Taipei Veterans General Hospital

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Sample Information

Patient Name: 吳耀盛
Gender: Male
ID No.: P122011779
History No.: 26974732
Age: 49

Ordering Doctor: DOC8127E 何碩容
Ordering REQ.: 0CPVSLX
Signing in Date: 2023/08/17

Path No.: M112-00217
MP No.: MY23058
Assay: Oncomine Myeloid Assay
Sample Type: Bone Marrow
Bone Marrow Aspirating Date: 2023/08/16

Reporting Doctor: DOC5444B 楊靜芬 (Phone: 8#5444)

Note:

Sample Cancer Type: Blast Phase Chronic Myeloid Leukemia

Table of Contents

Report Highlights

2 Relevant Biomarkers
37 Therapies Available
0 Clinical Trials

Relevant Biomarkers

Tier	Genomic Alteration	Relevant Therapies (In this cancer type)	Relevant Therapies (In other cancer type)	Clinical Trials
IA	*BCR::ABL1 fusion* BCR activator of RhoGEF and GTPase - ABL proto-oncogene 1, non-receptor tyrosine kinase	**bosutinib** [1, 2] **dasatinib** [1] **imatinib*** [1, 2] **imatinib* + chemotherapy** [2]	**asciminib** [1, 2] **bosutinib** [1, 2] **dasatinib** [1, 2] **dasatinib + chemotherapy** [2] **imatinib*** [1, 2] **imatinib* + chemotherapy** [2] **nilotinib** [1, 2] **ponatinib** [1, 2] allogeneic stem cells asciminib + chemotherapy azacitidine blinatumomab	0

Public data sources included in relevant therapies: FDA[1], NCCN, **EMA**[2], ESMO
Public data sources included in diagnostic significance: NCCN, ESMO
*** Includes biosimilars/generics**

Relevant Biomarkers (continued)

Tier	Genomic Alteration	Relevant Therapies (In this cancer type)	Relevant Therapies (In other cancer type)	Clinical Trials
			bosutinib + chemotherapy bosutinib + inotuzumab ozogamicin brexucabtagene autoleucel cytarabine cytarabine + daunorubicin cytarabine + daunorubicin + etoposide cytarabine + etoposide + idarubicin cytarabine + fludarabine + idarubicin + filgrastim cytarabine + idarubicin cytarabine + mitoxantrone dasatinib + inotuzumab ozogamicin decitabine imatinib + inotuzumab ozogamicin inotuzumab ozogamicin inotuzumab ozogamicin + nilotinib inotuzumab ozogamicin + ponatinib liposomal cytarabine-daunorubicin CPX-351 nilotinib + chemotherapy ponatinib + chemotherapy tisagenlecleucel-t venetoclax + chemotherapy	
	Diagnostic significance: Chronic Myeloid Leukemia			
IIC	*RUNX1::MECOM fusion* RUNX family transcription factor 1 - MDS1 and EVI1 complex locus	None	allogeneic stem cells azacitidine cytarabine cytarabine + daunorubicin cytarabine + daunorubicin + etoposide cytarabine + etoposide + idarubicin cytarabine + fludarabine + idarubicin + filgrastim cytarabine + idarubicin cytarabine + mitoxantrone decitabine liposomal cytarabine-daunorubicin CPX-351 venetoclax + chemotherapy	0

Public data sources included in relevant therapies: FDA1, NCCN, **EMA**2, ESMO
Public data sources included in diagnostic significance: NCCN, ESMO
*** Includes biosimilars/generics**

Prevalent cancer biomarkers without relevant evidence based on included data sources

RUNX1::RPL22 fusion

Variants (Exclude variant in Taiwan BioBank with >1% allele frequency)

Gene Fusions (RNA)

Genes	Variant ID	Locus	Read Count
RUNX1-MECOM	RUNX1-MECOM.R4M2	chr21:36206707 - chr3:169099312	6863
RUNX1-MECOM	RUNX1-MECOM.R3M2	chr21:36231771 - chr3:169099312	1196

Variants (Exclude variant in Taiwan BioBank with >1% allele frequency) (continued)

Gene Fusions (RNA) (continued)

Genes	Variant ID	Locus	Read Count
RUNX1-RPL22	RUNX1-RPL22.R3R2	chr21:36231771 - chr1:6257733	640
BCR-ABL1	BCR-ABL1.B13A2	chr22:23631808 - chr9:133729451	15246
RUNX1-RPL22	RUNX1-RPL22.R4R2.Non-Targeted	chr21:36206707 - chr1:6257733	3819

Biomarker Descriptions

ABL1 (ABL proto-oncogene 1, non-receptor tyrosine kinase)

Background: The ABL1 proto-oncogene encodes the ABL1 non-receptor tyrosine kinase[1]. ABL1 is a member of the Abelson (ABL) family of non-receptor tyrosine kinases that shares 90% homology with its paralog ABL2[2]. Based on its cellular localization (cytoplasmic or nuclear), ABL1 regulates various cellular functions, including cell growth, adhesion, survival, invasion, or migration[3,4]. ABL1 is most extensively studied in hematological malignancies, where constitutive activation of the ABL1 gene is associated with Philadelphia chromosome (Ph+) leukemias. Ph+ (also denoted as t(9;22)(q34;q11)) is a translocation resulting in the fusion of the BCR promoter region on chromosome 22 with the ABL1 kinase domain on chromosome 9, which leads to unregulated tyrosine kinase activity of ABL1 and contributes to the immortality of leukemic cells[2,3,5,6].

Alterations and prevalence: BCR-ABL1 fusions are reported in more than 90% of chronic myeloid leukemia (CML) cases, 25-35% of adult acute lymphoblastic leukemia (ALL) cases, and 3-5% of childhood ALL cases[7,8,9,10]. Other known fusion partners in hematological cancers include NUP214, ETV6, and EML1[3,8]. Somatic missense mutations such as E255K/V, F317C/I/L/V, F359C/I/V, G250E, T315A/I, V299L, A337T, P465S and Y253H are observed in the kinase domain of the BCR-ABL1 fusion, and are associated with resistance to first-generation and second generation tyrosine kinase inhibitors (TKI). In comparison to hematological cancer, ABL1 alterations (including somatic mutations and amplification) occur rarely in solid tumors[3].

Potential relevance: The BCR-ABL1 fusion is a diagnostic marker for Ph+/BCR-ABL1 CML[11,12]. BCR-ABL1 fusion is also associated with poor/adverse risk in acute myeloid leukemia (AML) and ALL[13,14,15]. Several targeted TKIs are approved by the FDA for activated BCR-ABL1, primarily in hematological cancers. These include imatinib[16] (2001), dasatinib[17] (2006), and ponatinib[18] (2012) in CML and ALL, as well as nilotinib[19] (2007) and bosutinib[20] (2012) in CML. Secondary mutations in the kinase domain (KD) of the BCR-ABL1 fusion are associated with poor prognosis, as they confer resistance to various first- or second-line TKIs[11]. Imatinib is recommended as a first-line TKI for BCR-ABL1 fusion, while variant-specific TKIs for KD mutations include asciminib for T315I in chronic phase (CP)-CML and ponatinib for T315I in CP-CML and ALL, as the mutation confers resistance to imatinib, dasatinib, nilotinib, and bosutinib[11]. The ABL myristoyl pocket (STAMP) inhibitor, asciminib, has also been approved (2021) for adults with BCR-ABL1 T315I mutated Philadelphia-chromosome positive (Ph+) chronic myeloid leukemia (CML) in the chronic phase[21].

BCR (BCR activator of RhoGEF and GTPase)

Background: The BCR gene encodes the BCR activator of RhoGEF and GTPase, a large oligomeric multidomain protein with serine/threonine protein kinase, guanine nucleotide exchange factor (GEF) and GTPase-activating domains[2,22].The Philadelphia chromosome, a reciprocal translocation between chromosomes 22 and 9, t(9;22)(q34.1;q11.2), is frequently found in patients with chronic myelogenous leukemia (CML)[5]. This translocation results in the fusion of the BCR promoter region on chromosome 22 with the ABL1 kinase domain on chromosome 9, which leads to unregulated tyrosine kinase activity of ABL1 and contributes to the immortality of leukemic cells[2,3,5,6].

Alterations and prevalence: BCR-ABL1 fusions are reported in more than 90% of CML cases, 25-35% of adult acute lymphoblastic leukemia (ALL) cases, and 3-5% of childhood ALL cases[7,8,9,10]. Other known fusion partners of BCR in hematological cancers include JAK2, FGFR1 and PDGFRA[23,24,25]. Somatic mutations in BCR are predominantly missense and observed in about 8% of skin cutaneous melanoma, 6% of uterine corpus endometrial carcinoma, 5% of diffuse large B-cell lymphoma, 3% of stomach adenocarcinoma and colorectal adenocarcinoma, and 2% of lung adenocarcinoma, cervical squamous cell carcinoma, lung squamous cell carcinoma, and kidney renal papillary cell carcinoma[26,27]. Amplification is observed in about 4% of sarcoma and uterine carcinosarcoma, 3% of bladder urothelial carcinoma, and 2% of adrenocortical carcinoma, ovarian serous cyst adenocarcinoma, lung squamous cell carcinoma, thymoma, head and neck squamous cell carcinoma, skin cutaneous melanoma, and lung adenocarcinoma[26,27].

Potential relevance: The BCR-ABL1 fusion is a diagnostic marker for Ph+/BCR-ABL1 CML[11]. The BCR-JAK2 fusion t(9;22)(p24.1;q11.2) is a diagnostic marker for myeloid/lymphoid neoplasms with eosinophilia[28]. BCR-ABL1 fusion defines a distinct molecular subtype of AML according to the World Health Organization (WHO) and is associated with poor/adverse risk in both AML and ALL[12,13,14,15]. Several targeted tyrosine kinase inhibitors (TKIs) are approved by the FDA for activated BCR-ABL1, primarily in hematological cancers.

Biomarker Descriptions (continued)

These include imatinib[16] (2001) and dasatinib[17] (2006) in CML and ALL, nilotinib[19] (2007), bosutinib[20] (2012), and asciminib[21] (2021) in CML, and ponatinib[18] (2012) in ALL. Secondary mutations in the kinase domain (KD) of the BCR-ABL1 fusion are associated with poor prognosis, as they confer resistance to various first- or second-line TKIs[11].

MECOM (MDS1 and EVI1 complex locus)

Background: The MECOM gene encodes the MDS1 and EVI1 complex locus (MECOM), a zinc-finger transcriptional factor that regulates hematopoietic cell differentiation[29]. The MECOM locus encodes multiple alternative splice variants that result in MDS1-EVI1, MDS1, and EVI1 protein isoforms[30]. The EVI1 isoform is the most abundant and oncogenic form of MECOM that is expressed in various cancers including acute myeloid leukemia (AML)[30,31]. MECOM is a frequent target of chromosomal translocation which can lead to MECOM overexpression and leukemogenesis[32].

Alterations and prevalence: Somatic mutations MECOM are observed in up to 22% of malignant melanoma; 75% of these mutations are missense and the remaining 25% are truncating mutations[26,27,33]. MECOM amplifications are observed in up to 35% of lung squamous cell carcinoma, 30% of ovarian serous cystadenocarcinoma, and 20% of esophageal adenocarcinoma, uterine carcinosarcoma, and cervical squamous cell carcinoma[26,27]. MECOM rearrangements occur with various partner genes including ETV6, RUNX1, and H2AFY[34]. The t(3;21)(q26;q22) translocation that results in the MECOM-RUNX1 fusion is most commonly observed in chronic myeloid leukemia (CML) in blast crisis. The t(3;3)(q21.3;q26.2)/ inv(3)(q21.3;q26.3) translocation, also referred to as inv(3)/t(3;3), results in a GATA2-MECOM fusion and is observed in AML, primary myelofibrosis (PMF), and myelodysplastic syndrome (MDS)[13,35,36]. The inv(3)/ t(3;3) translocation repositions the distal GATA enhancer element and activates MECOM expression while simultaneously causing GATA2 haploinsufficiency[37].

Potential relevance: AML with MECOM rearrangement is considered a distinct molecular subtype of AML as defined by the World Health Organization (WHO)[12]. MECOM rearrangements, including GATA2-MECOM fusions, are associated with poor/adverse risk in AML[13,15]. Inv(3) is associated with poor cytogenetic risk in MDS as defined by the revised international prognostic scoring system (IPSS-R) scoring system[36]. In PMF, inv(3) is considered an unfavorable karyotype associated with intermediate risk as defined by the dynamic international prognostic scoring system (DIPSS)-Plus scoring system[35]. MECOM overexpression is observed in 10% of de novo AML associated with poor prognosis, and is commonly found in MLL-rearranged cases[38,39]. Amplification of MECOM is associated with favorable prognosis in ovarian cancer[40].

RPL22 (ribosomal protein L22)

Background: The RPL22 gene encodes the ribosomal protein L22, a member of the L22E ribosomal protein family[2]. RPL22 functions as a component of the 60S ribosome subunit and has been observed to be incorporated late in the ribosome assembly and maturation process[41]. Although RPL22 is observed to be non-essential for ribosome biogenesis, RPL22-deficiency has been linked to developmental defects[41]. RPL22 haploinsufficiency has been found to accelerate T-cell malignancy development and progression[42].

Alterations and prevalence: Somatic mutation of RPL22 is observed in 11% uterine corpus endometrial carcinoma, 7% of stomach adenocarcinoma, 3% of adrenocortical carcinoma and colorectal adenocarcinoma, and 2% uterine carcinosarcoma and esophageal adenocarcinoma[26,27]. Biallelic deletion of RPL22 is observed in 4% of diffuse large B-cell lymphoma, 3% of adrenocortical carcinoma and cholangiocarcinoma, 2% pheochromocytoma and paraganglioma and liver hepatocellular carcinoma[26,27]. Amplification of RPL22 is observed in 3% of esophageal adenocarcinoma and ovarian serous cystadenocarcinoma and 2% of sarcoma, uterine carcinosarcoma, and pancreatic adenocarcinoma[26,27].

Potential relevance: Currently, no therapies are approved for RPL22 aberrations.

RUNX1 (RUNX family transcription factor 1)

Background: The RUNX1 gene encodes the runt-related transcription factor (RUNX) 1, part of the RUNX family of transcription factors which also includes RUNX2 and RUNX3[43]. All RUNX proteins share several conserved regions with similar functionality including a highly conserved N-terminal 'runt' domain responsible for binding DNA, a C-terminal region composed of an activation domain, inhibitory domain, protein interacting motifs, and a nuclear matrix targeting signal[44]. Each of these proteins are capable of interacting with core binding factor beta (CBFβ) to form the core binding factor (CFB) complex. Consequently, RUNX1, RUNX2, and RUNX3 are collectively known as core binding factor alpha (CBFα) since they can each function as the alpha subunit of CBF. Specifically, CBFβ binds to the 'runt' domain of RUNX1 leading to RUNX1 stabilization and increased affinity of the CFB complex for promoters involved in hematopoietic differentiation and cell cycle regulation[45,46]. RUNX1 is frequently mutated in various hematological malignancies[46]. Germline mutations in RUNX1 result in a rare autosomal dominant condition known as familial platelet disorder, with predisposition to acute myeloid leukemia (FPD/AML)[47,48]. Somatic mutations and chromosomal translocations in RUNX1 are often observed in myelodysplastic syndrome (MDS), acute myeloid leukemia (AML), acute lymphoblastic leukemia (ALL), and chronic myelomonocytic leukemia (CMML)[46].

Alterations and prevalence: RUNX1 is frequently rearranged in hematological malignancies with over 50 different observed translocations[49]. The most recurrent translocation, t(12;21)(q34;q11), results in ETV6-RUNX1 fusion and is observed in 20-25% of

Biomarker Descriptions (continued)

childhood ALL[50,51,52]. This translocation is also observed in adult ALL at a lower frequency (2%)[51,52]. Another recurrent translocation, t(8;21)(q22;q22), results in RUNX1-RUNX1T1 fusion and is observed in 5-10% of AML[53]. The RUNX1-RUNX1T1 fusion, consists of the RHD domain of RUNX1 and the majority of RUNX1T1, which promotes oncogenesis by altering transcriptional regulation of RUNX1 target genes[46,53]. Somatic mutations in RUNX1 include missense, nonsense, and frameshift mutations resulting in loss of function or dominant negative effects[46]. RUNX1 mutations are reported in approximately 10% of de novo AML as well as 10-15% of MDS[13,26,36,46].

Potential relevance: AML with RUNX1-RUNX1T1 fusions is considered a distinct molecular subtype by the World Health Organization (WHO)[12,13]. Translocations involving RUNX1, specifically t(8;21)(q22;q22)/RUNX1-RUNX1T1 in AML and t(12;21)(q34;q11)/ETV6-RUNX1 in ALL, are associated with favorable risk[13,14,15]. On the other hand, mutations in RUNX1 confer poor prognosis in AML, MDS, and systemic mastocytosis (SM)[13,36,54]

Relevant Therapy Summary

● In this cancer type ○ In other cancer type ◑ In this cancer type and other cancer types ✖ No evidence

BCR::ABL1 fusion

Relevant Therapy	FDA	NCCN	EMA	ESMO	Clinical Trials*
bosutinib	◑	○	◑	○	✖
imatinib	◑	○	◑	○	✖
dasatinib	◑	○	○	○	✖
nilotinib	○	○	○	○	✖
asciminib	○	○	○	✖	✖
ponatinib	○	○	○	✖	✖
imatinib + chemotherapy	✖	○	◑	✖	✖
dasatinib + chemotherapy	✖	○	○	✖	✖
Allogeneic hematopoietic stem cell transplantation	✖	○	✖	✖	✖
asciminib + chemotherapy	✖	○	✖	✖	✖
azacitidine	✖	○	✖	✖	✖
blinatumomab	✖	○	✖	✖	✖
bosutinib + blinatumomab	✖	○	✖	✖	✖
bosutinib + chemotherapy	✖	○	✖	✖	✖
bosutinib + cyclophosphamide + cytarabine + daunorubicin + methotrexate + PEG-L-asparaginase + vincristine + dexamethasone + prednisone	✖	○	✖	✖	✖
bosutinib + cytarabine + daunorubicin + etoposide + methotrexate + vincristine + dexamethasone	✖	○	✖	✖	✖
bosutinib + cytarabine + HyperCVAD	✖	○	✖	✖	✖
bosutinib + cytarabine + HyperCVAD + methotrexate	✖	○	✖	✖	✖
bosutinib + inotuzumab ozogamicin	✖	○	✖	✖	✖
bosutinib + steroid	✖	○	✖	✖	✖

Relevant Therapy Summary (continued)

● In this cancer type ○ In other cancer type ◑ In this cancer type and other cancer types ✖ No evidence

BCR::ABL1 fusion (continued)

Relevant Therapy	FDA	NCCN	EMA	ESMO	Clinical Trials*
bosutinib + vincristine + dexamethasone	✖	○	✖	✖	✖
brexucabtagene autoleucel	✖	○	✖	✖	✖
cytarabine	✖	○	✖	✖	✖
cytarabine + daunorubicin	✖	○	✖	✖	✖
cytarabine + daunorubicin + etoposide	✖	○	✖	✖	✖
cytarabine + etoposide + idarubicin	✖	○	✖	✖	✖
cytarabine + fludarabine + idarubicin + filgrastim	✖	○	✖	✖	✖
cytarabine + idarubicin	✖	○	✖	✖	✖
cytarabine + mitoxantrone	✖	○	✖	✖	✖
dasatinib + blinatumomab	✖	○	✖	✖	✖
dasatinib + cyclophosphamide + cytarabine + daunorubicin + methotrexate + PEG-L-asparaginase + vincristine + dexamethasone + prednisone	✖	○	✖	✖	✖
dasatinib + cytarabine + daunorubicin + etoposide + methotrexate + vincristine + dexamethasone	✖	○	✖	✖	✖
dasatinib + cytarabine + HyperCVAD	✖	○	✖	✖	✖
dasatinib + cytarabine + HyperCVAD + methotrexate	✖	○	✖	✖	✖
dasatinib + inotuzumab ozogamicin	✖	○	✖	✖	✖
dasatinib + steroid	✖	○	✖	✖	✖
dasatinib + vincristine + dexamethasone	✖	○	✖	✖	✖
decitabine	✖	○	✖	✖	✖
imatinib + blinatumomab	✖	○	✖	✖	✖
imatinib + cyclophosphamide + cytarabine + daunorubicin + methotrexate + PEG-L-asparaginase + vincristine + dexamethasone + prednisone	✖	○	✖	✖	✖
imatinib + cytarabine + daunorubicin + etoposide + methotrexate + vincristine + dexamethasone	✖	○	✖	✖	✖
imatinib + cytarabine + HyperCVAD	✖	○	✖	✖	✖
imatinib + cytarabine + HyperCVAD + methotrexate	✖	○	✖	✖	✖
imatinib + inotuzumab ozogamicin	✖	○	✖	✖	✖
imatinib + steroid	✖	○	✖	✖	✖
imatinib + vincristine + dexamethasone	✖	○	✖	✖	✖

Relevant Therapy Summary (continued)

● In this cancer type ○ In other cancer type ◑ In this cancer type and other cancer types ✖ No evidence

BCR::ABL1 fusion (continued)

Relevant Therapy	FDA	NCCN	EMA	ESMO	Clinical Trials*
inotuzumab ozogamicin	✖	○	✖	✖	✖
inotuzumab ozogamicin + nilotinib	✖	○	✖	✖	✖
inotuzumab ozogamicin + ponatinib	✖	○	✖	✖	✖
liposomal cytarabine-daunorubicin CPX-351	✖	○	✖	✖	✖
nilotinib + blinatumomab	✖	○	✖	✖	✖
nilotinib + chemotherapy	✖	○	✖	✖	✖
nilotinib + cyclophosphamide + cytarabine + daunorubicin + methotrexate + PEG-L-asparaginase + vincristine + dexamethasone + prednisone	✖	○	✖	✖	✖
nilotinib + cytarabine + daunorubicin + etoposide + methotrexate + vincristine + dexamethasone	✖	○	✖	✖	✖
nilotinib + cytarabine + HyperCVAD	✖	○	✖	✖	✖
nilotinib + cytarabine + HyperCVAD + methotrexate	✖	○	✖	✖	✖
nilotinib + steroid	✖	○	✖	✖	✖
nilotinib + vincristine + dexamethasone	✖	○	✖	✖	✖
ponatinib + blinatumomab	✖	○	✖	✖	✖
ponatinib + chemotherapy	✖	○	✖	✖	✖
ponatinib + cyclophosphamide + cytarabine + daunorubicin + methotrexate + PEG-L-asparaginase + vincristine + dexamethasone + prednisone	✖	○	✖	✖	✖
ponatinib + cytarabine + daunorubicin + etoposide + methotrexate + vincristine + dexamethasone	✖	○	✖	✖	✖
ponatinib + cytarabine + HyperCVAD	✖	○	✖	✖	✖
ponatinib + cytarabine + HyperCVAD + methotrexate	✖	○	✖	✖	✖
ponatinib + steroid	✖	○	✖	✖	✖
ponatinib + vincristine + dexamethasone	✖	○	✖	✖	✖
tisagenlecleucel-t	✖	○	✖	✖	✖
venetoclax + azacitidine	✖	○	✖	✖	✖
venetoclax + cytarabine	✖	○	✖	✖	✖
venetoclax + cytarabine + fludarabine + idarubicin + filgrastim	✖	○	✖	✖	✖
venetoclax + decitabine	✖	○	✖	✖	✖
imatinib (Accord)	✖	✖	◑	✖	✖

Relevant Therapy Summary (continued)

● In this cancer type ○ In other cancer type ◑ In this cancer type and other cancer types ✖ No evidence

BCR::ABL1 fusion (continued)

Relevant Therapy	FDA	NCCN	EMA	ESMO	Clinical Trials*
imatinib (Accord) + chemotherapy	✖	✖	◑	✖	✖
imatinib (Koanaa)	✖	✖	◑	✖	✖
imatinib (Koanaa) + chemotherapy	✖	✖	◑	✖	✖

RUNX1::MECOM fusion

Relevant Therapy	FDA	NCCN	EMA	ESMO	Clinical Trials*
Allogeneic hematopoietic stem cell transplantation	✖	○	✖	✖	✖
azacitidine	✖	○	✖	✖	✖
cytarabine	✖	○	✖	✖	✖
cytarabine + daunorubicin	✖	○	✖	✖	✖
cytarabine + daunorubicin + etoposide	✖	○	✖	✖	✖
cytarabine + etoposide + idarubicin	✖	○	✖	✖	✖
cytarabine + fludarabine + idarubicin + filgrastim	✖	○	✖	✖	✖
cytarabine + idarubicin	✖	○	✖	✖	✖
cytarabine + mitoxantrone	✖	○	✖	✖	✖
decitabine	✖	○	✖	✖	✖
liposomal cytarabine-daunorubicin CPX-351	✖	○	✖	✖	✖
venetoclax + azacitidine	✖	○	✖	✖	✖
venetoclax + cytarabine	✖	○	✖	✖	✖
venetoclax + cytarabine + fludarabine + idarubicin + filgrastim	✖	○	✖	✖	✖
venetoclax + decitabine	✖	○	✖	✖	✖

Relevant Therapy Details

Current FDA Information

● In this cancer type ○ In other cancer type ◑ In this cancer type and other cancer types

FDA information is current as of 2023-07-19. For the most up-to-date information, search www.fda.gov.

BCR::ABL1 fusion

◑ bosutinib

Cancer type: Accelerated Phase Chronic Myeloid Leukemia, Blast Phase Chronic Myeloid Leukemia, Chronic Phase Chronic Myeloid Leukemia

Label as of: 2023-04-20

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

Indications and usage:

BOSULIF® is a kinase inhibitor indicated for the treatment of adult patients with

- Newly-diagnosed chronic phase Ph+ chronic myelogenous leukemia (CML).
- Chronic, accelerated, or blast phase Ph+ CML with resistance or intolerance to prior therapy.

Reference:

https://www.accessdata.fda.gov/drugsatfda_docs/label/2023/203341s024lbl.pdf

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◑ dasatinib

Cancer type: Accelerated Phase Chronic Myeloid Leukemia, Acute Lymphoblastic Leukemia, Blast Phase Chronic Myeloid Leukemia, Chronic Phase Chronic Myeloid Leukemia

Label as of: 2023-02-08

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

Indications and usage:

SPRYCEL® is a kinase inhibitor indicated for the treatment of

- newly diagnosed adults with Philadelphia chromosome-positive (Ph+) chronic myeloid leukemia (CML) in chronic phase.
- adults with chronic, accelerated, or myeloid or lymphoid blast phase Ph+ CML with resistance or intolerance to prior therapy including imatinib.
- adults with Philadelphia chromosome-positive acute lymphoblastic leukemia (Ph+ ALL) with resistance or intolerance to prior therapy.
- pediatric patients 1 year of age and older with Ph+ CML in chronic phase.
- pediatric patients 1 year of age and older with newly diagnosed Ph+ ALL in combination with chemotherapy.

Reference:

https://www.accessdata.fda.gov/drugsatfda_docs/label/2023/021986s027lbl.pdf

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BCR::ABL1 fusion (continued)

imatinib

Cancer type: Accelerated Phase Chronic Myeloid Leukemia, Acute Lymphoblastic Leukemia, Blast Phase Chronic Myeloid Leukemia, Chronic Phase Chronic Myeloid Leukemia

Label as of: 2022-08-19

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

Indications and usage:

GLEEVEC® is a kinase inhibitor indicated for the treatment of:

- Newly diagnosed adult and pediatric patients with Philadelphia chromosome positive chronic myeloid leukemia (Ph+ CML) in chronic phase.
- Patients with Philadelphia chromosome positive chronic myeloid leukemia (Ph+ CML) in blast crisis (BC), accelerated phase (AP), or in chronic phase (CP) after failure of interferon-alpha therapy.
- Adult patients with relapsed or refractory Philadelphia chromosome positive acute lymphoblastic leukemia (Ph+ ALL).
- Pediatric patients with newly diagnosed Philadelphia chromosome positive acute lymphoblastic leukemia (Ph+ ALL) in combination with chemotherapy.
- Adult patients with myelodysplastic/myeloproliferative diseases (MDS/MPD) associated with platelet-derived growth factor receptor (PDGFR) gene re-arrangements.
- Adult patients with aggressive systemic mastocytosis (ASM) without the D816V c-Kit mutation or with c-Kit mutational status unknown.
- Adult patients with hypereosinophilic syndrome (HES) and/or chronic eosinophilic leukemia (CEL) who have the FIP1L1-PDGFRα fusion kinase (mutational analysis or fluorescence in situ hybridization [FISH] demonstration of CHIC2 allele deletion) and for patients with HES and/or CEL who are FIP1L1-PDGFRα fusion kinase negative or unknown.
- Adult patients with unresectable, recurrent and/or metastatic dermatofibrosarcoma protuberans (DFSP).
- Patients with Kit (CD117) positive unresectable and/or metastatic malignant gastrointestinal stromal tumors (GIST).
- Adjuvant treatment of adult patients following resection of Kit (CD117) positive GIST.

Reference:

https://www.accessdata.fda.gov/drugsatfda_docs/label/2022/021588s062lbl.pdf

asciminib

Cancer type: Chronic Phase Chronic Myeloid Leukemia

Label as of: 2023-06-26

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

Indications and usage:

SCEMBLIX® is a kinase inhibitor indicated for the treatment of adult patients with:

- Philadelphia chromosome-positive chronic myeloid leukemia (Ph+ CML) in chronic phase (CP), previously treated with two or more tyrosine kinase inhibitors (TKIs).
- Ph+ CML in CP with the T315I mutation.

Reference:

https://www.accessdata.fda.gov/drugsatfda_docs/label/2023/215358s003lbl.pdf

BCR::ABL1 fusion (continued)

nilotinib

Cancer type: Accelerated Phase Chronic Myeloid Leukemia, Chronic Phase Chronic Myeloid Leukemia

Label as of: 2021-09-23

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

Indications and usage:

TASIGNA® is a kinase inhibitor indicated for the treatment of:

- Adult and pediatric patients greater than or equal to 1 year of age with newly diagnosed Philadelphia chromosome positive chronic myeloid leukemia (Ph+ CML) in chronic phase.
- Adult patients with chronic phase (CP) and accelerated phase (AP) Ph+ CML resistant to or intolerant to prior therapy that included imatinib.
- Pediatric patients greater than or equal to 1 year of age with Ph+ CML-CP and CML-AP resistant or intolerant to prior tyrosine-kinase inhibitor (TKI) therapy.

Reference:

https://www.accessdata.fda.gov/drugsatfda_docs/label/2021/022068s035s036lbl.pdf

ponatinib

Cancer type: Acute Lymphoblastic Leukemia

Label as of: 2022-02-15

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

Indications and usage:

ICLUSIG® is a kinase inhibitor indicated for the treatment of adult patients with:

- Chronic phase (CP) chronic myeloid leukemia (CML) with resistance or intolerance to at least two prior kinase inhibitors.
- Accelerated phase (AP) or blast phase (BP) CML or Philadelphia chromosome positive acute lymphoblastic leukemia (Ph+ ALL) for whom no other kinase inhibitors are indicated.
- T315I-positive CML (chronic phase, accelerated phase, or blast phase) or T315I-positive Ph+ ALL.

Limitations of Use: ICLUSIG® is not indicated and is not recommended for the treatment of patients with newly diagnosed CP-CML.

Reference:

https://www.accessdata.fda.gov/drugsatfda_docs/label/2022/203469s035lbl.pdf

Current NCCN Information

● In this cancer type ○ In other cancer type ◑ In this cancer type and other cancer types

NCCN information is current as of 2023-07-03. For the most up-to-date information, search www.nccn.org.
For NCCN International Adaptations & Translations, search www.nccn.org/global/what-we-do/international-adaptations.

Some variant specific evidence in this report may be associated with a broader set of alterations from the NCCN Guidelines. Specific variants listed in this report were sourced from approved therapies or scientific literature. These therapeutic options are appropriate for certain population segments with cancer. Refer to the NCCN Guidelines® for full recommendation.

BCR::ABL1 fusion

○ azacitidine

Cancer type: Acute Myeloid Leukemia

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 1

Population segment (Line of therapy):
- (Maintenance therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

○ bosutinib

Cancer type: Chronic Phase Chronic Myeloid Leukemia

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 1

Population segment (Line of therapy):
- (First-line therapy); Preferred intervention

Reference: NCCN Guidelines® - NCCN-Chronic Myeloid Leukemia [Version 2.2023]

○ cytarabine + daunorubicin

Cancer type: Acute Myeloid Leukemia

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 1

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

○ cytarabine + daunorubicin + etoposide

Cancer type: Acute Myeloid Leukemia

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 1

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

BCR::ABL1 fusion (continued)

cytarabine + etoposide + idarubicin

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 1

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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cytarabine + idarubicin

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 1

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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dasatinib

Cancer type: Chronic Phase Chronic Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 1

Population segment (Line of therapy):
- (First-line therapy); Preferred intervention

Reference: NCCN Guidelines® - NCCN-Chronic Myeloid Leukemia [Version 2.2023]

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imatinib

Cancer type: Chronic Phase Chronic Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 1

Population segment (Line of therapy):
- (First-line therapy); Preferred intervention

Reference: NCCN Guidelines® - NCCN-Chronic Myeloid Leukemia [Version 2.2023]

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nilotinib

Cancer type: Chronic Phase Chronic Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 1

Population segment (Line of therapy):
- (First-line therapy); Preferred intervention

Reference: NCCN Guidelines® - NCCN-Chronic Myeloid Leukemia [Version 2.2023]

BCR::ABL1 fusion (continued)

Allogeneic hematopoietic stem cell transplantation

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Consolidation therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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azacitidine

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Maintenance therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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blinatumomab

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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bosutinib

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

---

bosutinib

Cancer type: Accelerated Phase Chronic Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (First-line therapy); Preferred intervention

Reference: NCCN Guidelines® - NCCN-Chronic Myeloid Leukemia [Version 2.2023]

BCR::ABL1 fusion (continued)

bosutinib + blinatumomab

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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bosutinib + cyclophosphamide + cytarabine + daunorubicin + methotrexate + PEG-L-asparaginase + vincristine + dexamethasone + prednisone

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Refractory, Relapsed (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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bosutinib + cytarabine + daunorubicin + etoposide + methotrexate + vincristine + dexamethasone

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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bosutinib + cytarabine + HyperCVAD

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

BCR::ABL1 fusion (continued)

bosutinib + cytarabine + HyperCVAD + methotrexate

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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bosutinib + inotuzumab ozogamicin

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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bosutinib + steroid

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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bosutinib + vincristine + dexamethasone

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

BCR::ABL1 fusion (continued)

brexucabtagene autoleucel

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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cytarabine

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Consolidation therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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cytarabine + mitoxantrone

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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dasatinib

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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dasatinib

Cancer type: Accelerated Phase Chronic Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (First-line therapy); Preferred intervention

Reference: NCCN Guidelines® - NCCN-Chronic Myeloid Leukemia [Version 2.2023]

BCR::ABL1 fusion (continued)

dasatinib + blinatumomab

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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dasatinib + cyclophosphamide + cytarabine + daunorubicin + methotrexate + PEG-L-asparaginase + vincristine + dexamethasone + prednisone

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Refractory, Relapsed (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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dasatinib + cytarabine + daunorubicin + etoposide + methotrexate + vincristine + dexamethasone

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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dasatinib + cytarabine + HyperCVAD

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

BCR::ABL1 fusion (continued)

dasatinib + cytarabine + HyperCVAD + methotrexate

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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dasatinib + inotuzumab ozogamicin

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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dasatinib + steroid

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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dasatinib + vincristine + dexamethasone

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

BCR::ABL1 fusion (continued)

decitabine

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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imatinib

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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imatinib

Cancer type: Chronic Phase Chronic Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (First-line therapy); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Chronic Myeloid Leukemia [Version 2.2023]

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imatinib

Cancer type: Accelerated Phase Chronic Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (First-line therapy); Useful in certain circumstances

Reference: NCCN Guidelines® - NCCN-Chronic Myeloid Leukemia [Version 2.2023]

BCR::ABL1 fusion (continued)

imatinib + blinatumomab

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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imatinib + cyclophosphamide + cytarabine + daunorubicin + methotrexate + PEG-L-asparaginase + vincristine + dexamethasone + prednisone

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Refractory, Relapsed (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

---

imatinib + cytarabine + daunorubicin + etoposide + methotrexate + vincristine + dexamethasone

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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imatinib + cytarabine + HyperCVAD

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

BCR::ABL1 fusion (continued)

imatinib + cytarabine + HyperCVAD + methotrexate

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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imatinib + inotuzumab ozogamicin

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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imatinib + steroid

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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imatinib + vincristine + dexamethasone

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

BCR::ABL1 fusion (continued)

inotuzumab ozogamicin

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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inotuzumab ozogamicin + nilotinib

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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inotuzumab ozogamicin + ponatinib

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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liposomal cytarabine-daunorubicin CPX-351

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Consolidation therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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nilotinib

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

BCR::ABL1 fusion (continued)

nilotinib

Cancer type: Accelerated Phase Chronic Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (First-line therapy); Preferred intervention

Reference: NCCN Guidelines® - NCCN-Chronic Myeloid Leukemia [Version 2.2023]

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nilotinib + blinatumomab

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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nilotinib + cyclophosphamide + cytarabine + daunorubicin + methotrexate + PEG-L-asparaginase + vincristine + dexamethasone + prednisone

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Refractory, Relapsed (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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nilotinib + cytarabine + daunorubicin + etoposide + methotrexate + vincristine + dexamethasone

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

BCR::ABL1 fusion (continued)

○ nilotinib + cytarabine + HyperCVAD

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

○ nilotinib + cytarabine + HyperCVAD + methotrexate

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

○ nilotinib + steroid

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

○ nilotinib + vincristine + dexamethasone

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

BCR::ABL1 fusion (continued)

ponatinib

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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ponatinib

Cancer type: Accelerated Phase Chronic Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (First-line therapy); Preferred intervention

Reference: NCCN Guidelines® - NCCN-Chronic Myeloid Leukemia [Version 2.2023]

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ponatinib + blinatumomab

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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ponatinib + cyclophosphamide + cytarabine + daunorubicin + methotrexate + PEG-L-asparaginase + vincristine + dexamethasone + prednisone

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Refractory, Relapsed (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

BCR::ABL1 fusion (continued)

ponatinib + cytarabine + daunorubicin + etoposide + methotrexate + vincristine + dexamethasone

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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ponatinib + cytarabine + HyperCVAD

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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ponatinib + cytarabine + HyperCVAD + methotrexate

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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ponatinib + steroid

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

BCR::ABL1 fusion (continued)

ponatinib + vincristine + dexamethasone

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell (Induction therapy); Other recommended intervention
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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tisagenlecleucel-t

Cancer type: Acute Lymphoblastic Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- B-cell; Relapsed, Refractory (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Acute Lymphoblastic Leukemia [Version 1.2023]

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venetoclax + azacitidine

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Consolidation therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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venetoclax + azacitidine

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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venetoclax + cytarabine

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

BCR::ABL1 fusion (continued)

venetoclax + decitabine

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Consolidation therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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venetoclax + decitabine

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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azacitidine

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2B

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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cytarabine + daunorubicin + etoposide

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2B

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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cytarabine + etoposide + idarubicin

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2B

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

BCR::ABL1 fusion (continued)

cytarabine + fludarabine + idarubicin + filgrastim

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2B

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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decitabine

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2B

Population segment (Line of therapy):
- (Maintenance therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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venetoclax + cytarabine + fludarabine + idarubicin + filgrastim

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 3

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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venetoclax + decitabine

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 3

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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asciminib

Cancer type: Myeloid/Lymphoid Neoplasms with Eosinophilia **Variant class:** ABL1 fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- Chronic Phase, Blast Phase (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Myeloid/Lymphoid Neoplasms with Eosinophilia and Tyrosine Kinase Gene Fusions [Version 1.2023]

BCR::ABL1 fusion (continued)

asciminib + chemotherapy

Cancer type: Myeloid/Lymphoid Neoplasms with Eosinophilia **Variant class:** ABL1 fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- Blast Phase (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Myeloid/Lymphoid Neoplasms with Eosinophilia and Tyrosine Kinase Gene Fusions [Version 1.2023]

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bosutinib

Cancer type: Myeloid/Lymphoid Neoplasms with Eosinophilia **Variant class:** ABL1 fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- Chronic Phase, Blast Phase (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Myeloid/Lymphoid Neoplasms with Eosinophilia and Tyrosine Kinase Gene Fusions [Version 1.2023]

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bosutinib + chemotherapy

Cancer type: Myeloid/Lymphoid Neoplasms with Eosinophilia **Variant class:** ABL1 fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- Blast Phase (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Myeloid/Lymphoid Neoplasms with Eosinophilia and Tyrosine Kinase Gene Fusions [Version 1.2023]

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dasatinib

Cancer type: Myeloid/Lymphoid Neoplasms with Eosinophilia **Variant class:** ABL1 fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- Blast Phase (Line of therapy not specified); Other recommended intervention
- Chronic Phase (Line of therapy not specified); Preferred intervention

Reference: NCCN Guidelines® - NCCN-Myeloid/Lymphoid Neoplasms with Eosinophilia and Tyrosine Kinase Gene Fusions [Version 1.2023]

BCR::ABL1 fusion (continued)

dasatinib + chemotherapy

Cancer type: Myeloid/Lymphoid Neoplasms with Eosinophilia **Variant class:** ABL1 fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- Blast Phase (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Myeloid/Lymphoid Neoplasms with Eosinophilia and Tyrosine Kinase Gene Fusions [Version 1.2023]

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imatinib

Cancer type: Myeloid/Lymphoid Neoplasms with Eosinophilia **Variant class:** ABL1 fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- Chronic Phase, Blast Phase (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Myeloid/Lymphoid Neoplasms with Eosinophilia and Tyrosine Kinase Gene Fusions [Version 1.2023]

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imatinib + chemotherapy

Cancer type: Myeloid/Lymphoid Neoplasms with Eosinophilia **Variant class:** ABL1 fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- Blast Phase (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Myeloid/Lymphoid Neoplasms with Eosinophilia and Tyrosine Kinase Gene Fusions [Version 1.2023]

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nilotinib

Cancer type: Myeloid/Lymphoid Neoplasms with Eosinophilia **Variant class:** ABL1 fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- Blast Phase (Line of therapy not specified); Other recommended intervention
- Chronic Phase (Line of therapy not specified); Preferred intervention

Reference: NCCN Guidelines® - NCCN-Myeloid/Lymphoid Neoplasms with Eosinophilia and Tyrosine Kinase Gene Fusions [Version 1.2023]

BCR::ABL1 fusion (continued)

nilotinib + chemotherapy

Cancer type: Myeloid/Lymphoid Neoplasms with Eosinophilia **Variant class:** ABL1 fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- Blast Phase (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Myeloid/Lymphoid Neoplasms with Eosinophilia and Tyrosine Kinase Gene Fusions [Version 1.2023]

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ponatinib

Cancer type: Myeloid/Lymphoid Neoplasms with Eosinophilia **Variant class:** ABL1 fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- Chronic Phase, Blast Phase (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Myeloid/Lymphoid Neoplasms with Eosinophilia and Tyrosine Kinase Gene Fusions [Version 1.2023]

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ponatinib + chemotherapy

Cancer type: Myeloid/Lymphoid Neoplasms with Eosinophilia **Variant class:** ABL1 fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- Blast Phase (Line of therapy not specified); Other recommended intervention

Reference: NCCN Guidelines® - NCCN-Myeloid/Lymphoid Neoplasms with Eosinophilia and Tyrosine Kinase Gene Fusions [Version 1.2023]

RUNX1::MECOM fusion

azacitidine

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 1

Population segment (Line of therapy):
- (Maintenance therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

RUNX1::MECOM fusion (continued)

cytarabine + daunorubicin

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 1

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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cytarabine + daunorubicin + etoposide

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 1

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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cytarabine + etoposide + idarubicin

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 1

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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cytarabine + idarubicin

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 1

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

Allogeneic hematopoietic stem cell transplantation

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Consolidation therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

RUNX1::MECOM fusion (continued)

azacitidine

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Maintenance therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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cytarabine

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Consolidation therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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cytarabine + mitoxantrone

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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decitabine

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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liposomal cytarabine-daunorubicin CPX-351

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Consolidation therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

RUNX1::MECOM fusion (continued)

venetoclax + azacitidine

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Consolidation therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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venetoclax + azacitidine

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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venetoclax + cytarabine

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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venetoclax + decitabine

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Consolidation therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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venetoclax + decitabine

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 2A

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

RUNX1::MECOM fusion (continued)

azacitidine

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 2B

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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cytarabine + daunorubicin + etoposide

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 2B

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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cytarabine + etoposide + idarubicin

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 2B

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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cytarabine + fludarabine + idarubicin + filgrastim

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 2B

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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decitabine

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 2B

Population segment (Line of therapy):
- (Maintenance therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

RUNX1::MECOM fusion (continued)

venetoclax + cytarabine + fludarabine + idarubicin + filgrastim

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 3

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

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venetoclax + decitabine

Cancer type: Acute Myeloid Leukemia **Variant class:** MECOM fusion

NCCN Recommendation category: 3

Population segment (Line of therapy):
- (Induction therapy)

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 3.2023]

Current EMA Information

● In this cancer type ○ In other cancer type ◑ In this cancer type and other cancer types

EMA information is current as of 2023-07-19. For the most up-to-date information, search www.ema.europa.eu/ema.

BCR::ABL1 fusion

◑ bosutinib

Cancer type: Accelerated Phase Chronic Myeloid Leukemia, Blast Phase Chronic Myeloid Leukemia, Chronic Phase Chronic Myeloid Leukemia

Label as of: 2023-05-17

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

Reference:

https://www.ema.europa.eu/en/documents/product-information/bosulif-epar-product-information_en.pdf

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◑ imatinib (Accord), imatinib (Accord) + chemotherapy

Cancer type: Accelerated Phase Chronic Myeloid Leukemia, Acute Lymphoblastic Leukemia, Blast Phase Chronic Myeloid Leukemia, Chronic Myeloid Leukemia, Chronic Phase Chronic Myeloid Leukemia

Label as of: 2022-12-14

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

Reference:

https://www.ema.europa.eu/en/documents/product-information/imatinib-accord-epar-product-information_en.pdf

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◑ imatinib (Koanaa), imatinib (Koanaa) + chemotherapy

Cancer type: Accelerated Phase Chronic Myeloid Leukemia, Acute Lymphoblastic Leukemia, Blast Phase Chronic Myeloid Leukemia, Chronic Myeloid Leukemia, Chronic Phase Chronic Myeloid Leukemia

Label as of: 2021-10-01

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

Reference:

https://www.ema.europa.eu/en/documents/product-information/imatinib-koanaa-epar-product-information_en.pdf

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◑ imatinib, imatinib + chemotherapy

Cancer type: Accelerated Phase Chronic Myeloid Leukemia, Acute Lymphoblastic Leukemia, Blast Phase Chronic Myeloid Leukemia, Chronic Myeloid Leukemia, Chronic Phase Chronic Myeloid Leukemia

Label as of: 2023-03-29

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

Reference:

https://www.ema.europa.eu/en/documents/product-information/glivec-epar-product-information_en.pdf

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BCR::ABL1 fusion (continued)

imatinib, imatinib + chemotherapy

Cancer type: Accelerated Phase Chronic Myeloid Leukemia, Acute Lymphoblastic Leukemia, Blast Phase Chronic Myeloid Leukemia, Chronic Myeloid Leukemia, Chronic Phase Chronic Myeloid Leukemia

Label as of: 2022-06-09

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

Reference:

https://www.ema.europa.eu/en/documents/product-information/imatinib-teva-epar-product-information_en.pdf

asciminib

Cancer type: Chronic Phase Chronic Myeloid Leukemia

Label as of: 2023-03-02

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

Reference:

https://www.ema.europa.eu/en/documents/product-information/scemblix-epar-product-information_en.pdf

dasatinib, dasatinib + chemotherapy

Cancer type: Acute Lymphoblastic Leukemia, Chronic Phase Chronic Myeloid Leukemia

Label as of: 2022-06-17

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

Reference:

https://www.ema.europa.eu/en/documents/product-information/sprycel-epar-product-information_en.pdf

nilotinib

Cancer type: Accelerated Phase Chronic Myeloid Leukemia, Chronic Phase Chronic Myeloid Leukemia

Label as of: 2022-06-13

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

Reference:

https://www.ema.europa.eu/en/documents/product-information/tasigna-epar-product-information_en.pdf

ponatinib

Cancer type: Acute Lymphoblastic Leukemia

Label as of: 2022-10-21

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

Reference:

https://www.ema.europa.eu/en/documents/product-information/iclusig-epar-product-information_en.pdf

Current ESMO Information

● In this cancer type ○ In other cancer type ◑ In this cancer type and other cancer types

ESMO information is current as of 2023-07-03. For the most up-to-date information, search www.esmo.org.

BCR::ABL1 fusion

○ dasatinib

Cancer type: Chronic Phase Chronic Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

ESMO Level of Evidence/Grade of Recommendation: I / A

Population segment (Line of therapy):
- (First-line therapy)

Reference: ESMO Clinical Practice Guidelines - ESMO-Chronic Myeloid Leukemia [Ann Oncol (2017) 28 (suppl 4): iv41–iv51. (Corrigendum: 03 October 2018)]

○ imatinib

Cancer type: Chronic Phase Chronic Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

ESMO Level of Evidence/Grade of Recommendation: I / A

Population segment (Line of therapy):
- (First-line therapy)

Reference: ESMO Clinical Practice Guidelines - ESMO-Chronic Myeloid Leukemia [Ann Oncol (2017) 28 (suppl 4): iv41–iv51. (Corrigendum: 03 October 2018)]

○ nilotinib

Cancer type: Chronic Phase Chronic Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

ESMO Level of Evidence/Grade of Recommendation: I / A

Population segment (Line of therapy):
- (First-line therapy)

Reference: ESMO Clinical Practice Guidelines - ESMO-Chronic Myeloid Leukemia [Ann Oncol (2017) 28 (suppl 4): iv41–iv51. (Corrigendum: 03 October 2018)]

○ dasatinib

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

ESMO Level of Evidence/Grade of Recommendation: II / A

Population segment (Line of therapy):
- (Line of therapy not specified)

Reference: ESMO Clinical Practice Guidelines - ESMO-Acute Myeloblastic Leukaemia in Adult Patients [Ann Oncol (2020); 31(6): 697-712.]

BCR::ABL1 fusion (continued)

imatinib

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

ESMO Level of Evidence/Grade of Recommendation: II / A

Population segment (Line of therapy):
- (Line of therapy not specified)

Reference: ESMO Clinical Practice Guidelines - ESMO-Acute Myeloblastic Leukaemia in Adult Patients [Ann Oncol (2020); 31(6): 697-712.]

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nilotinib

Cancer type: Acute Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

ESMO Level of Evidence/Grade of Recommendation: II / A

Population segment (Line of therapy):
- (Line of therapy not specified)

Reference: ESMO Clinical Practice Guidelines - ESMO-Acute Myeloblastic Leukaemia in Adult Patients [Ann Oncol (2020); 31(6): 697-712.]

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bosutinib

Cancer type: Chronic Phase Chronic Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

ESMO Level of Evidence/Grade of Recommendation: V / A

Population segment (Line of therapy):
- Resistant, Refractory (Second-line therapy, Third-line therapy)

Reference: ESMO Clinical Practice Guidelines - ESMO-Chronic Myeloid Leukemia [Ann Oncol (2017) 28 (suppl 4): iv41–iv51. (Corrigendum: 03 October 2018)]

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dasatinib

Cancer type: Chronic Phase Chronic Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

ESMO Level of Evidence/Grade of Recommendation: V / A

Population segment (Line of therapy):
- Resistant, Refractory (Second-line therapy, Third-line therapy)

Reference: ESMO Clinical Practice Guidelines - ESMO-Chronic Myeloid Leukemia [Ann Oncol (2017) 28 (suppl 4): iv41–iv51. (Corrigendum: 03 October 2018)]

BCR::ABL1 fusion (continued)

imatinib

Cancer type: Chronic Phase Chronic Myeloid Leukemia

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

ESMO Level of Evidence/Grade of Recommendation: V / A

Population segment (Line of therapy):
- Resistant, Refractory (Second-line therapy, Third-line therapy)

Reference: ESMO Clinical Practice Guidelines - ESMO-Chronic Myeloid Leukemia [Ann Oncol (2017) 28 (suppl 4): iv41–iv51. (Corrigendum: 03 October 2018)]

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nilotinib

Cancer type: Chronic Phase Chronic Myeloid Leukemia

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

ESMO Level of Evidence/Grade of Recommendation: V / A

Population segment (Line of therapy):
- Resistant, Refractory (Second-line therapy, Third-line therapy)

Reference: ESMO Clinical Practice Guidelines - ESMO-Chronic Myeloid Leukemia [Ann Oncol (2017) 28 (suppl 4): iv41–iv51. (Corrigendum: 03 October 2018)]

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dasatinib

Cancer type: Chronic Phase Chronic Myeloid Leukemia

Variant class: t(9;22)(q34;q11.2)

ESMO Level of Evidence/Grade of Recommendation: V / A

Population segment (Line of therapy):
- Resistant, Refractory (Second-line therapy, Third-line therapy)

Reference: ESMO Clinical Practice Guidelines - ESMO-Chronic Myeloid Leukemia [Ann Oncol (2017) 28 (suppl 4): iv41–iv51. (Corrigendum: 03 October 2018)]

Diagnostic Details

Current NCCN Information

NCCN information is current as of 2023-07-03. For the most up-to-date information, search www.nccn.org.
For NCCN International Adaptations & Translations, search www.nccn.org/global/what-we-do/international-adaptations.

Some variant specific evidence in this report may be associated with a broader set of alterations from the NCCN Guidelines. Specific variants listed in this report were sourced from approved therapies or scientific literature. These therapeutic options are appropriate for certain population segments with cancer. Refer to the NCCN Guidelines® for full recommendation.

BCR::ABL1 fusion

Diagnostic significance: Chronic Myeloid Leukemia

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

NCCN Recommendation category: 2A

Reference: NCCN Guidelines® - NCCN-Chronic Myeloid Leukemia [Version 2.2023]

Current ESMO Information

ESMO information is current as of 2023-07-03. For the most up-to-date information, search www.esmo.org.

BCR::ABL1 fusion

Diagnostic significance: Chronic Myeloid Leukemia

Variant class: BCR-ABL1 fusion [t(9;22)(q34;q11)]

Reference: ESMO Clinical Practice Guidelines - ESMO-Chronic Myeloid Leukemia [Ann Oncol (2017) 28 (suppl 4): iv41–iv51. (Corrigendum: 03 October 2018)]

Alerts Informed By Public Data Sources

Current NCCN Information

Contraindicated Not recommended Resistance Breakthrough Fast Track

NCCN information is current as of 2023-07-03. For the most up-to-date information, search www.nccn.org.
For NCCN International Adaptations & Translations, search www.nccn.org/global/what-we-do/international-adaptations.

Some variant specific evidence in this report may be associated with a broader set of alterations from the NCCN Guidelines. Specific variants listed in this report were sourced from approved therapies or scientific literature. These therapeutic options are appropriate for certain population segments with cancer. Refer to the NCCN Guidelines® for full recommendation.

BCR::ABL1 fusion

imatinib

Cancer type: Accelerated Phase Chronic Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

Summary:

NCCN Guidelines® include the following supporting statement(s):

- "Imatinib is not recommended for patients with disease progression on prior TKI therapy."

Reference: NCCN Guidelines® - NCCN-Chronic Myeloid Leukemia [Version 2.2023]

omacetaxine

Cancer type: Accelerated Phase Chronic Myeloid Leukemia **Variant class:** BCR-ABL1 fusion [t(9;22)(q34;q11)]

Summary:

NCCN Guidelines® include the following supporting statement(s):

- "Omacetaxine is not a treatment option for patients who present with accelerated phase CML."

Reference: NCCN Guidelines® - NCCN-Chronic Myeloid Leukemia [Version 2.2023]

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