Guidelines

Clinical Management of Japanese Encephalitis

Government of India

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Chapter 1

DIAGNOSIS OF JAPANESE ENCEPHALITIS

Objectives
1. Learn the case definition and common signs and symptoms

1. Clinical Manifestations

Following an incubation period of 5-15 days after an infective mosquito bite a prodrome of fever, headache, nausea, diarrhea, vomiting, and myalgia occurs lasting for few days followed by irritability, altered behavior, convulsions and coma. The progression of disease is rapid. Signs of raised intra cranial tension are commonly present in acute stage of illness. The patient may develop difficulty of speech and other neurological deficits like ocular palsies, hemiplegia, quadriplegia and extrapyramidal signs in the form of dystonia, choreoathetosis and coarse tremors.

For case surveillance Japanese encephalitis is reported in the syndrome of acute encephalitis ie all cases of Acute Encephalitis Syndrome should be reported as they have similar clinical manifestations. Their case management usually follows a common protocol along with situation specific treatment. Diagnosis of JE will depend on laboratory investigations. Following definitions are followed in the programme.

Case Definition – Suspected case

- Acute onset of fever (≤ 7 days)
- change in mental status

With/ without

- New onset of seizures (excluding febrile seizures)
- (Other early clinical findings - may include irritability, somnolence or abnormal behaviour greater than that seen with usual febrile illness)

Case Classification

Laboratory-Confirmed case

Suspected case with any one of the following markers:

- Presence of Ig M antibody in serum and/ or CSF
- Four fold difference in Ig G antibody titer in paired sera
- Virus isolation from brain tissue
- Antigen detection by immunofluroscence
- Nucleic acid detection by PCR

In the sentinel surveillance network JE will be diagnosed by Ig M Capture ELISA, and virus isolation will be done in National Reference laboratory.

Probable Cases

Suspected case in close geographic and temporal relationship to a laboratory-confirmed case of JE in an outbreak

Acute Encephalitis Syndrome *due to other agent*

A suspected case in which diagnostic testing is performed and an etiological agent other than JE is identified

Acute Encephalitis Syndrome *due to unknown agent*

A suspected case in which no diagnostic testing is performed / no etiological agent was identified / test results were indeterminate

Chapter 2

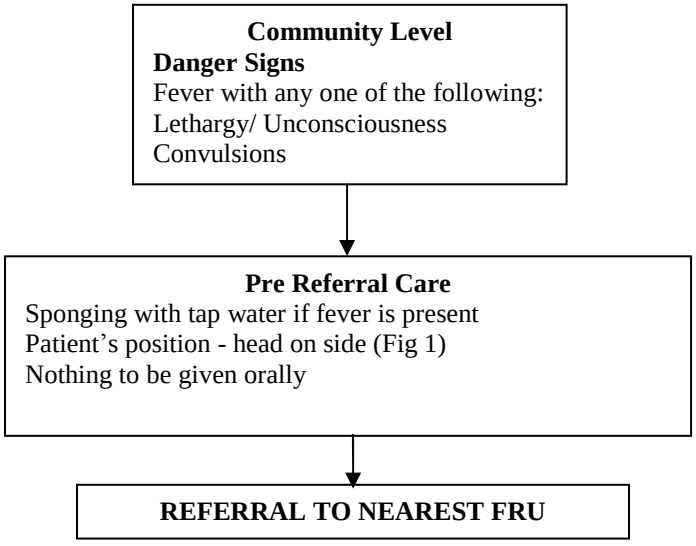
MANAGEMENT OF JAPANESE ENCEPHALITIS

Objectives
2. Learn the clinical management of Japanese Encephalitis
3. Know the danger signs for referral

1. Management

Management of Japanese encephalitis is essentially symptomatic. To reduce severe morbidity and mortality it is important to identify early warning signs and refer patient to health facility and educate the health workers about the first line of management at the grass root level. Chart 1 depicts what needs to be done for a patient at the community level.

Chart 1: Management of Japanese Encephalitis at Community Level



At the health facility it is important to exclude other causes of CNS affliction like meningitis or cerebral malaria which require specific treatment. Treatment will depend on the condition in which patient is received in the health facility. Since patients are likely to arrive with high grade fever and change in

mental status or convulsions proceed with the assessment of patency of airway. Management of airway and breathing is to be done as per chart 2.

Chart 2: Management of Airway and Breathing

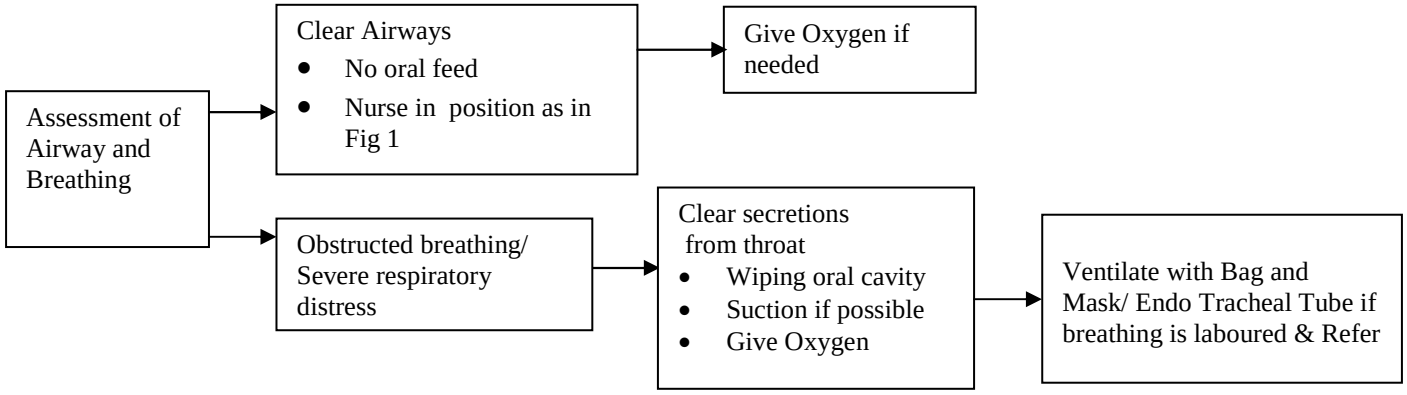
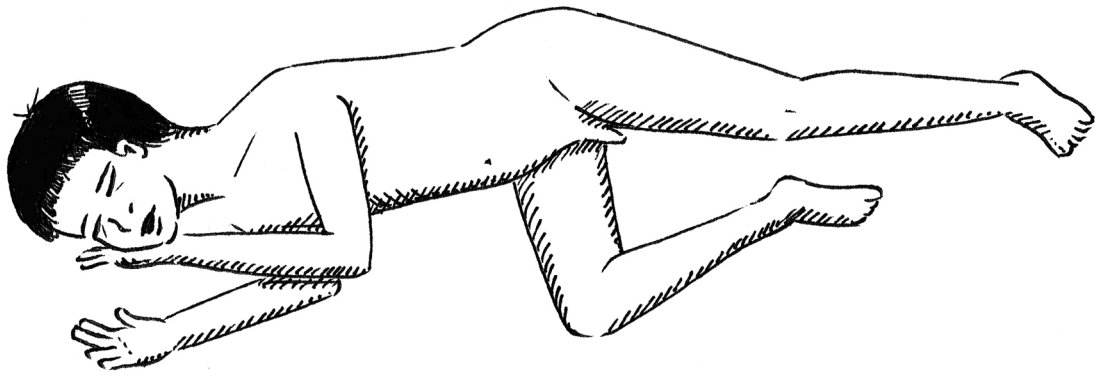


Fig1. Position of the Patient

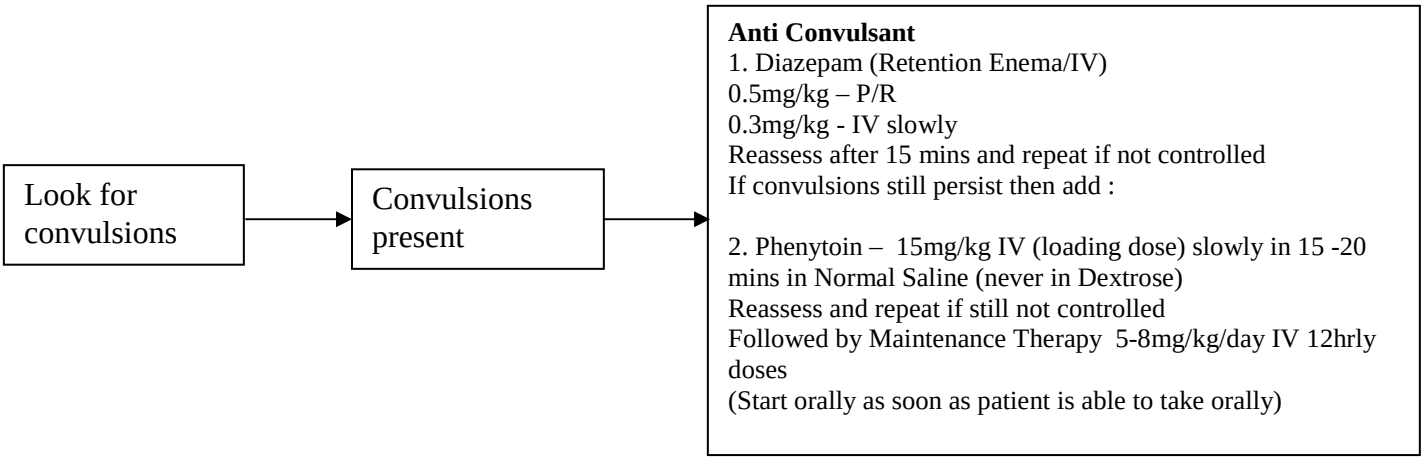
- Turn the patient on the side to reduce risk of aspiration.
- Keep the neck slightly extended and stabilize by placing cheek on one hand.
- Bend one leg to stabilize the body position.



Establish an IV line and insert a nasogastric tube, concurrently look for signs of dehydration and shock; cold and clammy extremities, weak pulse and capillary refill time >3secs (**Annexure 1**). Draw a blood sample for

investigation and in case of paediatric patient assess for dehydration. If convulsions are present institute anticonvulsants as mentioned in Chart 3. Chart 4 provides a guide to different conditions and the choice of IV fluid to be instituted.

Chart 3. Management of Convulsions



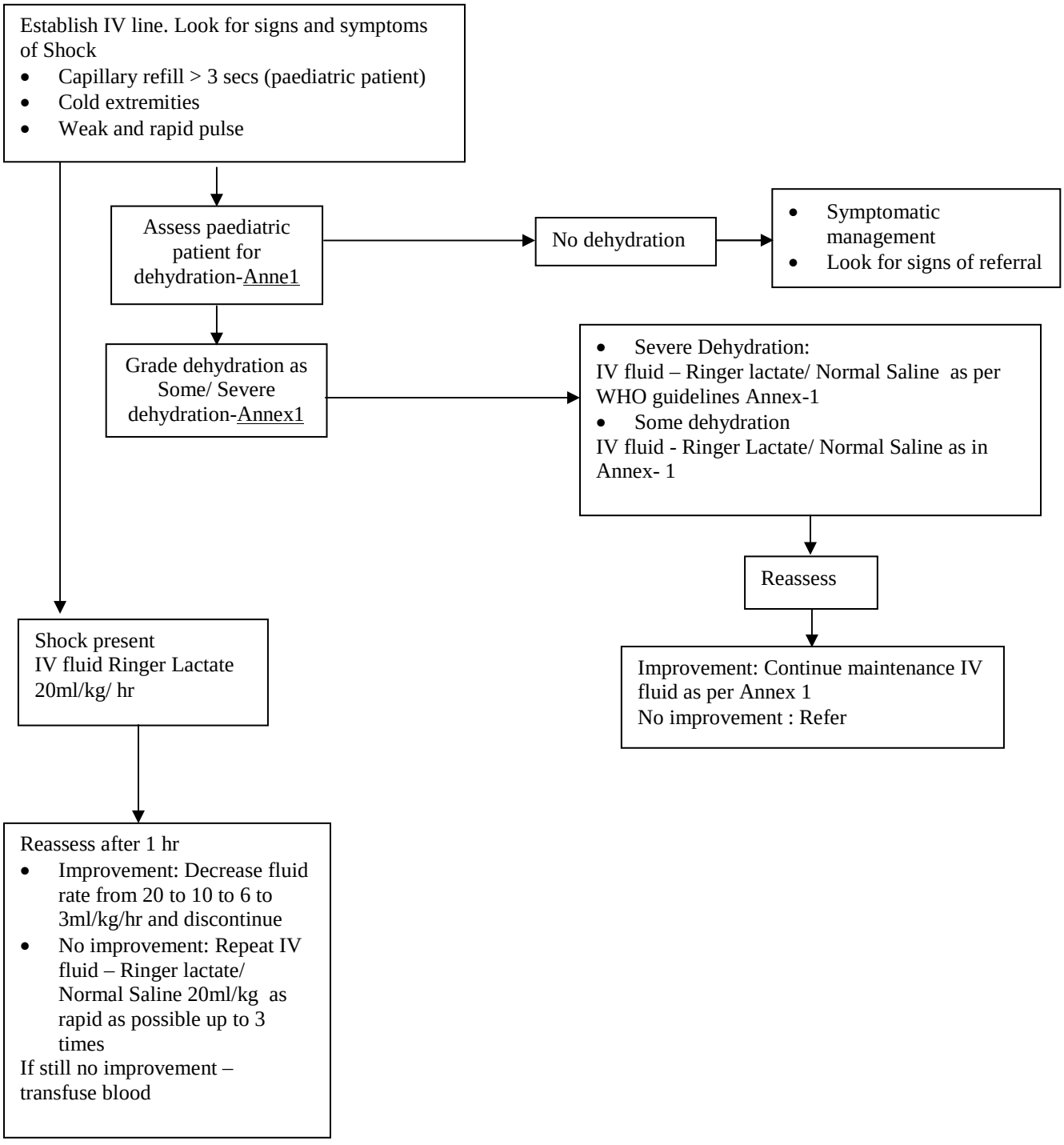
In case of fever of > 38.5ºC sponge with tepid water and administer paracetamol 15mg/kg/ dose. The adult dose is 500mg/dose. Paracetamol may be given through nasogastric tube/ Per Rectal and may be repeated ever 4-6 hrly.

For raised intracranial tension administer loading dose of IV mannitol 20%, 1gm/kg in 15-20 mins and subsequently repeat 0.25gm/kg at 6 hr intervals up to 48 hrs. steroids are not indicated in Japanese Encephalitis.

In case of suspected bacterial meningitis or a superadded infection administer parenteral antibiotic, preferred ceftriaxone at 50mg/kg every 12 hrly for 7-10 days.

For keeping records the Case Investigation form AES-4 in **Annexure 3** will be used

Chart 4. Management of Circulation



NB: These are broad guidelines; ultimate decision regarding management will depend upon the attending physician.

2. Investigations

i. Complete blood counts
ii. Peripheral blood smear – Malarial parasite
iii. Blood glucose
iv. CSF and Blood for serology by IgM ELISA/ virus isolation, CSF is preferred since by the time patient presents with CNS manifestations the level of viremia in blood has decreased and there is cross reaction with other flaviviruses.

Virus isolation should be done only in Apex Reference Laboratories and only for selected cases by investigating team. Patient information is recorded in Laboratory request and report form JES F-5 **Annexure 4.** The method of collection and transport are described in **Annexure 2.**

3. Refer the patient with following conditions to a higher centre:

i. Severe Respiratory Distress
ii. Uncontrolled seizure
iii. Deteriorating level of consciousness
iv. Shock – Not responding to fluid/ Refractory shock
v. Bleeding Manifestations

4. Care of the patient during transportation:

i. Oxygen to be given at the time of transport.
ii. Position is to be kept as mentioned
iii. Nasogastric tube should be in place to keep stomach empty
iv. Patient should be given nothing orally

Annexure1

1. Dehydration

Dehydration is classified into No/ Some/ Severe Dehydration. Since it is difficult to assess dehydration in a patient of encephalitis as the patient is lethargic and unable to drink. Therefore, skin turgor takes precedence over other signs. An objective way of classification would be as follows:

Some dehydration:

- Sunken eyes
- Skin pinch goes back slowly
- Dry mucous membrane
- Sunken Anterior Fontanell in a younger child

Severe dehydration:

- Letergy and unable to drink
- Sunken eyes
- Skin pinch goes back very slowly (>2 seconds)

Signs of shock

- Oliguria/ anuria
- Rapid and thready pulse
- Capillary filling time > 3secs

Management of Dehydration:

2. Some Dehydration

- IV fluid Ringer lactate/ N saline 100m/kg to be given over 8 hrs
- Where the facility for IV fluids is not available administer ORS 75ml/kg in 4 hrs through nasogasrtic tube
- Reassess: if there is improvement continue with maintenance IV fluid/ if no improvement is detected, switch to plan for severe dehydration

3. Severe Dehydration

- IV fluid Ringer lactate 100ml/kg is given as per the table below

Rate of Fluid(Ringer lactate)	**30ml/kg**	**70ml/kg**
<1yr	1hr	5hrs
>1yr	1/2hr	2 1/2hr

- Reassess: if there is improvement switch to maintenance/ if no improvement is detected or deterioration is observed infuse IV fluid more rapidly.

2. Maintenance

Maintenance fluid is administered at the following rate:

Weight	Fluid Volume
1-10	100ml/kg
11 - 20	1000ml+50cc/kg over & above 10 kg
21-40	1500ml+20cc/kg over & above 10 kg

Annexure2
Specimen Collection and Transportation

Blood (serum) and CSF specimen are to be collected. Blood specimen should be collected within 4 days after onset of illness for isolation of virus and at least 5 days after onset of illness for detection if Ig M antibodies. A second convalescent sample should be collected 10- 14 days after the first sample.

Following precautions need to be taken when samples are collected:

1. Blood / Serum

i. Equipment required

- 5 ml vacutainer tube (non-heparinized) with 23g needle / 5 ml syringe with needle
- 5ml blood collection tube if syringe and needle is used for blood collection
- Disposable gloves and face mask
- Tourniquet
- Sterilized swabs
- Sterile serum storage vials
- Specimen labels, marker pen
- Band aid
- Zip lock plastic bags
- Lab request form
- Cold box (vaccine carrier) with ice pack
- First aid kit

ii. Collection procedure

- Collect 5ml blood in a sterile tube labeled with patient identification and date of collection
- Keep at room temperature till clot retracts from serum
- Blood can be stored at 4-8ºC for 24 hrs before serum is separated, do not freeze whole blood
- Transport whole clotted blood specimen to laboratory on ice if it can reach lab in 24 hrs/ centrifuge at 1000rmp for 10 mins to separate the serum or if centrifuge is not available carefully remove serum with a pipette and transfer serum to a sterile vial and store at 4-8ºC.

iii. Transportation

- Specimen should be transported to laboratory as soon as possible, do not wait for collection of additional specimen.
- Put specimen in zip pouch/ plastic bag with absorbent material (cotton/ tissue)
- Use vaccine carrier/ thermo flask for transport. In vaccine carrier use frozen packs along the sides and place specimen in the centre. Transport as in reverse cold chain.

- Place lab request forming a plastic bag and tape to inside of carrier
- Inform the lab about the time and manner of transportation
- Transport the serum on wet ice within 48 hrs or it can be stored at 4-8ºC for 7 days
- If a delay is anticipated sera should be frozen at -20ºC and transported on frozen ice packs. Repeated freezing and thawing should be avoided as it affects the stability of IgM.

2. CSF

All attempts should be made to collect CSF specimen for confirmation of diagnosis.

i. Collection

- Lumbar puncture is the most commonly used means of collecting specimen
- Patient is positioned on his side with knees curled up to his abdomen, occasionally it is performed with the patient sitting or bent forward.
- Skin is scrubbed and local anesthetic is injected over lower spine. Spinal needle is inserted usually between L3 and L4 vertebrae.
- Once the needle is in subarachnoid space pressure can be measured and fluid is collected. Usually 2-3ml of fluid is collected in a sterile screw capped bottle.
- After sample is collected, the needle is removed and area is cleaned.
- Patient is advised to lie flat for 6-8 hrs
- Perform physical examination of CSF, indicate the findings on the laboratory requisition form and transport to the laboratory as soon as possible. Store at 4ºC if delay in processing is anticipated.

ii. Storage and Transportation

- Store at 4ºC as soon as possible after collection and dispatch at the earliest on wet ice in vaccine carrier/ thermo flask.
- Hand carry the specimen to laboratory preferably due to urgency.
- For PCR transport specimen on dry ice.
- A designated person should be responsible for storage, packing and transport as per national and international guidelines.

Annexure 3

ACUTE ENCEPHALITIC SYNDROME/ SUSPECTED JE CASE INVESTIGATION FORM

EPID Number: AES - _____ -_____ - _____ - _____ **JEF-4**

Reporting information

Date Case Reported: _____ /_____ / _____	Notified by: _____
Date Case Investigated: _____ / _____ / _____	Investigated by:_____

Patient information

Patient's Name: _____	Sex: _____	
Date of birth: _____/ _____ / _____	Age: years_____ months_____	
Father's Name:_____	Religion: Muslim / Hindu / Other	
Address: _____	Landmark: _____	
Village / Mohalla: _____	Block /Urban area: _____	
District: _____	State: _____	Setting: Urban / Rural

Travel history over past two weeks from onset of first symptoms

Dates of visit	Date from:						
	Date to:						
Address							
Block							
District and State							

Immunization history

JE immunization: Yes / No / Partial / Unknown	Date of last JE immunization: _____/ _____/_____

Signs and Symptoms

Date of onset of first symptoms: _____/_____/_____		Headache: Yes / No / Unknown	
Change in mental status: Yes / No / Unknown		Paralysis: Yes / No / Unknown	
Fever: Yes / No / Unknown		Unconsiousness: Yes / No / Unknown	
Seizure: Yes / No / Unknown		Neck rigidity: Yes / No / Unknown	
Any other, specify: _____			

Sample collection, tracking and results

	Date Collection	Date Sent	Date Result	Condition*	Laboratory Result (circle)
CSF					Positive Negative Not tested Unknown
Serum 1					Positive Negative Not tested Unknown
Serum 2					Positive Negative Not tested Unknown

Diagnosis and final classification

Final classification:	Laboratory confirmed JE / Probable JE / AES unknown / AES other agent
Clinical diagnosis:_____	

Discharge status

Status at discharge:	Alive / Dead / Unknown	Date of discharge: _____/ _____/_____
If alive, status of recovery:	Recovered completely / Recovered with disability	
If died, date of death: _____/ _____/_____		

* condition is adequate if specimen is transported in reverse cold chain

(Name & Signature)
Designation

Annexure 4

JAPANESE ENCEPHALITIS LABORATORY REQUEST AND REPORT FORM

JEF-5

	Patient number:	Date / /
Patient name:		M F
Age:		
Name of parent or guardian:		
Province:	District:	
Town/Village:	Name of health facility:	

Number of doses of Japanese Encephalitis Vaccine:	Date of last dose / /
Date of onset of illness: / /	
Name & address of treating doctors	
Clinical features:	

SPECIMEN TYPE	SPECIMEN ID	DATE OF COLLECTION	DATE OF SHIPMENT
(1)		/ /	/ /
(2)		/ /	/ /
(3)		/ /	/ /

Name of person to whom laboratory results should be sent:

Address:

Telephone number: Fax number: Email

For use by the receiving laboratory:

Name of laboratory:

Name of person receiving the specimen:

Specimen condition*:

SPECIMEN TYPE	DATE RECEIVED IN LAB	DATE RESULT	TEST TYPE	TEST RESULT	Date result to program/ sender	Remark
	/ /	/ /			/ /	
	/ /	/ /			/ /	
	/ /	/ /			/ /	

*** Sample is good if:**

- There is no leakage
- Of adequate quantity
- Brought in cold chain
- Documentation is complete

if sample is bad specify

Add in the following information:
Fever at onset: Y□ N□ Duration:
Seizures: Y□ N□
Altered level of consciousness: Y□ N□
Neck rigidity: Y□ N□

Any other information: _____

Source : WHO Draft document operational guidelines

(Name & Signature)
Designation