

Demystifying the Science Behind Targeted Treatments for Haematological Cancers

Introduction

The aim of this course, spread over two mornings, is to provide learners with an understanding of the biology, genetics and behaviours of many haematological cancers. Educator, Dr Elaine Vickers, will also provide an up-to-date overview of modern systemic treatment approaches given to people with various haematological cancers. This includes CAR T cell therapy and other targeted approaches that have come through clinical trials in recent years.

Dr Vickers' goal is to explain the science that underpins each treatment. She also hopes to provide learners with a broad understanding of why treatments work well for some patients but not for others.

Elaine's presentations are full of colourful and enlightening illustrations to help learners make sense of scientific concepts. Her descriptions avoid unnecessary jargon and are pitched so that even those with a limited understanding of cell biology are able to understand.

Format

The course content is split over two mornings. Each morning comprises three presentations of 30-40 minutes each. Elaine will be online throughout both mornings to interact with learners and answer questions.

Audience

This content is ideal for research nurses, clinical nurse specialists, pharmacists and clinical trials coordinators. It may also be of interest to other healthcare professionals involved in the diagnosis and treatment of people with haematological cancers, and to junior doctors.

About Dr Vickers

Elaine has a degree in Medical Science from the University of Birmingham and a PhD in Molecular Biology from the University of Manchester. She has worked as a specialist cancer educator and writer for almost 20 years. Her goal is to unravel the complexities of cancer biology and new cancer treatments and to make these topics interesting and accessible to non-scientists. Elaine is the author of: "A Beginner's Guide to Targeted Cancer Treatments", which was commended by the British Medical Association's book awards in 2019.

Morning 1: Description

This morning Elaine introduces the biology and genetics of haematological cancers. She also describes the basic principles that underlie many forms of treatment, such as antibody-based therapies, small molecules and cell-based treatments. This content provides an ideal starting point for day 2, in which Elaine delves into specific treatments for many different blood cancer types.

Programme

Session 1 – Biology and genetics of haematological cancers

- Cell of origin of different cancer types
- Types of DNA damage in haematological cancers
- Consequences of common chromosome translocations and other mutations
- Understanding the incidence of blood cancers in infants and children

LIVE Q&A

Session 2 – Unique properties of haematological cancers

- Why most haematological cancers are derived from B cells
- Important features of B cell cancers: indolent vs. aggressive, TP53-mutated, IgHV mutated, B cell receptor signalling pathway activation
- Importance of cell surface proteins and signalling pathways as the targets of treatment across various haematological cancers
- Other targets: cell metabolism, epigenetics, cell survival, the immune microenvironment

LIVE Q&A

Session 3 – Overview of treatment approaches

- Types of targeted cancer treatment and their mechanisms of action: monoclonal antibodies, conjugated antibodies, BiTEs & bi-specific antibodies, small molecules, cell-based therapies

LIVE Q&A

Morning 2: Description

This morning Elaine turns her attention to various forms of haematological cancer and explains the science behind the treatment approaches developed for each type. Elaine finishes the morning by explaining the concepts that underpin CAR T cell therapy, and its growing importance as a treatment for some cancers.

Programme

Session 1 – Targeted treatments for chronic lymphocytic leukaemia, non-Hodgkin lymphoma (NHL) and acute lymphoblastic leukemia (ALL)

- Description of CD20-targeted antibody therapies
- BiTEs, bi-specifics and conjugated antibodies
- B cell receptor signalling pathway inhibitors (targeting BTK, PI3K δ , CD79B)
- Bcl-2 inhibitors

LIVE Q&A

Session 2 – Treatments for myeloma, acute myeloid leukaemia, Hodgkin lymphoma and chronic myeloid leukaemia (CML)

- Treatments for multiple myeloma: proteasome inhibitors, immunomodulators, monoclonal antibodies
- Treatments for acute myeloid leukaemia: targeting IDH1/2, FLT3, smoothened, CD33, Bcl-2
- Kinase inhibitors for CML (and ALL)
- Targeting CD30 and PD-1 for Hodgkin lymphoma

LIVE Q&A

Session 2 – CAR T cell therapy for ALL, NHL, myeloma

- Overview of the CAR T cell process
- CAR protein design – what each bit does and why it matters
- Reasons for side effects of CAR T cells
- Reasons for resistance and relapse
- Overview of the results so far, the lessons learned, and what the future might look like

LIVE Q&A