## Pneumonia questions

1. Why is this algorithm only for children less than 5 years old? Can it be used for older children or adults? The guidelines so far developed are based on the available evidence for children less than 5 years. Although clinicians have used these algorithms in older children, we will need further evidence (and age-specific guidelines) for these groups of children (re: Macpherson L et al, BMJ Global Health 2019).
2. How can we tell if there is cyanosis? This is examined and interpreted as bluish discolouration under the gum or on the tongue (commonly called central cyanosis)
3. What does AVPU stand for? AVPU is an acronym for Alert, responds to Verbal stimulus, responds to Painful stimulus and Unresponsive to (or inappropriately responds to) painful stimulus. When sick children are clinically assessed for their neurological status (level of consciousness and wakefulness), they will be graded on AVPU scale as either at A, V, P or U.
4. The ‘P’ is for pain but how should one access pain? A painful stimulus is applied by rubbing one’s knuckles/exerting firm pressure on the child’s sternum (breast bone). If the infant/child (usually over 9 months of age) responds by pushing away the examiner’s hand, this is considered an appropriate response and the infant/child is graded at P. If the infant less than 9 months cries vigorously (not a weak cry/moan), this is also considered an appropriate response. Other responses (weak cry, moaning, wiggles, or no response are considered inappropriate and the infant/child will be graded at U
5. The ‘V’ is for verbal but what if the child is too young to be verbal? Verbal response means appropriate response to a verbal stimulus such as when you call out the infant/child or when you clap hands near the baby’s ear. It does not mean the infant/child verbalizing. Response that is expected (appropriate) is opening the eyes, coos, with or without crying to the verbal stimulus. The only challenge will be for infants/children with hearing impairment.
6. Does wheezing definitely indicate it is not pneumonia? Wheezing, a high pitched sound often heard when the lower airway pipes are narrowed plus with mucus fluid has commonly been associated with asthma. However it might also mean other diseases that lead to lower airway pipe narrowing including pneumonia.
7. Is stridor the same as wheezing? Stridor occurs with upper airway narrowing, while wheezing occurs with lower airway narrowing. Causes of stridor are therefore different from those of wheezing.
8. How should I check oxygen saturation? One needs a gadget called oxygen saturation monitor with a small probe attached to it and connected to the child/infant (usually on a digit). The probe has light sensitive sensor that will analyse the oxygen levels in the bloodstream and send the information on the monitor in percentages (0-100%) with Oxygen levels over 94% as normal.
9. How can I tell if the child is grunting? Grunting is noisy breathing usually indicating very high effort to get air in the lungs (increased work of breathing). It’s characteristics are different from stridor and wheezing
   1. What is a grunting respiration (grunting respirations are noisy breathing, similar as described above)
10. How rapid is rapid breathing? This is age specific. Breathing is considered fast if it is greater than or equal to 50 breaths/minute (infants up to 11months) and 40 breaths/minute (older children 12months to 5 years). One has to count for a whole minute the number of breaths
11. How slow is very slow breathing? Very slow breathing in all children less than 5 years is breathing less than 12 breaths per minute (which requires that artificial/assisted ventilation is performed with a bag/mask device)
12. What is indrawing? This is assessed by examining the chest wall during breathing in (inspiration). The space in between the ribs as well as the lower end of the ribs. Indrawing means moving in of the space in between the ribs or at the lower end of the chest wall during inspiration.
13. How can I tell if breathing is deep? Deep breathing is subjectively assessed (by looking during breathing) and is interpreted as excessive chest wall movement (inspiration). A better way to put it is how one breaths after running for a 100 meters.
14. How fast is a very fast large pulse? This is age specific. For infants, this is a pulse rate of equal to or greater than 180/minute and for children 1-5 years of greater than 160/minute
15. How slow is a very slow large pulse? For infants and children (up to the beginning of puberty), this is a pulse of less than 60 beats/minute
16. How to tell if the peripheral pulse is weak? The examiner has to compare the peripheral (usually radial pulse) and central pulse (either carotid or brachial/femoral) and subjectively interpret if the peripheral pulse as not easy to feel, thready, weak or sometimes absent.
17. How can I be sure a pulse is not palpable? When placing firmly one’s fingers on where the artery passes, e.g the carotid pulse, one is unable to feel the pulsation.
18. How should I decide if a chest is “indrawing”? One will need to observe the exposed chest of the infant/child during breathing. Lower Chest indrawing is present if the lower ribs on the chest moves in during breathing in. Sometimes there may also be indrawing in between the ribs (intercostal recession) during breathing in. Both lower chest and intercostal indrawing are abnormal, and are signs of difficulty in breathing/increased work of breathing
19. What are the signs of severe dehydration? These include lethargy, irritability, delayed skin turgor and sunken eyes. Other signs include rapid pulses and cold extremities.
20. What are the signs of severe pallor? Clinically identified as pale/white discoloration of hands and mucous membranes.
21. What are the signs of severe malnutrition? Identified as low weight for height/length of ≤3 Z score or visible severe muscle wasting Or a Mid Upper Arm Circumference MUAC of <11.5cm
22. How long is a prolonged skin pinch? ≥2 seconds
23. How should I “position” a child? Positioning commonly refers to an aspect of airway management for children with reduced level of consciousness, less than alert. For a child, the correct position of the airway is placing the head into a sniffing position
24. How can I get a child to open their mouth? If they are of verbal age and will obey commands, you will ask them to open the mouth. If they are non-verbal (young children and infants or are not alert), you will have to open it by pulling the chin down. Alternatively, when they cry, their mouth will open.
25. What should I expect to see when I look in the mouth? Normally you will see the normal organs such as the tongue and teeth. There might however be foreign material such as vomitus, food particles or other residue.
26. How should I decide if there is a “history of a cough”? How often? How long? History of cough is elicited by asking the parent/caretaker, E.G has your baby been coughing, for how many days now, and is it related to e.g time of the day/night or crying?
27. How do I know if a child is unable to drink? This is assessed by asking the mother e.g to attempt to breastfeed as you watch or to attempt to give the child something to drink over a cup as you observe. If they are not able to e.g due to looking tired, limp or the severity of the illness, then one says there is inability to drink/breastfeed/feed
28. How do I elicit a history of cough? As mentioned in Q 26
29. How do I know if a child has difficulty with breathing? There are clinical signs that indicate difficulty in breathing (also called respiratory distress) and include fast breathing, chest indrawing, head bobbing, deep breathing, grunting respirations, wheezing. Any of these signs indicates difficulty in breathing.
30. When should I give O2? All children signs of difficulty in breathing should be given oxygen. If Oxygen is limited, priority should be given to those with signs of severe respiratory distress such as grunting respirations, wheezing and fast breathing associated with fatigue. Children whose oxygen saturation is less than 90% and/or who have central cyanosis are also a high priority for being given oxygen
31. What is a septic screen and when should I do it? Sick children may require additional assessment besides clinical signs. This additional assessment includes drawing their blood (sometimes also urine and fluid from their spine, called Cerebral Spinal Fluid, CSF) to determine if they have any evidence of infection and where possible the infection causing organisms. This is what constitutes a septic screen.