



Guidance document for processing PM-JAY packages

Rickets - requiring admission for work up

Procedures covered: 1

Specialty: Pediatric Medical Management

Package name	Procedure name	HBP 1.0 code	HBP 2.0 code	Package price (INR)
Rickets – requiring admission for work up	Rickets – requiring admission for work up	M200020	MP030A	General Ward- 1800/- HDU – 2700/- ICU without ventilator– 3600/- ICU with Ventilator– 4500/-

ALOS: 1 day (Once diagnosis is established the case can be booked in the relevant package, further stay/admission should be decided based on the level of complications of the disease)

Minimum qualification of the treating doctor:

Essential: MD/DNB/DCH/ equivalent (Pediatric Medicine), Referral depending on Etiology - DM/DNB/ equivalent (Endocrinology/Nephrology)

Special empanelment criteria/linkage to empanelment module: Care at Tertiary Hospital

Disclaimer:

For monitoring and administering the claim management process of **Rickets – requiring admission for work up**, NHA shall be following these guidelines. This document has been prepared for guidance of PROCESSING TEAM and TRANSACTION MANAGEMENT SYSTEM of AB PM-JAY for the claims of procedures mentioned above. The hospitals can also refer to this document so that they have the insight on how the claims will be processed. However, this document doesn't provide any guidance on clinical and therapeutic management of patient. In that respect the hospitals and physicians may refer to any other relevant material as per the extant professional norms.

PART I: Guidelines for Clinicians and Healthcare Providers

1.1 Objective:

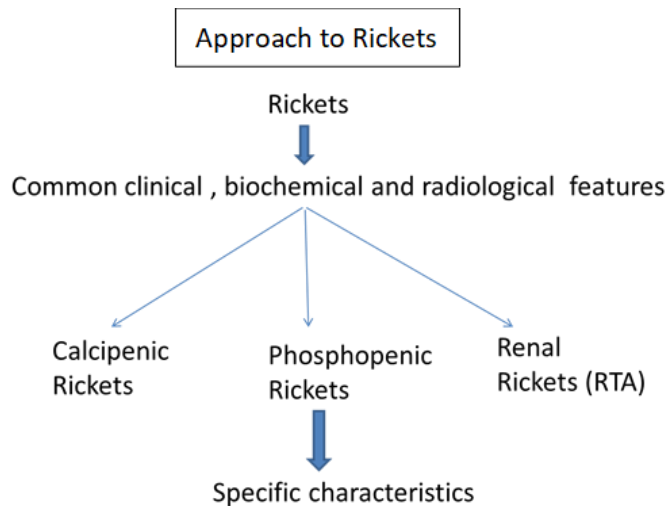
The purpose of this section is to act as a guidance & a clinical decision support tool for the clinicians in deciding the line of treatment, plan clinical management of patient and decide referral of cases to the appropriate level of care (as required) for treatment of patients under PMJAY and selection of corresponding Health Benefit Package.

It will also serve as a tool for hospitals to determine and submit the mandatory documents required for claiming reimbursement of health benefit package under PMJAY.

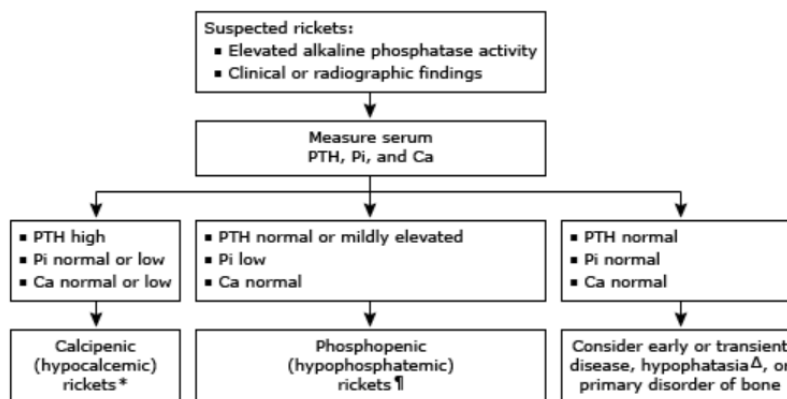
1.2 Clinical key pointers:

Rickets is a metabolic disease of childhood in which the osteoid, the organic matrix of bone fails to mineralize, due to interference with calcium metabolism.

Rickets may be nutritional (vitamin D or calcium deficiency), genetic (vitamin D resistance) or due to hypophosphatasia (renal disorders).



Diagnostic approach in suspected rickets



Rickets is suggested by typical clinical signs and elevated alkaline phosphatase activity in a child who has normal kidney and liver function. Calcipenic rickets is sometimes termed "hypocalcemic rickets," but this term is not completely accurate, because serum Ca is not always low in this disorder.

PTH: parathyroid hormone; Pi: inorganic phosphorus; Ca: calcium.

* The diagnosis of calcipenic rickets should be confirmed by monitoring response to therapy.

† In phosphopenic rickets, serum Pi is often very low.

Δ Hypophosphatasia is accompanied by low serum alkaline phosphatase activity.

Etiology of rickets

Deficient intake of minerals
Inadequate calcium intake
Inadequate phosphate intake
Poor absorption of minerals
Vitamin D deficiency
25-hydroxylase deficiency
1-alpha-hydroxylase deficiency (previously called vitamin D-dependent rickets type I or pseudovitamin D deficiency)
Hereditary resistance to vitamin D (previously called vitamin D-dependent rickets type II)
High phytin content (eg, soy formula)
Antacids
Anticonvulsants (eg, phenytoin, phenobarbital)
Renal insufficiency
Fanconi syndrome
Hepatic insufficiency
Fat malabsorption (eg, cystic fibrosis)
Neocate brand formula (an elemental formula designed for children with multiple food allergies)
Increased excretion of minerals
Furosemide
Renal tubular dysfunction
Phosphaturia (eg, X-linked hypophosphatemic rickets, hereditary hypophosphatemic rickets with hypercalcuria, tumor-induced osteomalacia)
Renal tubular acidosis with hypercalcuria
Renal tubular damage (eg, cystinosis, tyrosinosis, galactosemia, fructose intolerance, Wilson disease, lead poisoning, other heavy metal poisoning)
Tumors
Local defect of bone cells
Hypophosphatasia (alkaline phosphatase deficiency)

Proceed with Rickets – requiring admission for work up only if diagnosis made is backed by clinical manifestation:

Presenting symptoms:

- Seizures
- Tetany
- Irritability
- Stridor
- Wheezing
- Failure to thrive
- Short stature
- Delayed motor milestones
- Delayed dentition
- Difficulty in walking
- Proximal muscle weakness
- Bone pain
- Repeated infections

Associated symptoms:

- Polyuria
- Polydipsia
- Refractory rickets
- Renal stones
- Diarrhea or oily stools
- Alopecia
- Nontraumatic fractures

Signs due to deformity

- Newborn
 - Skull – frontoparietal bossing, craniotabes
delayed closure of anterior fontanelle
craniosynostosis
- Infancy
 - Chest – rachitic rosary, Harrison`s grove, pectus deformities
 - Upper limbs – wrist widening
 - Abdomen – pot belly, visceroptosis
- Pre-school
 - Spine – kyphoscoliosis, lordosis
 - Lower limbs – genu valgum (knock knees)
genu varum (bow legs)
windswept deformity
ankle widening
double malleolus
pelvic deformities
coxa vara, anterior bowing of tibia and fibula

Management:

- Initial Management
 - Daily dose of Vitamin D supplement

If the patient is not responding to Vit-D (assessment after 12 weeks of starting treatment) treatment on the repeat X-ray, thereafter requires admission for further evaluation.

- Vitamin D dependent Rickets Type 1
 - Calcitriol supplementation
- Vitamin D dependent Rickets Type 2
 - Higher doses of calcitriol and Calcium supplementation
- Calcipenic Rickets
 - Calcium and Vitamin D supplements

- Phosphophenic rickets
- X-linked hypophosphatemic rickets
 - Calcitriol, calcium and phosphorus supplementation
- Renal tubular acidosis (RTA)
 - Correction of the underlying cause
 - Sodium bicarbonate
 - Calcitriol, calcium and phosphorus supplementation
 - Correction by alkali

1.3 Mandatory documents- For healthcare providers

Following documents should be uploaded by the concerned hospital staff at the time of pre-authorization and claims submission:

Mandatory document	Rickets - requiring admission for work up
i. At the time of Pre-authorization	
Clinical notes showing vitals, examination findings, planned line of treatment and advice for admission	Yes
a. Investigations 1. X-ray PA wrist/radius/ulna or Knee/tibia/fibula 2. Serum Calcium 3. Serum Phosphorus 4. Alkaline phosphatase	Yes
Based on clinical condition and availability Desirable: 25-OH-Vitamin D, Complete blood count, Serum electrolytes, Renal function tests Optional Albumin, 24 hr urine Calcium / creatinine / phosphorus, fibroblast growth factor 23 FGF-23, blood gas analysis, chloride, Urine pH, Urine concentration of amino acids, genetic evaluation, total reabsorption of phosphorus (TRP) and the maximal tubular reabsorption of phosphorus per glomerular filtration rate (TmP/GFR), Parathyroid hormone Imaging: Bone scan, USG abdomen, CT/MRI	Yes
ii. At the time of claim submission	

Detailed Indoor case papers (ICPs) with treatment details	Yes
Detailed discharge summary	Yes

PART II: GUIDELINES FOR PROCESSING TEAM

PART III: GUIDELINES FOR TRANSACTION MANAGEMENT SYSTEM (TMS)

3.1 Objective: To enable setting up of cross check mechanisms/rule engines within the IT platform (TMS) to ensure compliance with STGs and to prevent fraud / abuse of the Health Benefit Package.

3.2 Below mentioned are the scenarios where a provision would be built in TMS for pop-ups:

- I. Did the radiological findings confirm the diagnosis of rickets? Yes
- II. Did the laboratory investigation report - serum calcium (decrease or normal), phosphorus (decrease or normal), alkaline phosphate (increase)? Yes
- III. Was there an indication of admission requirement for further workup? Yes

Till the time the functionality is being developed, the processing doctors shall check the above manually.

References

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- Thomas Carpenter, MD. Overview of rickets in children – Uptodate (last updated – April, 2020)
- https://www.rch.org.au/kidsinfo/fact_sheets/Rickets/