Technology Guidance

Gemtuzumab ozogamicin

for untreated de novo CD33-positive acute myeloid leukaemia

Technology Guidance from the MOH Drug Advisory Committee

Guidance Recommendations

The Ministry of Health's Drug Advisory Committee has recommended:

- ✓ Gemtuzumab ozogamicin 5 mg powder for concentrate for solution for infusion in combination with daunorubicin and cytarabine for patients with previously untreated de novo CD33-positive acute myeloid leukaemia (AML), if they:
  - do not have acute promyelocytic leukaemia,
  - only start induction therapy while waiting for cytogenetic test results or after confirming favourable, intermediate or unknown (due to inconclusive test results) cytogenetic risk, and
  - start consolidation therapy after confirming favourable, intermediate, or unknown cytogenetic risk.

Funding status

Gemtuzumab ozogamicin 5 mg powder for concentrate for solution for infusion is recommended for inclusion on the Medication Assistance Fund (MAF) for the abovementioned indication from 1 September 2022.

Clinical indication, subsidy class and MediShield Life claims eligibility for gemtuzumab ozogamicin is provided in the Annex.

Updated: 1 June 2026

Technology evaluation

1.1. The MOH Drug Advisory Committee ("the Committee") considered the evidence presented for the technology evaluation of gemtuzumab ozogamicin (referred as gemtuzumab from this point onwards) for previously untreated de novo CD33-positive acute myeloid leukaemia (AML). The Agency for Care Effectiveness (ACE) conducted the evaluation in consultation with clinical experts from the public healthcare institutions. Published clinical and economic evidence for gemtuzumab was considered in line with its registered indication. Additional expert opinion was obtained from the MOH Oncology Drug Subcommittee (ODS) who assisted ACE ascertain the clinical value of gemtuzumab and provided clinical advice on its appropriate and effective use based on the available clinical evidence.

1.2. The evidence was used to inform the Committee's deliberations around four core decision-making criteria:

- Clinical need of patients and nature of the condition;
- Clinical effectiveness and safety of the technology;
- Cost-effectiveness (value for money) – the incremental benefit and cost of the technology compared to existing alternatives; and
- Estimated annual technology cost and the number of patients likely to benefit from the technology.

1.3. Additional factors, including social and value judgments, may also inform the Committee's funding considerations.

Clinical need

2.1. The Committee noted that AML is a rapidly progressing haematological malignancy, predominantly occurring in older adults (median age 70 years) with a five-year survival rate of 25%. Approximately 130 patients are diagnosed with AML each year in Singapore, of which 80% are considered to have de novo AML (i.e., no clinical history of blood disorders or prior exposure to leukemogenic therapies).

2.2. Local clinical experts confirmed that patients with newly diagnosed AML are routinely tested for the presence of CD33 myeloid differentiation antigen and cytogenetic abnormalities to guide treatment decisions. In Singapore, approximately 25% of patients are categorised as having favourable cytogenetic risk, 40% intermediate risk and 30% unfavourable risk. A small proportion of patients (5%) have unknown cytogenetic risk due to inconclusive tests.

2.3. The Committee heard that approximately 60% of patients with de novo AML are eligible for standard chemotherapy. Gemtuzumab in combination with standard chemotherapy (daunorubicin and cytarabine) has a clinical role for patients with previously untreated de novo CD33-positive AML if they have favourable or intermediate cytogenetic risk, in line with international clinical practice guidelines. Local clinical experts confirmed that there was insufficient evidence supporting the use of gemtuzumab in patients with unfavourable cytogenetic risk.

2.4. The Committee agreed that there was a clinical need to consider gemtuzumab for inclusion on the Cancer Drug List (CDL) to improve treatment affordability and ensure appropriate care for patients with favourable or intermediate cytogenetic risk. However, they acknowledged that any funding recommendations should allow patients to access gemtuzumab before test results are available to avoid any delay to treatment.

Clinical effectiveness and safety

3.1. The Committee reviewed the available clinical evidence from a randomised controlled trial (RCT, ALFA-0701) which compared gemtuzumab in combination with standard chemotherapy (daunorubicin and cytarabine) with standard chemotherapy alone in patients with previously untreated de novo CD33-positive AML. After a median follow up of 47.6 months in the gemtuzumab group, adding gemtuzumab to standard chemotherapy led to a statistically significant improvement in event free survival (EFS) of 5.7 months in the modified intention to treat (mITT) population (hazard ratio [HR] 0.705, 95% CI: 0.536 to 0.928). However, while median OS was numerically longer with gemtuzumab in combination with chemotherapy compared to chemotherapy alone, there was no significant between the two treatment groups (HR 0.807, 95% CI: 0.596 to 1.093). The Committee noted that at the time of the OS analysis, 22% of patients in the chemotherapy group had crossed over to receive gemtuzumab.

3.2. The Committee noted results from a post-hoc subgroup analysis which showed that EFS gains from adding gemtuzumab to standard chemotherapy were only observed in patients with favourable, intermediate, or unknown cytogenetic risk (HR 0.630, 95% CI 0.459 to 0.866) and were not observed in patients with unfavourable cytogenetic risk (HR 1.009, 95% CI 0.582 to 1.750). Similarly, OS results were better in the subgroup with favourable, intermediate, or unknown cytogenetic risk (HR 0.697, 95% CI 0.486 to 0.999) than for patients with unfavourable cytogenetic risk (HR 1.553, 95% CI 0.878 to 2.748).

3.3. In terms of safety, a higher proportion of patients experienced treatment emergent serious adverse events in the gemtuzumab group compared to the chemotherapy group (67.2% vs 55%). The most common treatment emergent serious events reported in the gemtuzumab group were haemorrhage, thrombocytopenia, febrile bone marrow aplasia and venous occlusive disease.

3.4. Based on the available evidence, the Committee considered that gemtuzumab provided a clinically meaningful EFS benefit to patients with favourable, intermediate or unknown cytogenetic risk when used in combination with standard chemotherapy.

Cost effectiveness

4.1. The company of gemtuzumab was invited to submit a value-based pricing (VBP) proposal for funding consideration.

4.2. The Committee reviewed a cost effectiveness analysis conducted by ACE of gemtuzumab in patients with previously untreated de novo CD33-positive AML and favourable or intermediate cytogenetic risk. Results showed that gemtuzumab in combination with standard chemotherapy was associated with a base-case incremental cost-effectiveness ratio (ICER) between SG$75,000 to SG$105,000 per quality-adjusted life year (QALY) gained compared to standard chemotherapy alone.

4.3. Following VBP discussions, the Committee noted that the ICER improved to an acceptable level, and the company agreed to enter into a confidential price volume agreement (PVA) which further improved cost-effectiveness and reduced the uncertainty of the overall budget impact. Therefore, the Committee concluded that gemtuzumab in combination with standard chemotherapy was likely to represent a cost-effective treatment option for patients with AML and favourable or intermediate cytogenetic risk.

Estimated annual technology cost

5.1. The Committee noted that the annual cost impact to the public healthcare system was estimated to be less than SG$1 million in the first year of including gemtuzumab on the CDL for patients with previously untreated de novo CD33-positive AML with favourable, intermediate or unknown cytogenetic risk.

Recommendations

6.1. Based on available evidence, the Committee recommended gemtuzumab ozogamicin 5 mg powder for concentrate for solution for infusion be listed on the MAF for patients with previously untreated de novo CD33-positive AML, with favourable, intermediate, or unknown cytogenetic risk, in view of favourable clinical effectiveness and cost effectiveness compared with standard chemotherapy based on the proposed price and PVA agreed by the company.

ANNEX

Recommendations by the MOH Drug Advisory Committee

Drug preparation	Approved clinical indication	Subsidy class (implementation date)	Eligible for MediShield Life claims (implementation date)
Gemtuzumab ozogamicin powder for concentrate for solution for infusion vial (5 mg)	In combination with daunorubicin and cytarabine for patients with previously untreated de novo CD33-positive acute myeloid leukaemia (AML), if they: • do not have acute promyelocytic leukaemia, • only start induction therapy while waiting for cytogenetic test results or after confirming favourable, intermediate or unknown (due to inconclusive test results) cytogenetic risk, and • start consolidation therapy after confirming favourable, intermediate, or unknown cytogenetic risk.	MAF (1 Sep 2022)	Yes[1] (1 Sep 2022)

Abbreviation: MAF, Medication Assistance Fund.

[1] Please refer to MOH's website for the MediShield Life claim limit starting from the implementation date.

VERSION HISTORY

Guidance on gemtuzumab ozogamicin for untreated de novo CD33-positive acute myeloid leukaemia

This Version History is provided to track any updates or changes to the guidance following the first publication date. It is not part of the guidance.

1. **Publication of guidance**

   Date of Publication 31 Aug 2022

2. **Guidance updated to reflect MediShield Life claims eligibility**

   Date of Publication 1 Jun 2026

Agency for Care Effectiveness - ACE Agency for Care Effectiveness (ACE)

About the Agency

The Agency for Care Effectiveness (ACE) was established by the Ministry of Health (Singapore) to drive better decision-making in healthcare through health technology assessment (HTA), clinical guidance, and education.

As the national HTA agency, ACE conducts evaluations to inform government funding decisions for treatments, diagnostic tests and vaccines, and produces guidance for public hospitals and institutions in Singapore.

The guidance is not, and should not be regarded as, a substitute for professional or medical advice. Please seek the advice of a qualified healthcare professional about any medical condition. The responsibility for making decisions appropriate to the circumstances of the individual patient remains with the healthcare professional.

Find out more about ACE at https://www.ace-hta.gov.sg/about-us/

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