1. What is jaundice? Are there different types of jaundice?
2. What are the viruses that cause the “liver jaundice” or “acute viral hepatitis”?
3. Apart from yellowish discoloration of eyes, what are the other symptoms in acute viral hepatitis, and how long will they last? When can my child return to school and normal activity?
4. Can I manage my child at home doctor? When is hospitalization essential?
5. My child does not like blood tests. When are these necessary?
6. I heard that ultrasound is very child friendly, will this help doctor?
7. I have some doubts regarding the food to be avoided and those which can be allowed during jaundice. Please clarify.
8. The elders in our family wish to give herbal medicines? I am confused. Is it OK doctor?
9. Should I bring my child for follow up?
10. Is there some way to prevent these infections? Are vaccines available in our country?
IAP Parent Guideline Committee

Chairpersons: Piyush Gupta, Bakul Parekh
IAP Co-ordinators: GV Basavaraja, Harish Kumar Pemde, Purna Kurkure

Core Group

National Co-ordinator: Deepak Ugra
Member Secretaries: Upendra Kinjawadekar, Samir Dalwai
Members: Apurba Ghosh, CP Bansal, Santosh Soans, Somashekar Nimbalkar, S Sitaraman
Jaundice is only a symptom-like cough and not a disease. Jaundice only means yellowish discoloration of the sclera (white part of the eyeball) (Fig. 1) and is due to increase in the blood level of bilirubin. Bilirubin is an end product of red blood cells breakdown. The liver is the main factory to handle this bilirubin. Thus, there are three types of jaundice (Fig. 2):

1. **Hemolytic jaundice**: Overproduction of bilirubin due to increased red blood cell hemolysis.
2. **Hepatic jaundice**: “Sick liver”: inability to work adequately. The most common cause is acute viral hepatitis (AVH). Acute means abrupt in onset and “hepatitis” indicates inflammation (itis) of the liver cells (hepa).
3. **Obstructive jaundice**: Blockage in pathway of bile anywhere from liver to duodenum.
What are the viruses that cause the “liver jaundice” or “acute viral hepatitis”?

Remember the alphabets A, B, C, and E. These viruses are named alphabetically: hepatitis A virus (HAV), hepatitis B virus (HBV), etc.

A
1. HAV and HEV are common.
2. Share similarities.
3. Spread by contaminated food and water.
4. Do not progress to chronicity.
5. Less harmful culprits.

B
1. HBV and HCV are less common and share similarities.
2. Spread by blood and blood products.
4. Progress to chronic liver disease, cirrhosis, end-stage liver disease, liver cancer and death.
5. These two are more troublesome viruses.

Apart from yellowish discoloration of eyes, what are the other symptoms in acute viral hepatitis, and how long will they last? When can my child return to school and normal activity?

The common symptoms apart from jaundice depend on the stage of illness:

<table>
<thead>
<tr>
<th>Stage</th>
<th>Duration</th>
<th>Symptoms</th>
</tr>
</thead>
</table>
| 1. Prodrome/Prejaundice      | 2–7 days | • Fever, nausea, vomiting, lethargy, pain in right side of abdomen and loss of appetite  
|                              |          | • The urine becomes high colored and stools pale before the eyes become yellow |
| 2. Icteric/Jaundice          | 7–14 days| • Fever, nausea, and vomiting subsides  
|                              |          | • Urine continues to be high colored and stools may be pale  
|                              |          | • Jaundice deepens                                                        |
| 3. Convalescent/Recovery     | 3–5 days | • Jaundice decreases and clears  
|                              |          | • Appetite improves                                                       
|                              |          | • Urine becomes normal in color                                           
|                              |          | • Stool becomes yellow in color                                           |

Child can go to school once jaundice clears and appetite improves.
Child can start normal physical activity once he/she is able to take regular diet, has no vomiting, and is attending school.
Viral Hepatitis

I understand the fear your child has of injections. As your doctor I assure you no tests will be done unless it is necessary. I ensure that the poke will be done gently taking all precautions.

Blood tests are not necessary in all children with AVH.

The only essential blood test is checking for hepatitis B surface antigen (HBsAg).

They are required in those admitted in hospital to check status of the liver, complications, and cause of hepatitis.

Q4
Can I manage my child at home doctor? When is hospitalization essential?

- Most children with jaundice due to acute viral hepatitis (AVH) can be managed at home.
- Child should be hospitalized if the following 10 symptoms are present:

<table>
<thead>
<tr>
<th>Symptom</th>
<th>To exclude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistent vomiting</td>
<td>1. Gallstones</td>
</tr>
<tr>
<td>Persistent fever</td>
<td>2. Liver abscess</td>
</tr>
<tr>
<td>Poor intake of food</td>
<td>3. Fluid in abdomen</td>
</tr>
<tr>
<td>Drowsiness</td>
<td></td>
</tr>
<tr>
<td>Decreased urine output</td>
<td></td>
</tr>
</tbody>
</table>

Warning: All children on long-term medications (like antiepileptics/medicine for tuberculosis, etc.) should consult their physician in regard to their ongoing treatment, as these drugs may be toxic for the liver.

Q5
My child does not like blood tests. When are these necessary?

I understand the fear your child has of injections. As your doctor I assure you no tests will be done unless it is necessary. I ensure that the poke will be done gently taking all precautions.

- Blood tests are not necessary in all children with AVH.
- The only essential blood test is checking for hepatitis B surface antigen (HBsAg).
- They are required in those admitted in hospital to check status of the liver, complications, and cause of hepatitis.

Q6
I heard that ultrasound is very child friendly, will this help doctor?

- Yes, ultrasound is a safe and a painless imaging test.
- However, it has no role in the majority of children with AVH. It identifies structural lesions.
- It is done if the child has the following atypical manifestations:

<table>
<thead>
<tr>
<th>Symptom</th>
<th>To exclude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant abdominal pain</td>
<td>1. Gallstones</td>
</tr>
<tr>
<td>Fever and pain right upper abdomen</td>
<td>2. Liver abscess</td>
</tr>
<tr>
<td>Abdominal distension</td>
<td>3. Fluid in abdomen</td>
</tr>
</tbody>
</table>
Elders at home should be respected; however, you have to be careful and wise when and where your child's health is concerned.

All over the world, herbal medicines to treat jaundice have been tried for ages. We should remember three important facts:

1. There are several causes of jaundice and there is no single form of treatment.
2. It is not correct for doctors like us practicing allopathy to prescribe herbal medications as we have no knowledge of its efficacy and side effects.
3. All herbal medications are not safe and there are reports of hepatitis following herbal drugs.

The elders in our family wish to give herbal medicines? I am confused. Is it OK doctor?

- Elders at home should be respected; however, you have to be careful and wise when and where your child's health is concerned.
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<table>
<thead>
<tr>
<th>Stage</th>
<th>Appetite</th>
<th>Diet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prejaundice</td>
<td>May be poor</td>
<td>Child may prefer to take fluids, soup and fruit juice. Ensure adequate fluids are given.</td>
</tr>
<tr>
<td>Jaundice</td>
<td>Appetite will improve</td>
<td>Encourage child to have three regular meals with steamed food, dal, vegetables, and fruits.</td>
</tr>
<tr>
<td>Recovery</td>
<td>Normal</td>
<td>Normal diet</td>
</tr>
</tbody>
</table>

There are several myths in the management of jaundice:

<table>
<thead>
<tr>
<th>Common beliefs</th>
<th>Myth</th>
<th>Reality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt should not be added in diet.</td>
<td>Yes</td>
<td>Normal salt</td>
</tr>
<tr>
<td>Yellow color in turmeric should not be added in diet.</td>
<td>Yes</td>
<td>Can be added</td>
</tr>
<tr>
<td>Oil should not be added in cooking.</td>
<td>Yes</td>
<td>Can be added</td>
</tr>
<tr>
<td>Egg, mutton, and chicken should not be given during recovery.</td>
<td>Yes</td>
<td>Can be given</td>
</tr>
<tr>
<td>Water should be restricted during jaundice.</td>
<td>Yes</td>
<td>Normal amount can be given.</td>
</tr>
</tbody>
</table>

Improvement of appetite is indicator of convalescence period.
Children diagnosed with HAV and HEV infection do not need any follow up.

Children who are diagnosed with hepatitis B or hepatitis C infection need follow up to check whether the body has cleared the virus. Biochemical tests such as serum glutamic pyruvic transaminase (SGPT) and serum glutamic oxalo-acetic transaminase (SGOT) are done as surrogate markers to check liver status. Those children who have elevated values even 6 months following illness are further evaluated.

Six months after HBV infection, if hepatitis B surface antigen is still present, then that child has chronic HBV infection and needs evaluation and treatment as per the recommendation.

Six months after HCV infection, if HCV-ribonucleic acid (RNA) is present, then that child has chronic hepatitis C infection and needs therapy.

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**Should I bring my child for follow up?**

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**Is there some way to prevent these infections? Are vaccines available in our country?**

Yes, all these viral infections are preventable.

- **Hepatitis A and E:** These two viruses are spread by the orofecal route.
  - They can be prevented by following good and strict hygiene and ensuring proper sanitation.
  - Washing hands before eating, drinking boiled water, taking food from home or in hygienic places, washing hands with soap and water after defecation.
  - To prevent infections in siblings avoid sharing utensils for eating and drinking. The toilet seat should be cleaned and disinfected before use.

- **Hepatitis B and C:** These two viruses are spread by the parenteral route.
  - They can be prevented by avoiding unnecessary injections using reusable needles, unsafe ear boring and tattooing, and shared intravenous drug abuse.
  - Proper screening for hepatitis B and hepatitis C in all blood banks before blood transfusion.
  - Screening of children born to mothers who are hepatitis B or hepatitis C virus positive.

- **Vaccines:** Yes. Safe and effective vaccines are available for hepatitis A and hepatitis B. The timing and dosage are marked on your immunization card.