British Blood Transfusion Society

Specialist Certificate in Stem Cell Transplantation Science

Course Curriculum

INTRODUCTION

- The BBTS Specialist Certificate in STEM CELL TRANSPLANTATION SCIENCE
- Questions and Answers
- Assignments and Scenarios
- Mentors
- Training to SOPs and Maintaining Records

HAEMATOPOIETIC PROGENITOR STEM CELL TRANSPLANTATION: AN OVERVIEW

- What is Haematopoiesis?
- More About Haematopoietic Stem Cells and Progenitor Cells
- History of Bone Marrow Transplantation
- Haematopoietic Cells for Therapeutic Use
- Autologous Haematopoietic Progenitor Cell Transplantation
- Allogeneic Haematopoietic Progenitor Cell Transplantation
- Pre-Transplant Preparative Regimens
- Clinical Indications for the Use of Haematopoietic Progenitor Cells
- Benefits and Complications of Autologous and Allogeneic Haematopoietic Progenitor Cell Transplantation
- Summary and Future Perspectives

THE REGULATION OF CELL AND TISSUE BANKING

- Introduction
- Human Tissue Act 2004
- European Tissue and Cells Directive (EUTCD)
- Human Tissue (Quality and Safety for Human Application) Regulations 2007
- HTA Directions
- Other Relevant Regulations
- Appropriate Consent
- Advanced Therapy Medicinal Products

THE COLLECTION, USE AND PROTECTION OF DATA

- Freedom of Information Act
- HTA Directions Regarding Data Protection and Confidentiality
- Confidentiality, Data Protection, Caldicott Principles
- General Data Protection Regulation (GDPR)
- The Nature of Personal Data
- Data Handling within Tissue Banks and Stem Cell Laboratories

STEM CELL BIOLOGY

- Stem Cells in Embryonic Development
- Adult Stem Cells
- Progenitor Cells
- Embryonic Stem Cells
- Mesenchymal Stromal Cells
- Cancer Stem Cells
- Other Stem Cells with Potential for Therapeutic Use

DONOR SCREENING AND TESTING

- Infectious Agents
- Testing

HISTOCOMPATIBILITY AND IMMUNOGENETICS OF TRANSPLANTATION

- The HLA System and Haematopoietic Stem Cell Transplantation
- HLA Nomenclature
- Methods of HLA Typing
- Donor Selection in Haematopoietic Stem Cell Transplantation
- HLA Antibody Testing
- Post-Transplant Monitoring

COLLECTION OF HAEMATOPOIETIC PROGENITOR CELLS (HPC) AND THERAPEUTIC LYMPHOCYTES

- Referrals
- Bone Marrow Harvesting
- Peripheral Blood HPC by Apheresis
- Donor Lymphocyte Harvest
- Peripheral Blood Mononuclear Cell Harvest
- Cord Blook Collection
- Accreditation and Regulation

ASEPTIC TECHNIQUE AND PROCESSING FACILITIES

- Background
- Definitions
- Processing Facilities
- Cleanroom Operations
- Principles of Aseptic Technique
- Effective Facility Cleaning Programme
- Disinfectants

PROCESSING OF HAEMATOPOIETIC PROGENITOR CELLS FOR TRANSPLANTATION

- Physical Separation Techniques
- Monoclonal Antibody-Based Techniques

QUALITY CONTROL OF HAEMATOPOIETIC PROGENITOR CELLS FOR TRANSPLANTATION

- Quality Control
- Cell Counting
- Cell Culture Assays

CRYOPRESERVATION AND CRYOGENIC FACILITIES

- Introduction
- Variables in Cryopreservation
- Controlled Rate Freezing
- Transport of Frozen Product
- Packaging for Storage and Handling Frozen Products
- Safety in Handling Liquid Nitrogen
- Liquid Nitrogen Facilities

CAR T CELL THERAPY

- Introduction to CAR T cell therapy
- Chimeric Antigen Receptors
- CAR T cell product pathway
- Patient Outcomes
- Other challenges and limitations
- Conclusion and future directions

CORD BLOOD BANKING

- Introduction
- Clinical Observations
- The Impact of UCB Cell Doses
- Advantages of Cord Blood Banking
- Disadvantages of Cord Blood Banking
- Categories of Cord Blood Banking
- Regulation of Cord Blood Banks
- Overview of the Cord Blood Banking Process
- Donor Recruitment and the Consenting Process
- Cord Blood Collection
- Cord Blood Processing
- Cord Blood Testing
- Registration of Cord Blood Units
- Search, Issue and Release for Transplantation

- Dose Recommendations
- Cord Blood and Regenerative Medicine

TRANSFUSION OF HAEMATOPOIETIC PROGENITOR CELL TRANSPLANT PATIENTS

- Introduction
- Provision of Safe Blood
- Blood Components and their Indications in HPC Transplant
- Washed Red Cells and Platelets
- FFP and Cryoprecipitate Transfusion
- Granulocyte Transfusion
- Donor/Recipient Blood Group Incompatibility and Transfusion Support
- Blood Groups used for Transfusion Support
- Prevention of CMV Transmission
- Prevention of Transmission of Hepatitis E Virus
- Leucodepletion of Blood Components
- Prevention of Transfusion Associated GvHD
- Conclusion