Elaine Vickers
SCIENCE COMMUNICATED LTD

An Introduction to Systemic Cancer Treatments and Cancer Biomarkers

Introduction

This course is designed specifically for those new to cancer, or those wishing to refresh their knowledge. In the first morning Elaine will provide an overview of the mechanisms of action of chemotherapy, hormone therapy, targeted therapy and immunotherapy. In the second, she will describe what biomarkers are, where they're found, how they're detected, and what they're used for. Topics include genetic analysis, so-called "virtual biopsies", and how biomarkers can give both prognostic and predictive information.

Format

Both mornings comprise three presentations of around 45 minutes each. Every presentation is followed by a live Q&A session and a coffee break.

Audience

This course is ideal for nurses who are new to caring for cancer patients or who wish to refresh and expand their knowledge. This course is also suitable for anyone involved in cancer research and trials.

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 systemic cancer treatments and to make these topics interesting and accessible to non-scientists.

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Morning 1:

This morning Dr Vickers explains the science behind a wide range of systemic cancer treatments. Elaine uses colourful, easy-to-understand illustrations throughout. Her goal is to explain the science that underpins each treatment and to provide learners with a broad understanding of why treatments work well for some patients but not for others. During the morning learners will also become comfortable with the terminology used to describe various treatments.

Content

Session 1 – Chemotherapy and hormone therapies

Part 1

- What is chemotherapy and where do the drugs come from?
- How does chemotherapy work?
- Why are there so many different drugs, and why are they often given in combinations?
- Who is it given to, and why is it given in cycles?

Part 2

- How does hormone therapy work?
- Who is it given to, and why are people often taking it for years?

LIVE Q&A

Session 2 – Targeted therapies

- What does the term 'targeted therapy' actually mean?
- What do these drugs target?
- How do they work?
    - Monoclonal antibodies
    - Kinase inhibitors
    - Other small molecules
- Are they better than chemotherapy?
- Who are they given to, and why aren't they given to everyone?
- Why don't they always work, and why do people's cancers come back?

LIVE Q&A

Session 3 – Immunotherapy

- What is immunotherapy?
- How can our immune system destroy cancer cells?
- How do immunotherapies work, and why don't they work for everyone?
- Are immunotherapies for solid tumours and blood cancers the same?
- How far have we got?

LIVE Q&A

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Morning 2:

This morning, Elaine introduces biomarkers. She first describes what biomarkers are, where we find them, and what they can be used for. She'll also give examples of where biomarkers are being used now to select treatments for patients and explain why we're not using more of them. Lastly, Elaine looks at how biomarkers fit into a vision of 'precision medicine' – an ideal in which each patient is treated based on an in-depth knowledge of the characteristics of their cancer.

Content

Session 1 – Introduction to biomarkers

- What does the term 'biomarker' mean, and what are they used for?
- Where do we find them? (e.g. tumour biopsies, aspirates, blood samples)
- What testing methods and measurements do we use? (e.g. genetic testing, immunohistochemistry, whole genome sequencing, commercial platforms)

LIVE Q&A

Session 2 – Using biomarkers to select a patient's treatment

- Some examples:
  - Breast cancer: testing for hormone receptors and *HER2* amplification
  - Non-small cell lung cancer: testing for PD-L1 levels, *EGFR, ALK, ROS1, RET, MET* and other mutations
  - Malignant melanoma: testing for *BRAF* mutations
  - Bowel cancer: testing for defective DNA repair, *RAS* and *BRAF* mutations
- What about everyone else?

LIVE Q&A

Session 3 – The bigger picture of precision cancer medicine – where have we got to and where are we heading?

- What matters more – a mutation, a protein, or the immune system?
- The push and pull: the desire to use biomarkers vs. providing a treatment for everyone
- Heading in the opposite direction: the case for imprecision medicine e.g. combination checkpoint inhibitor therapy + chemotherapy
- The reality of precision medicine trials – are we really improving things?
- Conclusions

LIVE Q&A