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Synopsis: Prevention of Mother-To-Child Transmission of HIV in Nigeria: An Overview

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Introduction

The Human Immunodeficiency Virus (HIV) can be transmitted from an infected mother to her child during pregnancy, delivery and breastfeeding. Mother-to-child transmission (MTCT) is known as vertical transmission and is acknowledged as the commonest means of HIV infection in children. The burden of mother-to-child transmission of HIV is very high in sub-Saharan Africa, and Nigeria is not exempt. The reasons for this high burden include the high rates of heterosexual transmission, high prevalence of HIV in women of reproductive age, high fertility rate, prolonged breastfeeding culture and sub-optimal access to general HIV prevention interventions. HIV prevalence in Nigeria is 1.4% in adults aged 15 – 49 years. However, women have almost 4 times the prevalence of men in the same age group. This gender disparity is greatest among females aged 20-24 years, the age when most Nigerian women bear children.

Prevention of Mother-to-Child Transmission (PMTCT) of HIV is a critical public health initiative aimed at reducing the transmission of HIV from an infected mother to her child. Without interventions, mother-to-child transmission (MTCT) rates range between 15% and 45%. However, the risk of MTCT can be reduced to less than 2% with a package of evidence-based interventions. Globally, effective PMTCT has reduced the MTCT rate to low levels, but in Nigeria, the pooled MTCT rate is at 2.7%.

Some factors have been associated with increased risk of MTCT in any population. They include high prevalence of HIV among women of reproductive age and their partners, low contraceptive use resulting in unintended pregnancies among women living with HIV, non-utilization of ANC or facility delivery and non-utilization of post-natal care and child welfare services. These factors are still of significant concern in Nigeria.

Risk factors associated with MTCT

Pregnancy	Labour and Delivery	Breastfeeding
-High maternal viral load (from new or re-infection, advanced HIV disease or treatment failure). -Antepartum haemorrhage. -Infections, including STIs and those of the genital tract. -Maternal malnutrition.	-High maternal viral load (from new or re-infection, advanced HIV disease or treatment failure). -Preterm birth. -Multiple births. -External cephalic version. -Early rupture of membrane exceeding four hours before delivery. -Chorioamnionitis. -Prolonged labour. -Invasive delivery procedures include the use of forceps and episiotomy.	-High maternal viral load (from new or re-infection, advanced HIV disease or treatment failure). -Prolonged duration of breastfeeding. -Mixed feeding. -Breast abscess. -Nipple cracks/fissures -Mastitis. -Oral disease in infants, for example, oral ulcers and inflammation.

Source: National Guideline for HIV Prevention, Treatment and Care. 2024. FMOH, Abuja

PMTCT services are offered to women of childbearing age living with or at risk of HIV to maintain their health and prevent their infants from acquiring HIV. The services include preventing unwanted pregnancies among women living with HIV, safe childbirth practices, life-long antiretroviral (ARV) drug therapy to mothers once their status is ascertained irrespective of CD4 cell counts; ARV prophylaxis to infants from birth and infant feeding counselling and helping mothers make appropriate choices. Others include early infant diagnosis (EID) in HIV-exposed infants soon after delivery and during the breastfeeding period. PMTCT involves combining prevention and treatment for mother and child and incorporates improving reproductive, antenatal, delivery and post-natal, and infant and child health in a continuum of care. It also provides a vital entry point for tracing HIV-exposed children for diagnosis and prophylactic care.

Prevention of mother-to-child transmission of HIV (PMTCT) basically operates on four standardized pillars

Pillar 1

This involves the primary prevention of HIV infection in women of reproductive age and their partners. This pillar promotes safe and responsible sexual behaviour and attitude and follows the "ABCDE" approach.

A - Abstinence from having sexual intercourse
B - Be faithful to a faithful partner
C - Correct and consistent use of a condom
D - Drug for prevention (PrEP)
E - Education and women empowerment

Other safe and responsible sexual practices include:

- Delaying sexual debut.
- Reducing the number of sexual partners.
- Early diagnosis and treatment of STIs: This can reduce the incidence of HIV in the general population by about 40%.
- Provision of appropriate counselling for women who are HIV negative.

Pillar 2

This involves the prevention of unintended pregnancy among women living with HIV, which is essential for eliminating mother-to-child transmission of HIV.
Nigeria has an unmet need for family planning of 19% while the unintended pregnancy rate amongst women living with HIV is estimated to be between 51-90%.
Meeting the unmet need for family planning can be achieved by providing and promoting consistent condom (male/female) use, provision of emergency contraception to all HIV-positive mothers in the immediate postpartum period to prevent unintended pregnancy and the integration of family planning messages into ART services.

Pillar 3

This involves the prevention of HIV transmission from mothers living with HIV to their infants. This pillar covers interventions targeting mothers and their infants.

Package of Services under Pillar 3

Package of services for the mothers	*Package of services for the HIV exposed infants*
-Antenatal Care. -HIV testing services. -Infant feeding counselling in the context of HIV. -Modification of obstetric practices. -ART to all pregnant women living with HIV. -Viral load assessment at 32-36 weeks gestational age	-Administration of single or dual ARV prophylaxis to all HEI depending on the risk classification. -Routine immunization, growth monitoring and support. -Cotrimoxazole prophylaxis starting at 6 weeks. -HIV diagnostic testing. NAT at birth, DBS for DNA PCR at 6 to 8 weeks of age,9 months (if symptomatic and negative on Antibody test), and 6 weeks after cessation of breastfeeding. -HIV antibody test is the recommended diagnostic testing for children older than 18 months. -Ongoing infant feeding counselling and support.

	-Screening and management of tuberculosis and other OIs. -Prevention and treatment of malaria. -Nutritional care and support. -Psychosocial care and support. -Antiretroviral therapy for all HIV-infected children. -Symptom management and palliative care if needed.

Source. National Guideline for HIV Prevention, Treatment and Care. 2024.FMOH, Abuja

Pillar 4

This involves the provision of appropriate treatment, care and support to mothers living with HIV, their infants and family.

Package of Services under Pillar 4

Package of services for mothers	*Package of services for HIV-exposed children (HEI)*
-ART for all women living with HIV. -Cotrimoxazole prophylaxis. -TB screening, prophylaxis and treatment. -Hepatitis screening and treatment. -Syphilis screening and treatment. -Continued infant feeding counselling and support. -Nutritional counselling and support. -Sexual and reproductive health services, including family planning. -Cervical cancer screening. -Psychosocial support. -Partner counselling and testing. -HIV Testing for other members of the family. -Pre-exposure prophylaxis (PrEP) for serodiscordant couples.	-ARV prophylaxis. -Routine immunization and growth monitoring and support. -Cotrimoxazole prophylaxis starting at 6 weeks. -NAT or DNA PCR at birth, DBS for DNA PCR at 6 to 8 weeks of age,9 months (if symptomatic and negative on Antibody test), and 6 weeks after cessation of breastfeeding. -Ongoing infant feeding counselling and support. Screening and management of tuberculosis. -Prevention and treatment of malaria. -Nutritional care and support. -Psychosocial care and support. -Antiretroviral therapy for all HIV-infected children. -Symptom management and palliative care if needed.

Source: National Guideline for HIV Prevention, Treatment and Care. 2024 FMOH, Abuja

The PMTCT programme commenced in Nigeria in 2001. In collaboration with the World Health Organization, the guidelines have undergone frequent evidence-based modifications. Nigeria accounts for 24% of pregnant women living with HIV worldwide who are not on antiretroviral therapy and is the most significant contributor among the seven countries that account for half of all new HIV infections among children globally. By extrapolation, one in every seven babies born with HIV in the world is a Nigerian baby. A study that documented modes of transmission showed mother-to-child transmission as the second largest source of new HIV infections in the country, and it accounted for 22% of all new HIV infections.

The entry point for PMTCT services in Nigeria is via HIV testing of pregnant women at the earliest opportunity. This can happen during antenatal care, labour, delivery, and the postpartum period. Testing is offered to all pregnant women seeking antenatal care. There is also retesting for HIV in late pregnancy and early in labour for pregnant women who tested negative in early pregnancy. HIV testing of pregnant Nigerian women is accompanied by culturally acceptable counselling. The counselling highlights the benefits of knowing one's HIV status and its implications for the woman's health, pregnancy and the unborn child. Additionally, the elements of effective counselling, which include confidentiality, timeliness, acceptance, accessibility, consistency and accuracy, are upheld.

The approach to testing and counselling is the provider-initiated testing and counselling "opt-out" approach. The pregnant woman reserves the right to refuse the test using this approach.

In spite of the progress made, the coverage for PMTCT is still not optimal. This results in about 22,000 cases of mother-to-child transmission of HIV every year. This is worrisome. If the HIV infection gaps amongst newborns are not bridged, it will negatively affect the country's efforts towards achieving the United Nations 95-95-95 strategy of ending the AIDS epidemic by 2030.

The challenges to optimal PMTCT services in Nigeria include the following:

- Low antenatal care attendance.
- Low contraceptive use amongst Nigerian women of reproductive age.
- Suboptimal knowledge of means of HIV transmission and prevention.
- Low knowledge of their HIV status among pregnant women
- Inadequate political commitment at the state and local government levels of governance.
- Inadequate resource allocation at the state and local government levels.
- Inordinate dependence on international donors.

This dependence on grants from foreign governments and agencies makes the programme's sustainability risky.

An effective PMTCT programme confers numerous benefits to the mother, infant, family and community. These benefits include:

- Early diagnosis of HIV and prompt intervention.
- Improved child health and child survival.
- Improved HIV partner testing.
- Reduction in risk of infection in serodiscordant couples.
- Improved access to productive health and other services.
- Enhances ease of disclosure.
- Reduces the risk of intimate partner violence.

These lofty benefits stand to be lost if the challenges to the PMTCT programme are not addressed. Interventions will include measures to increase the uptake of prenatal, delivery and post-natal care services and enhance the integration of PMTCT services in maternal and child health care programmes. Additionally, traditional birth attendants (TBA) can be trained, and PMTCT services can be incorporated and made available to their clients.

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EXCERPTS FROM THE 2025 PAN WEBINARS

Empowering Paediatricians to Advocate for School Health Programme

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Introduction

School is often the first contact children make with an environment outside home.
Children spent significant number of years in schools.
Estimated 23% of Nigerian population are school-aged children.
Two-thirds of young adolescents are in school (according to UNICEF).
Estimated at 20.5 million (primary level) and 16.2 million (secondary level) translating to a huge proportion of the society.

Why School Health Programme (SHP) for School Children?

A healthy child is more likely to:

- Attend to school regularly and participate is school activities and curriculum.
- Sustain school retention rate
- Complete basic education where fund and support are available.

The deliberate effort to achieve Education for All (EFA) gave birth to the School Health Programme (SHP).
SHP refers to an "integrated set of planned and sequential, school affiliated strategies, activities and services designed to promote the optimal physical, emotional, social and educational development of students."

Components of SHP

a) School Health Services
b) Healthy School Environment
c) Physical Education
d) Comprehensive School Health Education
e) School-site Health Promotion for Staff
f) Counselling Psychological and Social Services
g) Nutrition services
h) Family and Community Involvement

Roadmap

SHP, when effectively implemented, should have significant impact on the health and quality of life (QOL) of children and adolescents.
The recent growing interest in the health of the Youth and Adolescents by:

- PAN
- African Union Roadmap
- The African Youth Charter
- The Maputo Plan for Action 2016-2030

Thus, there is an urgent need for awareness on SHP and facilitate implementation of its components (Adebayo *et al.* 2023).

Paediatric Association of Nigeria-SHP Sub-Committee Nationwide SITAN survey

In 2022, PAN SHP TWG was inaugurated
Renamed PAN Sub-committee on SHP in 2024
SITAN: National Health Research and Ethics Committee Approval (NHREC/01/01/2007-29/07/2022).
A total of 105 schools: urban and rural, private and public, primary and secondary were selected from six states of Nigeria: Abia, Bauchi, Delta, Kano, Ogun, Sokoto.

SITAN findings and other literatures

1. School Health services in Nigeira:

i. Pre-entry medical screening/examination (38.2%),
ii. Routine health screening/examinations (57.1%),
iii. Allow Specific immunization (26.9%),
iv. School health records keeping (33.3%),
v. Availability of sick bay (47.1%),
vi. Availability of First Aid (46.2%)
vii. Referral services (51.7%).
viii. Retainership (26.9%),

ix. Request of immunization record (37.5%),
x. Trained health personnel (17.6%)

2. **Healthy school environment**

i. WASH 76.5%
ii. Satisfied with school environment 76.9%
iii. Physical education
iv. No data

3. **Comprehensive School Health Education**

- No data

4. **School-site Health Promotion for Staff**

- No data

5. **Counselling Psychological and Social Services**

- Mental Health Counselling 48.6%

6. **Nutrition services**

i. Nutritional assessment 51.4%
ii. Screening of food handlers (No data)

7. **Family and Community Involvement**

i. No data

Literature Review

- Inadequate knowledge of National School Health Policy (NSHPo) (Adebayo *et al.* 2016, Odeyemi *et al.* 2015).
- Overall poor implementation of school health services (Kuponiyi *et al.* 2016, Chidiebere *et al.* 2016).
- Poor implementation of pre-enrolment medical examinations (Chidiebere *et al.* 2016, Bisi-Onyemaechi *et al.* 2017).
- Availability of first aid box in many schools, but inadequate content (Chidiebere *et al.* 2016, Bisi-Onyemaechi *et al.* 2017).
- Availability of medical records range from 33.3% to 64.5% (Chidiebere *et al.* 2016, Bisi-Onyemaechi *et al.* 2017).

Effective SHP is whose responsibility?

- Government.
- Physicians.
- Nurses.
- Health Educators.
- Environmental Health Officers.
- School Guidance Counsellors.
- Community Health Workers.
- Dieticians.
- Nutritionists.
- School Teachers.
- Social Workers.
- Community.

How can Paediatricians be empowered to Advocate for Effective School Health Programme?

Paediatricians need to look beyond the clinics!! (PANConf 2025, Gombe Survey)

Figure 1: Ensuring Effective School Health Programme

How?

Health Education and Promotion

- Regular health talks in schools during health days and PTA meetings
- Medical outreaches and Interactive sessions on healthy habits (e.g., handwashing, nutrition-school meal)
- Fighting childhood obesity
- Online seminars and training programs for staff
- Hub and Spikes model in establishing health clubs and societies in schools

Medical Screening and Healthcare Services

- PAN designed unified Pre-entry Medical examination and screening tool.
- Liaise with authorities to ensure pre-school entry screening.
- Conduct case management drills for schools.

- Identify and linkage with school health personnel for training and referral.

Capacity building and Training

- Training and retraining of teachers on key components of SHP.
- Guidance in the establishment of sick bays, student support services and School health program champions.
- PAN leads advocacy to Ministry of Education.
- Incorporate health education into the school curriculum.

Community Engagement and Partnerships

- Strengthen Parents Teachers Association's committees to include healthcare providers.
- Organizing awareness campaigns and community mobilization and relations.
- Meetings with parents, community leaders, and stakeholders.

Policy and administration

- Collaborate with the Ministries of Health and Education for policy implementation.
- Develop policy documents guiding school health programs.
- PAN-led establishment of SHP model schools.

Monitoring, Evaluation and Research

- Regular monitoring and evaluation (M&E) of health programs.
- Conduct more research on school health issues.
- Intervene in health-related challenges through data-driven programs.
- Using Evidence to Drive Change.
- Presenting local health data to stakeholders.

Conclusion

-Paediatricians play a multidimensional role in school health program.
-Reform the SHP via implementing the above-listed recommendations.
-Research on strategy to ameliorate the resistance to change.
-Learn Programme and Operational Research on SHP.
-Ensure that the perception of the reward of such interventions are clear.
-Must include improved academic performance of the students and improved ability of the teachers to impact knowledge on their students.

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Questions on School Health Programme
(Choose the best answer out of the options provided)

1. What is the main goal of School Health Program?

a) Promote physical and mental health of students
b) Treat diseases among students

c) Distribute medicines to students
d) Provide a sociable environment for school children

2. Which of the following is not a component of school health program?
a) Health education
b) Psychological and social services
c) Disease screening
d) Career counselling

3. Which of the following is excluded in the 4D's of disease screening in the school health programme?
a) Deficiencies
b) Defects at birth
c) Death data auditing
d) Diseases

4. Which of the following would be the most effective strategy for an on-site school health team to use to identify gaps and overlaps across the curriculum within a coordinated school health program?
a) Map each aspect of the curriculum to its respective program components.
b) Designate teams of staff to work on each health objective.
c) Administer a standardized health assessment to a random sample of students.
d) Observe several classes and other health-related school activities.

5. Which of the following is not a way by which paediatricians can advocate for effective school health programme?
a) Medical outreaches and interactive sessions on healthy habits
b) Liaise with authorities to ensure pre-school entry screening
c) Training and retraining of school nurses on key components of SHP
d) Strengthen PTA committees to include healthcare providers

6. The predominance of health educators working from a decision-making philosophy rather than a cognitive-based philosophy reflects which of the following principles of health education?
a) Behavior change depends on the exposure to facts that create dissonance for the individual.
b) Access to accurate facts is a crucial component of making informed choices about health.
c) Individuals in a democratic society need to be able to assess the consequences of their decisions.
d) Individuals need to be able to make good health decisions over their entire life span.

7. When meeting with school administrators to advocate for a controversial change to a school's health education policy, it would be most important for a paediatrician to:
a) Provide research-based evidence supporting the policy change.
b) Declare that the present policy conflicts with community values.
c) Acknowledge the merit of opposition to the proposed change.
d) Indicate awareness of the political implications of a change in policy.

Key to the questions

Question	Answer
1.	A
2.	D
3.	C
4.	A
5.	C
6.	D
7.	A

Paediatric Oral Health; A Collaborative Approach Between Paediatricians and Paediatric Dentists

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Introduction

Children are vital to the nation's present and its future. Parents are usually committed to providing every advantage possible to their children and ensure that they are healthy and have the opportunities they need to fulfill their potential.

Children's Health

In recent years, there has been an increased focus on issues that affect children and on improving their health.
Available evidence shows that health during childhood sets the stage for adult health.
Healthy children are more likely to become healthy adults.
Children differ from adults anatomically, physiologically, immunologically, psychologically, developmentally, and metabolically

Oral Health

Oral health has been identified as one of the 10 leading health indicators.
Good oral health is important for functions such as speaking, smiling, eating and social interactions.
Poor dental health exacerbates systemic diseases and individual's quality of life.
These consequences are often overlooked
Some general medical conditions may directly affect dental treatment.
Many chronic medical disorders or their treatments require alterations in the provision of dental management.
Failure to make appropriate treatment modifications may have serious clinical consequences.
Therefore, the need for collaboration between the paediatric dentist and the paediatrician.

Common oral problems in children

- These include:
  Caries (tooth decay)
- Gingivitis
- Periodontitis
- Malocclusion
- Trauma

These have significant detrimental effects on the general health of the child if left untreated.

Dental caries (Tooth Decay)

Early childhood caries – tooth decay in any primary tooth in a child under the age of 6 years
Aetiology is multifactorial
Consequences-pain from infection (abscess/cellulitis), disturbs sleep, failure to thrive, hospital admission and early tooth loss.
Collaboration - Paediatric dentists need to team up with paediatricians to prevent this condition

Picture 1: Tooth decays in children

Primary Herpetic Gingivostomatitis

Caused by herpes simplex virus type 1, a DNA virus.
Transmitted as a droplet spread or intimate contact.

Initial symptoms are constitutional (malaise and fever).

Picture 2: Primary Herpetic Gingivostomatitis

Acute Ulcerative Stomatitis

Causes–Protein Energy malnutrition, Polymicrobial infection (basically anaerobes).

Clinical features- Fever, malaise, enlarged lymph nodes, halitosis, bleeding gum, painful gum and pseudomembranous ulcers.

Collaboration:

Professional scaling and polishing of teeth, oral hygiene education, drugs, and removal of non-vital teeth.

Picture 3: Acute Ulcerative Stomatitis

Avulsion

A dental emergency!

Prognosis of replanted tooth depends on the management instituted immediately following the trauma

Picture 4: Avulsion

Collaboration

Paediatrican should work with Paediatric dentist to ensure early replantation of the tooth

Childhood Diabetes mellitus and Dental Health

Substantial evidence shows that periodontal disease is associated with diabetes mellitus.

Children with diabetes mellitus are more likely to have periodontal disease than those without diabetes (because of poor immune response).

In fact, periodontal disease is often considered the 'sixth complication' of diabetes

Collaboration

Professional scaling and polishing, prevention of periodontitis, which improves glycaemic control in addition to anti-hyperglycaemic medications prescribed by the paediatrician.

Cardiovascular diseases and Dental Health

Heart diseases in children can be congenital or acquired.

Oral problems - missing teeth, peg shaped lateral incisors, enamel hypoplasia, enamel hypomineralisation,

delayed tooth emergence, cleft lip/palate, caries, may co-exist with heart diseases.

Collaboration

These conditions are classified as high caries risk. Early diagnosis is important, prevention of dental problems, endodontic treatment may cause bacteraemia (predisposing to infective endocarditis)

Cleft lips and palate

Most often times this condition is syndromic.

Challenges - Feeding, speech, malocclusion, aesthetics, and psychosocial impairment and other systemic conditions

Collaboration
Multidisciplinary (team) approach to the care of the child from the time of diagnosis until adulthood.

Picture 5: Cleft lip and Palate

Bleeding disorders
Conditions such as von Willebrand's disease (VWD) and Haemophilia (A, B and C)
Prolonged clotting time and excessive bleeding tendencies is a major problem

Collaboration
Good oral health is imperative.
To avoid invasive dental procedures especially extraction.
Where invasive procedures are unavoidable, the dentist must work with the paediatrician/paediatric haematologist.

Picture 6: Bleeding from an exfoliating maxillary right primary canine in a child with Christmas disease

Sickle Cell Anaemia
Children with SCA may present with mucosa pallor, caries, delayed tooth emergence, mental nerve paraesthaesia and osteomyelitis
Odontogenic infections predispose individuals with SCA to crises.

Collaboration
Prevention of dental problems is key. To work with the paediatrician to control infections.

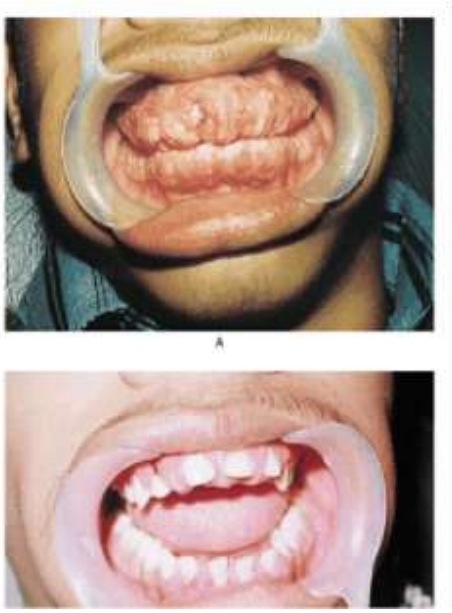
Childhood Asthma and Dental Health
The use of inhaled corticosteroids and bronchodilators, mostly short acting β2- adrenergic agonists modifies the oral flora and affects saliva.
Predisposes to oral candidiasis and systemic candidiasis, caries and mucosa ulcerations.

Tetracycline Staining
Use of Tetracyline during pregnancy, breastfeeding and in children below 12 years of age can result in stains that affects aesthetics and self esteem

Picture 8: Tetracycline Staining

Phenytoin-induced Gingival Overgrowth
It is seen two to three weeks after the commencement of phenytoin therapy.
Problems - Aesthetics, difficulty in mastication, speech impairment, delayed tooth eruption, tissue trauma and periodontitis.

Collaboration
To work with the paediatric dentist for possible drug alternatives.



Picture 8: Gingival Overgrowth

Medications

Anxiolytics, anticonvulsants, antidepressants, diuretics or sedatives can alter the quantity and quality of saliva, which may predispose to oral health problems.

Children and Adolescents with Special Health Care Needs (CASHCN)

Children with physical, mental, sensorial or medical impairment are not able to maintain adequate oral hygiene, which predisposes them to oral health problems.

In some cases, the medication is contributory.

Burkitt Lymphoma

A B-cell malignancy

One of the fastest growing tumours in children.

Affects the jaws, teeth and other organs.

Collaboration

Team work between the paediatric dentists, paediatric oncologists and haematologists.

Picture 9: A child with Jaw Burkitt Lymphoma

Conclusion

Oral health is often overlooked and yet it contributes significantly to early diagnosis of systemic conditions and the prevention of its consequences.

The holistic healthcare of the child patient involves continuous collaboration between the paediatric dentists and the paediatricians.

All children should have their oral health risk assessment beginning at age 6 months.

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Questions on Paediatric Dentistry
(Choose the best answer out of the options provided)

1. Oral health is an integral part of the general health. What is the appropriate age for a child to have his/her first dental visit?
a. 6 months
b. 3 months
c. 3 years
d. 6 years

2. Jane, a 4-year-old girl accompanied by the mother presents in the clinic for routine check-up. Examination of the mouth reveals tooth decay on all her primary molar teeth. What is the long-term effect of this condition if untreated on her general health?
a. Failure to thrive
b. Sleep disturbance
c. Acute abscess
d. Facial cellulitis

3. Tade, a 9-year-old boy presents at the children emergency following an injury to his tooth 20 minutes ago while running at home. Examinations shows that he is conscious and knocked out a tooth, which he brought to the clinic in a cup of his saliva. What is your immediate treatment plan?
a. Give TT, reimplant the tooth and call the Paediatric dentist
b. Give TT, discard the tooth and call the Paediatric dentist
c. Give TT, antibiotics and call the Paediatric dentist
d. Give TT, antibiotics, analgesics and call the Paediatric dentist

4. Jack, a 4-year-old boy accompanied by the mother presents in your clinic because of bad breath and gum bleeding of two weeks duration. Examination shows that he is small for age and has fluffy hair. What likely oral health problem does he have?
a. Acute ulcerative gingivitis
b. Vitamin C deficiency
c. Haemophilia A
d. Chronic localized gingivitis

5. Uncontrolled diabetes is associated with oral health problems. What oral health condition is considered the sixth complication of uncontrolled diabetes?
a. Periodontal disease
b. Oral candidiasis
c. Dental abscess
d. Chronic gingivitis

Key to the questions

Question1	Answer
1.	A
2.	A
3.	A
4.	A
5.	A

CLINICAL QUIZ

Case 1

A five-year-old boy was brought to the general outpatient clinic. The mother said he was well until the morning of presentation when he complained of tiredness and poor appetite. Mother gave him half a tablet of paracetamol before bringing him to the hospital. A review of the system showed fatigue, vomiting, and myalgia. A quick general examination also showed a well-nourished child (18 kg), alert, not pale but with an axillary temperature of 38.5°C. The pfHRP-2 mRDT test was positive.

(a). What is the primary diagnosis?
(b). What next step should be taken in management?
(c). What treatment would you give the child? By what route?
(d). Write down the prescription for the recommended drug of choice
(e). Outline the follow-up advice to the mother.

Case 1: Answers
(a) What is the primary diagnosis?
Uncomplicated malaria

(b) What next step should be taken to manage the child?
-Take a history to rule out other causes of fever.
-Full systemic examination and, most importantly, examination of the ear, nose and throat
-A malaria parasite microscopy for parasite count and speciation.

(c) What treatment would you give the child? By what route?
-Recommended ACT
-Oral route

(d) Write down the prescription for the recommended drug of choice
-Artemether-lumefantrine 20/120 given two tablets stat. Repeat after 8 hours - Day 1
-Artemether-lumefantrine 20/120 given two tablets 12 hourly - Days 2 & 3.

(e) Outline the follow-up advice to the mother.
(i) Tell the child's mother why there is a need for medication compliance.
(ii) Demonstrate how to measure, take, or give the correct dose.
(iii) Watch the patient taking the drug.
(iv) Explain that the drugs must be used to finish the full course of treatment even if the patient feels well before then.
(v) If the child vomits the drug, the dose should be repeated after 30 minutes
(vi) Doses should not be missed. However, if there is a miss, the drug should be given immediately, and timing synchronized thereafter
(vii) Lack of food should not be a reason to miss a dose, as anorexia is common in malaria and usually occurs late in the recovery phase. Although each dose of artemether-lumefantrine should be taken with food such as milk, pudding, porridge, or broth as food helps rapid absorption into the bloodstream, it should not be a reason to miss a dose as absorption will eventually take place even on an empty stomach.
(viii) Iron-containing medications and vitamin C should be avoided until doses are completed. There is no scientific conclusion on the effects of iron (haem) and vitamin C on the treatment of malaria. However, some studies have shown that vitamin C reduces blood viscosity and elasticity significantly. It may exert a dose-dependent pro-oxidant effect by increasing intracellular hydrogen peroxide generation, especially in an environment of free haem (a powerful generator of free radicals) mimicking intraerythrocytic growth of the malarial parasite.
(ix) Advise on when to return for follow-up, even if the fever has subsided.

Case 2

A six-year-old girl presented with fever and malaise. Medical history revealed that she had presented ten days ago at the general outpatient department with similar features and was placed on a three-day full course of ACT after a positive RDT. She took the drugs as prescribed, and the fever subsided but re-occurred five days after completion of the ACT.

Physical examination was essentially normal. The malaria RDT obtained at the presentation was positive.

(a) Outline the steps the attending physician should take.
(b) What is the usefulness of RDT in diagnosis in this scenario? Why?
(c) What is your primary diagnosis?
(d) What is the drug treatment of choice?

Case 2: Answers:
(a) Outline the steps the attending physician should take.
-Obtain history with an emphasis on drug history (especially of the ACT, including dosing, frequency, & duration; drug compliance).
-Re-examine the child and look for other focus of infection.
-Obtain blood film microscopy for malaria diagnosis - species and parasite count.

(b) What is the usefulness of RDT in diagnosis in this scenario? Why?
-RDT is not useful in follow-up and monitoring of malaria treatment
-Malaria antigen continues in circulation up to six weeks after full treatment with ACT

(c). What is your primary diagnosis?
Malaria Treatment Failure

(d). What is the drug treatment of choice?
Use of any of the ACT within the drug list below:
(i). Artemether plus Lumefantrine (AL)
(ii). Artesunate plus Amodiaquine (AA)
(iii). Artesunate plus Pyronaridine Tetraphosphate plus Artesunate (AP) Pyramax 180mg/60mg (Children > 20 kg and adults) Or 60mg/20mg (20kg and ≥ 5.0Kg) (dose: 6 – 12mg/kg per day).
(iv) Dihydroartemisinin plus Piperaquine (DHP).

Case 3

A 22-month-old child presented with a fever of two days duration and several episodes of vomiting a day. One hour before the presentation, he had a convulsion followed by unresponsiveness for a few minutes. The child was febrile (39.2°C), conscious, and able to localize and respond to a painful stimulus. Weight was 12kg. The Malaria Rapid Diagnostic Test was positive. The child repeatedly vomited any antimalarial medicine given by mouth. A blood smear showed *P. falciparum* rings with a parasite count of 300,000/µL.

(a). Does the child have cerebral malaria?
(b). What should be done about the convulsions?
(c). Outline the criteria for severe malaria
(d). Outline the prescription for the drug treatment of choice of the primary disease.

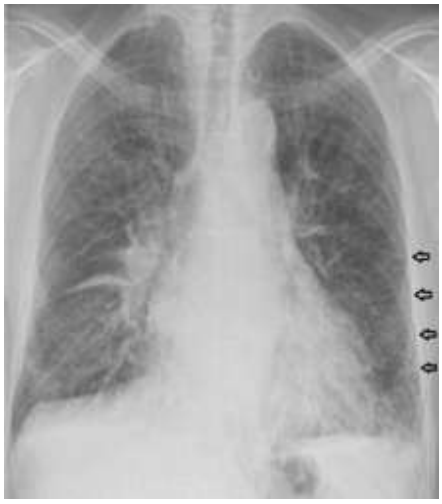
Case 3: Answer:
(a) Does the child have cerebral malaria?
No. The fact that the child is now fully conscious suggests that the convulsion was a "febrile convulsion" rather than a component of cerebral malaria. Convulsions occur in cerebral malaria, but a rapid recovery of consciousness does not usually follow them.

(b) What should be done about the convulsions?
Ensure that the risk of a further convulsion is minimized by reducing the child's temperature (paracetamol, tepid sponging and fanning).

(c). Outline the criteria for severe malaria
Clinical findings
-Impaired consciousness or altered sensorium
-Prostrations
-Change in behaviour, confusion or drowsiness
-Multiple convulsions
-Respiratory distress
-Circulatory collapse or shock (Note: signs of shock, < 50mmHg in children)
-Abnormal spontaneous bleeding (DIC)
-Acute renal failure (Oliguria < 0.5ml/ Kg / Hour in children, < 17ml/ Hour in adults, ↓GFR, ↑Cr)
-Passage of dark coloured urine
-Severe pallor
-Clinical jaundice must be combined with a parasite count of >20,000/ µL for *P. knowlesi* infection and a parasite count of >100,000/ µL for other malaria parasite species.
-Clinical evidence of pulmonary oedema

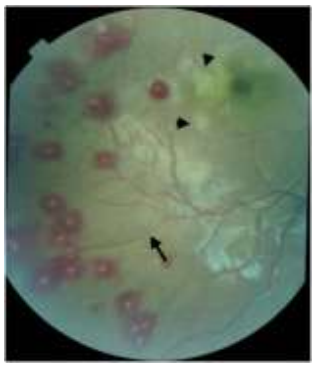
Laboratory Findings
-Severe malaria anaemia (normocytic anaemia)
-Hypoglycaemia (RBS < 2.0 mmol/ L or < 40mg/ L)*

-Metabolic acidosis -Hyperlactaemia (> 5 Mmol/L = hyperlactaemia)
-Haemoglobinuria – Blackwater fever
-Hyperparasitaemia (Red blood cell *P. falciparum* parasitaemia >10% or malaria parasite density) of ≥200,000 parasite/µl of blood.)
-Radiological evidence of pulmonary oedema is shown below:



Cerebral malaria (Revised criteria)
-Altered sensorium or unarousable coma (using BCS, GCS, AVPU).
-Demonstration of asexual form of *P. falciparum* (*P. knowlesi*) in peripheral blood, bone marrow or brain smear at autopsy.
-Malaria retinopathy (slide inserted below).
-Exclusion of other encephalopathies.

Malaria retinopathy



Retinal whitening – macular and peripheral whitening is primarily caused by the obstruction of blood vessels in the retina by parasitized red blood cells (pRBCs), which sequester in the capillaries, leading to reduced blood flow and tissue hypoxia, resulting in the characteristic whitening appearance on fundoscopy examination; this is most commonly seen in severe cases of cerebral malaria caused by *P. falciparum*.
Vessel discolouration (including orange vessels and tramlining)
Retinal haemorrhages – predominantly white-centred retinal haemorrhage.
Cotton wool spots are an abnormal finding on funduscopic exams of the retina. They appear as fluffy white patches on the retina caused by nerve fibre damage and result from accumulations of axoplasmic material within the nerve fibre layer.
Papilloedema - Papilloedema and cotton wool spots are always accompanied by retinal whitening, haemorrhages and vessel discolourations in cerebral malaria.

(d). Outline the prescription for the drug treatment of choice of the primary disease.
Parenteral (IV/IM) artesunate at 3mg/kg per dose = 36mg per dose at 0 hour - 12 hours - 24 hours for Day 1.
Then, a 3-day full course of recommended ACT - Days 2 - 4.

Case 4
Nigeria contributes to the highest malaria burden in the world. In order to reduce the burden of the disease, the National Strategy in case management is to test and treat.

Which of the following are major considerations in malaria diagnosis using RDT?
A. Identification of diagnostic biomarkers for malaria severity
B. monitoring and follow-up to confirm treatment failure
C. High specificity and high sensitivity
D. RDT test is positive irrespective of whether the control line is present or not.
Answer to Case 4: C

Case 5
A five-year-old boy is brought to the paediatric outpatient clinic with complaints of fever, malaise and anorexia of a day duration. He was given half a tablet of paracetamol at home. A review of the system is

normal. Examination showed a well-nourished 18-kg child, not pale, alert and with an axillary temperature of 38.3°C. The rest of the examination is normal. Inserted on the slide is the blood film picture of the patient.

Which of the following is true concerning his malaria diagnosis?

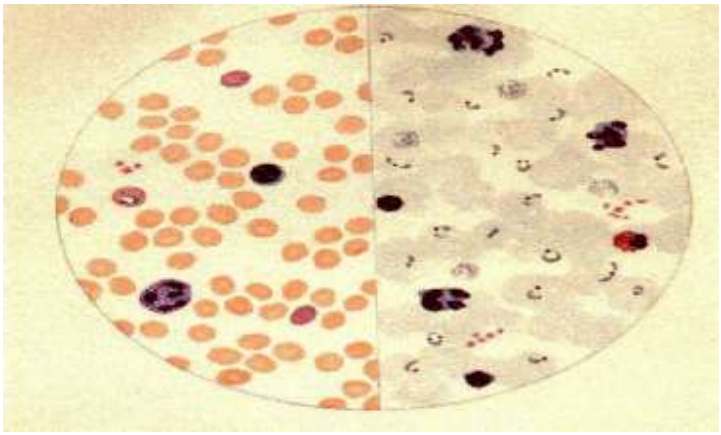
A. Thick films are required for parasite species identification

B. Thin film is required for parasite density

C. Presence of gametocytes on blood film signifies malaria infection

D. Signet ring appearance on blood film is in keeping with *P. falciparum*

Answer to Case 5: D



Further Reading

Training Manual for Management of Malaria at Health Facilities in Nigeria. Participants' & Tutors'Guide. Federal Ministry of Health, National Malaria and Vector Control Division Abuja, Nigeria, May 2022, pp 4 – 128.

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