SYLLABUS FOR M.D. IMMUNO HAEMATOLOGY & TRANSFUSION MEDICINE

17. Concurrent study of Post Graduate Diploma

A candidate admitted to undergo a Three year M.D. Transfusion Medicine Post Graduate Degree Clinical Course will be eligible to appear for the Post Graduate Diploma course in Transfusion Medicine while undergoing the degree course at the end of two years period course and syllabus for Diploma in Transfusion Medicine is attached.

SYLLABUS

Introduction - Course - Objectives and Goals of Training.

Introduction:

Transfusion Medicine, as a discipline, has made significant strides in recent years. Historically, teaching, research and clinical responsibilities in Transfusion Medicine have rarely been co-ordinated into a designable programme but have been dispersed among basic and clinical science disciplines and among activities of the blood centre facility. The programme in Transfusion Medicine is initiated to stimulate the development of multi disciplinary curricula and to permit the trainee to broaden his or her expertise so as to contribute more effectively to the needs of this discipline.

Transfusion Medicine is a multidisciplinary area concerned with the proper use or removal of blood and its components in the treatment or prevention of human disease states. In the last thirty years treatment has evolved from whole blood transfusion to the availability of many different blood components and derivatives. In addition, sophisticated technology now makes it possible to selectively remove blood components from donor or patients by a process called apheresis. While the many choices of blood products have complicated the physician’s decision making process, they have also made haemotherapy more specific and effective. It becomes important that trainees are properly trained in this new speciality, so that they are properly equipped to render special consultant service.

The purpose of the course is to provide didactic education and practical training in all aspects of blood transfusion technology; to develop the knowledge required to analyse immunohaematology problems; to provide experience in blood centre policies such as donor recruitment, collection, storage, preservation, administration of blood and blood components and to develop those qualities needed for competent managerial and academic responsibilities. The broad objectives of

1. To impart composite training in fundamental and applied aspects of Transfusion Medicine at Post Graduate level leading to M.D. Degree in Transfusion Medicine.
2. To provide consultants and teachers in Transfusion Medicine in various Medical Colleges and Transfusion Centre for operating well organized and efficient transfusion services.
3. To impart training and stimulate interest in research in the field of Transfusion Medicine.

Curriculum:

1. To understand the basic principles and concepts in the transfusion Medicine core curriculum, and develop a fund of basic knowledge in the field.
2. To recognize problems in clinical medicine that are related to transfusion and apply concepts and principles in the core curriculum to clinical situations.
3. To provide appropriate motivational therapeutic solutions to problems associated with transfusion medicine.
4. To improve the Transfusion services in the Village, Taluk and District Hospitals.
5. To recognize the significance of important research in the advancement of transfusion medicine.

On the basis of these goals the programme is designed to provide comprehensive training in all aspects of blood banking, recruitment, donation, screening, processing, storage, component preparation, immunohaematological procedures, apheresis techniques and transfusion management so that trainees are equipped for:

1. Managing a major academic department or hospital blood centre.
2. Acting as a guide, teacher, and consultant;
3. Beginning a career as a research investigator in the field of Transfusion Medicine.

It is expected that blood transfusion specialists will be specifically equipped for the following tasks:

1. Programme and organisation of the collection, preparation, storage, distribution and use of blood and blood products in the lights of a periodical evaluation of the needs of the sector in their charge.
2. Organisation of a quality control programmes.
3. Promotion of optimal use of blood and blood products and development of system for the clinical control of their use.
4. Organisation of Training Programme for manpower development.
5. Participation in research on blood transfusion, immuno-genetics, and haemotherapy.

Outline of the Syllabus:

I. <u>History of Transfusion Medicine:</u>

1.1. Landmarks in the evolution of Transfusion Medicine.

1.2. Changing trends in the practice of Transfusion Medicine.

1.3. Development of Transfusion Medicine during wars.

II. Physiology and Biochemistry of blood:

2.1. Metabolism of Morphology and Blood Cells.

2.2. Haemoglobin structure and functions.

2.3. Kinetics and functions of cellular elements of blood.

2.4. Plasma Protein Mechanism of Coagulation.

2.5. Haemodynamics of circulation.

2.6. Pathophysiology of blood donation.

2.7. Pathophysiology of haemorrhagic shock

2.8. Pathophysiology of Disseminated Intravasculur Coagulation.

2.9. Biochemical and haematological alternations during storage.

III. Genetics:

3.1. Principles of genetics and inheritance.

3.2. Immunogenetics and blood groups.

3.3. Applied Genetics.

3.4. Anthropology.

IV. Immunology:

4.1. Fundamentals of immunology and immunological techniques.

4.2. Immunology, Immune response Immunoglobuins.

4.3. Immunological basis of Isosenstization

4.4. Antigens, Antibodies, complement, Immune response and antihuman globulin test.

V. Fundamentals of Immunohaematology

5.1. Biochemical properties and characteristics of blood group antigens and antibodies.

5.2. Identifications of natural and Immuneantibodies.

5.3. Leucocyte antigens and antibodies.

5.4. Platelet antigens and antibodies.

VI. Blood group systems

6.1. Blood groups.

6.2. Blood groups and disease associations.

6.3. Serological techniques for blood group antigens and antibodies.

6.4. Blood group reagents, Polyclonal and Monoclonal.

6.5. Blood group substances.

6.6. Applied serology.

VII. Organisation and Management of transfusion services

7.1. Planning and development of Transfusion Services.

7.2. Organisation and functions of blood centre.

7.3. Donor motivation and voluntary blood donation programme.

7.4. Operation of mobile blood camps.

7.5. Donor recruitment and care.

7.6. Records and Statistics.

7.7. Computerization in blood bank services.

7.8. Bio statistics and Health Economics.

7.9. Inventory management.

7.10. Medical audits - Blood audits.

7.11. Accreditation of blood banks.

VIII. Blood Collections and Processing

8.1. Management of blood donation, criteria for selection, screening procedures, risks and management of donor complications.

8.2. Blood collection procedures.

8.3. Screening of collected blood for infectious.

8.4. Directed and autologous donations.

8.5. Preservations and storage of blood and components.

8.6. Preparation and standardisation of blood components.

8.7. Plasma fractionation.

8.8. Cryopreservation.

IX. Quality control and Instrumentation

9.1. Total quality management.

9.2. Automation and computerisation in transfusion practice.

9.3. Electronics, software and Plastics in transfusion medicine.

9.4. Safety measures, Sterilization and disposal procedures in transfusion technology.

X. Reagents and preservatives solutions

10.1. Production Standardization of biological reagents.

10.2. Anticoagulant Solutions.

10.3. Cell panelss.

XI. Pretransfusion testing

11.1. Basic procedures and Techniques for compatibility testing.

11.2. Emergency and elective techniques.

11.3. Typing and Screening.

11.4. Micro techniques for cross matching.

XII. Transfusion of blood and blood components

12.1. Clinical considerations, in transfusion practice.

12.2. Indications for whole blood, red cells, platelets, cryoprecipitate and other components.

12.3. Optimal use of blood and blood components.

12.4. Emergency indicatious of massive transfusion shock and Traumatology.

12.5. General Surgical and medical support.

12.6. Coagulopathies, thrombocytopenia, various haematological disorders, haemophilia and disseminated Intra Vascular Coagulation.

12.7. Neonatology, Paediatrics and Obstetrical Services.

12.8. Thoracic Surgery.

12.9. Haemodialysis.

12.10. Exchange transfusion.

12.11. Burns.

XIII. Hezards of blood transfusion and their managements.

13.1. Nature of transfusion reactions.

13.2. Immunological and non immunological reactions.

13.3. Non Immunological reaction.

13.4. Etiopathogenesis, investigation and management of transfusion reactions.

13.5. Transmittable diseases Hepatitiss, HIV Syphilis, Malaria etc - Detection and outline of management.

XIV. Artificial blood and blood related products

14.1. Synthetic Oxygen carrying compounds perfluor carbons and Hb solutions.

14.2. Volume expanders, Crystalloids, natural and synthetic colloids.

XV. Apheresis

15.1. Plasmapheresis - manual and machine

15.2. Cytapheresis

15.3. Therapeutic apheresis.

15.4. Plasma exchange.

XVI. Autologous Transfusion

16.1. Relevance of autologous transfusion.

16.2. Predonation, haemodilution and intra operative conservation of Blood.

16.3 Intra operative Blood salvage.

XVII. Autoimmunity

17.1. Autoimmune diseases.

17.2. Haemolytic anaemia.

17.3. Thrombocytopenia.

XVIII. Haemolytic disease of the new born

18.1. Etiopathogenesis, Investigations and management.

18.2. Antenatal serology and Rh immunization.

18.3. Role of immunoglobulin in prevention of HDN.

XIX. Medicolegal Considerations

19.1. Problems of disputed paternity.

19.2. Medicolegal considerations in Transfusion Practice.

19.3. Forensic Serology.

19.4. Community Medicine related to Transfusion Medicine.

XX. Transplantation

20.1. HLA typing.

20.2. Transfusion practice in Organ transplantation.

20.3. Bone Marrow transplantation.

20.4. Graft / Host reaction.

XXI. Management, Planning and Development Strategies for Blood Transfusion Services.

XXII. Organisation of teaching, research and co ordination with national and International agencies.

LIST OF BOOKS - TRANSFUSION MEDICINE

1. Progress in Transfusion Medicine
   Vol No. I, II, III, IV
   J.D.Cash
   Churchill Livingstone: London 1986,1987,1988

2. Blood Component therapy in Clinical Practice
   R.W.Bcal & J.P. Isbister
   Blackwell Scientific Publications: Oxford

3. Blood Transfusion in Clinical Medicine
   P.L.Mcllison, 8th Edn.
   Black Well scientific Publications: Oxford

4. Blood group Serology
   K.E. Boorman, B.E. Dodd
   Churchill Livingstone, London, 1988

5. Clinical Practice of Transfusion Medicine
   L.Petz & Swisher, 2nd Edn.
   Churchill Livingstone, New York, 1989

6. Blood groups in Man
   R.R. Race & R sanger
   Black well Scientific Publication, Oxford, 8th Edn.

7. Modern Blood Banking & Transfusion Practices
   D.N. Pottiglio
   F.A. Davis Company, Philadelphia, 1983

8. The Districution of Human Blood Groups
   A.E. Mourant
   Black well Scientific Publication, Oxford, 1983

9. Blood Transfusion Therapy: A problem oriented approach
   J.A.F. Napier
   John Willey & Sons: Chichester, 1987

10. Applied Blood group Serology
    P.D. Isstt.
    Montogmony Scientific Publication

11. Future development in Blood Banking
C T S Sibinga: P.C. Das & Greenwalt
Martinus Nijhoff Publishers, Boston. 1986

12. Serological & Immunological Methods of the Canandian
Red Cross Blood transfusion Service,
B P L Mooe: 8th Edn. (1980)
Canadian Red Cross Society, 95 Wellesley
Street past: Toronto: Ontario M4 Yl H6

13. Collection, Fractionation, Quality Control and uses of blood & Blood products.
World Health Organisation expert committee
Geneva 1981.

14. Australian Red Cross Society,
Blood transfusion Services - Sydney 1982
A Guide to Blood Transfusion Ed. RJ. Walsh: H.K. Ward: G.T. Archer

15. Technical Manual:
American Association of Blood Banks
Ed.F.K.Widmann. 10th Edn.
S.Karger

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16. Transfusion
American Association of Blood Banks
J.B.Lippincott Company, Philadelphia.

17. VoxSanguinis
International Journal of blood Transfusion & Immunohaematology
S.Karger Medical and Scientific Publishers.1986.