Technical Report

ePOCT+ Rwanda: A Clinical Decision Support Algorithm For Managing Sick Children Below 15 Years of Age in Primary Healthcare Settings

Vera von Kalckreuth[1,2], Victor P. Rwandarwacu[1], Ludovico Cobuccio[1,3], Théophile Dusengumuremyi[1], Gillian A. Levine[2,4], Martin Norris[2,4], Alix Miauton[3], Rainer Tan[2,3,4], Emmanuel Rusingiza[5,6], Christian Umuhoza[5,6,7], Florent H. Rutagarama[5,6], Hippolyte B. Muhire[5], John Baptist Nkuranga[8], Nina Vaezipour[4,9], Kristina Keitel[2,4,10], Fenella Beynon[2,4], Lisine Tuyisenge[5,7], Valérie D'Acremont[2,3,4], Alexandra V. Kulinkina[2,4*]

[1]*Swiss Tropical and Public Health Institute, Kigali, Rwanda*
[2]*Swiss Tropical and Public Health Institute, Basel, Switzerland*
[3]*Centre for Primary Care and Public Health, University of Lausanne, Lausanne, Switzerland*
[4]*University of Basel, Basel, Switzerland*
[5]*Rwanda Paediatric Association, Kigali, Rwanda*
[6]*University of Rwanda, Kigali, Rwanda*
[7]*University Teaching Hospital of Kigali, Kigali, Rwanda*
[8]*Department of Paediatrics, King Faisal Hospital, Kigali, Rwanda*
[9]*University Children's Hospital of Basel, Basel Switzerland*
[10]*Division of Pediatric Emergency Medicine, University Children's Hospital Bern, Bern, Switzerland*

***Corresponding author:** Alexandra V. Kulinkina. University of Basel, Basel, Switzerland. Email: alexandra.kulinkina@swisstph.ch. ORCID: https://orcid.org/0000-0002-4777-1254

Cite as: von Kalckreuth V, Rwandarwacu VP, Cobuccio L, Dusengumuremyi T, Levine GA, Norris M, Miauton A, Tan R,Rusingiza E, Umuhoza C, Rutagarama FH, Muhire HB, Nkuranga JB, Vaezipour N, Keitel K, Beynon F, Tuyisenge L, D'Acremont V, Kulinkina AV. ePOCT+ Rwanda: A Clinical Decision Support Algorithm For Managing Sick Children Below 15 Years of Age in Primary Healthcare Settings. Rwanda J Med Health Sci. 2025;8(1): 148-162. https://dx.doi.org/10.4314/rjmhs.v8i1.13.

Abstract

Primary health systems in resource-constrained settings suffer from human resource shortages, low quality care, and diagnostic uncertainty, resulting in over-reliance on antibiotics, increasing risks of antimicrobial resistance. Digital clinical decision support algorithms (CDSAs) help healthcare workers adhere to clinical guidelines and improve prescribing practices. In this manuscript, we present the scope and content of 'ePOCT+ Rwanda' (electronic Point-Of-Care Tests +), a CDSA trialed in primary health centers of Rusizi and Nyamasheke districts during the DYNAMIC project. The algorithm is based on the WHO IMCI guidelines, expanded to include a broader range of ages (between 1 day and 14 years, inclusive) and acute medical conditions encountered in primary care (57 diagnoses for young infants < 2 months and 144 diagnoses for children 2 months to 14 years). The digital application used to deploy ePOCT+ prompts users to enter the results of medical history, physical examinations and laboratory tests to propose diagnoses, treatments and managements. In addition to routine point-of-care tests, ePOCT+ utilizes haemoglobin and C-reactive protein tests, as well as pulse oximetry, targeted to specific clinical conditions. We discuss the rationale behind the content of the algorithm and the process of aligning it with the Rwandan paediatric guidelines and tailoring it to the primary care setting.

Rwanda J Med Health Sci 2025;8(1):148-162

Keywords: Clinical decision support, algorithm, primary care, CDSA, CDSS, clinical guidelines, child health, digital health, Rwanda

Introduction

Human resource shortages are a significant challenge to health systems globally, and especially in resource-constrained and remote primary care settings.[1,2] In addition to the overall low number of health workers, their educational background or level of medical training is often insufficient for the services they are expected to provide.[3] Clinical guidelines, in theory, can help address some of these knowledge gaps. Guidelines synthesize medical evidence into actionable information,[4] and when adhered to, can standardize patient management and improve quality of care[5,6] by increasing evidence-based practices. However, adherence to paper-based guidelines tends to be low,[7] in part due to their narrative nature and typical focus on a single condition,[4] while patients often present with multiple complaints. This requires simultaneous consideration of several guidelines,[8] which is difficult given high patient volumes, limited consultation time, and sometimes conflicting advice. This combination of health worker shortages, clinical skills and knowledge gaps, and non-adherence to clinical guidelines results in uncertainty in diagnosing and treating patients, and subsequently low quality of services in primary care settings. Over-prescription of antibiotics,[9–11] is a key example of such uncertainty and low service quality, contributing to the rise of antimicrobial resistance.[12]

With the recent advances in information and communication technology leading to increased internet connectivity and decreased cost of electronic devices, governments have embraced digital technologies to improve the quality of healthcare. In particular, clinical decision support algorithms (CDSAs) have enabled complex integration of multiple clinical guidelines into logical workflows that clinicians can follow throughout the consultation. These tools have the potential to augment the quality of healthcare and help narrow the existing gaps in human resources.

The use of CDSAs has demonstrated improved adherence to guidelines,[13] better clinical outcomes,[14,15] and in some cases significant reduction in antibiotic prescriptions[14,16] at the primary care level, especially if the CDSAs integrate the use of point-of-care tests.[17,18]

The goal of this manuscript is to describe the development and clinical content of a digital CDSA called ePOCT+ (electronic Point-Of-Care Tests +) in Rwanda. The aim of the algorithm is to improve the management of acutely ill children between 1 day and 14 years of age (inclusive) in the primary care setting, and particularly to decrease the unnecessary use of antibiotics, without compromising clinical safety. Such antibiotic stewardship interventions are essential in addressing the growing levels of antimicrobial resistance in Rwanda.[19,20] In addition to synthesizing clinical guidelines relevant to the pediatric age group, the algorithm recommends targeted use of pulse oximetry, haemoglobin, and C-reactive protein (CRP) point-of-care tests, currently not routinely used in pediatric primary care in Rwanda, to improve patient classification and propose appropriate management. Implementation of ePOCT+ is being evaluated in health centers in the Western province as part of the DYNAMIC research project.

Context and rationale

The DYNAMIC project introduced the digital CDSA in 32 primary health centers in Rusizi and Nyamasheke districts. Healthcare workers providing care to acutely ill children were trained in using the CDSA and pulse oximeters, along with a refresher on basic clinical skills. Laboratory technicians were trained in measuring haemoglobin and CRP levels. All children aged 1 day to 14 years (inclusive) seeking care for an acute illness at participating health centers are deemed eligible and treated with the digital CDSA if written consent is provided by their caregiver. The CDSA is deployed on an open-source tablet-based Android application called medAL-reader (medical algorithm reader),[21] with content available in English and French.

The sequence of questions in the application follows a logical consultation workflow including patient demographics, basic measurements, medical history, physical exams, laboratory tests, diagnosis, treatment and management, so that the healthcare workers can use it step-by-step while consulting patients. Apart from using the CDSA and point-of-care tests where recommended, consultations are done as usual. When required, pulse oximetry is performed by the healthcare providers in the consultation room, whereas the haemoglobin and CRP tests are done in the laboratory by trained technicians, as per normal operation of the health centers. At the end of the consultation, the algorithm proposes diagnoses, treatments, and managements, based on demographic and clinical characteristics of the child and lab test results that have been entered in the application. The proposed diagnoses and treatments can be accepted, rejected, or modified according to the healthcare worker's clinical judgment. The target level of care for ePOCT+ Rwanda is primary care facilities, and the target end-users are nurses with a professional certificate of secondary education (A2), advanced diploma (A1) and bachelor level (A0).[22]

The algorithm is based on the WHO Integrated Management of Childhood Illness (IMCI) guidelines,[23–25] which is the standard of care for children under 5 years of age in Rwanda. However, there are several important differences between IMCI and ePOCT+ Rwanda: (1) ePOCT+ includes an extended age range from 1 day to 14 years (inclusive); (2) the number of diagnoses covered by the algorithm is also extended, while maintaining focus on acute outpatient medical and surgical problems; and (3) ePOCT+ includes routine laboratory tests recommended by IMCI and available in health centers (HIV and malaria rapid diagnostic tests), tests not included in IMCI but available in health centers (urinalysis, blood glucose level, stool microscopy, syphilis rapid diagnostic test), and some additional devices (pulse oximeter) and point-of-care tests (haemoglobin, CRP) that are not currently available or routinely used for children at the primary care level (i.e., haemoglobin is used mainly for pregnant women). Previous versions of digital IMCI-based algorithms with [14] and without [26] point-of-care tests have been validated in previous research studies.

The rationale for extending the age range of the algorithm is to standardize clinical care for older children and young adolescents, who are often not the focus of international and national guidelines in low-resource settings. Lack of focus on this older age group in health policies and interventions has resulted in a slower decrease in their morbidity and mortality levels compared to children under 5 years.[27] Further, in prior studies, healthcare workers have expressed frustration about not having access to comprehensive information to treat the full range of health conditions they encountered,[28] (the focus of IMCI being on diseases with high mortality rather than those that are minor but still very frequent). Therefore, we extended the scope of the algorithm to support healthcare workers in providing evidence-based care for children presenting with additional non-IMCI conditions, streamlining their workflow and making the tool more relevant to their practice.[29] Lastly, we incorporated pulse oximetry and the haemoglobin test to improve the identification of children at risk for developing severe disease, as well as the CRP test to help differentiate between bacterial and viral infections and better guide in prescribing antibiotics.

Algorithm development and adaptation

The starting point for developing ePOCT+ was an IMCI-based algorithm for managing children between 2 months and 5 years called ePOCT, developed and tested in a previous study in Tanzania.[14] Content for managing sick young infants (below 2 months) and older children (5-14 years) was subsequently added, while also expanding the list of conditions for the IMCI age group (2-59 months). Criteria considered when expanding the scope of the algorithm were: 1) prevalence of syndromes/diseases; 2)

burden of associated morbidity, mortality, and outbreak potential; 3) capacity to diagnose and manage at the primary care level; and 4) existing evidence-based guidelines on assessment and management. The detailed approach and process to developing the expanded content of ePOCT+ is described elsewhere.[30]

The content of ePOCT+ was then adapted to the Rwandan setting based on the local disease prevalence, relevant national clinical guidelines and lists of essential medicines,[25,31–44] and the actual availability of medicines at the health center level (Figure 1).

The DYNAMIC project clinical team reviewed relevant national guidelines and adapted the algorithm accordingly. The adapted algorithm was reviewed by a Rwandan neonatal expert for young infants (< 2 months) and an expert clinical group of five Rwandan paediatricians for other children (2 months to 14 years). Feedback was solicited one-on-one from each expert, including general feedback upon their review of the full algorithm content, and specific feedback in response to a list of questions posed by the project clinical team.

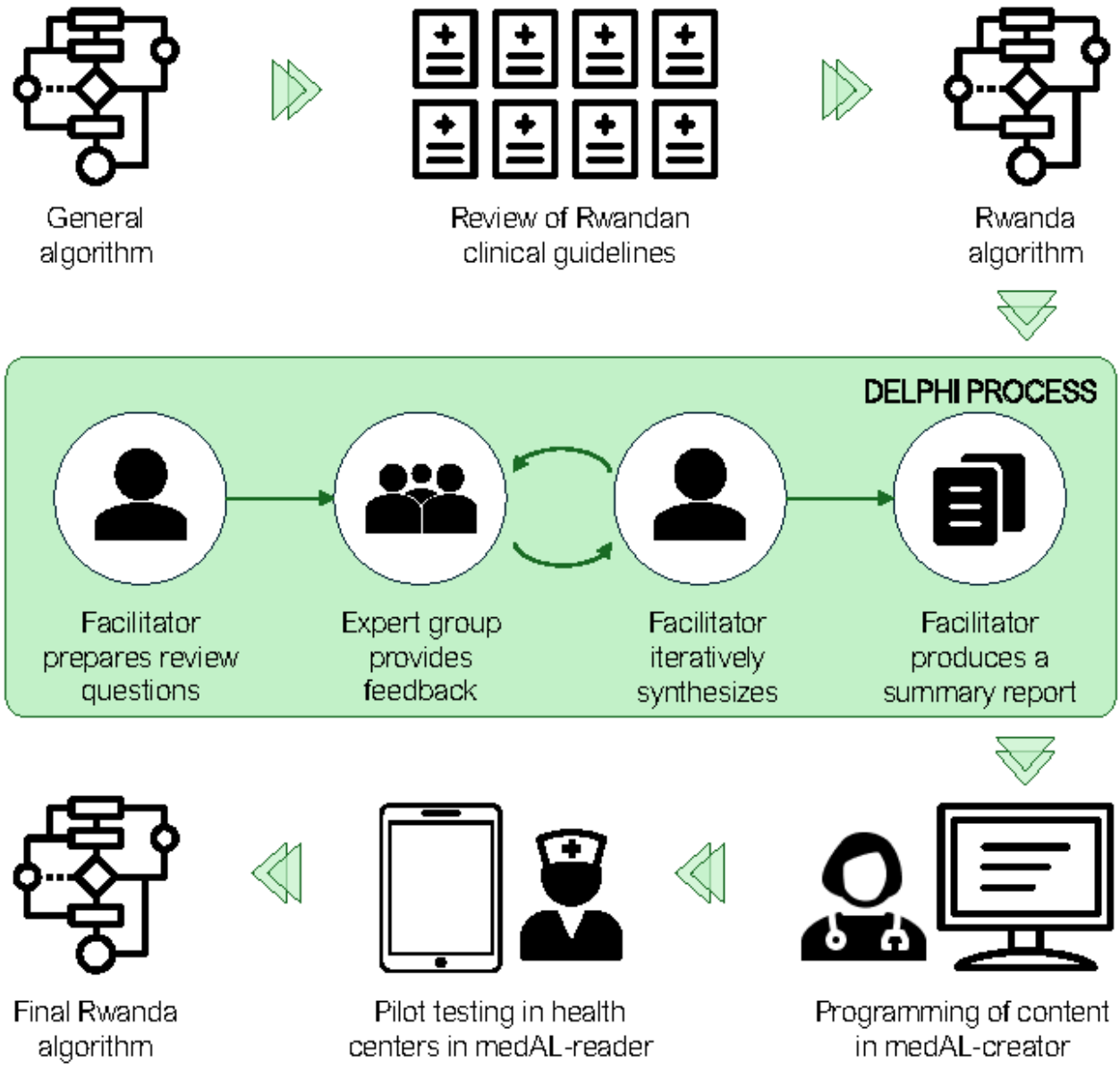


Figure 1. Overview of the algorithm adaptation process.
Adaptation was done iteratively with revisions to the algorithm at every step before and after the Delphi process. Icons were obtained from the Noun Project (CC BY 3.0) https://thenounproject.com and https://healthicons.org

Where the opinions of experts differed, a modified Delphi method was used to gain consensus. A final group meeting was held, in which the various opinions were presented and discussed, and whenever a consensus had not been achieved, an anonymous majority vote took place. Upon revision of the algorithm, study clinicians programmed its content in the medAL-creator software (a code-free drag-and-drop interface to design algorithms).[21] The algorithm was then deployed on tablets using the complementary medAL-reader software,[21] and pilot-tested in a health center (Figure 1). The final algorithm was released upon further minor modifications following piloting. Of note, minor modifications continued throughout the implementation process (and are still ongoing); this manuscript presents the algorithm that was in use during the DYNAMIC research project.

Algorithm content

The ePOCT+ algorithm in Rwanda includes a total of 57 diagnoses for young infants (< 2 months) and 144 diagnoses for other children (2 months to 14 years) (Table 1). When health workers use the medAL-reader application containing ePOCT+, they are guided through a comprehensive clinical consultation. Questions and assessments depend on the child's age and clinical presentation (Figure 2). Some questions and assessments are prompted for all children or young infants within a respective age group according to IMCI (i.e., systematic assessment for danger signs and other signs of severe illness, basic measurements to assess malnutrition status, among others). In young infants, these relate to severe and local infections, feeding and weight problems, jaundice, diarrhea, and HIV risk and status,[24] and for older children, to common complaints of fever, cough and difficult breathing, diarrhea, and ear problems, as well as assessment of chronic conditions, jaundice, palmar/conjunctival pallor, and screening for HIV and TB.[23]

Additional assessments relate to the main complaint categories as reported by caregivers (Figure 2), which serve as entry points into diagnostic decision trees, and subsequently lead to specific diagnoses and corresponding treatment and management plans (Annex). The rationale,[14] and diagnostic algorithms in which point-of-care tests are used are provided in Table 2. Diagnostic decision trees showing precisely how the results inform clinical decisions are shown in the Annex.

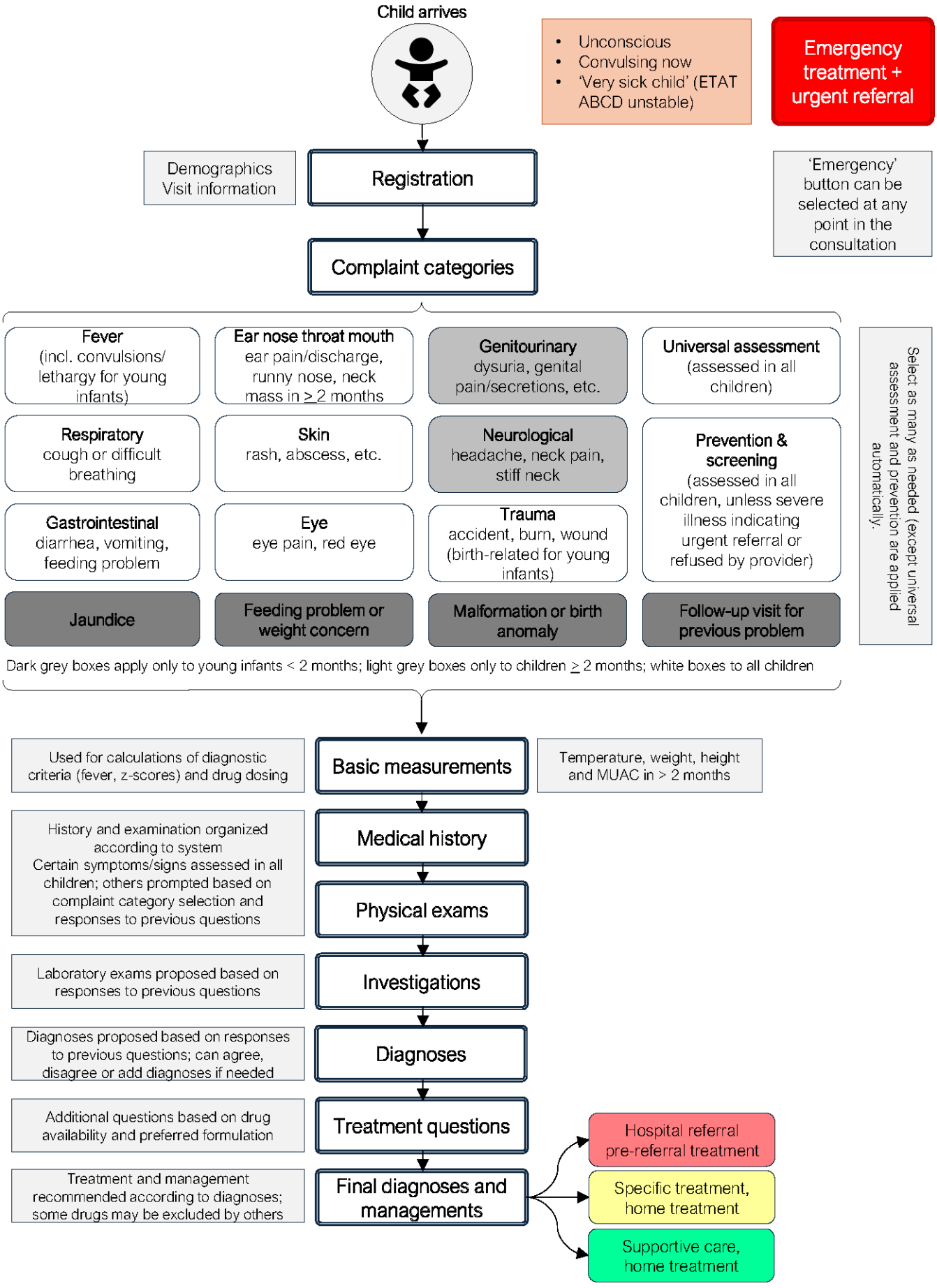


Figure 2. Consultation flow of ePOCT+ in the medAL-reader digital application.

Table 1. List of diagnoses included in the ePOCT+ algorithm.
Bolded diagnoses are not present in the 2020 edition of the Rwanda IMCI guidelines.[25]

Category	Diagnoses	
	Young infants (< 2 months)	**Older children (2 months – 14 years)**
General / Fever	Critical illness, Severe clinical infection, Feeding problems [Lactation/**Lack of weight gain**/Insufficient feeds/Lack of exclusive breastfeeding/Mixed feeding in infants with HIV positive mother], [Very low/Low] weight for age, [Physiological/**Prolonged**/Severe] jaundice, Confirmed HIV infection, HIV [Exposed/Unknown/Unlikely], Incomplete vaccination	**Simple febrile** convulsion, CNS danger sign, Very severe febrile disease, Prolonged fever, **Complicated prolonged fever**, **Typhoid fever**, [Severe/Uncomplicated/Suspected/Severe suspected] malaria, **Fever without source: presumed** [**viral/bacterial**], [Mild-moderate/Severe] anaemia, [Complicated/Uncomplicated] severe acute malnutrition, Moderate malnutrition, HIV [Exposed/Possible/Negative/Test unavailable], HIV positive mother, Hypoglycaemia, **Hyperglycaemia, Known** [**sickle cell disease/cerebral palsy/congenital heart disease/**HIV], Prevention and screening
Respiratory	**Pneumonia, Severe pneumonia, Respiratory tract infection**	[Severe/**Bacterial/Viral**] pneumonia, [**Severe/Mild**] **croup,** Common cold, **Reactive airway disease, Suspicion of foreign object in airways, Haemoptysis**, Suspicion of tuberculosis
Digestive	Diarrhoea with [no/some/severe] dehydration, Persistent diarrhoea, Dysentery, **Severe abdominal problem** **Uncomplicated vomiting**	[Severe/Some] dehydration, Acute diarrhoea, Dysentery, **Persisting dysentery**, Persistent diarrhoea, Severe persistent diarrhoea, [**Severe/Non-severe**] **abdominal condition, Constipation, Loss of appetite, Oxyuriasis, Intestinal parasitic infection:** [**protozoa/nematode**]
Genitourinary	--	**Lower urinary tract infection (cystitis), Pyelonephritis, Persisting pyelonephritis, Primary syphilis, Presumed primary syphilis, Presumed genital HSV, Urethral discharge syndrome, Inguinal bubo (lymphogranuloma venereum), Vulvovaginitis, Vaginal candidiasis, Vaginal discharge syndrome, Pelvic inflammatory disease, Dysmenorrhea, Pregnancy, Negative pregnancy test, Inguinal hernia, Balanitis, Suspected testicular torsion**
Neurological	--	**Non-severe headache,** Suspicion of meningitis
Accident / musculoskeletal	[**Uncomplicated/Complicated**] **Superficial wound**, [**Uncomplicated/Complicated**] **Deep wound**, **Birth-related soft tissue injury, Congenital muscular torticollis**	[**Uncomplicated/Complicated**] **Superficial wound**, [**Uncomplicated/Complicated**] **Deep wound,** [**Major/Minor**] **burn, Major trauma,** [**Major/Moderate/Minor**] **head injury, Confirmed fracture, Confirmed dislocation, Suspected fracture/dislocation, Confirmed clavicular fracture, Contusion,** [**Acute/Chronic**] **limp or joint pain, Osteomyelitis/septic arthritis, Carbon monoxide poisoning, Inhalation injury, Suspicion of poisoning, Uncomplicated suspicion of poisoning**
Skin	[Severe/Local] skin infection, Omphalitis, Severe Omphalitis, **Abscess, Cellulitis, Mastitis, Diaper rash, Heat rash, Scabies, Erythema toxicum, Mongolian spots, Transient neonatal pustular melanosis**	[**Complicated/Simple**] **abscess,** [**Complicated/Uncomplicated] cellulitis,** [**Complicated/Uncomplicated**] **impetigo, Folliculitis, Extensive folliculitis, Pediculosis, Scabies, Tinea capitis, Tinea corporis, Generalized tinea corporis, Pityriasis versicolor, Molluscum contagiosum, Non-specific viral rash,** [Severe/Non-severe] measles, **Scarlet fever,** [**Complicated/Uncomplicated**] **chickenpox, Eczema, Urticaria, Anaphylaxis, Diaper rash, Heat rash, Herpes labialis**
Eye	Conjunctivitis, Neonatal conjunctivitis, **Severe eye problem**	**Severe eye disease,** [Bacterial**/Viral/Allergic**] **conjunctivitis,** [**Preseptal/Orbital**] **cellulitis, Corneal abrasion**
Ear, nose, throat, mouth	**Acute otitis media**, oral thrush	[**Complicated/Uncomplicated**] acute ear infection, Chronic ear infection, Mastoiditis, **Foreign body in ear**, [**Bacterial/**Viral] **acute pharyngitis, Uncomplicated lymphadenopathy, Infectious lymphadenitis, Complicated neck mass, Mumps, Oral candidiasis,** Oral aphthous ulcer, **Tooth pain, Dental abscess**
Malformation or birth anomaly	**Concern for congenital syndrome, Concern for hydrocephalus, Concern for congenital heart disease, Minor anomaly, Cleft lip, Cleft palate/lip with high risk**	--

Table 2. Point-of-care tests (POCTs) that are currently not included in IMCI but recommended by the ePOCT+ Rwanda algorithm.

Test	Differential diagnoses by POCT (algorithms by age)	Type of test or assessment	Rationale for inclusion
CRP rapid test	1 month to < 2 months: Pneumonia vs. Respiratory tract infection (viral suspected). ≥ 2 months: Fever without source, presumed viral vs. bacterial cause; Febrile urinary tract infection (≥ 3 months to 2 years only if moderate CRP and positive urine dipstick); Pneumonia, viral vs. bacterial cause; Limp/joint pain vs. Osteomyelitis/Septic arthritis.	Semiquantitative immunochromatographic test that uses whole blood of a finger prick (categories of <10mg/L, 10-40mg/L, 40-80mg/L, 80mg/L and above); latter two categories signify a possible bacterial infection, except in some cases of young infants the threshold for bacterial infection is lower at 10-40 mg/L.	Symptoms and signs have been shown to be poor predictors of radiological pneumonia.[45–47]CRP can help better identify children with end-point pneumonia on a chest x-ray[48,49] or invasive bacterial pneumonia,[50–52] as opposed to other types of pneumonia. The use of CRP during the initial diagnostic process in patients with acute respiratory infections has shown to reduce antibiotic prescriptions. [53,54] In the management of osteomyelitis and fever without source, CRP has shown to be useful in some studies.[55,56]
Hb rapid test	≥ 2 months: Severe vs. Moderate/Mild anaemia	Spectrophotometric measurement with a hemoglobinometer that uses whole blood of a finger prick.	Severe anaemia is a risk factor for mortality in children. [57–61] No symptoms or signs allow to reliably detect (even severe) anaemia in children due to their poor sensitivity and specificity .[62–64]
Urine dipstick test	≥ 2 years to <15 years: Lower urinary tract infection vs. Vulvovaginitis vs. Pyelonephritis. ≥ 3 months to 2 yrs: Febrile urinary tract infection vs. Fever without source	Multiparameter urinalysis test strips that use middle stream urine.	The cause of fever without source in approximately 7% of children is a urinary tract infection (UTI) .[65,66] Management of febrile UTI requires targeted antibiotic treatment. UTI in infants and young children is difficult to diagnose clinically. A urine dipstick positive for leukocyte esterase or nitrite correlates with a high likelihood of a positive urine culture, whereas a dipstick negative for both helps to rule out UTI.[67]
Pulse oximetry*	< 2 months: Performed in all YI; Critical illness or Concern for congenital heart disease ≥ 2 months: Severe pneumonia vs. Pneumonia	Non-invasive technique of measuring blood oxygen saturation and heart rate using an oximeter with age-appropriate finger/toe probe.	Hypoxaemia and tachycardia can be detected by pulse oximetry. Both signs are known predictors of severe infection [68] and severe outcome.[26,69–71]

* Pulse oximetry (if available) is recommended by the global 2014 IMCI version[23] for children with cough or difficult breathing, but not by the 2020 Rwanda IMCI version.[25]

Conclusion

The goal of this manuscript was to describe the content of ePOCT+ Rwanda, a digital clinical decision support algorithm to manage acutely ill children in outpatient primary care settings. The aim of the algorithm, together with complementary point-of-care tests and devices, is to improve adherence to evidence-based guidelines for assessment, diagnosis, treatment and management of sick children, thereby improving quality of care and decreasing inappropriate antibiotic use while ensuring clinical safety. Additionally, ePOCT+ has the potential to support clinical education through learning content incorporated in the medAL-reader application and to reduce the cost of healthcare through more appropriate prescribing practices. However, implementation studies in close-to programmatic conditions are still ongoing to assess these potential benefits.

Due to the expanded scope of the algorithm, which includes many more clinical syndromes and diagnoses than the IMCI guidelines, and the explicit incorporation of management of multiple classifications/diagnoses, we expect that the uptake of the algorithm and the overall acceptance of the digital tool will be high among healthcare workers, resulting in superior adherence to clinical guidelines as compared to routine care. However, completing all of the necessary steps during consultation is not sufficient in and of itself; good clinical skills are still required in order to perform the assessments accurately and enter reliable information into the tool.[72] The algorithm's recommendations are only as good as the inputs entered by the clinicians along the way. Therefore, particular attention should be paid to enhancing and supporting clinical skills of health workers who use digital CDSAs,[72] through mentorship and supervision.

Furthermore, the option of accepting or rejecting the recommendation is given at the end of the consultation, so that healthcare workers can still tailor their final decisions to the practicalities and realities in the health centers (e.g., availability of medicines and referral pathways). Healthcare workers must possess the necessary skills and knowledge to accept the recommended course of treatment and management or to decide on alternative options that are locally available and best suited to the patient's condition.

One advantage of digital CDSAs like ePOCT+ Rwanda is that they allow for clinical content to be updated dynamically to account for new evidence or changes in guidelines more quickly than printing and distributing paper-based documents. Continuous adaptation is possible in accordance with evolving medical evidence, changing national and international guidelines, and user feedback. The unique nature of the medAL-creator algorithm authoring software with a graphical drag-and-drop user interface puts the adaptation process in the hands of experienced clinicians, rather than software developers.[21] This makes the adaptation process efficient and transparent, so that updating guidelines can be done in real-time, limiting the time-intensive and error-prone clinical-IT interactions.

Potential limitations to the impact of ePOCT+ Rwanda are the varying levels of clinical skills and digital literacy of healthcare workers and the need for re-training new staff on the usage of the software and point-of-care tests due to a high staff turnover. These challenges could be partly addressed through well-designed eLearning tools or through integration of digital algorithms and related skills into the formal nursing curriculum. Equally important to address are the healthcare providers' prescribing practices and the caregivers' expectations around antibiotics, which both require additional education, particularly in antimicrobial stewardship, regular monitoring and mentorship, as well as national and local sensitization campaigns. Further to be considered is the interoperability with other digital solutions used at the primary care level to avoid duplicative workflows.

These aspects, as well as costs, need for continuous support, monitoring and supervision, and other implementation considerations are essential in planning for sustainable and impactful deployment of digital CDSAs at scale.

Author contributions

LC, GAL, MN, AM, RT, NV, KK, FB contributed to clinical content creation and programming in medAL-creator. VPR, LC, TD, GAL, ER, CU, FHR, HBM, JBN, LT, AVK, contributed to adaptation of the content to the Rwandan guidelines and context. VDA and AVK supervised the project. VVK, VPR and AVK drafted the first version of the manuscript. All authors reviewed, provided substantive feedback, and approved the final version of the manuscript.

Conflict of interest

The authors declare that they have no conflicts of interest related to this manuscript.

References

1. GBD 2019 Human Resources for Health Collaborators. Measuring the availability of human resources for health and its relationship to universal health coverage for 204 countries and territories from 1990 to 2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet* . 2022 Jun 4;399(10341):2129–54. Available from: http://dx.doi.org/10.1016/S0140-6736(22)00532-3
2. Boniol M, Kunjumen T, Nair TS, Siyam A, Campbell J, Diallo K. The global health workforce stock and distribution in 2020 and 2030: a threat to equity and 'universal' health coverage? *BMJ Glob Health.* 2022 Jun;7(6). http://dx.doi.org/10.1136/bmjgh-2022-009316
3. Bvumbwe T, Mtshali N. Nursing education challenges and solutions in Sub Saharan Africa: an integrative review. *BMC Nurs* . 2018 Jan 31;17:3. http://dx.doi.org/10.1186/s12912-018-0272-4
4. Franco JVA, Arancibia M, Meza N, Madrid E, Kopitowski K. Clinical practice guidelines: Concepts, limitations and challenges. *Medwave.* 2020 Apr 30;20(3):e7887. http://dx.doi.org/10.5867/medwave.2020.03.7887
5. Grimshaw J, Freemantle N, Wallace S, Russell I, Hurwitz B, Watt I, et al. Developing and implementing clinical practice guidelines. *Qual Health Care.* 1995 Mar;4(1):55–64. http://dx.doi.org/10.1136/qshc.4.1.55
6. Gera T, Shah D, Garner P, Richardson M, Sachdev HS. Integrated management of childhood illness (IMCI) strategy for children under five. *Cochrane Database Syst Rev.* 2016 Jun 22;2016(6):CD010123. http://dx.doi.org/10.1002/14651858.CD010123.pub2
7. Lange S, Mwisongo A, Mæstad O. Why don't clinicians adhere more consistently to guidelines for the Integrated Management of Childhood Illness (IMCI)? *Soc Sci Med* . 2014 Mar;104:56–63. http://dx.doi.org/10.1016/j.socscimed.2013.12.020
8. Keitel K, D'Acremont V. Electronic clinical decision algorithms for the integrated primary care management of febrile children in low-resource settings: review of existing tools. *Clin Microbiol Infect* . 2018 Aug;24(8):845–55. http://dx.doi.org/10.1016/j.cmi.2018.04.014
9. Fink G, D'Acremont V, Leslie HH, Cohen J. Antibiotic exposure among children younger than 5 years in low-income and middle-income countries: a cross-sectional study of nationally representative facility-based and household-based surveys. *Lancet Infect Dis* . 2020 Feb;20(2):179–87. http://dx.doi.org/10.1016/S1473-3099(19)30572-9

10. Levine GA, Bielicki J, Fink G. Cumulative Antibiotic Exposure in the First 5 Years of Life: Estimates for 45 Low- and Middle-Income Countries From Demographic and Health Survey Data. *Clin Infect Dis* . 2022 Oct 29;75(9):1537–47. http://dx.doi.org/10.1093/cid/ciac225
11. Huth PFB, Addo M, Daniel T, Groendahl B, Hokororo A, Koliopoulos P, et al. Extensive Antibiotic and Antimalarial Prescription Rate among Children with Acute Febrile Diseases in the Lake Victoria Region, Tanzania. *J Trop Pediatr* . 2021 Jan 29;67(1). http://dx.doi.org/10.1093/tropej/fmaa135
12. Murray CJL, Ikuta KS, Sharara F, Swetschinski L, Aguilar GR, Gray A, et al. Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis. *Lancet.* 2022 Feb 12 [cited 2023 May 30];399(10325):629–55. http://www.thelancet.com/article/S0140673621027240/abstract
13. Mitchell M, Hedt-Gauthier BL, Msellemu D, Nkaka M, Lesh N. Using electronic technology to improve clinical care - results from a before-after cluster trial to evaluate assessment and classification of sick children according to Integrated Management of Childhood Illness (IMCI) protocol in Tanzania. *BMC Med Inform Decis Mak* . 2013 Aug 27;13:95. http://dx.doi.org/10.1186/1472-6947-13-95
14. Keitel K, Kagoro F, Samaka J, Masimba J, Said Z, Temba H, et al. A novel electronic algorithm using host biomarker point-of-care tests for the management of febrile illnesses in Tanzanian children (e-POCT): A randomized, controlled non-inferiority trial. *PLoS Med*. 2017 Oct;14(10):e1002411.https://doi.org/10.1371/journal.pmed.1002411
15. Schmitz T, Beynon F, Musard C, Kwiatkowski M, Landi M, Ishaya D, et al. Effectiveness of an electronic clinical decision support system in improving the management of childhood illness in primary care in rural Nigeria: an observational study. *BMJ Open*. 2022 Jul 21;12(7):e055315. http://dx.doi.org/10.1136/bmjopen-2021-055315
16. Shao AF, Rambaud-Althaus C, Samaka J, Faustine AF, Perri-Moore S, Swai N, et al. New Algorithm for Managing Childhood Illness Using Mobile Technology (ALMANACH): A Controlled Non-Inferiority Study on Clinical Outcome and Antibiotic Use in Tanzania. *PLoS One* . 2015 Jul 10;10(7):e0132316. http://dx.doi.org/10.1371/journal.pone.0132316
17. Brigadoi G, Gastaldi A, Moi M, Barbieri E, Rossin S, Biffi A, et al. Point-of-Care and Rapid Tests for the Etiological Diagnosis of Respiratory Tract Infections in Children: A Systematic Review and Meta-Analysis. *Antibiotics (Basel)*. 2022 Sep 3;11(9). http://dx.doi.org/10.3390/antibiotics11091192
18. Van Hecke O, Raymond M, Lee JJ, Turner P, Goyder CR, Verbakel JY, et al. In-vitro diagnostic point-of-care tests in paediatric ambulatory care: A systematic review and meta-analysis. *PLoS One*. 2020 Jul 6;15(7):e0235605. http://dx.doi.org/10.1371/journal.pone.0235605
19. Sutherland T, Mpirimbanyi C, Nziyomaze E, Niyomugabo J-P, Niyonsenga Z, Muvunyi CM, et al. Widespread antimicrobial resistance among bacterial infections in a Rwandan referral hospital. *PLoS One*. 2019 Aug 23;14(8):e0221121. http://dx.doi.org/10.1371/journal.pone.0221121
20. Carroll M, Rangaiahagari A, Musabeyezu E, Singer D, Ogbuagu O. Five-Year Antimicrobial Susceptibility Trends Among Bacterial Isolates from a Tertiary Health-Care Facility in Kigali, Rwanda. *Am J Trop Med Hyg*. 2016 Dec 7;95(6):1277–83. http://dx.doi.org/10.4269/ajtmh.16-0392
21. Cobuccio L. medAL-suite: a software solution for creating and deploying complex diagnostic knowledge-based clinical decision support algorithms. In preparation.
22. Mukamana D, Uwiyeze G, Sliney A. Nursing and Midwifery Education in Rwanda: Telling our Story. *Rwanda Journal of Medicine and Health Sciences.* 2015;2(2):9–12. DOI:10.4314/rj.v2i2.1F

23. WHO. Integrated Management of Childhood Illness - Chart Booklet. *World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland: WHO Press*; 2014.
24. WHO. Integrated Management of Childhood Illness: management of the sick young infant aged up to 2 months. IMCI chart booklet. *Geneva: WHO*; 2019.
25. Republic of Rwanda Ministry of Health. Rwanda Integrated Management of Childhood Illness. 2020.
26. Rambaud-Althaus C, Shao AF, Kahama-Maro J. Genton B, d'Acremont V. Managing the Sick Child in the Era of Declining Malaria Transmission: Development of ALMANACH, an Electronic Algorithm for Appropriate Use of Antimicrobials. *PLoS One*. 2015 Jul 10;10(7):e0127674.http://dx.doi.org/10.1371/journal.pone.0127674
27. Masquelier B, Hug L, Sharrow D, You D, Hogan D, Hill K, et al. Global, regional, and national mortality trends in older children and young adolescents (5-14 years) from 1990 to 2016: an analysis of empirical data. *Lancet Glob Health* . 2018 Oct;6(10):e1087–99. http://dx.doi.org/10.1016/S2214-109X(18)30353-X
28. Bessat C, Zonon NA, D'Acremont V. Large-scale implementation of electronic Integrated Management of Childhood Illness (eIMCI) at the primary care level in Burkina Faso: a qualitative study on health worker perception of its medical content, usability and impact on antibiotic prescription and resistance. *BMC Public Health* . 2019 Apr 29;19(1):449. http://dx.doi.org/10.1186/s12889-019-6692-6
29. Beynon F, Guérin F, Lampariello R, Schmitz T, Tan R, Ratanaprayul N, et al. Digitalizing clinical guidelines: Experiences in the development of clinical decision support algorithms for management of childhood illness in resource-constrained settings. *Glob Health Sci Pract*. 2023 Aug 28;11(4). doi:10.9745/GHSP-D-22-00439
30. Tan R, Cobuccio L, Beynon F, Levine GA, Vaezipour N, Luwanda LB, et al. ePOCT+ and the medAL-suite: Development of an electronic clinical decision support algorithm and digital platform for pediatric outpatients in low- and middle-income countries. *PLOS Digit Health*. 2023 Jan;2(1):e0000170. http://dx.doi.org/10.1371/journal.pdig.0000170
31. Republic of Rwanda Ministry of Health. National Directives on Rational Use of Blood and Blood Components in Rwanda. 2018.
32. Republic of Rwanda Ministry of Health. Rwanda Tuberculosis Childhood Guidelines. 2014.
33. Republic of Rwanda Ministry of Health. National Guidelines for Prevention and Management of HIV and STIs. 2016.
34. Republic of Rwanda Ministry of Health. Neglected Tropical Diseases and Other Parasitic Diseases Clinical Treatment Guidelines. 2019.
35. Republic of Rwanda Ministry of Health. Oral Conditions Clinical Treatment Guidelines. 2012.
36. Republic of Rwanda Ministry of Health. Dermatology Clinical Treatment Guidelines. 2012.
37. Republic of Rwanda Ministry of Health. Pediatric Emergencies Clinical Treatment Guidelines. 2012.
38. Republic of Rwanda Ministry of Health. Basic Pediatric Protocols. 2014.
39. Republic of Rwanda Ministry of Health. Protocol for the Management of Acute Malnutrition. 2018.
40. Republic of Rwanda Ministry of Health. National Guidelines for Prevention and Management of Viral Hepatitis B, C and Sexually Transmitted Infection. 2019.
41. Republic of Rwanda Ministry of Health. National Neonatal Care Protocol. 2019.
42. Republic of Rwanda Ministry of Health. Ear Nose and Throat Clinical Treatment Guidelines. 2012.
43. Republic of Rwanda Ministry of Health. National Malaria Case Management Guideline. 2019.

44. Republic of Rwanda Ministry of Health. Pediatrics Clinical Treatment Guidelines. 2012.
45. Shah SN, Bachur RG, Simel DL, Neuman MI. Does This Child Have Pneumonia?: The Rational Clinical Examination Systematic Review. *JAMA* . 2017 Aug 1;318(5):462–71. http://dx.doi.org/10.1001/jama.2017.9039
46. Rambaud-Althaus C, Althaus F, Genton B, D'Acremont V. Clinical features for diagnosis of pneumonia in children younger than 5 years: a systematic review and meta-analysis. *Lancet Infect Dis* . 2015 Apr;15(4):439–50. http://dx.doi.org/10.1016/S1473-3099(15)70017-4
47. Rees CA, Basnet S, Gentile A, Gessner BD, Kartasasmita CB, Lucero M, et al. An analysis of clinical predictive values for radiographic pneumonia in children. *BMJ Glob Health*. 2020 Aug;5(8). http://dx.doi.org/10.1136/bmjgh-2020-002708
48. Erdman LK, D'Acremont V, Hayford K, Rajwans N, Kilowoko M, Kyungu E, et al. Biomarkers of Host Response Predict Primary End-Point Radiological Pneumonia in Tanzanian Children with Clinical Pneumonia: A Prospective Cohort Study. *PLoS One*. 2015 Sep 14;10(9):e0137592.http://dx.doi.org/10.1371/journal.pone.0137592
49. Agnello L, Bellia C, Di Gangi M, Lo Sasso B, Calvaruso L, Bivona G, et al. Utility of serum procalcitonin and C-reactive protein in severity assessment of community-acquired pneumonia in children. *Clin Biochem*. 2016 Jan;49(1–2):47–50. http://dx.doi.org/10.1016/j.clinbiochem.2015.09.008
50. Díez-Padrisa N, Bassat Q, Machevo S, Quintó L, Morais L, Nhampossa T, et al. Procalcitonin and C-reactive protein for invasive bacterial pneumonia diagnosis among children in Mozambique, a malaria-endemic area. *PLoS One* . 2010 Oct 14;5(10):e13226. http://dx.doi.org/10.1371/journal.pone.0013226
51. Posfay-Barbe KM, Cevey-Macherel M. Elevated Inflammatory Markers Combined With Positive Pneumococcal Urinary Antigen Are a Good Predictor of Pneumococcal Community-acquired Pneumonia in Children. *Pediatr Infect Dis J*. 2013. DOI: 10.1097/INF.0b013e31829ba62a
52. Elemraid MA, Rushton SP, Thomas MF, Spencer DA, Gennery AR, Clark JE. Utility of inflammatory markers in predicting the aetiology of pneumonia in children. *Diagn Microbiol Infect Dis* . 2014 Aug;79(4):458–62.http://dx.doi.org/10.1016/j.diagmicrobio.2014.04.006
53. Aabenhus R, Jensen J-US, Jørgensen KJ, Hróbjartsson A, Bjerrum L. Biomarkers as point-of-care tests to guide prescription of antibiotics in patients with acute respiratory infections in primary care. *Cochrane Database Syst Rev*. 2014 Nov 6;(11):CD010130. http://dx.doi.org/10.1002/14651858.CD010130.pub2
54. Smedemark SA, Aabenhus R, Llor C, Fournaise A, Olsen O, Jørgensen KJ. Biomarkers as point-of-care tests to guide prescription of antibiotics in people with acute respiratory infections in primary care. *Cochrane Database Syst Rev*. 2022 Oct 17;10(10):CD010130. Available from: http://dx.doi.org/10.1002/14651858.CD010130.pub3
55. Peltola H, Pääkkönen M. Acute osteomyelitis in children. *N Engl J Med* . 2014 Jan 23;370(4):352–60. http://dx.doi.org/10.1056/NEJMra1213956
56. Andreola B, Bressan S, Callegaro S, Liverani A, Plebani M, Da Dalt L. Procalcitonin and C-reactive protein as diagnostic markers of severe bacterial infections in febrile infants and children in the emergency department. *Pediatr Infect Dis J* . 2007 Aug;26(8):672–7.http://dx.doi.org/10.1097/INF.0b013e31806215e3

57. Djelantik IGG, Gessner BD, Sutanto A, Steinhoff M, Linehan M, Moulton LH, et al. Case fatality proportions and predictive factors for mortality among children hospitalized with severe pneumonia in a rural developing country setting. *J Trop Pediatr*. 2003; Dec;49(6):327–32. Available from: http://dx.doi.org/10.1093/tropej/49.6.327
58. Brabin BJ, Premji Z, Verhoeff F. An analysis of anemia and child mortality. *J Nutr*. 2001; Feb;131(2S-2):636S-645S; discussion 646S-648S. http://dx.doi.org/10.1093/jn/131.2.636S
59. Helbok R, Kendjo E, Issifou S, Lackner P, Newton CR, Kombila M, et al. The Lambaréné Organ Dysfunction Score (LODS) is a simple clinical predictor of fatal malaria in African children. *J Infect Dis* . 2009 Dec 15 [cited 2023 Jul 11];200(12):1834–41. https://academic.oup.com/jid/article-abstract/200/12/1834/879681
60. English M, Ahmed M, Ngando C, Berkley J, Ross A. Blood transfusion for severe anaemia in children in a Kenyan hospital. *Lancet*. 2002; Feb 9;359(9305):494–5. http://dx.doi.org/10.1016/S0140-6736(02)07666-3
61. Ogero M, Sarguta RJ, Malla L, Aluvaala J, Agweyu A, English M, et al. Prognostic models for predicting in-hospital paediatric mortality in resource-limited countries: a systematic review. *BMJ Open*. 2020; Oct 19;10(10):e035045. http://dx.doi.org/10.1136/bmjopen-2019-035045
62. Aggarwal AK, Tripathy JP, Sharma D, Prabhu A. Validity of Palmar Pallor for Diagnosis of Anemia among Children Aged 6–59 Months in North India. *Anemia* . 2014; Nov 9 [cited 2023 Jul 12];2014. https://doi.org/10.1155/2014/543860
63. Kalter HD, Burnham G, Kolstad PR, Hossain M, Schillinger JA, Khan NZ, et al. Evaluation of clinical signs to diagnose anaemia in Uganda and Bangladesh, in areas with and without malaria. *Bull World Health Organ* . 1997;75 Suppl 1(Suppl 1):103–11.
64. Chalco JP, Huicho L, Alamo C, Carreazo NY, Bada CA. Accuracy of clinical pallor in the diagnosis of anaemia in children: a meta-analysis. *BMC Pediatr* . 2005 ; Dec 8;5:46. Available from: http://dx.doi.org/10.1186/1471-2431-5-46
65. Subcommittee on Urinary Tract Infection, Steering Committee on Quality Improvement and Management, Roberts KB. Urinary tract infection: clinical practice guideline for the diagnosis and management of the initial UTI in febrile infants and children 2 to 24 months. *Pediatrics*. 2011; Sep;128(3):595–610. http://dx.doi.org/10.1542/peds.2011-1330
66. Shaikh N, Morone NE, Bost JE, Farrell MH. Prevalence of urinary tract infection in childhood: a meta-analysis. *Pediatr Infect Dis J*. 2008; Apr;27(4):302–8.http://dx.doi.org/10.1097/INF.0b013e31815e4122
67. Whiting P, Westwood M, Watt I, Cooper J, Kleijnen J. Rapid tests and urine sampling techniques for the diagnosis of urinary tract infection (UTI) in children under five years: a systematic review. *BMC Pediatr* . 2005 ; Apr 5;5(1):4. http://dx.doi.org/10.1186/1471-2431-5-4
68. Biban P, Gaffuri M, Spaggiari S, Zaglia F, Serra A, Santuz P. Early recognition and management of septic shock in children. *Pediatr Rep* . 2012; Jan 2;4(1):e13. http://dx.doi.org/10.4081/pr.2012.e13
69. Bénet T, Picot VS, Awasthi S, Pandey N, Bavdekar A, Kawade A, et al. Severity of Pneumonia in Under 5-Year-Old Children from Developing Countries: A Multicenter, Prospective, Observational Study. *Am J Trop Med Hyg* . 2017; Jul;97(1):68–76. http://dx.doi.org/10.4269/ajtmh.16-0733

70. Harris M, Clark J, Coote N, Fletcher P, Harnden A, McKean M, et al. British Thoracic Society guidelines for the management of community acquired pneumonia in children: update 2011. *Thorax*. 2011; Oct;66 Suppl 2:ii1-23. http://dx.doi.org/10.1136/thoraxjnl-2011-200598
71. Bradley JS, Byington CL, Shah SS. The Management of Community-Acquired Pneumonia in Infants and Children Older Than 3 Months of Age: Clinical Practice Guidelines by the Pediatric Infectious Diseases Society and the Infectious Diseases Society of America. *Clinical Infectious Diseases.* 2011; Volume 53, Issue 7, Pages e25–e76. https://doi.org/10.1093/cid/cir531
72. World Health Organization. WHO guideline: Recommendations on digital interventions for health system strengthening. *World Health Organization.* 2018. 124 p. Available from: https://play.google.com/store/books/details?id=S3Q-zAEACAAJ

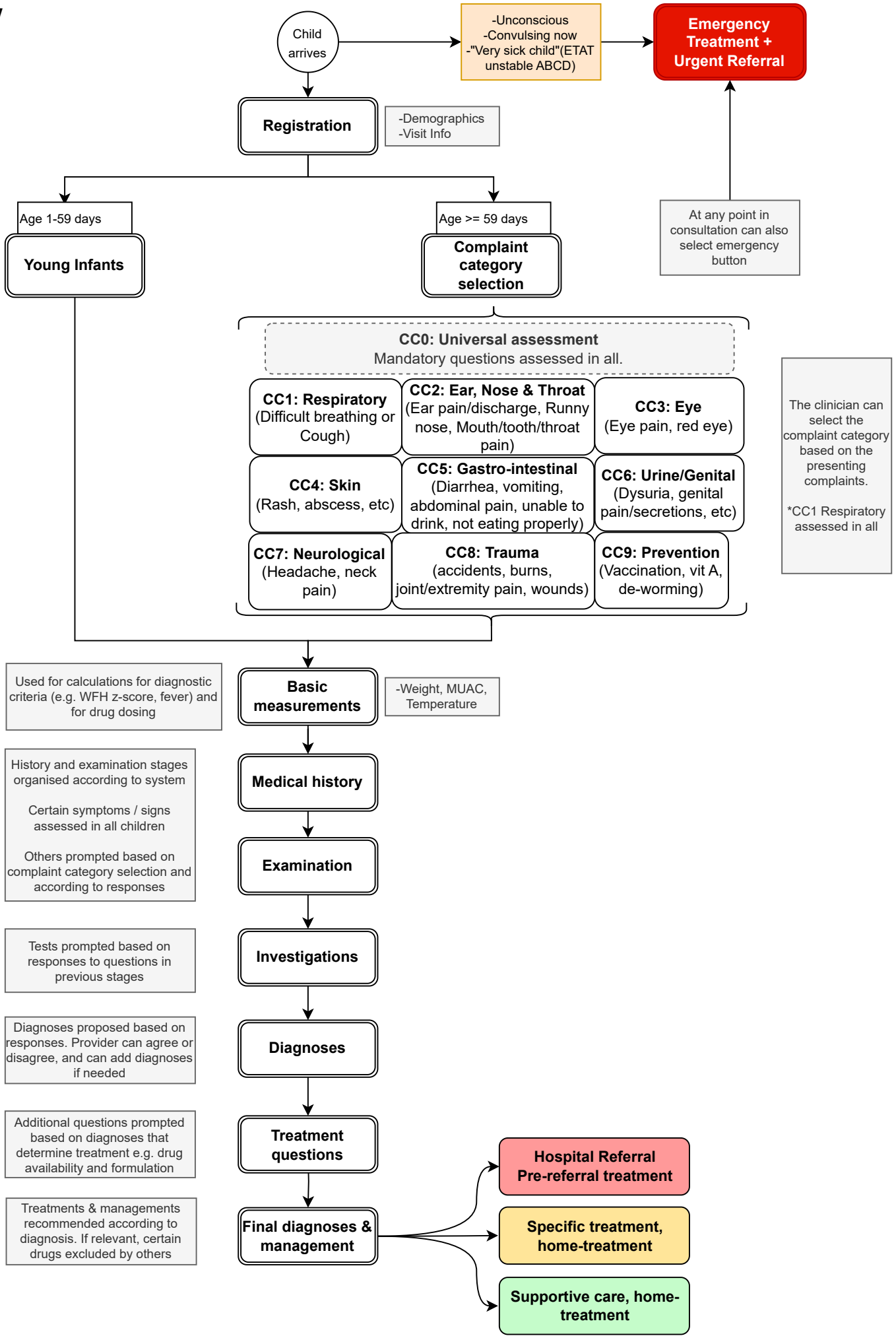
Annex

ePOCT+ Rwanda: a clinical decision support algorithm for managing sick children below 15 years of age in primary healthcare settings

Disclaimer: These representations of the algorithm are for reference of scope and content only. There can be discrepancies between these diagrams and the actual programming of the algorithm because draw.io representations are not machine readable and hence open to interpretation. Furthermore, the algorithm has been undergoing continuous minor adaptations throughout the implementation of the DYNAMIC project. If intended for implementation, further information and explanations, as well as machine readable content of the most up-to-date algorithm, can be provided upon request.

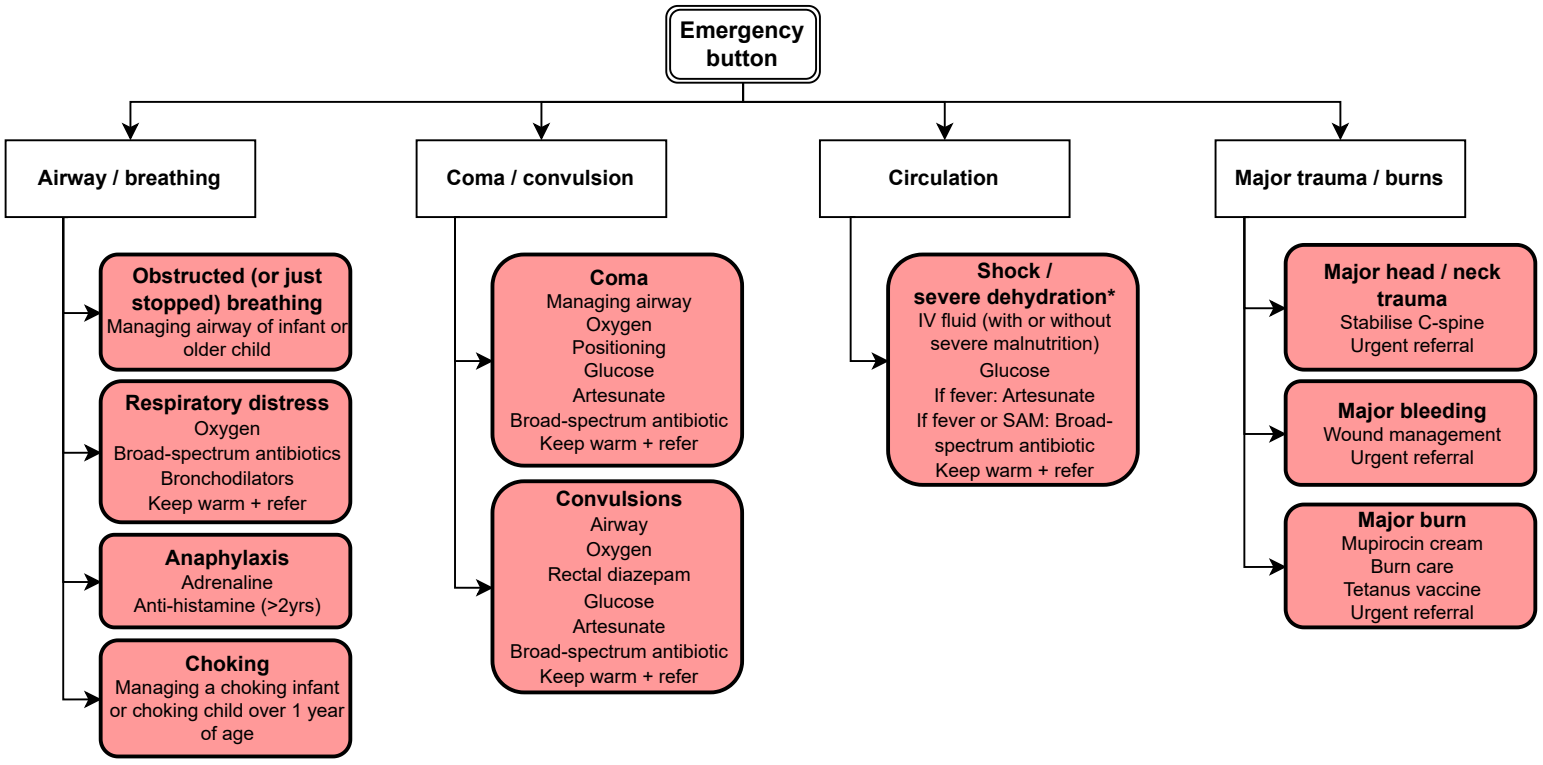
1. Older child algorithm (2 months to 14 years)

Visit Flow


Child arrives
-Unconscious
-Convulsing now
-"Very sick child"(ETAT unstable ABCD)
Emergency Treatment + Urgent Referral
Registration
-Demographics
-Visit Info
Age 1-59 days
Young Infants
Age >= 59 days
Complaint category selection
At any point in consultation can also select emergency button
CC0: Universal assessment
Mandatory questions assessed in all.
CC1: Respiratory (Difficult breathing or Cough)
CC2: Ear, Nose & Throat (Ear pain/discharge, Runny nose, Mouth/tooth/throat pain)
CC3: Eye (Eye pain, red eye)
CC4: Skin (Rash, abscess, etc)
CC5: Gastro-intestinal (Diarrhea, vomiting, abdominal pain, unable to drink, not eating properly)
CC6: Urine/Genital (Dysuria, genital pain/secretions, etc)
CC7: Neurological (Headache, neck pain)
CC8: Trauma (accidents, burns, joint/extremity pain, wounds)
CC9: Prevention (Vaccination, vit A, de-worming)
The clinician can select the complaint category based on the presenting complaints.
*CC1 Respiratory assessed in all
Used for calculations for diagnostic criteria (e.g. WFH z-score, fever) and for drug dosing
Basic measurements
-Weight, MUAC, Temperature
History and examination stages organised according to system
Certain symptoms / signs assessed in all children
Others prompted based on complaint category selection and according to responses
Medical history
Examination
Tests prompted based on responses to questions in previous stages
Investigations
Diagnoses proposed based on responses. Provider can agree or disagree, and can add diagnoses if needed
Diagnoses
Additional questions prompted based on diagnoses that determine treatment e.g. drug availability and formulation
Treatment questions
Treatments & managements recommended according to diagnosis. If relevant, certain drugs excluded by others
Final diagnoses & management
Hospital Referral Pre-referral treatment
Specific treatment, home-treatment
Supportive care, home-treatment

EMERGENCY PAGE: Accessible at any point during consultation

This 'emergency button' can be accessed at any point in the consultation without requiring the user to enter registration details or answer multiple questions - for critical cases requiring immediate management.



*Shock / severe dehydration: Weak pulse, cold extremities, cap. refill >3sec, very slow skin pinch)

MEDICAL ASSESSMENT : CC0 General / Universal Assessment (Algorithms developed in all)

CC0 Universal Assessment

Cough OR
Difficult breathing OR
Fever OR
Very Low Weight for Age (- Age >=6m-<10y: < -3WAZ)
OR
Severe Acute Malnutrition (
- Age >= 2m-<= 5m < -3 WAZ OR
- Age >= 6-<= 59m: MUAC <11.5cm OR
- Age >= 5-<= 14y: < -3 MUAC for age z-score
) OR
Moderate Malnutrition (
- Age 2m-59m: -3 to -2 WFA z-score OR MUAC 11.5-12.5cm)

- **Suspicion of TB**
  - Recent close contact with somebody with TB OR
  - Fever >2 weeks OR
  - Cough >2 weeks OR
  - Significant Weight loss OR
  - Significant hemoptysis
  → - No treatment (antibiotics if fever >2 weeks)
  - Non urgent referral

- **Very severe febrile disease**
  Fever AND (Fail Oral rehydration challenge OR ≥2 convulsions in present illness, OR CNS danger signs, OR Convulsing now OR (1 convulsion AND (Convulsion >=15min, OR age<12 mo OR ≥6 yrs OR HIV)
  → - IV/IM Antibiotics
  - Diazepam (if convulsing now)
  - Prevent low blood sugar
  - Refer

- **Danger signs**
  - >/= 2 convulsions, OR
  - 1 convulsion AND (no fever OR Age < 12m, or >/= 6y, OR convulsion >15min, OR convulsing now, OR HIV)
  - Vomiting everything, OR
  - Unable to eat or drink, AND Fail Oral Rehydration Challenge
  → - IV/IM Antibiotics
  - Diazepam if convulsing now
  - Prevent low blood sugar
  - Refer

- **Suspicion of meningitis****
  - Age 1-3, AND
  - Stiff neck
  → - Antibiotics
  - Refer

Priority signs

Emergency signs

- **Complicated prolonged fever**
  - Age 1-3 AND
  PS: Severe comorbidity
  → - No antibiotics
  - Refer

- **Prolonged Fever**
  - Fever >/= 7 days
  → - No antibiotics
  - Referral for further investigations within 3 days

- **Simple febrile convulsion**
  . Fever AND
  - Age 1 to < 6 years AND
  - Single convulsion AND
  - NO Stiff neck or CNS danger signs
  → - Febrile convulsion guidance
  - No referral

- Fever AND
- mRDT or malarial microscopy unavailable

  - **Clinical Severe malaria**
    - CNS Danger signs OR
    - Severe anemia OR
    - Respiratory Distress, OR
    - Convulsion OR
    - Severe anemia OR
    - Jaundice OR
    - failed rehydration test
    → - IM Artesunate
    - Ceftriaxone IM
    - Prevent low blood sugar
    - Refer

  - **Uncomplicated clinical malaria**
    → - PO ACT
    - Artesunate if minor GI symptoms
    - No referral

- Fever AND
- mRDT or malarial microscopy positive

  - **Severe malaria**
    - CNS Danger signs OR
    - Severe anemia OR
    - Respiratory Distress, OR
    - Convulsion OR
    - Severe anemia OR
    - Jaundice OR
    - failed rehydration test
    → - IM artesunate
    - IM Ampicillin/Chloramphenicol
    - Refer to DH with blood slides

  - **Uncomplicated malaria**
    → - PO ACT
    - Artesunate if minor GI symptoms
    - No referral

- Fever OR
- **Age 2m-5y:** < -2 WAZ or WFH z-score or MUAC <12.5cm OR
- Danger signs OR
- Sickle cell disease OR
- **Age 5-14y:** MUAC for age or BMI for age < -3 z-score or palmar/conjunctival pallor, malaria, HIV, jaundice

  - **Suspected Hemolytic Anemia**
    - Conjunctival/palmar pallor AND jaundice
    → - Non urgent referral
    - Measure Hb

  - **Severe anemia**
    - Hb <6g/dL
    - If no Hb: Severe palmor or conjunctival pallor
    → - Antibiotics if febrile
    - Iron after acute illness
    - Folic acid
    - Prevent low blood sugar
    - Refer

  - **Mild/moderate anemia**
    - Age 2-6m: Hb 6 - 9.9 g/dL
    - Age 6-59m: Hb 6-10.9 g/dL
    - Age 5-11y: Hb 6-11.4 g/dL
    - Age 12-14y : Hb 6-11.9 g/dL
    → - Iron after acute illness
    - No referral

- **Age >= 2m-<= 5m:** < -3 z-score WFA or WFH/L OR
- **Age >= 6-<= 59m:** MUAC <11.5cm or <-3 z score WFH/L OR
- **Age >= 5-<= 14y:** < -3 MUAC for age z-score

  - **Complicated Severe Acute Malnutrition**
    → - Antibiotics
    - Prevent hypothermia and hypoglycemia
    - Referral

  - **Uncomplicated severe acute malnutrition**
    → - Antibiotics if age <5y
    - Referral to nutrition program
    - Vit A if xerophtalmia/night blindness

- **Age >=6m-<10y:** < - 3 z-score WFA

  - **Very Low Weight for Age**
    → - Antibiotics if age <5y and febrile
    - Referral to nutrition program
    - Vit A if xerophtalmia/night blindness

- **Age 2m-59m:** -3 to -2 WFA or WFH z-score
- **Age 6m-59m:** MUAC 11.5-12.5cm
- Age 5-14y: MUAC for age or BMI for age z-score -3 to -2

  - **Moderate malnutrition**
    → - No Antibiotics
    - Feeding counselling
    - Vit A if xerophtalmia/night blindness

- Fever AND
- mRDT neg
- No identifiable source of fever (no cough, difficult breathing, runny nose, diarrhea, vomiting, etc)

  - **Fever without source: Presumed bacterial infection**
    - CRP >/= 40mg/L
    - No CRP and Age < 3 months OR
    - No CRP and 3-14 years and not well appearing
    → - Antibiotics
    - No referral

  - **Febrile urinary Tract Infection**
    - 2 months to 3 years AND
    - CRP <40 mg/L AND
    - Pathological urine dipstick
    → - Antibiotics
    - No referral (refer if oral intake not possible)

  - **Fever without source: Presumed viral infection**
    - CRP <40mg/L OR
    - No CRP and well appearing
    → - Symptomatic care
    - No antibiotics
    - No referral

- >/= 3 loose or liquid stools

  - **Dysentery**
    - Blood in stools
    → - Antibiotics (if <5yrs, febrile or malnourished, or HIV)
    - Refer (if significant amout of blood in stools)

  - **Acute diarrhea**
    → - ORS
    - Zinc if age < 5 y
    - No referral

  - **Persistent diarrhea**
    - Diarrhea >/= 14 days
    → - ORS
    - Zinc if age < 5 y
    - No referral

  - **Severe persistent diarrhea**
    Diarrhea >=14 days, AND
    - Some dehydration
    → - Plan B rehydration
    - Zinc
    - Refer

- >/= 3 loose or liquid stools (diarrhea) OR
- Vomiting OR
- Unable to drink

  - **Severe dehydration**
    - Sunken eyes, OR
    - Lethargic / unconscious OR
    - Not able to drink or excessive diarrhea* and/or vomiting** AND Fail oral hydration challenge***
    → - Plan C rehydration
    - Refer

  - **Some dehydration**
    - Not able to drink or excessive diarrhea* and/or vomiting** AND Pass oral hydration challenge
    → - Plan B rehydration
    - No referral

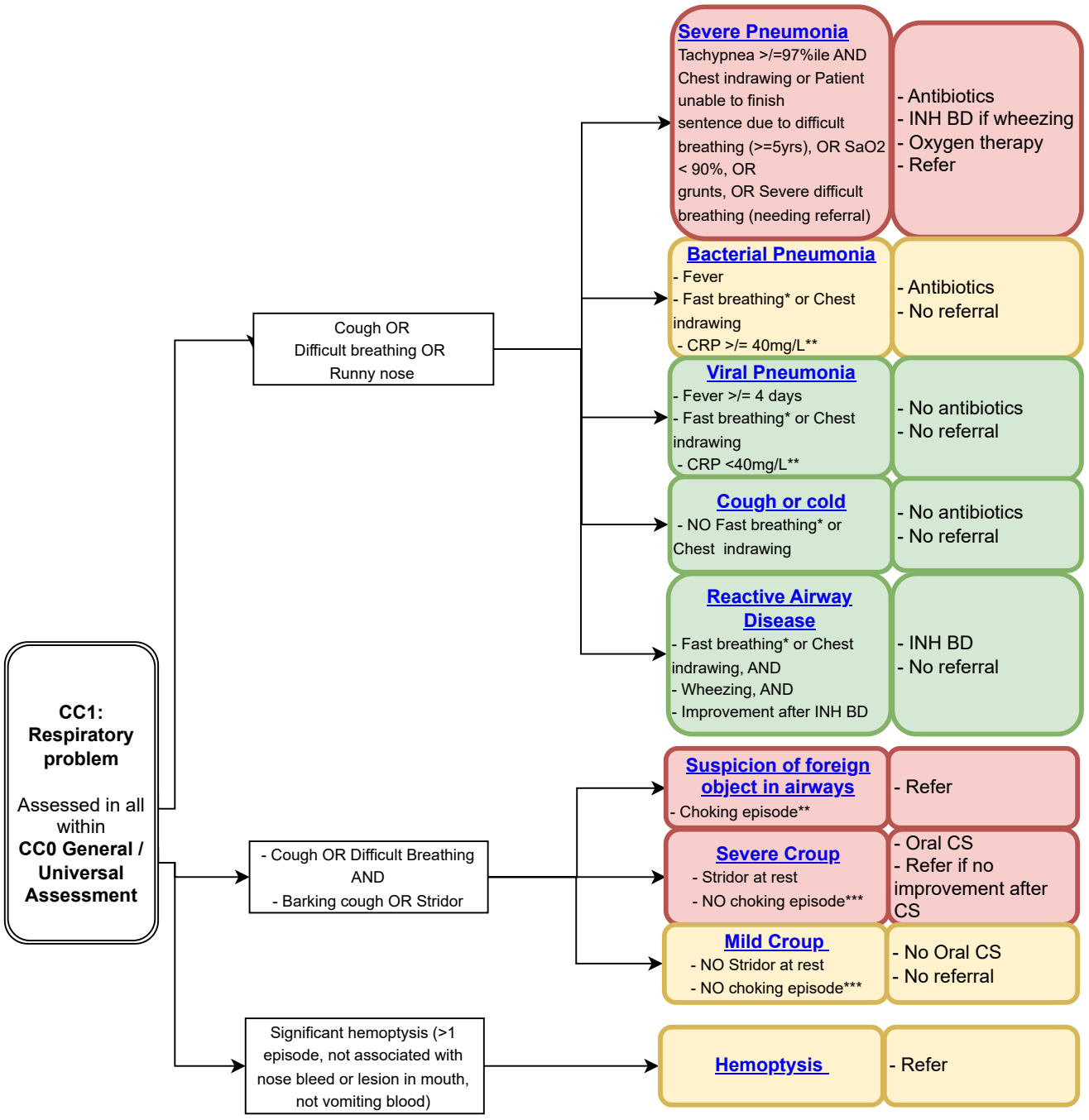
- HIV, OR
- Sickle cell, OR
- Congenital heart disease, OR
- Cerebral palsy

  - **Severe comorbidity**
    → - Guidance

* Emergency signs include: Convulsions, unconscious, lethargic, stiff neck; Priority signs: History of fever, measured fever
**Also evaluated in CC neurological problem (Suspicion of meningitis)
***Severe comorbidities/complications: CNS Danger signs, Severe anemia, severe dehydration, measles or complicated measles, complicated chicken pox, respiratory distress, bacterial/IMCI/IMAI pneumonia, fail appetite test

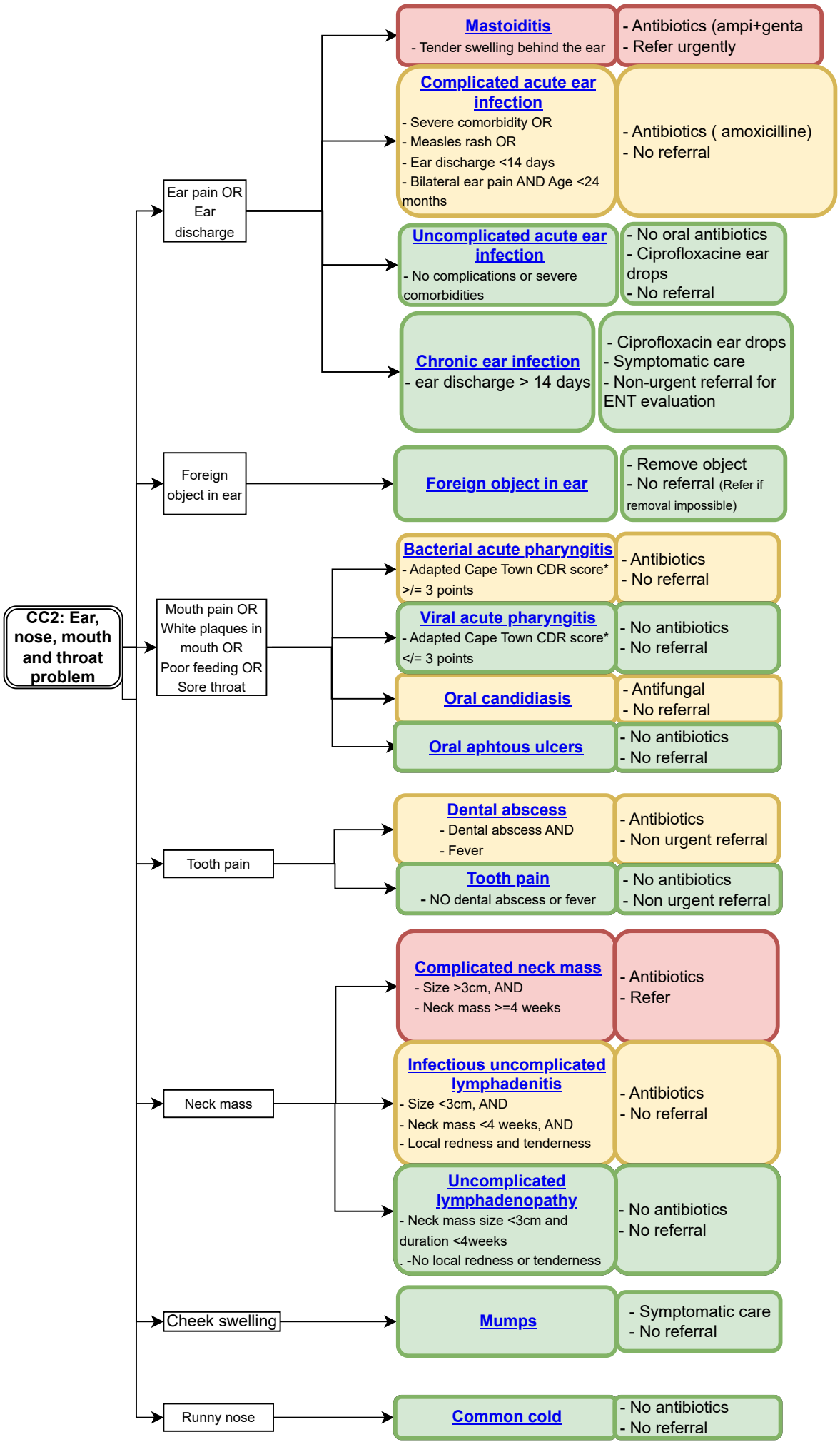
ACT: Artemisinin-based combination therapy
CC: Complaint Category
CNS: Central Nervous System
Hb: Hemoglobin
IM: Intra-muscular
m: month
MUAC: Mid-Upper Arm Circumference
PO: per os
WAZ: Weight-for-Age Z-score
WFH: Weight-for-height
y: year

MEDICAL ASSESSMENT : CC1 Respiratory problem
(Assessed in all within CC0 General / Universal Assessment)



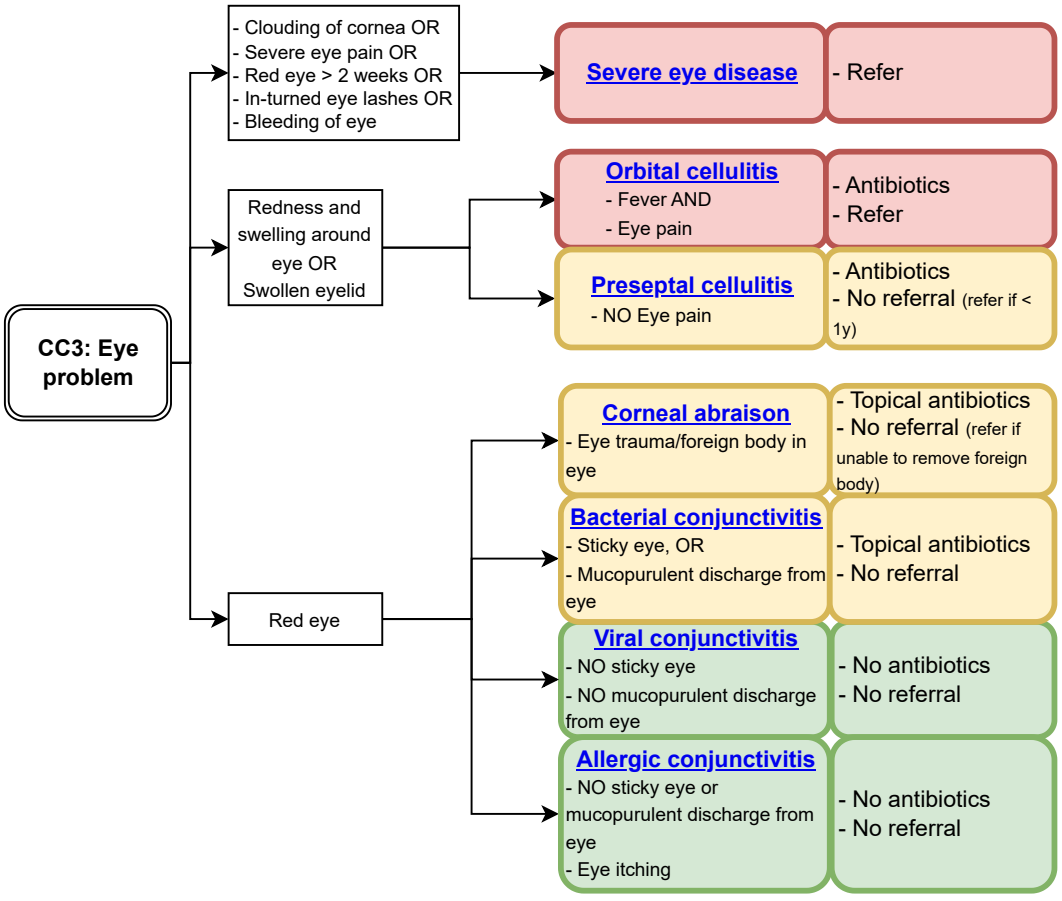
*Fast breathing: Respiratory rate 75-96%ile
** If no CRP available, use IMCI/IMAI respiratory thresholds: 2-12m >=50/min, 12-59m >=40/min, 5-12y >=30/min, 12-14y >=20/min
*** Or possibility of swallowing foreign object in airways
INH BD: Inhaled bronchodilator (most often salbutamol)
CS: Corticosteroids
TB: Tuberculosis

MEDICAL ASSESSMENT : CC2 Ear, Nose, Mouth and Throat Problem

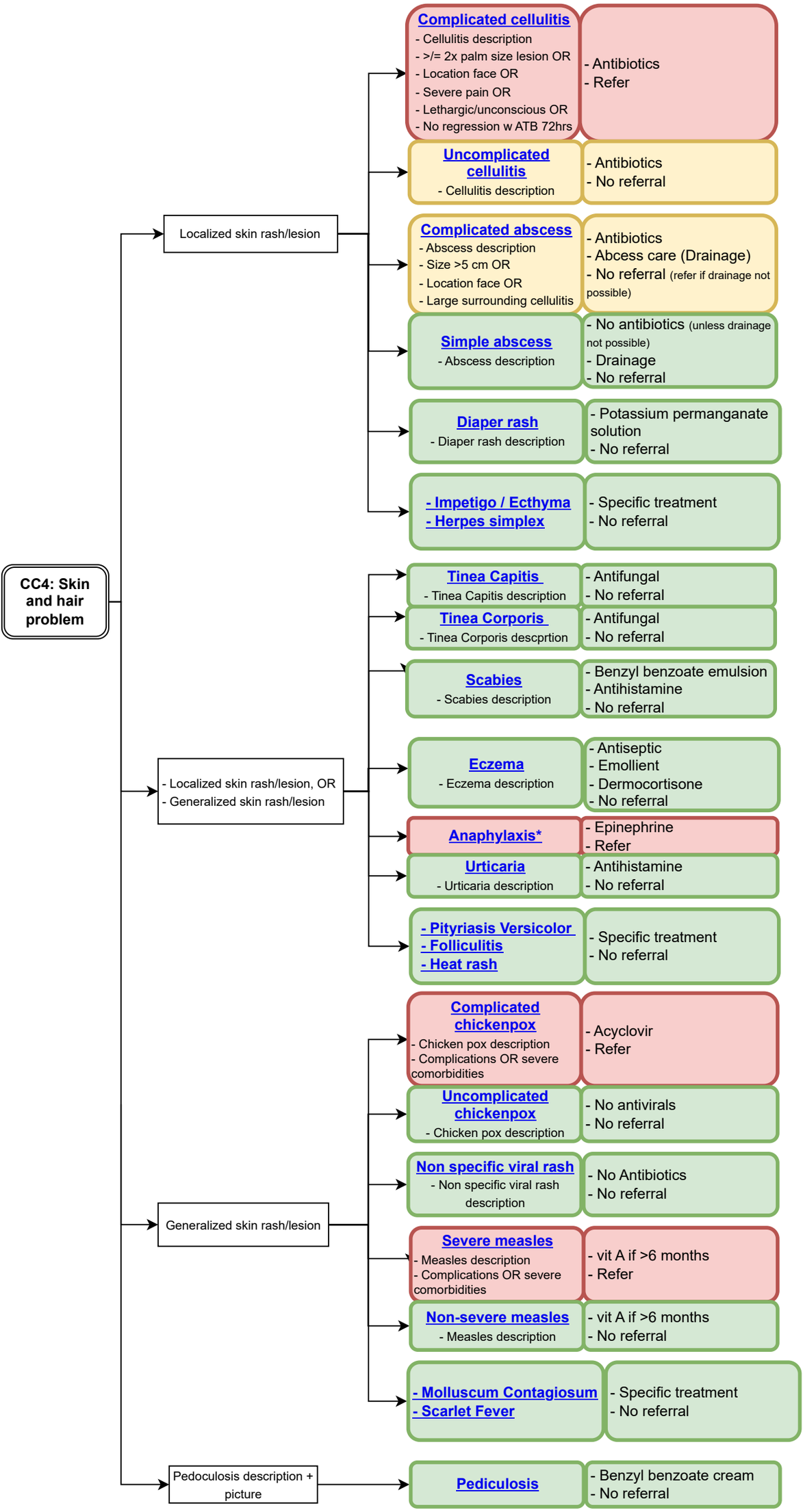


*Cape Town CDR score:
1 point: Absence of rhinorrhea, absence of cough, tonsillar exudate
2 points: Tonsillar swelling

MEDICAL ASSESSMENT : CC3 Eye problem

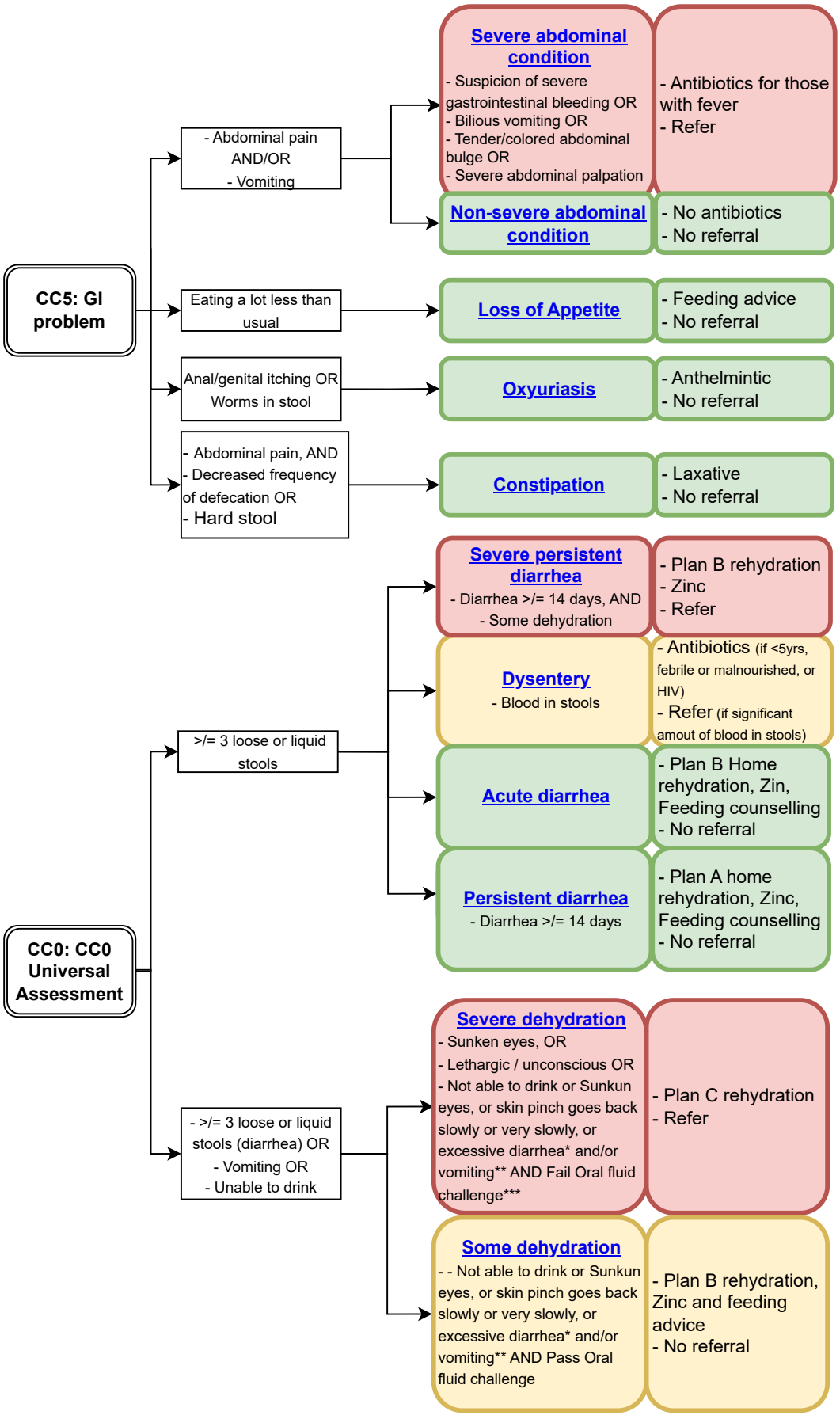


MEDICAL ASSESSMENT : CC4 Skin and hair problem



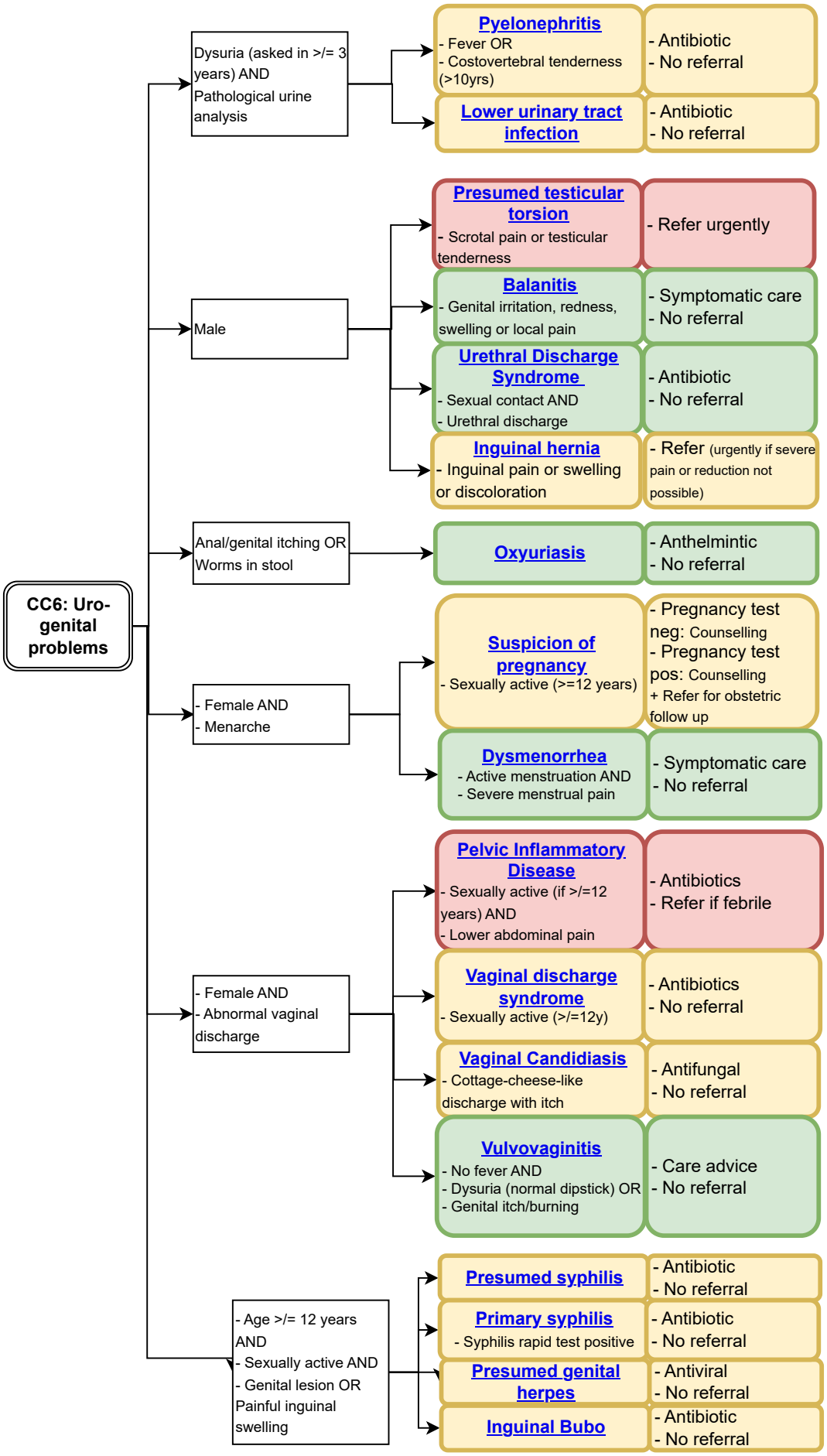
*Anaphylaxis : Urticaria AND (CNS Danger signs or Severe abdominal pain or Difficulty breathing or Vomiting)

MEDICAL ASSESSMENT : CC5 Gastrointestinal problem

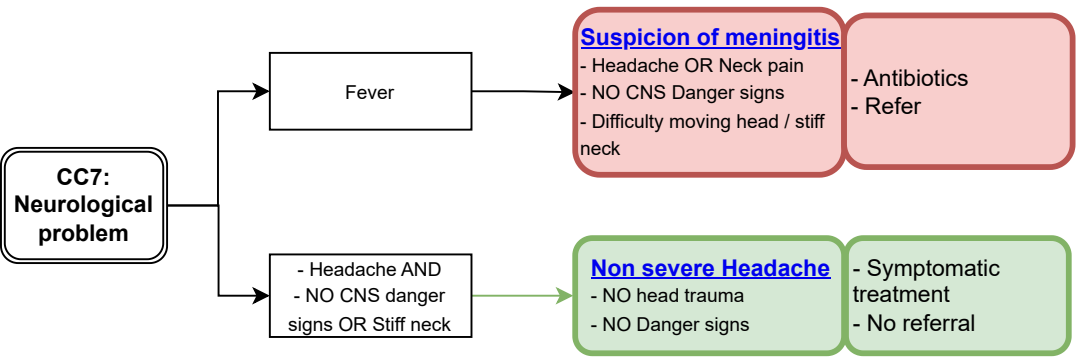


*Excessive diarrhea or vomiting = >/=4 stools or emesis/24hrs for age 2m-12m, >/=5 stools or emesis for age 1-5y, >/= 6 stools or emesis for age 5-14y
**Excessive diarrhea and vomiting = >/=3 stools and emesis/24hrs for age 2m-12m, >/=4 stools and emesis for age 1-5y, >/= 5 stools and emesis for age 5-14y
***Oral fluid challenge: Provide water to drink and see if able to drink without vomiting. Pass = able to drink. Fail = Not able to drink
ORS: Oral Rehydration Salt

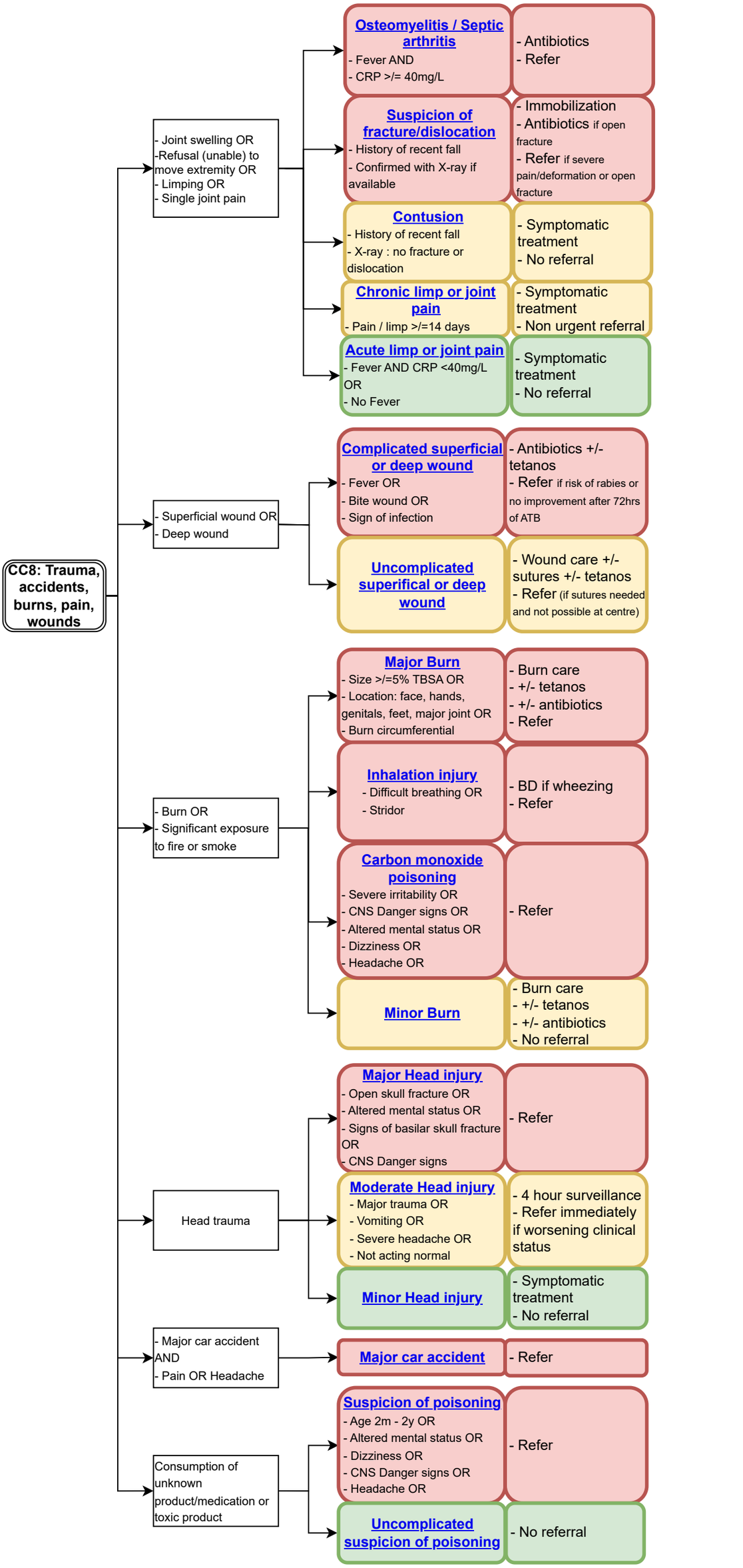
MEDICAL ASSESSMENT : CC6 Urine/Genital problems



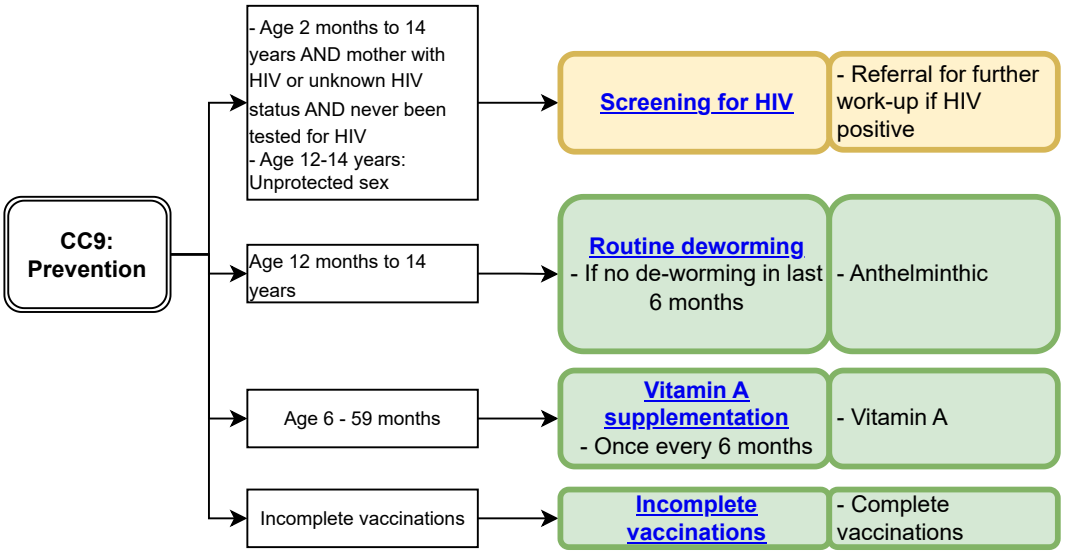
MEDICAL ASSESSMENT : CC7 Neurological problems

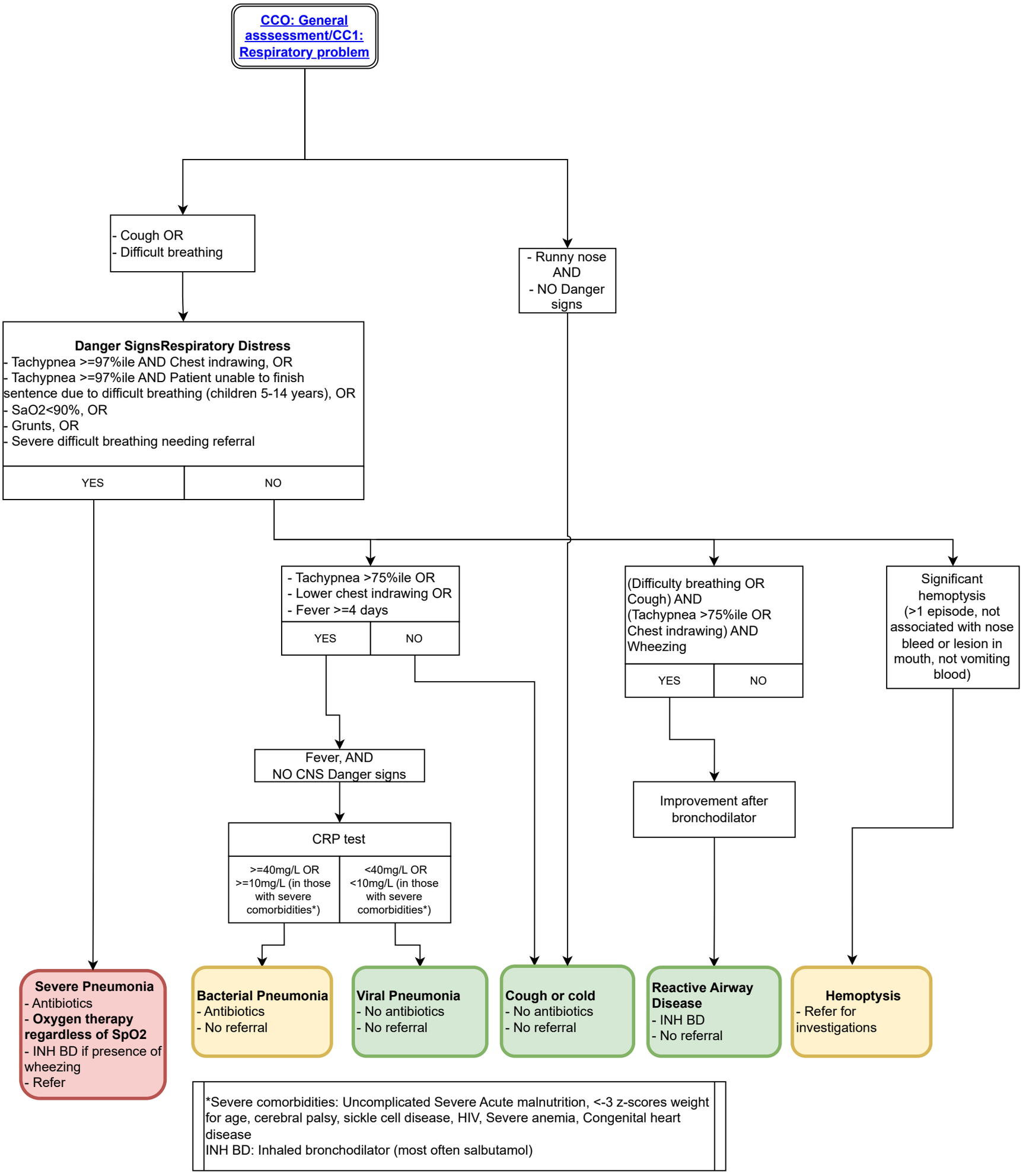


MEDICAL ASSESSMENT : CC8 Trauma, accidents, burns, pain, wounds



MEDICAL ASSESSMENT : CC9 Prevention




CCO: General asssessment/CC1: Respiratory problem
- Cough OR
- Difficult breathing
- Runny nose AND
- NO Danger signs
Danger SignsRespiratory Distress
- Tachypnea >=97%ile AND Chest indrawing, OR
- Tachypnea >=97%ile AND Patient unable to finish sentence due to difficult breathing (children 5-14 years), OR
- SaO2<90%, OR
- Grunts, OR
- Severe difficult breathing needing referral
YES
NO
- Tachypnea >75%ile OR
- Lower chest indrawing OR
- Fever >=4 days
YES
NO
(Difficulty breathing OR Cough) AND (Tachypnea >75%ile OR Chest indrawing) AND Wheezing
YES
NO
Significant hemoptysis (>1 episode, not associated with nose bleed or lesion in mouth, not vomiting blood)
Fever, AND NO CNS Danger signs
CRP test
>=40mg/L OR >=10mg/L (in those with severe comorbidities*)
<40mg/L OR <10mg/L (in those with severe comorbidities*)
Improvement after bronchodilator
Severe Pneumonia
- Antibiotics
- Oxygen therapy regardless of SpO2
- INH BD if presence of wheezing
- Refer
Bacterial Pneumonia
- Antibiotics
- No referral
Viral Pneumonia
- No antibiotics
- No referral
Cough or cold
- No antibiotics
- No referral
Reactive Airway Disease
- INH BD
- No referral
Hemoptysis
- Refer for investigations
*Severe comorbidities: Uncomplicated Severe Acute malnutrition, <-3 z-scores weight for age, cerebral palsy, sickle cell disease, HIV, Severe anemia, Congenital heart disease
INH BD: Inhaled bronchodilator (most often salbutamol)

Anthropometric measures						
=< - 3 z-score for WFA or WFH/L	< 11.5 cm MUAC or <-3 z-score for WFH/L	< - 3 z-score for MUAC for age	< - 3 z-score for WFA	-2 z-score for WFA or WFH	11.5 - 12.5 cm MUAC	-2 z-score for MUAC for age
2m - 5m	6m - 59m	5y - 14y	6m - 10y	2m - 59m	6m - 59m	5y - 14y

Complication criteria

Chickenpox lesions OR

Measles rash and associated signs OR

(cough or difficulty breathing AND fast breathing) OR

Presence of a severe diagnosis OR

Severe Croup OR

Suspicion of foreign object in airways OR

Severe Pesistent Diarrhea OR

Severe malaria OR

Severe anemia OR

Complicated prolonged fever OR

Mastoiditis OR

IMCI severe anemia OR

Suspicion of meningitis OR

Severe abdominal condition OR

Severe eye disease OR

Complicated abscess OR

Complicated cellulitis OR

Osteomyelitis/Septic arthritis OR

Severe dehydration OR

Severe pneumonia OR

Danger signs OR

Fail appetite test OR

Child too sick to perform test

(Appetite test unavailable AND Caregiver reports not feeding well) OR

Bilateral feet edema

YES

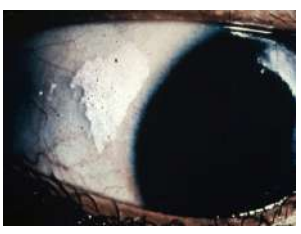
NO

Complicated Severe Acute Malnutrition
- Antibiotics (Ampi/Genta)
- Prevent hypoglycemia
- Prevent hypothermia
- Referral for urgent care

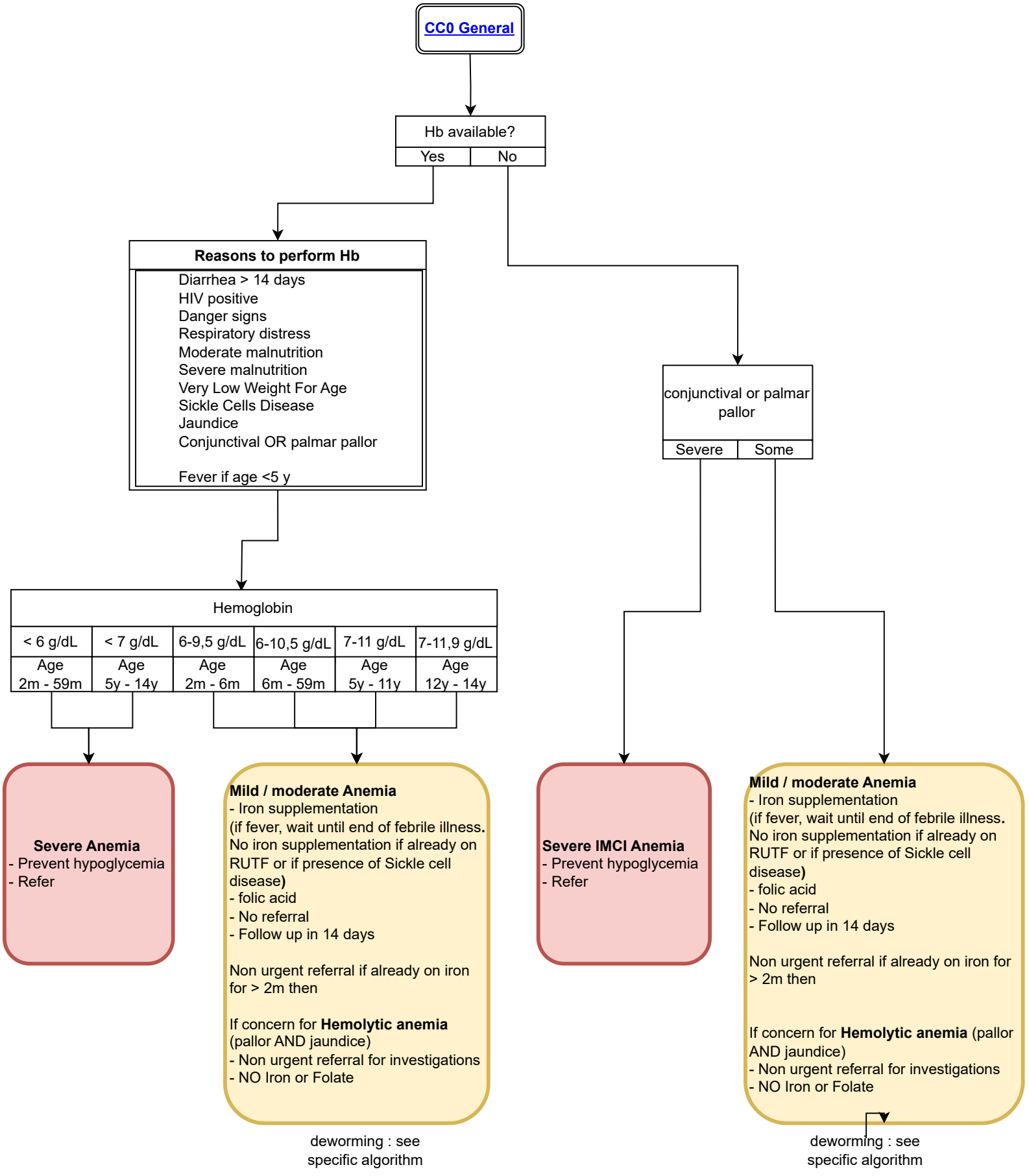
Uncomplicated Severe Acute Malnutrition
- Antibiotics in children <5 years
- Non-urgent referral (within 3 days) for malnutrition follow-up / assessment and RUTF
- Vit A if xerophtalmia/night blindness

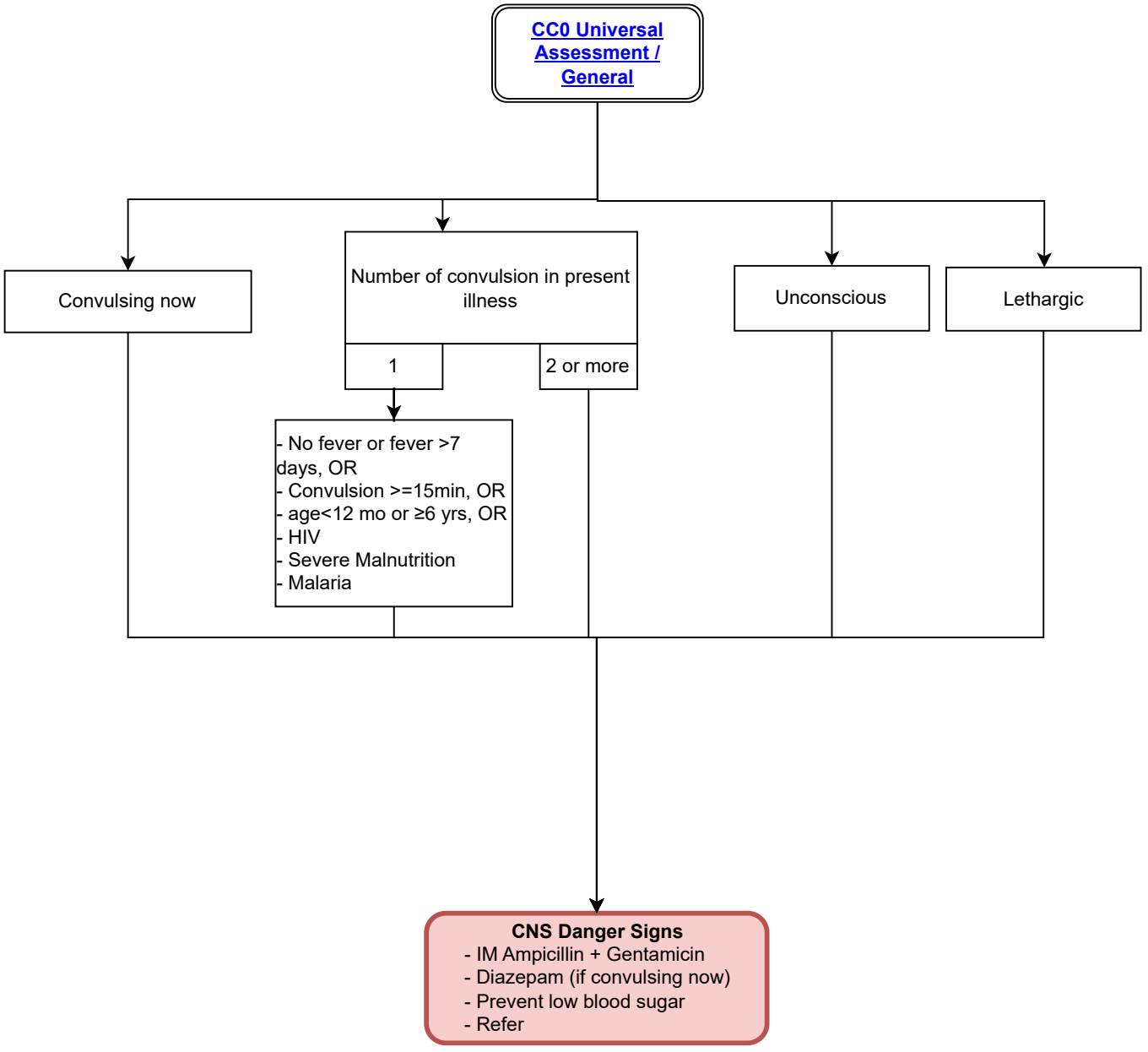
Very Low Weight-for-Age
- Antibiotics (if febrile and <5 years)
- Non-urgent referral for malnutrition follow-up / assessment and RUTF
- Vit A if xerophtalmia/night blindness

Moderate Malnutrition
- No antibiotics
- Non-urgent referral for malnutrition follow-up / assessment
- Vit A if xerophtalmia/night blindness



BMI: Body Mass Index
MUAC: Mid-Upper Arm Circumference
RUTF: Ready-to-Use Therapeutic Food
WFA: Weight for Age
WFH/L: Weight-for-Height or Weight-for-Length


CC0 General
Hb available?
Yes
No
Reasons to perform Hb
Diarrhea > 14 days
HIV positive
Danger signs
Respiratory distress
Moderate malnutrition
Severe malnutrition
Very Low Weight For Age
Sickle Cells Disease
Jaundice
Conjunctival OR palmar pallor
Fever if age <5 y
conjunctival or palmar pallor
Severe
Some
Hemoglobin
< 6 g/dL
Age 2m - 59m
< 7 g/dL
Age 5y - 14y
6-9,5 g/dL
Age 2m - 6m
6-10,5 g/dL
Age 6m - 59m
7-11 g/dL
Age 5y - 11y
7-11,9 g/dL
Age 12y - 14y
Severe Anemia
- Prevent hypoglycemia
- Refer
Mild / moderate Anemia
- Iron supplementation
(if fever, wait until end of febrile illness. No iron supplementation if already on RUTF or if presence of Sickle cell disease)
- folic acid
- No referral
- Follow up in 14 days
Non urgent referral if already on iron for > 2m then
If concern for Hemolytic anemia (pallor AND jaundice)
- Non urgent referral for investigations
- NO Iron or Folate
deworming : see specific algorithm
Severe IMCI Anemia
- Prevent hypoglycemia
- Refer
Mild / moderate Anemia
- Iron supplementation
(if fever, wait until end of febrile illness. No iron supplementation if already on RUTF or if presence of Sickle cell disease)
- folic acid
- No referral
- Follow up in 14 days
Non urgent referral if already on iron for > 2m then
If concern for Hemolytic anemia (pallor AND jaundice)
- Non urgent referral for investigations
- NO Iron or Folate
deworming : see specific algorithm


CC0 Universal Assessment / General
Convulsing now
Number of convulsion in present illness
1
2 or more
Unconscious
Lethargic
- No fever or fever >7 days, OR
- Convulsion >=15min, OR
- age<12 mo or ≥6 yrs, OR
- HIV
- Severe Malnutrition
- Malaria
CNS Danger Signs
- IM Ampicillin + Gentamicin
- Diazepam (if convulsing now)
- Prevent low blood sugar
- Refer

CC0 Universal Assessment / General

Fever

If age >=12m to 60m :
Stiff neck

Unable to drink or breastfeed

Vomiting everything, AND < 5years

Fail Oral rehydration challenge

CNS danger signs

CC0 Universal Assessment / General

Convulsing now

Number of convulsion in present illness

1

2 or more

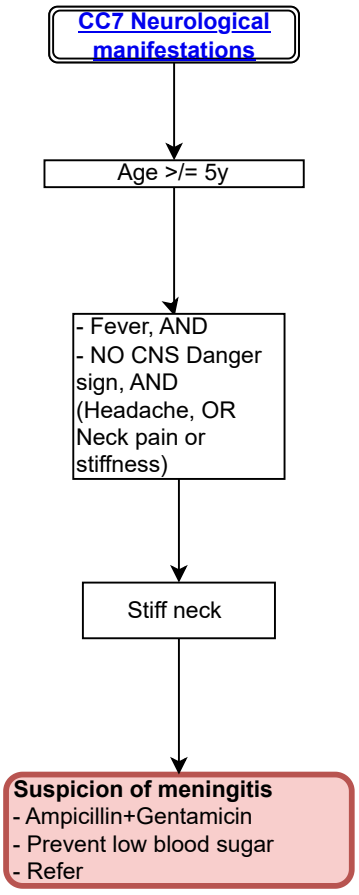
- No fever or fever >7 days, OR
- Convulsion >=15min, OR
- age<12 mo or ≥6 yrs, OR
- HIV
- Severe Malnutrition
- Malaria

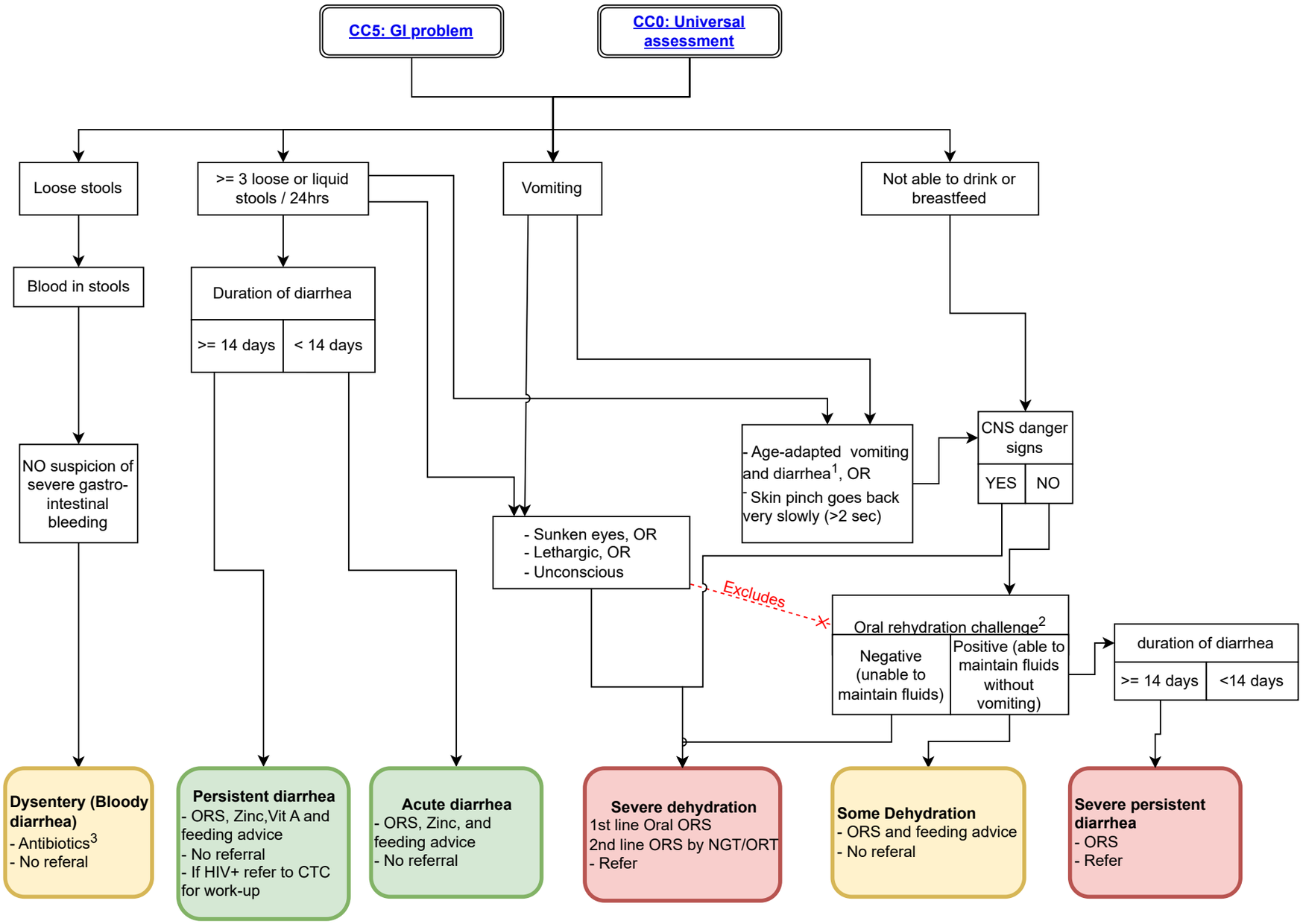
Unconscious

Lethargic

CNS Danger Signs

Very severe febrile disease
- Ampicillin+Gentamicin
- Diazepam (if convulsing now)
- Prevent hypoglycemia
- Antipyretic if fever
- Refer


CC7 Neurological manifestations
Age >/= 5y
- Fever, AND
- NO CNS Danger sign, AND
(Headache, OR Neck pain or stiffness)
Stiff neck
Suspicion of meningitis
- Ampicillin+Gentamicin
- Prevent low blood sugar
- Refer



[1] Age adapted vomiting and diarrhea:
Age 2-12m: >= 4 loose stools or >=4 episodes of vomiting / 24hours, or >=3 loose stools/24 hours and vomiting
Age 12 - 59m: >=5 loose stools or >=5 episodes of vomiting / 24 hours, or >=4 loose stools/24 hours and vomiting
Age 5 - 14y: >=6 loose stools or >=6 episodes of vomiting / 24 hours, or >=5 loose stools/24 hours and vomiting
[2] Oral rehydration challenge: Provide water to drink and see if able to drink without vomiting (observe for 2 hours).
[3] Antibiotics (Ciprofloxacin) for children < 5 years. If >=5 years, antibiotics only if febrile, or < -3 z-score for MUAC for age
ORS: Oral Rehydration Salt

CC0: General / Universal Assessment

Fever

--- No source of fever

- NO Cough
- NO difficult breathing
- NO runny or blocked nose
- NO Loose or liquid stools (diarrhea)

PS: NO Eye source of fever

Eyelid oedema OR
Warm tender swelling around eye

PS: NO ENT Source of fever

Neck mass
OR
(Sore throat AND age >=36m)
OR
Ear pain OR ear discharge
OR
(tooth pain AND dental abscess)
OR
(Cheek swelling AND Suspicion of mumps)

PS: NO Skin rash source of fever

Measles rash and associated signs
OR
Chickenpox lesions
OR
Scarlet fever rash
OR
Cellulitis
OR
Abscess
OR
Impetigo
OR
Bullous Impetigo
OR
Ecthyma lesion

PS: NO Musculoskeletal source of fever

(Musculo-skeletal pain or swelling (bone or joint pain/swelling) OR Limping OR Refusal (unable) to move extremity) AND Warm, tender or swollen joint or bone

PS: NO Urogenital source of fever

Age >=36 m AND pain or difficulty urinating
OR
Age >12y AND Female AND History of sexual contact AND lower abdominal pain AND Abnormal vaginal discharge AND lower abdominal tenderness

NO Identifiable Source of Fever

The patient has fever, but none of the following symptoms:
- Cough/difficult breathing
- Diarrhea/loose stools
- ear pain/discharge
- dental pain/abscess
- sore throat
- neck mass
- skin rash explaining the fever (chicken pox, measles, scarlet fever, cellulitis, abscess, impetigo
- bone or joint pain suspicious of septic arthritis/ostemyelitis
- symptoms of urinary tract infection or STI

Is there an explanation for the fever?

CRP

>=40mg/L	<40mg/L	No CRP*

mRDT or malaria microscopy

Positive	Negative	Unavailable

Age

< 3 months	3m - 24m	2y - 14y

Age

2m - 24m	2y - 14y

Urinalysis

Positive	Negative / unavailable

Well appearing (1 hour after paracetamol)

Yes	No

Fever without source: Presumed bacterial infection
- TT Amoxicillin HD and Ciprofloxacin
- No referral

Plan A: Home rehydration
- Refer Urgently if unexplained bleeding (concern for hemorrhagic fever)
- COVID-19 counselling

Febrile urinary Tract Infection
- TT Ciprofloxacin
- No referral

Fever without source: Presumed viral infection
- Symptomatic treatment
- No referral
- Refer Urgently if unexplained bleeding (concern for hemorrhagic fever)

[CC0 General]

- Fever, OR
- 1>= convulsions, OR
- Unconscious, OR
- Lethargic

mRDT
(Microscopy if mRDT not available)

Positive | Negative | Unavailable

Severity criteria

PS:Respiratory distress

Cough
OR Difficulty breathing) AND (Chest Indrawing OR Fast breathing Age-specific)
AND Blood oxygen saturation <90%
OR
Difficulty breathing AND (grunting OR severe difficult breathing needing referral)

PS: GI Danger Signs

Unable to drink or breastfeed

Vomiting everything, AND < 5years

Fail Oral rehydration challenge

Unconscious or Lethargic

Convulsing now

Convulsions in present illness

Severe anemia (age specific cutoff) OR Clinical Severe anemia (Hb unavailable)

Jaundice

1 or more | 0

Severe malaria
- IM artesunate
- IM Ampicillin/Gentamicin
- Refer to DH with blood slides

Uncomplicated malaria
- PO artemether-Lumefantrine
- No referral
-if vomiting or diarrhea treat with 1st line: IM Artesunate / 2nd line IV quinine
- Daily visit :
  - if improvement --> switch to oral
  - in no improvement --> refer

Consider admitting the patient if outpatient management impossible due to transportations constraints/social issues

Severity criteria

PS:Respiratory distress

Cough
OR Difficulty breathing) AND (Chest Indrawing OR Fast breathing Age-specific)
AND Blood oxygen saturation <90%
OR
Difficulty breathing AND (grunting OR severe difficult breathing needing referral)

PS: GI Danger Signs

Unable to drink or breastfeed

Vomiting everything, AND < 5years

Fail Oral rehydration challenge

Unconscious or Lethargic

Convulsing now

Convulsions in present illness

Severe anemia (age specific cutoff) OR Clinical Severe anemia (Hb unavailable)

Jaundice

1 or more | 0

Clinical Severe malaria
- IM artesunate
- IM Ampicillin/Gentamicin
- Refer

Transfer to nearby clinic with mRDT test possible within 2 hours?

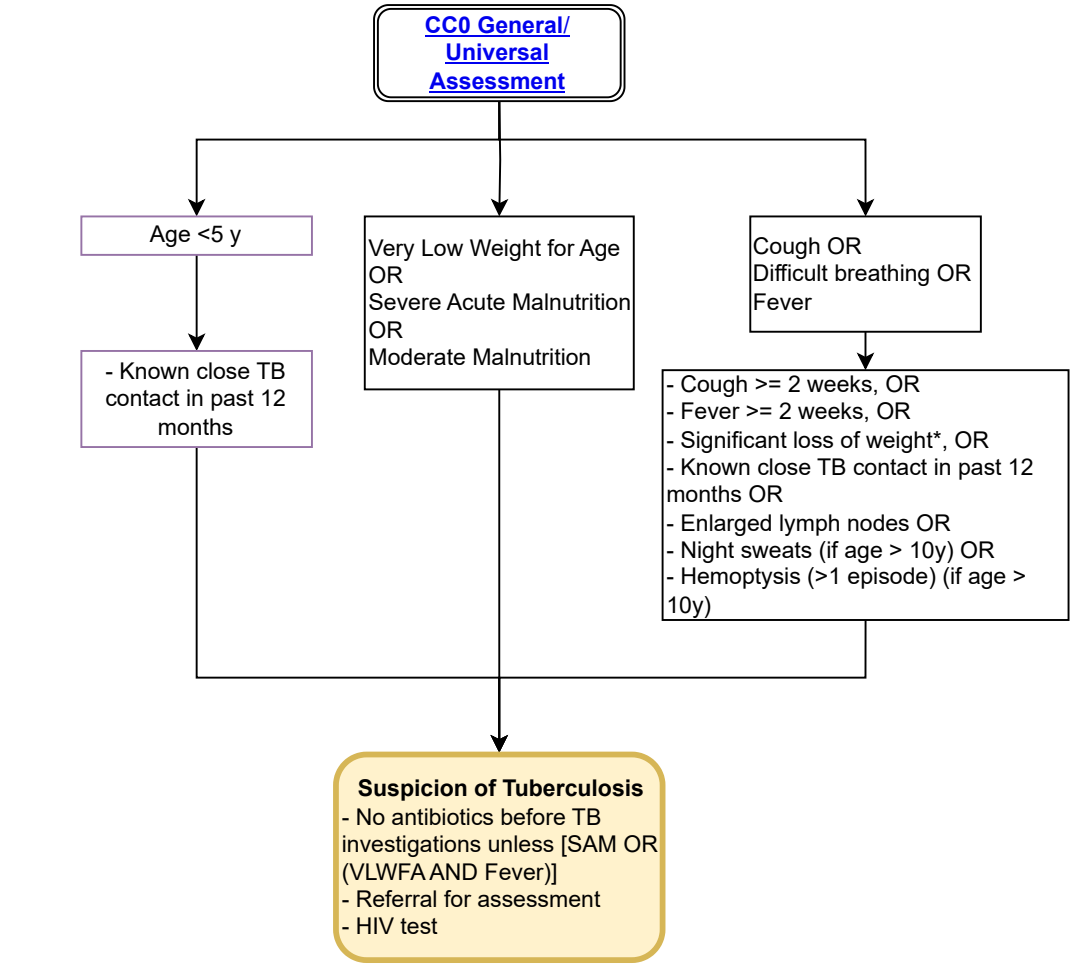
YES | NO

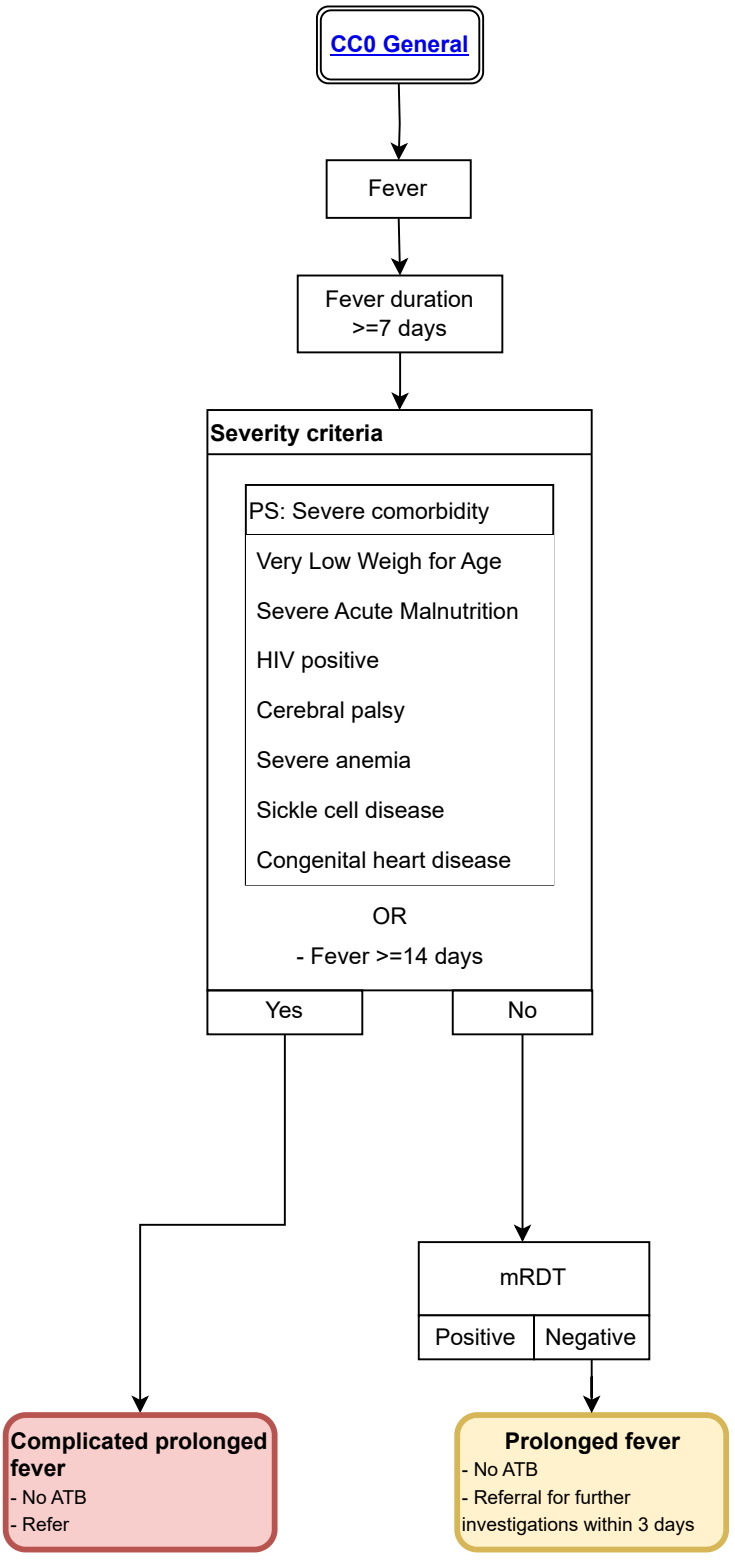
Suspected malaria
- Refer for malaria test

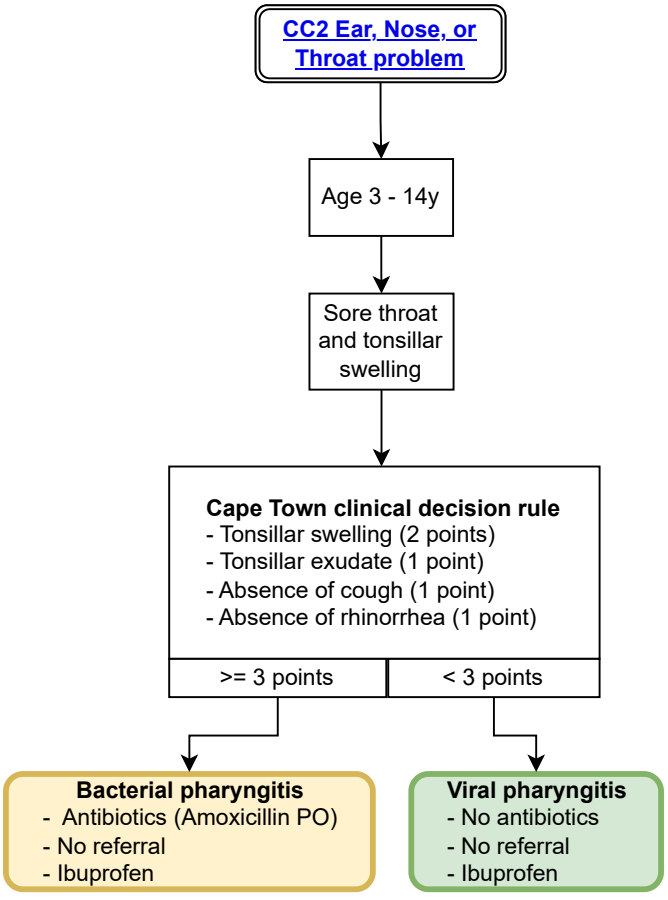
Suspected malaria
- PO artemether-Lumefantrine
- No referral
-if vomiting or diarrhea treat with 1st line: IM Artesunate / 2nd line IV quinine
- Daily visit :
  - if improvement --> switch to oral
  - in no improvement --> refer

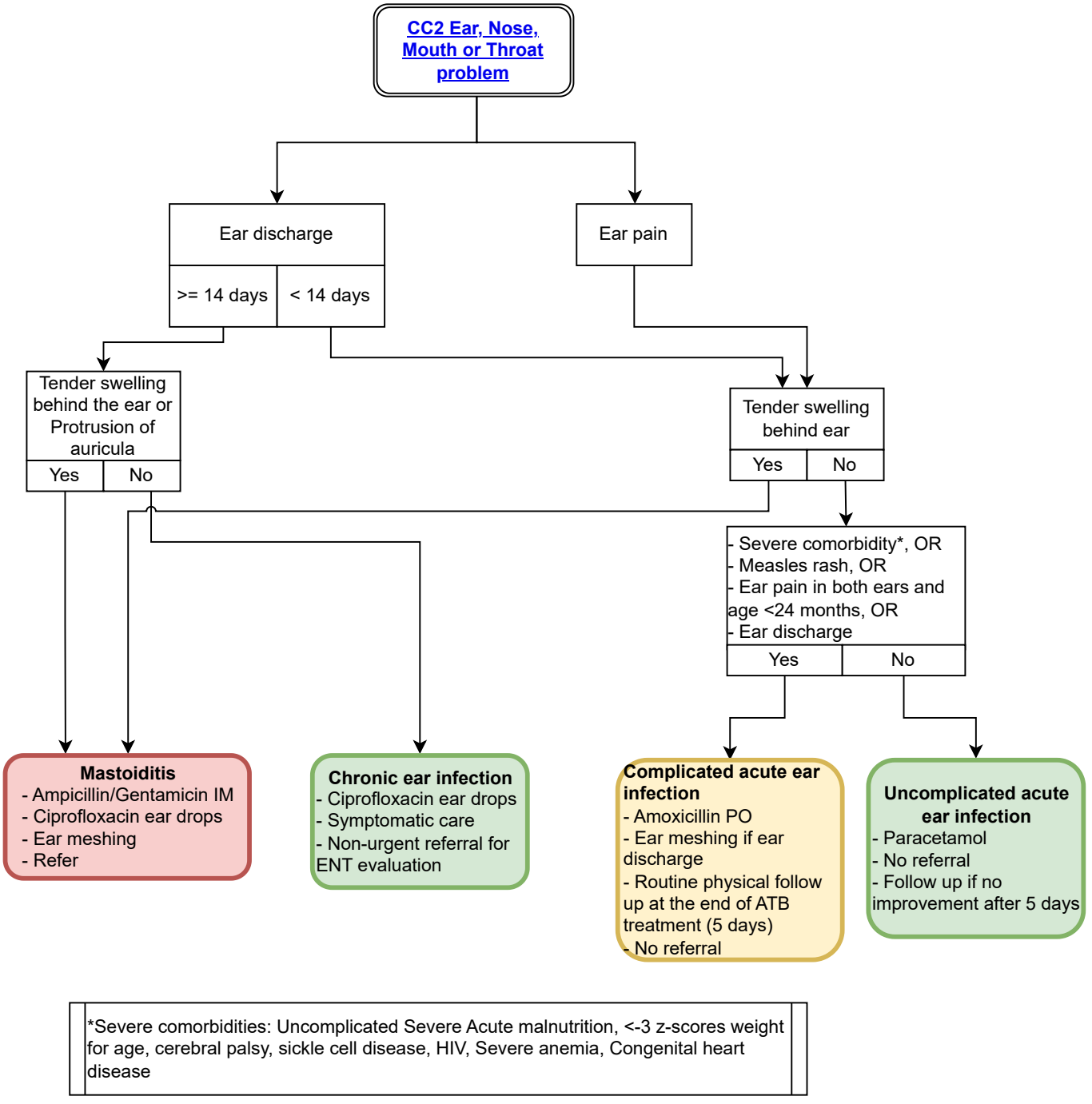
Consider admitting the patient if outpatient management impossible due to transportations constraints/social issues

Artesunate doses :
Individuals ≥20 kg: 2.4 mg/kg intravenously (first dose)
Individuals <20 kg: 3 mg/kg intravenously (first dose)

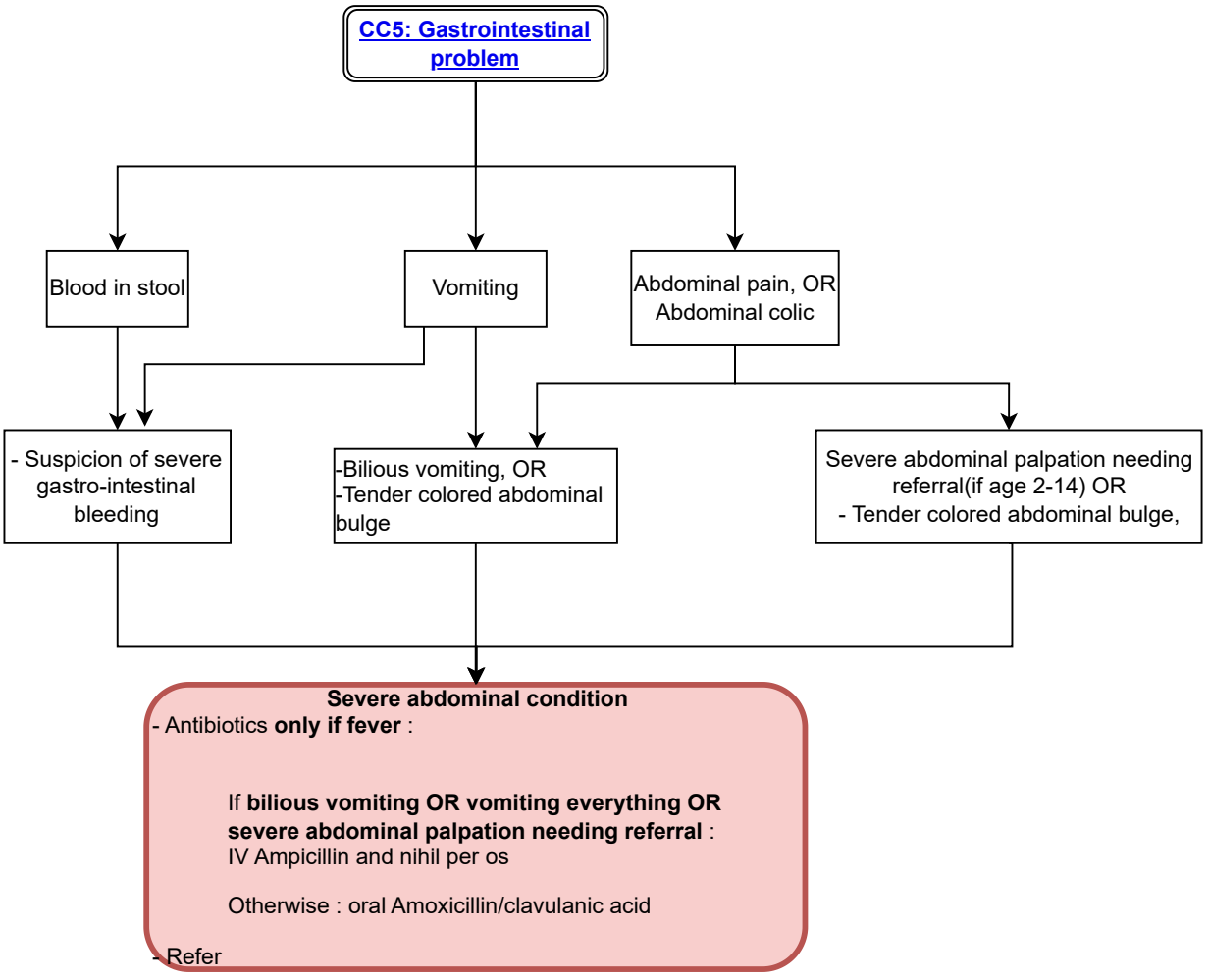

CC0 General/ Universal Assessment
Age <5 y
- Known close TB contact in past 12 months
Very Low Weight for Age OR
Severe Acute Malnutrition OR
Moderate Malnutrition
Cough OR
Difficult breathing OR
Fever
- Cough >= 2 weeks, OR
- Fever >= 2 weeks, OR
- Significant loss of weight*, OR
- Known close TB contact in past 12 months OR
- Enlarged lymph nodes OR
- Night sweats (if age > 10y) OR
- Hemoptysis (>1 episode) (if age > 10y)
Suspicion of Tuberculosis
- No antibiotics before TB investigations unless [SAM OR (VLWFA AND Fever)]
- Referral for assessment
- HIV test
*Significant weight loss = Poor weight gain, failure to thrive, documented weight loss


CC0 General
Fever
Fever duration >=7 days
Severity criteria
PS: Severe comorbidity
Very Low Weigh for Age
Severe Acute Malnutrition
HIV positive
Cerebral palsy
Severe anemia
Sickle cell disease
Congenital heart disease
OR
- Fever >=14 days
Yes
No
mRDT
Positive
Negative
Complicated prolonged fever
- No ATB
- Refer
Prolonged fever
- No ATB
- Referral for further investigations within 3 days

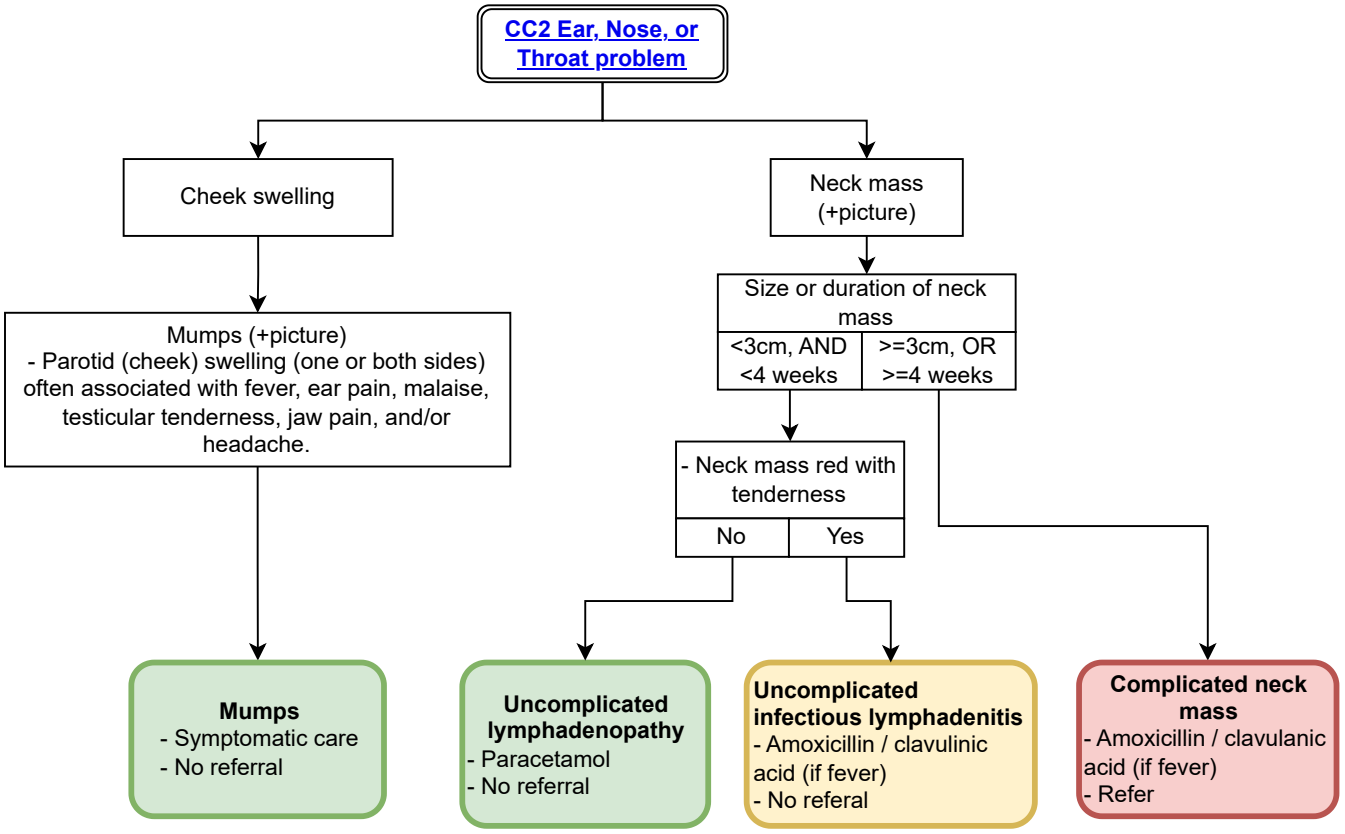

CC2 Ear, Nose, or Throat problem
Age 3 - 14y
Sore throat and tonsillar swelling
Cape Town clinical decision rule
- Tonsillar swelling (2 points)
- Tonsillar exudate (1 point)
- Absence of cough (1 point)
- Absence of rhinorrhea (1 point)
>= 3 points
< 3 points
Bacterial pharyngitis
- Antibiotics (Amoxicillin PO)
- No referral
- Ibuprofen
Viral pharyngitis
- No antibiotics
- No referral
- Ibuprofen

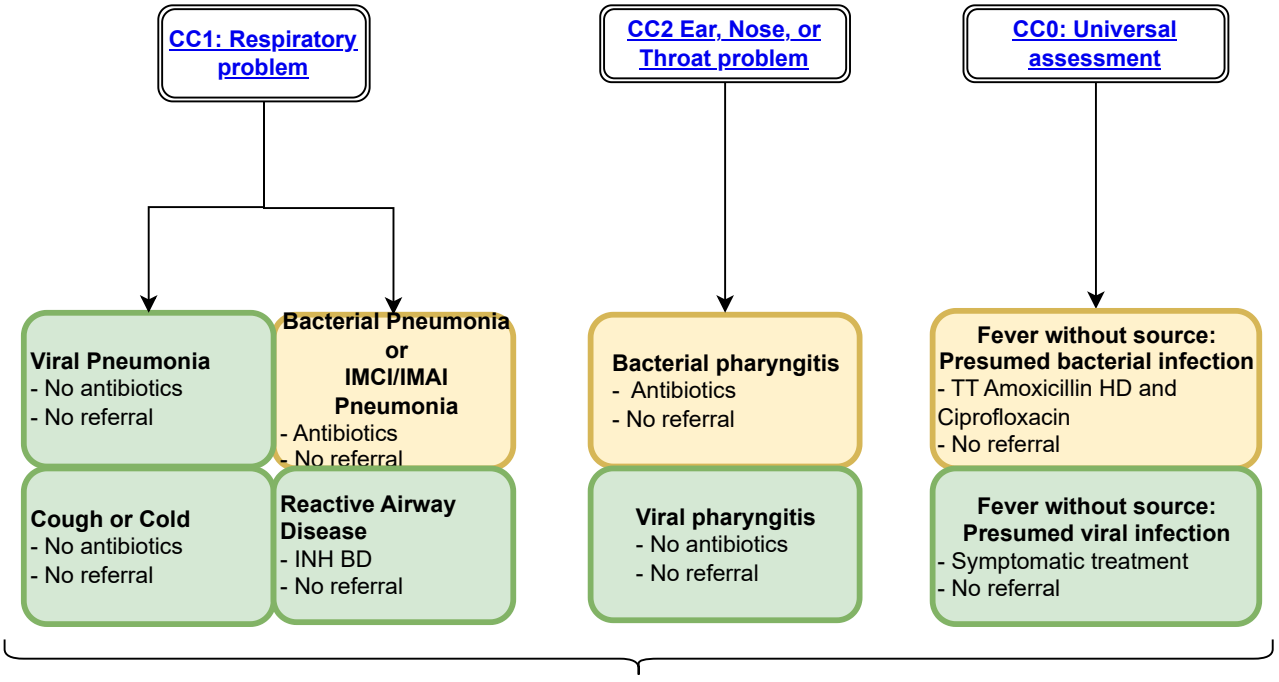


*Severe comorbidities: Uncomplicated Severe Acute malnutrition, <-3 z-scores weight for age, cerebral palsy, sickle cell disease, HIV, Severe anemia, Congenital heart disease



*Severe abdominal palpation needing referral =
Diffuse rebound tenderness. Pain to even light touch.
Specific signs of appendicitis: Right lower quadrant tenderness or rebound tenderness, accentuated when jumping on right foot, pain migrating from the umbilical region associated with fever.


CC2 Ear, Nose, or Throat problem
Cheek swelling
Neck mass (+picture)
Mumps (+picture)
- Parotid (cheek) swelling (one or both sides) often associated with fever, ear pain, malaise, testicular tenderness, jaw pain, and/or headache.
Size or duration of neck mass
<3cm, AND <4 weeks
>=3cm, OR >=4 weeks
- Neck mass red with tenderness
No
Yes
Mumps
- Symptomatic care
- No referral
Uncomplicated lymphadenopathy
- Paracetamol
- No referral
Uncomplicated infectious lymphadenitis
- Amoxicillin / clavulinic acid (if fever)
- No referal
Complicated neck mass
- Amoxicillin / clavulanic acid (if fever)
- Refer



COVID-19 guidance:

The patient is presenting signs and symptoms compatible with COVID-19.
Patients with suspected COVID-19 should be isolated to contain virus transmission (especially to vulnerable populations).
Please follow local guidelines in order for the patient to be refered to a designated COVID-19 health facility, community facility or at home (self-isolation).
Antibiotics are not recommended for treatment or prophylaxis for patients with mild or moderate COVID-19 (unless there is clinical suspicion of a bacterial infection). Of note, few patients with COVID-19 experience a secondary bacterial infection.

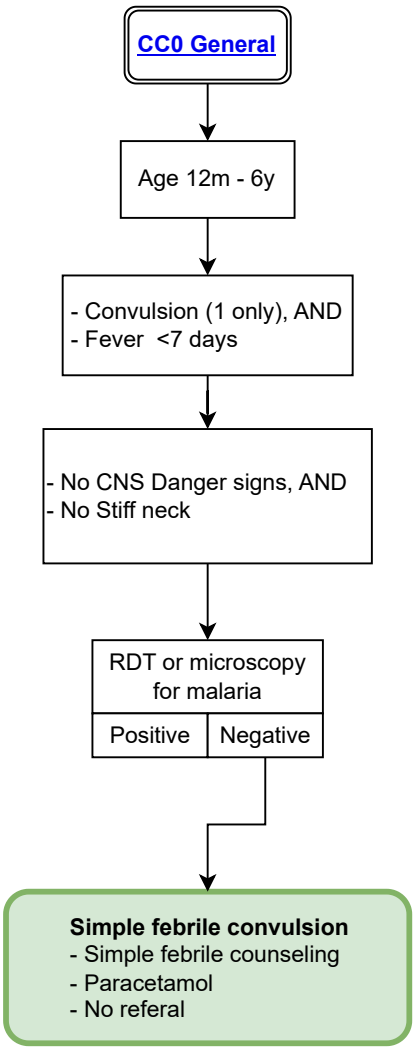
If the patient will be self-isolated at home, the following recommendations should be followed:
- Place the patient in a well-ventilated single room (ideally in a different room from others)
- Limit movement of the patient in the house and minimize shared space (keep windows open) if sharing space.
- Wash hands after any type of contact with the patient or their immediate environment.
- A mask should be worn as much as possible by the patient.
- Caregivers should wear a mask when in the same room as the patient.
- Avoid direct contact with body fluids (oral respiratory secretions, and stool).
- Avoid sharing potentially contaminated items (toothbrushes, eating utensils, towels, bed linen, washcloths, clothes)

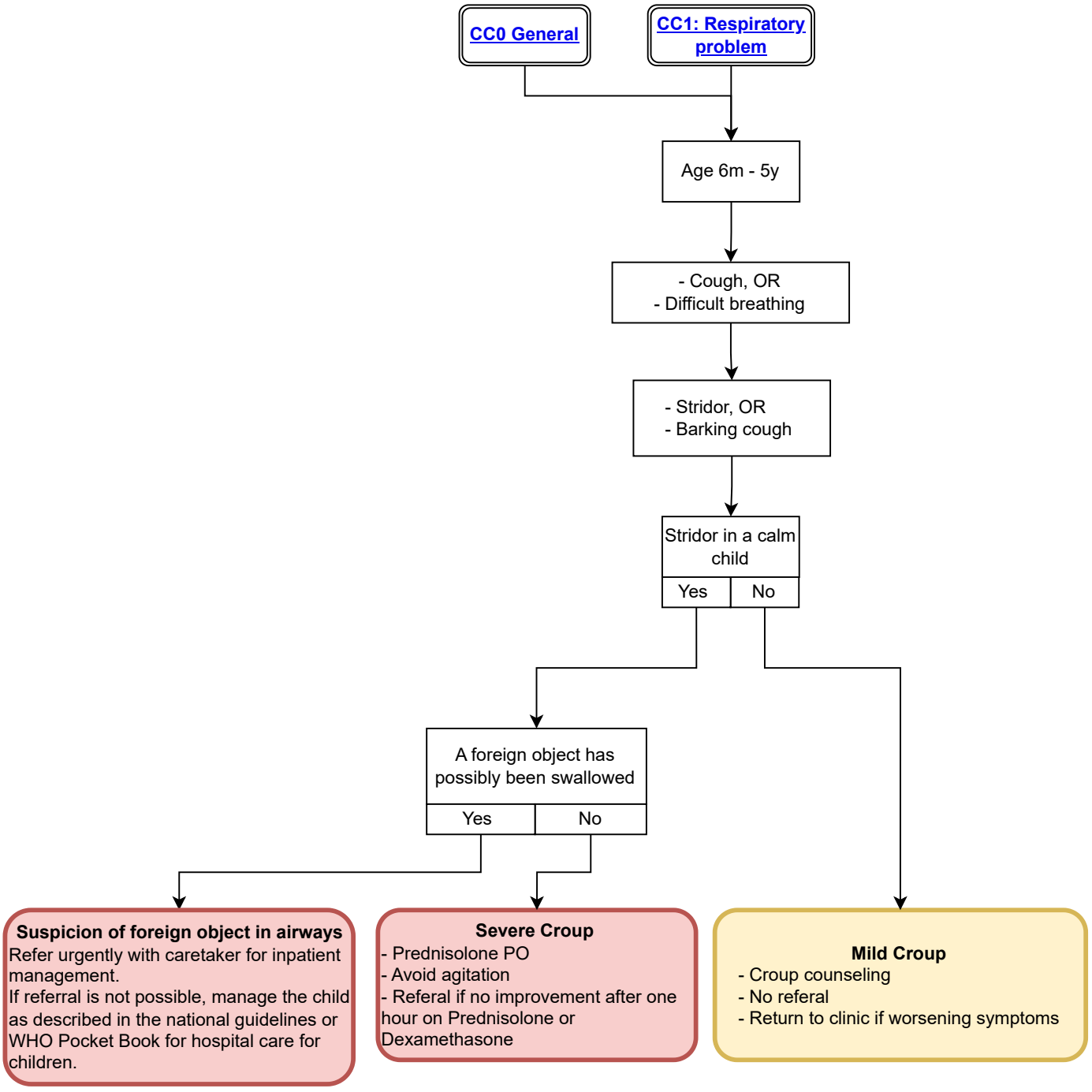
Advise close contacts of the patient that they are at risk of contracting COVID-19, and must seek care if they develop symptoms and wear face masks and wash hands.

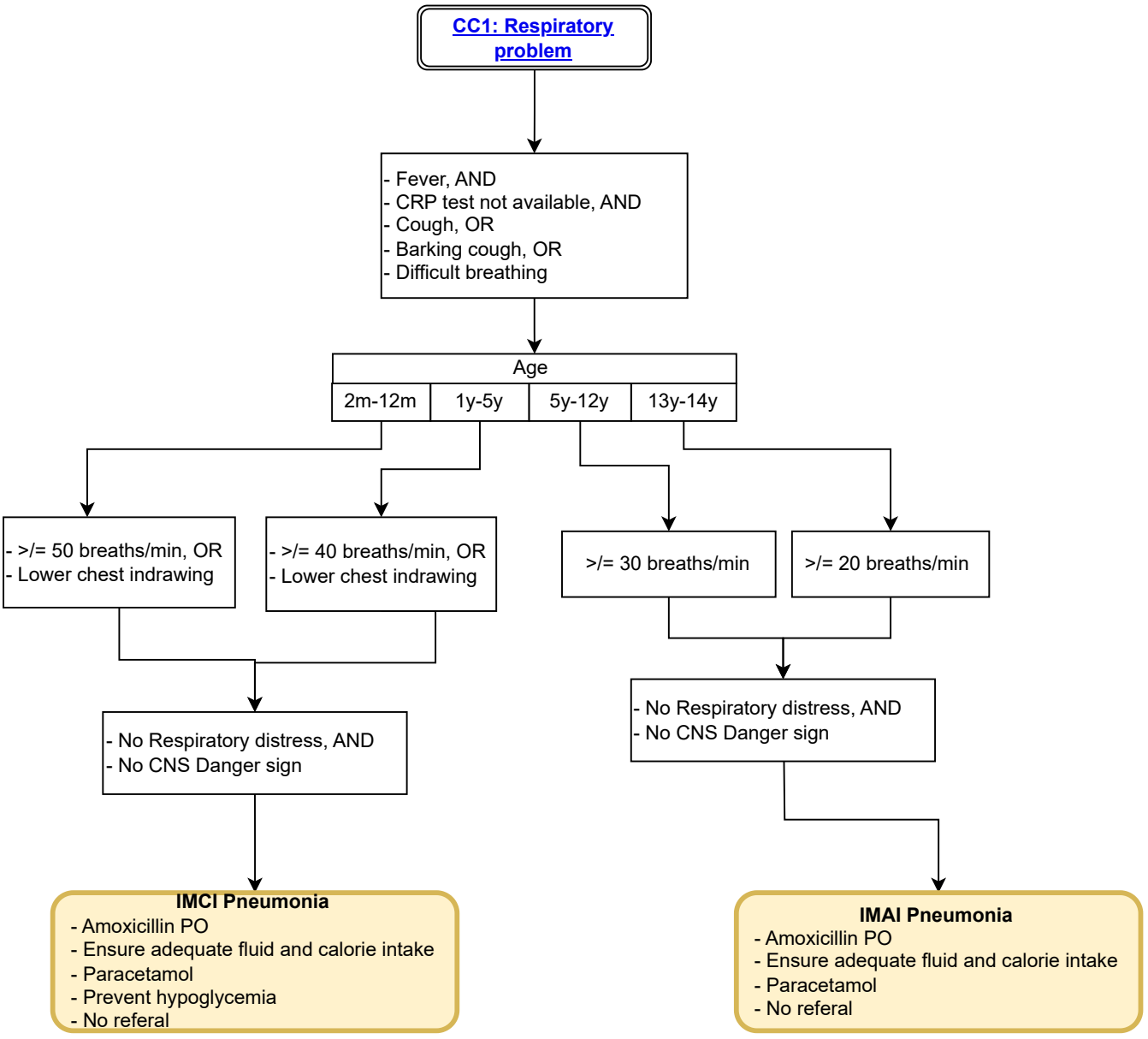
Special attention must be given to limit transmission to vulnerable close-contacts, such as those with chronic diseases (hypertension, diabetes, HIV), and the elderly (>= 60 years).

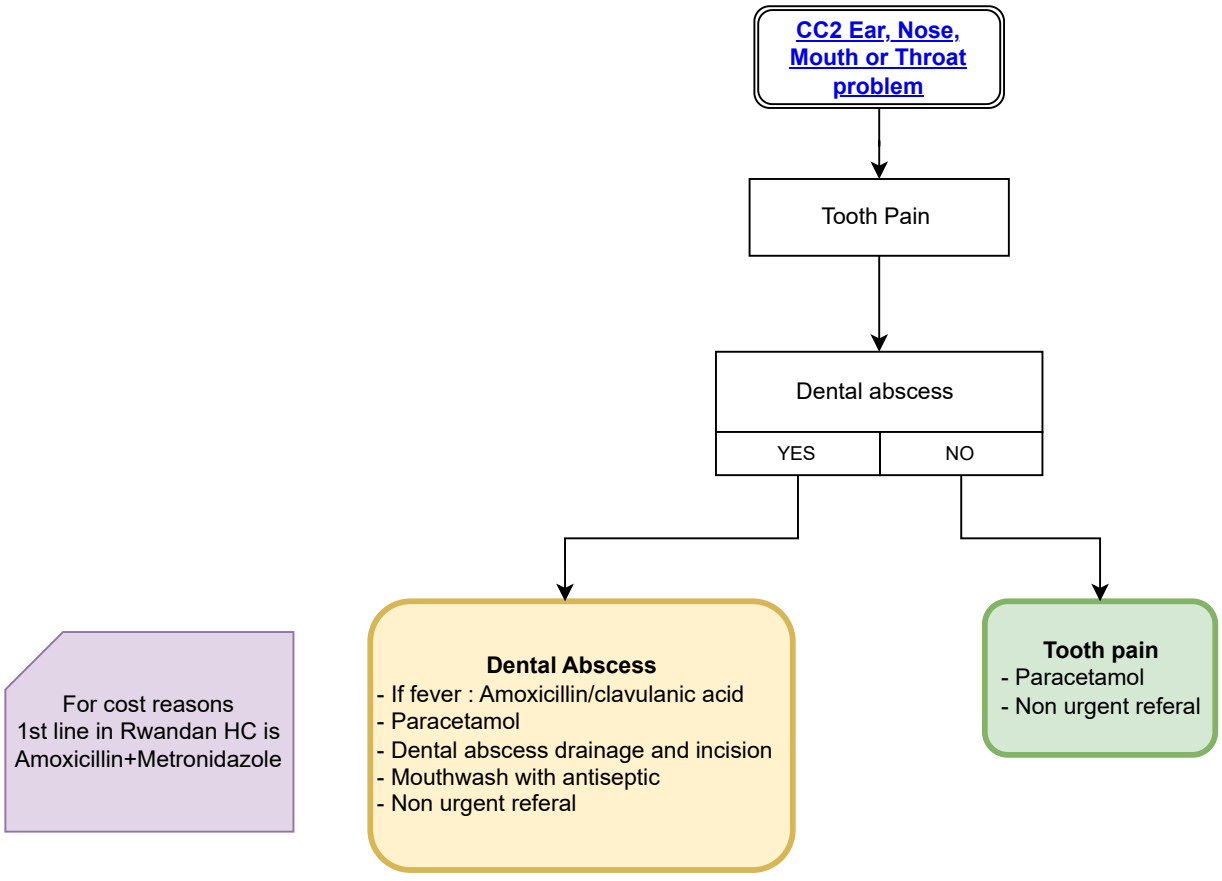
Return to clinic in case there are worsening symptoms (especialy dyspnea)

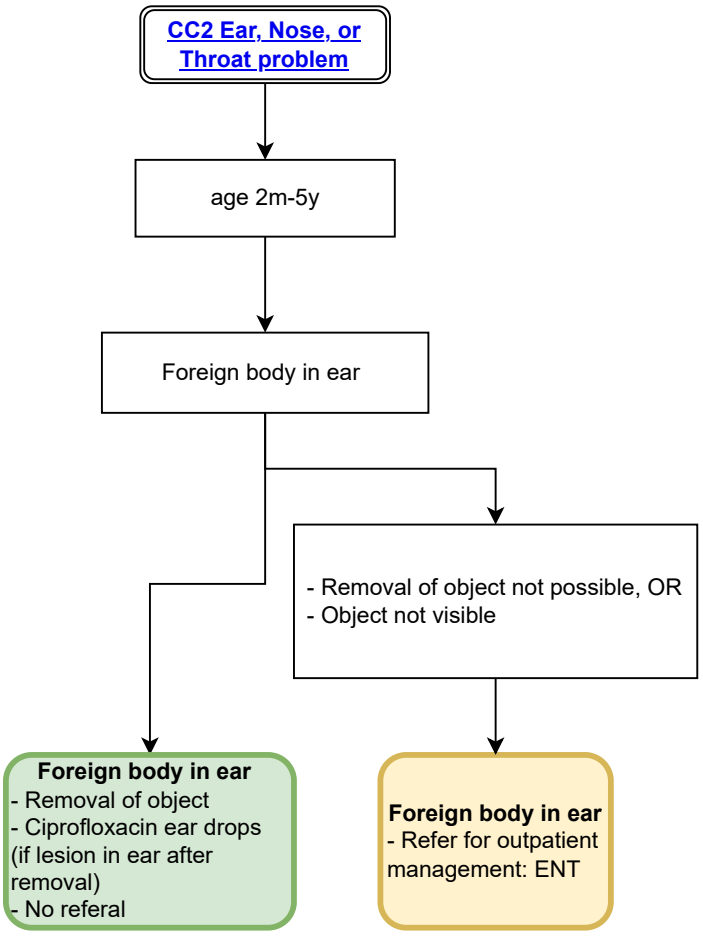
REF: WHO/2019-nCov/IPC/HomeCare/2020.3

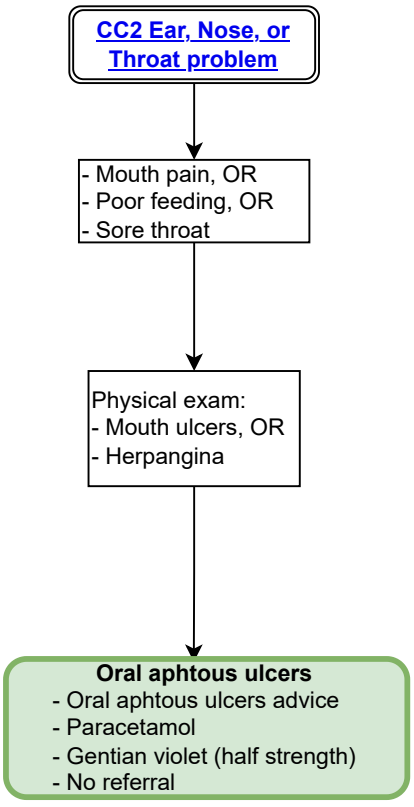

CC0 General
Age 12m - 6y
- Convulsion (1 only), AND
- Fever <7 days
- No CNS Danger signs, AND
- No Stiff neck
RDT or microscopy for malaria
Positive
Negative
Simple febrile convulsion
- Simple febrile counseling
- Paracetamol
- No referal

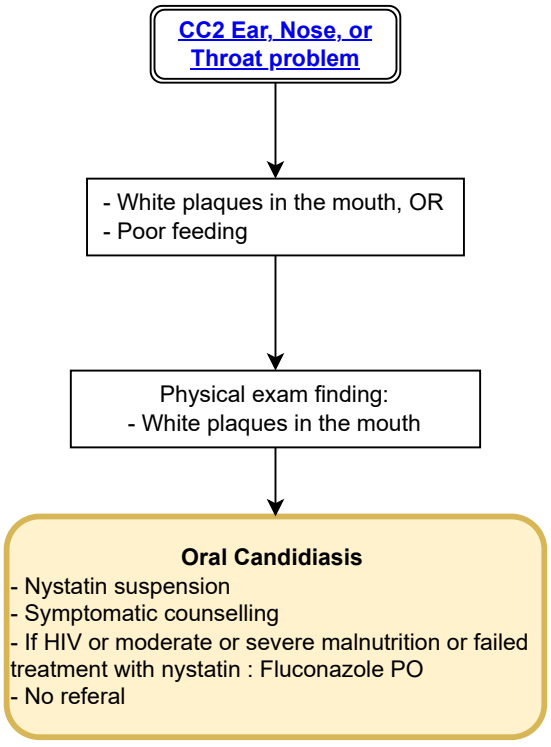

CC0 General
CC1: Respiratory problem
Age 6m - 5y
- Cough, OR
- Difficult breathing
- Stridor, OR
- Barking cough
Stridor in a calm child
Yes
No
A foreign object has possibly been swallowed
Yes
No
Suspicion of foreign object in airways
Refer urgently with caretaker for inpatient management.
If referral is not possible, manage the child as described in the national guidelines or WHO Pocket Book for hospital care for children.
Severe Croup
- Prednisolone PO
- Avoid agitation
- Referal if no improvement after one hour on Prednisolone or Dexamethasone
Mild Croup
- Croup counseling
- No referal
- Return to clinic if worsening symptoms

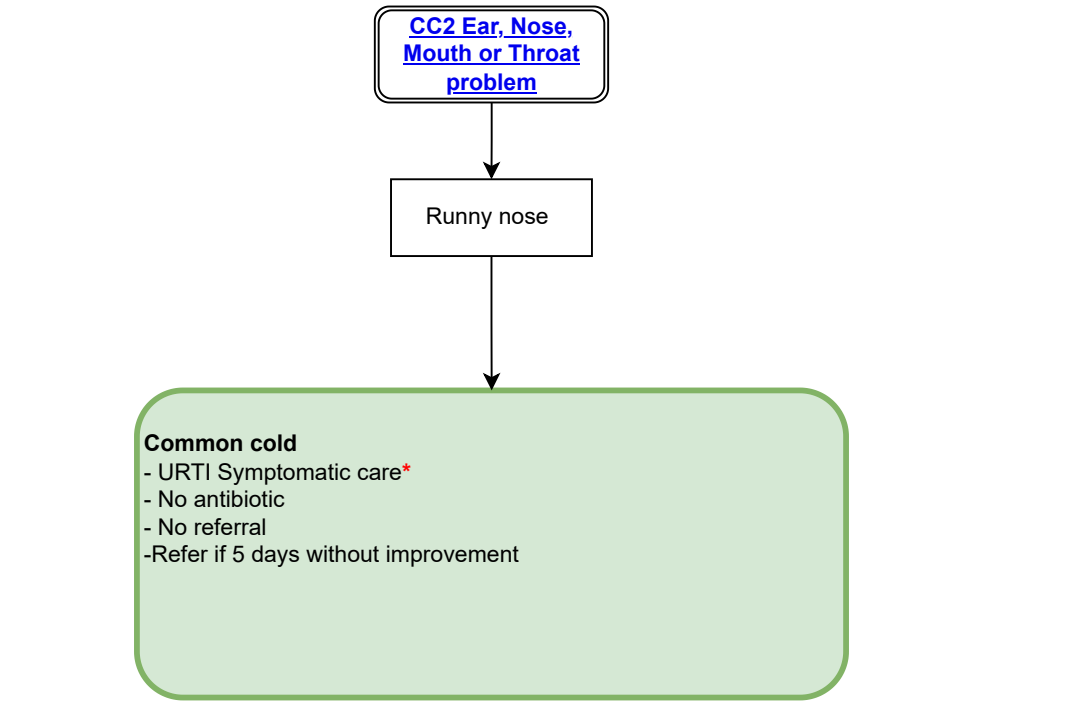

CC1: Respiratory problem
- Fever, AND
- CRP test not available, AND
- Cough, OR
- Barking cough, OR
- Difficult breathing
Age
2m-12m
1y-5y
5y-12y
13y-14y
- >/= 50 breaths/min, OR
- Lower chest indrawing
- >/= 40 breaths/min, OR
- Lower chest indrawing
>/= 30 breaths/min
>/= 20 breaths/min
- No Respiratory distress, AND
- No CNS Danger sign
- No Respiratory distress, AND
- No CNS Danger sign
IMCI Pneumonia
- Amoxicillin PO
- Ensure adequate fluid and calorie intake
- Paracetamol
- Prevent hypoglycemia
- No referal
IMAI Pneumonia
- Amoxicillin PO
- Ensure adequate fluid and calorie intake
- Paracetamol
- No referal


CC2 Ear, Nose, Mouth or Throat problem
Tooth Pain
Dental abscess
YES
NO
For cost reasons
1st line in Rwandan HC is
Amoxicillin+Metronidazole
Dental Abscess
- If fever : Amoxicillin/clavulanic acid
- Paracetamol
- Dental abscess drainage and incision
- Mouthwash with antiseptic
- Non urgent referal
Tooth pain
- Paracetamol
- Non urgent referal

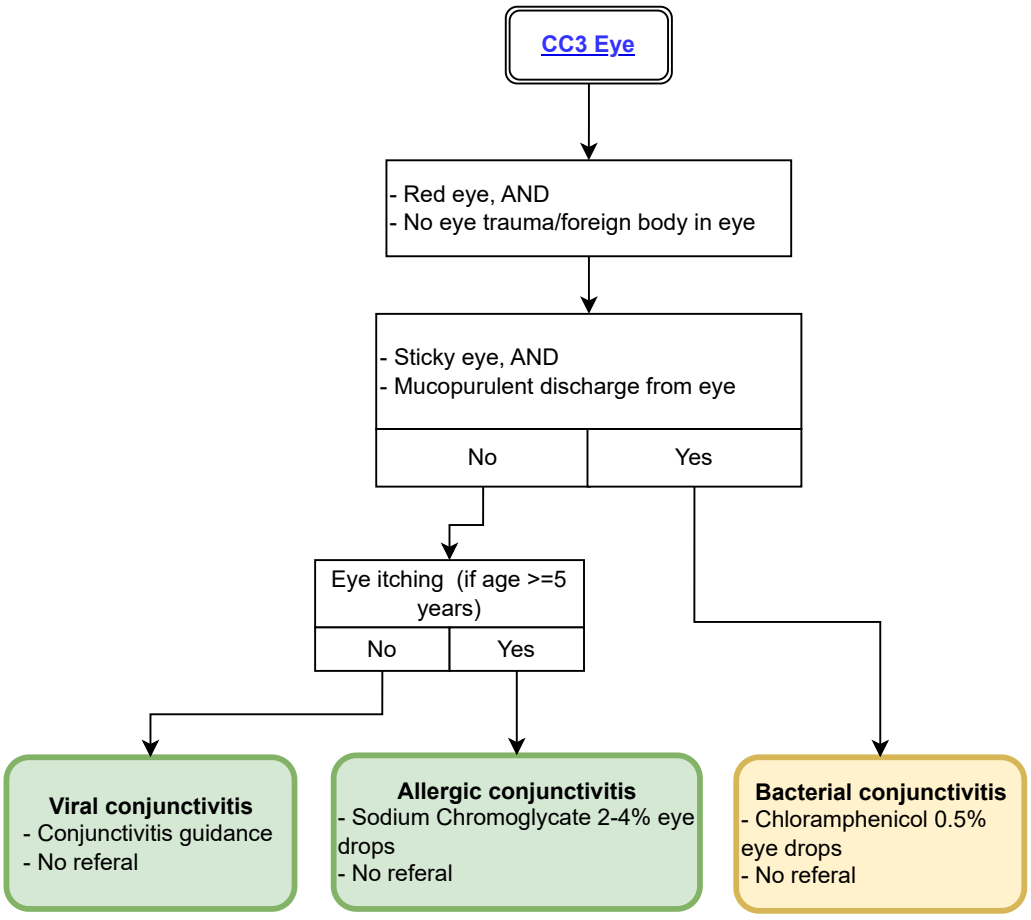

CC2 Ear, Nose, or Throat problem
age 2m-5y
Foreign body in ear
- Removal of object not possible, OR
- Object not visible
Foreign body in ear
- Removal of object
- Ciprofloxacin ear drops (if lesion in ear after removal)
- No referal
Foreign body in ear
- Refer for outpatient management: ENT

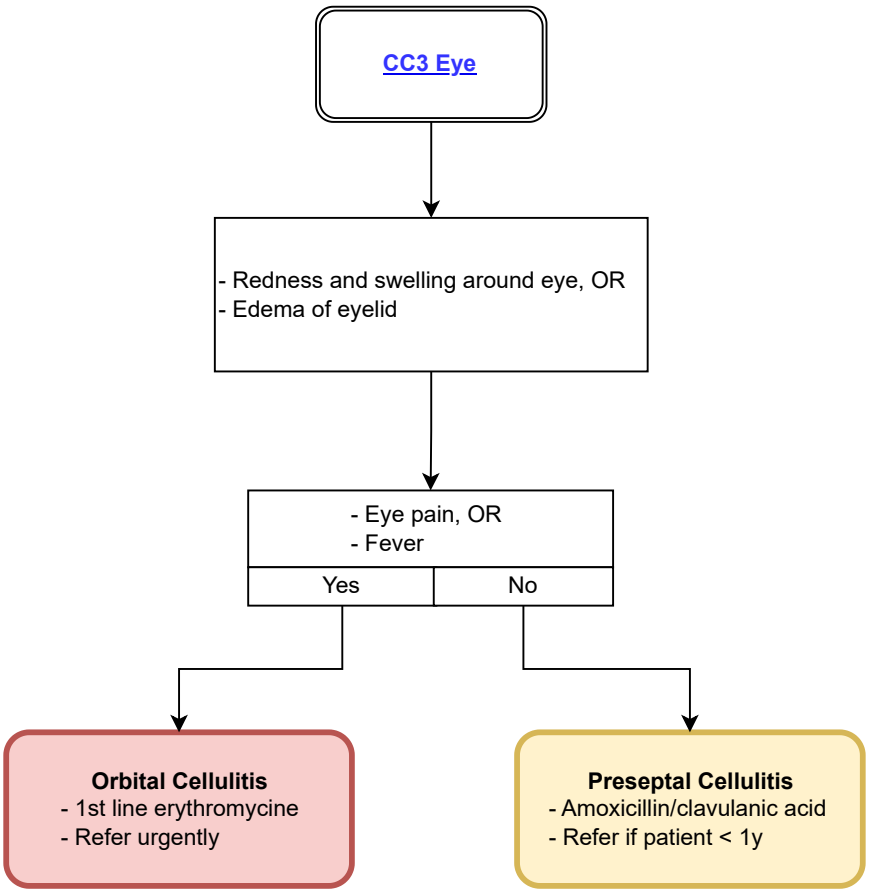

CC2 Ear, Nose, or Throat problem
- Mouth pain, OR
- Poor feeding, OR
- Sore throat
Physical exam:
- Mouth ulcers, OR
- Herpangina
Oral aphtous ulcers
- Oral aphtous ulcers advice
- Paracetamol
- Gentian violet (half strength)
- No referral

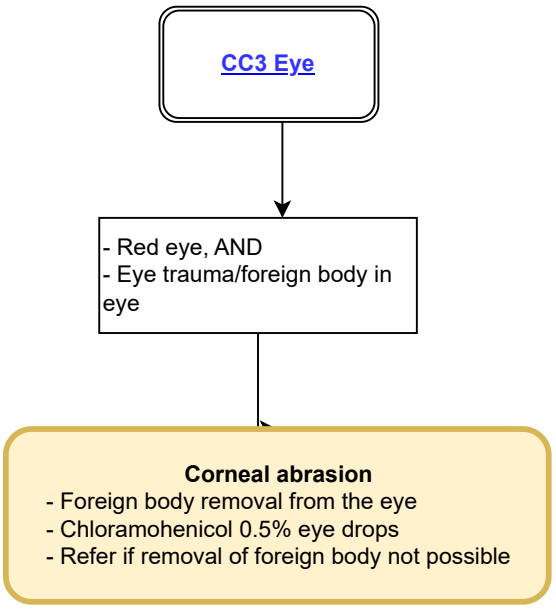

CC2 Ear, Nose, or Throat problem
- White plaques in the mouth, OR
- Poor feeding
Physical exam finding:
- White plaques in the mouth
Oral Candidiasis
- Nystatin suspension
- Symptomatic counselling
- If HIV or moderate or severe malnutrition or failed treatment with nystatin : Fluconazole PO
- No referal

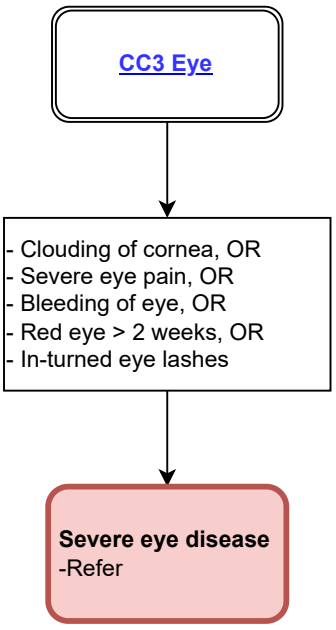


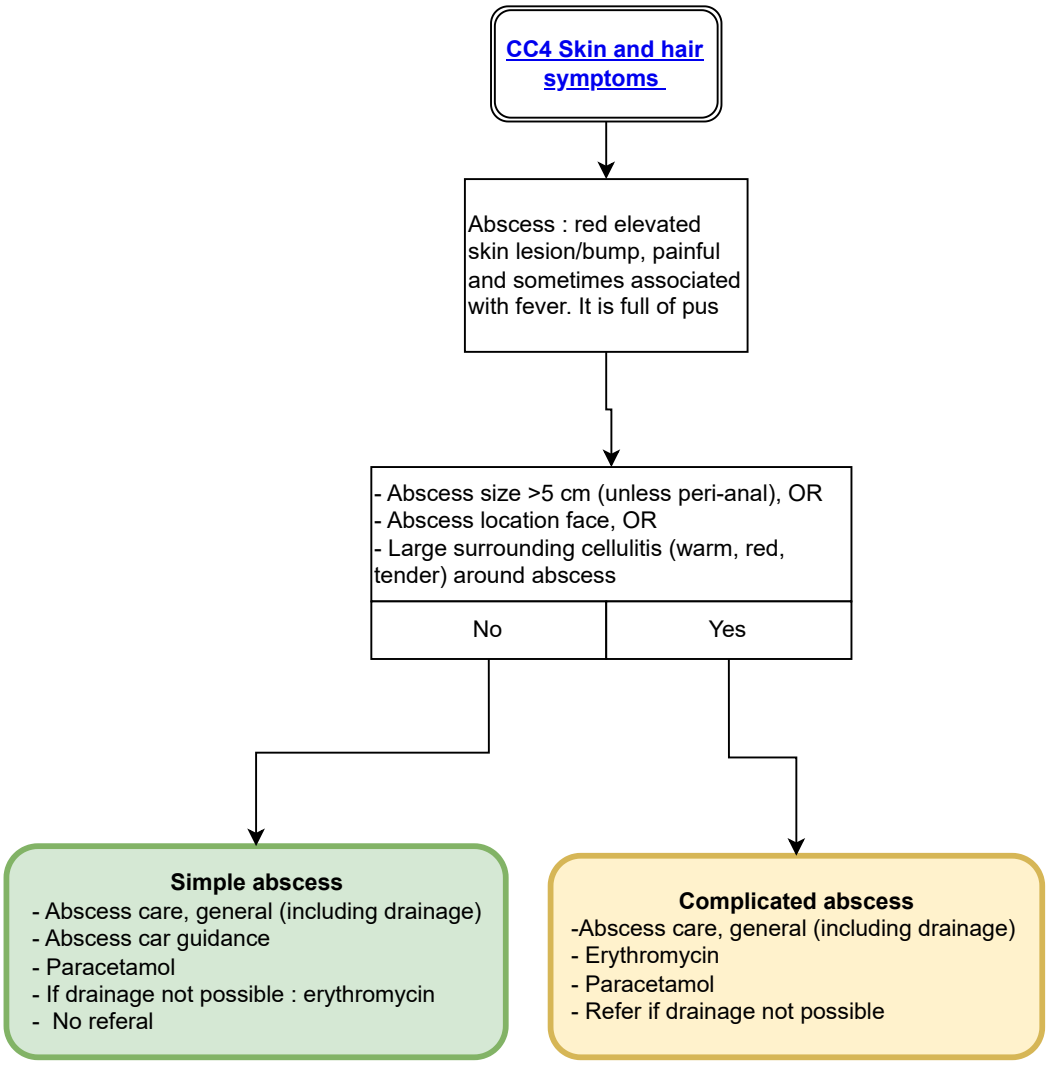
*Soothe the throat and relieve the cough with a safe remedy, such as tea with lemon, lime, or honey.- Drink fluids: Fluids keep the throat moist and prevent dehydration.- Clear secretions from child using a cloth soaked in water that has been twisted to form a pointed wick(Adapted from IMCI 2014, and Mayo Clinic 2020)

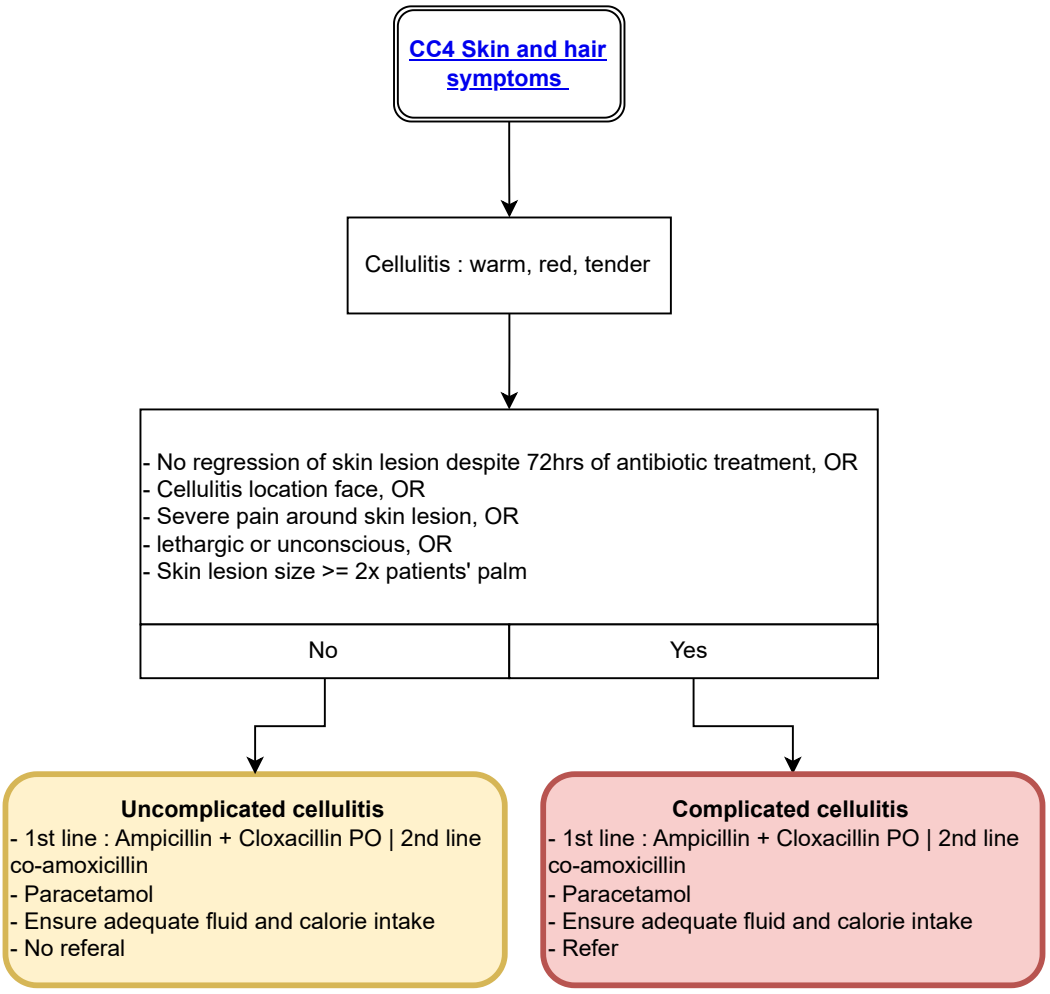

CC3 Eye
- Red eye, AND
- No eye trauma/foreign body in eye
- Sticky eye, AND
- Mucopurulent discharge from eye
No
Yes
Eye itching (if age >=5 years)
No
Yes
Viral conjunctivitis
- Conjunctivitis guidance
- No referal
Allergic conjunctivitis
- Sodium Chromoglycate 2-4% eye drops
- No referal
Bacterial conjunctivitis
- Chloramphenicol 0.5% eye drops
- No referal

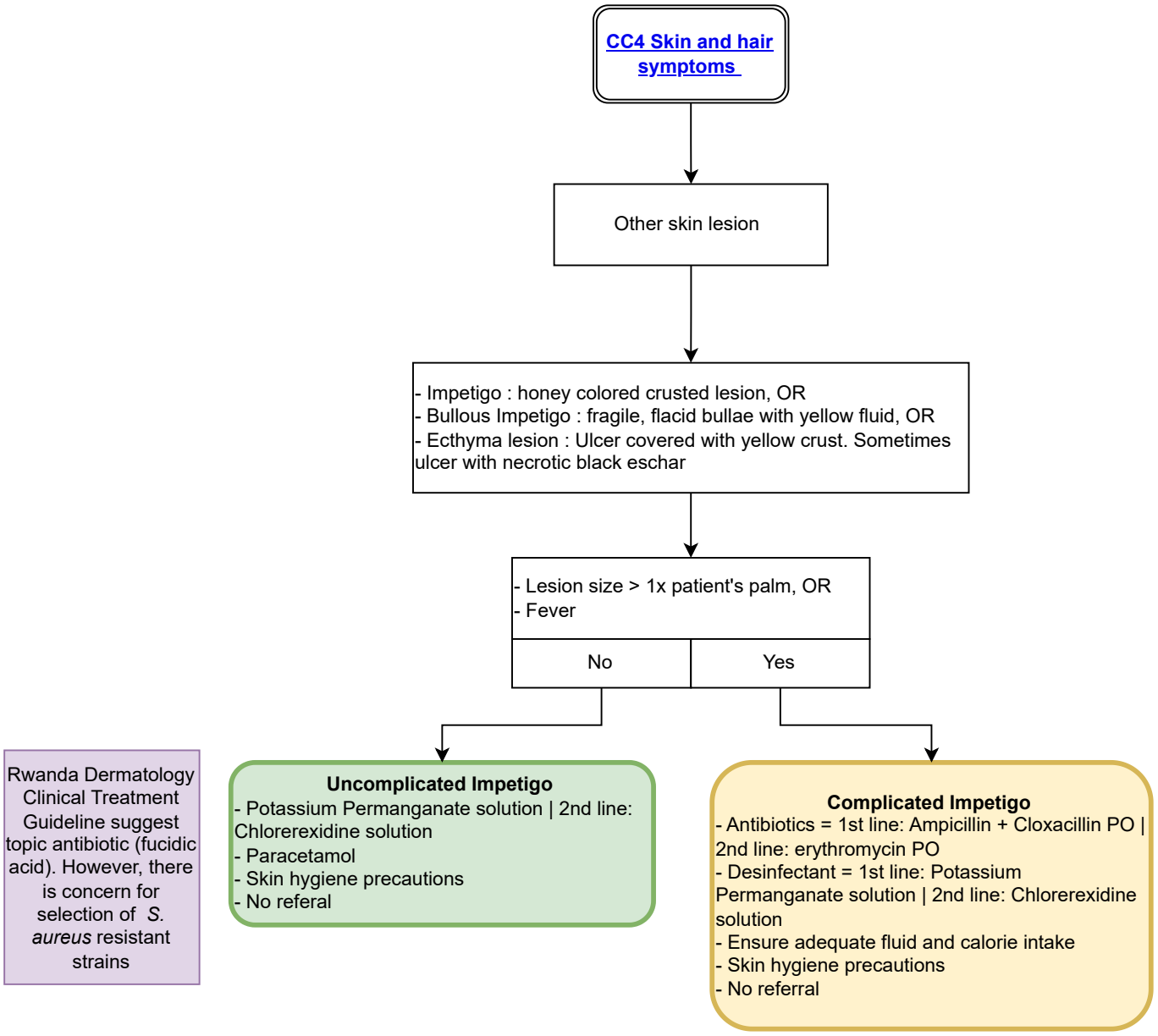

CC3 Eye
- Redness and swelling around eye, OR
- Edema of eyelid
- Eye pain, OR
- Fever
Yes
No
Orbital Cellulitis
- 1st line erythromycine
- Refer urgently
Preseptal Cellulitis
- Amoxicillin/clavulanic acid
- Refer if patient < 1y

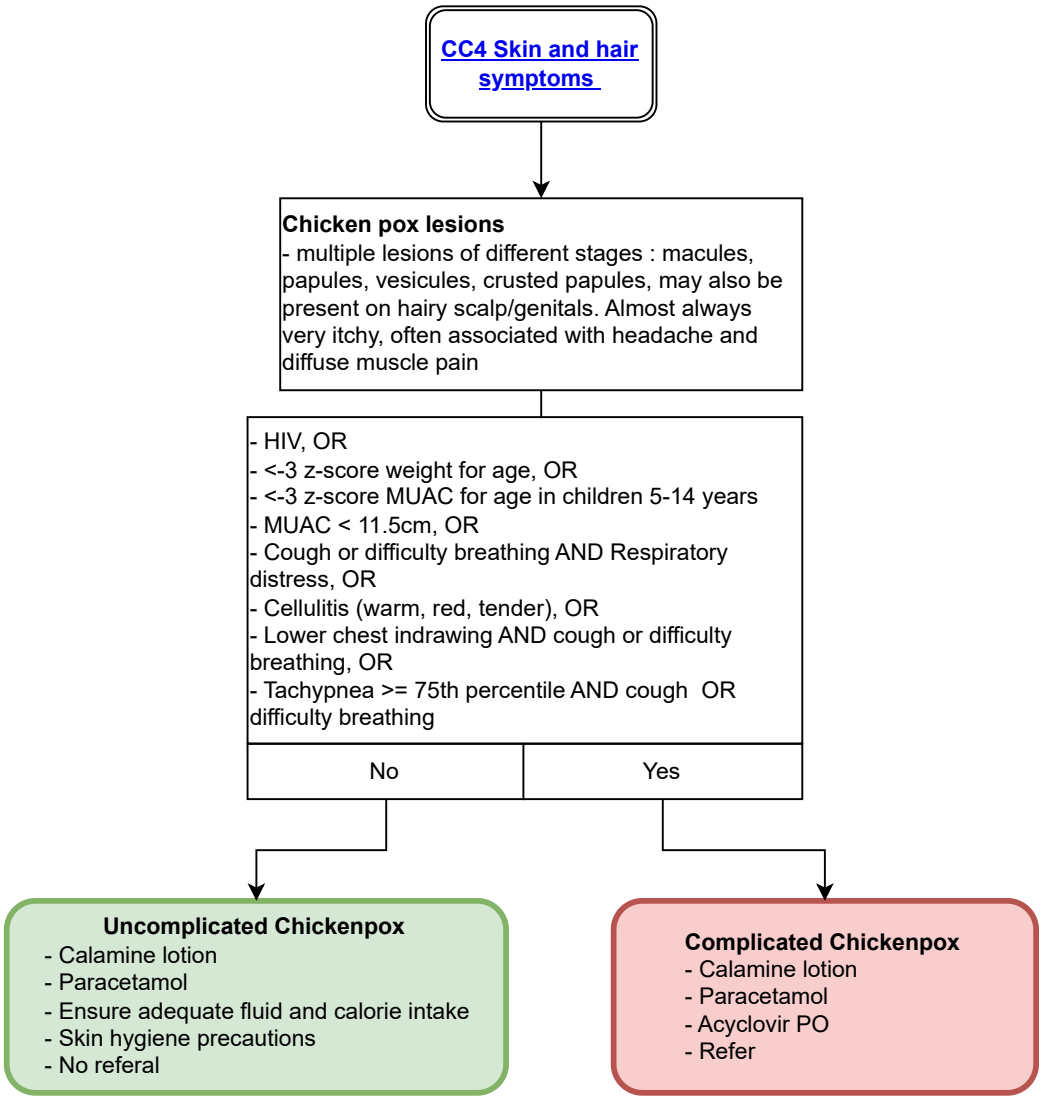

CC3 Eye
- Red eye, AND
- Eye trauma/foreign body in eye
Corneal abrasion
- Foreign body removal from the eye
- Chloramohenicol 0.5% eye drops
- Refer if removal of foreign body not possible

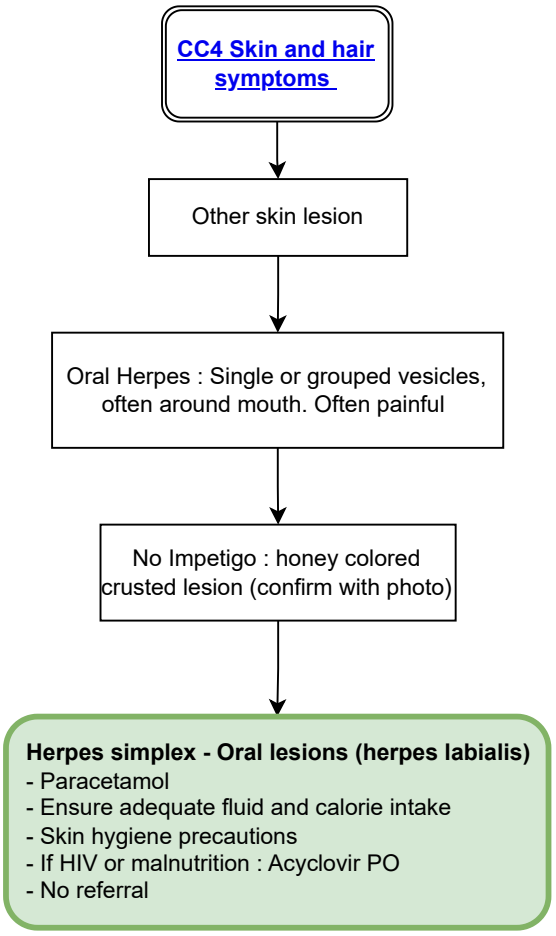

CC3 Eye
- Clouding of cornea, OR
- Severe eye pain, OR
- Bleeding of eye, OR
- Red eye > 2 weeks, OR
- In-turned eye lashes
Severe eye disease
-Refer

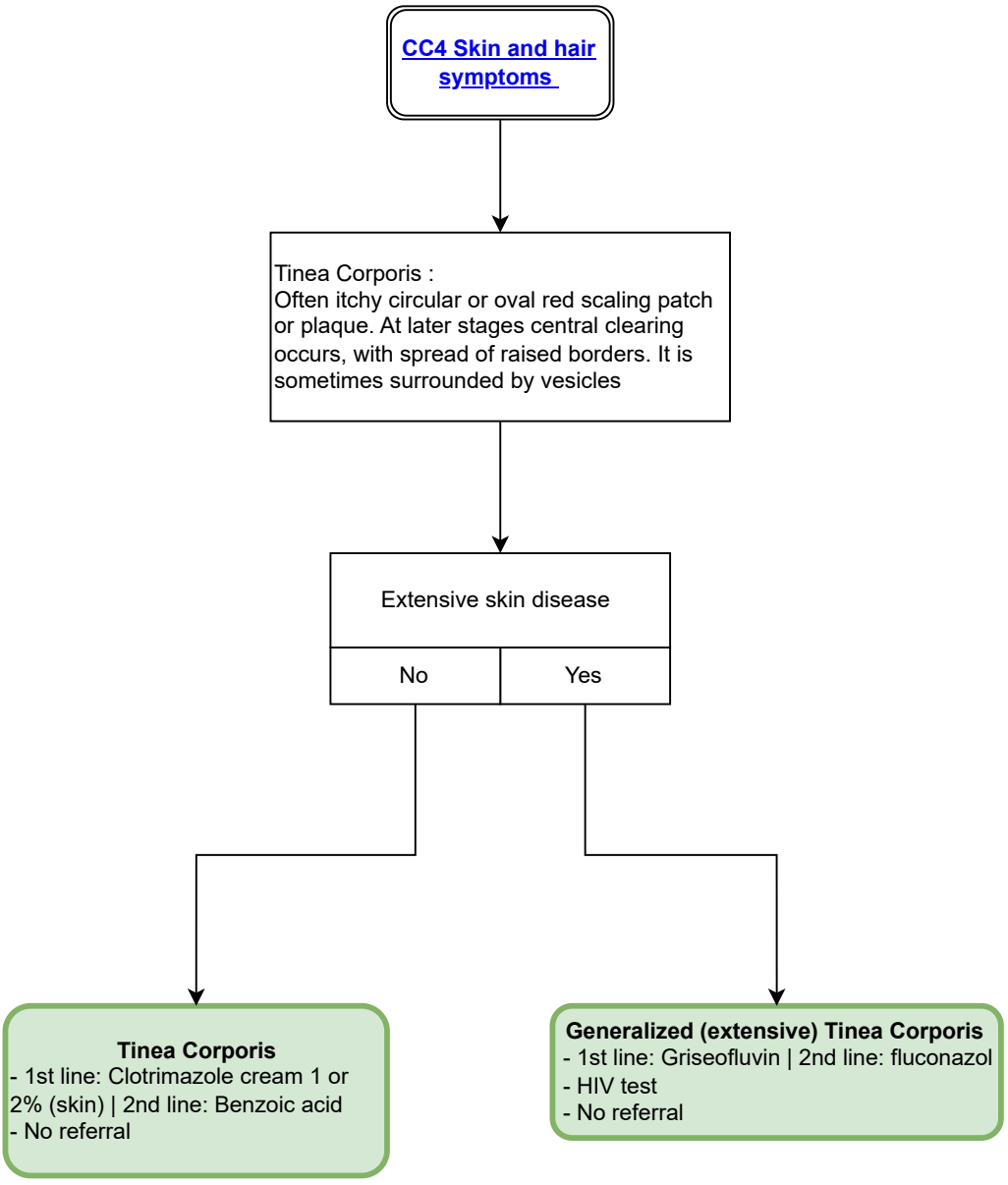

CC4 Skin and hair symptoms
Abscess : red elevated skin lesion/bump, painful and sometimes associated with fever. It is full of pus
- Abscess size >5 cm (unless peri-anal), OR
- Abscess location face, OR
- Large surrounding cellulitis (warm, red, tender) around abscess
No
Yes
Simple abscess
- Abscess care, general (including drainage)
- Abscess car guidance
- Paracetamol
- If drainage not possible : erythromycin
- No referal
Complicated abscess
-Abscess care, general (including drainage)
- Erythromycin
- Paracetamol
- Refer if drainage not possible

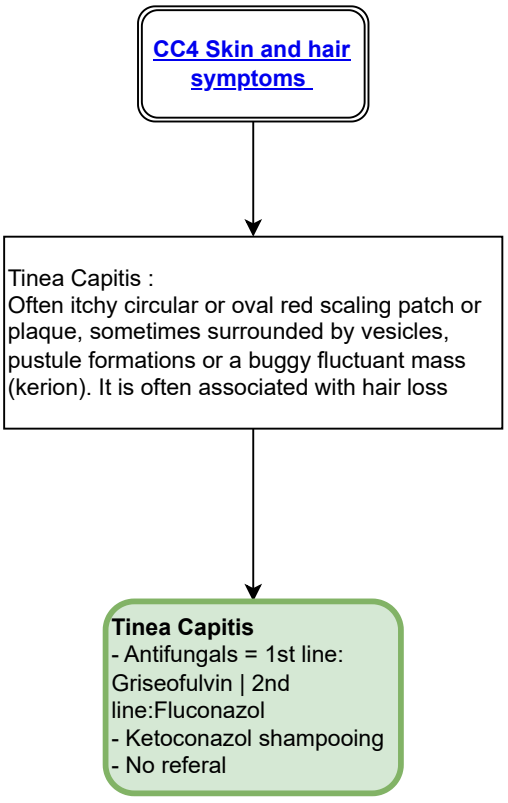

CC4 Skin and hair symptoms
Cellulitis : warm, red, tender
- No regression of skin lesion despite 72hrs of antibiotic treatment, OR
- Cellulitis location face, OR
- Severe pain around skin lesion, OR
- lethargic or unconscious, OR
- Skin lesion size >= 2x patients' palm
No
Yes
Uncomplicated cellulitis
- 1st line : Ampicillin + Cloxacillin PO | 2nd line co-amoxicillin
- Paracetamol
- Ensure adequate fluid and calorie intake
- No referal
Complicated cellulitis
- 1st line : Ampicillin + Cloxacillin PO | 2nd line co-amoxicillin
- Paracetamol
- Ensure adequate fluid and calorie intake
- Refer

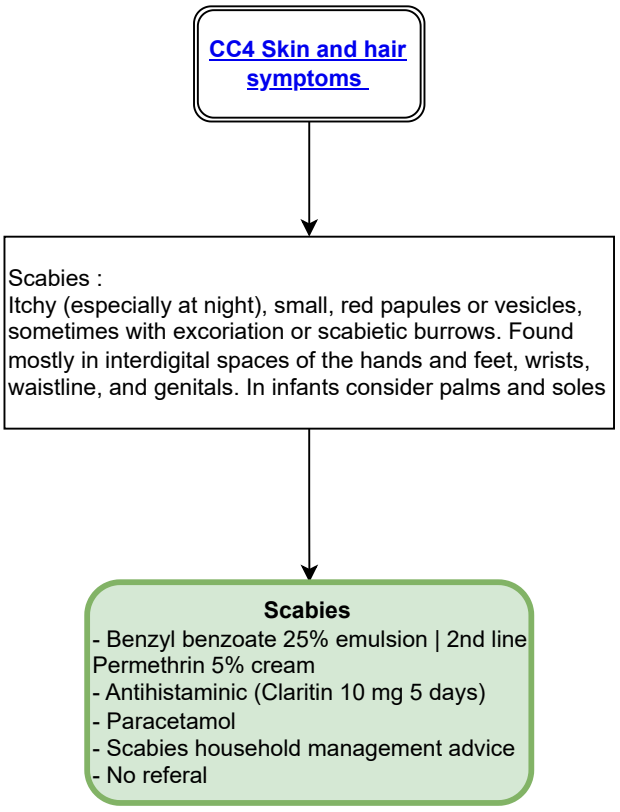

CC4 Skin and hair symptoms
Other skin lesion
- Impetigo : honey colored crusted lesion, OR
- Bullous Impetigo : fragile, flacid bullae with yellow fluid, OR
- Ecthyma lesion : Ulcer covered with yellow crust. Sometimes ulcer with necrotic black eschar
- Lesion size > 1x patient's palm, OR
- Fever
No
Yes
Rwanda Dermatology Clinical Treatment Guideline suggest topic antibiotic (fucidic acid). However, there is concern for selection of S. aureus resistant strains
Uncomplicated Impetigo
- Potassium Permanganate solution | 2nd line: Chlorerexidine solution
- Paracetamol
- Skin hygiene precautions
- No referal
Complicated Impetigo
- Antibiotics = 1st line: Ampicillin + Cloxacillin PO | 2nd line: erythromycin PO
- Desinfectant = 1st line: Potassium Permanganate solution | 2nd line: Chlorerexidine solution
- Ensure adequate fluid and calorie intake
- Skin hygiene precautions
- No referral

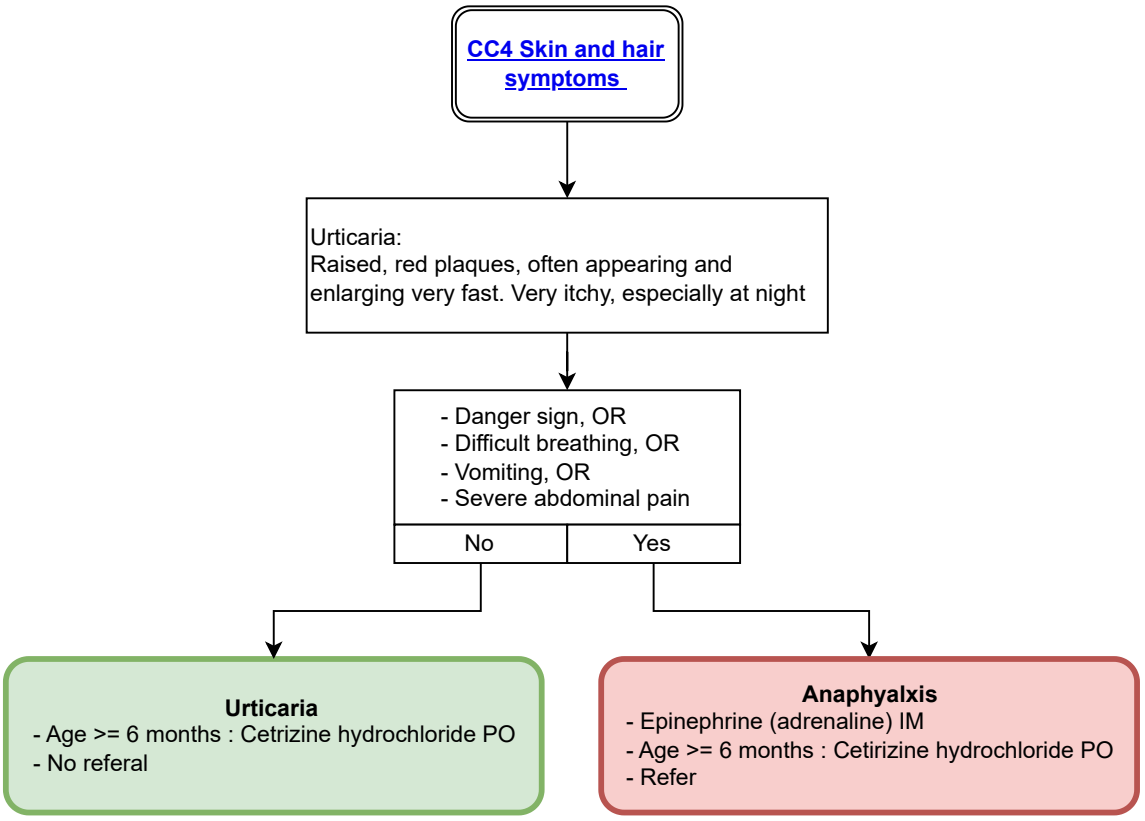

CC4 Skin and hair symptoms
Chicken pox lesions
- multiple lesions of different stages : macules, papules, vesicules, crusted papules, may also be present on hairy scalp/genitals. Almost always very itchy, often associated with headache and diffuse muscle pain
- HIV, OR
- <-3 z-score weight for age, OR
- <-3 z-score MUAC for age in children 5-14 years
- MUAC < 11.5cm, OR
- Cough or difficulty breathing AND Respiratory distress, OR
- Cellulitis (warm, red, tender), OR
- Lower chest indrawing AND cough or difficulty breathing, OR
- Tachypnea >= 75th percentile AND cough OR difficulty breathing
No
Yes
Uncomplicated Chickenpox
- Calamine lotion
- Paracetamol
- Ensure adequate fluid and calorie intake
- Skin hygiene precautions
- No referal
Complicated Chickenpox
- Calamine lotion
- Paracetamol
- Acyclovir PO
- Refer


CC4 Skin and hair symptoms
Other skin lesion
Oral Herpes : Single or grouped vesicles, often around mouth. Often painful
No Impetigo : honey colored crusted lesion (confirm with photo)
Herpes simplex - Oral lesions (herpes labialis)
- Paracetamol
- Ensure adequate fluid and calorie intake
- Skin hygiene precautions
- If HIV or malnutrition : Acyclovir PO
- No referral


CC4 Skin and hair symptoms
Tinea Corporis :
Often itchy circular or oval red scaling patch or plaque. At later stages central clearing occurs, with spread of raised borders. It is sometimes surrounded by vesicles
Extensive skin disease
No
Yes
Tinea Corporis
- 1st line: Clotrimazole cream 1 or 2% (skin) | 2nd line: Benzoic acid
- No referral
Generalized (extensive) Tinea Corporis
- 1st line: Griseofluvin | 2nd line: fluconazol
- HIV test
- No referral


CC4 Skin and hair symptoms
Tinea Capitis :
Often itchy circular or oval red scaling patch or plaque, sometimes surrounded by vesicles, pustule formations or a buggy fluctuant mass (kerion). It is often associated with hair loss
Tinea Capitis
- Antifungals = 1st line: Griseofulvin | 2nd line:Fluconazol
- Ketoconazol shampooing
- No referal

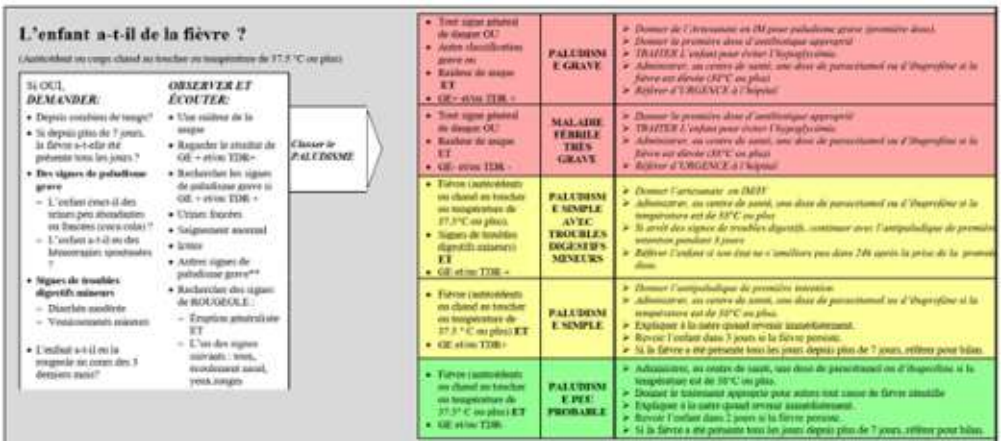

CC4 Skin and hair symptoms
Scabies :
Itchy (especially at night), small, red papules or vesicles, sometimes with excoriation or scabietic burrows. Found mostly in interdigital spaces of the hands and feet, wrists, waistline, and genitals. In infants consider palms and soles
Scabies
- Benzyl benzoate 25% emulsion | 2nd line Permethrin 5% cream
- Antihistaminic (Claritin 10 mg 5 days)
- Paracetamol
- Scabies household management advice
- No referal

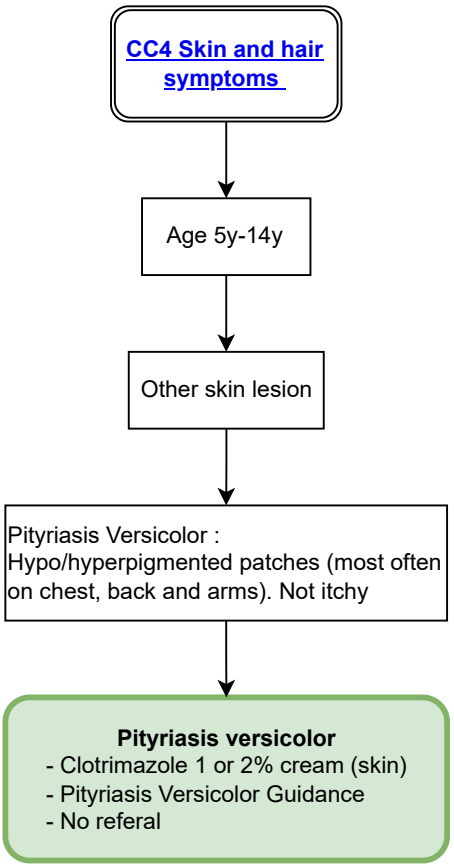

CC4 Skin and hair symptoms
Urticaria:
Raised, red plaques, often appearing and enlarging very fast. Very itchy, especially at night
- Danger sign, OR
- Difficult breathing, OR
- Vomiting, OR
- Severe abdominal pain
No
Yes
Urticaria
- Age >= 6 months : Cetrizine hydrochloride PO
- No referal
Anaphyalxis
- Epinephrine (adrenaline) IM
- Age >= 6 months : Cetirizine hydrochloride PO
- Refer

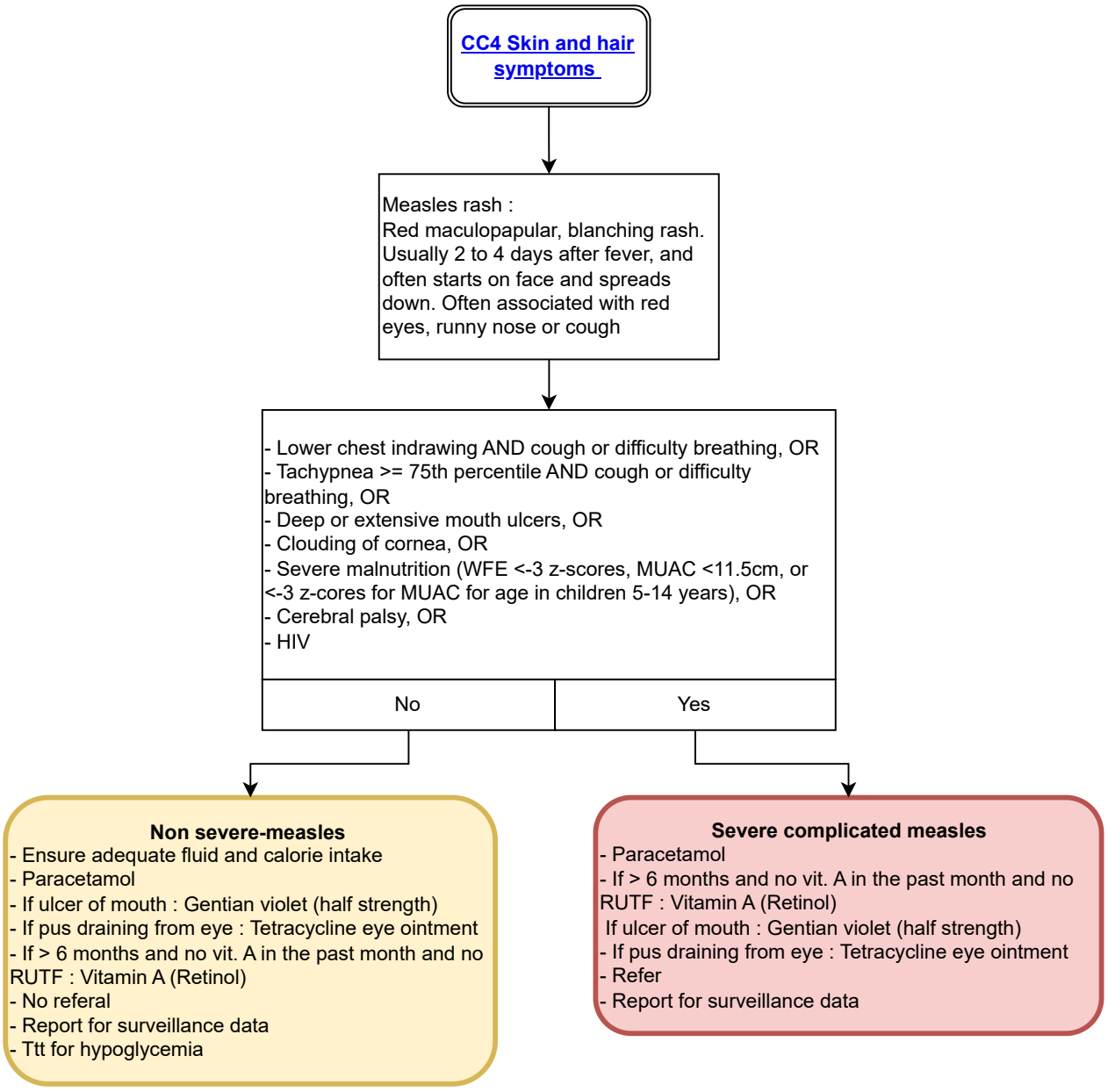
CC4 Skin and hair symptoms

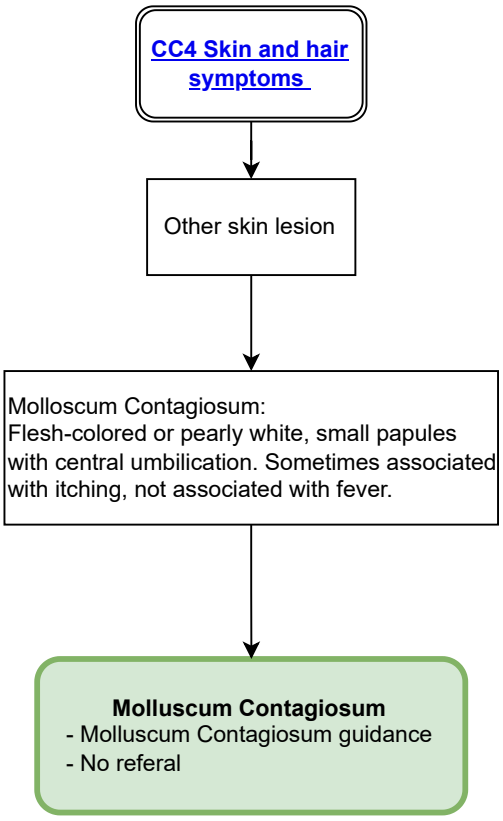
Atopic eczema:
Itchy, thick (lichenified) plaques (sometimes hypo or hyperpigmentation especially on dark skin), in flexural surfaces especially elbows, knees, neck, wrist, and ankles. Rarely in groin and axilla region

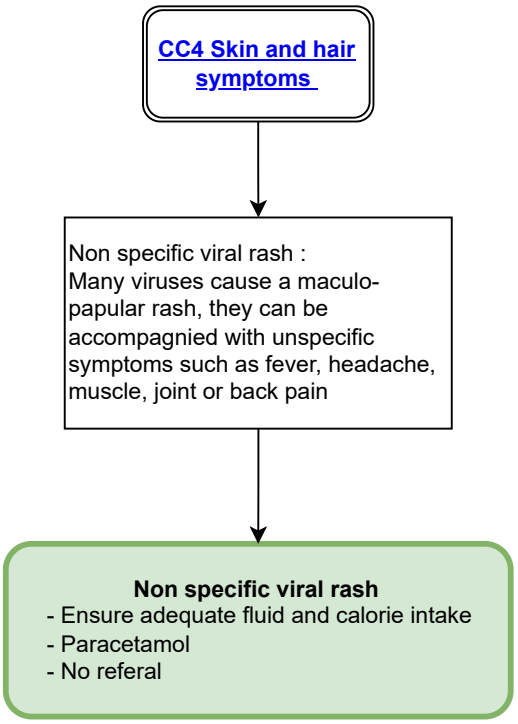
Eczema (Atopic dermatitis)
- Antiseptic = Potassium permanganate
- Emollients = acqueous cream | plain vaseline
- Dermocorticoids = 1st line: Hydrocortisone cream | 2nd line: betamethasone cream
- Eczema guidance
- No referal

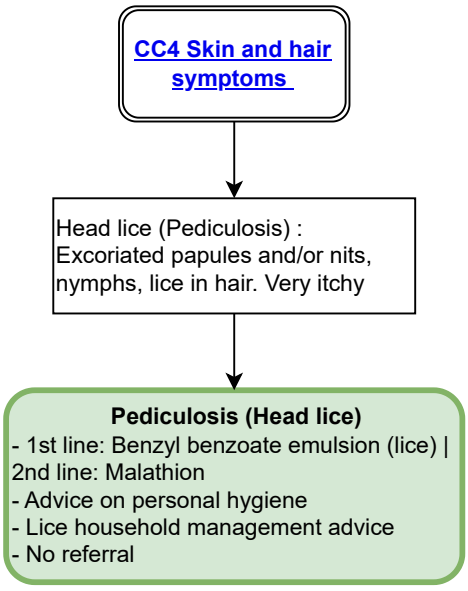


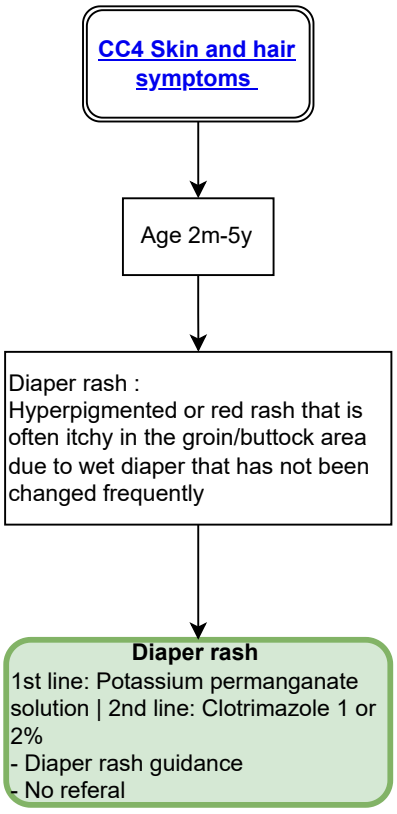

CC4 Skin and hair symptoms
Age 5y-14y
Other skin lesion
Pityriasis Versicolor :
Hypo/hyperpigmented patches (most often on chest, back and arms). Not itchy
Pityriasis versicolor
- Clotrimazole 1 or 2% cream (skin)
- Pityriasis Versicolor Guidance
- No referal

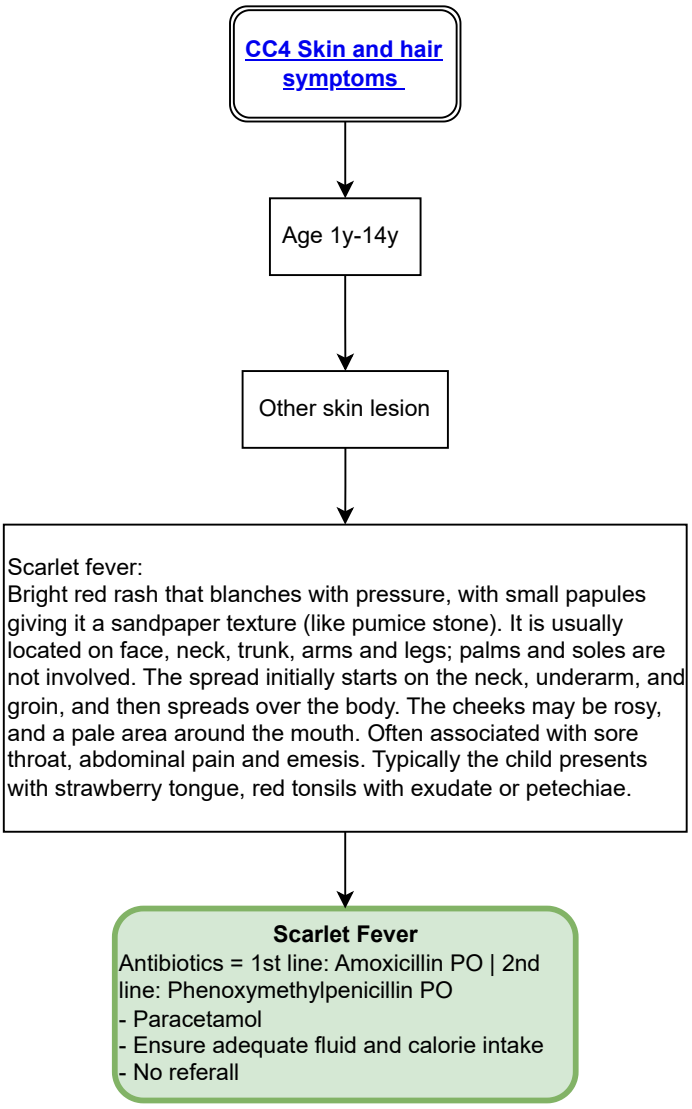

CC4 Skin and hair symptoms
Measles rash :
Red maculopapular, blanching rash. Usually 2 to 4 days after fever, and often starts on face and spreads down. Often associated with red eyes, runny nose or cough
- Lower chest indrawing AND cough or difficulty breathing, OR
- Tachypnea >= 75th percentile AND cough or difficulty breathing, OR
- Deep or extensive mouth ulcers, OR
- Clouding of cornea, OR
- Severe malnutrition (WFE <-3 z-scores, MUAC <11.5cm, or <-3 z-cores for MUAC for age in children 5-14 years), OR
- Cerebral palsy, OR
- HIV
No
Yes
Non severe-measles
- Ensure adequate fluid and calorie intake
- Paracetamol
- If ulcer of mouth : Gentian violet (half strength)
- If pus draining from eye : Tetracycline eye ointment
- If > 6 months and no vit. A in the past month and no RUTF : Vitamin A (Retinol)
- No referal
- Report for surveillance data
- Ttt for hypoglycemia
Severe complicated measles
- Paracetamol
- If > 6 months and no vit. A in the past month and no RUTF : Vitamin A (Retinol)
If ulcer of mouth : Gentian violet (half strength)
- If pus draining from eye : Tetracycline eye ointment
- Refer
- Report for surveillance data

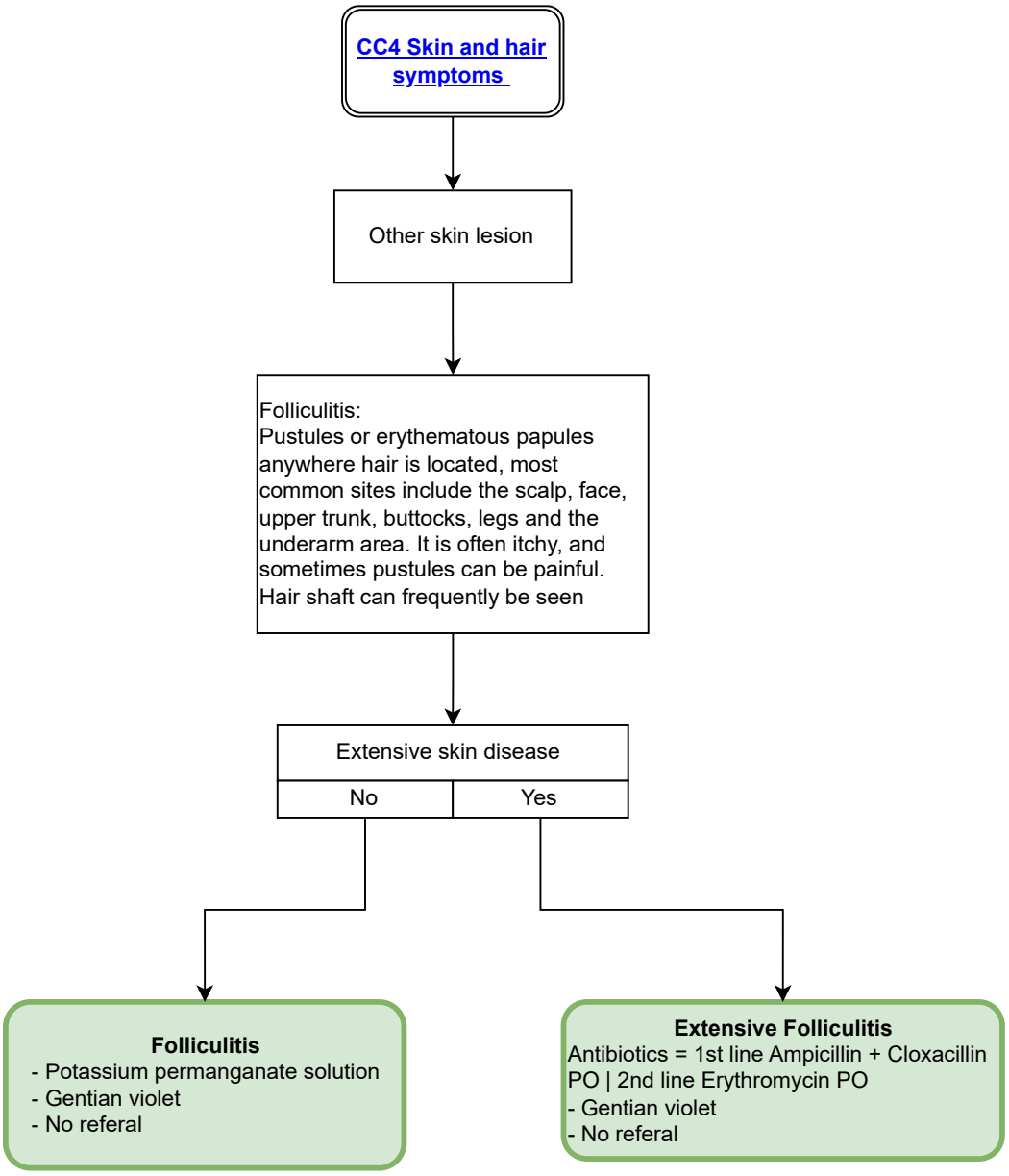

CC4 Skin and hair symptoms
Other skin lesion
Molloscum Contagiosum:
Flesh-colored or pearly white, small papules with central umbilication. Sometimes associated with itching, not associated with fever.
Molluscum Contagiosum
- Molluscum Contagiosum guidance
- No referal

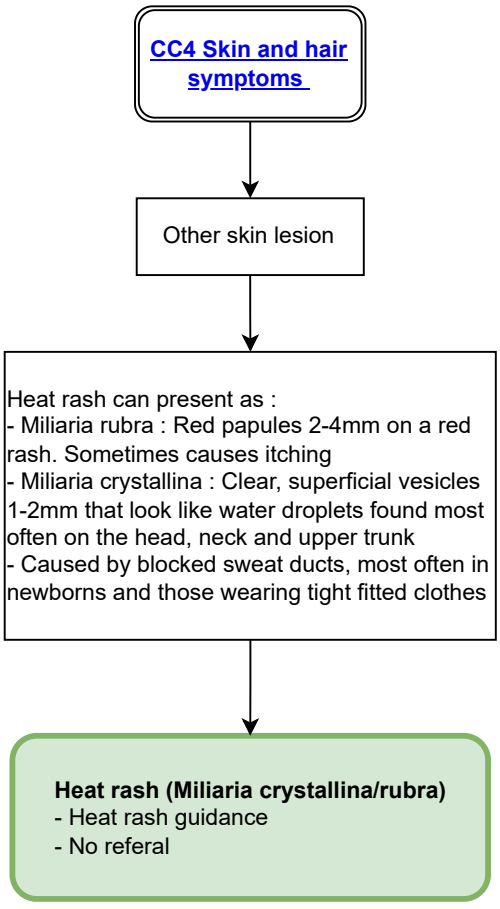

CC4 Skin and hair symptoms
Non specific viral rash :
Many viruses cause a maculo-papular rash, they can be accompagnied with unspecific symptoms such as fever, headache, muscle, joint or back pain
Non specific viral rash
- Ensure adequate fluid and calorie intake
- Paracetamol
- No referal

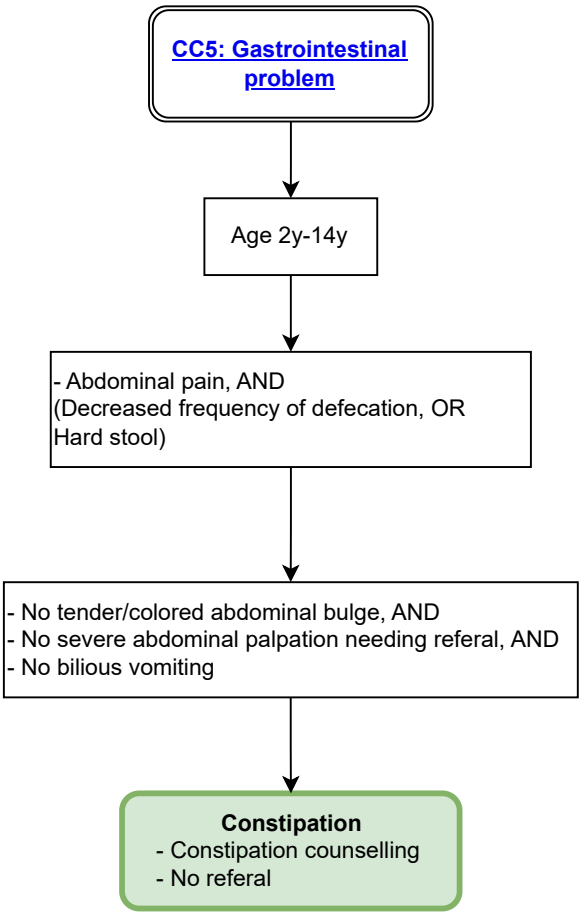

CC4 Skin and hair symptoms
Head lice (Pediculosis) : Excoriated papules and/or nits, nymphs, lice in hair. Very itchy
Pediculosis (Head lice)
- 1st line: Benzyl benzoate emulsion (lice) | 2nd line: Malathion
- Advice on personal hygiene
- Lice household management advice
- No referral

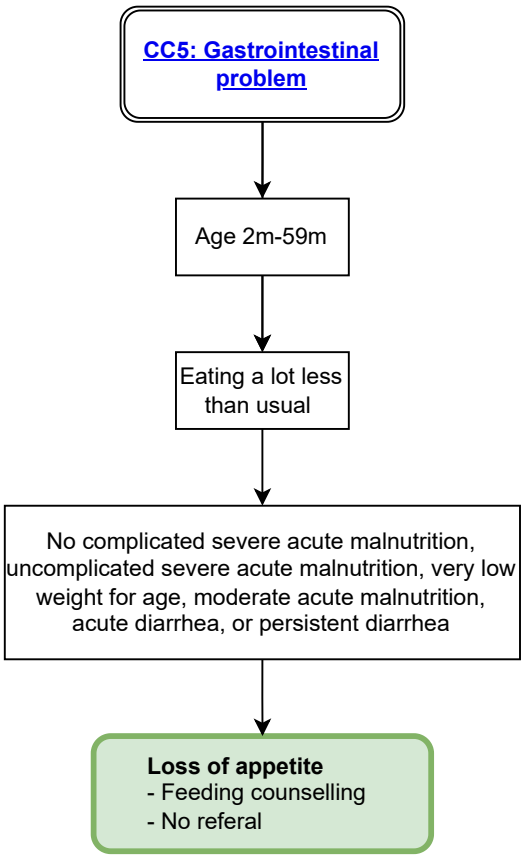

CC4 Skin and hair symptoms
Age 2m-5y
Diaper rash :
Hyperpigmented or red rash that is often itchy in the groin/buttock area due to wet diaper that has not been changed frequently
Diaper rash
1st line: Potassium permanganate solution | 2nd line: Clotrimazole 1 or 2%
- Diaper rash guidance
- No referal

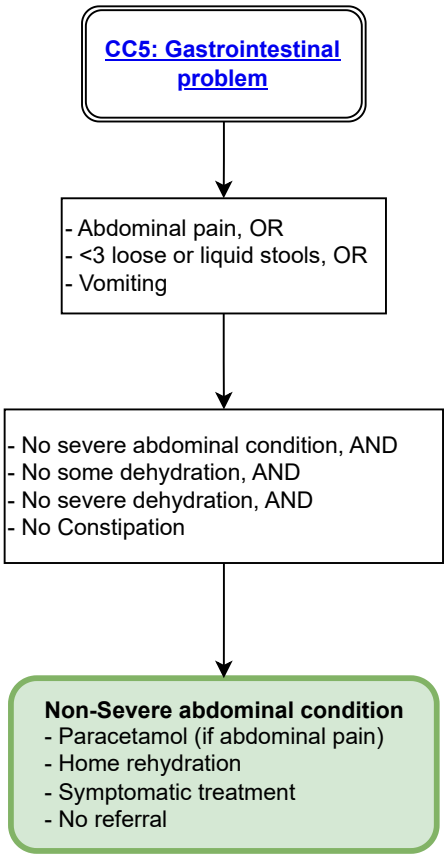

CC4 Skin and hair symptoms
Age 1y-14y
Other skin lesion
Scarlet fever:
Bright red rash that blanches with pressure, with small papules giving it a sandpaper texture (like pumice stone). It is usually located on face, neck, trunk, arms and legs; palms and soles are not involved. The spread initially starts on the neck, underarm, and groin, and then spreads over the body. The cheeks may be rosy, and a pale area around the mouth. Often associated with sore throat, abdominal pain and emesis. Typically the child presents with strawberry tongue, red tonsils with exudate or petechiae.
Scarlet Fever
Antibiotics = 1st line: Amoxicillin PO | 2nd line: Phenoxymethylpenicillin PO
- Paracetamol
- Ensure adequate fluid and calorie intake
- No referall

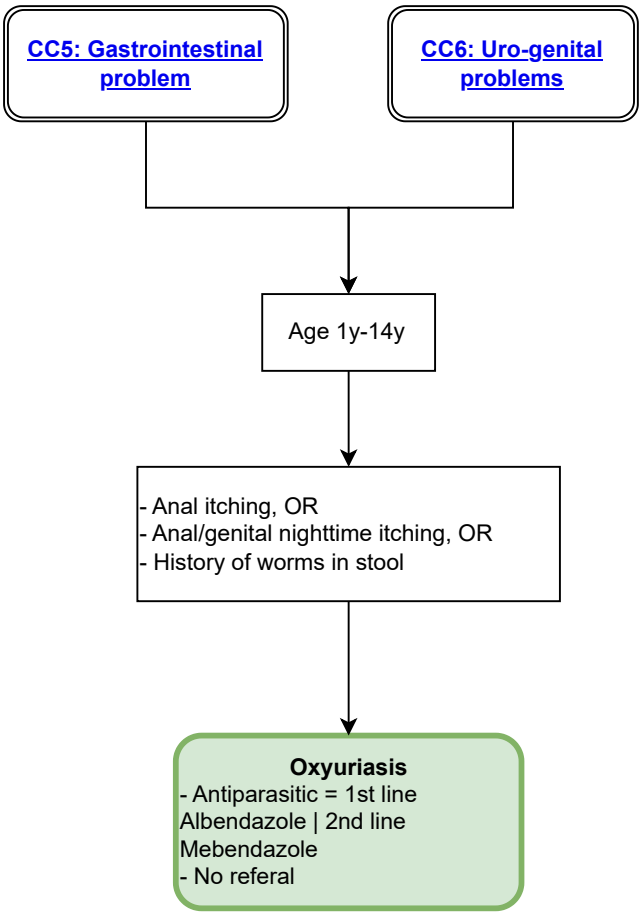

CC4 Skin and hair symptoms
Other skin lesion
Folliculitis:
Pustules or erythematous papules anywhere hair is located, most common sites include the scalp, face, upper trunk, buttocks, legs and the underarm area. It is often itchy, and sometimes pustules can be painful. Hair shaft can frequently be seen
Extensive skin disease
No
Yes
Folliculitis
- Potassium permanganate solution
- Gentian violet
- No referal
Extensive Folliculitis
Antibiotics = 1st line Ampicillin + Cloxacillin PO | 2nd line Erythromycin PO
- Gentian violet
- No referal

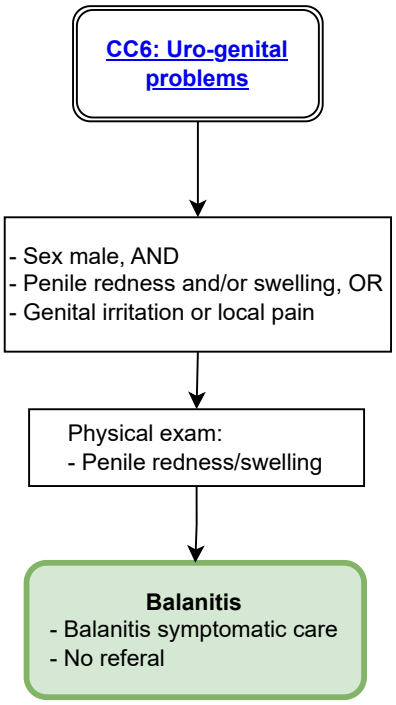

CC4 Skin and hair symptoms
Other skin lesion
Heat rash can present as :
- Miliaria rubra : Red papules 2-4mm on a red rash. Sometimes causes itching
- Miliaria crystallina : Clear, superficial vesicles 1-2mm that look like water droplets found most often on the head, neck and upper trunk
- Caused by blocked sweat ducts, most often in newborns and those wearing tight fitted clothes
Heat rash (Miliaria crystallina/rubra)
- Heat rash guidance
- No referal

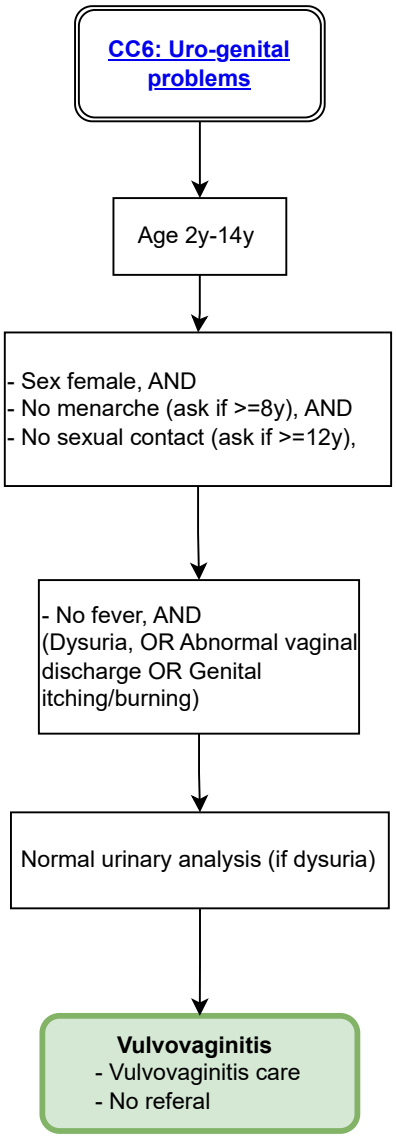

CC5: Gastrointestinal problem
Age 2y-14y
- Abdominal pain, AND
(Decreased frequency of defecation, OR
Hard stool)
- No tender/colored abdominal bulge, AND
- No severe abdominal palpation needing referal, AND
- No bilious vomiting
Constipation
- Constipation counselling
- No referal


CC5: Gastrointestinal problem
Age 2m-59m
Eating a lot less than usual
No complicated severe acute malnutrition, uncomplicated severe acute malnutrition, very low weight for age, moderate acute malnutrition, acute diarrhea, or persistent diarrhea
Loss of appetite
- Feeding counselling
- No referal


CC5: Gastrointestinal problem
- Abdominal pain, OR
- <3 loose or liquid stools, OR
- Vomiting
- No severe abdominal condition, AND
- No some dehydration, AND
- No severe dehydration, AND
- No Constipation
Non-Severe abdominal condition
- Paracetamol (if abdominal pain)
- Home rehydration
- Symptomatic treatment
- No referral


CC5: Gastrointestinal problem
CC6: Uro-genital problems
Age 1y-14y
- Anal itching, OR
- Anal/genital nighttime itching, OR
- History of worms in stool
Oxyuriasis
- Antiparasitic = 1st line
Albendazole | 2nd line
Mebendazole
- No referal

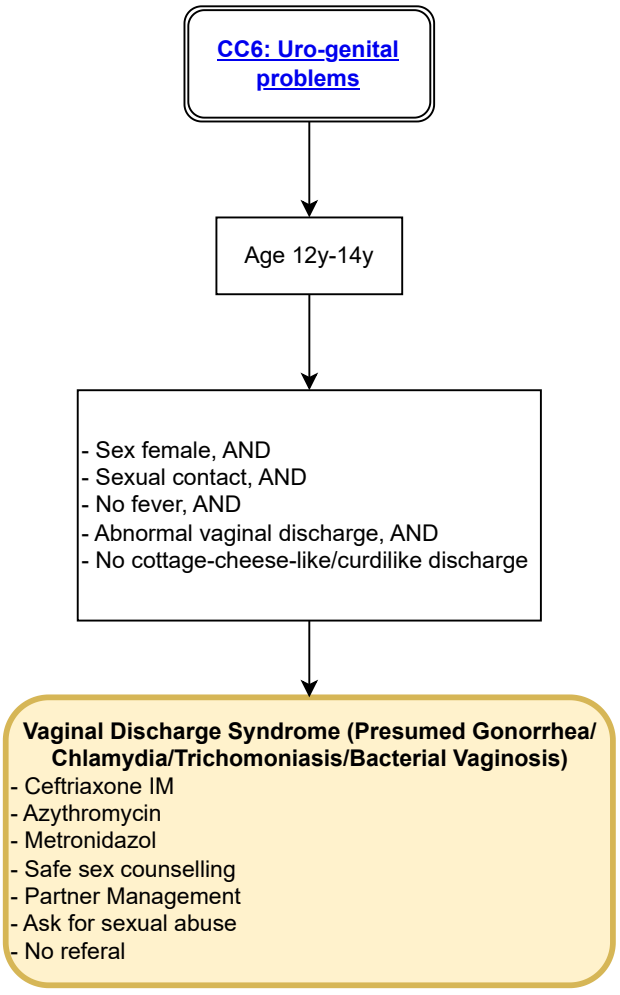

CC6: Uro-genital problems
- Sex male, AND
- Penile redness and/or swelling, OR
- Genital irritation or local pain
Physical exam:
- Penile redness/swelling
Balanitis
- Balanitis symptomatic care
- No referal

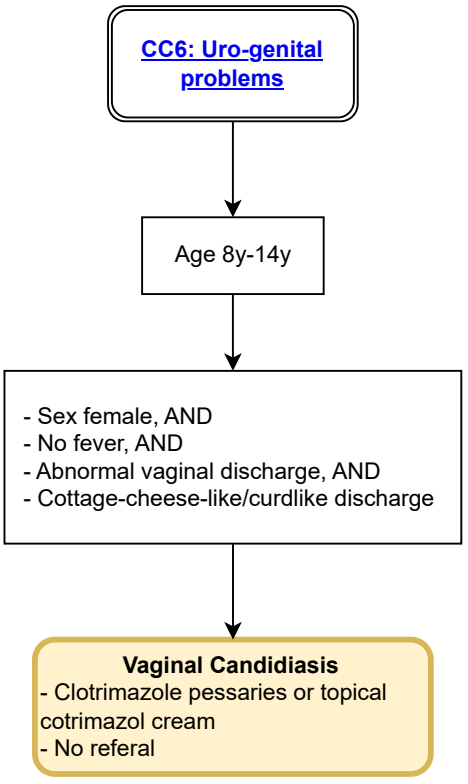


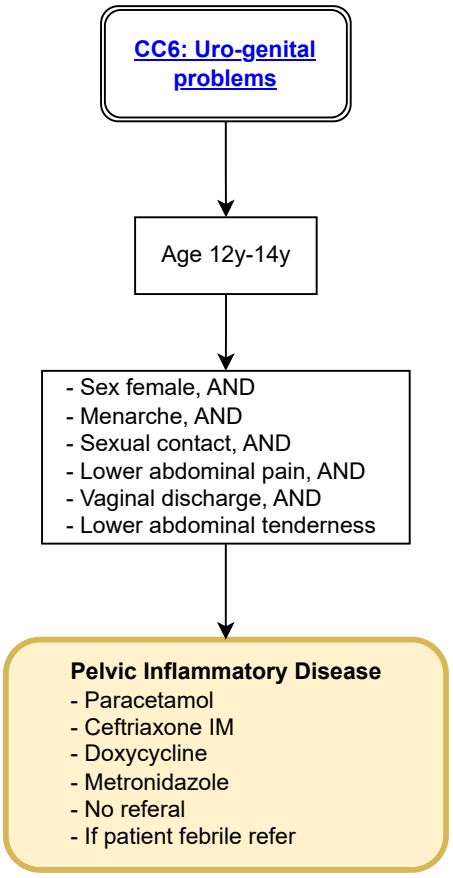
Rwanda Guidelines suggest antibiotic treatment:

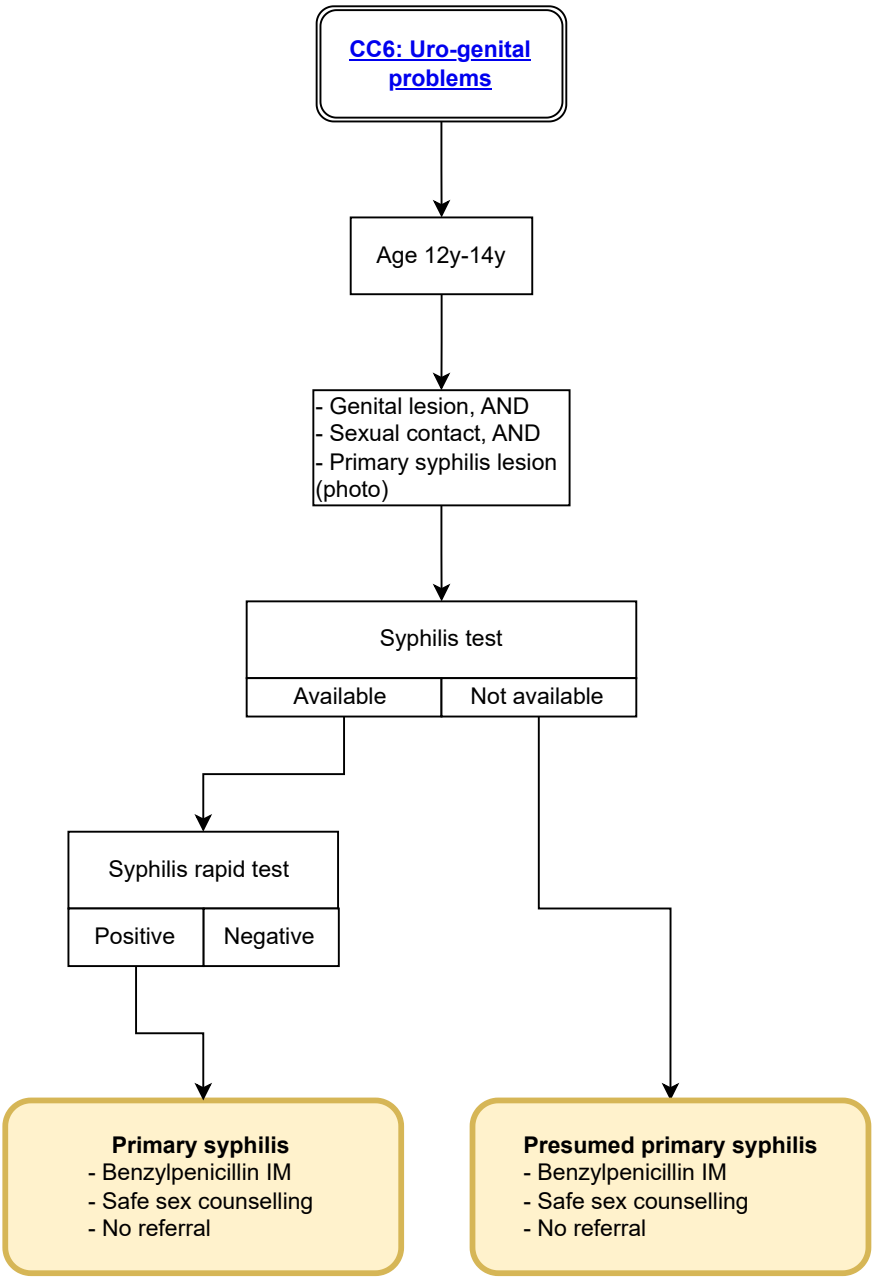
- Prepubertal vaginitis (N.gonorrhoea, C trachomatis,T vaginalis, bacterial vaginosis -> ttt with Ceftriaxone or erythromycine if < 45 kg & <8 y ; HSV-primary infection -> acyclovir oral)
- Adolescent vulvovaginitis (T vaginalis, bacterial vaginosis) -> ttt with metronidazole,clindamycin cream; candida species (vulvovaginal candidiasis)

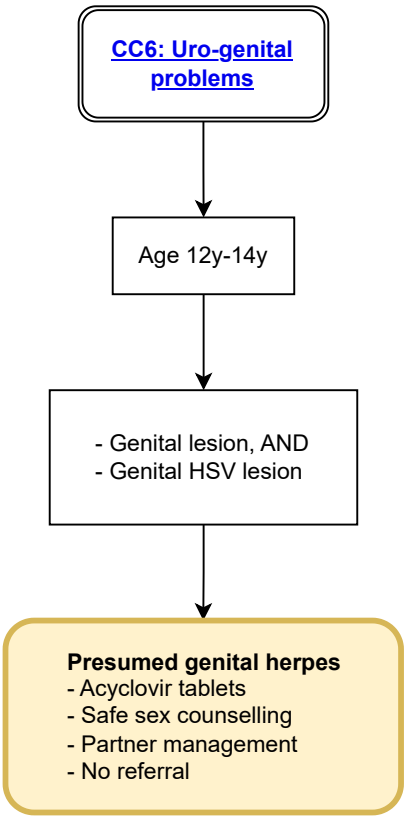
In our algorithm antibiotic treatment is reserved to puber girls with vaginal discharge syndrome see specific algorithm

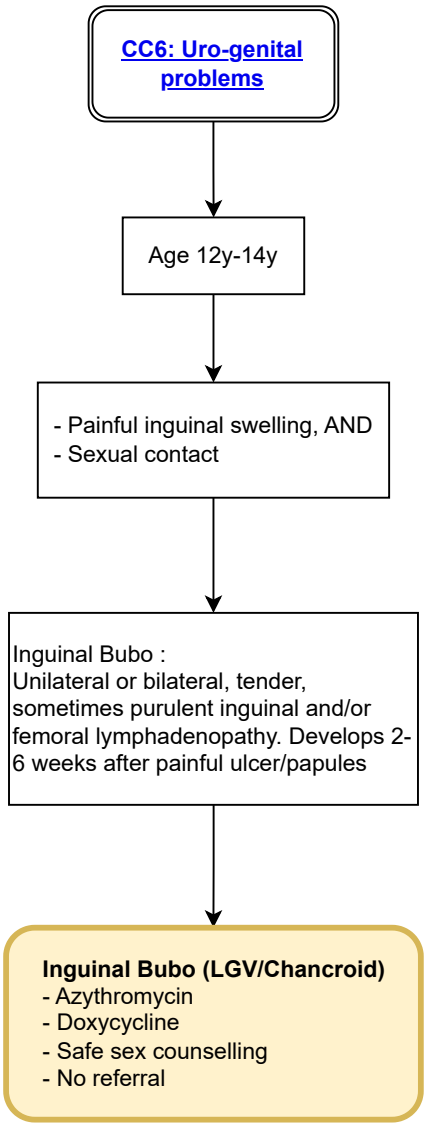

CC6: Uro-genital problems
Age 12y-14y
- Sex female, AND
- Sexual contact, AND
- No fever, AND
- Abnormal vaginal discharge, AND
- No cottage-cheese-like/curdilike discharge
Vaginal Discharge Syndrome (Presumed Gonorrhea/ Chlamydia/Trichomoniasis/Bacterial Vaginosis)
- Ceftriaxone IM
- Azythromycin
- Metronidazol
- Safe sex counselling
- Partner Management
- Ask for sexual abuse
- No referal

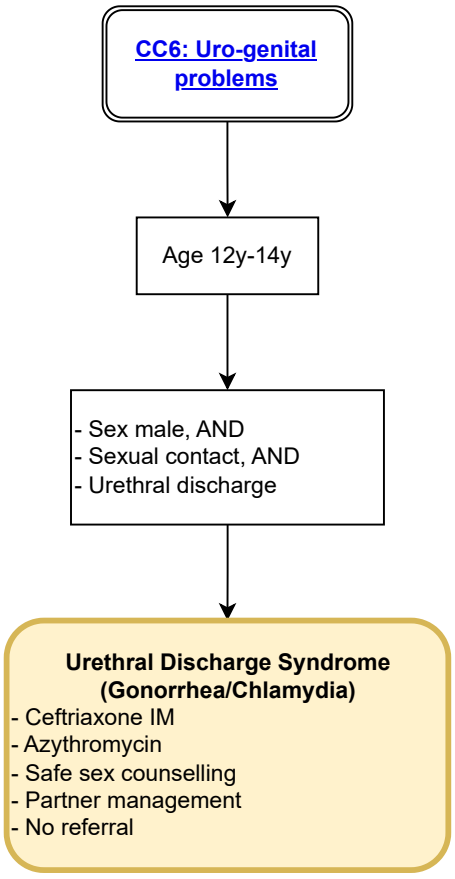

CC6: Uro-genital problems
Age 8y-14y
- Sex female, AND
- No fever, AND
- Abnormal vaginal discharge, AND
- Cottage-cheese-like/curdlike discharge
Vaginal Candidiasis
- Clotrimazole pessaries or topical cotrimazol cream
- No referal

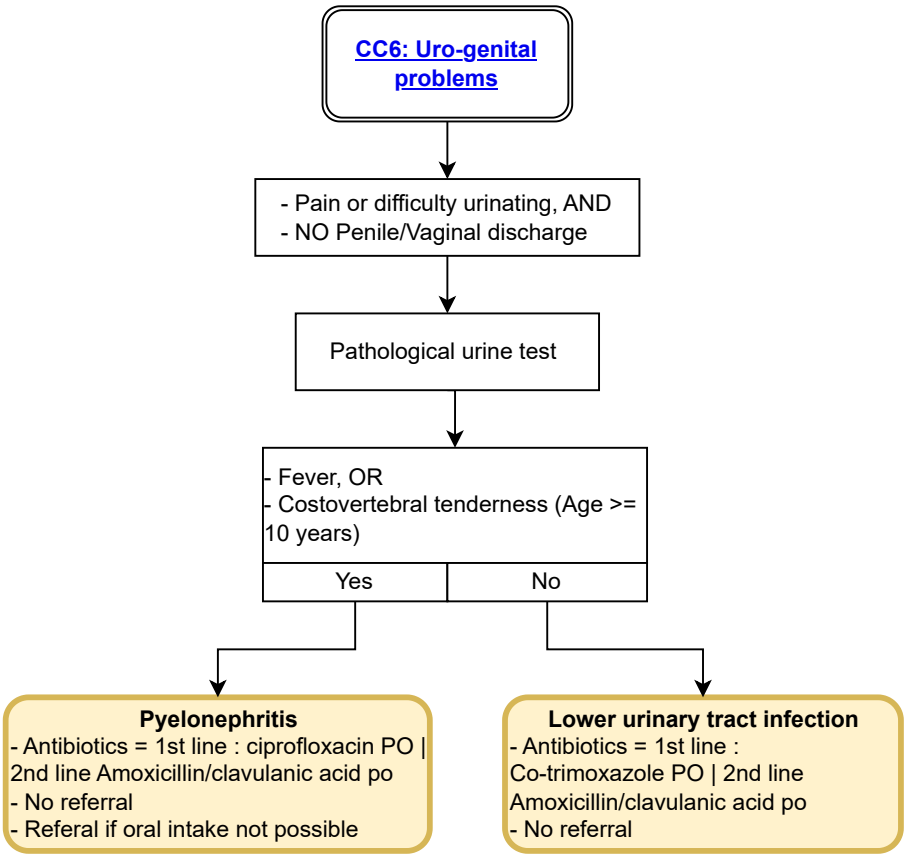

CC6: Uro-genital problems
Age 12y-14y
- Sex female, AND
- Menarche, AND
- Sexual contact, AND
- Lower abdominal pain, AND
- Vaginal discharge, AND
- Lower abdominal tenderness
Pelvic Inflammatory Disease
- Paracetamol
- Ceftriaxone IM
- Doxycycline
- Metronidazole
- No referal
- If patient febrile refer

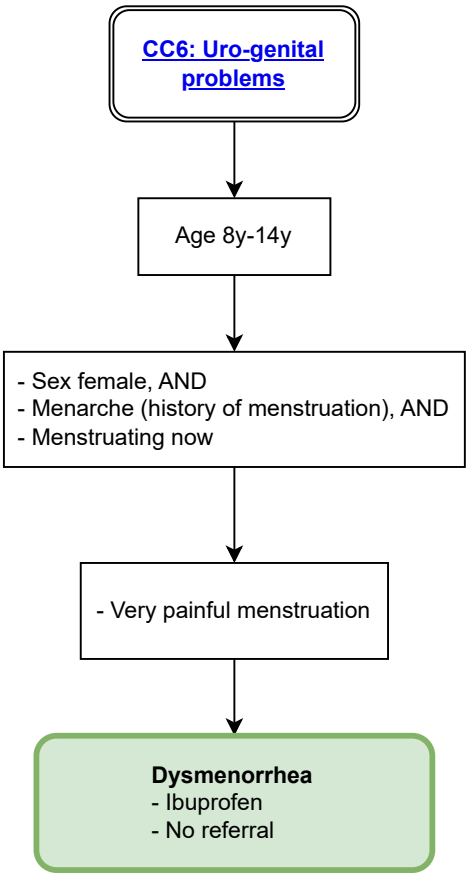

CC6: Uro-genital problems
Age 12y-14y
- Genital lesion, AND
- Sexual contact, AND
- Primary syphilis lesion (photo)
Syphilis test
Available
Not available
Syphilis rapid test
Positive
Negative
Primary syphilis
- Benzylpenicillin IM
- Safe sex counselling
- No referral
Presumed primary syphilis
- Benzylpenicillin IM
- Safe sex counselling
- No referral

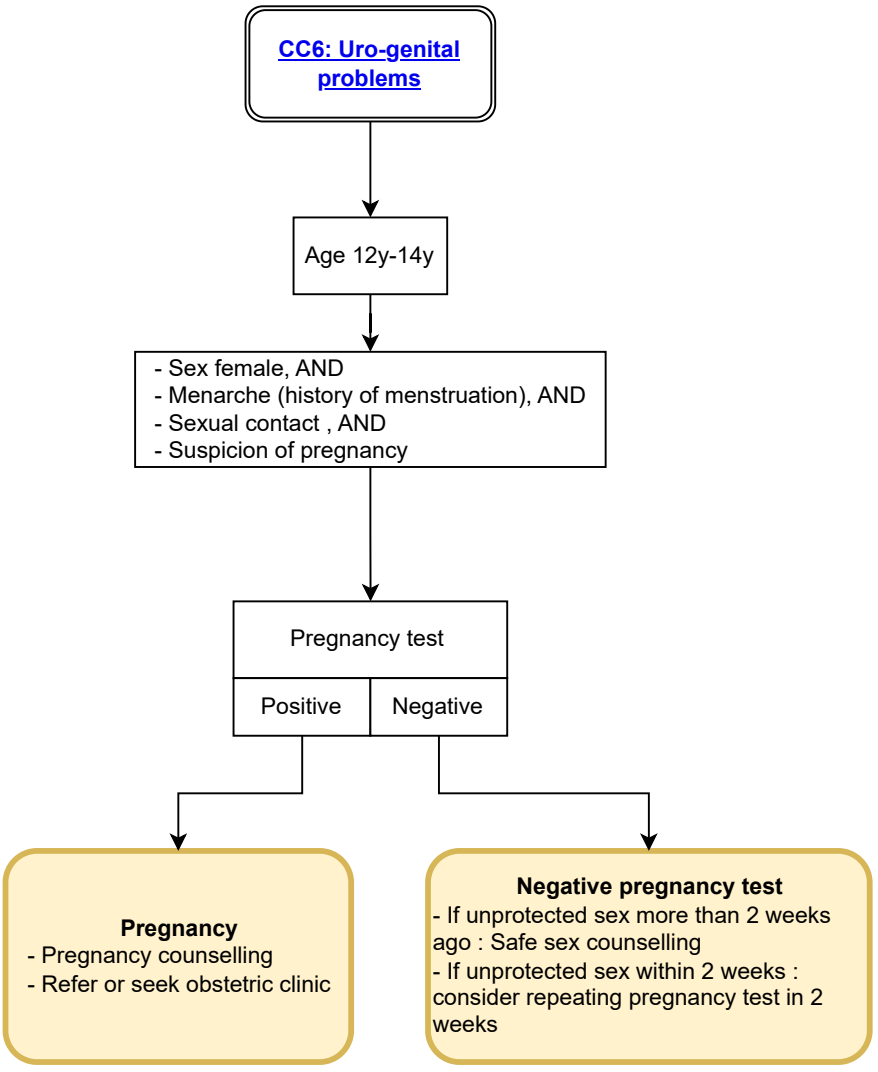

CC6: Uro-genital problems
Age 12y-14y
- Genital lesion, AND
- Genital HSV lesion
Presumed genital herpes
- Acyclovir tablets
- Safe sex counselling
- Partner management
- No referral

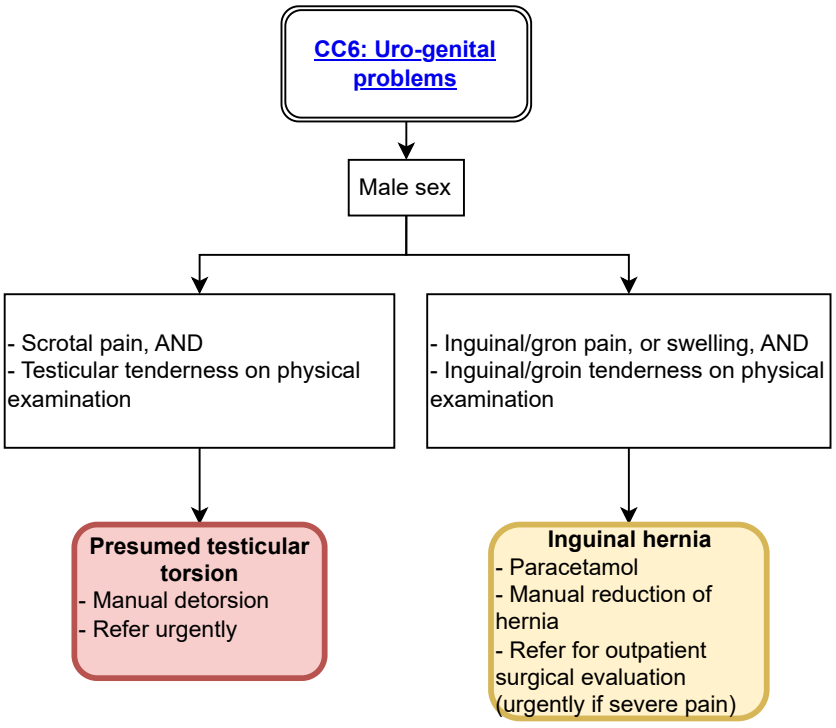

CC6: Uro-genital problems
Age 12y-14y
- Painful inguinal swelling, AND
- Sexual contact
Inguinal Bubo :
Unilateral or bilateral, tender, sometimes purulent inguinal and/or femoral lymphadenopathy. Develops 2-6 weeks after painful ulcer/papules
Inguinal Bubo (LGV/Chancroid)
- Azythromycin
- Doxycycline
- Safe sex counselling
- No referral

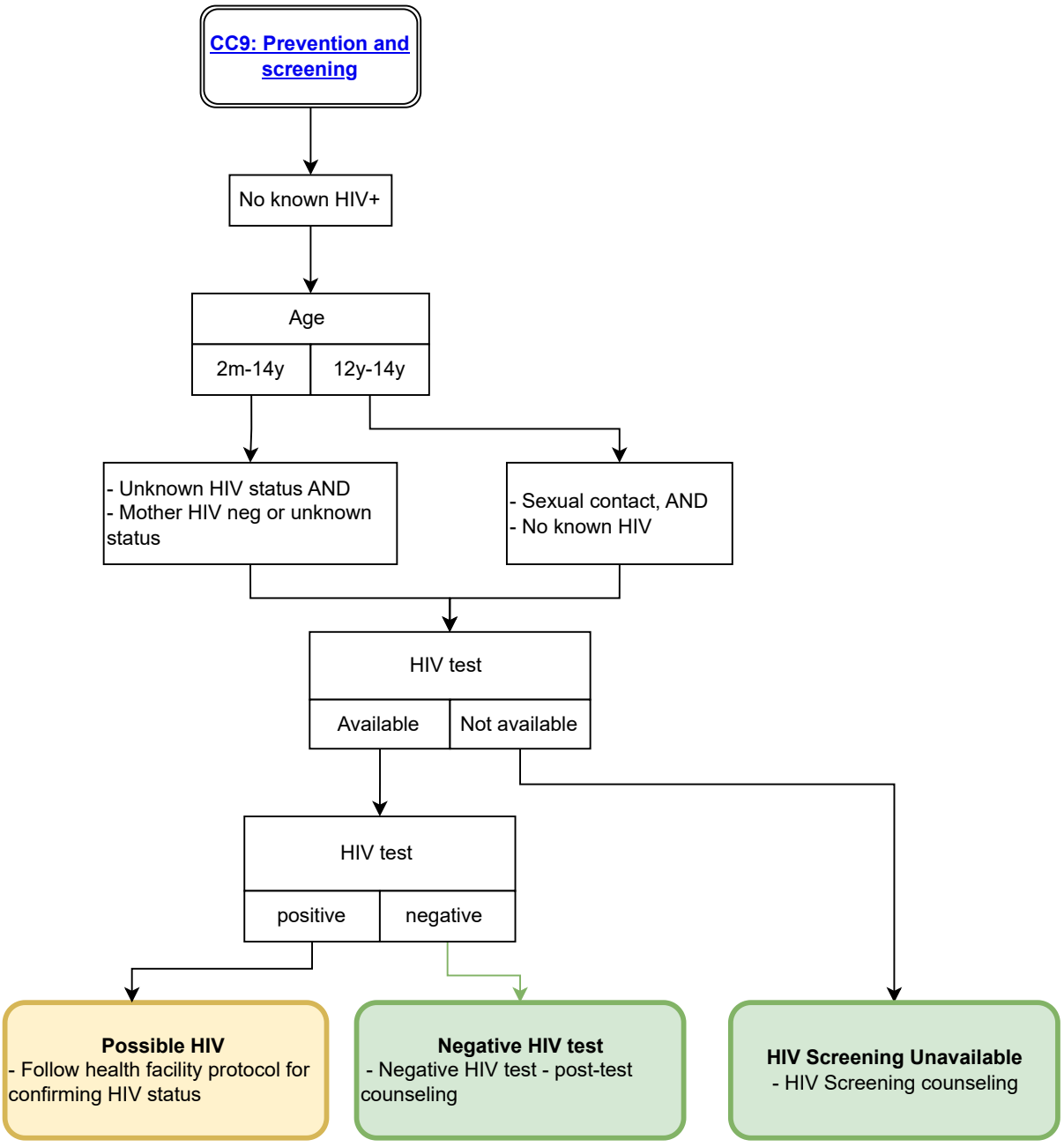

CC6: Uro-genital problems
Age 12y-14y
- Sex male, AND
- Sexual contact, AND
- Urethral discharge
Urethral Discharge Syndrome (Gonorrhea/Chlamydia)
- Ceftriaxone IM
- Azythromycin
- Safe sex counselling
- Partner management
- No referral

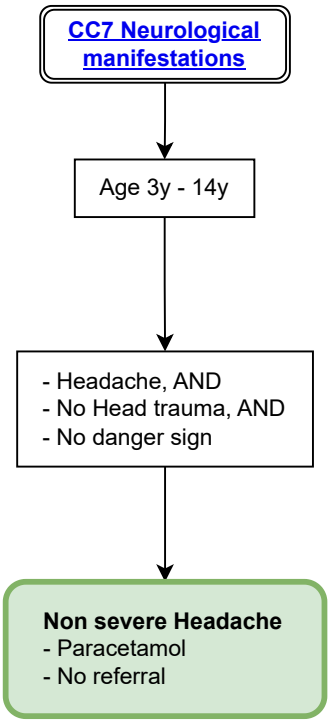

CC6: Uro-genital problems
- Pain or difficulty urinating, AND
- NO Penile/Vaginal discharge
Pathological urine test
- Fever, OR
- Costovertebral tenderness (Age >= 10 years)
Yes
No
Pyelonephritis
- Antibiotics = 1st line : ciprofloxacin PO | 2nd line Amoxicillin/clavulanic acid po
- No referral
- Referal if oral intake not possible
Lower urinary tract infection
- Antibiotics = 1st line : Co-trimoxazole PO | 2nd line Amoxicillin/clavulanic acid po
- No referral

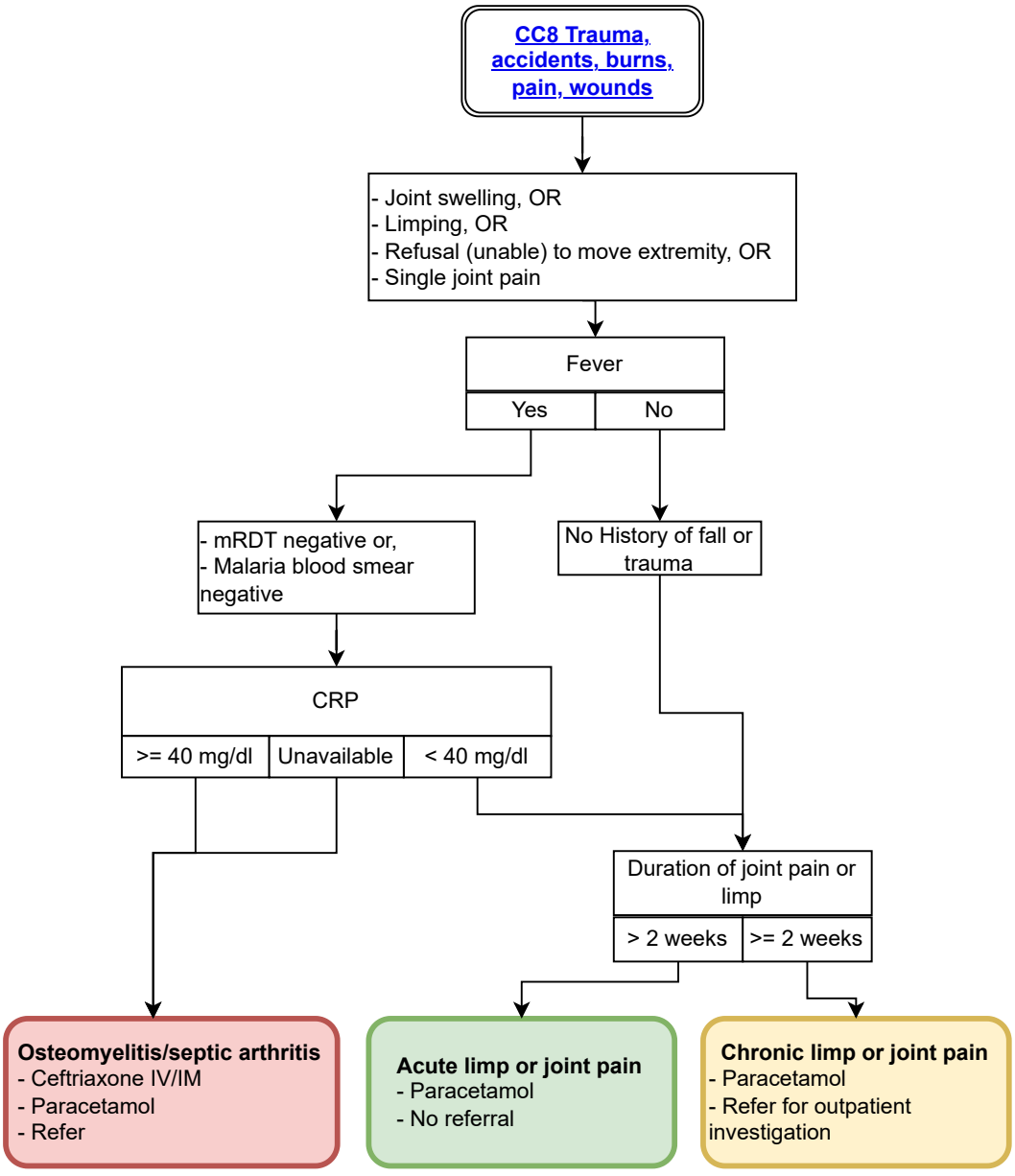

CC6: Uro-genital problems
Age 8y-14y
- Sex female, AND
- Menarche (history of menstruation), AND
- Menstruating now
- Very painful menstruation
Dysmenorrhea
- Ibuprofen
- No referral

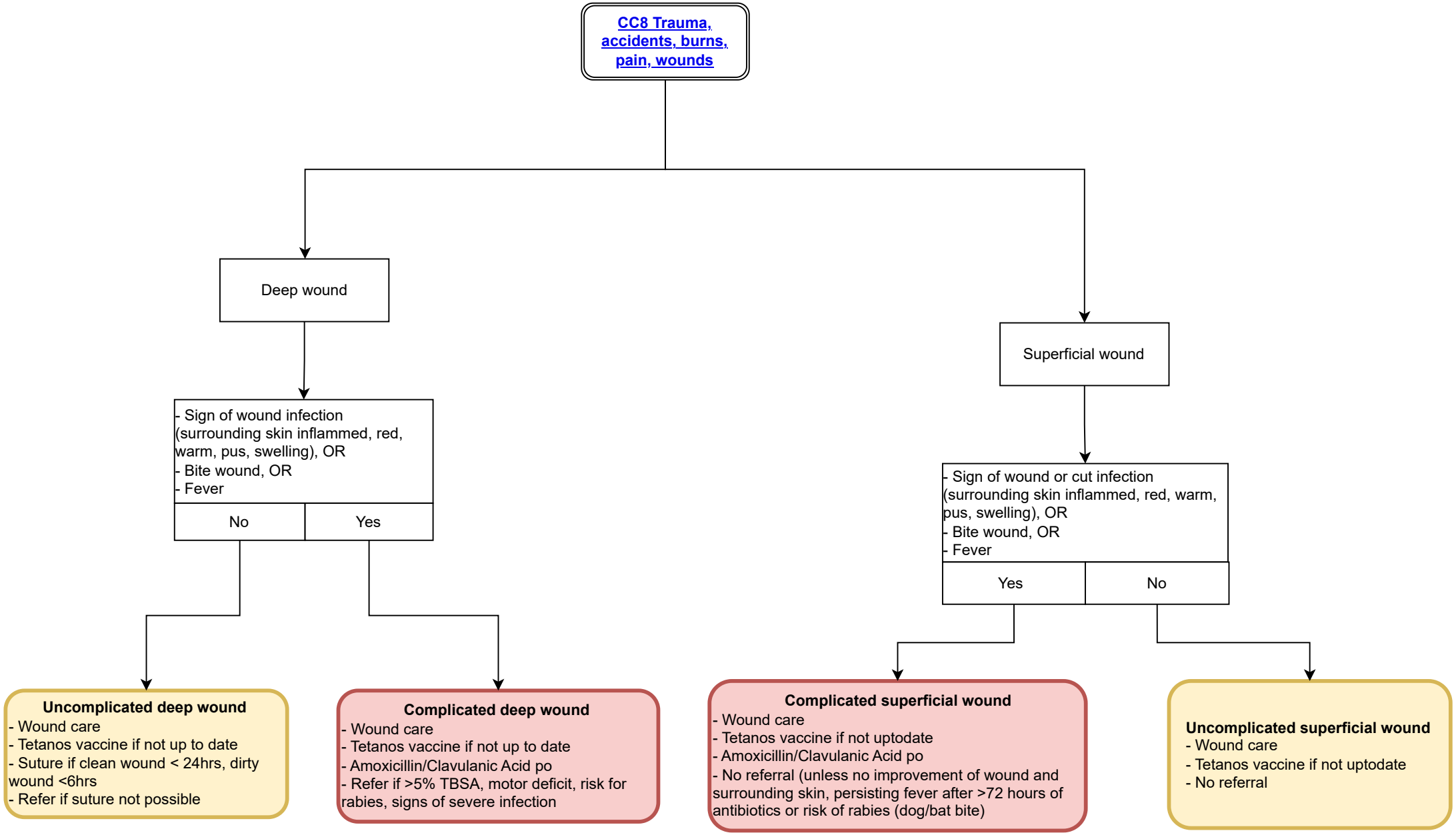

CC6: Uro-genital problems
Age 12y-14y
- Sex female, AND
- Menarche (history of menstruation), AND
- Sexual contact , AND
- Suspicion of pregnancy
Pregnancy test
Positive
Negative
Pregnancy
- Pregnancy counselling
- Refer or seek obstetric clinic
Negative pregnancy test
- If unprotected sex more than 2 weeks ago : Safe sex counselling
- If unprotected sex within 2 weeks : consider repeating pregnancy test in 2 weeks

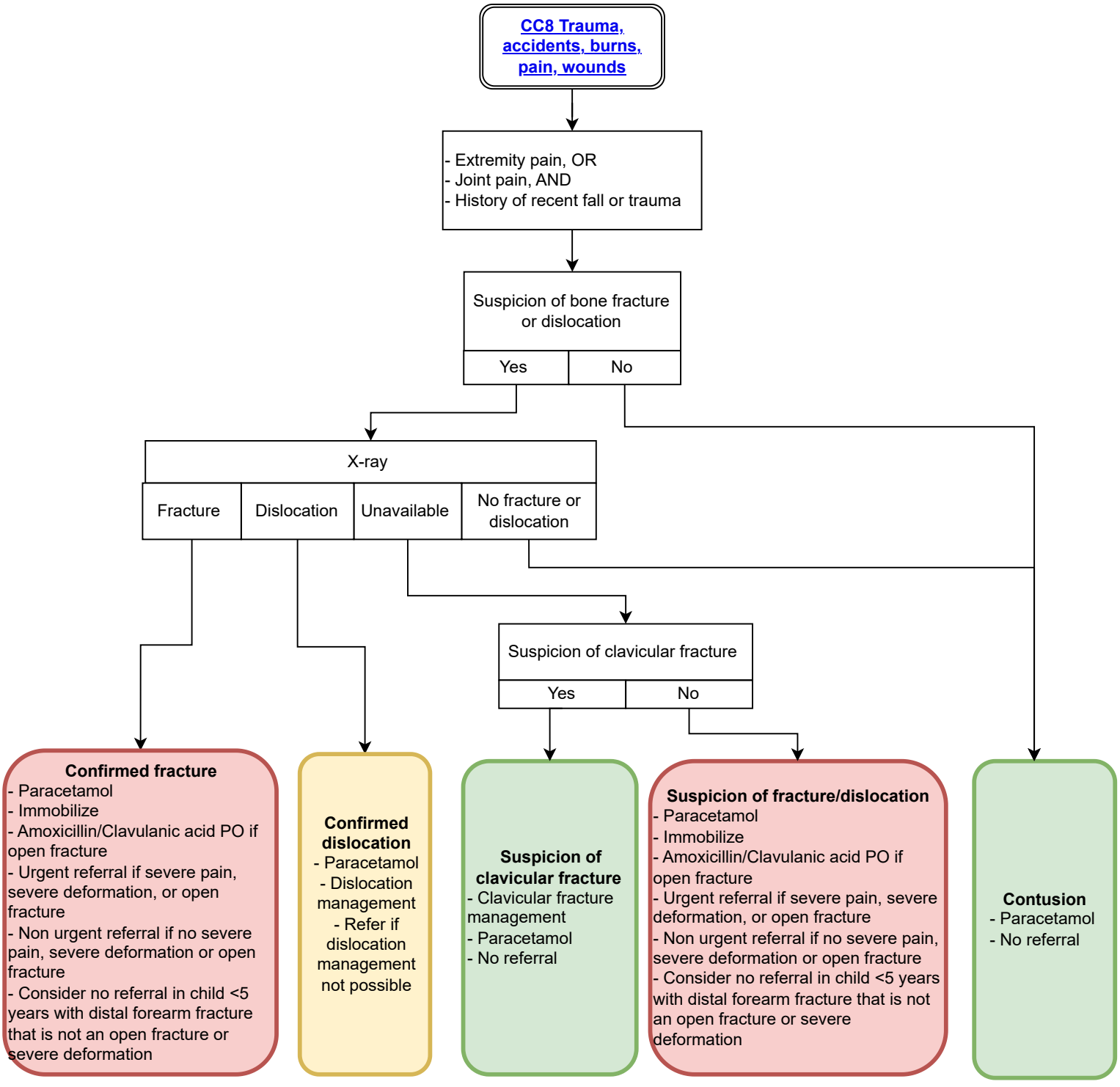

CC6: Uro-genital problems
Male sex
- Scrotal pain, AND
- Testicular tenderness on physical examination
- Inguinal/gron pain, or swelling, AND
- Inguinal/groin tenderness on physical examination
Presumed testicular torsion
- Manual detorsion
- Refer urgently
Inguinal hernia
- Paracetamol
- Manual reduction of hernia
- Refer for outpatient surgical evaluation (urgently if severe pain)

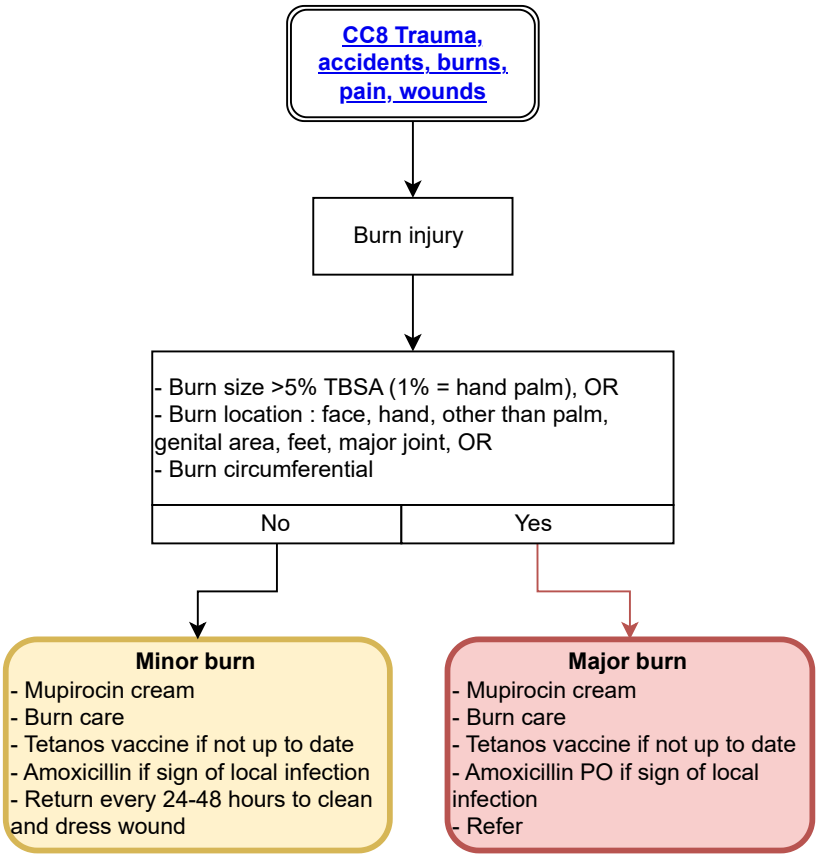

CC9: Prevention and screening
No known HIV+
Age
2m-14y
12y-14y
- Unknown HIV status AND
- Mother HIV neg or unknown status
- Sexual contact, AND
- No known HIV
HIV test
Available
Not available
HIV test
positive
negative
Possible HIV
- Follow health facility protocol for confirming HIV status
Negative HIV test
- Negative HIV test - post-test counseling
HIV Screening Unavailable
- HIV Screening counseling

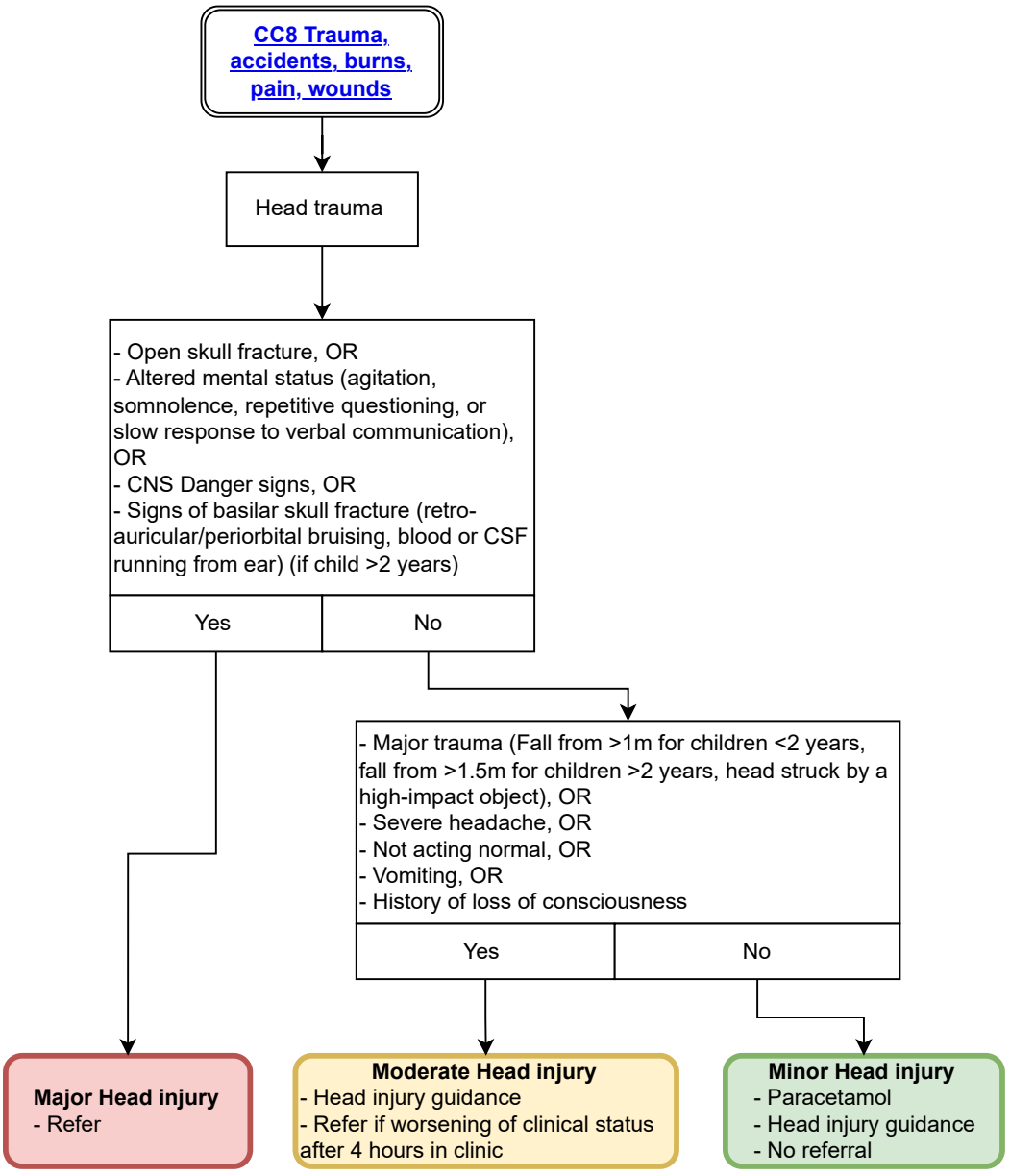

CC7 Neurological manifestations
Age 3y - 14y
- Headache, AND
- No Head trauma, AND
- No danger sign
Non severe Headache
- Paracetamol
- No referral

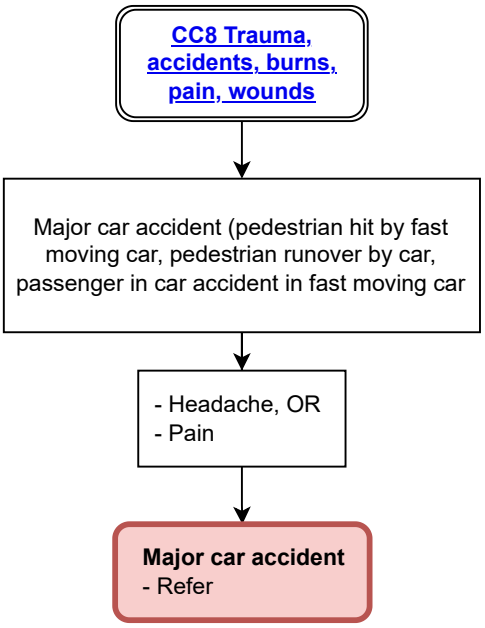

CC8 Trauma, accidents, burns, pain, wounds
- Joint swelling, OR
- Limping, OR
- Refusal (unable) to move extremity, OR
- Single joint pain
Fever
Yes
No
- mRDT negative or,
- Malaria blood smear negative
No History of fall or trauma
CRP
>= 40 mg/dl
Unavailable
< 40 mg/dl
Duration of joint pain or limp
> 2 weeks
>= 2 weeks
Osteomyelitis/septic arthritis
- Ceftriaxone IV/IM
- Paracetamol
- Refer
Acute limp or joint pain
- Paracetamol
- No referral
Chronic limp or joint pain
- Paracetamol
- Refer for outpatient investigation

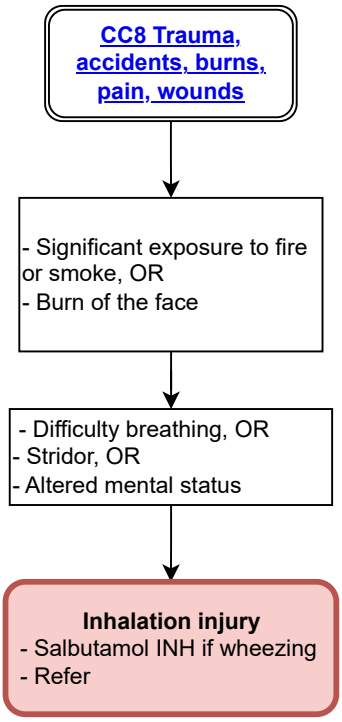

CC8 Trauma, accidents, burns, pain, wounds
Deep wound
Superficial wound
- Sign of wound infection (surrounding skin inflammed, red, warm, pus, swelling), OR
- Bite wound, OR
- Fever
No
Yes
- Sign of wound or cut infection (surrounding skin inflammed, red, warm, pus, swelling), OR
- Bite wound, OR
- Fever
Yes
No
Uncomplicated deep wound
- Wound care
- Tetanos vaccine if not up to date
- Suture if clean wound < 24hrs, dirty wound <6hrs
- Refer if suture not possible
Complicated deep wound
- Wound care
- Tetanos vaccine if not up to date
- Amoxicillin/Clavulanic Acid po
- Refer if >5% TBSA, motor deficit, risk for rabies, signs of severe infection
Complicated superficial wound
- Wound care
- Tetanos vaccine if not uptodate
- Amoxicillin/Clavulanic Acid po
- No referral (unless no improvement of wound and surrounding skin, persisting fever after >72 hours of antibiotics or risk of rabies (dog/bat bite)
Uncomplicated superficial wound
- Wound care
- Tetanos vaccine if not uptodate
- No referral

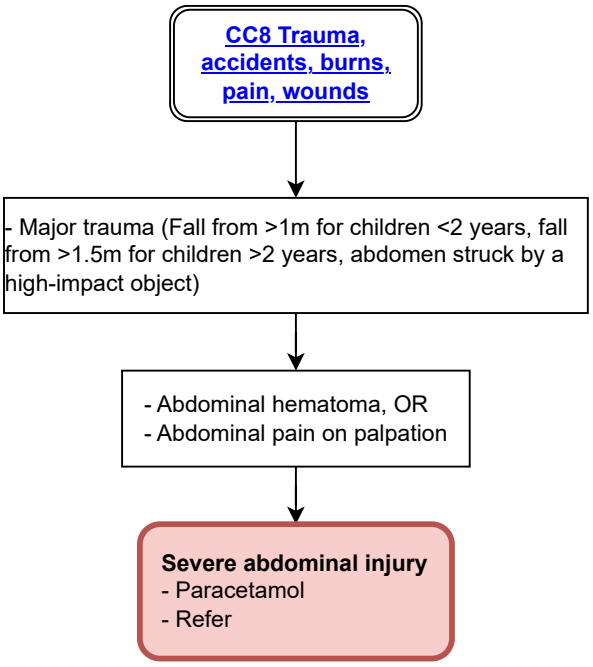

CC8 Trauma, accidents, burns, pain, wounds
- Extremity pain, OR
- Joint pain, AND
- History of recent fall or trauma
Suspicion of bone fracture or dislocation
Yes
No
X-ray
Fracture
Dislocation
Unavailable
No fracture or dislocation
Suspicion of clavicular fracture
Yes
No
Confirmed fracture
- Paracetamol
- Immobilize
- Amoxicillin/Clavulanic acid PO if open fracture
- Urgent referral if severe pain, severe deformation, or open fracture
- Non urgent referral if no severe pain, severe deformation or open fracture
- Consider no referral in child <5 years with distal forearm fracture that is not an open fracture or severe deformation
Confirmed dislocation
- Paracetamol
- Dislocation management
- Refer if dislocation management not possible
Suspicion of clavicular fracture
- Clavicular fracture management
- Paracetamol
- No referral
Suspicion of fracture/dislocation
- Paracetamol
- Immobilize
- Amoxicillin/Clavulanic acid PO if open fracture
- Urgent referral if severe pain, severe deformation, or open fracture
- Non urgent referral if no severe pain, severe deformation or open fracture
- Consider no referral in child <5 years with distal forearm fracture that is not an open fracture or severe deformation
Contusion
- Paracetamol
- No referral

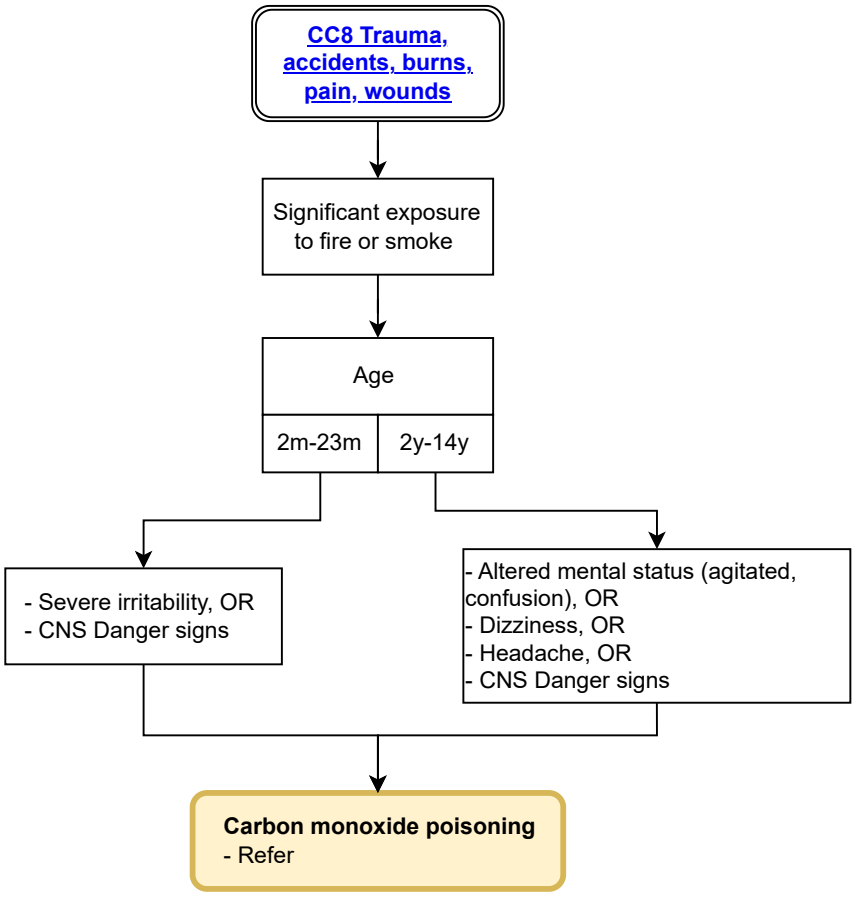

CC8 Trauma, accidents, burns, pain, wounds
Burn injury
- Burn size >5% TBSA (1% = hand palm), OR
- Burn location : face, hand, other than palm, genital area, feet, major joint, OR
- Burn circumferential
No
Yes
Minor burn
- Mupirocin cream
- Burn care
- Tetanos vaccine if not up to date
- Amoxicillin if sign of local infection
- Return every 24-48 hours to clean and dress wound
Major burn
- Mupirocin cream
- Burn care
- Tetanos vaccine if not up to date
- Amoxicillin PO if sign of local infection
- Refer

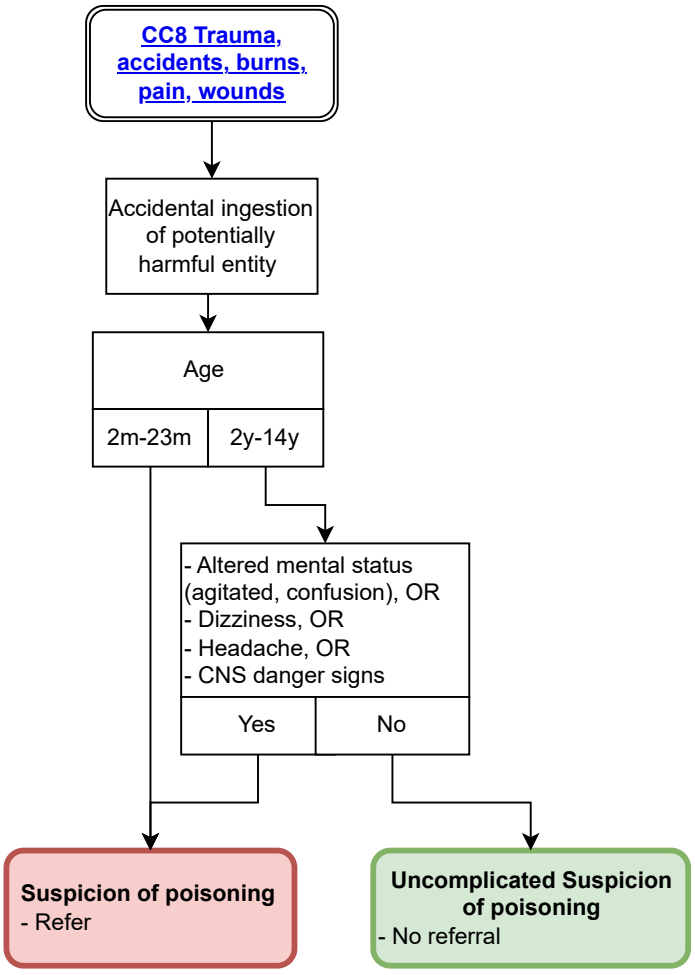

CC8 Trauma, accidents, burns, pain, wounds
Head trauma
- Open skull fracture, OR
- Altered mental status (agitation, somnolence, repetitive questioning, or slow response to verbal communication), OR
- CNS Danger signs, OR
- Signs of basilar skull fracture (retro-auricular/periorbital bruising, blood or CSF running from ear) (if child >2 years)
Yes
No
- Major trauma (Fall from >1m for children <2 years, fall from >1.5m for children >2 years, head struck by a high-impact object), OR
- Severe headache, OR
- Not acting normal, OR
- Vomiting, OR
- History of loss of consciousness
Yes
No
Major Head injury
- Refer
Moderate Head injury
- Head injury guidance
- Refer if worsening of clinical status after 4 hours in clinic
Minor Head injury
- Paracetamol
- Head injury guidance
- No referral

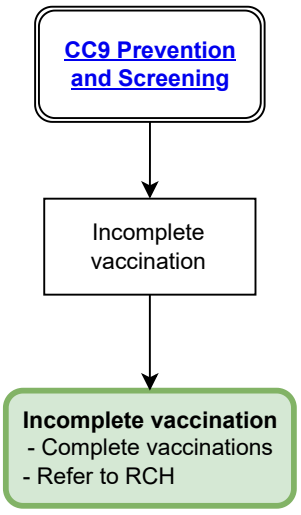

CC8 Trauma, accidents, burns, pain, wounds
Major car accident (pedestrian hit by fast moving car, pedestrian runover by car, passenger in car accident in fast moving car
- Headache, OR
- Pain
Major car accident
- Refer

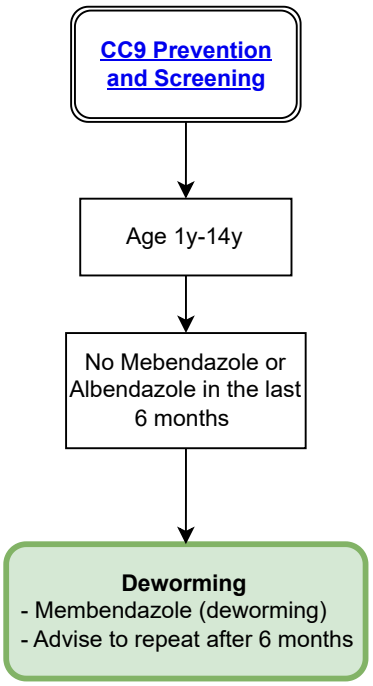

CC8 Trauma, accidents, burns, pain, wounds
- Significant exposure to fire or smoke, OR
- Burn of the face
- Difficulty breathing, OR
- Stridor, OR
- Altered mental status
Inhalation injury
- Salbutamol INH if wheezing
- Refer

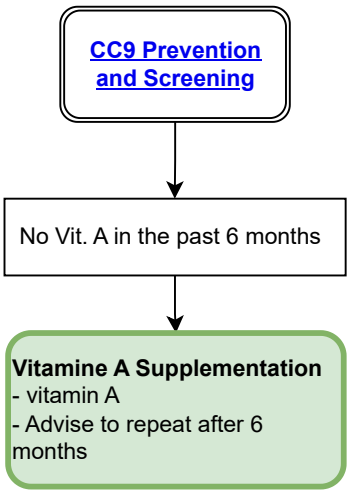

CC8 Trauma, accidents, burns, pain, wounds
- Major trauma (Fall from >1m for children <2 years, fall from >1.5m for children >2 years, abdomen struck by a high-impact object)
- Abdominal hematoma, OR
- Abdominal pain on palpation
Severe abdominal injury
- Paracetamol
- Refer

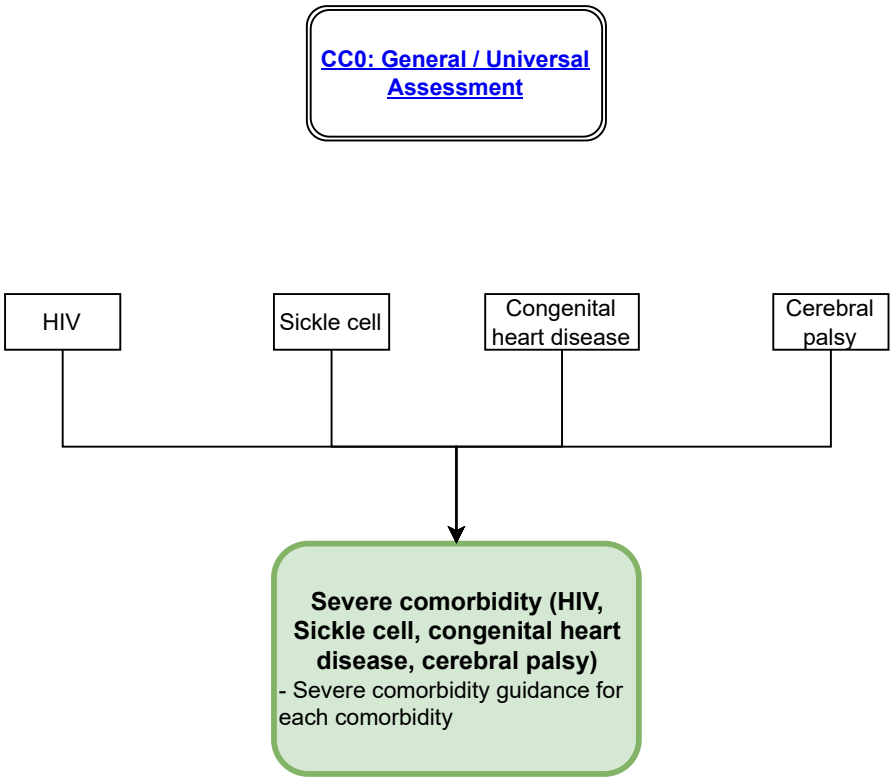

CC8 Trauma, accidents, burns, pain, wounds
Significant exposure to fire or smoke
Age
2m-23m
2y-14y
- Severe irritability, OR
- CNS Danger signs
- Altered mental status (agitated, confusion), OR
- Dizziness, OR
- Headache, OR
- CNS Danger signs
Carbon monoxide poisoning
- Refer


CC8 Trauma, accidents, burns, pain, wounds
Accidental ingestion of potentially harmful entity
Age
2m-23m
2y-14y
- Altered mental status (agitated, confusion), OR
- Dizziness, OR
- Headache, OR
- CNS danger signs
Yes
No
Suspicion of poisoning
- Refer
Uncomplicated Suspicion of poisoning
- No referral


CC9 Prevention and Screening
Incomplete vaccination
Incomplete vaccination
- Complete vaccinations
- Refer to RCH


CC9 Prevention and Screening
Age 1y-14y
No Mebendazole or Albendazole in the last 6 months
Deworming
- Membendazole (deworming)
- Advise to repeat after 6 months

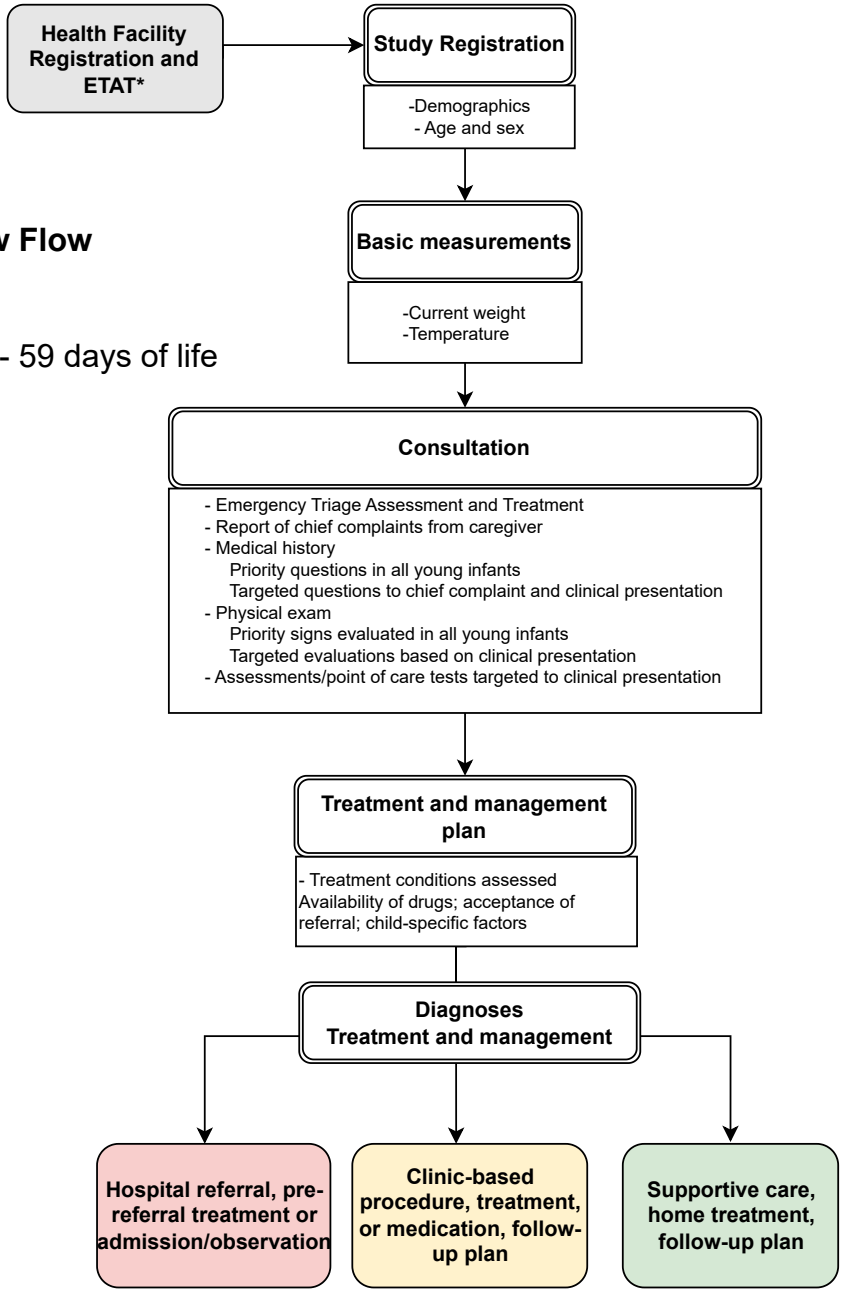

CC9 Prevention and Screening
No Vit. A in the past 6 months
Vitamine A Supplementation
- vitamin A
- Advise to repeat after 6 months


CC0: General / Universal Assessment
HIV
Sickle cell
Congenital heart disease
Cerebral palsy
Severe comorbidity (HIV, Sickle cell, congenital heart disease, cerebral palsy)
- Severe comorbidity guidance for each comorbidity

2. Young infant algorithm (< 2 months)

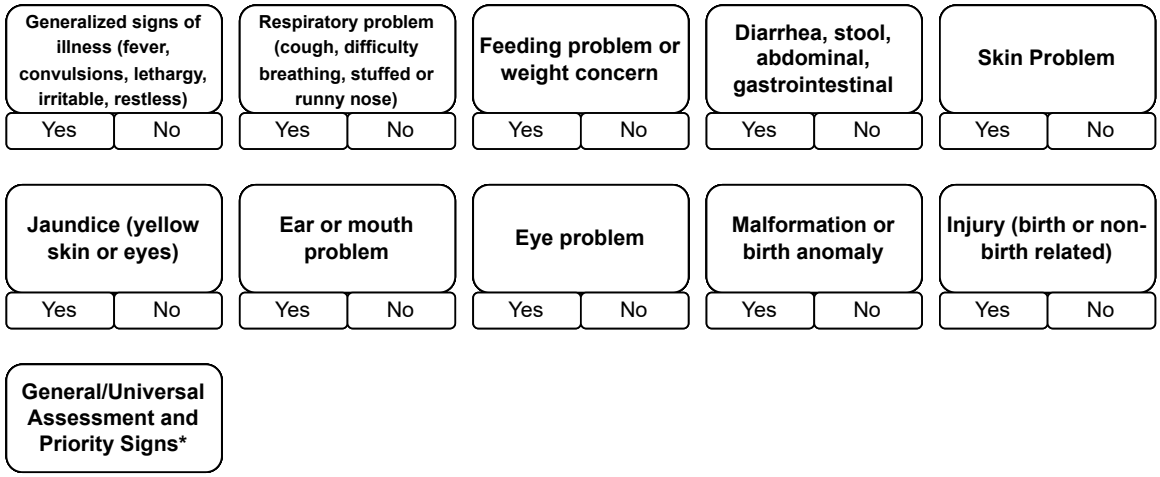
Overview Flow

ePOCT+
Infants 1 - 59 days of life



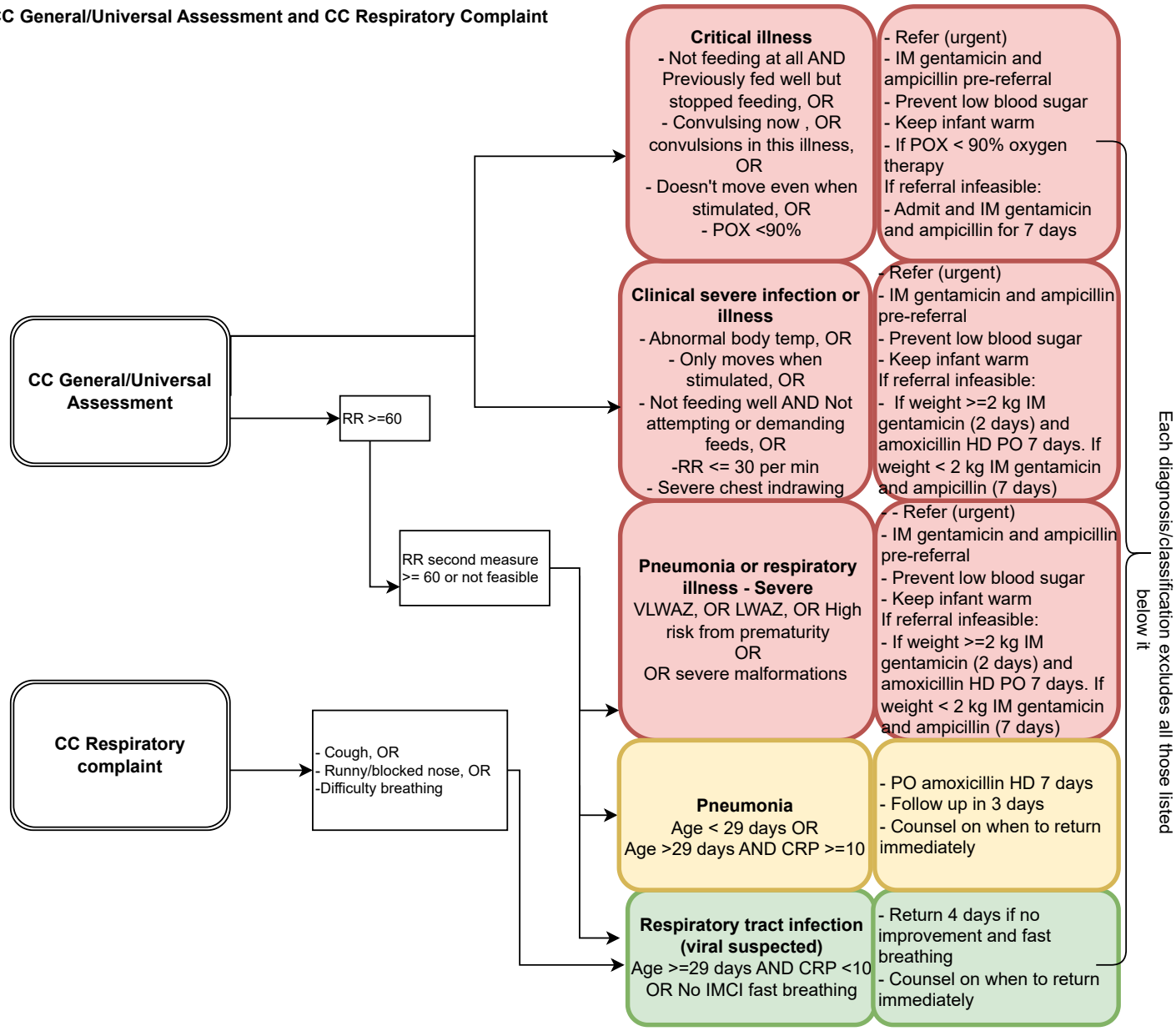
* As per health facility standard practice

CC Chief Complaints



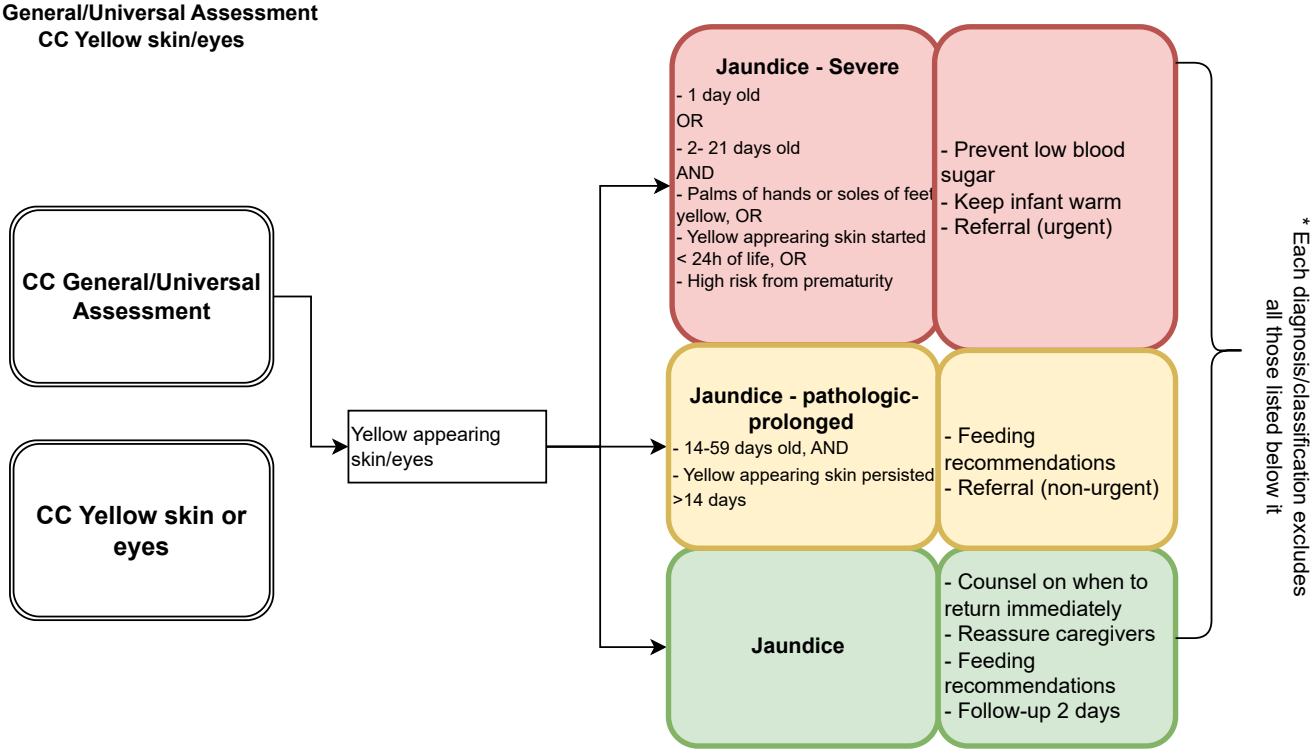
* All items in the General/Universal Assessment are asked/evaluated of all young infants <60 days, regardless of the chief complaint(s) selected. This category is not visible to health worker to select.

CC General/Universal Assessment and CC Respiratory Complaint



RR: Respiratory rate
Abnormal body temperature: Axillary temperature >/= 38, OR; Axillary temperature < 35.5.; OR Reported history of fever in present illness
VLWAZ: Very low weight for age Z-score (<-3)
LWAZ: Low weight for age Z-score (<-2)
High risk from prematurity: Birthweight <1.5 kg OR gestational age <34 week OR report from caregiver infant born "very early" OR "very small"
PO: Oral, HD: high dose
IMCI Fast breathing: RR >= 60 on two measurements, or on one measurement with 2nd infeasible

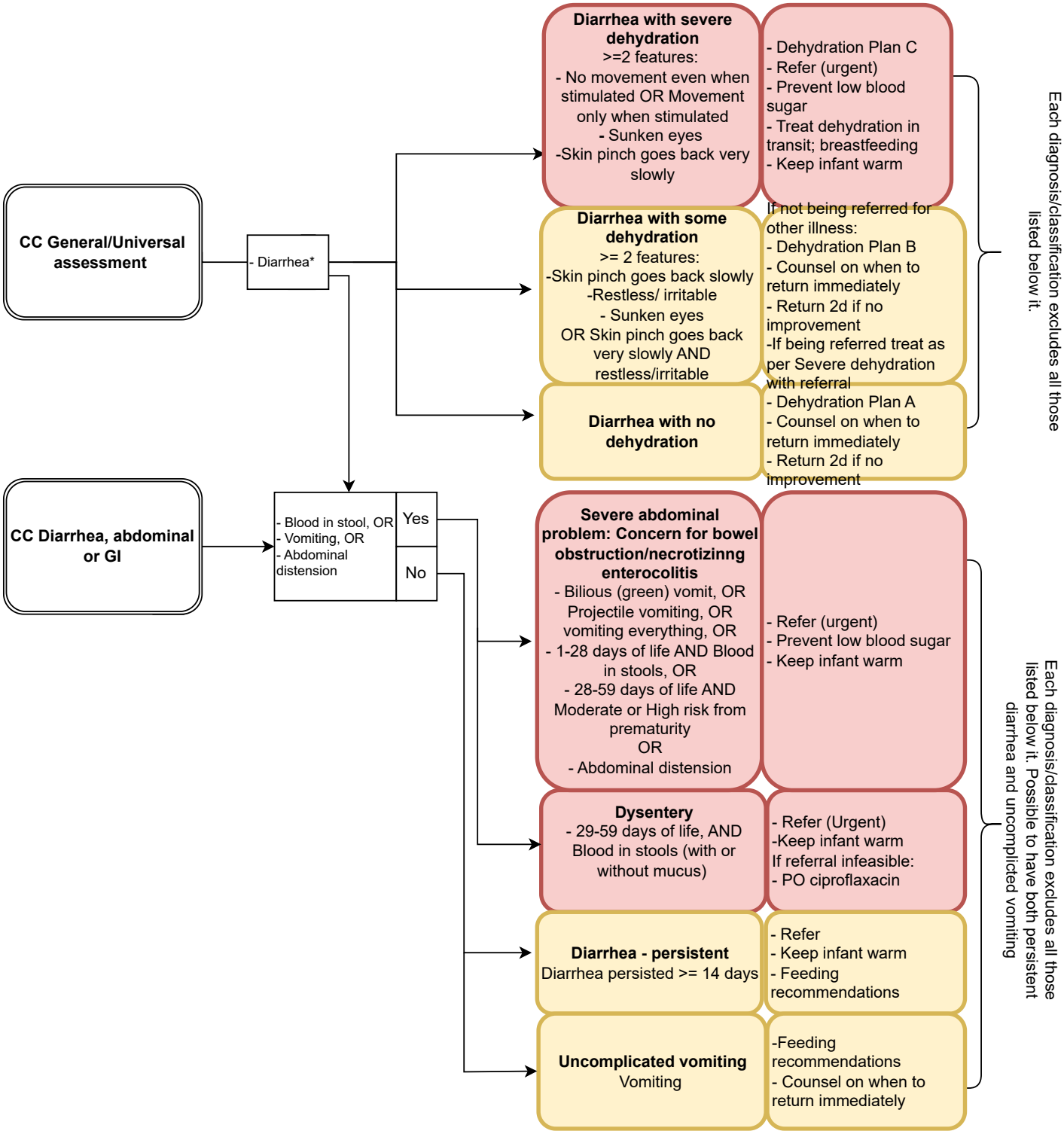
CC General/Universal Assessment
CC Yellow skin/eyes



High risk from prematurity: Gestational age <34 weeks OR birthweight <1.5 kg OR caregiver report born "Very early" OR "Very small"

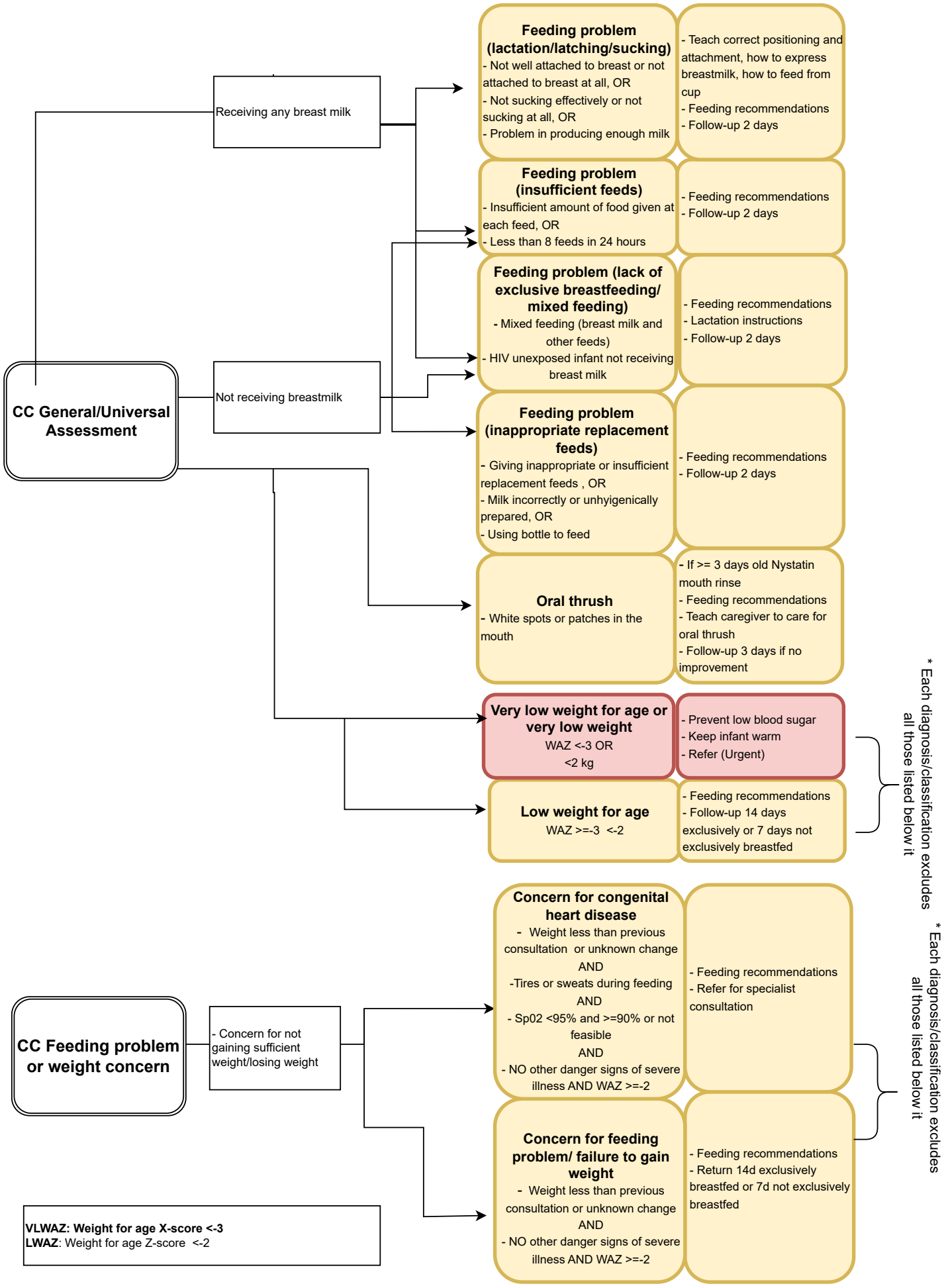
Diarrhea [Evaluated in CC General/Universal assessment]

CC Diarrhea, abdominal, stool or GI

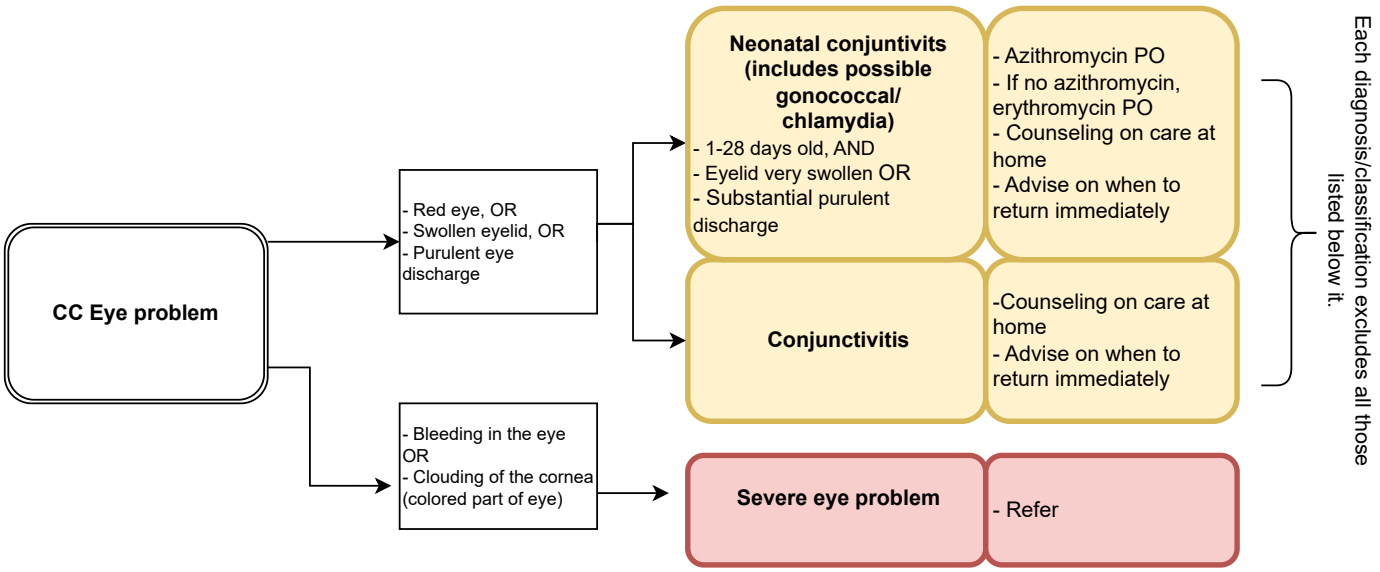


Moderate risk from prematurity: <37 weeks OR birthweight <2.5 kg OR report of baby born "early" OR "small"
High risk from prematurity: < 32 weeks OR birthweight <1.5 kg OR report of baby born "very early" OR "very small"
Diarrhea: Stools are more loose/watery than usual
PO: Oral

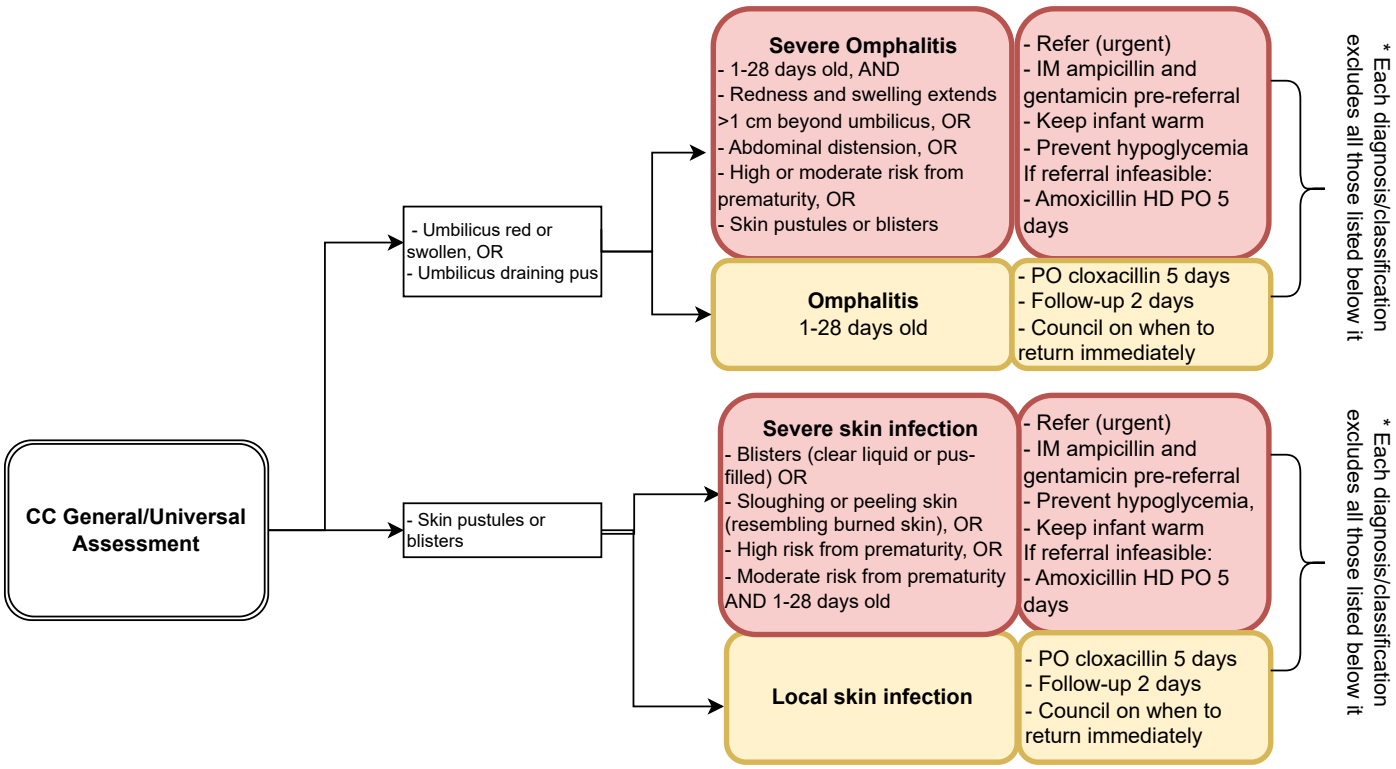
CC Feeding problem or low weight



CC Eye problem

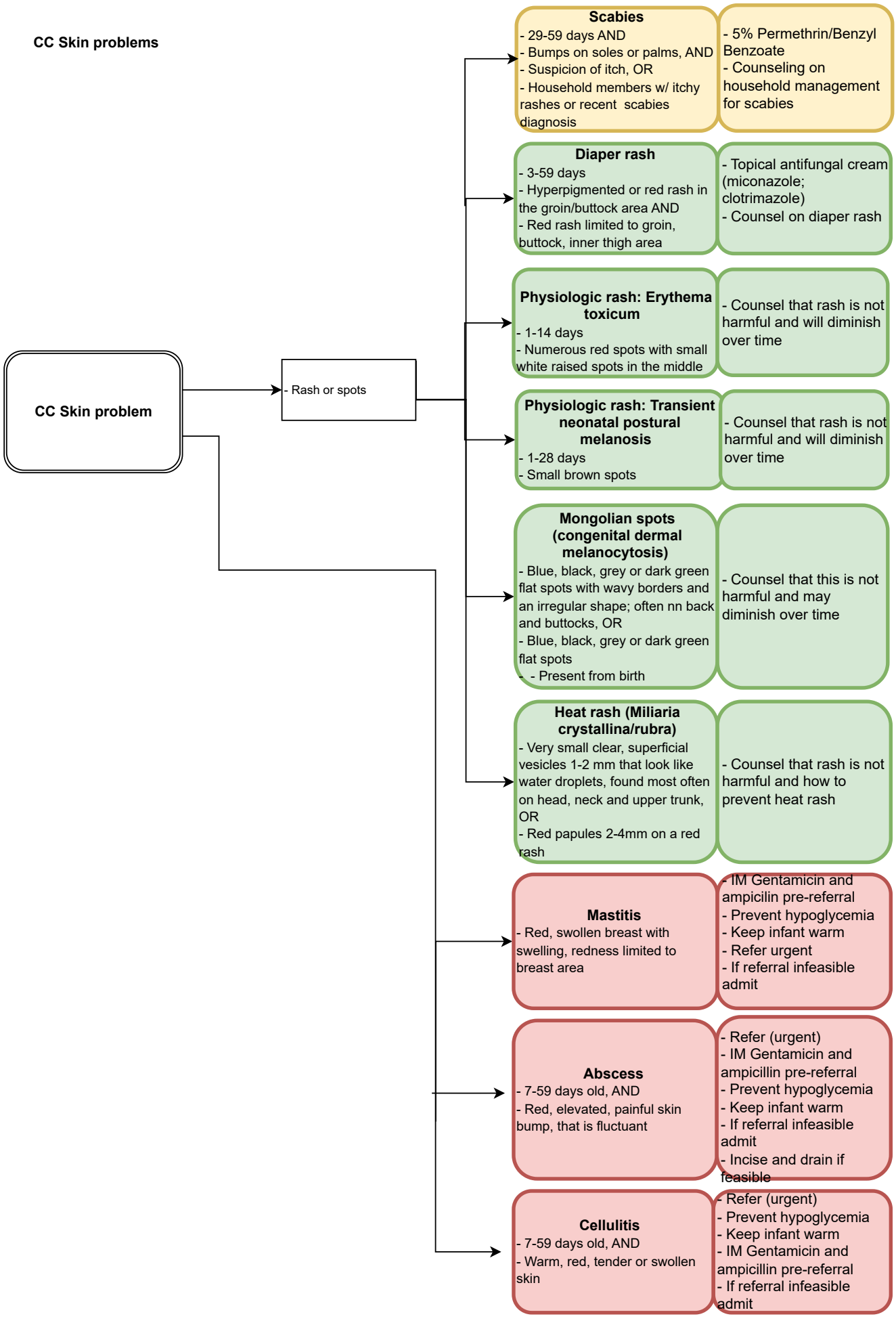


CC General/Universal Assessment (Skin problems)

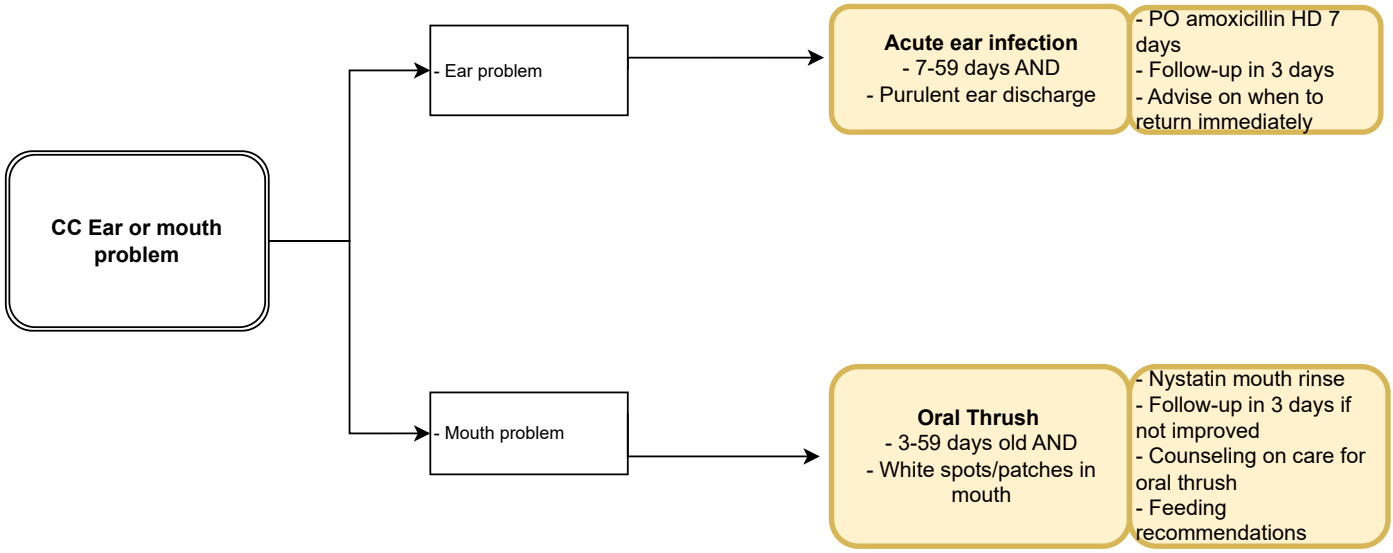


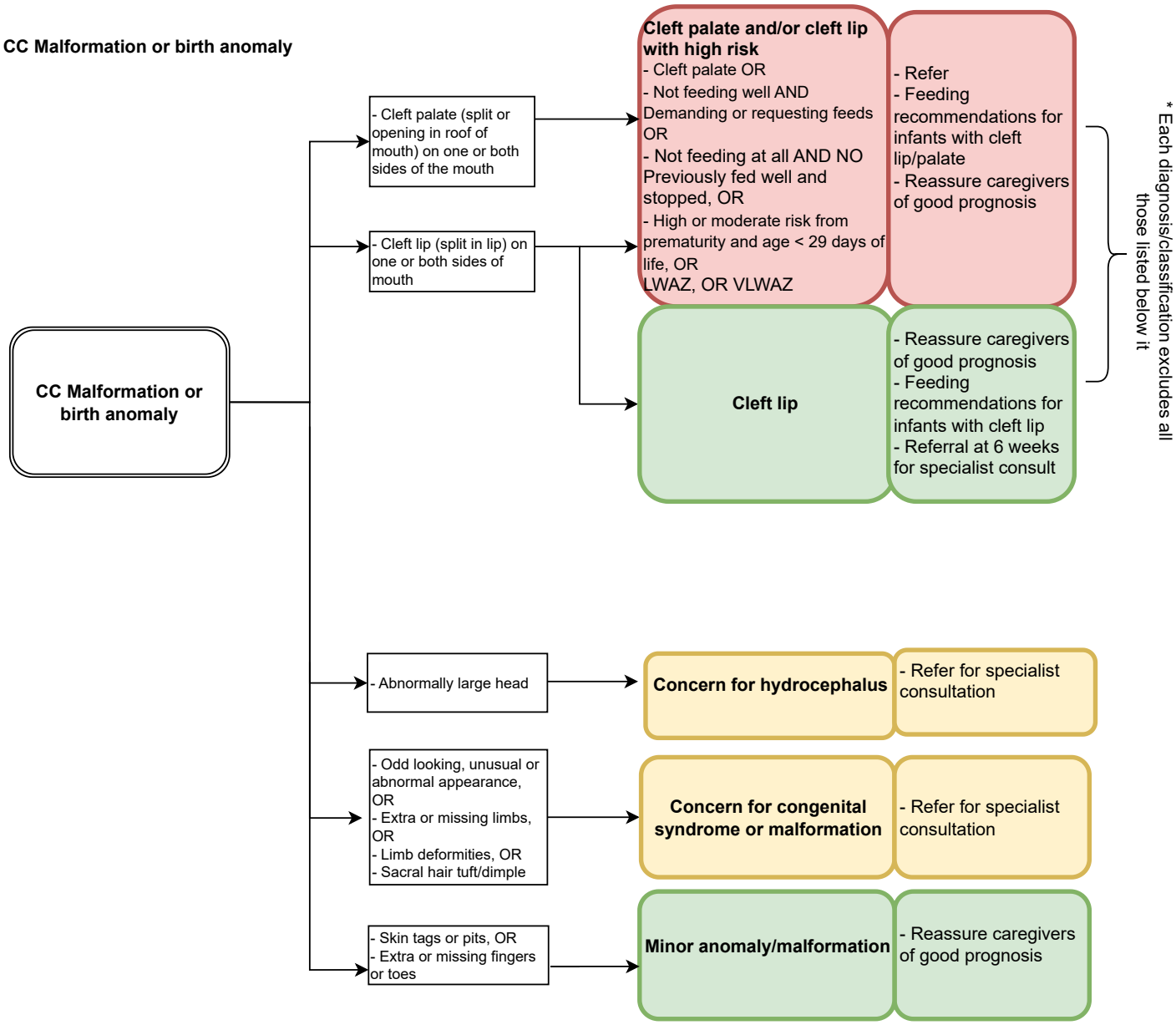
Moderate risk from prematurity: Gestational age <37 weeks OR birthweight <2.5 kg OR caregiver report born "Early" OR "Small"
High risk from prematurity: Gestational age <34 weeks OR birthweight <1.5 kg OR caregiver report born "Very early" OR "Very small"

CC Skin problems



CC Ear or mouth problem



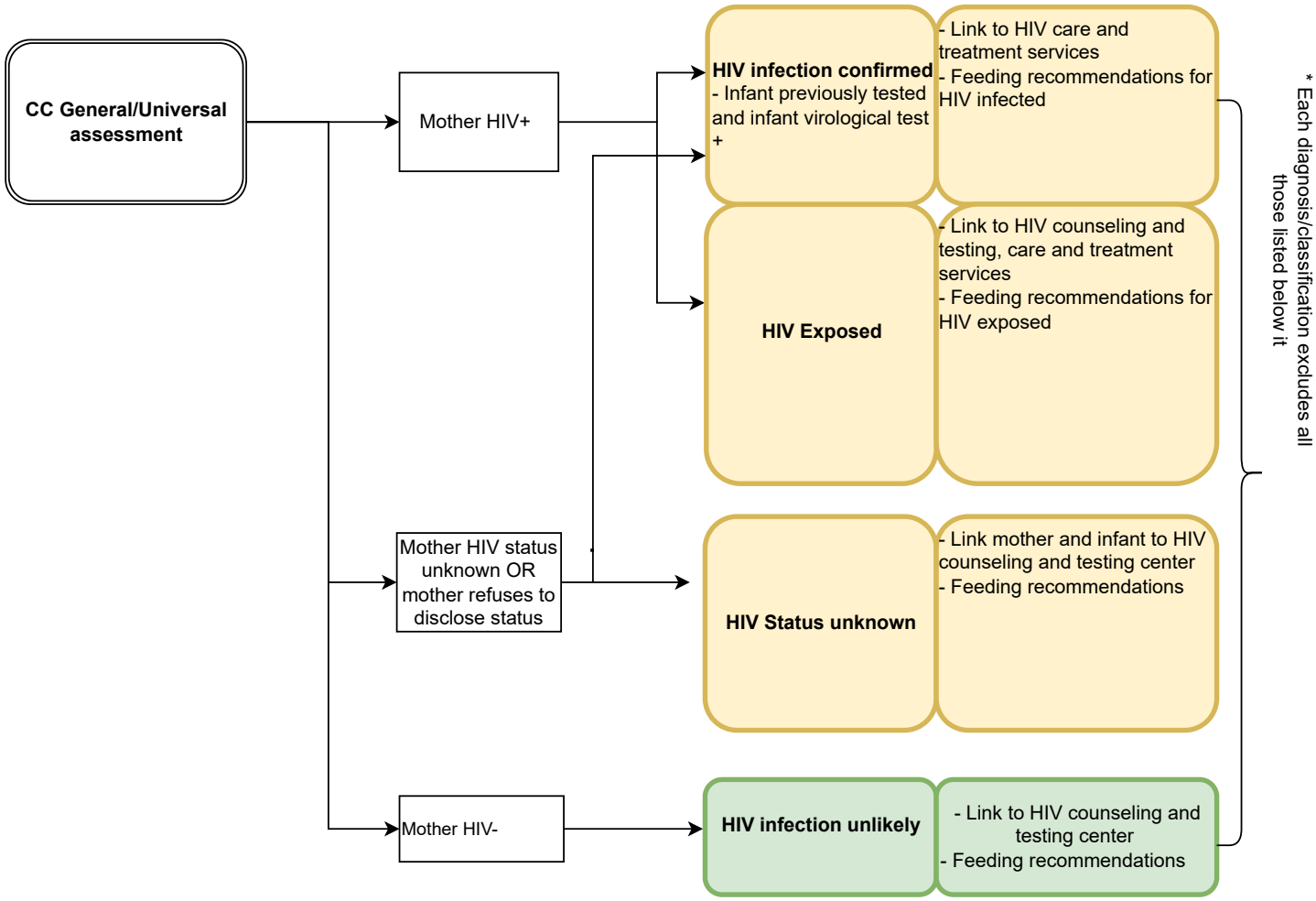


VLWAZ: Very low weight for age Z-score (<-3)
LWAZ: Low weight for age Z-score (<-2)
High risk from prematurity: Gestational age <34 weeks OR birthweight <1.5 kg OR caregiver report born "Very early" OR "Very small"
Moderate risk from prematurity: Gestational age <37 weeks OR birthweight <2.5 kg OR caregiver report born "Early" OR "Small"

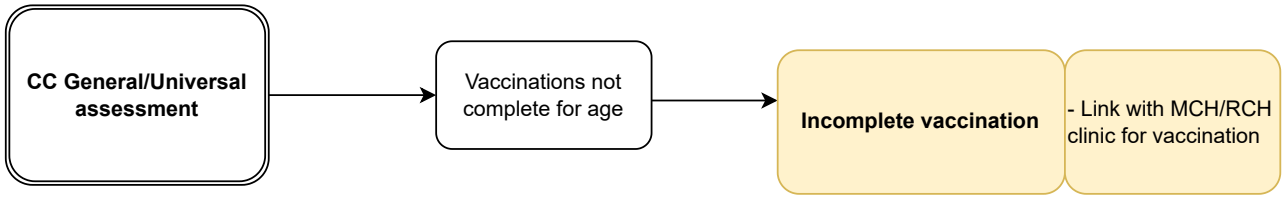
CC Injury (birth- or non-birth-related)

Signs of infection: Redness, hot to touch, hardness, pus

HIV Risk (Assessed in CC General/Universal Assessment)



CC Vaccination (Assessed in CC General/Universal assessment)



3. Drugs linked to diagnoses

Indication	Drug	Days	Description
Abscess	Ampicillin pre-referral	1	Antibiotic: 50 mg/kg/dose, give one dose IM before referral
Abscess	Gentamicin pre-referral	1	
Abscess	Amoxicillin po	5	ANTIBIOTIC: Amoxicillin regular dose (50mg/Kg/day divided in 2 doses)
Acute diarrhea	Zinc sulfate 10 mg (half a tablet)	10	
Acute limp or joint pain	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Acute otitis media (ear infection)	Amoxicillin HD po	7	ANTIBIOTIC: amoxicillin high dose (80-100mg/kg/day divided in 2 doses), dispersible tablets
Allergic conjunctivitis	Sodium Cromoglycate 2-4% eye drops	30	
Anaphylaxis	Cetirizine po (for 6 months to 2 years)	1	Pre-referral treatment : Give the first dose of the medication before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
Anaphylaxis	Chlorpheniramine po (Piriton) (2-6 years old)	1	Pre-referral treatment : Give the first dose of the medication before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
Anaphylaxis	Chlorpheniramine po (Piriton) (6 to 12 years)	1	Pre-referral treatment : Give the first dose of the medication before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
Anaphylaxis	Cetirizine po (for >= 5 years)	1	Pre-referral treatment : Give the first dose of the medication before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
Anaphylaxis	Cetirizine po (for 2 to 5 years)	1	Pre-referral treatment : Give the first dose of the medication before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
Anaphylaxis	Epinephrine (Adrenaline) im	1	Pre-referral treatment : Give the first dose of the medication before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
Anaphylaxis	Chlorpheniramine po (Piriton) (12 to 14 years)	1	Pre-referral treatment : Give the first dose of the medication before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
Bacterial acute pharyngitis	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Bacterial acute pharyngitis	Amoxicillin po	5	Amoxicillin regular dose, dispersible tablets
Bacterial acute pharyngitis	Phenoxymehtylpenicillin (Penicillin V) po	5	
Bacterial conjunctivitis	Chloramphenicol eye drops	5	
Bacterial conjunctivitis	Ciprofloxacin eye drops	5	
Bacterial conjunctivitis (< 5 y)	Chloramphenicol eye drops	5	
Bacterial conjunctivitis (< 5 y)	Ciprofloxacin eye drops	5	
Bacterial pneumonia	Erythromycin po	7	
Bacterial pneumonia	Paracetamol	3	
Bacterial pneumonia	Amoxicillin HD po	5	
Bacterial pneumonia	Amoxicillin HD po	5	
Cellulitis	Amoxicillin po	5	ANTIBIOTIC: Amoxicillin regular dose (50mg/Kg/day divided in 2 doses)
Cellulitis	Ampicillin pre-referral		
Cellulitis	Gentamicin pre-referral		
Chronic ear infection	Paracetamol	3	
Chronic ear infection	Ciprofloxacin ear drops 0.3%	14	
Chronic limp or joint pain	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
CNS Danger signs	Diazepam rectal vials (12-36m)		Pre-referral dose Give second dose if continues after 10 minutes
CNS Danger signs	Diazepam rectal vials (>= 36 months)		10mg at 10mg/2mL = 2mL Pre-referral dose Give second dose if continues after 10 minutes Use a 1 ml syringe without needle and insert it 2 to 3 cm into the rectum, or attach a nasogastric tube n°8 cut to a length of 2 to 3 cm to the tip of a 2 ml syringe. Hold the buttocks together for a few minutes.
CNS Danger signs	Diazepam rectal vials (6 - 12m)		Pre-referral dose Give second dose if continues after 10 minutes
CNS Danger signs	Phenobarbital im		
CNS Danger signs	Ampicillin HD IM/IV		High dose for severe diseases. Pre-referral treatment : Give the first dose of the medication before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
CNS Danger signs	Dextrose IV bolus		Dextrose IV for the management of hypoglycemia
CNS Danger signs	Gentamicin IM		Pre-referral treatment : Give the first dose of the medication before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
CNS Danger signs	Ceftriaxone HD IV/IM		Pre-referral treatment : Give the first dose of the medication before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
CNS Danger signs	Diazepam rectal vials (2-6m)		Pre-referral dose Give second dose if continues after 10 minutes
Common Cold	Paracetamol	3	
Complicated abscess	Cloxacillin po	7	50 to 100 mg/kg/day, max 4g/day
Complicated abscess	Paracetamol	3	
Complicated abscess	Erythromycin po	7	Antibiotic: 50 mg/Kg/day, max 2g/day
Complicated acute ear infection	Amoxicillin HD po	5	ANTIBIOTIC: amoxicillin high dose (75-100mg/kg/day divided in 2 doses) If the drug is not available a prescription should be made.
Complicated acute ear infection	Paracetamol	5	
Complicated acute ear infection	Erythromycin po	5	Antibiotic: 50 mg/Kg/day, max 2g/day
Complicated cellulitis	Cloxacillin po	7	50 to 100 mg/kg/day, max 4g/day
Complicated cellulitis	Paracetamol	5	
Complicated cellulitis	Erythromycin po	7	Antibiotic: 50 mg/Kg/day, max 2g/day
Complicated chicken pox	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Complicated chicken pox	Calamine lotion	5	Apply over the whole body
Complicated chicken pox	Acyclovir po (chicken pox)	5	
Complicated deep wound	Cloxacillin po	7	50 to 100 mg/kg/day, max 4g/day
Complicated deep wound	Paracetamol	3	- Weight based dosage 80mg/Kg/day (min dose per kg/day 60; max dose per kg/day 80); max daily dose: 4000mg - Four times a day (roughly every 6hrs) as needed for pain or fever Oral Tablet 500mg; breakable by 2
Complicated deep wound	Erythromycin po	7	Antibiotic: 50 mg/Kg/day, max 2g/day
Complicated deep wound	Amoxicillin HD po	5	ANTIBIOTIC: amoxicillin high dose (75-100mg/kg/day divided in 2 doses)
Complicated impetigo	Cloxacillin po	7	50 to 100 mg/kg/day, max 4g/day
Complicated impetigo	Fucidic acid cream 2%	7	Topical antibiotic
Complicated impetigo	Erythromycin po	7	Antibiotic: 50 mg/Kg/day, max 2g/day
Complicated impetigo	Paracetamol	3	
Complicated impetigo	Potassium permanganate solution 1:4000 (0.025%)	7	
Complicated neck mass	Cloxacillin po	1	50 to 100 mg/kg/day, max 4g/day
Complicated neck mass	Erythromycin po	1	Antibiotic: 50 mg/Kg/day, max 2g/day
Complicated prolonged fever	Paracetamol	3	- Weight based dosage 80mg/Kg/day (min dose per kg/day 60; max dose per kg/day 80); max daily dose: 4000mg - Four times a day (roughly every 6hrs) as needed for pain or fever Oral Tablet 500mg; breakable by 2
Complicated severe acute malnutrition	Gentamicin IM	1	Antibiotic: 7mg/Kg/day, max 400mg/day
Complicated severe acute malnutrition	Ampicillin IM	1	ANTIBIOTIC: normal dose for infection
Complicated severe acute malnutrition	Dextrose IV bolus		Dextrose IV for the management of hypoglycemia
Complicated superficial wound	Cloxacillin po	7	50 to 100 mg/kg/day, max 4g/day
Complicated superficial wound	Erythromycin po	7	Antibiotic: 50 mg/Kg/day, max 2g/day
Complicated superficial wound	Amoxicillin HD po [For infants under 2 months old]	5	Antibiotic: PO Amoxicillin (75-100 mg/kg/day, divided in two doses)
Confirmed clavicular fracture	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain
Confirmed dislocation	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain
Confirmed fracture	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain

Indication	Drug	Days	Description
Confirmed fracture	Gentamicin IM	1	Antibiotic: 7mg/Kg/day, max 400mg/day Pre-referral treatment : Give the first dose of the medication before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
Confirmed fracture	Ampicillin IM	1	Normal dosage for infection: 200mg/kg/day Pre-referral treatment : Give the first dose of the medication before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
Conjunctivitis	Tetracycline eye ointment	5	Antibacterial eye ointment
Contusion	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Corneal abrasion	Chloramphenicol eye drops	5	
Corneal abrasion	Ciprofloxacin eye drops	5	
Critical illness	Ampicillin pre-referral	1	
Critical illness	Ampicillin at facility (7 days)	7	
Critical illness	Gentamicin pre-referral	1	
Critical illness	Gentamicin at facility (7 days)	7	
Dental abscess	Metronidazole po	7	
Dental abscess	Amoxicillin po	7	
Dental abscess	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Diaper rash	Clotrimazole (diaper rash) cream 1%	14	Antifungal; Topical (skin); Cream1%; 4 times a day Apply on affected area every 6 hours until the rash disappears, then continue for another 7 days.
Diaper rash	Clotrimazole (diaper rash) cream 1%	7	Apply on affected area every 6 hours until the rash disappears, then continue for another 7 days.
Diaper rash	Potassium permanganate solution 1:4000 (0.025%)	7	
Diarrhea with severe dehydration	Oral Rehydration Salts (ORS) by naso-gastric tube	1	ORS by naso-gastric tube in cases of Severe dehydration
Dysentery	Ciprofloxacin po	5	
Dysentery	Zinc sulfate 10 mg (half a tablet)	10	
Dysentery	Ciprofloxacin po [For infants less than 2 months old]	3	Antibiotic: for dysentery treatment in neonates
Dysmenorrhea	Ibuprofen po	3	As long as symptoms but max. 3 days
Eczema (Atopic dermatitis)	Betamethasone cream	14	
Eczema (Atopic dermatitis)	Hydrocortisone cream	14	
Extensive folliculitis	Erythromycin po	7	Antibiotic: 50 mg/Kg/day, max 2g/day
Extensive folliculitis	Cloxacillin po	7	50 to 100 mg/kg/day, max 4g/day
Extensive folliculitis	Gentian Violet (full strength) solution	5	
Extensive folliculitis	Silver sulfadiazine cream 1%	5	
Febrile urinary tract infection	Amoxicillin / clavulanic acid po	10	
Febrile urinary tract infection	Ciprofloxacin po	10	
Fever without source: presumed bacterial infection	Cotrimoxazole po	5	
Fever without source: presumed bacterial infection	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Fever without source: presumed bacterial infection	Amoxicillin HD po	5	
Fever without source: presumed bacterial infection	Ciprofloxacin po	5	
Fever without source: presumed viral illness	Paracetamol	3	
Folliculitis	Silver sulfadiazine cream 1%	5	Apply on affected areas twice a day.
Folliculitis	Gentian Violet (full strength) solution	5	
Folliculitis	Potassium permanganate solution 1:4000 (0.025%)	4	2 times a day Wet dressing with weak Potassium Permanganate soaks. Leave wet dressing for 15 to 20 minutes. Potassium permanganate solution should always be prepared fresh, as it is rapidly inactivated after being diluted.
Foreign body in ear	Ciprofloxacin ear drops 0.3%	10	
Generalized (extensive) tinea corporis	Fluconazole	42	
Generalized (extensive) tinea corporis	Griseofulvin po (for 2 months to 12 years old)	42	
Generalized (extensive) tinea corporis	Griseofulvin po (for 12 to 14 years old)	42	
Herpes simplex - Oral lesions (herpes labialis)	Acyclovir po (HSV)	5	
Herpes simplex - Oral lesions (herpes labialis)	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Hypoglycemia	Dextrose IV bolus	1	Dextrose IV bolus for the management of hypoglycemia
IMCI Anemia	Iron po	14	
IMCI/IMAI pneumonia	Amoxicillin HD po	5	Amoxicillin high dose, dispersible tablets
IMCI/IMAI pneumonia	Paracetamol	3	
IMCI/IMAI pneumonia	Erythromycin po	7	Antibiotic: 50 mg/Kg/day, max 2g/day
Inguinal bubo (Lymphogranuloma venereum / Chancroid)	Ciprofloxacin po	3	500 mg twice daily
Inguinal bubo (Lymphogranuloma venereum / Chancroid)	Doxycycline po	14	
Inguinal hernia	Paracetamol	3	
Inhalation injury	Salbutamol INH	1	Pre-referral treatment : Give the first dose of the medication before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
Inhalation injury	Budesonide INH	1	Pre-referral treatment : Give the first dose of the medication before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
Intestinal parasitic infection: Nematode	Albendazole po (deworming child 2 y and older)	1	Antihelminths Dosage based on Age: >= 2 years: 400mg
Intestinal parasitic infection: Nematode	Mebendazole po (deworming)	1	Antihelminths for routine deworming Dosage based on Age: >=1 year : 500mg
Intestinal parasitic infection: Protozoa	Metronidazole po	7	Antibiotic: dosage 20mg/kg/day (also used for parasitic infections)
Local skin infection	Ampiclox (Ampicillin + Cloxacillin) po syrup [For infants less than 2 months old]	5	Antibiotic for skin infection Dosing based on combined formulation 50-150mg/kg/day (equivalent to 25-75mg/kg/day for ampicillin or cloxacillin separately)
Local skin infection	Amoxicillin HD po [For infants under 2 months old]	5	Antibiotic: PO Amoxicillin (75-100 mg/kg/day, divided in two doses)
Lower urinary tract infection (cystitis)	Amoxicillin po	3	ANTIBIOTIC: Amoxicillin regular dose (50mg/Kg/day divided in 2 doses)
Lower urinary tract infection (cystitis)	Cotrimoxazole po	3	
Lower urinary tract infection (cystitis)	Cotrimoxazole po	3	Antibiotic: dosage 8mg TMP/kg/day (dosage based on TMP)
Lower urinary tract infection (cystitis)	Amoxicillin po	3	ANTIBIOTIC: Amoxicillin regular dose (50mg/Kg/day divided in 2 doses)
Major burn	Cloxacillin po	7	50 to 100 mg/kg/day, max 4g/day
Major burn	Fucidic acid cream 2%		Pre-referral treatment : Apply the cream before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
Major burn	Silver sulfadiazine cream 1%		Pre-referral treatment : Apply the cream before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
Mastitis	Ampicillin IM [For infants under 2 months old]		Antibiotic: 50 mg/kg/dose, IM injection
Mastitis	Gentamicin IM [For infants under 2 months old]		Antibiotic, 5-7.5 mg/kg/dose, IM injection
Mastitis	Amoxicillin HD po [For infants under 2 months old]	5	Antibiotic: PO Amoxicillin (75-100 mg/kg/day, divided in two doses)
Mastitis	Cloxacillin po [For infants under 2 months old]	5	Antibiotic PO (For infants under 2 months old): 25-75mg/kg/day
Mastoiditis	Ampicillin IM		Ampicillin iv, powder for infection (as sodium salt), 500 mg per vial
Mastoiditis	Paracetamol	3	
Mastoiditis	Ciprofloxacin ear drops 0.3%	10	
Mastoiditis	Gentamicin IM		Gentamicin, IV, ampoule 40mg/ml in 2ml (80mg/2ml)
Mild/Moderate anemia	Iron po	14	
Minor burn	Fucidic acid cream 2%		Pre-referral treatment : Apply the cream before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
Minor burn	Cloxacillin po	7	50 to 100 mg/kg/day, max 4g/day
Minor burn	Paracetamol	5	For Pain or fever - Weight based dosing: 60-75mg/Kg/day; max daily dose: 4000mg
Minor burn	Silver sulfadiazine cream 1%	7	
Minor head injury	Paracetamol	2	
Moderate head injury	Paracetamol	3	- Weight based dosage 80mg/Kg/day (min dose per kg/day 60; max dose per kg/day 80); max daily dose: 4000mg - Four times a day (roughly every 6hrs) as needed for pain or fever Oral Tablet 500mg; breakable by 2

Indication	Drug	Days	Description
Moderate malnutrition	Vitamin A po (retinol) for >= 1 year of age	1	Vitamins Dosage based on Age: >= 1 years :200 000 IU
Moderate malnutrition	Vitamin A po (retinol) for 6 to 12 months of age	1	Vitamin supplementation 6-12 months = 100,000 IU
Mumps	Paracetamol	5	
Neonatal conjunctivitis - (includes possible gonococcal / chlamydia infection)	Erythromycin PO [For infants less than 2 months old]	14	Antibiotic used for the treatment of chlamydial conjunctivitis. Note that there is risk of infantile hypertrophic pyloric stenosis, especially in neonates. Azithromycin is preferred for treatment of chlamydial conjuntivitis in neonates when available. Erythromycin should not be used for treatment of routine pneumonia or sepsis in neonates.
Neonatal conjunctivitis - (includes possible gonococcal / chlamydia infection)	Azithromycin po syrup [For infants less than 2 months old]	5	Antibiotic: Dosage 10mg/kg/day
Non specific viral rash	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Non-severe abdominal condition	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Non-severe headache	Paracetamol	3	
Non-severe measles	Vitamin A po (retinol) for 6 to 12 months of age	2	Give vitamin A dose on day 1 and 2, and then again in 2 weeks.
Non-severe measles	Vitamin A po (retinol) for >= 1 year of age	2	Give vitamin A dose on day 1 and 2, and then again in 2 weeks.
Non-severe measles	Vitamin A (retinol) for <6m	2	Vitamins - Dosage based on Age: <6 months : 50 000 IU Give vitamin A dose on day 1 and 2, and then again in 2 weeks.
Non-severe measles	Paracetamol	5	
Non-severe measles	Tetracycline eye ointment	14	
Non-severe measles	Gentian Violet (half strength) solution	5	
Omphalitis	Amoxicillin HD po [For infants under 2 months old]	5	
Omphalitis complicated / severe	Gentamicin IM [For infants under 2 months old]		
Omphalitis complicated / severe	Ampicillin IM [For infants under 2 months old]		
Omphalitis complicated / severe	Amoxicillin HD po [For infants under 2 months old]	5	
Oral aphthous ulcers	Gentian Violet (half strength) solution	5	
Oral aphthous ulcers	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Oral candidiasis	Nystatin (Rinse for mouth)	14	
Oral candidiasis	Fluconazole	7	
Oral candidiasis	Miconazole Gel 2% (for mouth)	14	
Oral thrush	Nystatin (Rinse for mouth)	7	
Oral thrush	Nystatin (Rinse for mouth)	7	Antifungal oral liquid 50mg/5mL (100,000iu/ml). All ages 1mL4x/day. Rinse in mouth for 3 minutes.
Orbital cellulitis	Erythromycin po		Antibiotic: 50 mg/Kg/day, max 2g/day
Orbital cellulitis	Amoxicillin HD po		ANTIBIOTIC: amoxicillin high dose (75-100mg/kg/day divided in 2 doses)
Orbital cellulitis	Cloxacillin po		50 to 100 mg/kg/day, max 4g/day
Osteomyelitis/septic arthritis	Gentamicin IM		Antibiotic: 7mg/Kg/day, max 400mg/day
Osteomyelitis/septic arthritis	Ampicillin HD IM/IV		Antibiotic: High dose for severe diseases (severe pneumonia, suspicion of meningitis, CNS danger signs, very severe febrile disease, osteomyelitis/septic arthritis) = 400mg/Kg/day
Osteomyelitis/septic arthritis	Paracetamol		
Oxyuriasis (rectal symptoms/worms in stool)	Albendazole (therapeutic) po for 1-2 years	1	Single dose to be repeated once after 14 days.
Oxyuriasis (rectal symptoms/worms in stool)	Albendazole (therapeutic) po for >= 2 to 14 years	1	Single dose to be repeated once after 14 days.
Oxyuriasis (rectal symptoms/worms in stool)	Mebendazole (therapeutic) po	1	Single dose to be repeated once after 14 days.
Pediculosis (Head lice)	Permethrin 1% lotion	1	
Pediculosis (Head lice)	Benzyl Benzoate 25% Emulsion (lice) for hair	1	Apply to dry hair for 10-minutes and then rinse off with warm water. Perform second application 1 week apart.
Pelvic inflammatory disease	Paracetamol	3	
Pelvic inflammatory disease	Ceftriaxone IM for patients <46kg (STI)	1	25 to 50mg/kg (max 125mg/dose) antibiotic for STI
Pelvic inflammatory disease	Metronidazole po (STI)	14	
Pelvic inflammatory disease	Ceftriaxone IM (STI)	1	Single dose
Pelvic inflammatory disease	Doxycycline po	14	
Persistent diarrhea	Vitamin A po (retinol) for 6 to 12 months of age	1	Vitamins; Oral; Capsule: 50,000 IU; 100,000 IU. Oral oily solution: 100,000 IU/mL. Tablet: 10,000 IU; 50,000 IU Dosage based on Age: Age 6 - 12 months100 000 IU 1 time a day Do not give if the child is less than 6 months, or is already on RUTF, or received vit A within the past month.
Persistent diarrhea	Zinc sulfate 10 mg (half a tablet)	10	
Persistent diarrhea	Vitamin A po (retinol) for >= 1 year of age	1	Vitamins; Oral; Capsule: 50,000 IU; 100,000 IU. Oral oily solution: 100,000 IU/mL. Tablet: 10,000 IU; 50,000 IU Dosage based on Age: >= 1 years :200 000 IU 1 time a day Do not give if the child is already on RUTF, or received vit A within the past month.
Persisting dysentery	Azithromycin po	5	Antibiotic: Dosage 10mg/kg/day
Pityriasis versicolor	Benzoic acid compound (whitfield)	28	
Pityriasis versicolor	Clotrimazole cream	28	
Pneumonia	Amoxicillin HD po [For infants under 2 months old]	7	Antibiotic: PO Amoxicillin (75-100 mg/kg/day, divided in two doses)
Preseptal cellulitis	Cloxacillin po	10	50 to 100 mg/kg/day, max 4g/day
Preseptal cellulitis	Erythromycin po	10	Antibiotic: 50 mg/Kg/day, max 2g/day
Presumed genital HSV	Acyclovir po (HSV)	7	
Presumed primary syphilis	Doxycycline po	14	
Presumed primary syphilis	Benzathine Penicillin i.m.	1	Single dose
Prevention and Screening	Vitamin A po (retinol) Age >=1 year	1	
Prevention and Screening	Albendazole po (deworming 1-2y)	1	
Prevention and Screening	Albendazole po (deworming child 2 y and older)	1	
Prevention and Screening	Vitamin A po (retinol) Age: 6-12m	1	
Prevention and Screening	Mebendazole po (deworming)	1	
Primary Syphilis	Benzathine Penicillin i.m.	1	Single dose
Primary Syphilis	Doxycycline po	14	
Primary Syphilis	Benzathine Penicillin i.m.	1	Single dose : Antibiotic: dosing for primary syphilis: 2.4MIU
Primary Syphilis	Doxycycline po	14	Antibiotic: Doxycycline for sexual transmitted infection 100mg/dose twice a day
Pyelonephritis	Ciprofloxacin po	10	
Pyelonephritis	Ciprofloxacin po	10	Antibiotic: 20-40mg/kg/day, max 1500mg/day
Pyelonephritis	Amoxicillin / clavulanic acid po	10	ATB: weight based dosage : Amoxicillin 100mg/kg/day; min 80; max 100; max daily dose: 1.5g/d
Reactive airway disease	Budesonide INH	14	
Reactive airway disease	Salbutamol INH	14	
Scabies	Permethrin 5%	7	Apply on skin to the whole body. Permethrin should be removed by washing (bath) after 8 to 14 hours. Repeat daily for 7 days.
Scabies	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Scabies	Benzyl Benzoate Emulsion 25%	1	Apply from chin to toes and under finger nails and toenails. Leave to dry and repeat without bathing after 24 hours. Wash off on the third day. Repeat the same treatment 7 days after the last application.
Scabies	Permethrin 5%	1	Apply on skin to the whole body. Permethrin should be removed by washing (bath) after 8 to 14 hours. Apply a second application one week later.
Scarlet fever	Amoxicillin po	5	
Scarlet fever	Phenoxymehtylpenicillin (Penicillin V) po	5	
Scarlet fever	Paracetamol	3	
Severe abdominal condition (possible bowel obstruction / hernia / appendicitis)	Paracetamol		

Indication	Drug	Days	Description
Severe abdominal condition (possible bowel obstruction / hernia / appendicitis)	Ciprofloxacin po		
Severe abdominal condition (possible bowel obstruction / hernia / appendicitis)	Metronidazole po		
Severe abdominal condition (possible bowel obstruction / hernia / appendicitis)	Gentamicin IM		Antibiotic: 7mg/Kg/day, max 400mg/day
Severe abdominal condition (possible bowel obstruction / hernia / appendicitis)	Ampicillin HD IM/IV		Antibiotic: High dose for severe diseases (severe pneumonia, suspicion of meningitis, CNS danger signs, very severe febrile disease) = 400mg/Kg/day
Severe Clinical infection or Severe illness	Gentamicin at facility (2 days)	2	
Severe Clinical infection or Severe illness	Ampicillin pre-referral	1	
Severe Clinical infection or Severe illness	Gentamicin pre-referral	1	
Severe Clinical infection or Severe illness	Amoxicillin HD po when referral infeasible/not accepted - pneumonia or severe infection (7 days)	7	
Severe complicated measles	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Severe complicated measles	Vitamin A (retinol) for <6m	2	Vitamins - Dosage based on Age: <6 months : 50 000 IU Give vitamin A dose on day 1 and 2, and then again in 2 weeks
Severe complicated measles	Gentamicin IM	1	Pre-referral Gentamicin
Severe complicated measles	Ampicillin IM	1	Pre-referral Ampicillin IM
Severe complicated measles	Vitamin A po (retinol) for 6 to 12 months of age	2	Give vitamin A dose on day 1 and 2, and then again in 2 weeks.
Severe complicated measles	Vitamin A po (retinol) for >= 1 year of age	2	Give vitamin A dose on day 1 and 2, and then again in 2 weeks.
Severe complicated measles	Tetracycline eye ointment	7	
Severe complicated measles	Gentian Violet (half strength) solution	5	Powder reconstituted to 0.25% with water "For mouth ulcers: Treating mouth ulcers controls infection and helps the child to eat. Teach the mother to treat mouth ulcers with half-strength gentian violet. Gentian violet used in the mouth should be half-strength (0.25%), not full-strength (0.5%). Give the following information. Tell the mother: • Her child will start eating normally sooner if she paints the mouth ulcers in her child's mouth. It is important that the child eats. • Clean the child's mouth. Wrap a clean soft cloth around her finger. Dip it in salt water. Wipe the mouth. • Use a clean cloth or a cotton-tipped stick to paint gentian violet on the mouth ulcers. The gentian violet will kill germs that cause the ulcers. Put a small amount of gentian violet on the cloth or stick. Do not let the child drink the gentian violet. • Treat the mouth ulcers 2 times per day, in the morning and evening. • Treat the mouth ulcers for 5 days and then stop. Wrap a clean cloth around your finger and dip it into salt water. Show the mother how to first wipe the child's mouth clean. Then paint half of the child's mouth with halfstrength gentian violet. Ask the mother to practise. Watch her wipe the child's mouth clean and paint the rest of the ulcers with gentian violet. Comment on the steps she did well and those that need to be improved. Give the mother a bottle of half-strength gentian violet to take home. Tell her to return to the clinic if the mouth ulcers get worse or if the child is not able to drink or eat. Before the mother leaves, ask checking questions. For example, ask:
Severe Croup	Dexamethasone po		
Severe Croup	Prednisolone po		
Severe dehydration	Zinc sulfate 10 mg (half a tablet)	10	Zinc for diarrhea 10mg
Severe dehydration	Oral Rehydration Salts (ORS) by naso-gastric tube	1	ORS by naso-gastric tube in cases of Severe dehydration
Severe eye disease	Paracetamol		On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Severe eye disease	Vitamin A (retinol) for <6m	2	Vitamins - Dosage based on Age: <6 months : 50 000 IU Give one dose on day 1 and 2, and then again in 2 weeks
Severe eye disease	Vitamin A po (retinol) for 6 to 12 months of age	2	Vitamin supplementation; 6-12 months = 100,000 IU Give a dose on day 1 and 2, and a third does in 2 weeks
Severe eye disease	Chloramphenicol eye drops	5	Chloramphenicol eye drops 0.50%, 1 drop every 3 hours
Severe eye disease	Vitamin A po (retinol) for >= 1 year of age	2	Vitamins: Dosage based on Age: >= 1 years :200 000 IU Give a dose on day 1 and 2, and a third does in 2 weeks
Severe eye disease	Ciprofloxacin eye drops	5	Ciprofloxacin 0.3% eye drops
Severe malaria	Gentamicin IM		Pre-referral treatment: Give the first dose of the medication before referring the child. The full duration of the treatment will the be prescribed at the referral health facility.
Severe malaria	Artesunate IV/IM		Pre-referral treatment : Give the first dose of the medication before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
Severe malaria	Quinine IM		Pre-referral treatment : Give the first dose of the medication before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
Severe malaria	Ampicillin IM		Pre-referral treatment: Give the first dose of the medication before referring the child. The full duration of the treatment will the be prescribed at the referral health facility.
Severe malaria	Paracetamol		500mg tablet breakable in 2. Provide to patient if febrile and able to swallow
Severe Persistent Diarrhea	Zinc sulfate 10 mg (half a tablet)	14	Supplements; Oral;Dispersible tablets;20mg; breakable in 2; dosage based on Age: 2 months - 6 years: 10mg (2m-6m), 20mg (6m-6yrs)
Severe Persistent Diarrhea	Oral Rehydration Salts (ORS) in the clinic: WHO Treatment Plan B	1	Oral Rehydration Salts (ORS) for the treatment of some dehydration (WHO Treatment Plan B) in the clinic
Severe Persistent Diarrhea	Zinc sulfate 20 mg	14	Supplements; Oral;Dispersible tablets;20mg; breakable in 2; dosage based on Age: 2 months - 6 years: 10mg (2m-6m), 20mg (6m-6yrs)
Severe pneumonia	Gentamicin IM		Antibiotic: 7mg/Kg/day, max 400mg/day
Severe pneumonia	Paracetamol		
Severe pneumonia	Ampicillin HD IM/IV		
Severe pneumonia or Severe respiratory illness	Gentamicin pre-referral		Antibiotic, 5-7.5 mg/kg/dose, 1 IM injection before referral
Severe pneumonia or Severe respiratory illness	Gentamicin IM [For infants under 2 months old]	2	Antibiotic, 5-7.5 mg/kg/dose, IM injection
Severe pneumonia or Severe respiratory illness	Ampicillin pre-referral	1	Antibiotic: 50 mg/kg/dose, give one dose IM before referral
Severe pneumonia or Severe respiratory illness	Amoxicillin HD po [For infants under 2 months old]	7	Antibiotic : 75-100 mg/kg/day, divided in two doses per day
Severe pneumonia or Severe respiratory illness	Ampicillin IM [For infants under 2 months old]		Antibiotic: 50 mg/kg/dose, IM injection
Severe pneumonia or Severe respiratory illness	Gentamicin IM [For infants under 2 months old]	1	Antibiotic, 5-7.5 mg/kg/dose, IM injection
Severe pneumonia or Severe respiratory illness	Amoxicillin HD po [For infants under 2 months old]	7	Antibiotic : 75-100 mg/kg/day, divided in two doses per day
Severe skin infection	Ampiclox (Ampicillin + Cloxacillin) po syrup [For infants less than 2 months old]	5	Antibiotic for skin infection Dosing based on combined formulation 50-150mg/kg/day (equivalent to 25-75mg/kg/day for ampicilllin or cloxacillin separately)
Severe skin infection	Ampicillin + cloxacillin IM (Ampiclox) [For infants under 2 months old] (Pre-Referral)		100mg/kg 3 times per day if age > 7 days
Severe skin infection	Ampiclox IM pre-referral for <= 7 days of age		100mg/kg 2 times per day if <= 7 days of age
Severe skin infection	Ampicillin IM [For infants under 2 months old]		Antibiotic: IM 50 mg/kg/dose
Severe skin infection	Gentamicin IM [For infants under 2 months old]		Antibiotic, 5-7.5 mg/kg/dose
Severe skin infection	Amoxicillin HD po [For infants under 2 months old]	5	Antibiotic : 75-100 mg/kg/day, divided in two doses per day
Severe skin infection	Ampicillin pre-referral		Antibiotic: 50 mg/kg/dose, give one dose IM before referral
Simple abscess	Cloxacillin po	7	50 to 100 mg/kg/day, max 4g/day
Simple abscess	Erythromycin po	7	Antibiotic: 50 mg/Kg/day, max 2g/day
Simple febrile convulsion	Paracetamol	3	
Some dehydration	Oral Rehydration Salts (ORS) in the clinic: WHO Treatment Plan B	1	Oral Rehydration Salts (ORS) for the treatment of some dehydration (WHO Treatment Plan B) at the health facility

Indication	Drug	Days	Description
Suspected malaria	Artemether-Lumefantrine po (Weight >=35kg)	3	Give the first dose at the clinic and observe for one hour. If the child vomits within an hour repeat the dose. Give second dose at home after 8 HOURS. Then twice daily for further two days. Artemether-lumefantrine should be taken with food. Nb of tablet according to body weight: >=35kg: 4 tablets twice a day
Suspected malaria	Artemether-Lumefantrine po (Weight <15kg)	3	Give the first dose at the clinic and observe for one hour. If the child vomits within an hour repeat the dose. Give second dose at home after 8 HOURS. Then twice daily for further two days. Artemether-lumefantrine should be taken with food. Nb of tablet according to body weight: 5-<15 kg: 1 tablet twice a day
Suspected malaria	Artesunate IV/IM	3	Pre-referral anti-Malarial for severe malaria Weightbased dosage: >20 kg : 2.4mg/kg/day <20 kg : 3mg/kg/day
Suspected malaria	Artemether-Lumefantrine po (Weight 15 to <25kg)	3	Give the first dose at the clinic and observe for one hour. If the child vomits within an hour repeat the dose. Give second dose at home after 8 HOURS. Then twice daily for further two days. Artemether-lumefantrine should be taken with food. Nb of tablet according to body weight: 15-30 kg: 2 tablest twice a day
Suspected malaria	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Suspected malaria	Artemether-Lumefantrine po (Weight 25 to <35kg)	3	Give the first dose at the clinic and observe for one hour. If the child vomits within an hour repeat the dose. Give second dose at home after 8 HOURS. Then twice daily for further two days. Artemether-lumefantrine should be taken with food. Nb of tablet according to body weight: 25 to <35kg: 3 tablets twice a day
Suspected severe malaria	Quinine IM		Anti-malarial: Quinine; IM;Weightbased loading dosage: 20 mg/Kg one dose for Pre-referral
Suspected severe malaria	Ampicillin IM		Pre-referral antibiotic Normal dosage for infection: 200mg/kg/day
Suspected severe malaria	Gentamicin IM		Gentamicin, IM, ampoule 40mg/ml in 2ml (80mg/2ml)
Suspected severe malaria	Artesunate IV/IM		Anti-Malarials; IV/IM; Injection; 60mg or 120'mg vial of anhydrous artesunic acid with a separate ampoule of 5% sodium bicarbonate solution; Weightbased dosage: 2.4mg/kg/day Pre-referral dose
Suspected severe malaria	Paracetamol		- Weight based dosage 80mg/Kg/day (min dose per kg/day 60; max dose per kg/day 80); max daily dose: 4000mg - Four times a day (roughly every 6hrs) as needed for fever
Suspected testicular torsion	Paracetamol		Duration : Pre-referral - Weight based dosage 80mg/Kg/day (min dose per kg/day 60; max dose per kg/day 80); max daily dose: 4000mg - Four times a day (roughly every 6hrs) as needed for pain or fever Oral Tablet 500mg; breakable by 2
Suspicion of fracture/dislocation	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain
Suspicion of fracture/dislocation	Ampicillin IM		
Suspicion of fracture/dislocation	Gentamicin IM		Antibiotic: 7mg/Kg/day, max 400mg/day Pre-referral treatment : Give the first dose of the medication before referring the child. The full duration of the treatment will be prescribed at the referral health facility.
Suspicion of meningitis	Gentamicin IM		
Suspicion of meningitis	Ampicillin HD IM/IV		
Tinea capitis	Fluconazole	42	
Tinea capitis	Griseofulvin po (for 12 to 14 years old)	42	
Tinea capitis	Griseofulvin po (for 2 months to 12 years old)	42	
Tinea corporis	Clotrimazole cream	28	
Tinea corporis	Benzoic acid compound (whitfield)	28	
Tooth pain	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Typhoid Fever	Paracetamol	3	For Pain or fever - Weight based dosing: 80mg/Kg/day (min dose per kg/day 60; max dose per kg/day 80); max daily dose: 4000mg
Typhoid Fever	Azithromycin po	7	Antibiotic: Dosage 10mg/kg/day
Typhoid Fever	Ciprofloxacin po	10	Antibiotic: 20-40mg/kg/day, max 1500mg/day
Uncomplicated acute ear infection	Paracetamol	3	
Uncomplicated cellulitis	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Uncomplicated cellulitis	Cloxacillin po	7	50 to 100 mg/kg/day, max 4g/day
Uncomplicated cellulitis	Erythromycin po	7	Antibiotic: 50 mg/Kg/day, max 2g/day
Uncomplicated chicken pox	Calamine lotion	5	Apply over the whole body
Uncomplicated chicken pox	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Uncomplicated deep wound	Paracetamol	3	- Weight based dosage 80mg/Kg/day (min dose per kg/day 60; max dose per kg/day 80); max daily dose: 4000mg - Four times a day (roughly every 6hrs) as needed for pain or fever Oral Tablet 500mg; breakable by 2
Uncomplicated impetigo	Fucidic acid cream 2%	7	Topical antibiotic
Uncomplicated impetigo	Potassium permanganate solution 1:4000 (0.025%)	5	
Uncomplicated infectious lymphadenitis	Erythromycin po	7	Antibiotic: 50 mg/Kg/day, max 2g/day
Uncomplicated infectious lymphadenitis	Cloxacillin po	7	50 to 100 mg/kg/day, max 4g/day
Uncomplicated infectious lymphadenitis	Paracetamol	3	
Uncomplicated lymphadenopathy	Paracetamol	3	
Uncomplicated Malaria	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Uncomplicated Malaria	Artemether-Lumefantrine po (Weight 25 to <35kg)	3	Give the first dose at the clinic and observe for one hour. If the child vomits within an hour repeat the dose. Give second dose at home after 8 HOURS. Then twice daily for further two days. Artemether-lumefantrine should be taken with food. Nb of tablet according to body weight: 25 to <35kg: 3 tablets twice a day
Uncomplicated Malaria	Artemether-Lumefantrine po (Weight <15kg)	3	Give the first dose at the clinic and observe for one hour. If the child vomits within an hour repeat the dose. Give second dose at home after 8 HOURS. Then twice daily for further two days. Artemether-lumefantrine should be taken with food. Nb of tablet according to body weight: 5-<15 kg: 1 tablet twice a day
Uncomplicated Malaria	Artemether-Lumefantrine po (Weight >=35kg)	3	Give the first dose at the clinic and observe for one hour. If the child vomits within an hour repeat the dose. Give second dose at home after 8 HOURS. Then twice daily for further two days. Artemether-lumefantrine should be taken with food. Nb of tablet according to body weight: >=35kg: 4 tablets twice a day
Uncomplicated Malaria	Artesunate IV/IM	1	Weight based dosage: >20 kg : 2.4mg/kg/day <20 kg : 3mg/kg/day
Uncomplicated Malaria	Artemether-Lumefantrine po (Weight 15 to <25kg)	3	Give the first dose at the clinic and observe for one hour. If the child vomits within an hour repeat the dose. Give second dose at home after 8 HOURS. Then twice daily for further two days. Artemether-lumefantrine should be taken with food. Nb of tablet according to body weight: 15-30 kg: 2 tablest twice a day
Uncomplicated severe acute malnutrition	Vitamin A po (retinol) for 6 to 12 months of age	1	Vitamin supplementation 6-12 months = 100,000 IU
Uncomplicated severe acute malnutrition	Vitamin A po (retinol) for >= 1 year of age	1	Vitamins Dosage based on Age: >= 1 years :200 000 IU
Uncomplicated severe acute malnutrition	Amoxicillin po	5	ANTIBIOTIC: Amoxicillin regular dose (50mg/Kg/day divided in 2 doses)
Uncomplicated severe acute malnutrition	Cotrimoxazole po	5	Antibiotic: dosage 8mg TMP/kg/day (dosage based on TMP)
Urethral discharge syndrome (Gonorrhea / Chlamydia)	Doxycycline po	7	Antibiotic: Doxycycline for sexual transmitted infection 100mg/dose twice a day
Urethral discharge syndrome (Gonorrhea / Chlamydia)	Ceftriaxone IM for patients <46kg (STI)	1	25 to 50mg/kg (max 125mg/dose) antibiotic for STI
Urethral discharge syndrome (Gonorrhea / Chlamydia)	Ceftriaxone IM (STI)	1	Single dose

Indication	Drug	Days	Description
Urticaria	Cetirizine po (for >= 5 years)	3	
Urticaria	Chlorpheniramine po (Piriton) (2-6 years old)	3	
Urticaria	Cetirizine po (for 6 months to 2 years)	3	
Urticaria	Cetirizine po (for 2 to 5 years)	3	
Urticaria	Chlorpheniramine po (Piriton) (6 to 12 years)	3	
Urticaria	Chlorpheniramine po (Piriton) (12 to 14 years)	3	
Vaginal candidiasis	Clotrimazole (genital) cream 1%	6	Topical (vuvlovaginal)
Vaginal candidiasis	Fluconazole po (vaginal candidiasis)	1	Single dose
Vaginal discharge syndrome (Presumed Gonorrhea/ Chlamydia / Trichomoniasis / Bacterial Vaginosis)	Doxycycline po	7	Antibiotic: Doxycycline for sexual transmitted infection100mg/dose twice a day
Vaginal discharge syndrome (Presumed Gonorrhea/ Chlamydia / Trichomoniasis / Bacterial Vaginosis)	Metronidazole po (STI)	7	
Vaginal discharge syndrome (Presumed Gonorrhea/ Chlamydia / Trichomoniasis / Bacterial Vaginosis)	Ceftriaxone IM (STI)	1	Single dose
Vaginal discharge syndrome (Presumed Gonorrhea/ Chlamydia / Trichomoniasis / Bacterial Vaginosis)	Ceftriaxone IM for patients <46kg (STI)	1	25 to 50mg/kg (max 125mg/dose) antibiotic for STI
Very low weight for age	Amoxicillin po	5	
Very low weight for age	Vitamin A po (retinol) for >= 1 year of age	1	Vitamins Dosage based on Age: >= 1 years :200 000 IU
Very low weight for age	Vitamin A po (retinol) for 6 to 12 months of age	1	Vitamin supplementation 6-12 months = 100,000 IU
Very low weight for age	Cotrimoxazole po	5	
Very severe febrile disease	Diazepam rectal vials (12-36m)	1	Pre-referral anticonvulsant Age based dosing: 12-36m: 1.5 mL
Very severe febrile disease	Ampicillin HD IM/IV	1	Duration: Pre-referral = 1 day Antibiotic: High dose for severe diseases (severe pneumonia, suspicion of meningitis, CNS danger signs, very severe febrile disease) = 400mg/Kg/day
Very severe febrile disease	Phenobarbital im	1	Pre-referral duration: 1 day Anti-convulsant Weight based dosage: 20 mg/Kg
Very severe febrile disease	Diazepam rectal vials (>= 36 months)	1	Pre-referral anticonvulsant Age based dosing: >=36m: 2 mL
Very severe febrile disease	Diazepam rectal vials (6 - 12m)	1	Pre-referral anti-convulsant Age 6-12 months = 5mg
Very severe febrile disease	Diazepam rectal vials (2-6m)	1	Anti-convulsant: Age 2-6 months = 2.5mg
Very severe febrile disease	Gentamicin IM	1	Pre-referral = 1 day Antibiotic: 7mg/Kg/day, max 400mg/day
Viral acute pharyngitis	Paracetamol	3	On demand, max four times a day (roughly every 6hrs) as needed for pain or fever
Viral pneumonia	Paracetamol	3	
Vulvovaginitis	Metronidazole po	7	Metronidazole tablets 200mg/ suspension 200mg/5ml, dosage 20mg/kg/day

4. Drug formulations

Label	Formulation
Acyclovir po (HSV)	Antiviral for HSV: dosage based on weight: 80mg/kg/day; daily maximum dose 1200mg.
	400mg tablet
	200mg tablet
Acyclovir po (chicken pox)	Antiviral for chicken pox: dosage based on weight: 80mg/kg/day; daily maximum dose 3200mg.
	200mg tablet
	400mg tablet
Albendazole (therapeutic) po for 1-2 years	Anti-helminthics for oxyuriasis Dosage based on Age; for1-2 years: 200mg
	400mg tablet
	200mg tablet
Albendazole (therapeutic) po for >= 2 to 14 years	Anti-helminthics for oxyuriasis Dosage based on Age; for 2-14 years: 400mg
	400mg tablet
	200mg tablets
Albendazole po (deworming 1-2y)	200mg tablet
	400mg tablet
Albendazole po (deworming child 2 y and older)	400mg tablet
	200mg tablet
Amoxicillin po	Antibiotic: Amoxicillin regular dose (50mg/Kg/day divided in 2 doses)
	250mg dispersible tablet
	125mg dispersible tablet
	125mg/5ml syrup
Amoxicillin HD po when referral infeasible/not accepted - pneumonia or severe infection (7 days)	Antibiotic : 75-100 mg/kg/day, give twice a day for 7 days
	Dispersible tablet 125 mg
	Dispersible tablet 250 mg
	Syrup 125 mg/5 ml
Amoxicillin HD po [For infants under 2 months old]	Antibiotic: PO Amoxicillin (75-100 mg/kg/day, divided in two doses)
	250mg dispersible tablet
	125mg/5ml syrup
	125mg dispersible tablet
Amoxicillin HD po	Antibiotic: amoxicillin high dose (75-100mg/kg/day divided in 2 doses)
	125mg/5ml syrup
	125mg Dispersible Tablet
	250mg dispersible tablet
Amoxicillin / clavulanic acid po	Antibiotic: weight based dosage : Amoxicillin 100mg/kg/day; min 80; max 100; max daily dose: 1.5g/d
	Amoxicillin 500mg + Clavulanic acid 125mg
	Syrup: 125mg amoxicillin + 31.5mg clavulanic acid / 5mL
Ampicillin at facility (7 days)	Antibiotic: 50 mg/kg/dose, give twice a day during 7 days at facility
	Vial of 250 mg
	Vial of 500 mg
Ampicillin pre-referral	Antibiotic: 50 mg/kg/dose, give one dose IM before referral
	Vial of 500mg
	Vial of 250 mg
Ampicillin HD IM/IV	500mg/2.5mL vial: powder for infection (as sodium salt)
Ampicillin IM	Antibiotic Normal dosage for infection: 200mg/kg/day
	500mg/2.5mL vial: powder for injection (as sodium salt)
Ampicillin IM [For infants under 2 months old]	Antibiotic: 50 mg/kg/dose, IM injection
	IM - 500mg vial: powder for injection
	IM - 250mg vial: powder for injection
Artemether-Lumefantrine po (Weight >=35kg)	20 mg artemether/120 mg lumefantrine tablet
Artemether-Lumefantrine po (Weight >=35kg)	80 mg artemether/480 mg lumefantrine tablet
Artemether-Lumefantrine po (Weight <15kg)	20 mg artemether/120 mg lumefantrine tablet
Artemether-Lumefantrine po (Weight 15 to <25kg)	20 mg artemether/120 mg lumefantrine tablet
Artemether-Lumefantrine po (Weight 25 to <35kg)	20 mg artemether/120 mg lumefantrine tablet
Artesunate IV/IM	Pre-referral anti-Malarial for severe malaria Weightbased dosage: 2.4mg/kg/day
	60mg vial for IM injection
	120mg vial for IM injection
	120mg vial for IV injection
	60mg vial for IV injection
Azithromycin po syrup [For infants less than 2 months old]	Antibiotic: Dosage 10mg/kg/day
	125mg/5mL syrup
Azithromycin po	Antibiotic: Dosage 10mg/kg/day
	125mg/5mL syrup
	250mg tablet
	500mg tablet
Benzoic acid compound (whitfield)	Antifungal topical ointment for tinea corporis or pityriasis versicolor
	3 or 6% ointment
Benzyl Benzoate 25% Emulsion (lice) for hair	Lotion for head lice
	25% emulsion
Benzathine Penicillin i.m.	Antibiotic: dosing for primary syphilis: 2.4MIU
	5mL vial of 2.4 MIU
Benzyl Benzoate Emulsion 25%	Emulsion for scabies
	Benzyl benzoate 25% emulsion
Betamethasone cream	Topical Steroids for eczema (atopic dermatitis)
	0.1% ointment
Budesonide INH	Inhalators for reactive airway disease (asthma) or inhalation injury with wheeze
	200mcg inhaler
	100mcg inhaler
Calamine lotion	Anti-inflammatory or Antipruritic Preparations for chicken pox or other skin condition
	Calamine lotion
Ceftriaxone IM (STI)	Antibiotic: Ceftriaxone IM for Sexually transmitted infection Dosage 500mg/dose/day
	IM - 250mg/mL vial
Ceftriaxone IM for patients <46kg (STI)	25 to 50mg/kg (max 125mg/dose) antibiotic for STI
	IM - 250mg/ml

Label	Formulation
Ceftriaxone HD IV/IM	Antibiotic: Ceftriaxone HD for severe infection (meningitis, danger signs): 80mg/Kg, max 4g/day
	250mg powder for injection in vial
Cetirizine po (for >= 5 years)	Anti-histamine Dosage by Age; age >= 5 years 10mg
	10mg tablet
	5mg/5mL Syrup
Cetirizine po (for 6 months to 2 years)	Anti-histamine Dosage by Age; Age 6m - 2 years: 2.5mg
	5mg/5mL syrup
Cetirizine po (for 2 to 5 years)	Anti-histamine Dosage by Age; Age 2 to 5 years: 5mg
	10mg tablet
	5mg/5mL Syrup
Chlorpheniramine po (Piriton) (12 to 14 years)	Anti-histamine Age 12-14 years: 4 mg 4 times a day; daily max dosage: 16mg
Chlorpheniramine po (Piriton) (2-6 years old)	Anti-histamine Age 2-6 years: 2mg 2 times a day; daily max dosage: 4mg
	4mg tablet
Chlorpheniramine po (Piriton) (6 to 12 years)	Anti-histamine Age 6-12 years: 2 mg 3 times a day; daily max dosage : 6mg
	4mg tablet
Chloramphenicol eye drops	Antibiotic eye drops
	Chloramphenicol eye drops 0.50%
Ciprofloxacin eye drops	Ciprofloxacin 0.3% eye drops
	0.3% eye drops
Ciprofloxacin po	Antibiotic: 20-40mg/kg/day, max 1500mg/day
	Oral liquid 250mg / 5 ml
	500mg tablet
	250mg tablet
Ciprofloxacin ear drops 0.3%	Ear drops for ear infection
	Ciprofloxacin ear drops 0.3%
Ciprofloxacin po [For infants less than 2 months old]	Antibiotic: PO 30 mg/kg/day for young infants
	Oral liquid 250mg / 5 ml
Clotrimazole (diaper rash) cream 1%	Antifungal for diaper rash
	Cream1%
Clotrimazole (genital) cream 1%	Antifungal cream for vaginal candidiasis
	Cream 1%
Clotrimazole cream	Antifungal cream for tinea corporis or pityriasis versicolor
	1 or 2 % cream
Cloxacillin po	50 to 100 mg/kg/day, max 4g/day
	125mg/5ml syrup
Cloxacillin po [For infants under 2 months old]	Antibiotic PO (For infants under 2 months old): 25-75mg/kg/day
	125mg/5ml Syrup
Cotrimoxazole po	Antibiotic: dosage 8mg TMP/kg/day (dosage based on TMP)
	Tablet 480mg (Trimethoprim 80mg, Sulfamethoxazole 400mg)
	Syrup: 240mg / 5mL = 40mg Trimpethoprim; 200mg Sulfamethoxazole
Dexamethasone po	2mg tablet
	0.5mg tablet
Dextrose IV bolus	Dextrose IV for the management of hypoglycemia
	Dextrose 5%
	Dextrose 10%
Diazepam rectal vials (12-36m)	Pre-referral anticonvulsant Age based dosing: 12-36m: 1.5 mL
Diazepam rectal vials (12-36m)	10mg/2mL ampoule
Diazepam rectal vials (>= 36 months)	Pre-referral anticonvulsant Age based dosing: >=36m: 2 mL
Diazepam rectal vials (>= 36 months)	10mg/2mL ampoule
Diazepam rectal vials (6 - 12m)	Pre-referral anti-convulsant Age 6-12 months = 5mg
	10mg/2mL ampoule
Diazepam rectal vials (2-6m)	Anti-convulsant: Age 2-6 months = 2.5mg
	10mg/2mL ampoule
Doxycycline po	Antibiotic: Doxycycline for sexual transmitted infection 100mg/dose twice a day
	100mg tablet
Epinephrine (Adrenaline) im	Sympathomimetic for anaphylaxis Weight based dosage 0.01mL/Kg;max 0.3mg
	1mg/mL ampoule
Erythromycin po	Antibiotic: 50 mg/Kg/day, max 2g/day
	250mg tablet
	125mg/5mL syrup
Erythromycin PO [For infants less than 2 months old]	Antibiotic used for the treatment of chlamydial conjunctivitis. Note that there is risk of infantile hypertrophic pyloric stenosis, especially in neonates. Azithromycin is preferred for treatment of chlamydial conjuntivitis in neonates when available. Erythromycin should not be used for treatment of routine pneumonia or sepsis in neonates.
Fluconazole	Antifungal for tinea corporis, tinea capitis, and oral candidiasis Dosage based on Weight; 6mg/Kg/day; maximum 200mg/day
	150mg tablet
	50mg/5mL suspension
	50mg capsule
Fluconazole po (vaginal candidiasis)	2nd line antifungal for vaginal candidiasis Age 8-14 years: 150mg
	50mg capsule
	150mg capsule
Fucidic acid cream 2%	Topical antibiotic
	2% cream
Gentamicin at facility (7 days)	Antibiotic, 5-7.5 mg/kg/dose, IM injection once a day during 7 days at facility
	Vial of 80 mg/2ml
	Vial of 20 mg/ml
	Vial of 10mg/ml

Label	Formulation
Gentamicin pre-referral	Antibiotic, 5-7.5 mg/kg/dose, 1 IM injection before referral
	Vial of 80 mg/2ml
	Vial of 20 mg/ml
	Vial of 10mg/ml
Gentamicin IM [For infants under 2 months old]	Antibiotic, 5-7.5 mg/kg/dose, IM injection
	IM - 40mg/2ml ampoule (20 mg/ml)
	IM - 80mg/2ml ampoule (40 mg/ml)
	IM - 20mg/2ml ampoule (10 mg/ml)
Gentamicin IM	Antibiotic: 7mg/Kg/day, max 400mg/day
	80mg/2mL ampoule
	20mg/2ml ampoule
	40mg/2ml ampoule
Gentian Violet (full strength) solution	Anti-infective solution for Folliculitis
	Powder reconstituted to 0.5% with water
Gentian Violet (half strength) solution	Anti-infective solution for mouth ulcers
	Half-strength (0.25%)
	Ampicillin 125mg + Cloxacillin 125mg = 250mg/5mL syrup
Griseofulvin po (for 2 months to 12 years old)	Antifungal for tinea corporis or tinea capitis Dosage based on Weight + age; Age 2m - 12 years : 20mg/Kg (15-25mg/kg) daily max 500mg
	500mg tablet
	250mg tablet
Griseofulvin po (for 12 to 14 years old)	Antifungal for tinea corporis and capitis Dosage based on age; Age 12-14 years : 500mg
	250mg tablet
	500mg tablet
	4mg tablet
Hydrocortisone cream	Topical Steroids for eczema (atopic dermatitis)
	0.5% acetate cream
	1% ointment (base)
Ibuprofen po	Non-Steroidal Anti-Inflammatory Drugs (NSAID) Dosage based on Weight : 30mg/kg (15-30mg/kg/day)
	400mg tablet
	200mg tablet
Iron po	Ferrous sulfate syrup 20 mg/mL
Iron po	Tablet: Iron 60mg (Fe Sulfate 200mg + vit B9 2.5mg)
Mebendazole (therapeutic) po	Anti-helminthics treatment for oxyuriasis
	100mg/5mL
	100mg tablet
Mebendazole po (deworming)	Antihelminths for routine deworming Dosage based on Age: >=1 year : 500mg
	100mg tablet
	100mg/5mL
	500mg tablet
Metronidazole po (STI)	Antibiotic: Metronidazole, dosage for sexual transmitted disease, 400mg/dose twice a day
	200mg tablet
Metronidazole po	Antibiotic: dosage 20mg/kg/day
	200mg/5mL Suspension
	200mg tablet
Miconazole Gel 2% (for mouth)	Antifungal for oral candidiasis Dosage based on Age; - For 2 months to 2 years : 1.25 ml - For over 2 years and adult 2.5 ml
	2% topical gel
Nystatin (Rinse for mouth)	Antifungal for oral candidiasis and thrush 50mg/5ml (100,000IU/ml For All ages: 1mL 4 times per day
Oral Rehydration Salts (ORS) in the clinic: WHO Treatment Plan B	Oral Rehydration Salts (ORS) for the treatment of some dehydration (WHO Treatment Plan B) in the clinic
	Sachet of ORS (20.5g)
Oral Rehydration Salts (ORS) by naso-gastric tube	ORS by naso-gastric tube in cases of Severe dehydration
	Sachet of ORS (20.5g)
Paracetamol	For Pain or fever - Weight based dosing: 60-75mg/Kg/day; max daily dose: 4000mg
	500mg tablet
	125mg/5mL syrup
	100mg tablet
	Paracetamol suppository 125mg
Permethrin 1% lotion	Permethrin 1% lotion
Permethrin 5%	Permethrin 5% cream
Phenobarbital im	Anti-convulsant Weight based dosage: 20 mg/Kg
Phenoxymehtylpenicillin (Penicillin V) po	Antibiotic: dosage 100mg/kg/day
	125mg/5mL Suspension
	250mg tablet
Potassium permanganate solution 1:4000 (0.025%)	Anti-infective for skin rashes (diaper rash, impetigo, folliculitis)
	Solution: 1:4000 (0.025%)
Prednisolone po	5mg tablet
	5mg/5mL syrup
	50m/5 mL (100,000 IU/mL) suspension
Quinine IM	2nd line Anti-malarial treatment for severe malaria Weight based loading dose: 20 mg/Kg
	300mg/ml quinine hydrochloride in 2mL ampoule
Salbutamol INH	Inhalator for reactive airway disease (asthma) or inhalation injury with wheeze
Silver sulfadiazine cream 1%	Anti-infective topical cream for burns and folliculitis
	Cream 1%
Sodium Cromoglycate 2-4% eye drops	Anti-inflammatory eye drops for conjunctivitis Dosage based on Age; For 4 - 12 years : 1 drop q6h
	Sodium Cromoglycate 2% or 4%
Tetracycline eye ointment	Antibacterial eye ointment
	Tetracycline eye ointment

Label	Formulation
Vitamin A po (retinol) Age >=1 year	Vitamin Dosage based on Age: >= 1 years :200 000 IU
	50,000 IU capsule (as palmitate)
	100,000 IU capsule (as palmitate)
	50,000 IU tablet (as palmitate)
	100,000 IU tablet (as palmitate)
	100,000 IU/mL Solution
	200,000 IU capsule (as palmitate)
Vitamin A po (retinol) Age: 6-12m	Vitamin supplementation 6-12 months = 100,000 IU
	100,000 IU capsule
	50,000 IU tablet (as palmitate)
	50,000 IU capsule
	100,000 IU/mL solution
	50mg/mL Suspension
Vitamin A (retinol) for <6m	Vitamins - Dosage based on Age: <6 months : 50 000 IU
	50,000 IU capsule (as palmitate)
	100,000 IU tablet (as palmitate)
	50,000 IU tablet (as palmitate)
	100,000 IU/mL Solution
Vitamin A po (retinol) for 6 to 12 months of age	Vitamin supplementation 6-12 months = 100,000 IU
	50,000 IU capsule
	50,000 IU tablet (as palmitate)
	100,000 IU/mL solution
	100,000 IU capsule
Vitamin A po (retinol) for >= 1 year of age	Vitamins Dosage based on Age: >= 1 years :200 000 IU
	100,000 IU capsule (as palmitate)
	50,000 IU capsule (as palmitate)
	100,000 IU tablet (as palmitate)
	200,000 IU capsule (as palmitate)
	100,000 IU/mL Solution
	50,000 IU tablet (as palmitate)
Zinc sulfate 10 mg (half a tablet)	Zinc for diarrhea 10mg
	20mg dispersible tablet
Zinc sulfate 20 mg	Zinc for diarrhea
	20mg tablet