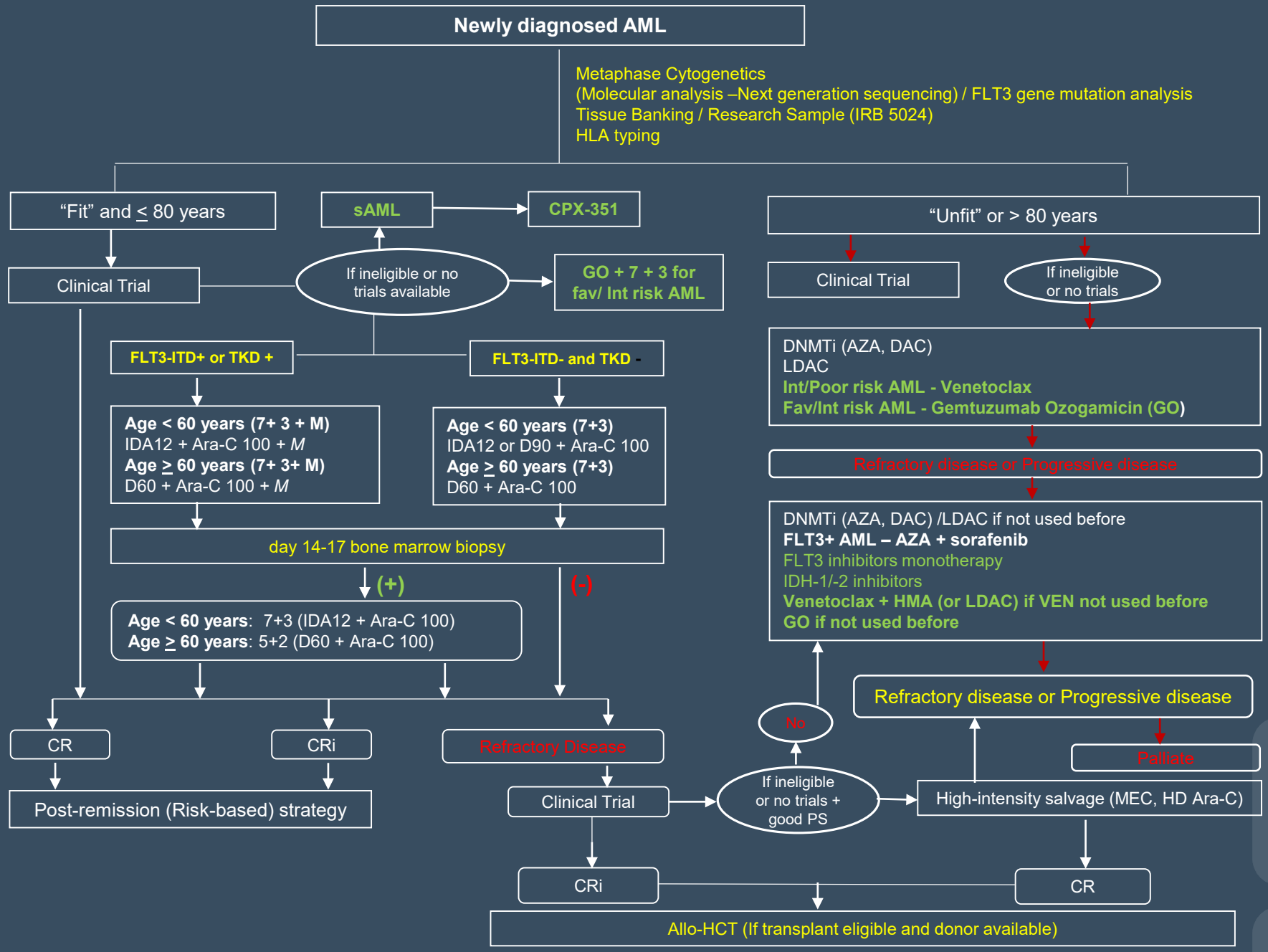
Algorithims for AML

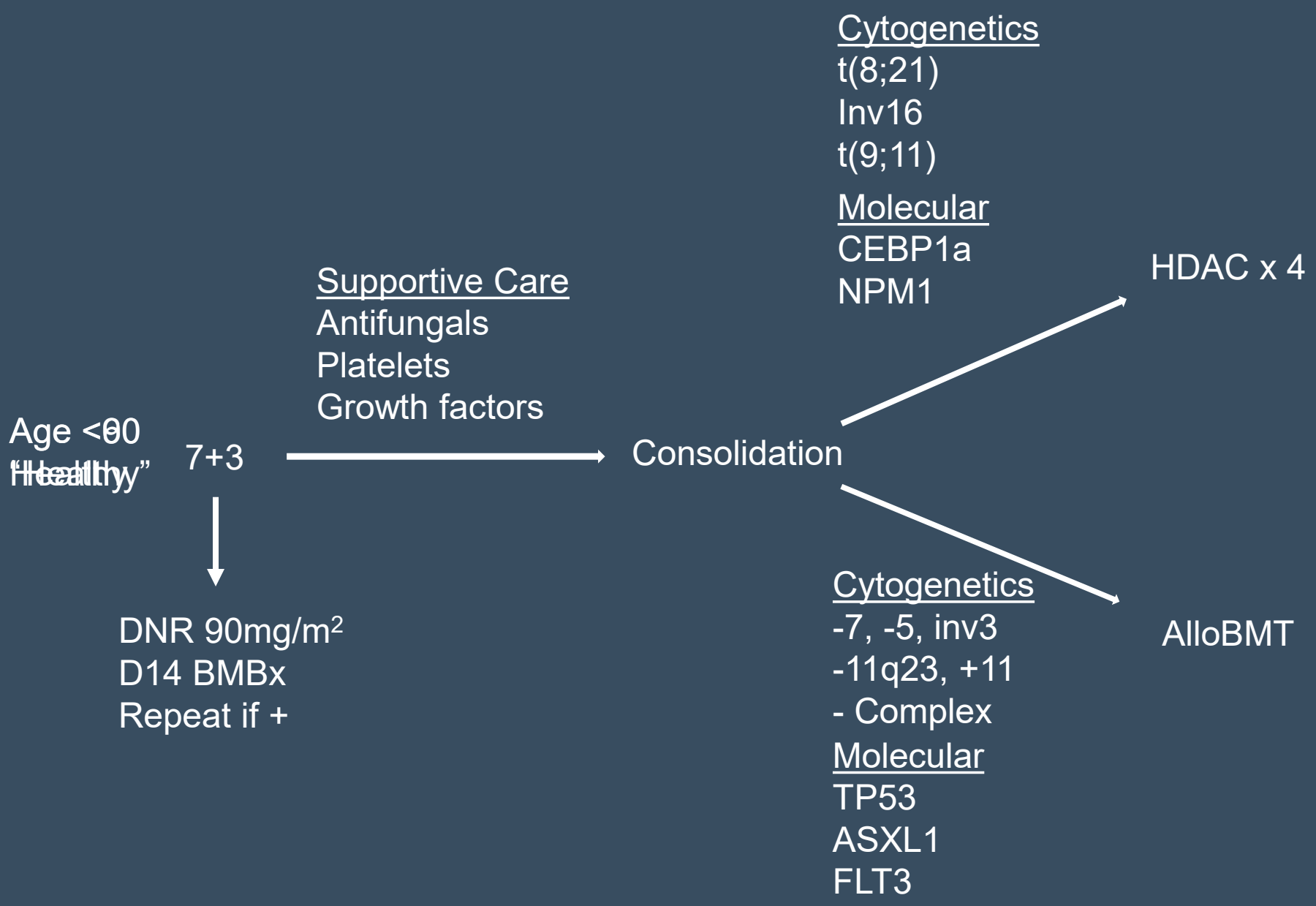
29th Annual Fall Cancer Conference
West Virginia University

Objectives

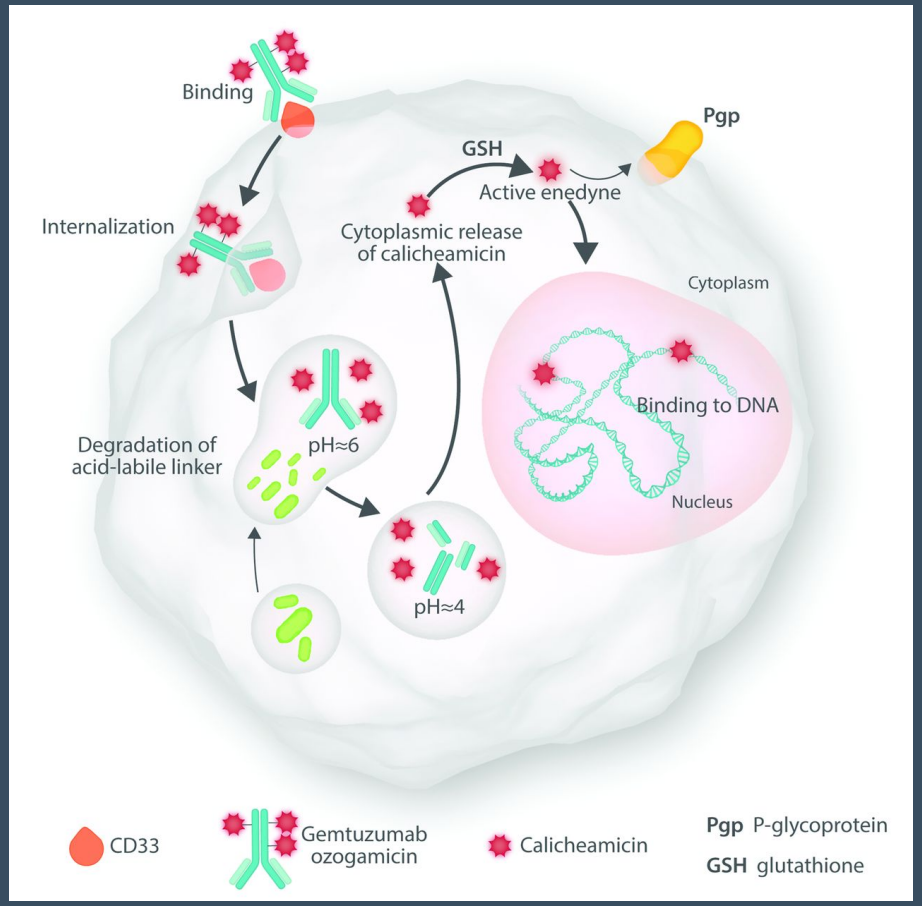
1) Describe newer treatments for AML
2) Outline the latest approaches to the management of AML
3) Finish on time
4) Make friends

Conflict of Interest Disclosure


Newly diagnosed AML
Metaphase Cytogenetics
(Molecular analysis –Next generation sequencing) / FLT3 gene mutation analysis
Tissue Banking / Research Sample (IRB 5024)
HLA typing
"Fit" and ≤ 80 years
sAML
CPX-351
Clinical Trial
If ineligible or no trials available
GO + 7 + 3 for fav/ Int risk AML
FLT3-ITD+ or TKD +
FLT3-ITD- and TKD -
Age < 60 years (7+ 3 + M)
IDA12 + Ara-C 100 + M
Age ≥ 60 years (7+ 3+ M)
D60 + Ara-C 100 + M
Age < 60 years (7+3)
IDA12 or D90 + Ara-C 100
Age ≥ 60 years (7+3)
D60 + Ara-C 100
day 14-17 bone marrow biopsy
(+)
(-)
Age < 60 years: 7+3 (IDA12 + Ara-C 100)
Age ≥ 60 years: 5+2 (D60 + Ara-C 100)
CR
CRi
Refractory Disease
Post-remission (Risk-based) strategy
Clinical Trial
If ineligible or no trials + good PS
High-intensity salvage (MEC, HD Ara-C)
CRi
CR
Allo-HCT (If transplant eligible and donor available)
"Unfit" or > 80 years
Clinical Trial
If ineligible or no trials
DNMTi (AZA, DAC)
LDAC
Int/Poor risk AML - Venetoclax
Fav/Int risk AML - Gemtuzumab Ozogamicin (GO)
Refractory disease or Progressive disease
DNMTi (AZA, DAC) /LDAC if not used before
FLT3+ AML – AZA + sorafenib
FLT3 inhibitors monotherapy
IDH-1/-2 inhibitors
Venetoclax + HMA (or LDAC) if VEN not used before
GO if not used before
Refractory disease or Progressive disease
No
Palliate


Cytogenetics
t(8;21)
Inv16
t(9;11)
Molecular
CEBP1a
NPM1
HDAC x 4
Supportive Care
Antifungals
Platelets
Growth factors
Age <60
"Healthy"
7+3
Consolidation
DNR 90mg/m2
D14 BMBx
Repeat if +
Cytogenetics
-7, -5, inv3
-11q23, +11
- Complex
Molecular
TP53
ASXL1
FLT3
AlloBMT

Gemtuzumab Ozogamicin



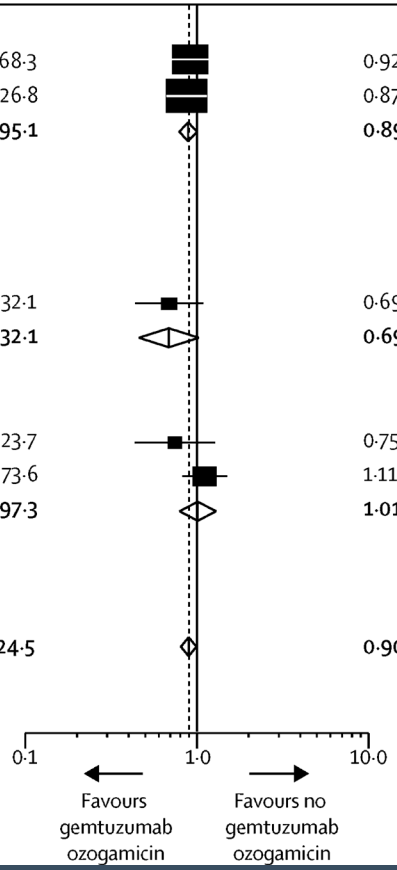
Hitzler & Estey. Haematologica 104: 7, 2019

Gemtuzumab Ozogamicin

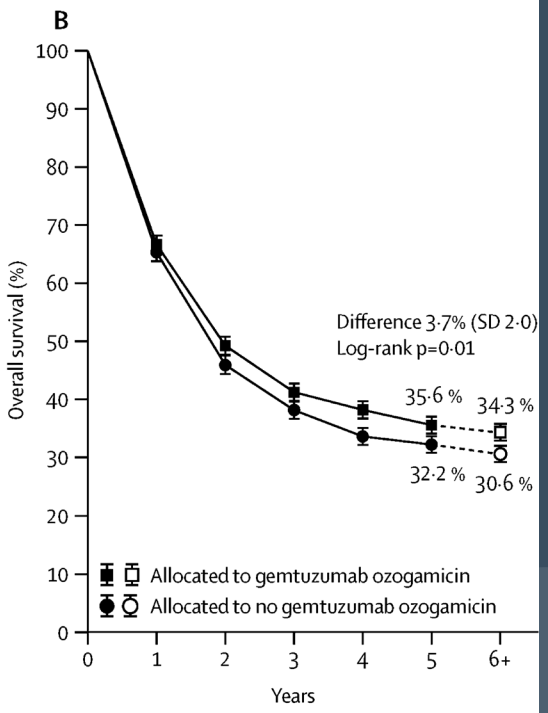
Hills et al, Lancet Oncol 15:986, 2014

A

	Events/patients		o–e	Variance	OR (CI*)	p value
	Gemtuzumab ozogamicin group	No gemtuzumab ozogamicin group				
3 mg/m² single dose						
MRC AML15	326/548	348/551	−14·7	168·3	0·92 (0·75–1·12)	
NCRI AML16	447/559	466/554	−31·1	226·8	0·87 (0·73–1·03)	
Subtotal	**773/1107**	**814/1105**	**−45·7**	**395·1**	**0·89 (0·81–0·98)**	**0·02**
Test for heterogeneity between trials χ^2=0·2; p=0·6						
3 mg/m² fractionated						
ALFA-0701	59/139	72/139	−11·8	32·1	0·69 (0·44–1·09)	
Subtotal	**51/113**	**72/139**	**−11·8**	**32·1**	**0·69 (0·49–0·98)**	**0·04**
6 mg/m² dose						
GOELAMS AML2006 IR	41/119	54/119	−7·0	23·7	0·75 (0·44–1·27)	
SWOG 0106	151/295	144/300	8·0	73·6	1·11 (0·83–1·50)	
Subtotal	**192/414**	**198/419**	**1·0**	**97·3**	**1·01 (0·83–1·23)**	**0·9**
Test for heterogeneity between trials χ^2=2·9; p=0·09						
Total	**1024/1660**	**1084/1663**	**−56·6**	**524·5**	**0·90 (0·82–0·98)**	**0·01**
Test for heterogeneity (five trials) χ^2=6·7; p=0·2						
Test for heterogeneity between subtotals χ^2=3·6; p=0·2						



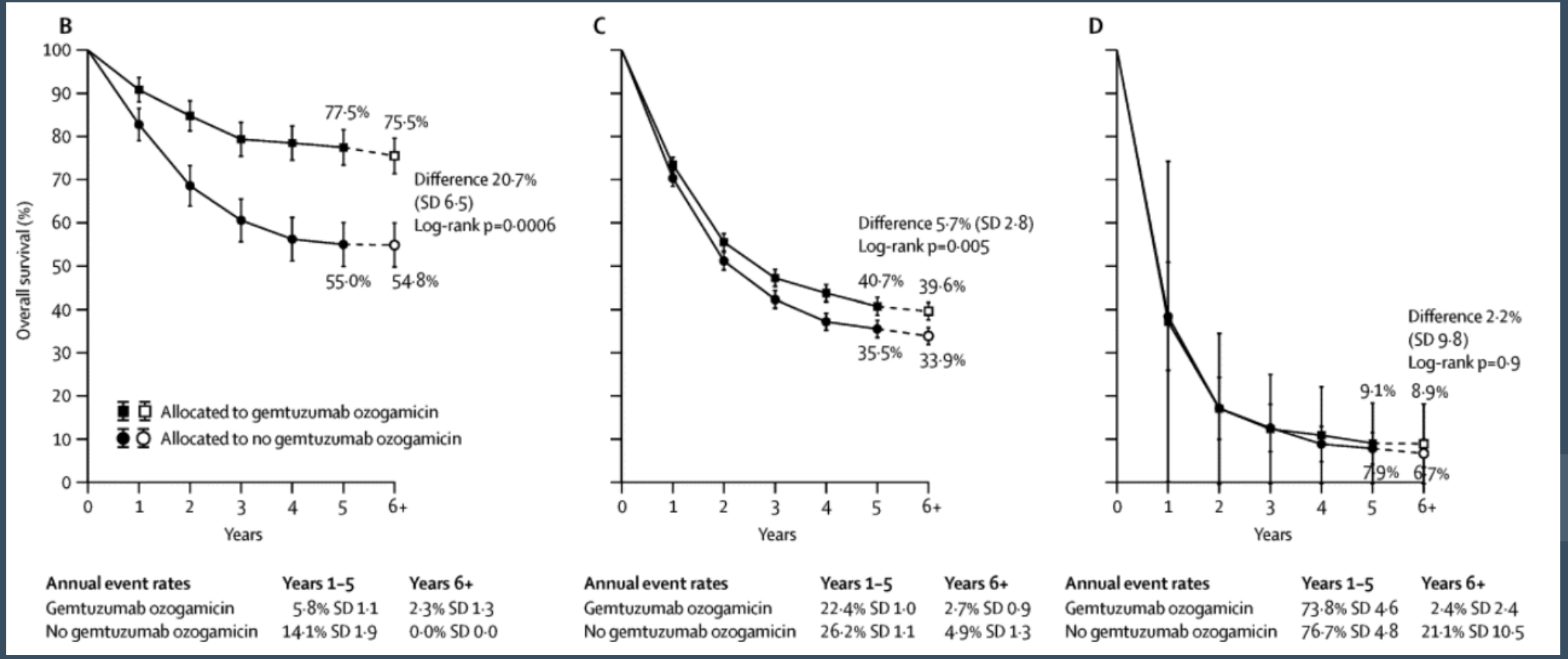
B



Annual event rates	Years 1–5	Years 6+
Gemtuzumab ozogamicin	26·7 % SD 0·8	3·5 % SD 0·8
No gemtuzumab ozogamicin	29·5 % SD 0·9	5·2 % SD 1·0

Gemtuzumab Ozogamicin

Hills et al, Lancet Oncol 15:986, 2014



Annual event rates	Years 1–5	Years 6+
Gemtuzumab ozogamicin	5·8% SD 1·1	2·3% SD 1·3
No gemtuzumab ozogamicin	14·1% SD 1·9	0·0% SD 0·0

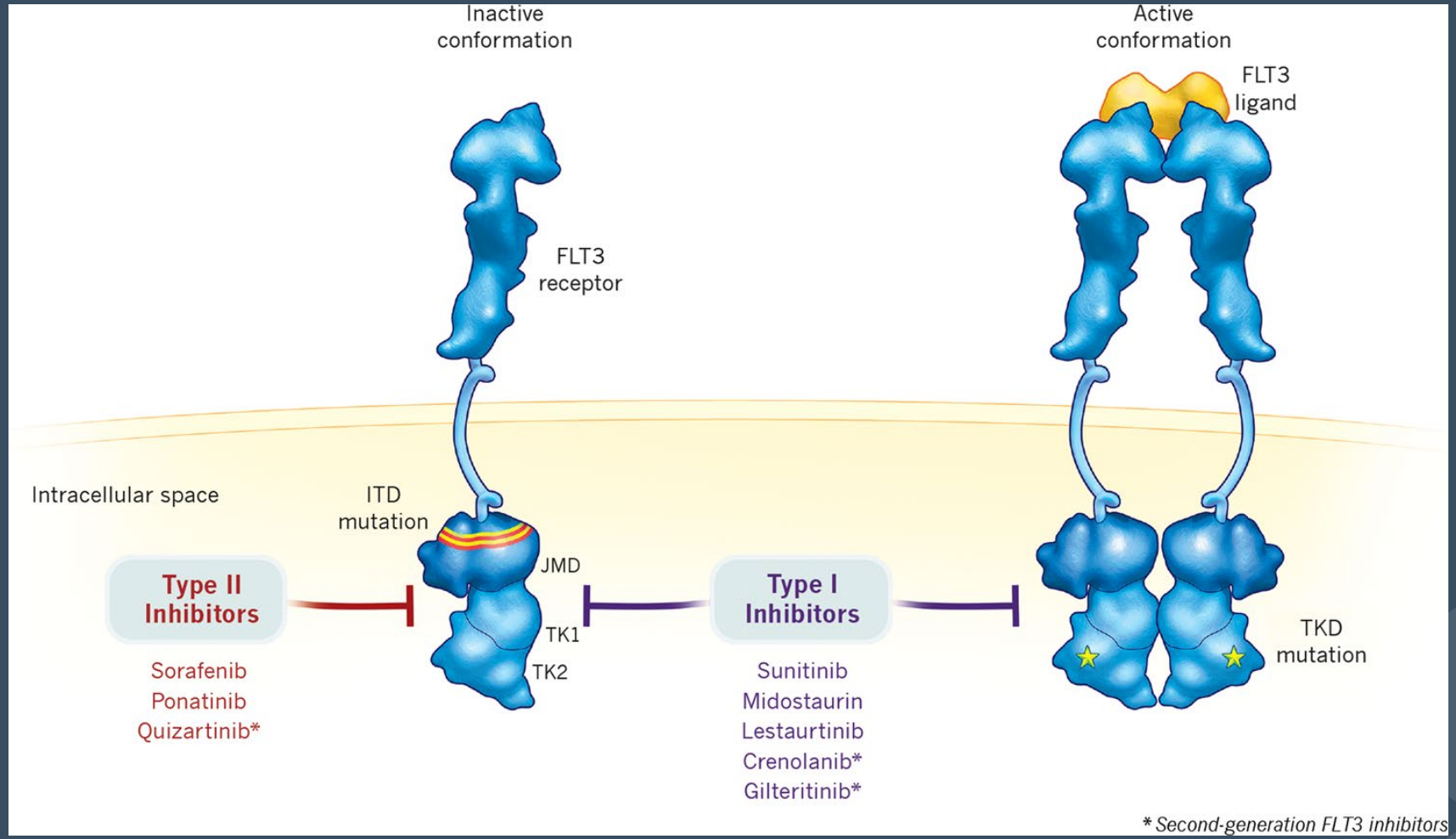
Annual event rates	Years 1–5	Years 6+
Gemtuzumab ozogamicin	22·4% SD 1·0	2·7% SD 0·9
No gemtuzumab ozogamicin	26·2% SD 1·1	4·9% SD 1·3

Annual event rates	Years 1–5	Years 6+
Gemtuzumab ozogamicin	73·8% SD 4·6	2·4% SD 2·4
No gemtuzumab ozogamicin	76·7% SD 4·8	21·1% SD 10·5

Gemtuzmab Ozogamicin

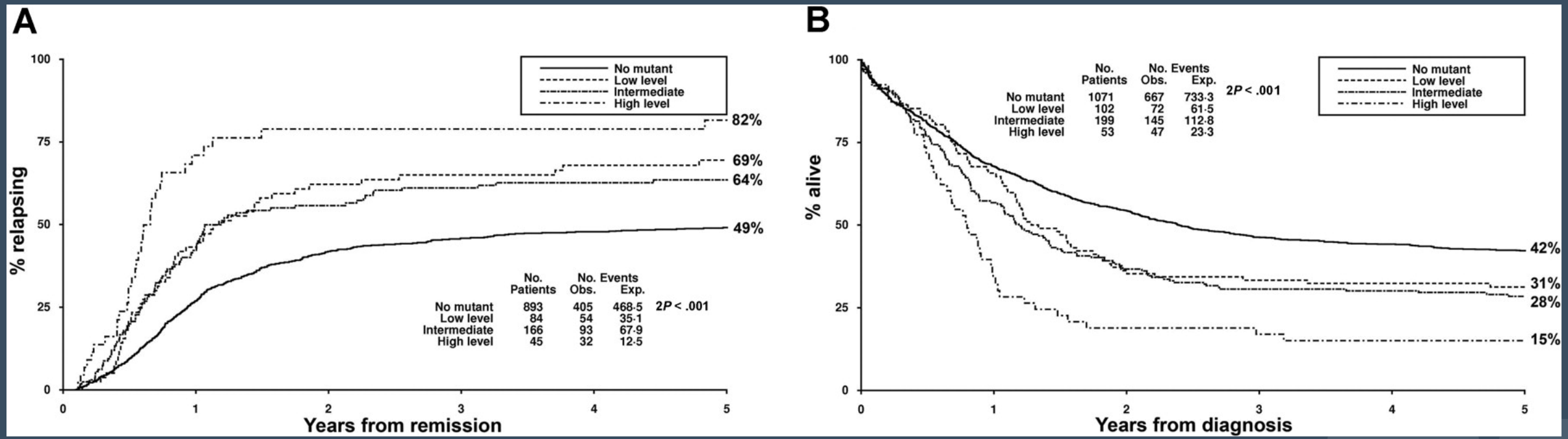
- GO is a new standard of care for patients with favorable cytogenetics
- Less so for those with intermediate CG
- Do not use in those headed to BMT

FLT3 Inhibitors



Daver et al, Leukemia 33: 299, 2019

FLT3-ITD+ AML

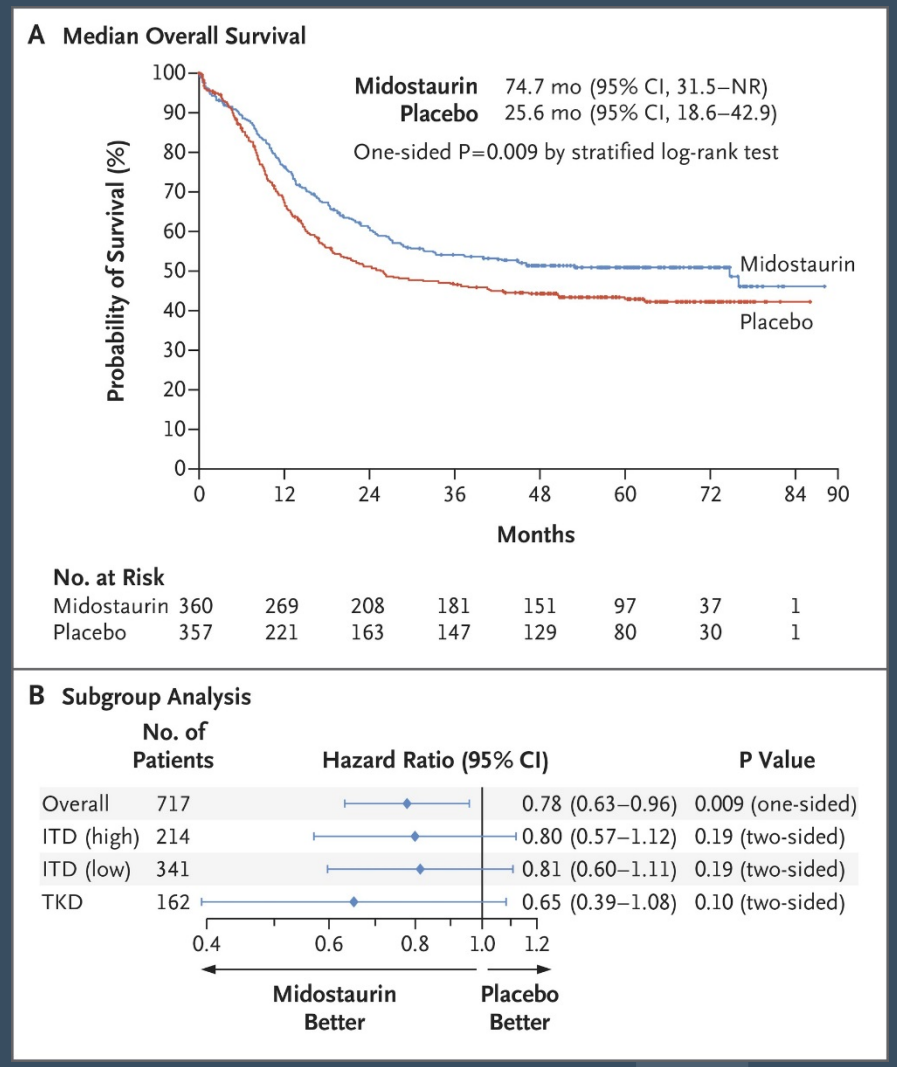


Gale RE et al, Blood 111: 2776, 2008

FLT3-ITD+ AML

Stone et al, NEJM 377, 454, 2017

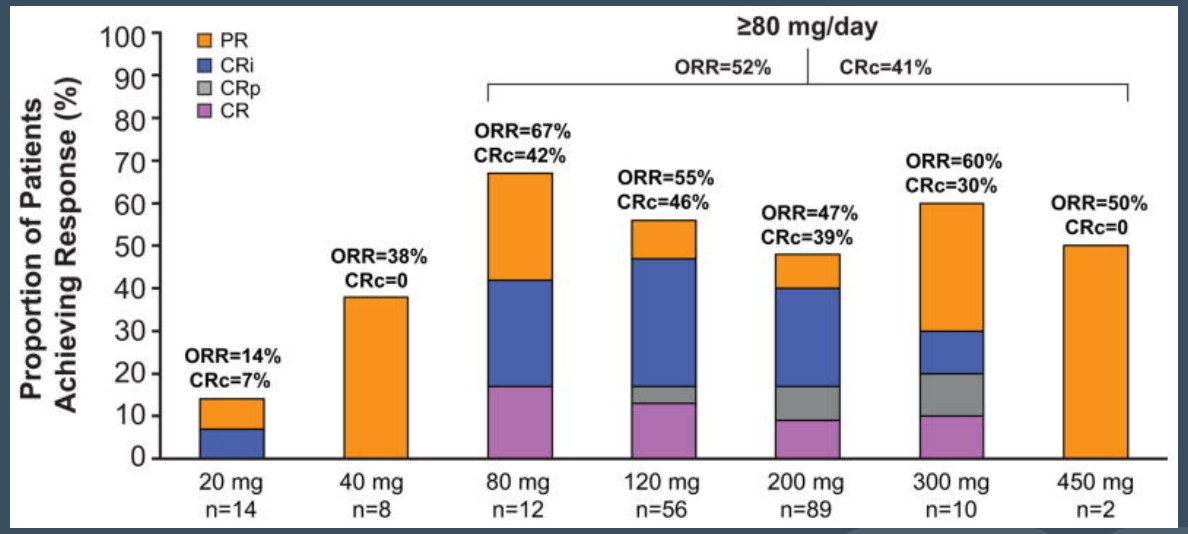
- 717 pts randomized before treatment
- 7+3 (60mg/m^2)
- Midostaurin or placebo 50 mg orally bid D8-21 for induction, consolidation, and maintenance x 1yr
- BMT OK



FLT3-ITD+ AML

Perl et al, Lancet Oncol 18: 1061, 2017

- 252 pts Phase 1-2
- Gilteritinib once daily
- Very active with GI and hepatic toxicity



In R/R FLT3+ AML, Phase 3 ADMIRAL trial showed Gilt improved 1y OS from 17% with chemo to 37% (95% CI, 31-44%).

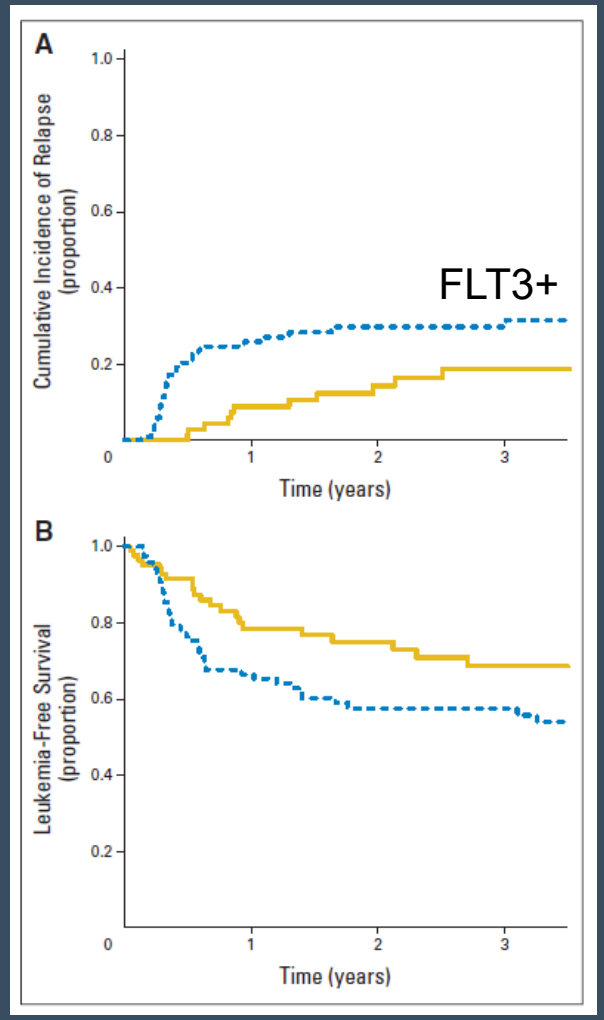
Perl et al, AACR 2019

FLT3-ITD+ AML

- Midostaurin is new standard of care for newly diagnosed patients
- Gilteritinib is new standard of care for relapsed/refractory patients
  - What about those pts previously treated with midostaurin?
- BMT still indicated
  - Maintenance?

Indications for BMT

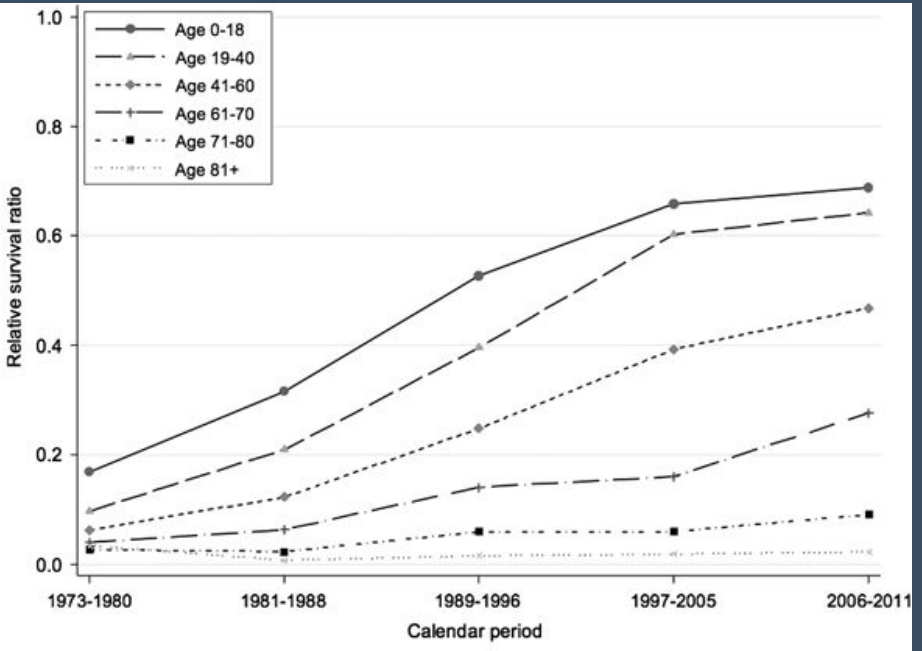
- Primary refractory
- sAML and tAML
- High-risk
  - Cytogenetics
  - Molecular
    - FLT3 ITD
    - TP53



Brunet et al, JCO 30: 735, 2012

AML in Younger Patients

- Algorithm fails
  - Borderline cases
  - Fertility issues
  - Patient preference
- Goal remains cure
- Not much has changed
  - GO
  - FLT3+



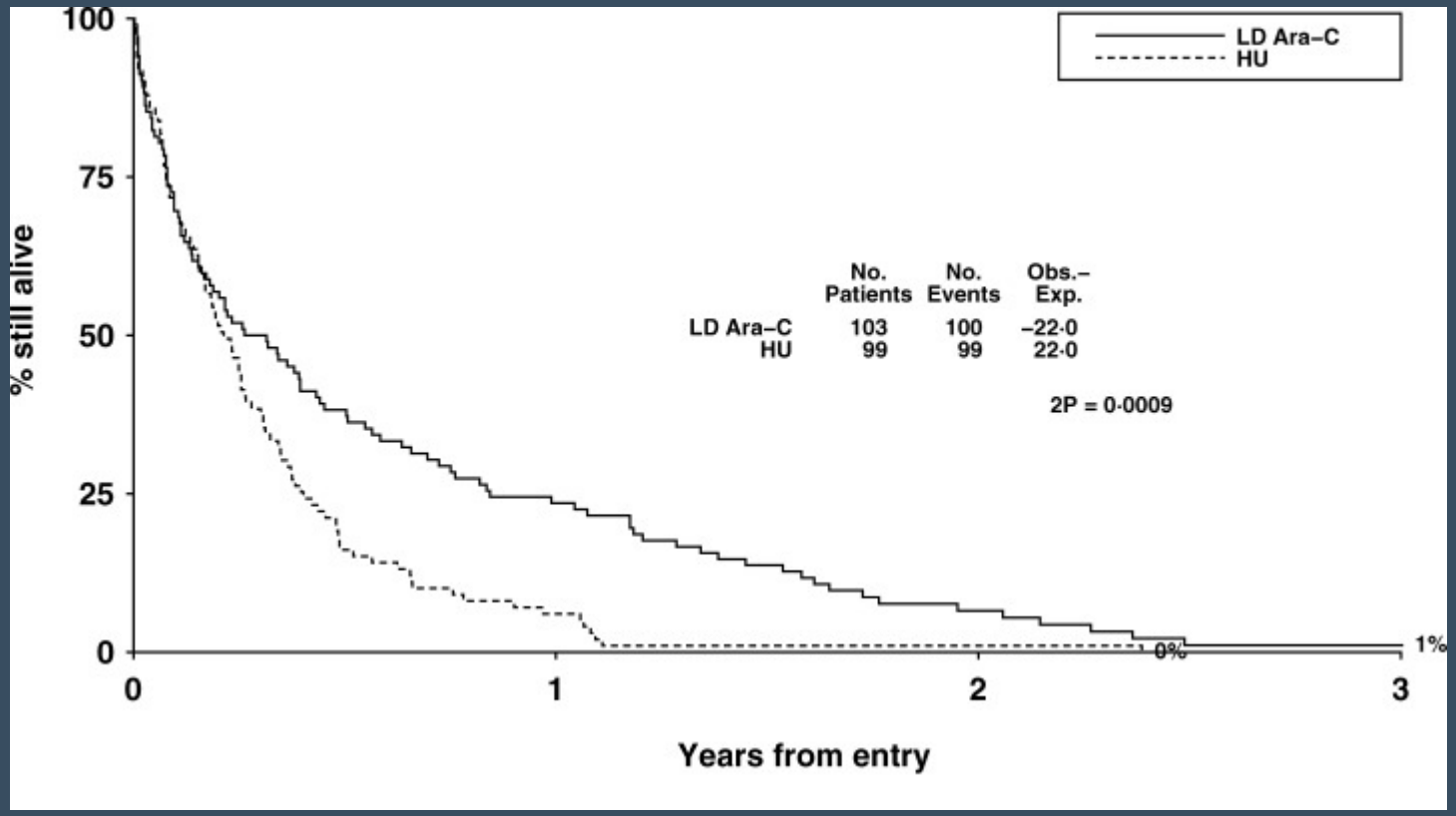
Age category (years)	1973-1980 (95% CI)	1981-1988 (95% CI)	1989-1996 (95% CI)	1997-2005 (95% CI)	2006-2011 (95% CI)
0-18	0.17 (0.10,0.25)	0.32 (0.23,0.62)	0.53 (0.42,0.62)	0.66 (0.57,0.73)	0.69 (0.58,0.78)
19-40	0.10 (0.06,0.14)	0.21 (0.15,0.27)	0.40 (0.33,0.46)	0.60 (0.53,0.67)	0.64 (0.54,0.72)
41-60	0.06 (0.04,0.09)	0.12 (0.09,0.16)	0.25 (0.21,0.29)	0.39 (0.35,0.43)	0.47 (0.41,0.52)
61-70	0.04 (0.02,0.06)	0.06 (0.04,0.09)	0.14 (0.11,0.17)	0.16 (0.13,0.19)	0.28 (0.23,0.33)
71-80	0.03 (0.01,0.05)	0.02 (0.01,0.04)	0.06 (0.04,0.08)	0.06 (0.04,0.08)	0.09 (0.06,0.12)
81 and older	0.03 (0.01,0.09)	0.01 (0.00,0.04)	0.02 (0.00,0.04)	0.02 (0.01,0.04)	0.02 (0.01,0.05)

Bower et al, Blood Ca J 6:e390, 2016

Treating Older Patients

- Low-dose AraC bid improves OS vs BSC
- Neither 5AZA nor Decitabine have been compared to LDAC with bid schedule
  - No FDA approval, but OK by NCCN
- LDAC is the standard of care ?

LDAC



Burnett AK et al, Cancer 109: 1114, 2007

Trying to improve on LDAC

Table 1. Outcome of Low-dose Ara-C Over Time Compared With Other Treatment

Outcome	Comparator, %							
	BSC	LDAC + GO	LDAC + Tipifarnib	LDAC + ATO	Clofarabine	Sapacitabine	Vosaroxin	Vosaroxin + LDAC
CR	0	19	25	22	19	29	29	18
OS								
1 y	24	24	34	30	26	27	31	37
2 y	7	12	13	15	13	10	10	NA

Table 2. Pick a Winner Trial Options

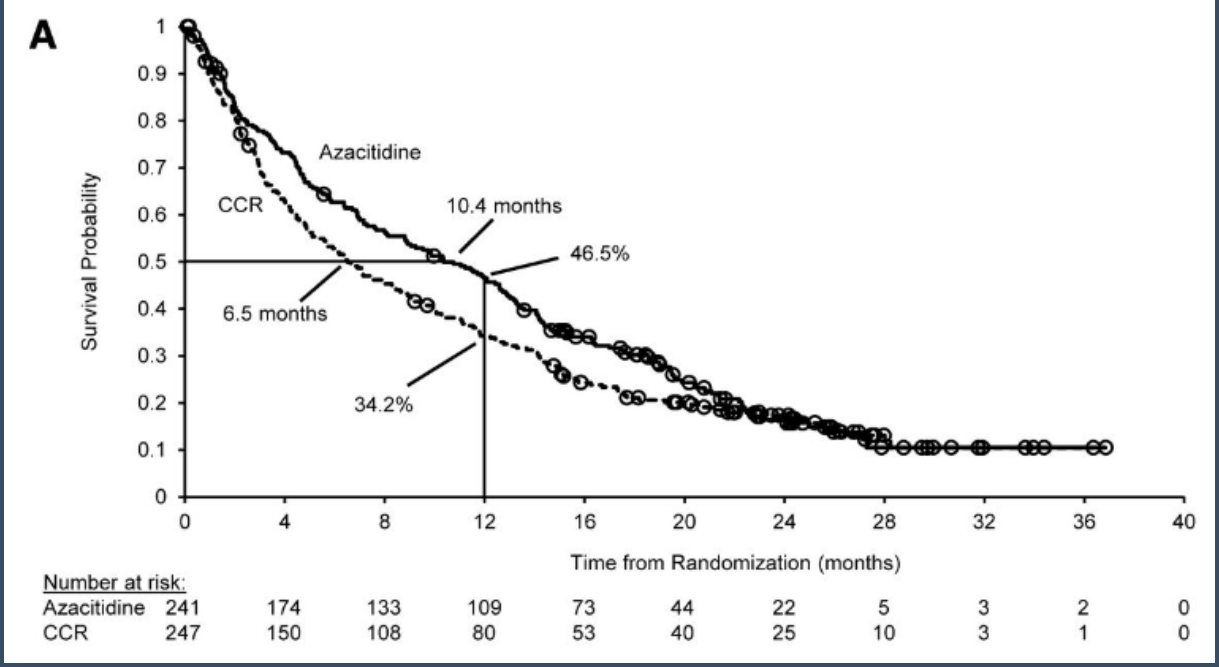
Study Arm	Era	Stage 1 Success	Phase III Success
LDAC + tipifarnib	2006-2008	No	NA
LDAC + ATO	2007-2009	No	NA
LDAC + GO	2006-2010	Yes	No
Clofarabine	2006-2010	Yes	No
Sapacitabine	2010-2012	No	NA
LDAC + quizartinib	2012	Yes	Unknown
Vosaroxin	2012-2013	No	NA
LDAC + vosaroxin	2012-2013	No	NA
LDAC + ganetespib	2012-2014	No	NA
LDAC + tosedostat	2014-2017	Yes	No

Burnett AK, Clin Lymphoma Myeloma & Leuk 18:553, 2018

LDAC?

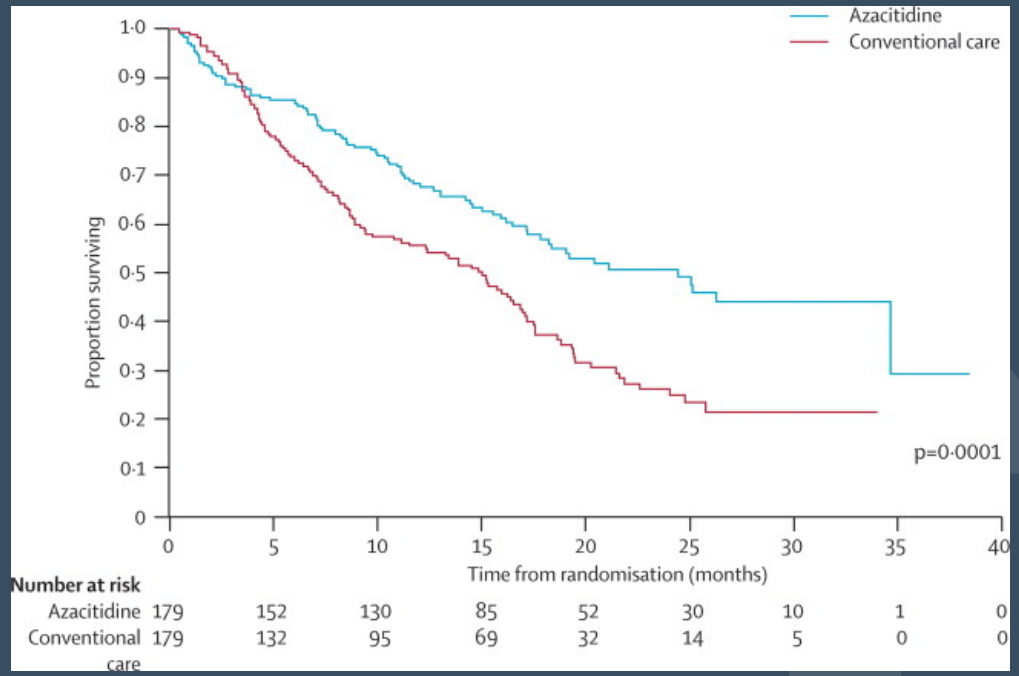
Dombret et al, Blood 126:291, 2015

- AML Age >65
- AZA vs CCR (BSC, LDAC, or IC)



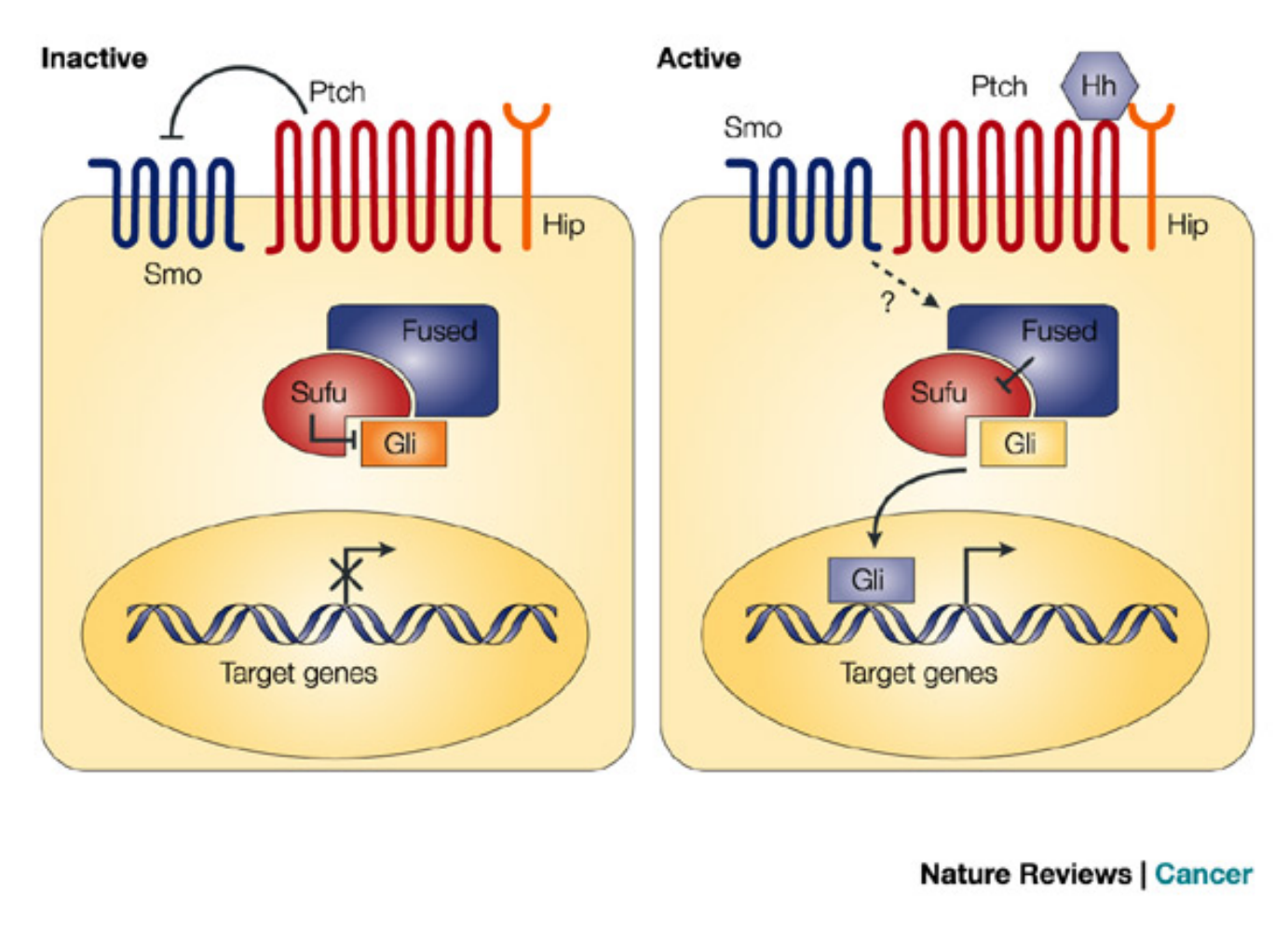
Fenaux et al, Lancet Oncol 10: 223, 2009

- RAEB Blasts >10%
- AZA vs CCR



Hedgehog Signaling Pathway

Pasca de Magliano et al, Nat Rev Cancer 3: 903, 2004



Glasdegib

Cortes et al, Leukemia 33: 379, 2019

- Age >55 with AML or RAEB >10% blasts
- Unsuitable for induction
  - Age >75, Creat >1.3, LVEF < 45%
- Randomized 2:1 to LDAC +/- Glasdegib
  - LDAC 20mg sq bid for 10 days
  - Glasdegib 100mg once daily

Glasdegib/LDAC vs Azacytidine

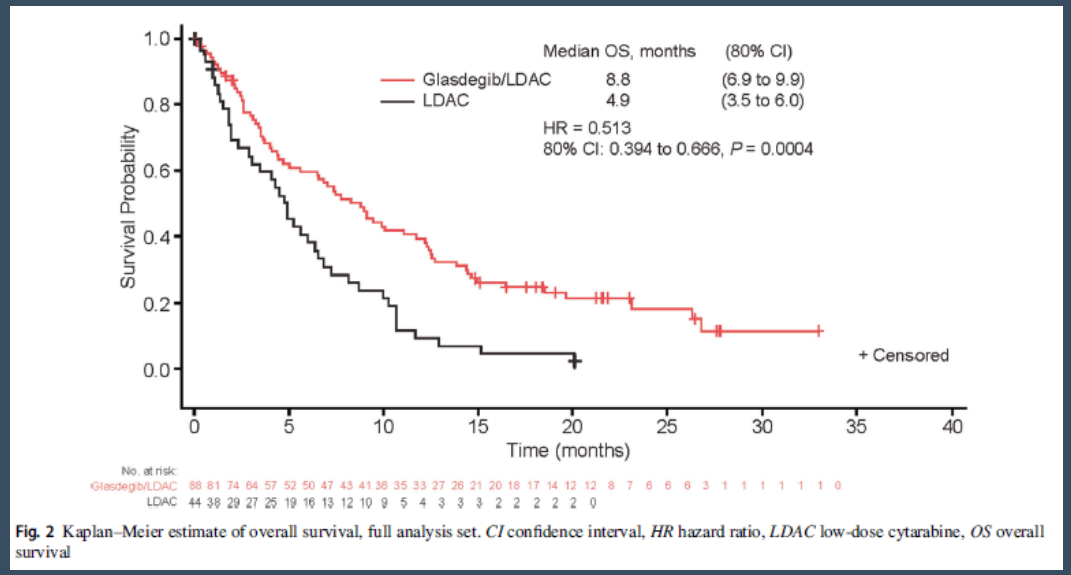
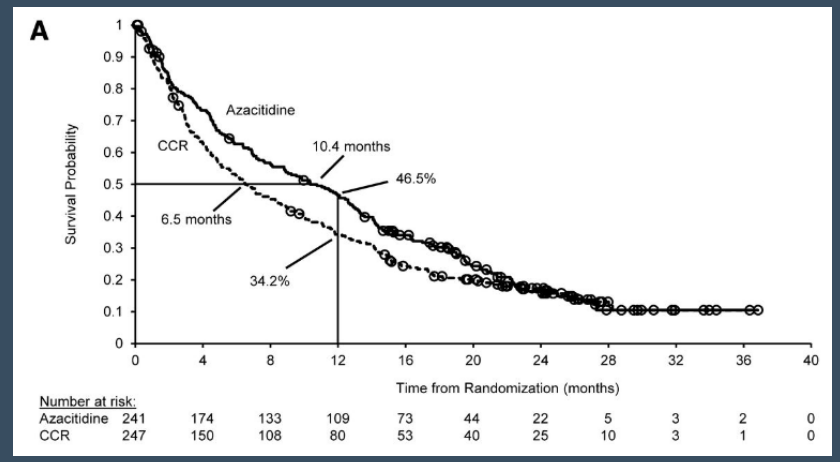
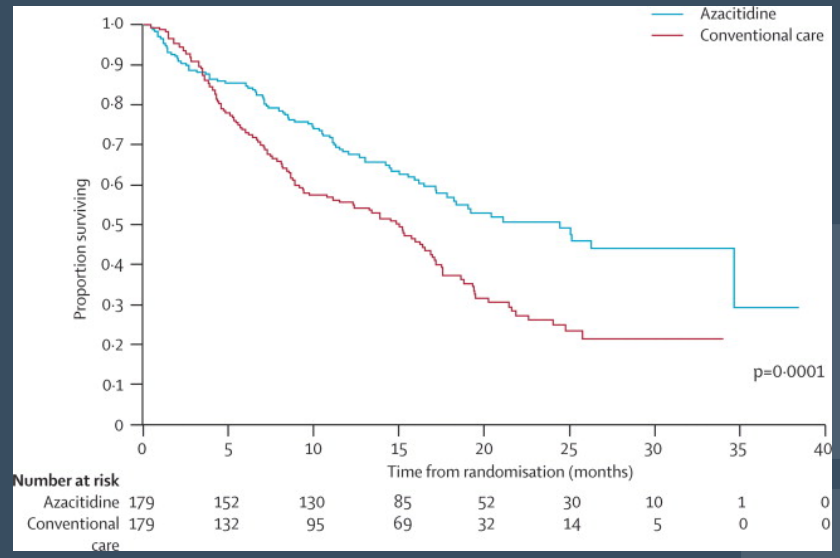


Fig. 2 Kaplan–Meier estimate of overall survival, full analysis set. *CI* confidence interval, *HR* hazard ratio, *LDAC* low-dose cytarabine, *OS* overall survival





Venetoclax

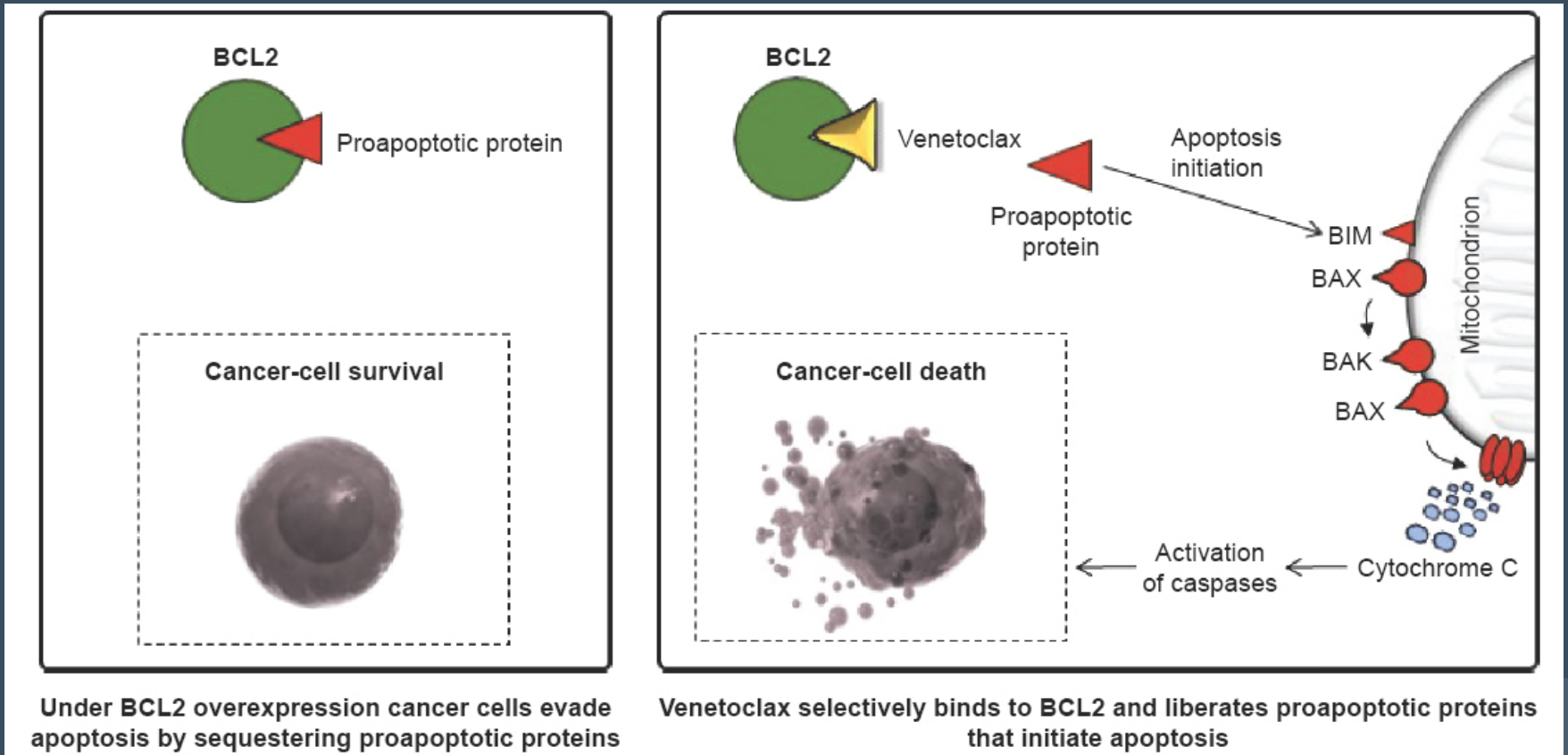


Figure 1 Many cancer cells are able to evade apoptosis through impairment of the mitochondrial apoptotic pathway, controlled by proapoptotic (eg, BAK, BAX, BIM) and prosurvival (eg, BCL2, BCL-X_L) members of the BCL2 family.
Notes: In CLL, cells show BCL2 overexpression. The BCL2 inhibitor venetoclax selectively binds to BCL2 and liberates proapoptotic proteins, inducing mitochondrial outer-membrane permeabilization and leading to caspase activation. This reaction induces apoptosis.
Abbreviation: CLL, chronic lymphocytic leukemia.

Huber et al, Oncotargets and Therapy 10:645, 2017

LDAC+ Venetoclax

Wei et al, JCO prepublished, 2019

- Venetoclax began at 50 or 100 mg and increased over 4 to 5 days to the target venetoclax dose; dosing was continued through day 28 of each cycle.
- Age >60, secondary AML, unfit for induction, WBC <25, no CBF
- No DLT or TLS, 600mg daily was target dose
- CR 26%, CR/Cri 54%, DOR 8.1m

HMA + Venetoclax

DiNardo et al, Blood 133:7, 2019

- Ramp up dosing starting D1 in hospital
  - Target doses of 400 (n=60), 800 (n=74), or 1200mg (n=11) daily
- Age >65, secondary AML, unfit for induction, WBC <25, no CBF
- No DLT or TLS, but more AE at 1200mg daily
  - Febrile neutropenia in 32%

HMA + Venetoclax

DiNardo et al, Blood 133: 7, 2019

	N	CR + CRi	Med DOR	Med OS
LDAC + V600	82	54%	8.1m	10.1m
HMA + V400	60	73%	12.5m	NR
HMA + V800	74	65%	11m	17.5m

21 patients proceeded to stem cell transplant

No difference in CR by age, cytogenetics, or secondary AML

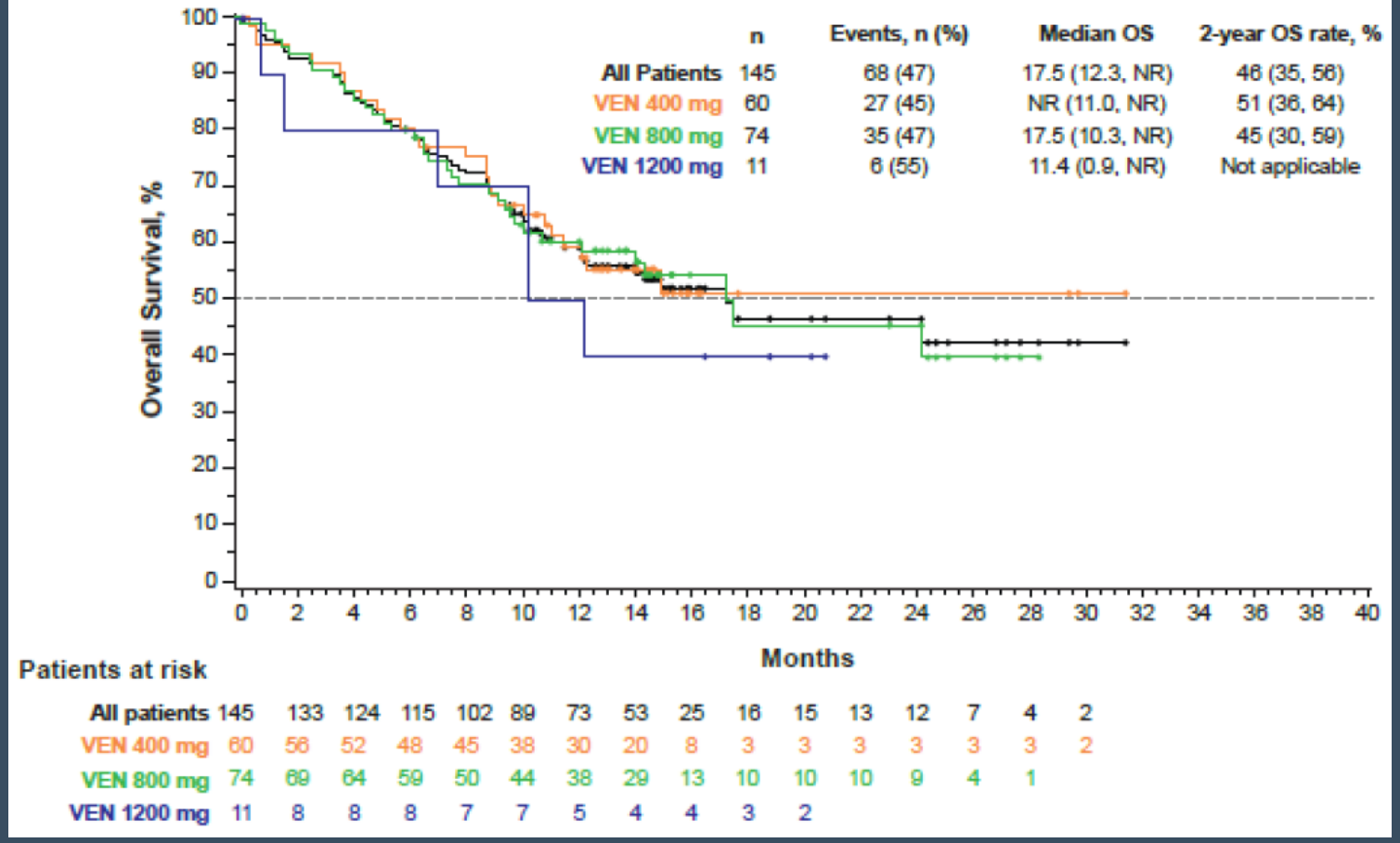
CR = 71% in 35 with IDH1/2 mutations

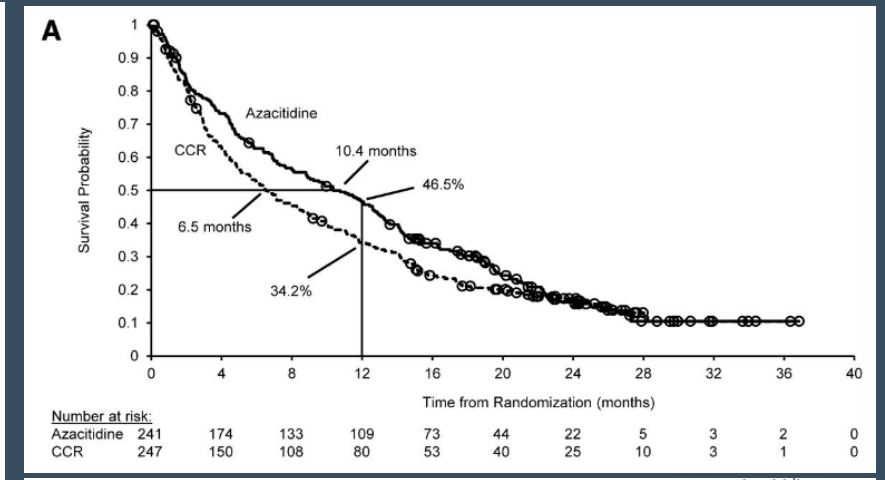
CR = 47% in 36 with TP53 mutations and 5.6m DOR

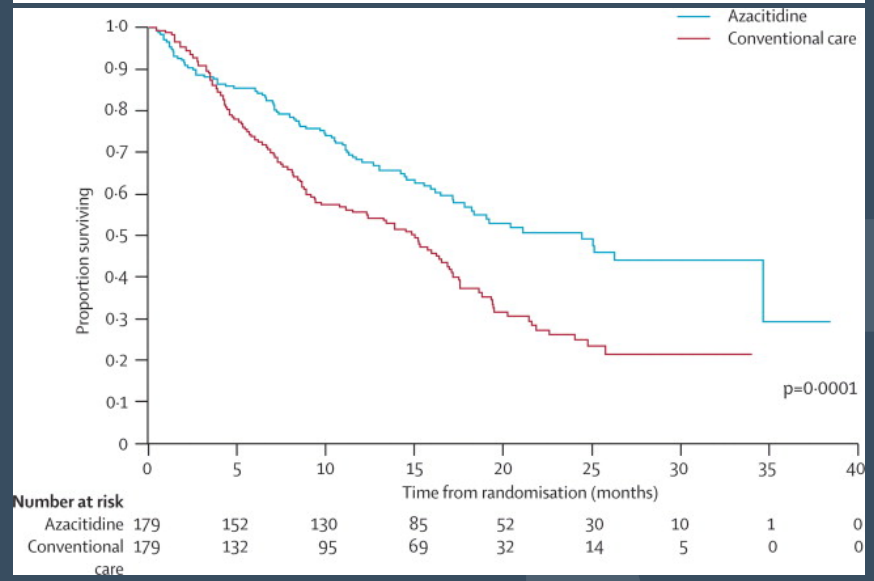
HMA + Venetoclax

DiNardo et al, Blood 133: 7, 2019

Figure 2. Overall survival by venetoclax dose levels (dose escalation + dose expansion cohorts)





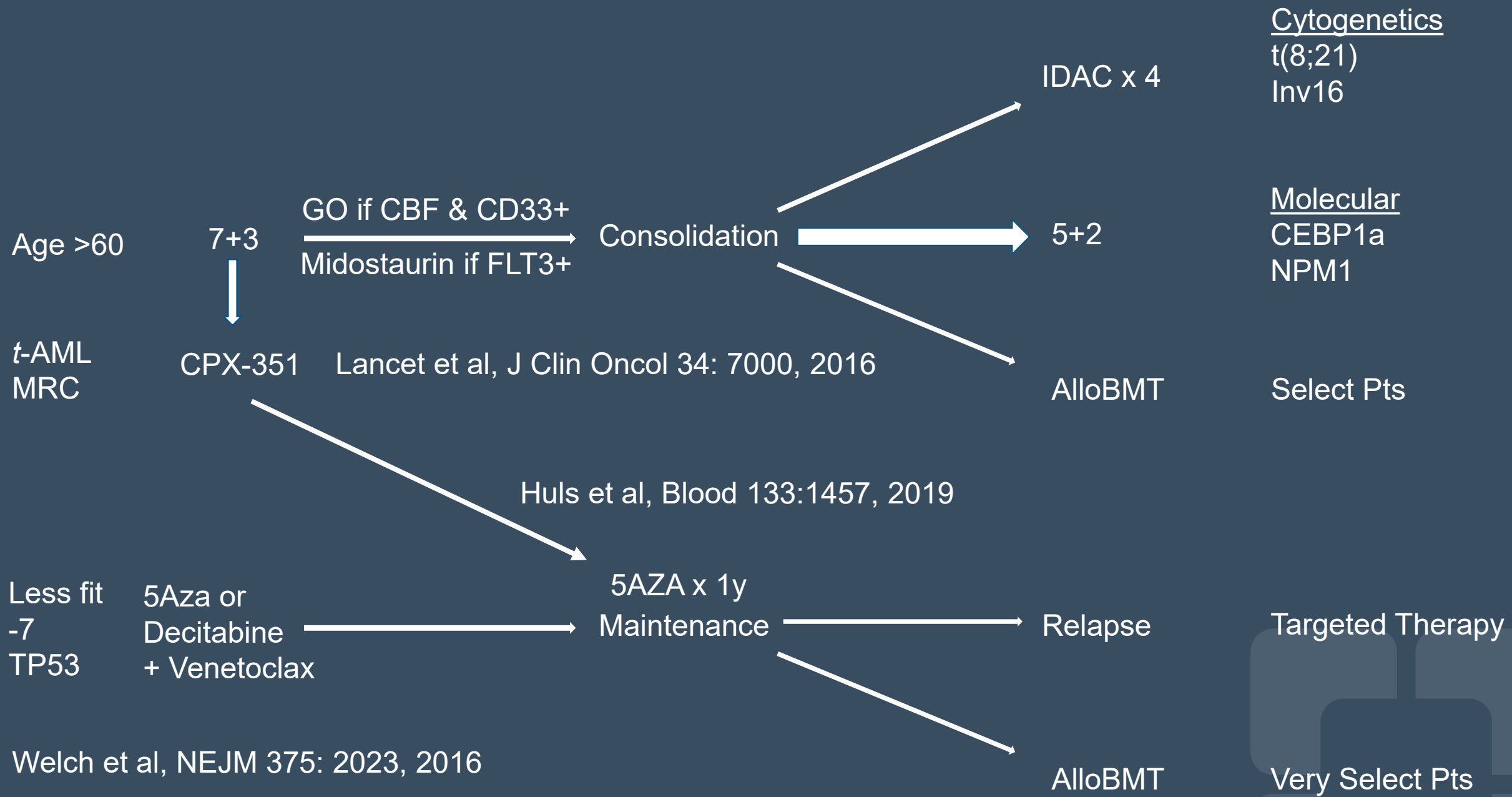


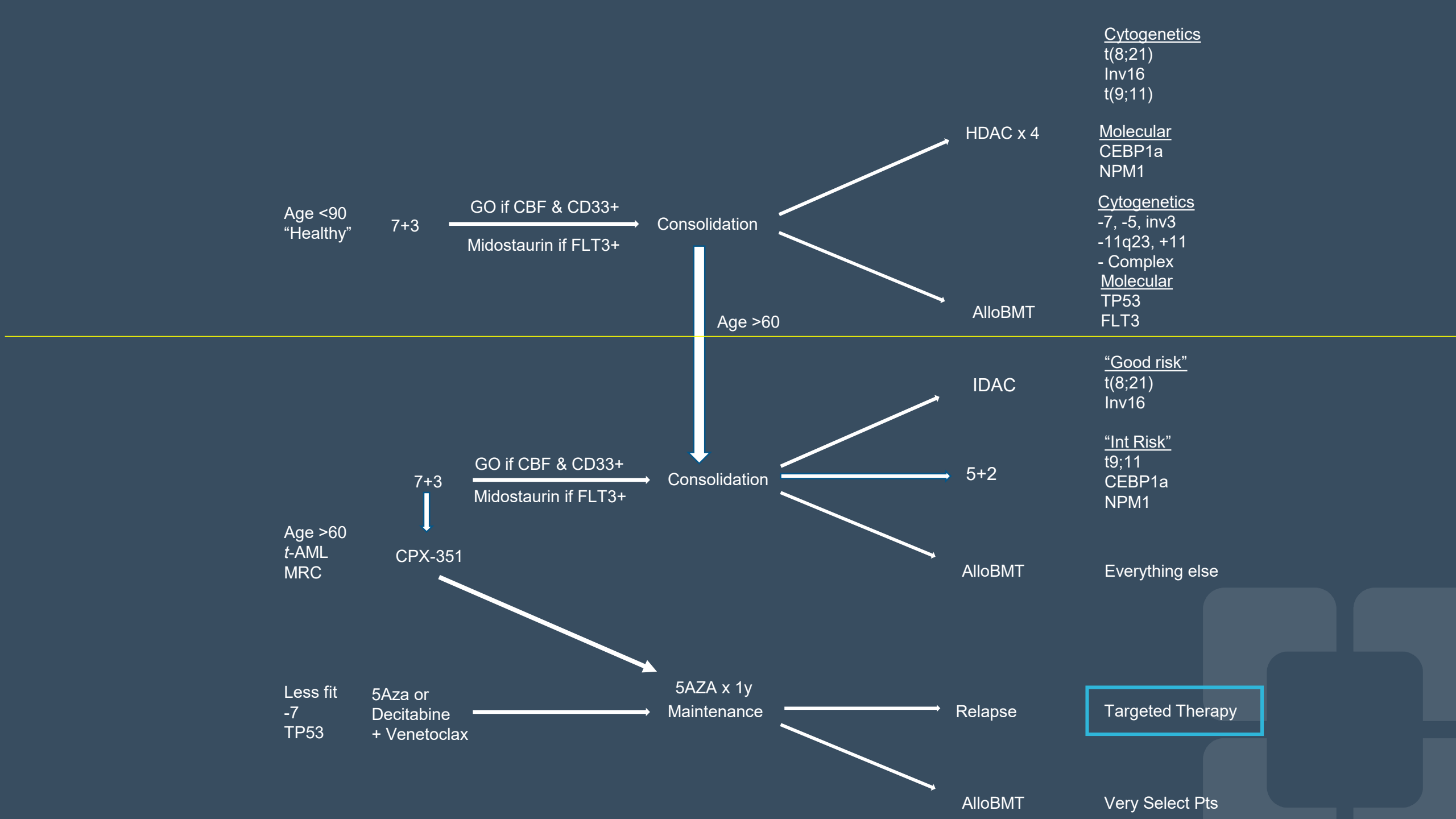
HMA + Venetoclax

•In combination with azacitidine, or decitabine, or low-dose cytarabine for the treatment of newly-diagnosed acute myeloid leukemia (AML) in adults who are age 75 years or older, or who have comorbidities that preclude use of intensive induction chemotherapy.

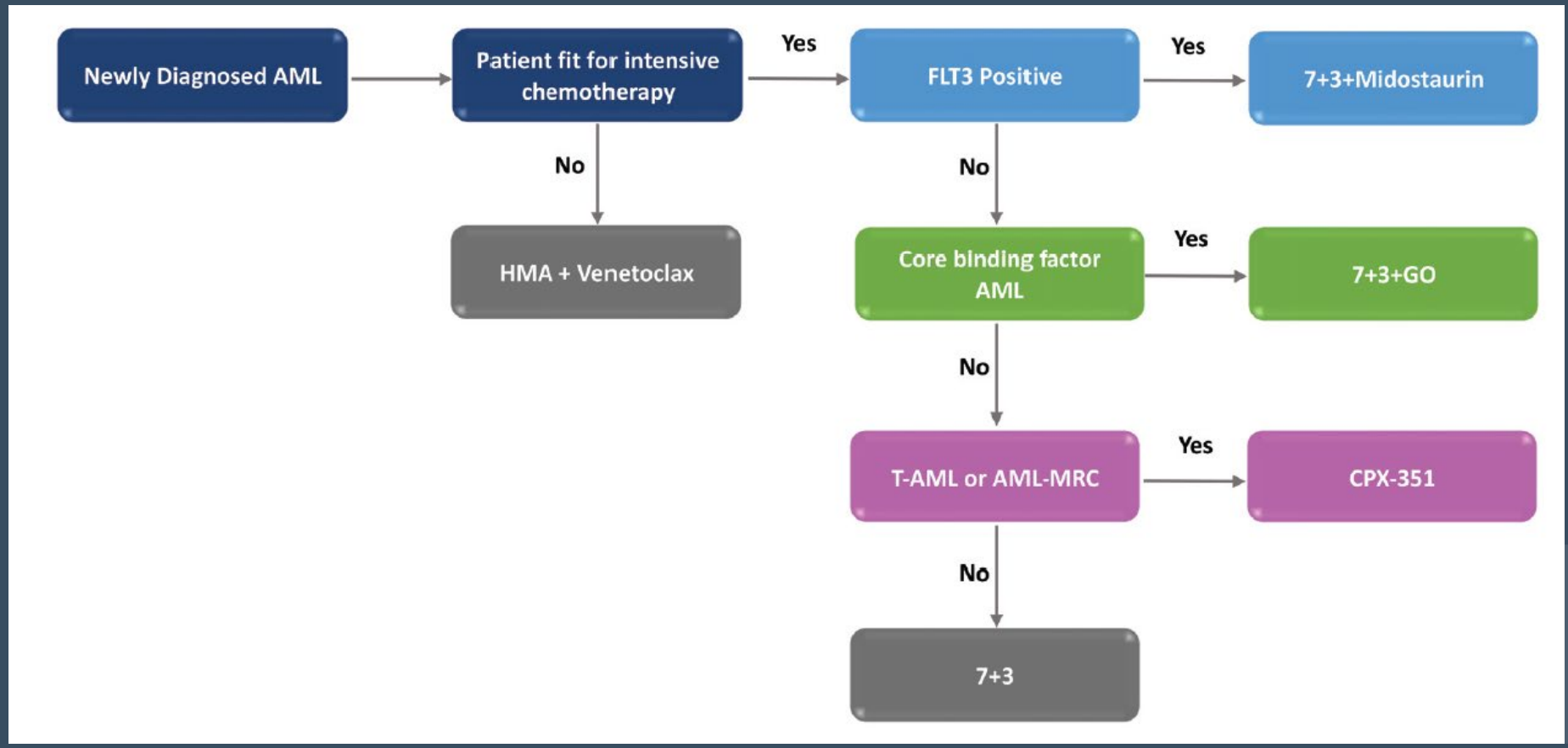
- This indication is approved under accelerated approval based on response rates. Continued approval for this indication may be contingent upon verification and description of clinical benefit in confirmatory trials.

- Comorbidities that preclude the use of intensive induction chemotherapy?


Cytogenetics
t(8;21)
Inv16
IDAC x 4
Age >60
7+3
GO if CBF & CD33+
Midostaurin if FLT3+
Consolidation
5+2
Molecular
CEBP1a
NPM1
t-AML
MRC
CPX-351
Lancet et al, J Clin Oncol 34: 7000, 2016
AlloBMT
Select Pts
Huls et al, Blood 133:1457, 2019
5AZA x 1y
Maintenance
Less fit
-7
TP53
5Aza or
Decitabine
+ Venetoclax
Relapse
Targeted Therapy
Welch et al, NEJM 375: 2023, 2016
AlloBMT
Very Select Pts


Age <90
"Healthy"
7+3
GO if CBF & CD33+
Midostaurin if FLT3+
Consolidation
HDAC x 4
AlloBMT
Cytogenetics
t(8;21)
Inv16
t(9;11)
Molecular
CEBP1a
NPM1
Cytogenetics
-7, -5, inv3
-11q23, +11
- Complex
Molecular
TP53
FLT3
Age >60
Age >60
t-AML
MRC
7+3
CPX-351
GO if CBF & CD33+
Midostaurin if FLT3+
Consolidation
IDAC
5+2
AlloBMT
"Good risk"
t(8;21)
Inv16
"Int Risk"
t9;11
CEBP1a
NPM1
Everything else
Less fit
-7
TP53
5Aza or
Decitabine
+ Venetoclax
5AZA x 1y
Maintenance
Relapse
AlloBMT
Targeted Therapy
Very Select Pts

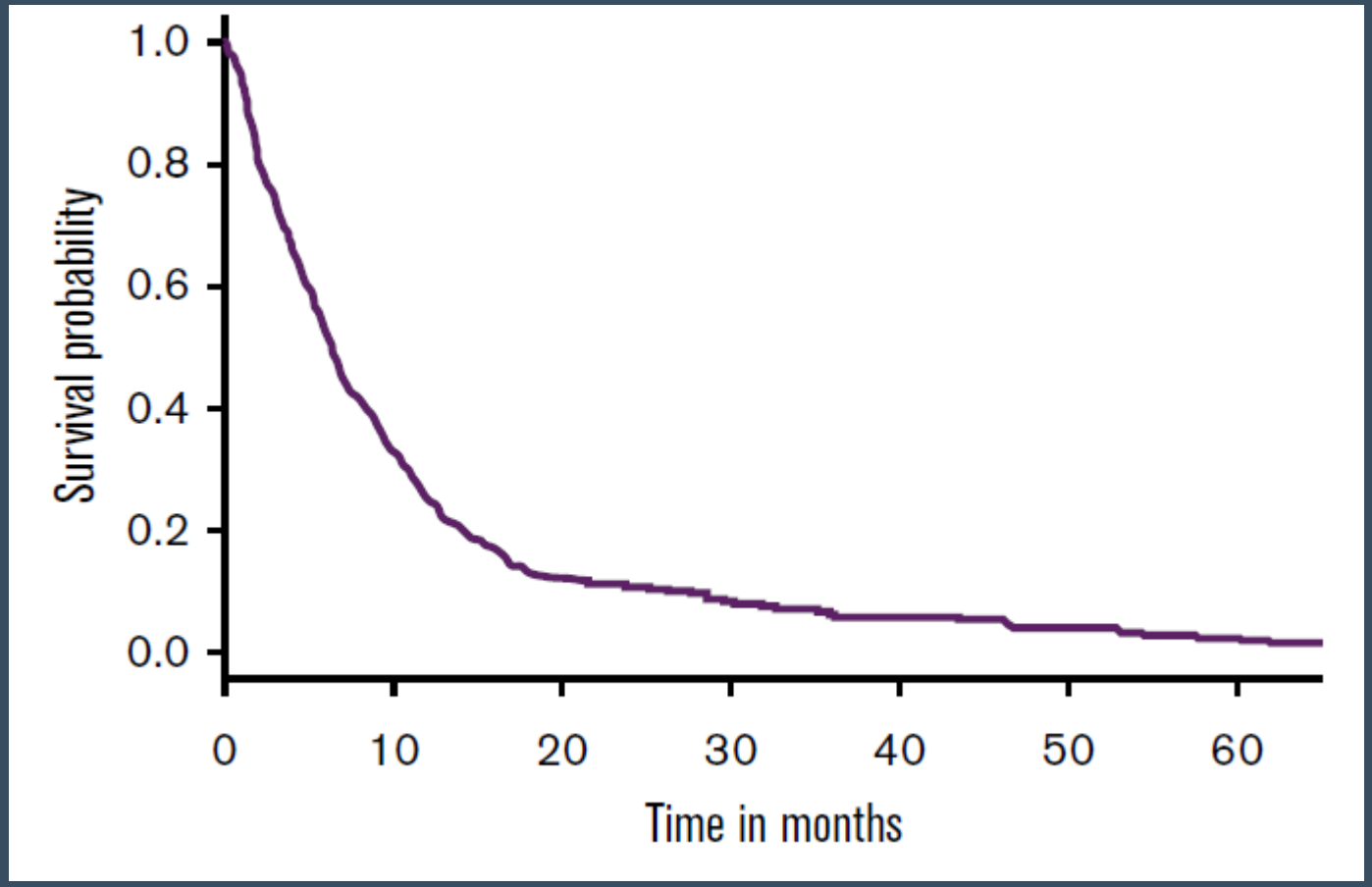
Simplified



Madanat, Kalaycio, and Nazha; ACTA Medica Academica, In press, 2019

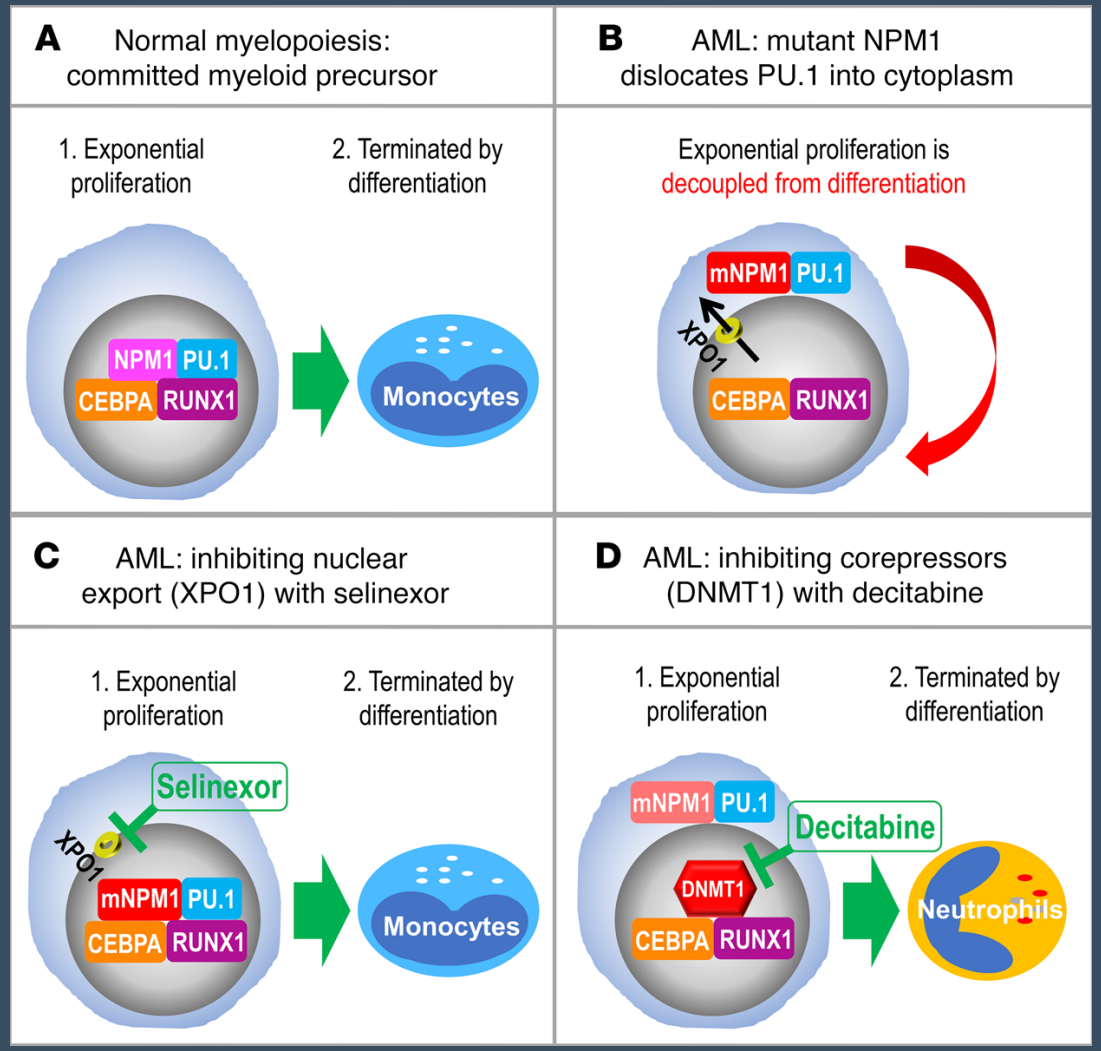
HMA for Relapsed/Refractory AML

Stahl et al, Blood Adv 2: 923, 2018

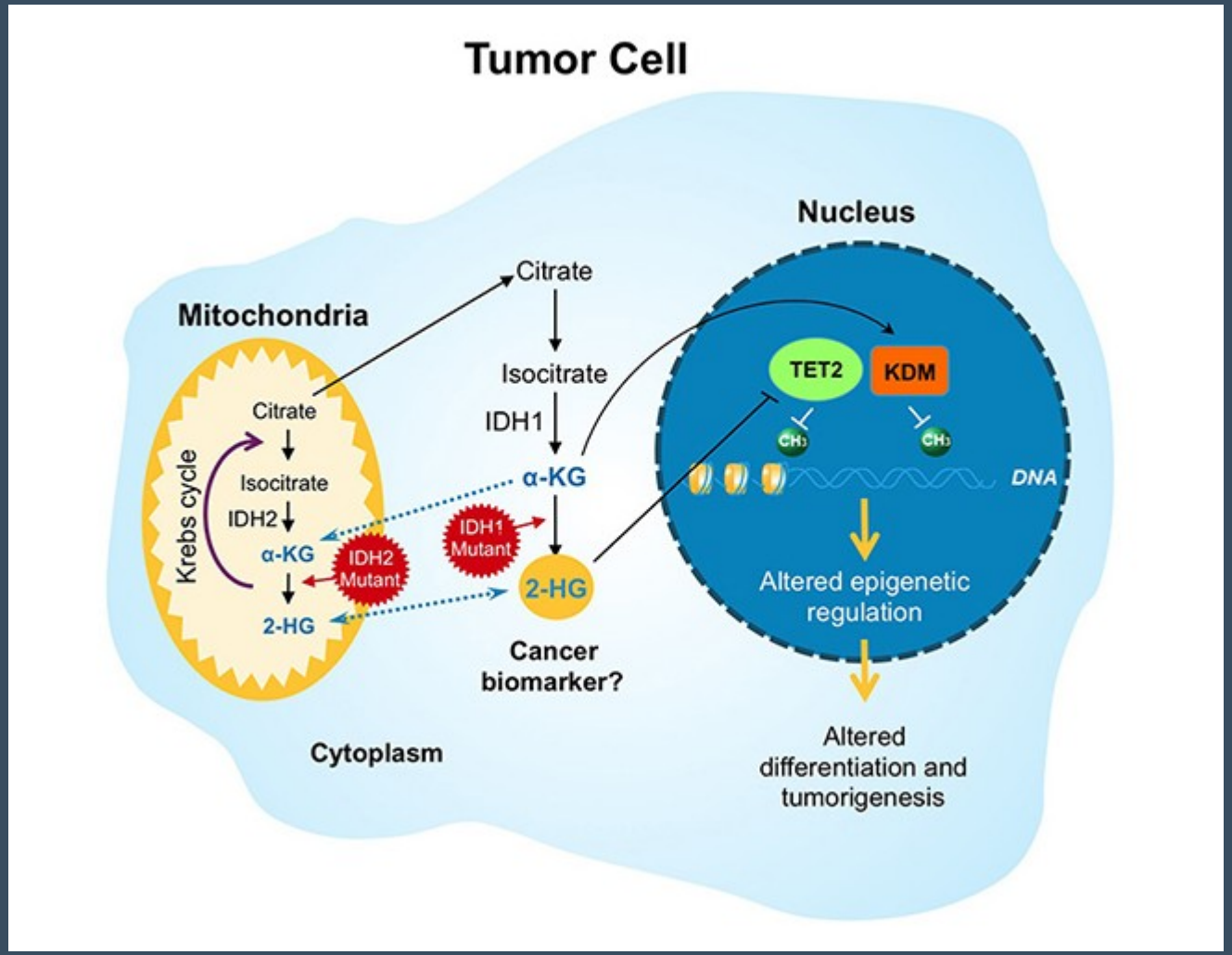


Identifying AML Targets

Gu et al, J Clin Invest 128: 4260, 2018



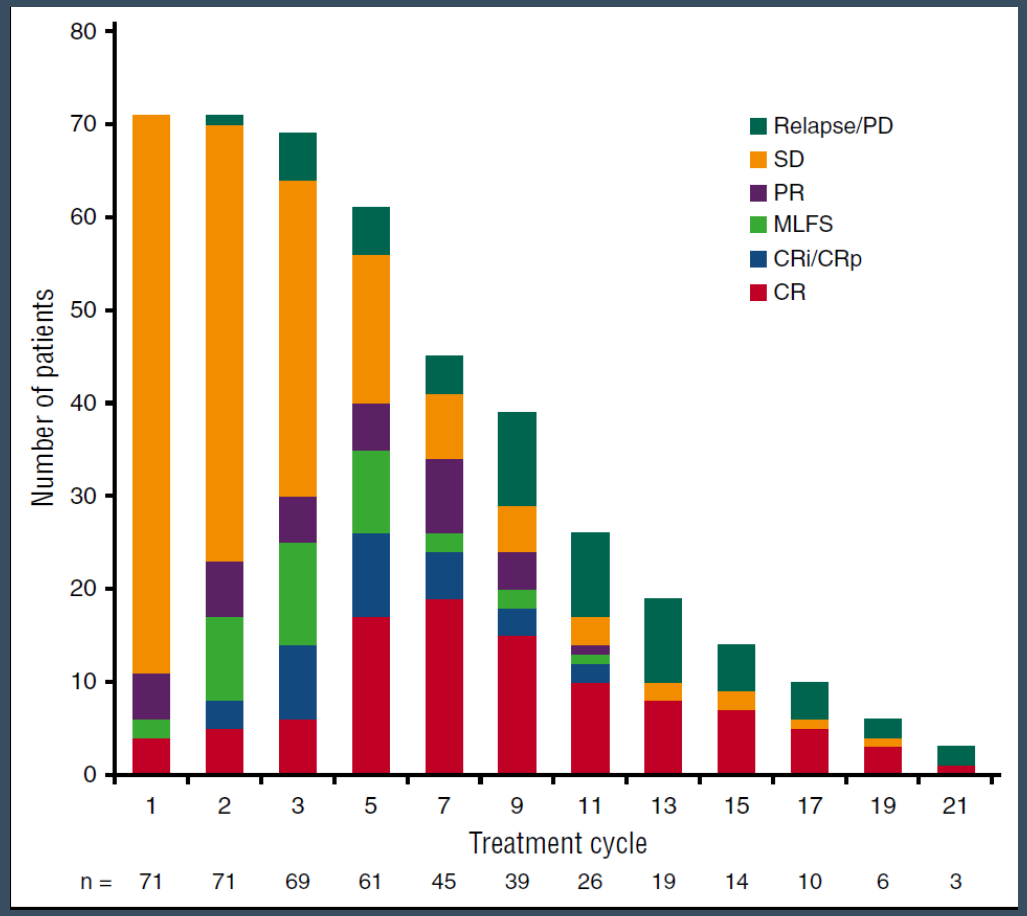
IDH Mutations



IDH inhibitors

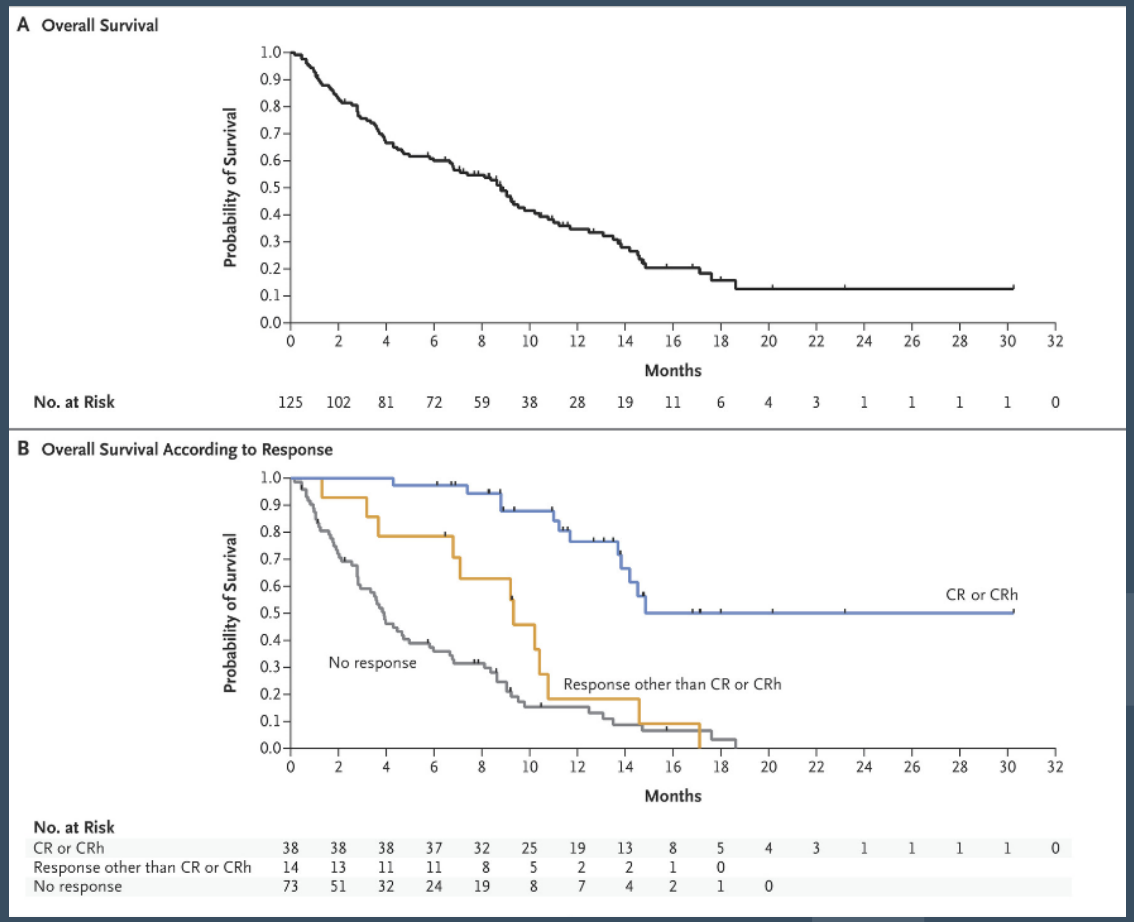
Enasidenib

Stein et al, Blood 130:722, 2017



Ivosidenib

DiNardo et al, NEJM 378:2386, 2018



IDH inhibitors as initial therapy

Table 1. Outcome of Low-dose Ara-C Over Time Compared With Other Treatment

Outcome	Comparator, %							
	BSC	LDAC + GO	LDAC + Tipifarnib	LDAC + ATO	Clofarabine	Sapacitabine	Vosaroxin	Vosaroxin + LDAC
CR	0	19	25	22	19	29	29	18
OS								
1 y	24	24	34	30	26	27	31	37
2 y	7	12	13	15	13	10	10	NA

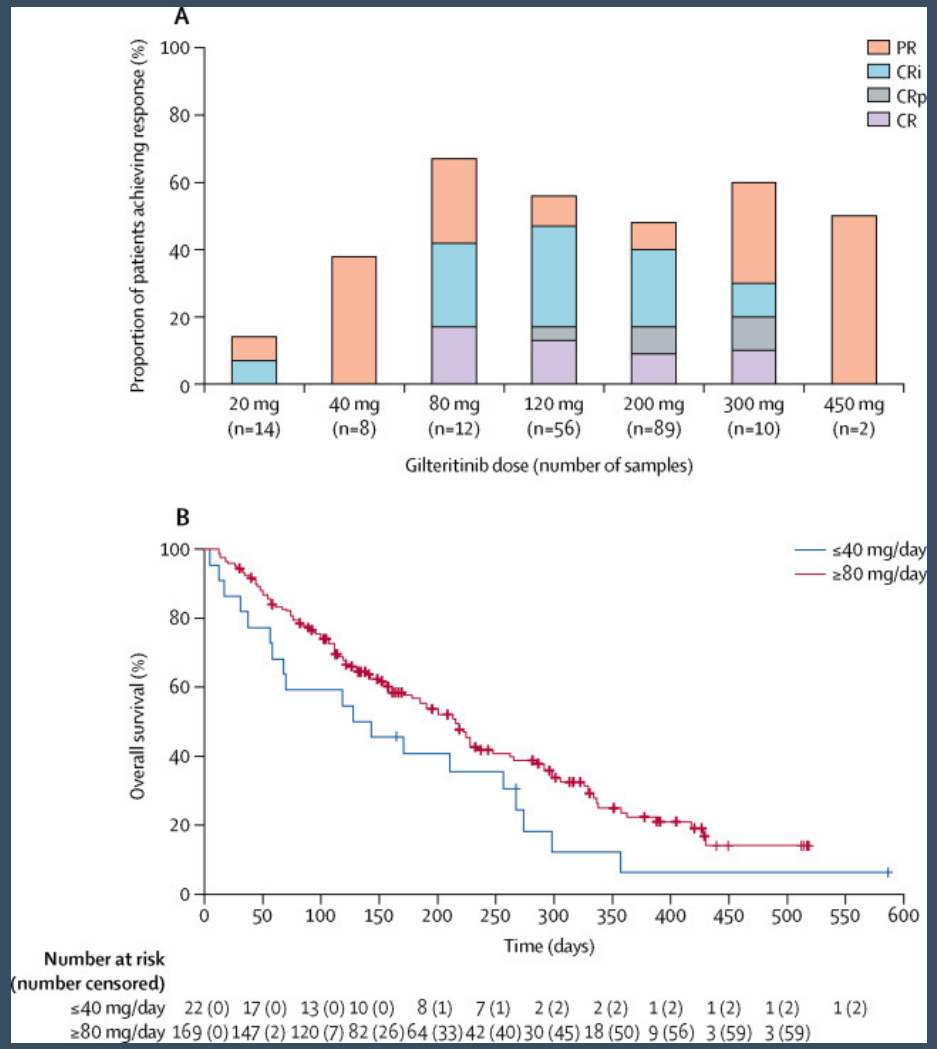
Burnett AK, Clin Lymphoma Myeloma & Leuk 18:553, 2018

IVO	V+HMA
27	71%
?	
PFS 75%	12m

Roboz et al, ASH 2018, Abs 561
DiNardo et al, Blood 133: 7, 2019

Gilteritinib for FLT3+ R/R AML

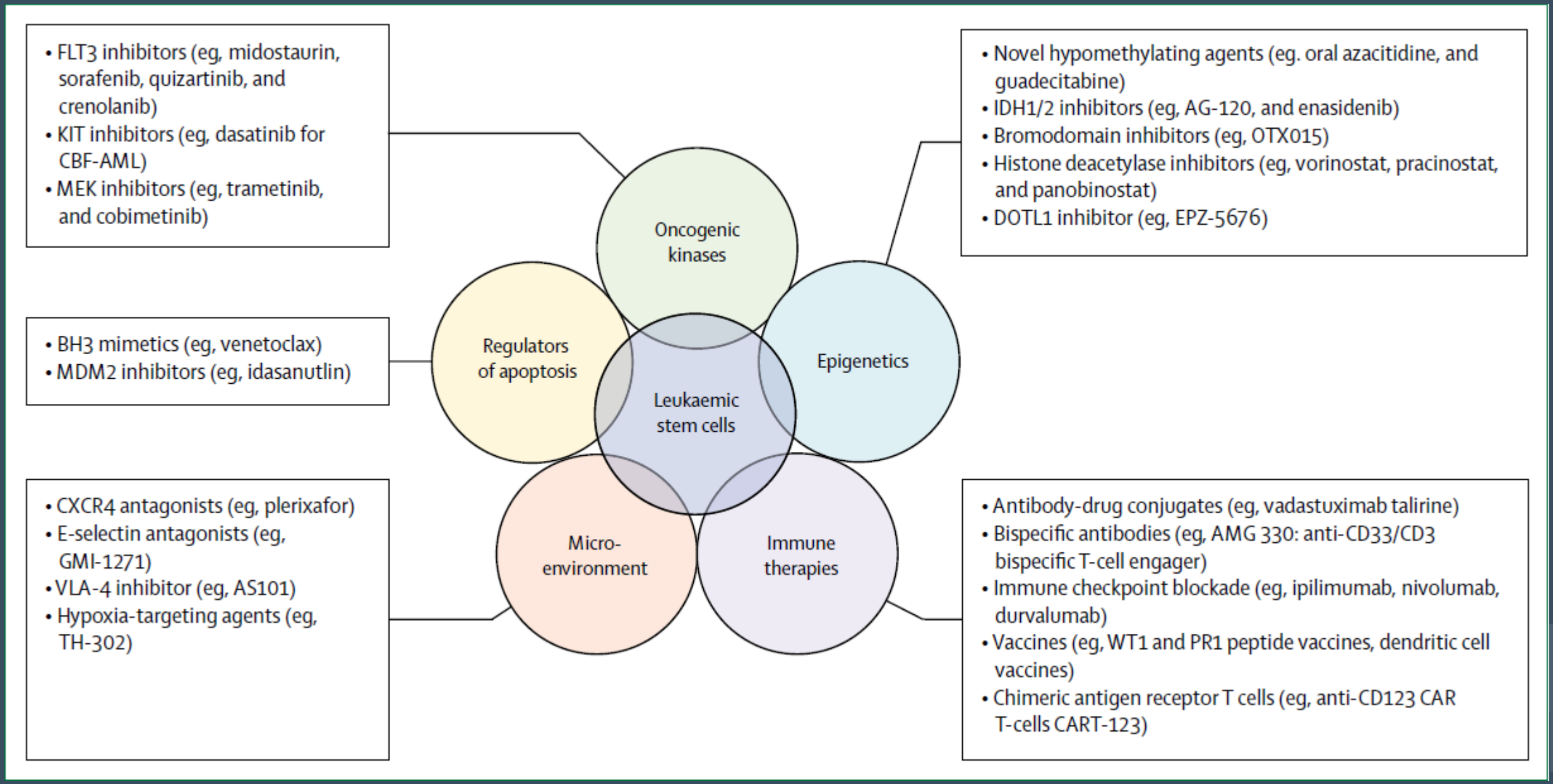
Perl et al, Lancet Oncol 18:1061, 2017



	Frequency	Impact on prognosis	Comments
FLT3	20–25% (ITD) and 5–10% (D835 TKD)	Inferior survival for ITD mutations and prognostic significance of D835 TKD mutations unclear	More common in NK acute myeloid leukaemia (<35% for ITD mutations), *FLT3*-ITD mutation with high allelic burden (ie, ≥0·5) associated with worse prognosis[29,30] than lower allelic burden, prognosis affected by concomitant *NPM1* mutation status, and prognostic significance not fully established with widespread use of *FLT3* inhibitors
NPM1	About 30%	Superior survival in the absence of high allelic burden *FLT3*-ITD mutation	More common in NK acute myeloid leukaemia (<60%) than in acute myeloid leukaemia with cytogenetic abnormalities, increased incidence in younger patients, coexisting chromosomal abnormalities do not affect prognosis[31,32], substantial association with concomitant *FLT3*, *IDH1/2*, and *DNMT3A* mutations,[26] and can be used to monitor for minimal residual disease[33]
CEBPA	About 10%	Superior survival (only if biallelic)	More common in NK acute myeloid leukaemia (<20%) than in acute myeloid leukaemia with cytogenetic abnormalities, increased incidence in younger patients, coexisting chromosomal abnormalities do not affect prognosis,[34] and germline mutations with familiar predisposition to acute myeloid leukaemia have been described[35]
KIT	About 10%	Inferior survival in CBF acute myeloid leukaemia	More common in CBF acute myeloid leukaemia (present in 25–35%) than in non-CBF, poor prognosis more notable in acute myeloid leukaemia with t(8;21) than with inv(16), KIT inhibitors (eg, dasatinib) are being evaluated in clinical trials of CBF acute myeloid leukaemia
DNMT3A	About 20%	Conflicting reports on impact on survival	More common in NK acute myeloid leukaemia (<35%) than in acute myeloid leukaemia with cytogenetic abnormalities, increased incidence in older adults, CHIP mutation[18], inferior prognosis particularly when present with other mutations (eg, $IDH2^{R140}$)[26], prognosis affected by type of *DNMT3A* mutation (ie, R882 *vs* non-R882) and patient age
IDH1 and *IDH2*	5–15% (*IDH1*) and 10–20% (*IDH2*)	Conflicting reports on impact on survival	More common in NK acute myeloid leukaemia (<30%) than in acute myeloid leukaemia with cytogenetic abnormalities, *IDH1* and $IDH2^{R140}$ are associated with concomitant *NPM1* mutations, $IDH2^{R172}$ can represent distinct acute myeloid leukaemia disease subtype,[26] enasidenib (IDH2 inhibitor) has been approved for use in relapsed or refractory *IDH2*-mutated acute myeloid leukaemia, and IDH1 inhibitors are in clinical development
NRAS	About 15%	Conflicting reports on impact on survival	Associated with *NPM1* and biallelic *CEPBA* mutations, and with inv(16) or t(16;16) and inv(3) or t(3;3), superior outcomes with $NRAS^{G12/G13}$ mutation in presence of *NPM1* and *DNMT3A* mutations,[26] and RAS pathway inhibitors are in clinical development
TET2	5–20%	Conflicting reports on impact on survival	More common in NK acute myeloid leukaemia (<25%) than in acute myeloid leukaemia with cytogenetic abnormalities, increased incidence in older adults, CHIP mutation,[18] mutually exclusive with *IDH1* and *IDH2* mutations
ASXL1	5–15%	Inferior survival	Increased incidence in older adults, CHIP mutation,[18] associated with secondary acute myeloid leukaemia that has progressed from antecedent haematologic malignancy[36]
RUNX1	5–20%	Inferior survival	Increased incidence in older adults, associated with secondary acute myeloid leukaemia that has progressed from antecedent haematologic malignancy,[37] and germline mutations with familiar predisposition to acute myeloid leukaemia have been described[38]
TP53	5–20%	Inferior survival	Increased incidence in older adults, and associated with complex karyotype, monosomal karyotype, and secondary acute myeloid leukaemia (from antecedent haematological malignancy or therapy related)

ITD=internal tandem duplication. TKD=tyrosine kinase domain. NK=normal karyotype. CBF=core-binding factor. CHIP=clonal haemopoiesis of indeterminate potential.

Table 1: **Recurrent genomic mutations in newly diagnosed acute myeloid leukaemia in adults**



Short, Rytting, and Cortes. Lancet 392: 593, 2018

Beat AML

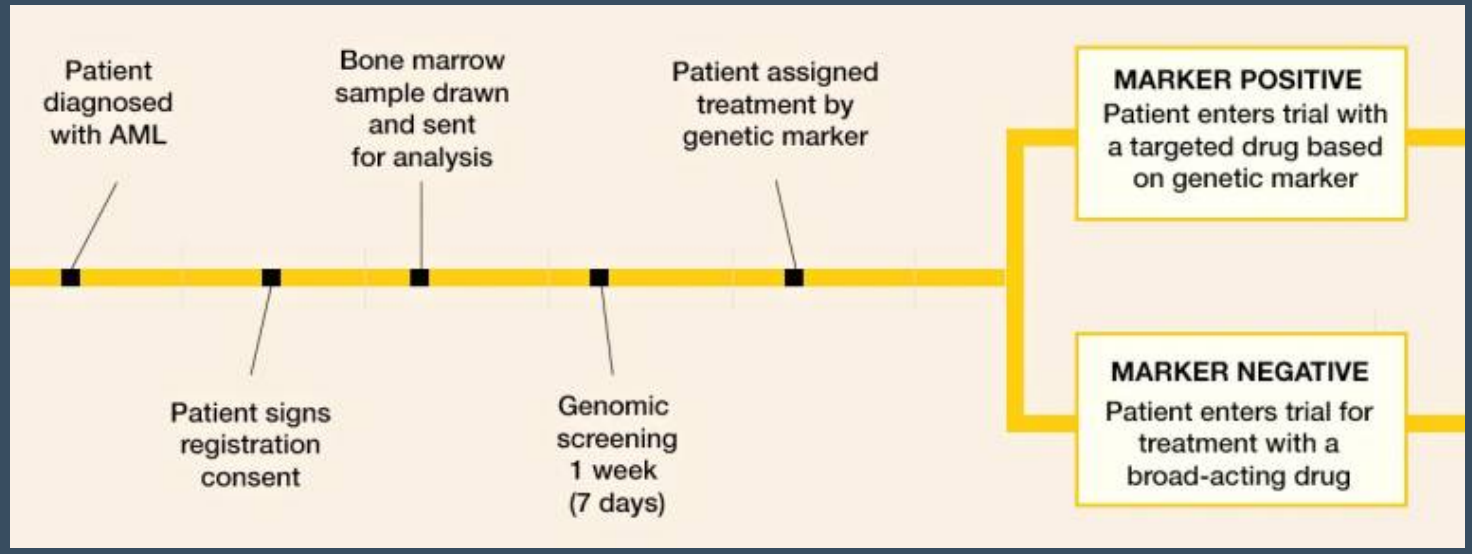
- Functional Genomic Landscape of AML
  - http://www.vizome.org/aml/

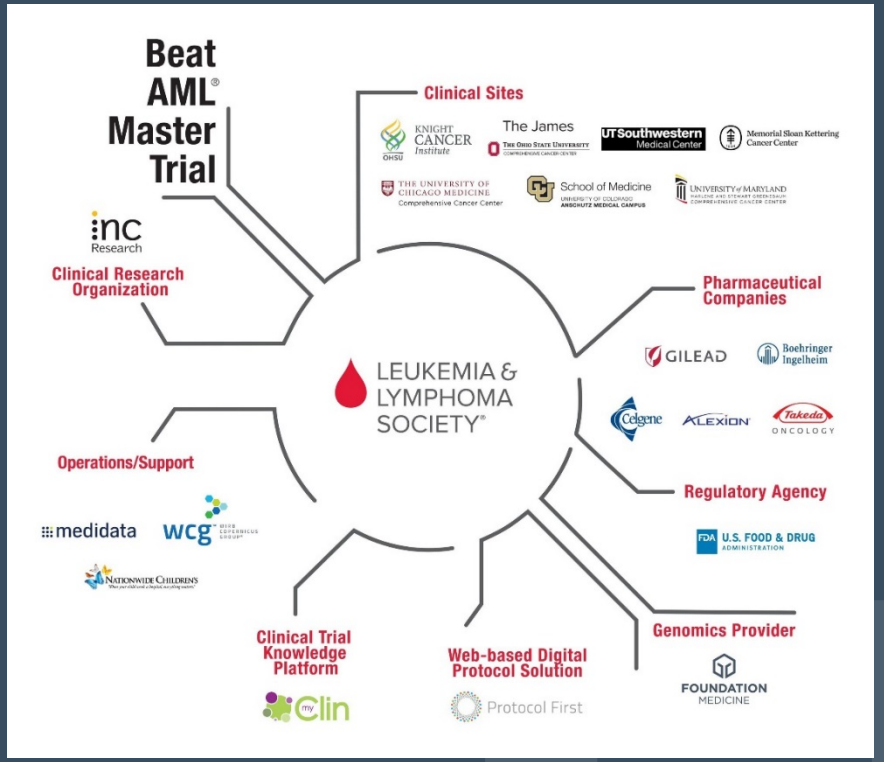
Table 1 Publicly available databases and web portals with current URL links for data mining in AML

Database	AML	Primary tumor derived	Cell line derived	Mutation	Expression	CNV	Methylation	shRNA	Drug efficacy	Drug-target	Survival	URL
Beat AML	√	√		√	√	√			√		√	http://www.vizome.org/aml/
TCGA	√	√		√	√	√	√				√	https://cancergenome.nih.gov
TARGET-AML	√	√		√	√	√	√				√	https://ocg.cancer.gov/programs/target/data-matrix/
ICGC	√	√		√	√	√	√				√	https://icgc.org
Leucegene	√	√		√	√						√	https://leucegene.ca
AML-Multistage	√	√		√		√					√	https://cancer.sanger.ac.uk/aml-multistage/
Gene Expression Commons	√	√			√							https://gexc.riken.jp/
cBioPortal	√	√	√	√	√	√					√	http://www.cbioportal.org/index.do
COSMIC	√	√	√	√					√			https://cancer.sanger.ac.uk/cosmic
Leukemia Gene Atlas	√	√	√	√	√		√				√	http://www.leukemia-gene-atlas.org
BloodSpot	√	√	√	√	√	√						http://servers.binf.ku.dk/bloodspot/
ArrayExpress	√	√	√	√	√		√					https://www.ebi.ac.uk/arrayexpress/
SynLethDB	√	√	√	√	√	√		√	√	√		http://histone.sce.ntu.edu.sg/SynLethDB/index.php
Expression Atlas	√	√	√	√	√				√			https://www.ebi.ac.uk/gxa/about.html
CCLE	√		√	√	√				√			https://portals.broadinstitute.org/ccle
GEO	√		√		√							https://www.ncbi.nlm.nih.gov/geo/
Project Achilles			√	√	√	√		√	√			https://portals.broadinstitute.org/achilles
LINCS			√					√	√			http://lincs.hms.harvard.edu/db/
Genomics of Drug Sensitivity in Cancer			√	√		√			√			https://www.cancerrxgene.org
Cancer Therapeutics Response Portal			√	√	√	√				√		https://portals.broadinstitute.org/ctrp/
ChEMBL			√						√	√		https://www.ebi.ac.uk/chembl/
Comparative Toxicogenomic Database (CTD)			√							√		http://ctdbase.org
TARGET	√	√		√	√	√	√			√	√	https://software.broadinstitute.org/cancer/cga/target

Tyner et al, Nature 562: 526, 2018; Benard et al, Leukemia 33:826, 2019

Beat AML


Patient diagnosed with AML
Patient signs registration consent
Bone marrow sample drawn and sent for analysis
Genomic screening 1 week (7 days)
Patient assigned treatment by genetic marker
MARKER POSITIVE
Patient enters trial with a targeted drug based on genetic marker
MARKER NEGATIVE
Patient enters trial for treatment with a broad-acting drug


Beat AML® Master Trial
Clinical Sites
Clinical Research Organization
Pharmaceutical Companies
LEUKEMIA & LYMPHOMA SOCIETY®
Operations/Support
Regulatory Agency
Clinical Trial Knowledge Platform
Web-based Digital Protocol Solution
Genomics Provider

Algorithims for AML

- Easiest algorithim is to just refer patients to a teaching hospital with expertise

- 6 physicians
- 5 APPs
- 2 pharmacists
- 22 bed floor
- 6 OPD nurses
- Social workers
- 160-180 pts/year