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Sample Information

Patient Name: 陳錦福
Gender: Male
ID No.: R123864963
History No.: 49963715
Age: 47

Ordering Doctor: DOC1697J 蔡淳光
Ordering REQ.: 0CTXFYT
Signing in Date: 2023/11/24

Path No.: M112-00305
MP No.: MY23079
Assay: Oncomine Myeloid Assay
Sample Type: Bone Marrow
Bone Marrow Aspirating Date: 2023/11/24

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

Note:

Sample Cancer Type: Chronic Myeloid Leukemia

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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	**asciminib** [1, 2] **bosutinib** [1, 2] **dasatinib** [1, 2] **dasatinib + chemotherapy** [2] **imatinib*** [1, 2] **imatinib* + chemotherapy** [2] **nilotinib** [1, 2] ponatinib	**dasatinib** [1, 2] **dasatinib + chemotherapy** [2] **imatinib*** [1, 2] **imatinib* + chemotherapy** [2] **ponatinib** [1, 2] allogeneic stem cells asciminib asciminib + chemotherapy azacitidine blinatumomab bosutinib bosutinib + chemotherapy	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 + 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 nilotinib + chemotherapy ponatinib + chemotherapy tisagenlecleucel-t venetoclax + chemotherapy	
	Diagnostic significance: Chronic Myeloid Leukemia			
IIC	*ASXL1 p.(T1139Kfs*25) c.3416_3416delCinsAA* ASXL transcriptional regulator 1 Allele Frequency: 49.49%	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**

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

DNA Sequence Variants

Gene	Amino Acid Change	Coding	Variant ID	Locus	Allele Frequency	Transcript	Variant Effect	Coverage
ASXL1	p.(T1139Kfs*25)	c.3416_3416delCinsAA	.	chr20:31023931	49.49%	NM_015338.6	frameshift Block Substitution	1978
CEBPA	p.(H195_P196dup)	c.589_590insACCCGC	.	chr19:33792731	35.78%	NM_004364.4	nonframeshift Insertion	668
ASXL1	p.(T1139K)	c.3416C>A	.	chr20:31023931	48.97%	NM_015338.6	missense	1997

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

Gene Fusions (RNA)

Genes	Variant ID	Locus	Read Count
BCR-ABL1	BCR-ABL1.B14A2.1	chr22:23632600 - chr9:133729451	10244

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].

ASXL1 (ASXL transcriptional regulator 1)

Background: The ASXL1 gene encodes the ASXL transcriptional regulator 1 protein, a ligand-dependent co-activator and epigenetic scaffolding protein involved in transcriptional regulation[2,22]. ASXL1 belongs to the ASXL gene family, which also includes ASXL2 and ASXL3[22]. ASXL proteins contain a conserved c-terminal plant homeodomain (PHD) which facilitates interaction with DNA and histones[22,23]. ASXL1 influences chromatin remodeling and transcription through interaction with BAP1 and polycomb repressive complex (PRC) proteins, as well as other transcriptional activators and repressors[22,24]. In cancer, ASXL1 is the target of somatic mutations which often result in a truncated ASXL1 protein and loss of its PHD[25,26,27]. Such mutations can lead to impaired protein function and consequent upregulation of HOXA gene expression, supporting a tumor suppressor role for ASXL1[28].

Alterations and prevalence: Missense, nonsense, and frameshift mutations in ASXL1 are reported in 3-6% of de novo acute myeloid leukemia (AML), up to 36% of secondary AML, approximately 15% of myelodysplastic syndromes (MDS), up to 23% of myeloproliferative neoplasms (MPN), up to 30% of systemic mastocytosis (SM), and approximately 45% of chronic myelomonocytic leukemia (CMML)[13,24,29,30,31,32,33,34,35]. The ASXL1 G646Wfs*12 mutation accounts for over 50% of ASXL1 mutated cases in myeloid malignancies[26,31,36]. This mutation results from a single nucleotide expansion that occurs within an eight base pair guanine repeat that extends from c.1927 to c.1934. It is proposed that the high prevalence of the G646Wfs*12 variant is due to replication slippage which can occur in areas of repetitive sequence[37]. As a consequence, detection of G646Wfs*12 may result as an artifact of PCR and/or sequencing[38]. However, multiple studies observe an increase in the frequency of G646Wfs*12 in myeloid cancer relative to normal suggesting that G646Wfs*12 is a bona fide somatic mutation[29,37,39].

Potential relevance: The majority of frameshift and nonsense mutations in ASXL1 that result in protein truncation and removal of the PHD domain are considered pathogenic[40]. Mutations in ASXL1 confer poor/adverse risk in AML[13,15]. Additionally, ASXL1 nonsense or frameshift mutations are independently associated with poor prognosis in MDS and CMML[41]. Moreover, ASXL1 mutations are independently associated with inferior overall survival (OS) in patients with MPN or SM[42,43].

Biomarker Descriptions (continued)

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[2,44].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[45,46,47]. 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[32,48]. 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[32,48].

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[49]. 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. 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].

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*
dasatinib	◑	◑	◑	◑	✖
imatinib	◑	◑	◑	◑	✖
nilotinib	●	◑	●	◑	✖
bosutinib	●	◑	●	●	✖
asciminib	●	○	●	✖	✖
ponatinib	○	◑	○	✖	✖
dasatinib + chemotherapy	✖	○	◑	✖	✖
imatinib + chemotherapy	✖	○	◑	✖	✖
Allogeneic hematopoietic stem cell transplantation	✖	○	✖	✖	✖
asciminib + chemotherapy	✖	○	✖	✖	✖
azacitidine	✖	○	✖	✖	✖
blinatumomab	✖	○	✖	✖	✖
bosutinib + blinatumomab	✖	○	✖	✖	✖

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 + 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	✖	○	✖	✖	✖
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	✖	○	✖	✖	✖

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 + 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	✖	○	✖	✖	✖
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	✖	○	✖	✖	✖

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*
ponatinib + steroid	✖	○	✖	✖	✖
ponatinib + vincristine + dexamethasone	✖	○	✖	✖	✖
tisagenlecleucel-t	✖	○	✖	✖	✖
venetoclax + azacitidine	✖	○	✖	✖	✖
venetoclax + cytarabine	✖	○	✖	✖	✖
venetoclax + cytarabine + fludarabine + idarubicin + filgrastim	✖	○	✖	✖	✖
venetoclax + decitabine	✖	○	✖	✖	✖
imatinib (Accord)	✖	✖	◑	✖	✖
imatinib (Accord) + chemotherapy	✖	✖	◑	✖	✖
imatinib (Koanaa)	✖	✖	◑	✖	✖
imatinib (Koanaa) + chemotherapy	✖	✖	◑	✖	✖

ASXL1 p.(T1139Kfs*25) c.3416_3416delCinsAA

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 2023-09-13. For the most up-to-date information, search www.fda.gov.

BCR::ABL1 fusion

◑ 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

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

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)

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

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 2023-09-01. 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

● 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 1.2024]

● 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 1.2024]

● 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 1.2024]

● 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 1.2024]

BCR::ABL1 fusion (continued)

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 1.2024]

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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 1.2024]

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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 1.2024]

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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 1.2024]

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 1.2024]

● 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 1.2024]

○ 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 4.2023]

○ 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 4.2023]

○ 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 4.2023]

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 4.2023]

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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 4.2023]

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 4.2023]

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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 4.2023]

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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 2.2023]

BCR::ABL1 fusion (continued)

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 2.2023]

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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 2.2023]

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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 2.2023]

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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 2.2023]

BCR::ABL1 fusion (continued)

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 2.2023]

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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 2.2023]

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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 2.2023]

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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 2.2023]

BCR::ABL1 fusion (continued)

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 2.2023]

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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 2.2023]

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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 4.2023]

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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 4.2023]

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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 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 2.2023]

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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 2.2023]

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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 2.2023]

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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 2.2023]

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 2.2023]

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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 2.2023]

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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 2.2023]

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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 2.2023]

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 4.2023]

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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 2.2023]

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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 2.2023]

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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 2.2023]

BCR::ABL1 fusion (continued)

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 2.2023]

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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 2.2023]

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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 2.2023]

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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 2.2023]

BCR::ABL1 fusion (continued)

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 2.2023]

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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 2.2023]

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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 2.2023]

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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 2.2023]

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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 2.2023]

BCR::ABL1 fusion (continued)

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 4.2023]

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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 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 2.2023]

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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 2.2023]

BCR::ABL1 fusion (continued)

○ 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 2.2023]

○ 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 2.2023]

○ 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 2.2023]

○ 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 2.2023]

BCR::ABL1 fusion (continued)

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 2.2023]

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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 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 2.2023]

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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 2.2023]

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 2.2023]

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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 2.2023]

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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 2.2023]

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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 2.2023]

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 2.2023]

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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 2.2023]

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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 4.2023]

---

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 4.2023]

---

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 4.2023]

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 4.2023]

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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 4.2023]

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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 4.2023]

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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 4.2023]

---

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 4.2023]

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 4.2023]

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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 4.2023]

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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 4.2023]

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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 4.2023]

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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 2.2023]

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 2.2023]

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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 2.2023]

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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 2.2023]

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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 2.2023]

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 2.2023]

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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 2.2023]

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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 2.2023]

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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 2.2023]

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 2.2023]

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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 2.2023]

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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 2.2023]

ASXL1 p.(T1139Kfs*25) c.3416_3416delCinsAA

azacitidine

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 1

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

ASXL1 p.(T1139Kfs*25) c.3416_3416delCinsAA (continued)

cytarabine + daunorubicin

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 1

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

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cytarabine + daunorubicin + etoposide

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 1

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

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cytarabine + etoposide + idarubicin

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 1

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

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cytarabine + idarubicin

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 1

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

Allogeneic hematopoietic stem cell transplantation

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 2A

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

ASXL1 p.(T1139Kfs*25) c.3416_3416delCinsAA (continued)

azacitidine

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 2A

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

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cytarabine

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 2A

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

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cytarabine + mitoxantrone

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 2A

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

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decitabine

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 2A

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

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liposomal cytarabine-daunorubicin CPX-351

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 2A

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

ASXL1 p.(T1139Kfs*25) c.3416_3416delCinsAA (continued)

venetoclax + azacitidine

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 2A

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

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venetoclax + azacitidine

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 2A

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

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venetoclax + cytarabine

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 2A

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

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venetoclax + decitabine

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 2A

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

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venetoclax + decitabine

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 2A

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

ASXL1 p.(T1139Kfs*25) c.3416_3416delCinsAA (continued)

azacitidine

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 2B

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

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cytarabine + daunorubicin + etoposide

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 2B

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

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cytarabine + etoposide + idarubicin

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 2B

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

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cytarabine + fludarabine + idarubicin + filgrastim

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 2B

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

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decitabine

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 2B

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

ASXL1 p.(T1139Kfs*25) c.3416_3416delCinsAA (continued)

venetoclax + cytarabine + fludarabine + idarubicin + filgrastim

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 3

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

venetoclax + decitabine

Cancer type: Acute Myeloid Leukemia **Variant class:** ASXL1 mutation

NCCN Recommendation category: 3

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

Reference: NCCN Guidelines® - NCCN-Acute Myeloid Leukemia [Version 4.2023]

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 2023-09-13. For the most up-to-date information, search www.ema.europa.eu/ema.

BCR::ABL1 fusion

◑ 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

◑ 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

◑ 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

◑ 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

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

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

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 2023-09-01. 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)]

● 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)]

BCR::ABL1 fusion (continued)

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)]

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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)]

BCR::ABL1 fusion (continued)

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.]

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.]

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.]

Diagnostic Details

Current NCCN Information

NCCN information is current as of 2023-09-01. 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 1.2024]

Current ESMO Information

ESMO information is current as of 2023-09-01. 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 2023-09-01. 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 1.2024]

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 1.2024]

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