

# 綜合腫瘤科中心 Comprehensive Oncology Centre

For enquiries and appointments,  
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## Comprehensive Oncology Centre

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### Service Hours

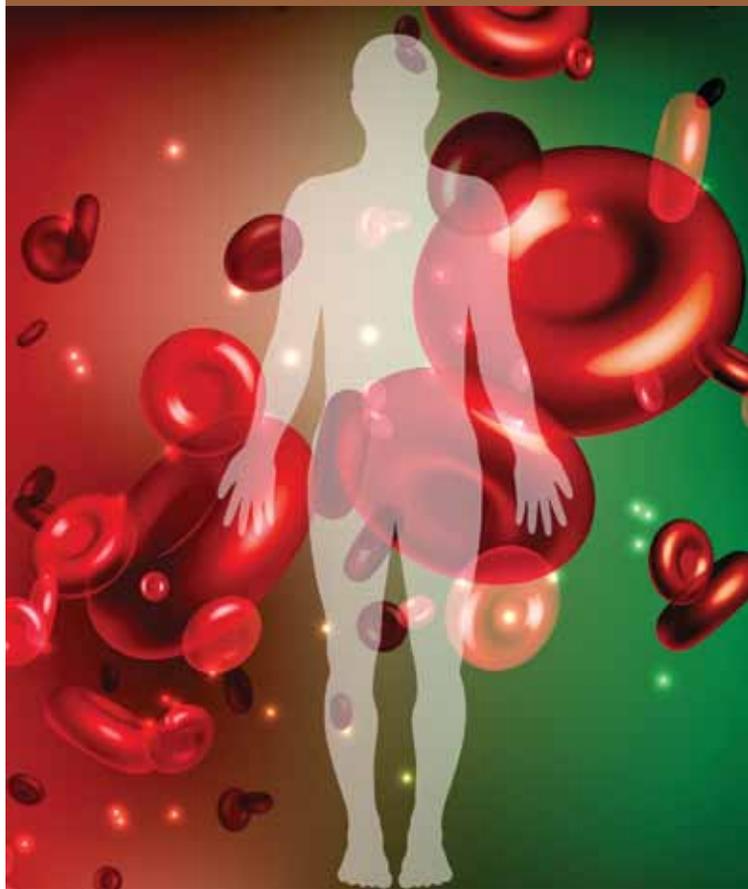
Monday to Friday: 9:00 am – 5:00 pm  
Saturday: 9:00 am – 1:00 pm  
Closed on Sundays and Public Holidays

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## Haematological Cancer Leukaemia



## Winning Against Cancer



養和醫院  
Hong Kong Sanatorium & Hospital

綜合腫瘤科中心  
Comprehensive Oncology Centre

Our Centre provides state-of-the-art services in haematology and haematological oncology. Our Haematopathology Laboratory has a wide range of diagnostic tests available which are essential for modern management of haematology patients. After making an accurate diagnosis, optimal treatments are given promptly to obtain the best clinical outcome possible.

Blood cancers are one of the top ten cancers in Hong Kong. Every year, over 1,000 new cases are diagnosed. They include leukaemia, lymphoma and myeloma.

## Leukaemia

Leukaemia is the malignancy of white cells. Its causes are largely unknown. It is occasionally related to previous chemotherapy or radiation exposure, and may be preceded by myelodysplastic syndrome or myeloproliferative disease.

### Common Subtypes

- Acute Leukaemia
- Chronic Lymphocytic Leukaemia
- Chronic Myeloid Leukaemia

## Acute Leukaemia

Acute myeloid leukemia is more common in adults, while acute lymphoblastic leukaemia is the commonest type seen in children and young adults. Symptoms include anaemia, fever and bleeding, and patients are more prone to infection. Usually blood tests show low haemoglobin count, high white cell count and low platelet count. Leukaemia cells are found in blood and bone marrow, and they are immature white cells. The lymph nodes, liver and spleen may be enlarged. In some cases, the skin and central nervous system may also be affected.

### Diagnosis

- Full blood counts
- Peripheral blood film examination
- Bone marrow biopsy
- Lumbar puncture
- Cytochemical study and immunophenotyping to define the subtype
- Cytogenetic and molecular genetic studies are essential

### Treatment

Intensive chemotherapy is necessary for cure, and infection must be treated without delay. Supportive care is also important. Patients may require blood and platelet transfusions, and haematopoietic growth factor (e.g. G-CSF) is frequently used for the disease. Some patients may need an allogeneic bone marrow transplantation, while gentle chemotherapy is considered appropriate for the elderly patients. All-trans retinoic acid and arsenic trioxide are used to treat acute promyelocytic leukaemia. An unrelated marrow donor registry is available in Hong Kong, i.e. Hong Kong Bone Marrow Donor Registry, which is linked to the registries of Taiwan and the Mainland.

## Prognosis

- It is a curable disease for young patients
- Most patients respond well to chemotherapy
- Cure rate may exceed 50% for younger patients
- Survival rate improves with bone marrow transplantation

## Chronic Lymphocytic Leukaemia

It is more common among the elderly. While patients are often asymptomatic initially, some may have enlarged lymph nodes and spleen. The white cell count is high, which are mature lymphocytes, and the haemoglobin and platelet count may be low. The bone marrow is infiltrated by mature lymphocytes.

## Diagnosis

- Full blood counts
- Peripheral blood film examination
- Bone marrow biopsy
- Immunophenotyping to confirm diagnosis
- Cytogenetic and fluorescence in situ hybridization (FISH) analysis

## Treatment

Various combinations of target therapy and chemotherapy are available:

- Mabthera/Rituximab (anti-CD20 monoclonal antibody)
- Fludarabine
- Cyclophosphamide or Chlorambucil
- Mitoxantrone
- Prednisolone or Dexamethasone
- Bendamustine
- Alemtuzumab/Campath (anti-CD52 monoclonal antibody)
- Bone marrow transplantation is an option for young patients with relapsed disease

## Prognosis

- Good disease control can be achieved in most cases
- Relapses usually respond to retreatment
- FISH tests are useful in determining prognosis

## Chronic Myeloid Leukaemia

Chronic myeloid leukaemia is often asymptomatic during the early phase of the disease. Patients may be quite young. High white cell counts are noted with increase in both mature and immature white cells. Platelet count is also at high level. Spleen is usually enlarged.

## Diagnosis

- Full blood counts
- Bone marrow biopsy
- Cytogenetic study showing “Philadelphia Chromosome”
- Fluorescence in situ hybridization (FISH) analysis or polymerase chain reaction to detect bcr-abl translocation

## Treatment

- Tyrosine kinase inhibitors (TKI) , e.g. Imatinib, Nilotinib or Dasatinib
- Long-term therapy is required
- Genetic test monitoring is necessary

## Prognosis

- If not properly treated, the disease transforms to refractory acute leukaemia within an average period of 3 years
- Most patients respond very well to tyrosine kinase inhibitors and have a long survival period

# Common Treatment

## Chemotherapy

Most blood cancer patients respond very well to various combinations of chemotherapy. Chemotherapy drugs are effective in eradicating rapidly proliferating cells. As blood cancer cells often grow at a very high rate, they are more susceptible to the effects of chemotherapy. Some normal cells in our body also grow rapidly, e.g. the bone marrow cells. Damages to the normal cells are responsible for the side effects, and thus patients must be monitored closely. Serious infections may complicate low white cell count and bleeding tendency if the platelet counts are low. There may also be anaemia. Haematopoietic growth factor G-CSF may be used. Red cells and platelet transfusions may be given. Chemotherapy may be given in our Chemotherapy Centre on either an outpatient or inpatient basis, depending on the intensity of the therapy.

## Radiotherapy

High-energy radiation is commonly used in cancer treatment. Blood cancer cells are very sensitive to radiotherapy, making it an effective treatment for local control of blood cancers and an adjunct to chemotherapy.

## Targeted Therapy

The transformation of normal cells to cancer cells is the result of many genetic changes. These changes distinguish cancer cells from normal cells and can be used as a target for therapy. Either a monoclonal antibody or a chemical can be used against the target to inhibit its effects. Mabthera/Rituximab is a monoclonal antibody commonly used to treat all kinds of B-cell lymphomas, while Imatinib is a chemical drug which is very effective in treating chronic myeloid leukaemia.

## Bone Marrow Transplantation

Bone marrow transplantation is commonly used in treating various types of blood cancers. It is often the last hope for patients. There are two main types of bone marrow transplantation, i.e. autologous transplant using the patient's own marrow cells, and allogeneic transplant using marrow from HLA compatible donors, who can be a sibling or an unrelated donor. The source of the marrow cells or haematopoietic stem cells can be the marrow itself or G-CSF-driven peripheral blood stem cell or cord blood. A mini transplant can also be used for elderly patients to minimize the risk.