# Directory of services

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| **DOCUMENT CONTROL INFORMATION** | |
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| DOCUMENT NAME | **PRIMARY SAMPLE COLLECTION MANUAL,** Neurochemistry Laboratory, Department of Neurological Sciences |
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## 1. KEY CONTACT PERSONS

| Sl no | Name | Designation | Emp.No. | Qualification | Contact number |
|---|---|---|---|---|---|
| 1 | Dr. Christhunesa Soundararajan C | Professor | 33516 | Ph.D | Ext: 24830 |
| 2 | Dr.V.Prabhakaran | Professor | 31055 | Ph.D | Ext: 24821 |
| 3 | Dr.C.Mahalakshmi | Senior Lecturer | 31385 | Ph.D | Ext: 24822 |
| 4 | Mr.Raja Solomon | Lecturer | 53714 | M.Sc | Ext: 24823 |
| 5 | Mr.V.Jayakumar | Sel. Gr.II Graduate Technician | 51993 | B.Sc | Ext:24829 |
| 6 | Ms.C.Yogalakshmi | Sel. Gr.II Graduate Technician | 52291 | B.Sc | Ext: 24829 |
| 7 | Mr.N.Kesavan | Sel. Gr.II Graduate Technician | 52971 | B.Sc | Ext: 24829 |
| 8 | Ms.S.Kushpu | Sel. Gr.III Graduate Technician | 53638 | B.Sc | Ext: 24829 |

## 2. Laboratory Location

| | |
|---|---|
| Office | No: A708, Neurochemistry Laboratory, Department of Neurological Sciences, CMC Vellore – Ranipet |

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## 3. Routine Specimen

## Processing Hours

| | |
|---|---|
| Monday – Friday | 08:00 – 16:30 hrs |
| Saturday | 08:00 – 12:00 hrs |
| Sunday Holiday | Closed (except pre-arranged emergencies) |

## 4. Emergency Specimens

Certain urgent neurochemical tests may be processed outside routine hours with prior arrangement. Examples include:
- Urinary organic acids (acute metabolic crisis)
- Toxicology assays (from casualty)
- Serum amino acids (suspected inborn errors)

Emergency contact numbers:

Dr. Christhunesa Soundararajan – 04172-224830

Dr. V.Prabhakaran - 04172-224821

Dr.C.Mahalakshmi – 04172- 224822

## 5. General Rules for Sending Specimens

| |
|---|
| Collect the RIGHT specimen, at the RIGHT time, in the RIGHT container, in the RIGHT volume, and transport at the RIGHT temperature. |
| Clearly label specimen with patient name, hospital number, specimen type, date/time. |
| Accompany specimens with completed request form |
| Avoid hemolysis and contamination. |
| Transport conditions: Serum/Plasma/Urine frozen at –20 °C if >2 hrs; CSF refrigerated (not frozen for OCB); muscle biopsy snap frozen in liquid nitrogen. |
| Use clean, leak-proof containers only. |

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## 6. Criteria for Rejection of Specimens

| |
|---|
| Mislabeled or unlabeled specimens |
| Inadequate sample volume |
| Wrong container/tube |
| Hemolyzed, lipemic, or contaminated serum |
| CSF in EDTA or non-sterile container |
| Leaking or broken specimens |
| Improper storage or transport |
| Formalin-fixed tissue (unacceptable) |

## 7. Specimen Collection Procedures

| | |
|---|---|
| Blood / Serum / Plasma | 3–5 ml venous blood in plain tube; centrifuge, separate, and freeze. |
| CSF | 1–2 ml sterile tube; paired serum for OCB; refrigerate (not frozen). |
| Urine | 10–20 ml spot or 24-hr collection; refrigerate; freeze for amino/organic acids. |
| Muscle Biopsy | 50–100 mg; snap freeze in liquid nitrogen; transport on dry ice. |

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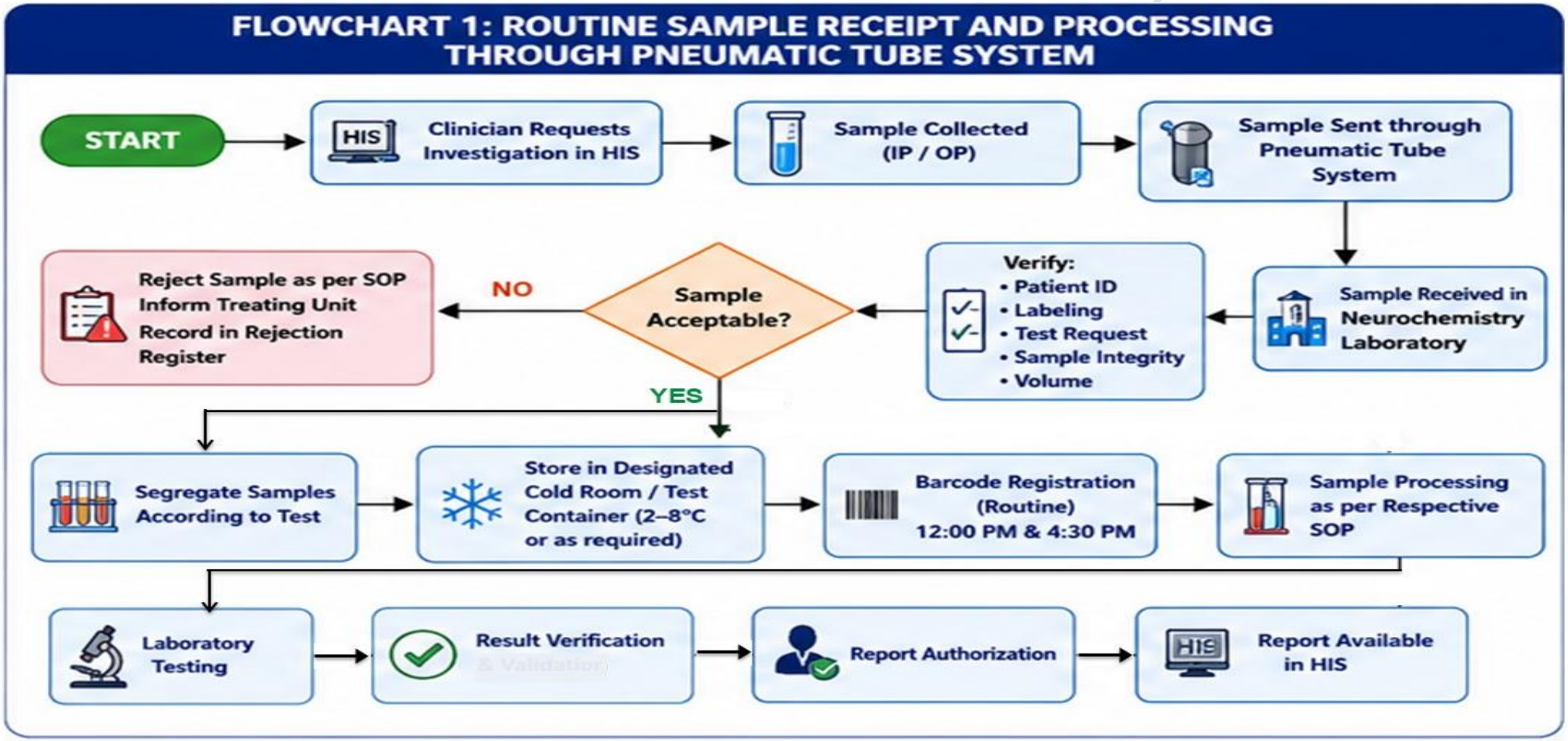
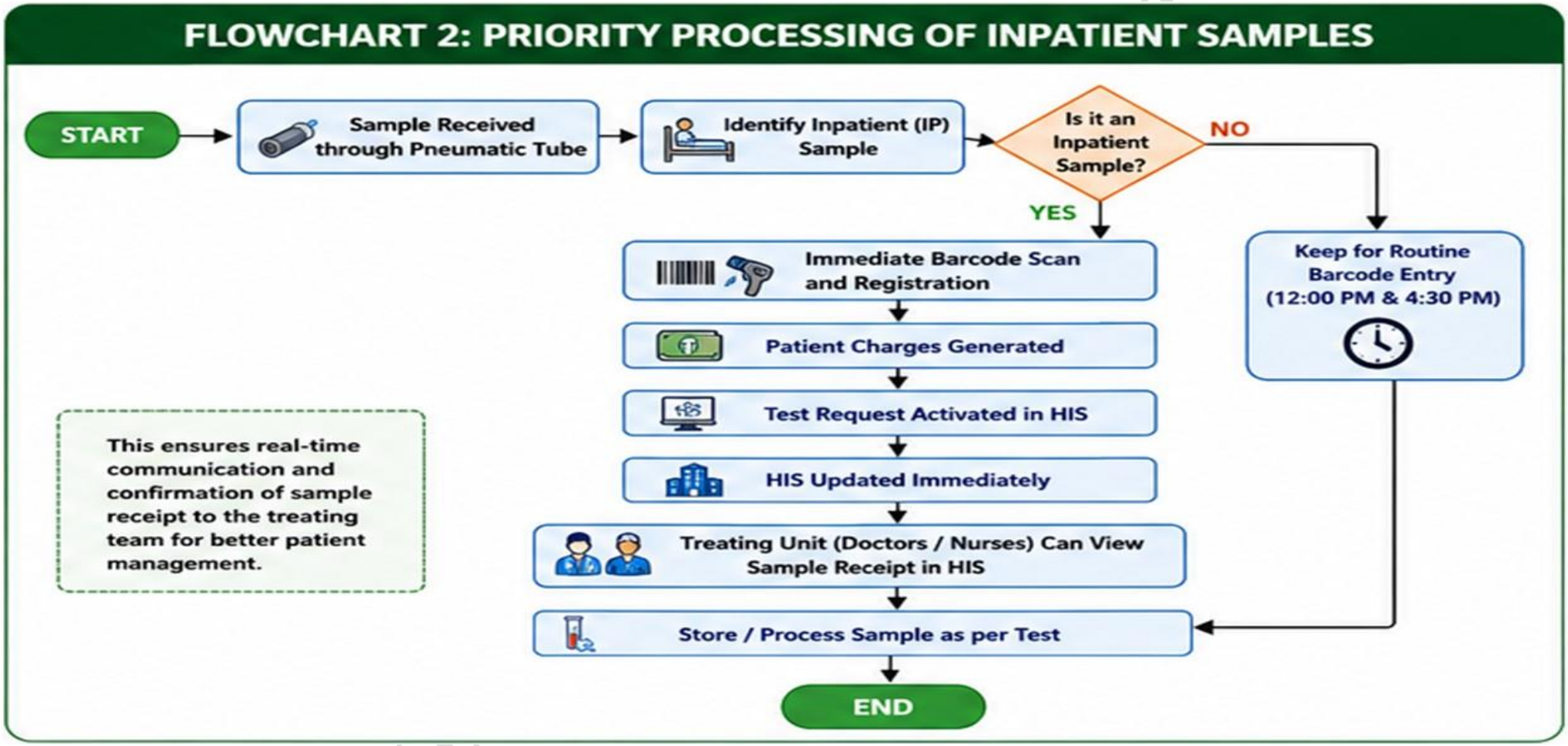
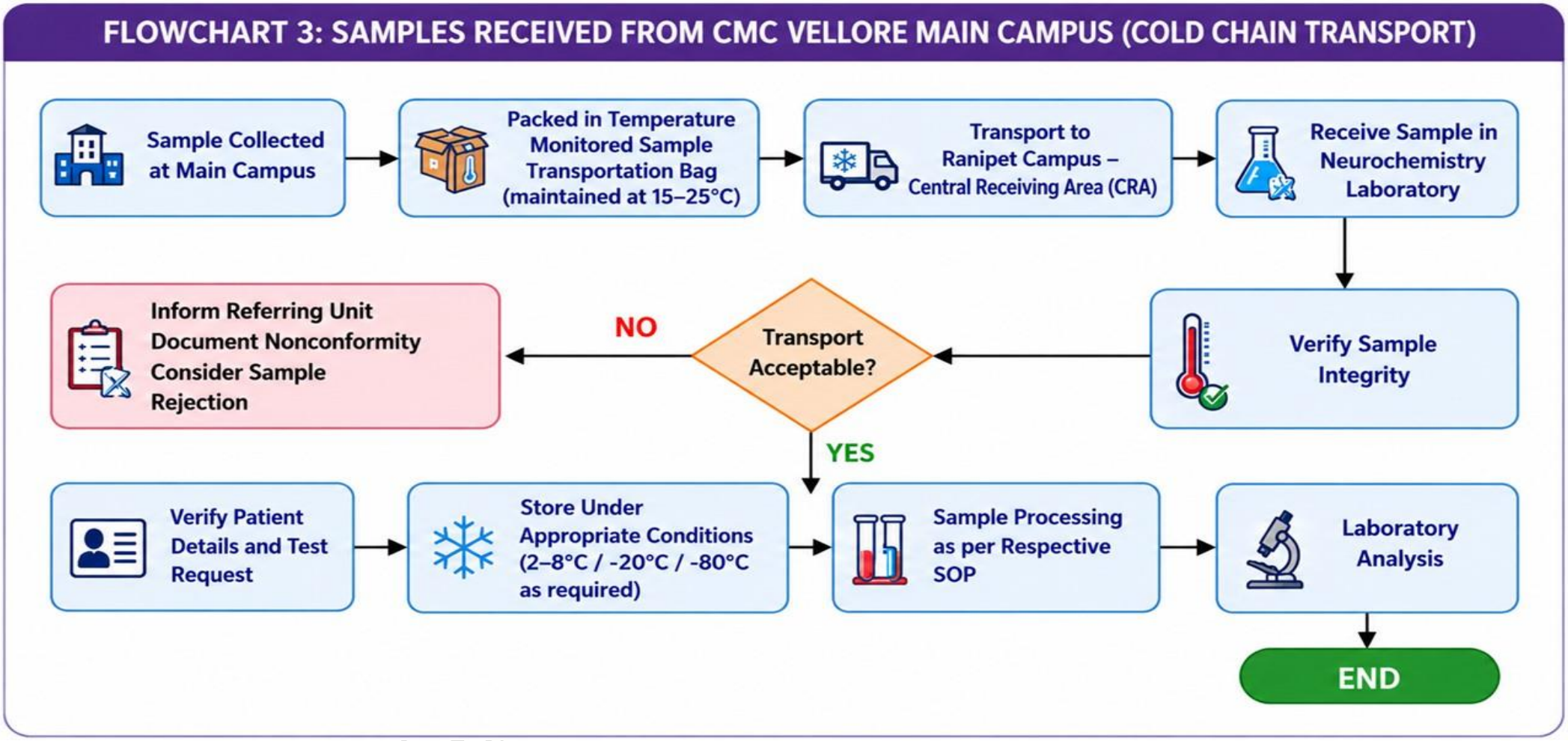
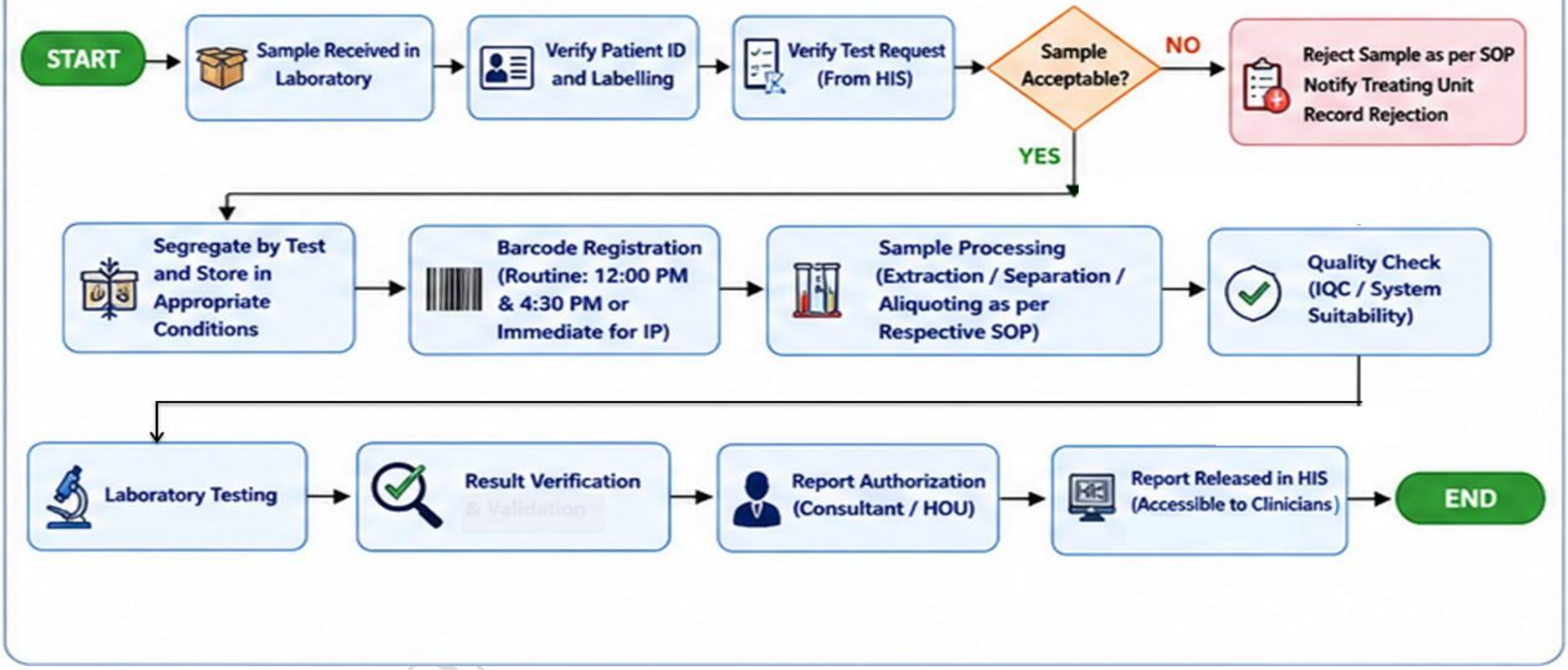



| Prepared by Quality Manager: Dr. Prabhakaran V | Approved by HOU: Dr. Christhunesa S Christudass |
|---|---|
| V. Prabhakaran | |


FLOWCHART 2: PRIORITY PROCESSING OF INPATIENT SAMPLES
START
Sample Received through Pneumatic Tube
Identify Inpatient (IP) Sample
Is it an Inpatient Sample?
NO
YES
Keep for Routine Barcode Entry (12:00 PM & 4:30 PM)
Immediate Barcode Scan and Registration
Patient Charges Generated
Test Request Activated in HIS
HIS Updated Immediately
Treating Unit (Doctors / Nurses) Can View Sample Receipt in HIS
Store / Process Sample as per Test
END
This ensures real-time communication and confirmation of sample receipt to the treating team for better patient management.


FLOWCHART 3: SAMPLES RECEIVED FROM CMC VELLORE MAIN CAMPUS (COLD CHAIN TRANSPORT)
Sample Collected at Main Campus
Packed in Temperature Monitored Sample Transportation Bag (maintained at 15–25°C)
Transport to Ranipet Campus – Central Receiving Area (CRA)
Receive Sample in Neurochemistry Laboratory
Verify Sample Integrity
Transport Acceptable?
NO
Inform Referring Unit
Document Nonconformity
Consider Sample Rejection
YES
Verify Patient Details and Test Request
Store Under Appropriate Conditions (2–8°C / -20°C / -80°C as required)
Sample Processing as per Respective SOP
Laboratory Analysis
END

## FLOWCHART 4: OVERALL NEUROCHEMISTRY SAMPLE HANDLING WORKFLOW



## 12. Annexure I: Neurochemistry Diagnostic Tests

| S. No | Code | Service Name | Specimen & Container | Volume | Storage / Transport | Frequency | TAT | Clinical Notes |
|---|---|---|---|---|---|---|---|---|
| 1 | 48003 | Urine Mucopolysaccharides (24 hr) | 24 hr urine (Collect bottle from Neurochemistry Lab) | Above 300 ml | Transport from Main campus at 4°C and process on same day | Monday to Thursday (8am to 11 am) in Main campus and Monday to Friday during working hours in Ranipet campus. | 10 days | For mucopolysaccharidosis. Note: Refrigerate during collection. |
| 2 | 48004 | Blood Arylsulfatase (A & B) | Special tube (Collect from Neurochemistry Lab) | 7 ml | Transport from the Main campus at 4°C | Monday to Friday (8 am to 10 am) | 5 days | Diagnosis of Metachromatic Leukodystrophy and Maroteaux-Lamy Syndrome (MPS VI). Avoid hemolysis. Note: After leukocyte isolation freeze immediately; avoid repeated freeze–thaw. |
| 3 | 48005 | Blood Hexosaminidase (A & B) | Special tube (Collect from Neurochemistry Lab) | 5 ml | Transport from the Main campus at 4°C | Monday to Friday (8am to 10 am) | 5 days | Diagnosis of Tay-Sachs and Sandhoff disease. |
| 4 | 48008 | Serum ELISA/EITB for Cysticercosis | Serum | 2 ml | Freeze –20 °C | Daily | 10 Working days | Diagnosis of neurocysticercosis. |

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| 5 | 48009 | Serum Amino Acids (HPLC) | Serum (plain tube) | 2 ml | Freeze –20 °C | Daily | 7 days | Diagnosis of aminoacidopathies. |
| 6 | 48010 | Urine Amino Acids (HPLC) | Urine | 10–20 ml | Freeze –20 °C | Daily | 7 days | For aminoacidurias. |
| 7 | 48011 | CSF Amino Acids (HPLC) | CSF (sterile tube) | 1–2 ml | Freeze –20 °C if >2 hrs | Daily | 7 days | Diagnosis of inborn errors of metabolism. |
| 8 | 48013 | Urine Homocysteine (HPLC) | Urine | 10 ml | Freeze –20 °C | Daily | 7 days | For homocystinuria. |
| 9 | 48014 | Urinary Orotic Acid | Urine | 10 ml | Freeze –20 °C | Daily | 6 Working days | For urea cycle disorders. |
| 10 | 48015 | Urinary Organic Acids | Urine | 10–20 ml | Freeze –20°C | Daily | 6 Working days | Screening for inborn errors of metabolism. Note: Collect during symptomatic period. |
| 11 | 48016 | CSF Oligoclonal Banding | CSF + paired serum | 0.5–1 ml each | CSF refrigerated; serum frozen | Daily | 15 Working days | Diagnosis of MS, CNS demyelination. Paired serum mandatory. Do not freeze CSF. |
| 12 | 48017 | Immunoblot for Muscle Calpain | Muscle biopsy, snap frozen | 50–100 mg | Cryovial on dry ice | On request | 20 Working days | For Limb Girdle Muscular Dystrophy. Note: Do not use formalin; freeze in liquid nitrogen. |
| 13 | 48018 | Immunoblot for Muscle Dysferlin | Muscle biopsy, snap frozen | 50–100 mg | Cryovial on dry ice | On request | 20 Work-ing days | For dysferlinopathies. Note: Do not use formalin; freeze in LN2. |
| 14 | 48019 | Serum Biotinidase Test | Serum | 2 ml | Refrigerated | Daily | 7 days | Biotinidase deficiency diagnosis. |
| 15 | 48020 | Serum Carbohydrate Deficient Glycoprotein Syndrome | Serum | 2 ml | Freeze –20 °C | Daily | 15 Working days | For congenital disorders of glycosylation. |

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| 16 | 48021 | Serum Cysteine(HPLC) | Serum | 2 ml | Freeze –20 °C | Daily | 7 days | Evaluation of cystinuria. |
| 17 | 48022 | Urine Cysteine (HPLC) | Urine | 10 ml | Freeze –20 °C | Daily | 7 days | For cystinuria diagnosis. |
| 18 | 48023 | Serum Citrulline (HPLC) | Serum | 2 ml | Freeze –20 °C | Daily | 7 days | For urea cycle disorders. |
| 19 | 48024 | Urine Citrulline (HPLC) | Urine | 10 ml | Freeze –20 °C | Daily | 7 days | For urea cycle disorder evaluation. |
| 20 | 48025 | Urine Mucopolysaccharides (Spot) | Spot urine | 5-10 ml | Refrigerated/frozen | Daily | 3 days | Screening for MPS. |
| 21 | 48026 | Urine Sulfite | Fresh urine | 5–10ml | Fresh/refrigerated | Weekly | 5 days | For sulfite oxidase deficiency and Molybdenum cofactor deficiency. |
| 22 | 48027 | Thymidine Phosphorylase (TPP) Assay | Special tube (Collect from Neurochemistry Lab) | 7 ml | Transport from the Main campus at 4°C | As required | 10 Working days | For mitochondrial neurogastrointestinal encephalopathy. |
| 23 | 48028 | Blood Beta-Galactosidase | Special tube (Collect from Neurochemistry Lab) | 5 ml | Transport from the Main campus at 4°C | Monday to Friday (8 am to 10 am) | 7 days | Diagnosis of GM1 gangliosidosis, Morquio B disease. |
| 24 | 48029 | Psychotropics & CNS Depressants Panel | Serum/Urine | 5 ml | Freeze –20 °C | On request | Same day | Detects psychotropic drug ingestion/overdose. |
| 25 | 48034 | Phenothiazines | Serum/Urine | 5 ml | Freeze –20 °C | On request | Same day | Phenothiazine drug levels. |
| 26 | 48035 | Herbicide Panel | Urine/Plasma | 5–10 ml | Freeze –20 °C | On request | Same day | Comprehensive panel for herbicide poisoning. |
| 27 | 48036 | Paraquat | Plasma/Urine | 5 ml | Refrigerated or frozen | On request | Same day | For suspected paraquat poisoning. |

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| 28 | 48037 | Diquat | Plasma/Urine | 5 ml | Refrigerated or frozen | On request | Same day | For suspected herbicide ingestion. |
| 29 | 48039 | Irritants and Corrosives Panel | Serum/Urine | 5 ml | Refrigerated or frozen | On request | Same day | Detects corrosive chemicals in poisoning cases. |
| 30 | 48040 | Urine Psychotropics & DOA Screen | Urine | 10–20 ml | Refrigerated/frozen | On request | Same day | Drug abuse screening. |
| 31 | 48041 | Urine Total Glycosaminoglycans (MPS) | Urine | 5-10 ml | Refrigerated | Daily | 3 days | Quantification for MPS. |
| 32 | 48042 | Serum ELISA Neurofascin-155 Ab | Serum | 2 ml | Freeze –20 °C | Daily | 10 Working days | Subtype specific antibody assay. |
| 33 | 48043 | Serum ELISA Neurofascin-140 Ab | Serum | 2 ml | Freeze –20 °C | Daily | 10 Working days | Subtype specific antibody assay. |
| 34 | 48044 | Serum ELISA Neurofascin-140/155Ab | Serum | 2 ml | Freeze –20 °C | Daily | 10 Working days | Autoantibodies in immune-mediated neuropathies. |
| 35 | 48045 | Blood β-Galactocerebrosidase | Special tube (Collect from Neurochemistry Lab) | 5ml | Transport from the Main campus at 4°C | Monday-Friday(8-10am) | 15 days | Krabbe Disease |
| 36 | 40093 | Stroke Predisposition Test | Whole blood (EDTA) | 2 ml | Refrigerated | As required | 14 days | Genetic risk markers for stroke. |
| 37 | 40094 | AED Resistance Genetic Test | Whole blood (EDTA) | 2–3 ml | Refrigerated; not frozen | As required | 2 weeks | Polymorphisms linked to AED resistance. |
| 38 | 40095 | DNA Isolation Charges | Whole blood (EDTA) | 2 ml | Refrigerated | As required | 3 days | DNA extraction for molecular testing. |
| 39 | 40127 | VEGF ELISA | Serum/Plasma | 2 ml | Freeze –20 °C | As required | 7 days | Angiogenesis marker, tumor prognostic. |

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| 40 | 40128 | Vitamin E ELISA | Serum (protect from light) | 2 ml | Refrigerated/frozen; shield from light | As required | 7 days | Fat-soluble vitamin assay. Note: Wrap in foil to protect from light. |
| 41 | 40129 | LTA4H RS17525495 (C/T) Genotyping | Whole blood (EDTA) | 2–3 ml | Refrigerated | As required | 7 days | Genetic susceptibility marker. |
| 42 | 40151 | Neuron Specific Enolase ELISA | Serum | 2 ml | Freeze –20 °C | As required | 7 days | Biomarker for neuronal injury, small cell carcinoma. |
| 43 | 40152 | Neurofilament Light Chain ELISA | Serum/Plasma | 2 ml | Freeze –20 °C | As required | 7 days | Biomarker of axonal damage. |
| 44 | 40162 | Beta-2 Transferrin (CSF leak marker) | CSF/nasal fluid | 0.5–1 ml | Refrigerated/frozen | As required | 3 days | Marker for CSF leak. |
| 45 | 48051 | VLCFA (Plasma C26:0 lysoPC) | Whole blood (EDTA) | 2 ml | Refrigerated; not frozen | Daily | 15 days | Plasma C26:0-LysoPC is used as a biochemical biomarker for the evaluation of X-linked adrenoleukodystrophy (X-ALD) and other peroxisomal disorders. |

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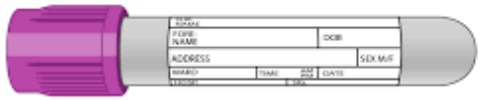
## 13. Annexure II: Specimen Collection Containers

The following table lists common specimen collection containers used in Neurochemistry laboratory testing.

| Container Type | Use | Images |
|---|---|---|
| Plain vacutainer (Red-top) | Serum collection |  |
| EDTA vacutainer (Purple with white top) | DNA/genetic tests |  |
| *Tubes need to be collect from Neurochemistry Lab*<br>• Blood Arylsulfatase (A & B) tube with 1.75ml ACD<br>• Blood Hexosaminidase (A & B) tube with 1.25ml ACD<br>• Blood Beta-Galactosidase tube with 1.25ml ACD<br>• Blood β-Galactocerebrosidase tube with 1.25ml ACD<br>• Thymidine Phosphorylase (TPP) tube with 1.25ml ACD | Enzyme assays |  |
| Urine container | Metabolic & toxicology tests |  |

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| | | |
|---|---|---|
| Urine container | Sulfite assay |   |
| Urine container (24 hr) with 3ml Toulene | Mucopolysaccharidosis assay |  |
| Cryovial | Frozen |  |
| Sterile screw-cap tube | CSF |  |

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