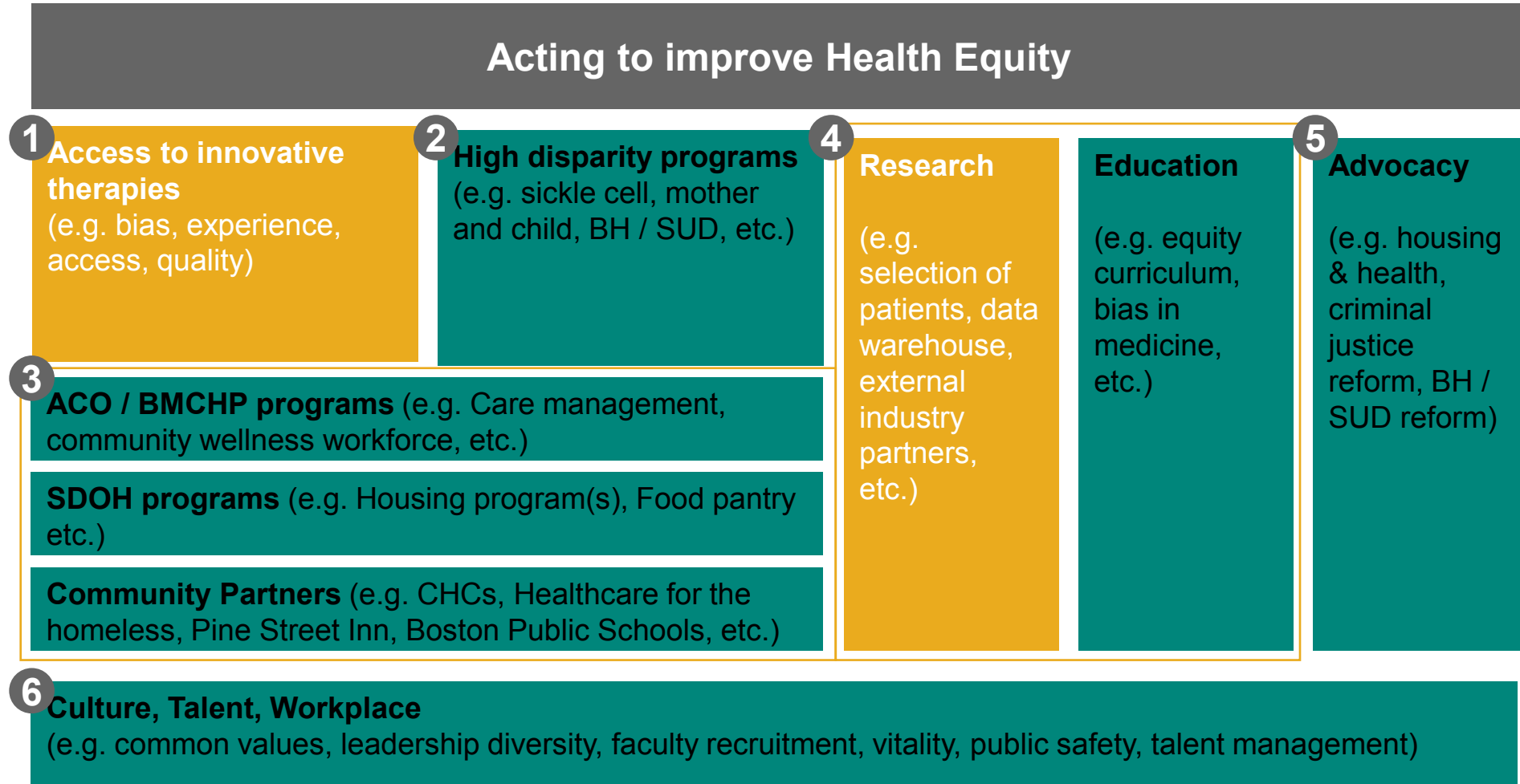


Rewriting Healthcare by Arminta Graham, patient →

Arminta Graham was the first patient at BMC to receive lifesaving CAR T-cell therapy for lymphoma. Read her story to learn how BMC is changing lives like Arminta's by making this innovative therapy available to all patients.

<https://www.bmc.org/rewriting>

BMC has embarked on a process to intentionally elevate BMCHS's role towards racial health equity



Topic of focus