

Clareville

The Dr. G. B. Cross Memorial Hospital

CYTOLOGY TECHNICAL PROCEDURES MANUAL

TABLE OF CONTENTS

I. ORGANIZATION OF LABORATORY DUTIES

Daily Routine.....	I-10
Weekly Routine.....	I-20

II. GYNECOLOGICAL TECHNICAL ASSIGNMENTS

Specimen Receiving and Entering.....	II-10
Specimen Resulting.....	II-15
Notes on Staining and Staining Guidelines..	II-20
Gyne and Non-Gyne Staining Technique (PAP stain).....	II-30
Coverslipping.....	II-40
Organization of Work after Coverslipping...	II-50
Destaining Procedure.....	II-60
Freezer Method for Removal of Coverslips...	II-70
Troubleshooting Staining Techniques.....	II-80
Solution Preparation.....	II-90

III. NON-GYNE TECHNICAL ASSIGNMENTS/
CYTOPREPARATORY TECHNIQUES

Specimen Receiving and Entering.....	III-10
Specimen Resulting.....	III-15
Slide Labelling.....	III-20
Pipetting.....	III-30
Centrifugation.....	III-40
Cytocentrifugation.....	III-50
Swabbing.....	III-60
Smearing.....	III-70
Cell Block.....	III-80

IV. NON-GYNE ROUTINE PROCEDURES

Saccomanno Technique for Sputum Cytology...	IV-10
Urinary Specimens.....	IV-20
Gastrointestinal Specimens.....	IV-30
Fluid Preparations.....	IV-40
Buccal Smearing Technique.....	IV-50
Fine Needle Aspiration Biopsy Specimens....	IV-60
Cerebrospinal Fluid Specimens.....	IV-70
Troubleshooting.....	IV-80
Instructions for Submitting Non-Gyne Cytology Specimens	IV-90

-2-

Section IV: Laboratory Safety

Standard Precautions	IV-10
Gloves	IV-20
Laboratory Specimen Handling	IV-30
Leaking Specimens	IV-40
Specimen Shipping	IV-50
Emergency Response Plan	IV-60
Aerosol Reduction	IV-70
Broken Tube in Centrifuge	IV-80
Spill Control Pillows	IV-90
Decontamination of Work Bench	IV-100
Decontamination of Sinks	IV-110
Use/Storage of Chemicals	IV-120
Hazardous Fumes	IV-130
Fire Plan	IV-140
Laboratory First Aid	IV-150
General Safety Practices	IV-160
Isolation Patients	IV-170
Safety Standards	IV-180
Daily Safety Checks	IV-190
Preventative Maintenance	IV-200
Faulty/Damaged Equipment	IV-210
Laboratory Waste Disposal	IV-220

TABLE OF CONTENTS

I	Introduction	I-10
II	Post Mortem Examination	
	Definitions	II-10
	Purpose of Autopsy	II-20
	Extent of Autopsy	II-30
	Autopsies	II-40
	Inspection	II-50
	General Principles in Dissection	
	and Examination of the Viscera	II-60
	Primary Incision of Thorax and Abdomen	II-70
	Inspection of the Peritoneal Cavity	
	and Abdominal Organs	II-80
	Fluid in Peritoneal Cavity	II-90
	Exposure and Inspection	
	of the Thoracic Viscera	II-100
	Pleural Cavities	II-110
	Removal of Viscera	II-120
	Skin	II-130
III	Dress Code and Professional Ethics	III-10
IV	Post Mortem Protocol	
	Release of the Body	IV-10
	Release of Personal Effects of the Deceased	IV-20
	Death in Transit	IV-30
V	Safety	V-10
VI	Housekeeping	

The Dr. G. B. Cross Memorial Hospital

HISTOLOGY TECHNICAL PROCEDURES MANUAL

TABLE OF CONTENTSI. SPECIMEN ACCESSION

In-house Specimens	I-10
Referred Specimens	I-20
Criteria for Rejection of Specimens	I-30
Surgical Specimens	I-40
Placenta Specimens	I-50
Autopsy Specimens	I-60
Disposal of Gross Specimens	I-70
Referred Out Pathology Specimens	I-80

II. OPERATIONAL PROCEDURES

Histology - Daily Routine	II-10
Histostat Tissue Embedding Centre	II-15
AO Rotary Microtome	II-20
Frozen Sections	II-30
Cryostat-Microtome	II-40
Post Mortem Examinations	II-45
Bone Marrow	II-50
Fine Needle Aspirations	II-60
Decalcification	II-70
V.I.P.	II-80
Mounting (Coverslip) Procedure	II-90

III. GROSS DESCRIPTION

Normal Appearing Appendix	III-10
Acute Suppurative Appendix	III-20
Fibroadenoma of Breast	III-30
Biopsy of Breast	III-40
Endometrium, Resting Phase	III-50
Circumcision	III-60
Cone Biopsy of Cervix	III-70
Disc - Intervertebral	III-80
Soft Tissue and Ganglion	III-90
Gallbladder	III-100
Hemorrhoids	III-110

HISTOLOGY TECHNICAL PROCEDURES MANUAL

PAGE 2

III. GROSS DESCRIPTION (Cont'd)

Hernial Sac (Inguinal or Ventral)	III-120
Lipoma	III-130
Pilonidal Cyst	III-140
Polyp	III-150
Ruptured Meniscus	III-160
Tonsils	III-170
Varicose Veins	III-180
Skin Excision (Mole, Lesion, Growth, etc.)	III-190
Tubal Ligation	III-200
Vas Ligation	III-210
Small Biopsies	III-220
Uterus	III-230

IV. STAINING PROCEDURES

Hematoxylin/Eosin for Frozen Sections	IV-10
Routine Hematoxylin/Eosin	IV-20
Periodic Acid Schiff	IV-30
Periodic Acid Schiff (Sigma)	IV-40
Iron Stain	IV-50
Trichrome Stain-Masson (Sigma)	IV-60
Trichrome Stain-Masson Microwave Application (Sigma) ..	IV-65
Fite's Method for Acid Fast Organisms	IV-70
Acid-Fast Stain (Sigma)	IV-80
Amyloid Stain-Microwave (Sigma)	IV-90
Amyloid Stain-Congo Red	IV-95
Trichrome Stain-Gomori (Sigma)	IV-100
Silver Stain (Sigma)	IV-110
Elastic Stain-Modified Verhoff's/Van Gieson (Sigma) ..	IV-120
Alcian Blue	IV-130
Weigert's Resorcin Fuschin for Elastic Fibers (modified Hart's for Microwave)	IV-140
Gomori's Methenamine Silver Impregnation for Fungi and Pneumocystis (Modified Grocott's for Microwave) ..	IV-150
Hematoxylin, Phloxine and Saffron Stain	IV-160
P.T.A.H.	IV-170

HISTOLOGY TECHNICAL PROCEDURES MANUAL

PAGE 3

IV. STAINING PROCEDURES (Cont'd)

Perl's Prussian Blue Reaction for Ferric Salts (modified for Microwave)	IV-180
Laxol Fast Blue-Hematoxylin/Eosin (modified Kluver and Bauer for Microwave)	IV-190
Wilder's Reticulum Stain	IV-200
Sudan Black B for Certain Fatty Substances	IV-210
Mayer's Mucicarmine Method	IV-220
Schmorl's Method for Reducing Substances	IV-230
Fontana-Masson Silver Method	IV-240
Giemsa Stain	IV-250

V. TISSUE PROCESSING SCHEDULES

Small Biopsies - 10 % Neutral	V-10
Buffered Formalin Fixation Routine Processing	V-20
Cell Blocks	V-30
F.N.A. Methanol/Acetic Acid	V-40
Cardiac Biopsies	V-50

VI. PREVENTIVE MAINTENANCE

Knife Sharpener Operating Procedure	VI-10
Microtome Preventive Maintenance	VI-20
Maintenance of Embedding Centre	VI-30
Rotary Microtome Problem Solving	VI-40
Cryostat Problem Solving	VI-50
Terminal Disinfection of Cryostat	VI-60
V.I.P. Maintenance	VI-70
V.I.P. Hot Water Flush Procedure	VI-75
Faults in Paraffin Sections	VI-80
Cleaning Base Molds	VI-90

~~The Dr. G. B. Cross Memorial Hospital~~

URINALYSIS TECHNICAL PROCEDURES MANUAL

TABLE OF CONTENTS

I. INSTRUMENTATION

CLINITEX 200+ - Setup and Calibration I-10

II. TECHNICAL PROCEDURES

Processing Routine Urine Specimens II-10

Urinalysis - Chemical Examination II-20

Urinalysis - Physical Characteristics II-30

Limitations of Urine Chemistry Examination II-40

Urine Quality Control (Kovatrol) II-50

III. MICROSCOPIC EXAMINATION OF URINARY SEDIMENT

Standardized Microscopic Urinalysis (KOVA System) ... III-10

Microscopic Examination of Urine Sediment III-20

Comments on Urinary Formed Elements III-30

IV. MISCELLANEOUS URINE CHEMISTRY TESTS

AMES Clinitest (Urinary Sugars) IV-10

AMES Ictotest (Urinary Bilirubin) IV-20

Tests for Urinary Reducing Substances IV-25

Semi-quantitative Measurement for

Serum/Plasma Ketones IV-60

Urine Normal Ranges IV-100

V. PREGNANCY TESTING

Abbott Test-Pak Plus V-10

VI. FECAL EXAMINATION

Seracult for Occult Blood VI-10

Stool for Reducing Substances VI-40

The Dr. G. B. Cross Memorial Hospital

CHEMISTRY TECHNICAL PROCEDURES MANUAL

TABLE OF CONTENTS

I. INSTRUMENTATION

Hitachi 717 Description	I-10
Hitachi 717 Start-Up Procedure	I-20
Hitachi 717 Routine Operation	I-30
Hitachi 717 STAT Operation	I-40
Hitachi 717 HDL Procedure	I-45
Hitachi 717 Test Parameters	I-50
Hitachi 717 Rerun Mode	I-60
Hitachi 717 Within Run Recalibration.....	I-70
Hitachi 717 Troubleshooting	I-80
Hitachi 717 Preventative Maintenance	I-90
Nova 14 Description	I-100
Nova 14 Sample Handling Requirements	I-110
Nova 14 Routine Operation	I-120
Nova 14 Daily Maintenance	I-130
Nova 11 Description	I-140
IL 1306 Blood Gas Analyzer	I-160
Spectronic 21 MV Spectrophotometer	I-180
Micro Osmette (Osmolality)	I-190
TDx FLx Description	I-200
TDx FLx Acetaminophen	I-210
TDx FLx Carbamazepine	I-220
TDx FLx Digoxin	I-230
TDx FLx Ethanol	I-240
TDx FLx Gentamicin	I-250
TDx FLx Phenobarbital	I-260
TDx FLx Phenytoin	I-270
TDx FLx Salicylate	I-280
TDx FLx Theophylline	I-290
TDx FLx Valproic Acid	I-300
IMx Description	I-310
IMx STAT CKMB	I-320
IMx Ferritin	I-330
IMx hTSH	I-340

II. MANUAL PROCEDURES

Protein Micro Determination (Urine and CSF)	II-10
Carbon Monoxide SPOT Test	II-20

The Dr. G. B. Cross Memorial Hospital

~~MICROBIOLOGY TECHNICAL MANUAL~~

Table of Contents

I. BACTERIOLOGY SETUP

General Setup Information/Interpretation of Growth ..	I-10
Abbreviations	I-20
Collection of Microbiology Specimens	I-30
Specimen Setup Chart	I-40
Throat, Nasopharyngeal, Nose, Mouth	I-50
Ear and Eye	I-60
Sputum	I-70
Genital	I-80
Incisions, Wounds, Burns, Abscess	I-90
Topical Areas (All Other Swabs Outside the Body)	I-100
Stools, Rectal Swab	I-110
Fluids Including CSF, Tissue Culture, Aspirate	I-120
Tips	I-130
Routine Urine	I-140
Calibrated Loop Technique/Colony Count	I-150
Interpretation of Urine Colony Count	I-160
Blood Culture Collection	I-170
Criteria for Rejection of Specimens	I-180

II. STAINS

Gram Stain	II-10
------------------	-------

III. REFERRALS TO PUBLIC HEALTH LABORATORY

Specimen Types	III-10
Method of Collection and Transportation	III-20

IV. PATHOGENIC/NON-PATHOGENIC MICROORGANISMS ACCORDING TO SPECIMEN TYPE

Throat, Nasopharyngeal, Nose, Mouth	IV-10
Ear	IV-20
Eye	IV-30
Sputum	IV-40
Genital	IV-50
Incisions, Wounds, Burns, Abscess	IV-60
Topical Area (All Other Swabs Outside the Body)	IV-70
Stools, Rectal Swab	IV-80
Fluids Including CSF, Tissue Culture, Aspirate	IV-90
Urine	IV-100
Blood Culture	IV-110
Anaerobic Specimens	IV-120

Table of Contents

Page 2

V. IDENTIFICATION PROCEDURES FOR MICROORGANISMS

Staphylococci	V-10
Streptococci	V-20
Enterobacteriaceae	V-30
Pseudomonas	V-40
Campylobacter	V-50
Hemophilus	V-60
Gardnerella Vaginalis	V-70
Neisseria and Branhamella	V-80
Gram Positive Bacilli	V-90

VI. IDENTIFICATION (TECHNICAL) PROCEDURES

Oxidase	VI-10
Coagulase	VI-20
Catalase	VI-30
Germ Tube	VI-40
Hippurate Disk	VI-50
Bile Esculin Hydrolysis	VI-60
TSI Slants	VI-70
Differentiation Disk Method/Pneumococci	VI-80
Kirby-Bauer Sensitivity Method/Enterococcus Non-enterococcus	VI-90
Beta-Lactamase	VI-100
Wet Preparation/Trichomonas	VI-110
XV Factors	VI-120
Gastric Biopsy/Helicobacter Pylori	VI-130

VII. KIT METHODS

Group A Strep ID	VII-10
BBL Strep Grouping for Lancefield Groups A, B, C, F and G	VII-20
Wellcogen Bacterial Antigen Kit (For the Detection of Group B Strep, H. Influenzae, S. Pneumoniae, N. Meningitides and E. Coli)	VII-30
quadFERM+ (For the Detection of Neisseria and Branhamella)	VII-40
MicroScan Dried Breakpoint Combo Panels	VII-50
API 20E System	VII-60
Mono-Plus	VII-70
ImmunoScan SLE	VII-80
RapiTex ASL	VII-90
RapiTex CRP	VII-100
RapiTex RF	VII-110

Table of Contents

Page 3

VIII. MEDIA PURPOSE AND PREPARATION

Bile Esculin	VIII-10
Blood Agar	VIII-20
Campylobacter Agar	VIII-30
Chocolate Agar	VIII-40
Hektoen Agar	VIII-50
MacConkey Agar	VIII-60
Mannitol Salt Agar	VIII-70
Mueller Hinton Agar	VIII-80
Phenylethyl Alcohol Agar (PEA)	VIII-90
Selenite Broth	VIII-100
Sodium Chloride (0.85 %) for API	VIII-110
Sodium Chloride (6.5 %)	VIII-120
Strep Plate	VIII-130
Thayer-Martin Agar	VIII-140
Thioglycollate Medium	VIII-150
Triple Sugar Iron Agar (TSI Agar)	VIII-160
Trypticase Soy Broth (TSB)	VIII-170
V-Agar	VIII-180
Yersinia Agar	VIII-190
Quality Control Chart for Media	VIII-200

BLOOD BANK TECHNICAL MANUAL
TABLE OF CONTENTS

PAGE 2

~~II. BLOOD BANK TECHNICAL PROCEDURES (Cont'd)~~

Antibody Identification	II-70
Summary and Explanation	
Principle	
Reagent 10 Cell Panel	
Group O Cord Cell	
Specimen Collection and Preparation	
Procedure	
Interpretation of Results	
Multiple Antibodies	
Cold Panel Procedure	
Antibody Titration	II-80
Principle	
Specimen Collection	
Procedure	
Major Crossmatch	II-90
Crossmatch - Clerical Functions	II-100
Investigation of Suspected Transfusion Reactions	II-110
Policy	
Outline of Laboratory Investigation	
Interpretation of Laboratory Evaluation	
Investigation for Possible Alloantibodies	
Investigation for Other Problems	
Clinical Evaluation	
Special Tests to Diagnose Red Cell Incompatibility	
Cold Agglutinins	II-120

III. BLOOD COMPONENT THERAPY

Preparation of Cryoprecipitate for Infusion	III-10
Indications	
Administration and Dosage (Procedure)	
Preparation of Fresh Frozen Plasma for Infusion	III-20
Indications	
Administration and Dosage (Procedure)	
Compatible Donor and Recipient Blood Groups	
for Plasma Infusion	
Preparation of Platelet Concentrates for Infusion ...	III-30
Indications	
Administration and Dosage (Procedure)	
Storage	
Supply	
Pooling	
Storage of Blood Products	III-40

IV. QUALITY CONTROL

Blood Bank Reagent Quality Control	IV-10
--	-------

V. INSTRUMENTATION

BAXTER DAC Automatic Cell Washer	V-10
--	------

The Dr. G. B. Cross Memorial Hospital

BLOOD BANK TECHNICAL MANUAL

TABLE OF CONTENTS

I. BLOOD TRANSFUSION PRACTICE

Records	I-10
Required Patient Identification Information	I-20
Issuing Incompletely Tested or Untested Blood Products	I-30
Inspection of Blood and Blood Products	I-40
Notice of Blood Product Cancellation	I-45
Reissuing of Blood Products	I-50
Issuing Blood Products for Transfusion	I-60
Selection of Donor Cells	I-70
Pretransfusion Testing	I-80
Emergency Transfusions	I-90
Specimen Storage	I-100
Non-Group Specific Donor Selection	I-110
Relocation of Blood/Blood Products from Blood Bank ..	I-120
Maximum Surgical Blood Order Schedule (MSBOS)	I-130
Adverse Effects of Blood Transfusion Suspected Hemolytic Transfusion Reactions	I-140
<i>Therapeutic Phlebotomy</i>	<i>I-150</i>

II. BLOOD BANK TECHNICAL PROCEDURES

ABO Blood Grouping Sera	II-10
ABO Direct Grouping Procedure Limitations of Procedure Problems Encountered with Red Cells False Results	
Reverse Blood Grouping Cells	II-20
Reverse Blood Grouping Procedure Interpretation of Results Limitations of Procedure Other Problems Encountered with Serum	
Rh Typing Using Anti-D Antisera	II-30
Rh Typing (Anti-D) Procedure Du Test and Anti-CDE Screen Procedure Limitations of Procedure Interpretation of Du Antigen Test Results	
Indirect Antiglobulin Test	II-40
Summary and Explanation Specimen Collection and Preparation Procedure for Indirect Antiglobulin Test	
Direct Antiglobulin Test	II-50
Summary and Explanation Procedure for Direct Antiglobulin Test Interpretation	
Investigation of Positive Direct Antiglobulin Test ..	II-55
Coombs Coated Control Cells	II-60
Summary and Explanation Procedure Interpretation	

The Dr. G. B. Cross Memorial Hospital

HEMATOLOGY TECHNICAL MANUAL

TABLE OF CONTENTS

I. INSTRUMENTATION

Technicon H*1 Analyzer Daily Operations	I-10
H*1 Daily Quality Control Setup	I-20
H*1 Schematics	I-25
Processing Samples on H*1 Analyzer	I-30
Technicon H*1 Analyzer Daily Shutdown	I-40
H*1 Reporting Criteria	I-50

II. TECHNICAL PROCEDURES - HEMATOLOGY

Manual Cell Counting	II-10
Preparation and Loading of Hemocytometer	II-20
Manual WBC and Platelet Counts	II-30
Unopette Procedure	II-40
Hematocrit	II-50
Erythrocyte Indices - MCV, MCH, MCHC	II-60
Reticulocyte Count	II-70
Preparation of Blood Films	II-80
Staining Procedures for Blood Films	II-90
Grading and Reporting Blood Films	II-100
Bone Marrow Preparation and Collection	II-110
Erythrocyte Sedimentation Rate (ESR)	II-120
Cerebrospinal Fluid (CSF) Analysis	II-130
Normal Ranges	II-160
Semen Analysis	II-170
Synovial Fluid Analysis	II-180

III. TECHNICAL PROCEDURES - COAGULATION

Reconstitution of Reagents and Controls	III-10
Procedure PT/PTT	III-20
PT-Fibrinogen Calibration	III-30
Thrombin Time	III-40
D-Dimer Test	III-50
Prothrombin Time - Manual Method	III-60
Partial Thromboplastin Time - Manual Method	III-70
Bleeding Time	III-80
ACL Preventive Maintenance	III-90

TABLE OF CONTENTS

PAGE 2

IV. PREVENTIVE MAINTENANCE PROCEDURES

H*1 Analyzer Preventive Maintenance

Daily Maintenance	IV-10
Replacing Reagents	IV-11
On-Board Rinse Wash Procedure	IV-12
Daily Supplemental Wash Procedure	IV-13
Two-Week Maintenance	IV-20
Monthly Maintenance	IV-30
Cleaning Air Circulation Filters	IV-32
Inspecting and Cleaning Syringe Filters	IV-31
Cleaning Waste Chamber	IV-32
Two-Month Maintenance	IV-33
Replacing Sheath Filters	IV-40
Three-Month Maintenance	IV-41
Replacing Sample Syringe Plungers	IV-50
Six-Month Maintenance	IV-51
Replacing Reagent Syringe Plungers	IV-60
Replacing Waste Container Filter	IV-61
Maintenance Performed as Needed	IV-70
Cleaning Flowcells	IV-71
Off-Line Cleaning of the Flowcell	IV-72
Adjusting Temperature of Peroxidase Reaction Chamber	IV-73
Cleaning Sample and Reagent Shear Valves	IV-74