STANDARD TREATMENT WORKFLOW (STW)

Severe Pneumonia in Children

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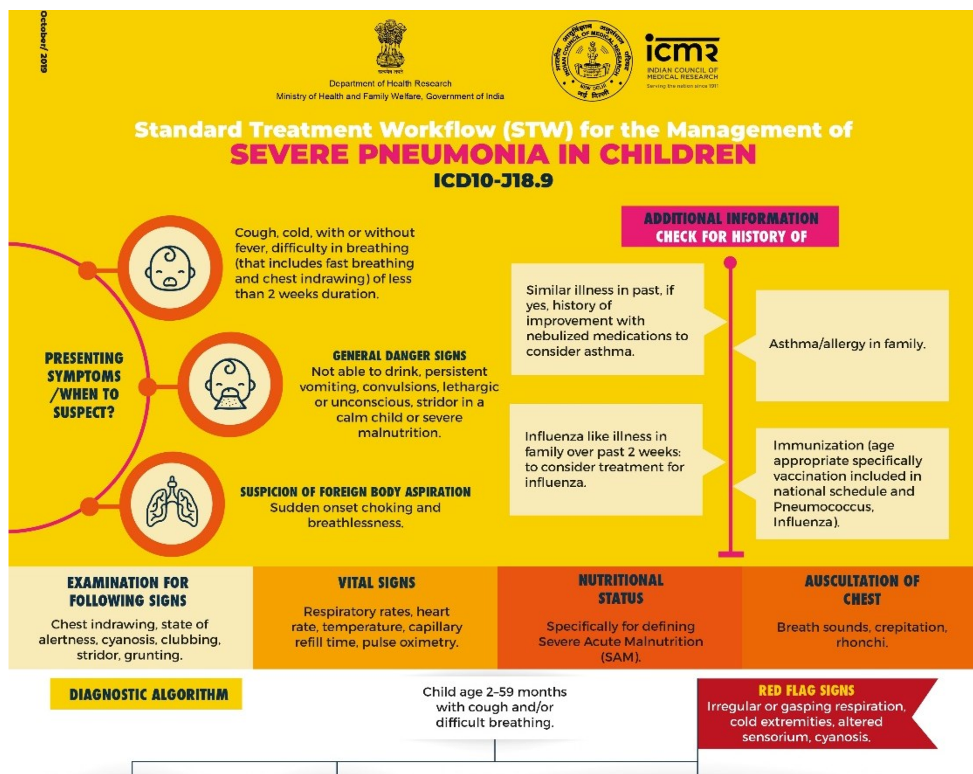

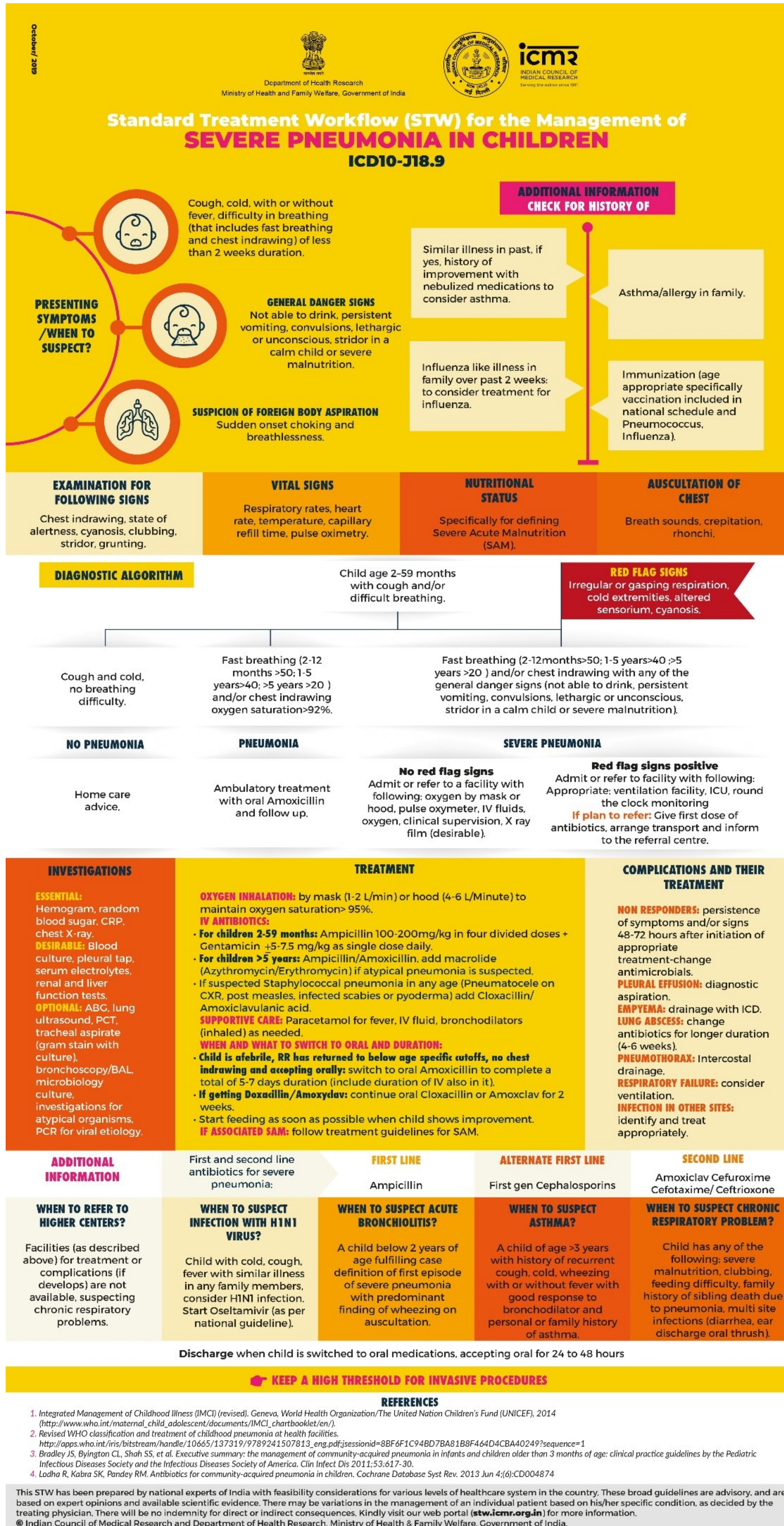
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Standard Treatment Workflow (STW) for the Management of
SEVERE PNEUMONIA IN CHILDREN
ICD10-J18.9
PRESENTING SYMPTOMS /WHEN TO SUSPECT?
Cough, cold, with or without fever, difficulty in breathing (that includes fast breathing and chest indrawing) of less than 2 weeks duration.
GENERAL DANGER SIGNS
Not able to drink, persistent vomiting, convulsions, lethargic or unconscious, stridor in a calm child or severe malnutrition.
SUSPICION OF FOREIGN BODY ASPIRATION
Sudden onset choking and breathlessness.
ADDITIONAL INFORMATION
CHECK FOR HISTORY OF
Similar illness in past, if yes, history of improvement with nebulized medications to consider asthma.
Asthma/allergy in family.
Influenza like illness in family over past 2 weeks: to consider treatment for influenza.
Immunization (age appropriate specifically vaccination included in national schedule and Pneumococcus, Influenza).
EXAMINATION FOR FOLLOWING SIGNS
Chest indrawing, state of alertness, cyanosis, clubbing, stridor, grunting.
VITAL SIGNS
Respiratory rates, heart rate, temperature, capillary refill time, pulse oximetry.
NUTRITIONAL STATUS
Specifically for defining Severe Acute Malnutrition (SAM).
AUSCULTATION OF CHEST
Breath sounds, crepitation, rhonchi.
DIAGNOSTIC ALGORITHM
Child age 2-59 months with cough and/or difficult breathing.
RED FLAG SIGNS
Irregular or gasping respiration, cold extremities, altered sensorium, cyanosis.
Cough and cold, no breathing difficulty.
Fast breathing (2-12 months >50; 1-5 years>40; >5 years >20) and/or chest indrawing oxygen saturation>92%.
Fast breathing (2-12months>50; 1-5 years>40 ;>5 years >20) and/or chest indrawing with any of the general danger signs (not able to drink, persistent vomiting, convulsions, lethargic or unconscious, stridor in a calm child or severe malnutrition).
NO PNEUMONIA
PNEUMONIA
SEVERE PNEUMONIA
Home care advice.
Ambulatory treatment with oral Amoxicillin and follow up.
No red flag signs
Admit or refer to a facility with following: oxygen by mask or hood, pulse oxymeter, IV fluids, oxygen, clinical supervision, X ray film (desirable).
Red flag signs positive
Admit or refer to facility with following: Appropriate: ventilation facility, ICU, round the clock monitoring
If plan to refer: Give first dose of antibiotics, arrange transport and inform to the referral centre.
INVESTIGATIONS
ESSENTIAL: Hemogram, random blood sugar, CRP, chest X-ray.
DESIRABLE: Blood culture, pleural tap, serum electrolytes, renal and liver function tests.
OPTIONAL: ABG, lung ultrasound, PCT, tracheal aspirate (gram stain with culture), bronchoscopy/BAL, microbiology culture, investigations for atypical organisms, PCR for viral etiology.
TREATMENT
OXYGEN INHALATION: by mask (1-2 L/min) or hood (4-6 L/Minute) to maintain oxygen saturation> 95%.
IV ANTIBIOTICS:
· For children 2-59 months: Ampicillin 100-200mg/kg in four divided doses + Gentamicin ±5-7.5 mg/kg as single dose daily.
· For children >5 years: Ampicillin/Amoxicillin, add macrolide (Azythromycin/Erythromycin) if atypical pneumonia is suspected.
· If suspected Staphylococcal pneumonia in any age (Pneumatocele on CXR, post measles, infected scabies or pyoderma) add Cloxacillin/ Amoxiclavulanic acid.
SUPPORTIVE CARE: Paracetamol for fever, IV fluid, bronchodilators (inhaled) as needed.
WHEN AND WHAT TO SWITCH TO ORAL AND DURATION:
· Child is afebrile, RR has returned to below age specific cutoffs, no chest indrawing and accepting orally: switch to oral Amoxicillin to complete a total of 5-7 days duration (include duration of IV also in it).
· If getting Doxacillin/Amoxyclav: continue oral Cloxacillin or Amoxclav for 2 weeks.
· Start feeding as soon as possible when child shows improvement.
IF ASSOCIATED SAM: follow treatment guidelines for SAM.
COMPLICATIONS AND THEIR TREATMENT
NON RESPONDERS: persistence of symptoms and/or signs 48-72 hours after initiation of appropriate treatment-change antimicrobials.
PLEURAL EFFUSION: diagnostic aspiration.
EMPYEMA: drainage with ICD.
LUNG ABSCESS: change antibiotics for longer duration (4-6 weeks).
PNEUMOTHORAX: Intercostal drainage.
RESPIRATORY FAILURE: consider ventilation.
INFECTION IN OTHER SITES: identify and treat appropriately.
ADDITIONAL INFORMATION
First and second line antibiotics for severe pneumonia:
FIRST LINE
Ampicillin
ALTERNATE FIRST LINE
First gen Cephalosporins
SECOND LINE
Amoxiclav Cefuroxime Cefotaxime/ Ceftrioxone
WHEN TO REFER TO HIGHER CENTERS?
Facilities (as described above) for treatment or complications (if develops) are not available, suspecting chronic respiratory problems.
WHEN TO SUSPECT INFECTION WITH H1N1 VIRUS?
Child with cold, cough, fever with similar illness in any family members, consider H1N1 infection. Start Oseltamivir (as per national guideline).
WHEN TO SUSPECT ACUTE BRONCHIOLITIS?
A child below 2 years of age fulfilling case definition of first episode of severe pneumonia with predominant finding of wheezing on auscultation.
WHEN TO SUSPECT ASTHMA?
A child of age >3 years with history of recurrent cough, cold, wheezing with or without fever with good response to bronchodilator and personal or family history of asthma.
WHEN TO SUSPECT CHRONIC RESPIRATORY PROBLEM?
Child has any of the following: severe malnutrition, clubbing, feeding difficulty, family history of sibling death due to pneumonia, multi site infections (diarrhea, ear discharge oral thrush).
Discharge when child is switched to oral medications, accepting oral for 24 to 48 hours
KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES
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This STW has been prepared by national experts of India with feasibility considerations for various levels of healthcare system in the country. These broad guidelines are advisory, and are based on expert opinions and available scientific evidence. There may be variations in the management of an individual patient based on his/her specific condition, as decided by the treating physician. There will be no indemnity for direct or indirect consequences. Kindly visit our web portal (stw.icmr.org.in) for more information.
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