REPUBLIC OF RWANDA

MINISTRY OF HEALTH

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National guidelines for management of Ear Nose and Throat (ENT), Eye and oral health

Edition 2015

RWANDA
BIOMEDICAL
CENTER

A Healthy People. A Wealthy nation

PREFACE OF THE HON. MINISTER OF HEALTH

"… the world stands at a … crossroads in the movement to confront the rapidly growing burden of non-communicable diseases such as heart disease, cancer, diabetes, and respiratory disease. We now face the challenge of equipping health systems with the means to adequately prevent, treat and monitor this group of complex chronic conditions… the complexity of this task is enormous and its urgency fierce, but there is no question of whether we possess the tool to meet it head on. History will judge us by our efforts to meet the challenge."
Dr. Agnes Binagwaho, Rwanda Minister of Health, March 2012[1]

The guidelines and protocols presented in this document are designed to provide a useful resource for healthcare professionals involved in clinical case management in Rwanda. They were developed by taking into consideration services provided at different levels within the health system and the resources available, and are intended to standardize care at both the secondary and tertiary levels of service delivery across different socio-economic levels of our society

The clinical conditions included in this manual were selected based on facility reports of high volume and high risk conditions treated in each specialty area. The guidelines were developed through extensive consultative work sessions, which included health experts and clinicians from different specialties. The working group brought together current evidence-based knowledge in an effort to provide the highest quality of healthcare to the public. It is my strong hope that the use of these guidelines will greatly contribute to improve the diagnosis, management, and treatment of patients across Rwanda.

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[1] Agnes Binagwaho, "Meeting the Challenge of NCD: We Cannot Wait," *Global Heart* 7, no. 1 (March 1, 2012): 1–2, doi:10.1016/j.gheart.2012.01.004

And it is my sincere expectation that service providers will adhere to these guidelines and protocols.

Dr Partick NDIMUBANZI

Hon. Minister of State in Charge of Public Health and Primary Health Care

ACKNOWLEDGEMENTS

The Ministry of Health is grateful for the efforts of all those who contributed in various ways to the development, review, and validation of the Clinical Treatment Guidelines. We would like to thank our colleagues from District, Referral, and University Teaching Hospitals, and specialized departments within the Ministry of Health, our development partners, and private health practitioners. We also thank the Rwanda Professional Societies in their relevant areas of specialty for their contributions and for their technical review, which enriched the content of this document, as well as the World Health Organization (WHO) and the Belgium Technical Cooperation (BTC) for their support.

We would like to especially thank the United States Agency for International Development (USAID) for both their financial and technical support through the Management Sciences for Hea lth (MSH) Integrated Health System Strengthening Project (IHSSP) and Systems for Improved Access to Pharmaceuticals and Services (SIAPS).

To end with, we wish to express our sincere gratitude to all those who continue to contribute to improving the quality of health care of the Rwanda population.

Dr Marie Aimee MUHIMPUNDU

Head of NCDs division RBC

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PART 1: Eye Health

1 EYE CARE GUIDELINES

1.1 Introduction

Data reported in the Annual Health Statistics Booklet 2013 shows that in 2013, eye health visits was the second cause of outpatient visit in the hospitals with a staggering proportion of 22% of the overall outpatient visits.

Regarding the cataract, the 2006 RAAB (population based survey) carried out in western province reported that 65% of blindness and visual impairment were due to cataract. The last available data about the Cataract Surgical Rate (CSR) (total number of cataract surgeries per million people per year) indicates that Rwanda had in 2007 around 285 surgeries per million people. Recent estimates indicate that the surgical rate is less than 500, well below the WHO recommended rate of 2.000 surgeries per million people adopted as a target in sub-Saharan Africa. According to these figures, we can assume that the incidence of cataract is higher than the current cataract surgery rate. Cataract is fully treatable and cost-effective and early diagnosis can prevent blindness.

Regarding the refractive errors, the prevalence is estimated at 12% of population (2007 National Plan.) with 10% with age>40 and 2% other people needing distance glasses. The condition is easily correctable.

Regarding the Glaucoma, the 2006 RAAB survey carried out in western province, reported that 2.6% of blindness is due to Glaucoma. Glaucoma then represents the second cause of blindness in Rwanda. It's a disease for aged people but it's becoming more common in children due to misuse of steroid eye drops for allergy. The medical condition is treatable but the service is available only in Kigali and Kabgayi hospitals. Early diagnosis has a high success rate.

The allergic conjunctivitis is one of the leading causes of consultation at HCs and DHs (estimate of 80% of total eye cases). The medical condition is treatable with anti-allergic eye drops that in 2012 were added in the essential drugs list. The medical condition is due to environmental factors and affects mainly children.

The diabetic retinopathy is estimated to affect 10% of all diabetics. Regional data shows that 30% of diabetic have diabetic retinopathy. The medical condition is treatable and increasingly important because of trends in diabetes prevalence and low awareness of diabetic retinopathy.

1.2 Package of services – Eye health

Facility Level	Provider	Prevention	Clinical Services	Lab	Imaging
Referral Hospital/Specialty Hospital	-Paediatric Ophthalmologists -Glaucoma specialists -Vitreo-retinal surgeons -Medical retina specialists -Cornea and anterior segment specialists -Oculoplastic surgeons -General Ophthalmologists -Optometrists -Orthoptists -Ophthalmic nurses	-Patient education -Support district and Provincial Hospital to conduct prevention activities -Advocacy and health education	- Specialized eye surgery including vitreo-retinal surgery, Hitech cornea surgery, Glaucoma surgery , LASER treatment for Diabetes, oculoplastic surgery -Cataract surgery - Diagnosis of all ocular diseases -Tele-ophthalmology link with lower levels -Preventive intervention	General lab services for diagnosis of infections, endocrine diseases, auto-immune diseases	-Ultrasound, A&B, -Automated perimetry - Retinal angiography -Optical Coherence Tomography - Cornea topography
Provincial Hospital	-General Ophthalmologists -Ophthalmic technicians	Advocacy and lobbying of local and INGO, Local authorities to support eye health activities.	Cataract surgery, glaucoma surgery Diagnostic and treatment of		-Perimetry -A-scan Ultrasound

Facility Level	Provider	Prevention	Clinical Services	Lab	Imaging
	-ophthalmic nurses		ophthalmic medical conditions -Outreach activities at district level		
District Hospital	-General Ophthalmic technicians -Ophthalmic Technicians - OT refractionists	-Patient education - Support health center to conduct preventive intervention -Advocacy and lobbying of District authorities to put eye health preventive intervention in their action plan.	-Diagnosis and treatment of medical conditions - prescription of glasses - Screening and referral of surgical conditions		
Health Centre	Trained Primary eye care nurses	Provide eye messages for all ages Conduct sensitization and mobilization to raise the public awareness	-diagnose and treat allergic conjunctivitis - diagnose refractive errors in adults and dispense adjustable glasses		

Facility Level	Provider	Prevention	Clinical Services	Lab	Imaging
			- diagnose visual impairment and refer to higher level		
Community	CHWs, Local and INGO	-Health education and health promotion -CHWs will raise awareness in the community about the importance of healthy eyes, will identify signs and symptoms of eye disease and refer community members to the health center as needed.			

1.3 Primary health care guidelines

1.3.1 PROCEDURE FOR TESTING A PERSON WITH AN EYE PROBLEM

YOU NEED:

- A torch
- Pen and record card
- Visual acuity test charts
- 3m and 40cm strings

PREPARATION

- Find a space in good light
- Seat the person comfortably
- Always explain to the person what you are going to do.

METHOD

1. Great the patient warmly
2. Record demographic details of the patient: name, age, sex, address
3. Ask the person "Why did you come and see me?"
4. Record if they say they have pain, redness, loss of vision, eye injury, swelling / lumps on their lids or anything else and indicate which eye is affected
5. Look at the eyes of a person using the torch
    a. The white should be white (with a few red veins)
    b. The black should be black
    c. The eyes should be the same size

d. The eyes should look straight ahead.

6. Ask the person to close their eyes
    a. The lids should open and close normally and be smooth with no growths
    b. The lashes should turn out, not in and have no discharge
7. Record what you see on the patent record form
8. Test Distance Visual Acuity
9. Test Near Visual Acuity if the patient complained about it
10. Record what you find on the patent record form
11. Make a management decision

1.3.2 DISTANCE VISION SCREENING PROCEDURE

YOU NEED:

- Distance vision screening chart
- String of 3 m
- Pen and record card

Figure 1: Distance vision test chart

PREPARATION

- Find a space in good light (not too dark, bright or looking into the sun)
- Seat the person comfortably
- Always explain to the patient what you are going to do.

METHOD

- Take the vision chart close to the person and explain that you will point at the Es and s/he should point at the direction of the "legs". Ask them to show you to make sure that they understand.

Figure 2: How to show where the E is facing

- If the person normally wears spectacles to see at the distance, tell her/him to leave them on during the test.
- Measure 3m away from the wall and place a mark on the ground and put the patient's sit there.
- Position the reading chart on the wall placing the lower edge of the chart one meter from the ground.
- Ask the person to cover the left eye with the palm, so that you can test the right eye.
- Stand beside the Vision chart and point to the 6/60 E. Ask the person to indicate the direction of the legs of the E.
- If the person does not point in the right direction, rotate the E and ask them to point again. If the person still does not point in the right direction, write down: cannot see 6/60 for the right eye
- if the person points in the right direction, go to the 6/12 Es
- Point to first E on the 6/12 row of Es. Ask the person to indicate the direction of the

Figure 3: Patient showing in which direction the E on the chart is facing

legs of the E. Note the response. Move to the next E. Continue until all the Es in the 6/12 row have been shown to the person.

- If a person can see 4 or all 5 of the 6/12 Es. Write down: Can see 6/12 for the right eye
- If they can only see 0, 1, 2 or 3 Es correctly. Write down R: Can see 6/60 but cannot see 6/12 for the right eye

Now ask the person to cover the right eye with the palm and repeat the test with the left eye

INTERPRETATION OF DISTANCE VISION RESULTS

Abnormal vision

If the person cannot see 6/60 Es with one or both eyes, their distance vision is abnormal and they need a pinhole test. If they do not improve to 6/12 they need to be referred urgently.

If the person cannot see 6/12 Es with one or both eyes, their distance vision is abnormal and they need a pinhole test. If they do not improve to 6/12 they need to be referred.

Normal vision

If the person can see the 6/12 Es they have normal distance vision

Fig 4: Patient showing in which direction the E on the chart is facing

1.3.3 NEAR VISION SCREENING PROCEDURE

YOU NEED:

- Near vision screening chart
- Pen and record card

PREPARATION

- Find a space in good light (not too dark, bright or looking into the sun)
- Seat the person comfortably

METHOD

- Always explain to the patient what you are going to do
- For screening near vision, hold the vision screener at the testing distance of 40cm from the eyes.
- The test should be undertaken with both eyes open, and if the person has spectacles for near vision these should be worn
- If the person can see the N8 line, write down Near N8
- If the person cannot see the N8 line, write down Near: cannot see N8

INTERPRETATION OF NEAR VISION RESULTS

Abnormal vision

If the person cannot see N8 both eyes, their near vision is abnormal.

Normal vision

If the person can see the N8 line, they have normal near vision

Figure 4: Testing for Near Vision

1.3.4 HOW TO DETERMINE THE POWER OF NEAR VISION SPECTACLES

YOU NEED:

- Near vision chart
- Pen and record card
- +1.50, +2.00, +2.50, +3.00 spectacles

PREPARATION

- Find a space in good light
- Seat the person comfortably
- Always explain to the person what you are going to do

METHOD

- Check that both eyes are open
- Use the 40cm string to show the patient where they should hold the reading chart
- The print on the chart represents N8 near vision. Point to the print on the chart and ask them if they can see it clearly

- If they cannot see N8 start testing with the +1.50 glasses
- Ask them to see if they can see the N8 line. Keep the chart at 40cm away from the eyes
- If they cannot see N8 with +1.50DS, try one power stronger and do this until they see the N8 clearly
- Once they say they can see clearly try one power weaker and let the person decide which power they prefer and record this on the record chart.

If the person cannot see N8 with any of the four powers then refer.

Give the following instructions to all patients that you give reading glasses to.

1) Tell the person these spectacles are to be worn for near vision only. Their distance vision will be blurred. Ask them to look up and confirm this.
2) Ask the person to clean their spectacles by washing them with soap and water and drying with a soft cloth
3) Record the power of the spectacles on the person's record card and on a piece of paper to give to them
4) Advise the person that they will probably need a stronger power of spectacles in about 2 years
5) Ask the person if they have a relative with glaucoma, if yes, refer for a complete eye
6) Ask the person if they have diabetes, and advise they should have a complete eye check once a year.

1.3.5 PROTOCOL FOR PIN HOLE TEST

THIS PROTOCOL IS DEVELOPED FOR USE IN RWANDA WHERE ADJUSTABLE GLASSES ARE AVAILABLE FOR CORRECTION OF REFRACTIVE ERRORS

IMPORTANT: THE PERSON UNDERGOING THE PINHOLE TEST SHOULD HAVE HAD THE DISTANCE VISION TEST AS DESCRIBED IN THE DISTANCE VISION PROTOCOL

THIS TEST IS ONLY FOR THOSE WHO CANNOT SEE 6/12 IN EITHER EYE

YOU NEED:

- Distance vision screening chart
- String of 3 m
- Pinhole card
- Pen and record card

PREPARATION

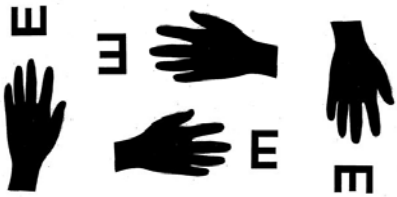
- Find a space in good light (not too dark, bright or looking into the sun)
- Seat the person comfortably

METHOD

- Ask the subject to keep both eyes open.
- Ask the patient to cover the eye you're not examining with the palm of the hand.
- Let your subject hold the Pinhole card in their other hand and encourage them to look through the hole in the centre of it.

- Ask the subject to look at the 6/60 line and say if it is visible through the pinhole.
- If the person cannot see the 6/60 E; record R pinhole test failed
- If the person can see the 6/60 E, test with the 6/12 E
- If the person cannot see at least 4 of 6/12 Es, record R record pinhole test failed

Figure 5: How to show where the E is facing



- If the person can see at least 4 of 6/12 Es record R can see 6/12.

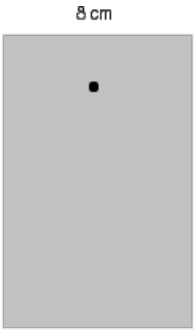
INTERPRETATION

If the patients vision in both eyes has improved to 6/12 in both eyes when looking though the pinhole, then you should place a tick in the 'Passed pinhole' box on the form provided. Proceed to the adjustable glasses protocol.

If their vision has not improved in one or both eyes then you should stop examining the person, place a tick in the 'Failed Pinhole test' box on the form provided and refer the subject to a district hospital with a trained eye personnel (OCO, OT or ophthalmologist)

1.3.6 PERFORMING THE PINHOLE TEST WITH A PINHOLE OCCLUDER

Figure 6: The Pinhole test and a picture Picture of a pinhole occluder



If you do not have a standard one, the pinhole occluder can be simply made by cutting out an 8cm by 12cm piece of card paper and punching a 1.5 mm diameter pinhole through it as shown using a G21 needle

1.3.7 HOW TO INSTILL EYE DROPS

YOU NEED:

- Eye drops and ointment
- Tissue to wipe
- Pen and record card

PREPARATION

- Find a space in good light
- Seat the person comfortably
- Wash your hands with soap and water and dry them with clean tissue paper

METHOD

- Ask the patient to tilt his head backwards and look up. Explain that they might taste the drops in their throat
- Shake the eye drop bottle and inspect it to make sure you have the correct medication and it has not expired
- Explain to the patient what you are doing as you instill the drops
- Gently pull down the patient's bottom eyelid by pulling it down with your index finger. This creates a pocket.
- Hold the bottle a few centimetres above the eye. Press the bottle so as to release one drop of the medication into the lower lid eye pocket, without allowing the dropper to touch the eye.
- Wait a second and then release the bottom eyelid.
- Instruct the patient to close his eye and press gently with one finger over the corner of the eye closest to his nose for a moment. This will keep the drops in the eye so that they can do their work. Wipe away any excess medication which emerges when they close the eyes.
- For the second eye, ask the patient or the caregiver to instill the drops, so that you can check it is done properly
- If you have to put in more than 1 kind of eyedrop at a time, it usually does not matter which eye drop goes in first. However, allow 3-5 minutes between putting in different eye drops so that the second eye drop does not wash out the first eye drop.

Figure 7: How to instill eye drops

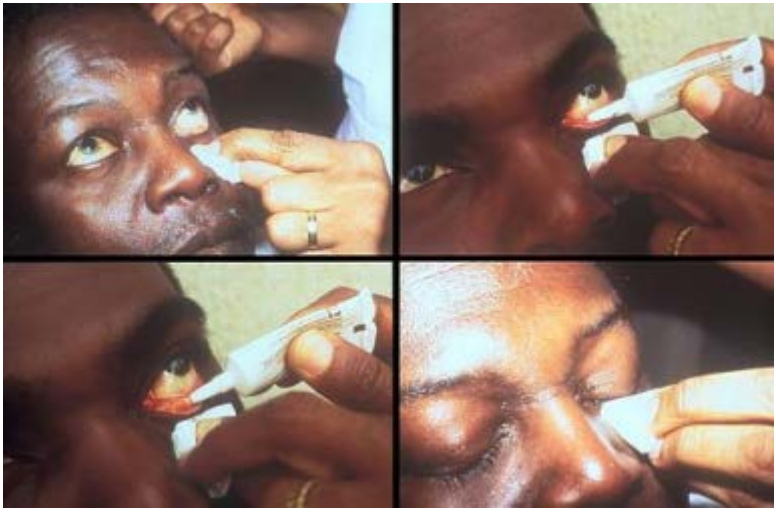
1.3.8 HOW TO INSTILL EYE OINTMENT

METHOD

- Ask the patient to tilt his head backwards and look up
- Shake the eye ointment tube and inspect it to make sure you have the correct medication and it has not expired
- Explain to the patient what you are doing as you instill the ointment
- Gently pull down the patient's bottom eyelid by pulling it down with your index finger. This creates a pocket.
- Hold the nozzle of the tube approximately 2.5cm above the eye.
- Apply a line of ointment about 1 cm long to the inner edge of the lower lid from the nasal corner outwards

- Ask the person to close their eyes
- Wipe away any surplus ointment which may emerge when the patient closes the eye.
- Secure the nozzle cap.
- For the second eye, ask the patient or the caregiver to instill the ointment, so that you can check it is done properly
- Explain to the patient that his vision will be blurry for a few minutes

Figure 8: How to instill eye ointment



Eye drop and Eye ointment Tips

- Do not make the eyelid turn out too much as instilled eye drops may fall out on to the cheek.

- Do not allow the eye drop to fall on to the cornea as this can be painful and may alarm the patient and cause loss of confidence.
- Do not allow the bottle or tube to touch the eyelid skin or eye lashes as it will cease to be sterile and need to be discarded.

1.3.9 CLEANING OF EYELIDS

You will need

- Sterile gauze swabs or cotton buds. Do not use large cotton wool balls as these can leave fragments on eyelid margins, become an irritant and may even cause complications.
- Saline or water

Method

Top lid

Figure 9: How to clean the upper eyelid

- Take a folded gauze swab or cotton bud.
- Moisten the swab or bud with the saline or water
- Ask the patient to close both eyes.
- With the swab or bud, clean **gently** along the eyelashes in one movement from inner to outer canthus.
- **Discard the swab or bud after use**. If the eyelashes need further cleaning use **new** swab or bud.

Bottom lid margin

Figure 10: How to clean the lower eyelid

Ask the patient to look up.

- With one hand take a moistened sterile swab or bud.
- With the index finger of the other hand gently hold down the lower eyelid.

- With the swab or bud clean gently along the lower eyelid margin in one movement from inner to outer canthus
- Discard the swab or bud after use.

If the lower eye lid margin needs further cleaning use a new swab

Top lid margin

- Ask the patient to look down.
- With one hand take a moistened sterile swab or bud.
- With a thumb or a finger of the other hand gently ease the upper eyelid up against the orbital rim (just below the eyebrow).
- With the swab or bud clean gently along the upper eyelid margin in one movement from inner to outer canthus
- Discard the swab or bud after use. If the upper eye lid margin needs further cleaning use a new swab or bud.

Tips

Extra care is needed when cleaning the upper eyelid! Try to keep the cornea in view throughout and to avoid touching it with the gauze swab or cotton bud.

It may be necessary to repeat any part of the above procedure, if the eyelids are very sticky, until all debris/discharge is removed.

Remember - always use a new swab or bud each time !

1.3.10 APPLYING AN EYE PAD

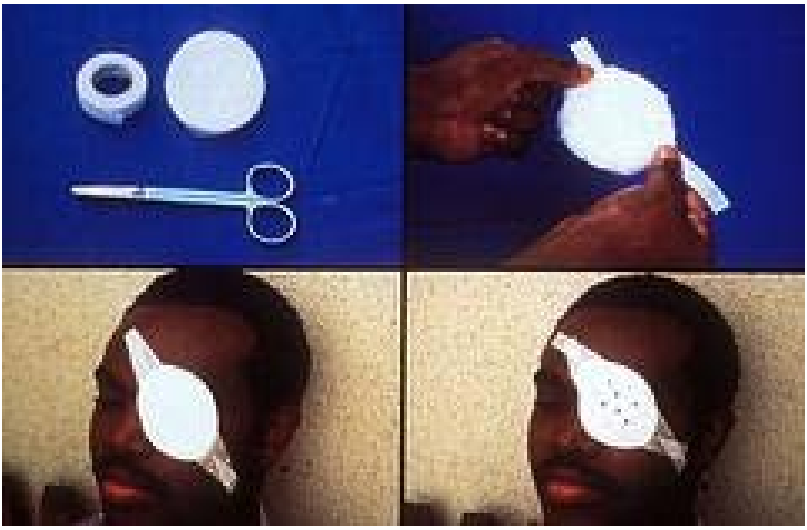
You will need

- Adhesive tape
- Eye pad
- Scissors

Preparation

It is important to remind the patient to try not to open the affected eye under the pad.

Figure 11: How to apply an eye pad



Method

- Apply a piece of adhesive tape, about fifteen centimetres long, to the eye pad - as shown in the picture.
- Ask the patient to close both eyes.

- Position the eye pad diagonally over the closed lids and secure the tape to the forehead and cheek.
- Apply a second and third piece of tape, as shown in the picture, to ensure the eye pad lies flat.
- Eye protection can also be given with an eye shield. The shield shown in the picture is produced commercially and is called a 'Cartella shield'.

1.3.11 HOW TO REFER A PATIENT

You will need

- Eye Record and Referral form
- Details of the place (and person) to whom you are referring you should know if ophthalmic services are available and on which days. You should also know the approximate costs involved.

Methods

Your referral note should include:

- Patient details: Name of the patient, age, sex and address. Date of referral (Abdulla Ali age 45M from Rulindo district. 1 June 2012)
- Referring facility details: Name of referring clinic and name of referring person. (Mrs Kabaka Rulindo Ndogo Clinic)
- Information about the eye condition clearly recorded in the record and referral form: Patient complaint, details of eye

assessment and vision, details of what you did/ prescribed (Complete the patient record and referral form.)

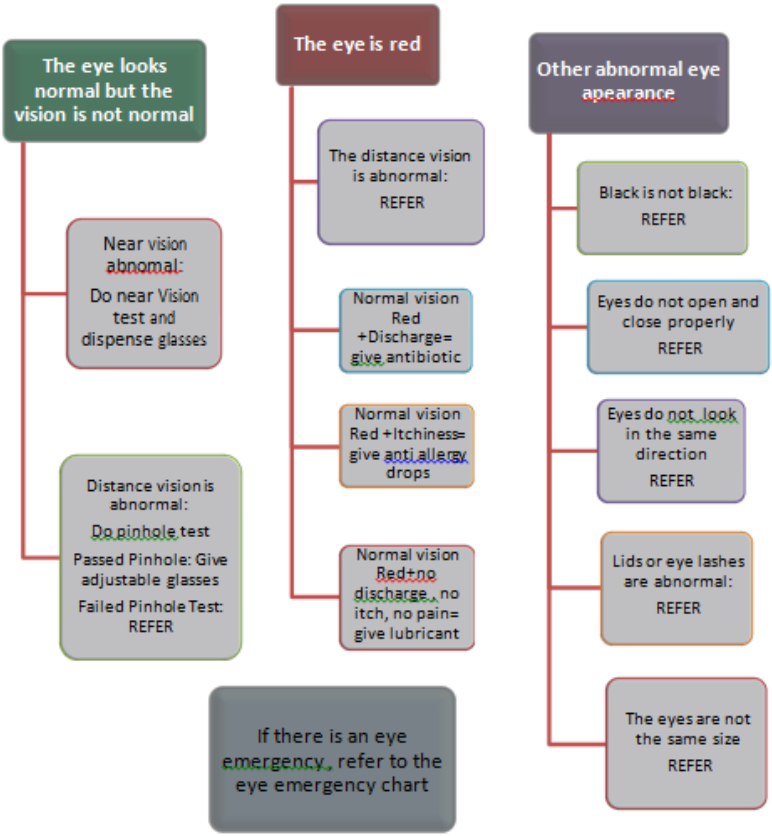
- Your explanation to the patient and the caregiver if present should include information about
    - the need to be seen by a specialist eye care provider
    - the seriousness of the condition. Be firm but gentle
    - where and when the specialist eye care provider is available and the approximate costs
    - If you have started treatment explain that that is not the final treatment.
    - Ask the person or caregiver: “Which questions do you have?” so that they feel more comfortable to ask you
- Ask the person to whom you referred for feedback about the referral, so that you can provide follow-up care, and get confirmation that your management and referral was correct. If it was not correct you can learn from this experience, to improve your assessment and management, for next time.

1.3.12 MANAGEMENT GUIDELINES FOR A PATIENT WITH RED EYE

Red eye with reduced vision	Refer always
Red eye with Pain	Refer always
Red eye and black not black	Refer always
Sudden bright redness in a small area with no pain, itchiness or discharge and no loss of vision	Reassure. Give lubricant Advice patient to come back if no sign of improvement after 7 days and then refer.
Red eye with itchiness	Give Chromozyl eye drops (one drop four times a day) and review after one week. If still no improvement refer. If getting better continue treatment for another three weeks. Inform the patient that this is a recurrent problem
Red eye with Discharge	Give Chloramphenicol or Gentamicin drops one drop four times a day (or ointment 2 times a day) and review after one week. If still no improvement refer. If getting better continue treatment for another week.

1.3.13 MANAGEMENT DECISION GUIDE

Figure 12: Management decision guide



1.3.15 EYE EXAMINATION PROTOCOL

RWANDA HEALTH CENTRE EXAMINATION PROTOCOL FOR EYE PATIENTS

❶HAVE YOU RECORDED THE IDENTIFICATION INFORMATION ON THE PATIENT'S OUTPATIENT FILE?

☐Patient's Name ☐ *Age* ☐ Gender ☐ *Address*

❷ASK THE PATIENT WHY THEY CAME TO SEE YOU USING THIS CHECKLIST AND NOTE DOWN THE POSITIVE SYMPTOMS INDICATING WHICH EYE IS AFFECTED (RE, LE, BE). RECORD IN THE CLINICAL HISTORY SECTION OF THE PATIENT'S OUTPATIENT FILE

- ☐ *Pain if yes ask if severe or mild*
- ☐ *Redness if yes*
  - ☐ *ask if redness in one area*
  - ☐ *or redness whole eye*
- ☐ *Itchiness*
- ☐ *Discharge*
- ☐ *Loss of vision if yes*
  - ☐ *Ask if near vision or far*
  - ☐ *Ask if gradual or sudden*
- ☐ *Eye Injury*
  - ☐ *Chemical*
  - ☐ *Hot liquid/fire*
  - ☐ *Foreign body*
  - ☐ *knock/blow/cut*
- ☐ *Change in colour*
- ☐ *Eyes do not look straight*
- ☐ *Lid problem*
  - ☐ *Growth*
  - ☐ *Closure /opening*
  - ☐ *Lashes*
- ☐ *Change in size of the eyes*
  - ☐ *Indicate which eye the patient says is bigger or smaller*
- ☐ *Eye Check up*
- ☐ *Other symptoms Indicate details in patient case sheet*

❸NOW DO THE EYE ASSESSMENT USING THIS CHECKLIST AND NOTE DOWN ON THE PHYSICAL EXAMINATION SECTION OF THE PATIENT'S OUTPATIENT FILE ALL THE POSITIVE FINDINGS INDICATING RE, LE OR BE FOR EACH SIGN (enter as many as required)

- ☐ Is the white, white (few red veins) and no discharge?
- ☐ Is the black (coloured) part black and shiny?
- ☐ Are the eyes the same size? If not indicate which eye you see as bigger or smaller
- ☐ Do the eyes look straight ahead? If not indicate which eye is not straight
- ☐ Do the lids open and close normally?
- ☐ Are the lashes normal?
- ☐ Any other abnormality you see

❹NOW TEST THE VISUAL ACUITY FOR ALL PATIENTS AND RECORD AS FOLLOWS FOR EACH EYE ON THE PATIENT'S OUTPATIENT FILE (DISTANCE VISION)

☐Can see 6/12 ☐Can see 6/60 but cannot see 6/12

❺FOR ALL THOSE WHO CANNOT SEE 6/12 CARRY OUT THE PIN HOLE VISION TEST AND RECORD ON THE PATIENT'S OUTPATIENT FILE AS FOLLOWS

☐ Passed (Can see 6/12 with pinhole) ☐ Failed (Cannot see 6/12 with pinhole)

❻FOR THOSE AGED 40YEARS AND ABOVE WHO COMPLAIN OF POOR NEAR VISION TEST THE

NEAR VISION AND RECORD ON THE PATIENT'S OUTPATIENT FILE AS FOLLOWS

☐ *Can see N8* ☐ *Cannot see N8*

❼ RECORD THE MANAGEMENT DECISION ON THE TREATMENT OR FOLOWUP SECTION OF

THE PATIENT'S OUTPATIENT FILE. RECORD ALSO THE FINAL DIAGNOSES.

MANAGEMENT	INCLUDE DETAILS	WRITE FINAL DIAGNOSES AS
ADJUSTABLE GLASSES	*Indicate if issued*	*REFRACTIVE ERROR FAR*
READING GLASSES	*Indicate Power issued*	*REFRACTIVE ERROR NEAR*
TREATMENT	*Describe medication*	*CONJUNCTIVITIS (Allergic or Infective)*
FIRST AID	*Describe the emergency*	*EYE EMERGENCY*
COUNSELLING GIVEN	*Give details in the patient file*	*CHOOSE ABOVE OR DESCRIBE*
REFERRAL	*Indicate where referred*	*CHOOSE ABOVE OR DESCRIBE*
OTHER	*Give any details*	*OTHER*

1.3.16 EYE EMERGENCIES

CONDITION	ACTION
Any Sudden Vision Loss	Refer as emergency
Any vision less than 6/60 not improving with pin hole	Tell the patient he needs to see a specialist urgently
Severe pain in the eye	Give pain killer and refer
Injury to eye lids or surrounding tissues with broken skin and bleeding	Pad to stop bleeding. Check if necessary to give tetanus toxoid Refer urgently
Injury penetrating into the eye Ball	Put shield and refer urgently Give pain killer if indicated Check if necessary to give tetanus toxoid **DO NOT INSTILL ANY EYE DROPS**
Swollen eye ball • with fever • with no fever	Give antibiotic and refer as emergency Refer urgently **IF EYE LIDS CANNOT CLOSE PUT EYE SHIELD**
Foreign body in the eye	

• On the surface • Penetrating the eye tissues	Try and washout with normal saline **DO NOT TRY TO REMOVE. Put eye shield and refer as emergency**
Chemical entering the eyes	Wash eyes with normal saline or clean water for ten minutes Put antibiotic ointment and refer.
Other eye conditions	Whenever you cannot figure out what the problem is or how to treat it be honest with the patient and counsel on the importance of going to the district hospital

FOR ALL CONDITIONS RECORD THE DISTANCE VISUAL ACUITY IF THE PATIENT IS NOT UNCOMFORTABLE AND FILL IN THE PATIENT OUTPATIENT FILE

1.4 Secondary health care guidelines

Ophthalmologists should not rely on the Clinical Guidelines alone for patient care and management.

Refer to the listed references and other sources for a more detailed analysis and discussion of research and patient care information. The information in the Guidelines are current as of the date of publication. These guidelines will be reviewed periodically and revised as needed

Ratings

- A: Most important
- B: Moderately important
- C: Relevant but not critical

Strength of Evidence

- I: Strong
- II: Substantial but lacks some of I
- III: Consensus of expert opinion in absence of evidence for I & II

1.4.1 CATARACT

1.4.1.1 Initial Exam History

- Symptoms (A: II)
- Ocular history (A: III)
- Systemic history (A: III)
- Assessment of visual functional status (A: II)

1.4.1.2 Initial Physical Exam

- Visual acuity, with current correction (A: III)
- Measurement of BCVA (with refraction when indicated) (A: III)
- Ocular alignment and motility (A: III)
- Pupil reactivity and function (A: III)
- Measurement of IOP (A: III)

- External examination (A: III)
- Slit-lamp biomicroscopy (A:III)
- Evaluation of the fundus (through a dilated pupil) (A: III)
- Assessment of relevant aspects of general and mental health (B: III)

1.4.1.3 Management

N:B Treatment is indicated when visual function no longer meets the patient's needs and cataract surgery provides a reasonable likelihood of improvement. (A: II)

Preoperative Care

Ophthalmologist who is to perform the surgery has the following responsibilities:

- Examine the patient preoperatively (A: III)
- Ensure that the evaluation accurately documents symptoms, findings and indications for treatment (A: III)
- Inform the patient about the risks, benefits and expected outcomes of surgery (A: III)
- Formulate surgical plan, including selection of an IOL (A: III)
- Review results of pre-surgical and diagnostic evaluations with the patient (A: III)
- Formulate postoperative plans and inform patient of arrangements (A: III)

Cataract removal

- Indicated when there is evidence of lens-induced diseases or when it is necessary to visualize the fundus in an eye that has the potential for sight. (A: III)

- Surgery should not be performed under the following circumstances: (A: III)
    - Glasses or visual aids provide vision that meets the patient's needs’
    - Surgery will not improve visual function
    - The patient cannot safely undergo surgery because of coexisting medical or ocular conditions
    - Appropriate postoperative care cannot be obtained
- Indications for second eye surgery are the same as for the first eye: (A: II) (With consideration given to the needs for binocular function)

Nd:YAG Laser Capsulotomy

- Treatment is indicated when vision impaired by posterior capsular opacification does not meet the patient's functional needs or when it critically interferes with visualization of the fundus (A: III)

Follow-up Evaluation

- High-risk patients should be seen within 24 hours of surgery. (A: III)
- Routine patients should be seen within 48 hours of surgery. (A: III)
- Components of each postoperative exam should include:
- Interval history, including new symptoms and use of postoperative medication (A: III)
- Patient’s assessment of visual functional status (A: III)
- Measurement of IOP (A: III)

- Slit lamp biomicroscopy (A: III)

Patient Education

- For patients who are functionally monocular, discuss special benefits and risks of surgery, including the risk of blindness (A: III)
- Educate patient concerning the symptoms of posterior vitreous detachment, retinal tears and detachment as well as the need for immediate examination, if these symptoms are noticed (A: III)

References:

ICO International Clinical Guidelines, 2010; Adapted from the American Academy of Ophthalmology Summary Benchmarks, November 2010 (www.aao.org).

1.4.2 DIABETIC RETINOPATHY

Initial Exam History

- Duration of diabetes (A: I)
- Past glycemic control (hemoglobin A1c) (A: I)
- Medications (A: III)
- Systemic history (e.g., onset of puberty (A: III), obesity (A: III), renal disease (A: II), systemic hypertension (A: I), serum lipid levels (A: II), pregnancy (A: I))

Initial Physical Exam

- Best-corrected visual acuity (A: I)
- Measurement of IOP (A: III)
- Gonioscopy when indicated (for neovascularization of the iris or increased IOP) (A: III)

- Slit-lamp biomicroscopy (A: III)
- Dilated funduscopy including stereoscopic examination of the posterior pole (A: I)
- Examination of the peripheral retina and vitreous, best performed with indirect ophthalmoscopy or with slit-lamp biomicroscopy, combined with a contact lens (A: III)

Diagnosis

- Classify both eyes as to category and severity of diabetic retinopathy, with presence/absence of CSME. (A:III) Each category has an inherent risk for progression.

Follow-up History

- Visual symptoms (A: III)
- Systemic status (e.g. pregnancy, Blood Pressure, renal status) (A: III)
- Glycemic status (hemoglobin A1c) (A: I)

Follow-up Physical Exam

- Visual acuity (A: I)
- Measurement of IOP (A: III)
- Slit-lamp biomicroscopy with iris examination (A: II)
- Gonioscopy (if neovascularization is suspected or present or if intraocular pressure is increased) (A: II)
- Stereo examination of the posterior pole with dilation of the pupils (A: I)
- Examination of the peripheral retina and vitreous when indicated (A: II)

Investigations

- Fundus photography is seldom of value in cases of minimal diabetic retinopathy or when diabetic retinopathy is unchanged from the previous photographic appearance. (A: III)
- Fundus photography may be useful for documenting significant progression of disease and response to treatment. (B: III)
- Fluorescein angiography is used as a guide for treating CSME (A: I) and as a means of evaluating the cause(s) of unexplained decreased visual acuity. (A: III) Angiography can identify macular capillary nonperfusion (A: II) or macular edema (or both) as possible explanations for visual loss.
- Fluorescein angiography is not routinely indicated as part of the examination of patients with diabetes. (A: III)
- Fluorescein angiography is not needed to diagnose CSME or PDR, both of which are diagnosed by means of the clinical exam.

Management

Patient Education

- Discuss results or exam and implications. (A: II)
- Encourage patients with diabetes but without diabetic retinopathy to have annual dilated eye exam. (A: II)
- Inform patients that effective treatment for diabetic retinopathy depends on timely intervention, despite good vision and no ocular symptoms. (A: II)
- Educate patients about the importance of maintaining near-normal glucose levels and near-normal Blood Pressure and lowering serum lipid levels. (A: III)

- Communicate with the attending physician, e.g. family physician, internist, or endocrinologist, regarding eye findings. (A: III)
- Provide patients whose conditions fail to respond to surgery and for whom treatment is unavailable with proper professional support and offer referral for counseling, rehabilitative, or social services as appropriate. (A: III)
- Refer patients with significant visual impairment to a provider experienced in vision rehabilitation who can equip the patient with appropriate aids. (A: III)

Diabetic Retinopathy (Management Recommendations)

Management Recommendations for Patients with Diabetes

Severity of Retinopathy	Presence of CSME*	Follow-up (Months)	Scatter Laser (Pan-retinal)	Fluorescein Angiography	Focal Laser†
Normal or minimal NPDR	No	12	No	No	No
Mild to moderate NPDR	No	6-12	No	No	No
Severe or very severe NPDR	Yes	2-4	No	Usually	Usually*^
	No	2-4	Sometimes‡	Rarely	No
Non-high-risk PDR	Yes	2-4	Sometimes‡	Usually	Usually**
	No	2-4	Sometimes‡	Rarely	No
High-risk PDR	Yes	2-4	Sometimes‡	Usually	Usually^
	No	3-4	Usually‡	Rarely	No
High-risk PDR not amenable to photocoagulation	Yes	3-4	Usually‡	Usually	Usually**
	No	1-6	Not	Occasionally	Not

(e.g., media opacities)			Possible††		Possible††
Inactive / involuted PDR	No	6-12	No	No	Usually
	Yes	2-4	No	Usually	Usually

CSME = clinically significant macular edema; NPDR = non-proliferative diabetic retinopathy; PDR = proliferative diabetic retinopathy

* **Exceptions include:** hypertension or fluid retention associated with heart failure, renal failure, pregnancy, or any other causes that may aggravate macular edema. Deferral of photocoagulation for a brief period of medical treatment may be considered in these cases. Also, deferral of CSME treatment is an option when the center of the macula is not involved, visual acuity is excellent, and the patient understands the risks.

† **Adjunctive treatment:** may be considered to include intravitreal corticosteroids or anti-vascular endothelial growth factor agents (off-label use). Data from the Diabetic Retinopathy Clinical Research Network in 2010 demonstrated that, at one year of follow-up, intravitrealranibizumab with prompt or deferred laser resulted in greater visual acuity gain and intravitreal triamcinolone acetonide plus laser also resulted in greater visual gain in pseudophakic eyes compared with laser alone. Individuals receiving the intravitreal injections of anti-vascular endothelial growth factor agents may be examined one month following injection.

^ **Deferring focal photocoagulation** for CSME is an option when the center of the macula is not involved, visual acuity is excellent, close follow-up is possible, and the patient understands the risks. However, initiation of treatment with focal photocoagulation should also be considered because although treatment with focal photocoagulation is less likely to improve the vision, it is more likely to stabilize the current visual acuity. Treatment of lesions close to

the foveal avascular zone may result in damage to central vision and with time, such laser scars may expand and cause further vision deterioration. Future studies may help guide the use of intravitreal therapies including corticosteroids and anti-vascular endothelial growth factor agents in these cases in which laser photocoagulation cannot be administered safely. Closer follow-up may be necessary for macular edema that is not clinically significant.

‡ **Pan-retinal photocoagulation** surgery may be considered as patients approach high-risk PDR. The benefit of early pan-retinal photocoagulation at the severe non-proliferative or worse stage of retinopathy is greater in patients with type II diabetes than in those with type I. Treatment should be considered for patients with severe NPDR and type II diabetes. Other factors, such as poor compliance with follow-up, impending cataract extraction or pregnancy, and status of fellow eye will help in determining the timing of the pan-retinal photocoagulation.

** It is preferable to perform the focal photocoagulation first, prior to pan-retinal photocoagulation laser-induced exacerbation of the macular edema.

Reference:

ICO International Clinical Guidelines, 2010 Adapted from the American Academy of Ophthalmology Summary Benchmarks, November 2006 (www.aao.org).

1.4.3 CONJUNCTIVITIS

History

Questions about the following elements of the patient history may elicit helpful information

- Symptoms and signs
- Duration of symptoms

- Exacerbating factors
- Unilateral or bilateral presentation
- Character of the discharge
- Recent exposure to an infected individual
- Trauma
- Contact lens wear
- Symptoms and signs potentially related to systemic diseases
- Allergy, asthma, eczema
- Use of topical and systemic medication
- Ocular history of previous episodes of conjunctivitis, previous ophthalmic surgery
- Medical history of the following: compromised immune status e.g. HIV, chemotherapy, immunosuppressants
- Current or prior systemic diseases
- Social history about patients lifestyle

Examination

- Initial eye exam includes: VA, external examination, and Slit lamp exam.

External eye exam

- Regional lymphadenopathy (particularly preauricular)
- Abnormalities of lids and adnexae
- Conjuctiva: pattern of injection, subconjuncival hemorrhages, chemosis, cicatricial changes, symblepharon, masses, discharge

Slit lamp biomicroscopy

- Eye lid margins
- Eyelashes
- Lacrimal puncta and canaculi
- Tarsal and fornicealconjuctiva
- Bulbar conjuctiva
- Cornea:
    - Anterior chamber/Iris
    - Dye staining pattern

Ancillary tests

- Bacterial conjunctivitis: smears for cytology (gram stain) and culture + sensitivity.
- Chlamydia: Giemsastain, Immunologically based diagnostic tests e.g. direct immunofluorescent antibody tests, Elisa & PCR.
- Conjunctival biopsy in conjunctivitis unresponsive to therapy; r/o neoplasm
- Thyroid function tests in Superior Limbic Keratoconjunctivitis (SLK) in cases without known thyroid disease.

Management

- Directed at root cause of the conjunctivitis.
- Avoid indiscriminate use of corticosteroids and antibiotics.
- Corticosteroids can worsen herpes simplex infection and can potentially prolong adenoviral infections.

- Antibiotics can induce toxicity.

1.4.4 ALLERGIC CONJUNCTIVITIS

1.4.4.1 Seasonal / Venal keratoconjunctivitis / Atopic keratoconjunctivitis

Always try to grade the disease, this guides the treatment to be administered and is very important in order to minimize the potential for development of drug related side effects.

SEVERITY	PRESENTATION	TREATMENT
Grade 0 **(quiescent)**	Disease was present in past **but no current symptoms**. • Absent/mild conjuctival hyperemia • No conjuctival secretions • **Inactive** mild - moderate papillary reaction (+1 up to +3) • No Trantas dots or corneal involvement.	No treatment necessary
Grade 1 **(mild)**	Mild and **occasional symptoms** • Mild conjuctival hyperemia • Absent/mild conjuctival secretions • Mild – moderate papillary reaction (+1 up to +3) • No Trantas dots or corneal involvement.	Mast cell stabilizers or anti-allergic (antihistamine) eye drops or combined antihistamine and mast cell stabilizers e.g. olopatadine, +/- Lubricant eye drops

Grade 2 **(moderate)**	Mild – moderate **persistent symptoms.** • Mild- moderate conjuctival hyperemia • Mild- moderate conjuctival secretions • Mild – severe papillary reaction, active • No Trantas dots, SPK's may be present	Low dose of low potent steroid e.g. Fluomethalone eye drops Mast cell stabilizers or anti-allergic (antihistamine) eye drops or combined antihistamine and mast cell stabilizers e.g. olopatadine, +/- Lubricant eye drops
Grade 3 **(Severe)**	Moderate – **severe persistent symptoms** • Moderate to severe conjuctival hyperemia • Moderate – severe conjuctival secretions • Moderate – severe papillary reaction (+3 to +4), active • Few Trantas dots may be present +SPK	Increase frequency of low dose steroid and taper Daily administration of anti-allergic eye drops /mast cell stabilizers +/- lubricants Cyclosporine A eye drops
Grade 4 **(very severe)**	**Severe and persistent symptoms** • Moderate – severe conjuctival hyperemia • Mucus discharge on ocular surface &	High dose steroid and taper Mast cell stabilizers/lubricants/ anti-allergic Cyclosporine A and Supratarsal steroid

	between papillae • Moderate – severe papillae (+3 to +4), active • Numerous Trantas dots may be present (>+3) • Corneal erosion / ulceration	injection (if no improvement)
Additional measures	-Cool compresses -Oral antihistamines -Allergen avoidance - In severe sight threatening AKC, not responsive to therapy, systemic immunotherapy may rarely be warranted - Need for consultation with dermatologist	

1.4.4.2 Giant Papillary Conjunctivitis (GPC)

Treatment involves modifying the causative agent, e.g

- Removal of protruding sutures, rotating the knots or use of therapeutic contact lenses.
- Cleaning and polishing ocular prostheses that cause GPC.

GPC related to contact lens wearing

- Assess contact lens fit
- Change contact lenses frequently
- Decrease contact lens wearing time
- Use preservative free contact care systems

- Use mast cell stabilizing agents
- Switch to disposable lenses (daily wear)

Moderate – Severe GPC

- Discontinue contact lens wear for weeks- months and use brief course of topical corticosteroid

1.4.5 VIRAL CONJUNCTIVITIS

1.4.5.1 Adenoviral conjunctivitis

- Highly contagious condition
- No effective treatment for adenovirus (does not respond to antivirals)
- Use artificial tears, topical antihistamines, cold compresses
- In membranous conjunctivitis debridement of membranes may be considered to improve comfort

NB: Topical corticosteroids can be used to reduce symptoms in severe cases of adenoviral keratoconjuctivitis (i.e. marked chemosis, lid swelling, membranous conjunctivitis).Topical steroids may prolong viral shedding (patients on corticosteroids may remain infective for longer periods).

Avoid in Patients with severe disease i.e. corneal epithelial ulceration.

1.4.5.2 Herpes Simplex Virus Conjunctivitis

- Topical and/or oral antiviral treatment is recommended to prevent corneal infection e.g. topical Acyclovir 0.3%, Ganciclovir gel 0.15%, 3-5 times per day.
- Oral Acyclovir 200-400mg 5 times per day or Valacyclovir 500mg, 2-3 times per day.

- Topical antivirals may cause toxicity if used for > 2 weeks.
- Topical corticosteroids potentiate HSV infection and should be avoided.
- Neonates: involve pediatrician because systemic HSV infection is life threatening.

1.4.5.3 Varicella Zoster Virus (VZV) conjunctivitis

- Children with chicken pox may have conjunctivitis.
- Prescribe topical antibiotics to prevent secondary bacterial infection.
- Topical antivirals are not effective.
- When treatment seems justified, use oral acyclovir 800mg 5 times a day for 7 days or valacyclovir 1gm 3 times a day for 7 days.
- Make use of aggressive treatment for immunocompromised patients.

1.4.5.4 Molluscumcontagiosum conjunctivitis

- Conjunctivitis and keratitis are due to viral shedding from eyelid lesion into the eye surface
- Lesions may resolve spontaneously
- Treatment indicated in symptomatic patients
- Options:
- Incision + curettage (aggressive enough to cause bleeding)
- Simple excision
- Excision + cautery and cryotherapy.

1.4.6 BACTERIAL CONJUNCTIVITIS

- Choice of antibiotic is initially empirical (mainly broad spectrum) and is later guided by sensitivity to results.
- Systemic antibiotics are necessary for N. Gonorrhoea & Chlamydia conjunctivitis; topical therapy is also usually added
- Gonococcal conjunctivitis
    - Ceftriaxone Igm IM, single dose
        - Children (<18 years) 125mg, single dose.
        - Neonates: 25-50mg/kg iv/im, single dose. Do not exceed 125mg.
- Chlamydial conjunctivitis (follicular conjunctivitis that persists for weeks)
    - Adults
        - Azithromycin 1gm single dose orally or Doxycycline 100mg twice a day for 1 week.
    - Children (<18 years)
        - Erythromycin syrup, 50mg/kg/day in 4 divided doses for 2 weeks.
    - Other measures
        - Saline lavage
        - Review of patient's sexual partner in STD clinic for evaluation

1.4.7 MECHANICAL/IRRITATIVE/TOXIC CONJUNCTIVITIS

1.4.7.1 Superior Limbic Kerato-conjunctivitis (SLK)

Mild cases

- Treat dry eyes with lubricants, mast cell stabilizers, cyclosporine, soft contact lenses and/or punctual occlusion.

Filamentary keratopathy

- May occasionally respond to topical 10% Acetylcysteine

Persistent cases

- May require surgery to tighten redundant conjunctiva e.g. cautery or conjunctival resection.

Investigate for underlying thyroid disease (thyroid function tests)

1.4.8 IMMUNE MEDIATED CONJUNCTIVITIS

1.4.8.1 Ocular mucus membrane pemphigoid (OMMP)

- If using drugs associated with medication induced OMMP, a trial discontinuation of the medication should be attempted
- Topical corticosteroids may aid in acute inflammation
- Systemic immunosuppressive therapy is usually required
- Systemic corticosteroids may be used to control inflammation initially and then immunosuppressive therapy

Patient education/ Referral

- Counseling is vital in all contagious cases of conjunctivitis to minimize spread of the disease.
- Frequency of follow up is based on severity of disease presentation, etiology and treatment.

References

Adapted from the American Academy of Ophthalmology Cornea/External Disease Panel.

Preferred Practice Pattern Guidelines.Conjunctivitis American Academy of ophthalmology; 2011. Available at www.aaa.org/ppp

1.4.9 PRIMARY OPEN ANGLE GLAUCOMA

Initial Evaluation

In completing the elements in the comprehensive adult medical eye evaluation, the ophthalmic evaluation specifically focuses on the following elements:

- History (A: III)
- Visual acuity measurement (A: III)
- Pupil examination (B: II)
- Anterior segment examination (A: III)
- Intraocular pressure measurement (A: I)
- Gonioscopy (A: III)
- Optic nerve head and retinal nerve fiber layer examination (A: III)
- Fundus examination (A: III)

Ancillary Tests

- Supplemental ophthalmic testing includes the following components:
- Central corneal thickness measurement (A: II)
- Visual field evaluation (A: III)

- Optic nerve head and retinal nerve fiber layer analysis (A: II)

Management

Goals

- Controlled IOP in the target range: It is reasonable to select an initial target pressure at least 25% lower than pre-treatment levels. Choosing an even lower target IOP can be justified if there are more severe optic nerve damage, if the damage is progressing rapidly, or if other risk factors such as family history, age, or disc hemorrhages are present
- Stable optic nerve/retinal nerve fiber layer status
- Stable visual fields

Therapeutic Choices

- Medical treatment
- Laser therapy
- Incisional glaucoma surgery (alone or in combination).

N.B. The choice of initial therapy depends on numerous considerations, and discussion of treatment with the patient should include the relative risks and benefits of the three options. (A: III)

Medical treatment

- Prostaglandin analogs and beta-blockers are the most frequently used initial eye drops for lowering IOP in patients with glaucoma.
- Prostaglandin analogs are the most effective drugs at lowering IOP and can be considered as initial medical therapy unless other considerations such as cost, side effects, intolerance, or patient refusal preclude this. (A: I)

- Other agents in addition to prostaglandin analogs and beta-blockers include
- Alpha2 adrenergic agonists
- Parasympathomimetics
- Topical and oral Carbonic Anhydrase inhibitors.
- If a single medication is effective in lowering IOP but the target pressure is not reached, combination therapy or switching to an alternative therapy may be appropriate.

Laser trabeculoplasty

- Laser trabeculoplasty can be considered as initial therapy in selected patients (A: I) or an alternative for patients who cannot or will not use medication reliably due to cost, memory problems, difficulty with instillation, or intolerance to the medication

- Perioperative care in laser trabeculoplasty The ophthalmologist who performs the laser surgery has the following responsibilities: (A: III)
- Obtain informed consent from the patient or the patient's surrogate decision maker after discussing the risks, benefits, and expected outcomes of surgery (A: III)
- Ensure that the preoperative evaluation confirms the need for surgery (A: III)
- Perform at least one IOP check within 30 minutes to 2 hours of surgery (A: I)
- Perform a follow-up examination within 6 weeks of surgery or sooner if there is concern about IOP-related damage to the optic nerve during this time (A: III)

Incisional glaucoma surgery

- Trabeculectomy
    - Antifibrotic agents may be used intra-operatively and post-operatively to reduce the subconjunctival scarring after filtration surgery that can result in failure of the operation.
- Aqueous shunts. Aqueous shunts have traditionally been used to manage medically uncontrolled glaucoma when trabeculectomy has failed to control IOP or is deemed unlikely to succeed.
    - This includes eyes with neovascular glaucoma, uveitic glaucoma, extensive conjunctival scarring from previous ocular surgery or cicatrizing diseases of the conjunctiva, and congenital glaucoma in which angle surgery has failed. However, the indications for using aqueous shunts have been broadening, and these devices are being increasingly utilized in the surgical management of glaucoma.
- Perioperative care in incisional glaucoma surgery. The ophthalmologist who performs incisional glaucoma surgery has the following responsibilities: (A: III)
    - Obtain informed consent from the patient or the patient's surrogate decision maker after discussing the risks, benefits, and expected outcomes of surgery (A: III)
    - Ensure that the preoperative evaluation accurately documents the findings and indications for surgery (A: III)

- Prescribe topical corticosteroids in the postoperative period (A: II)
- Perform a follow-up evaluation on the first postoperative day (12 to 36 hours after surgery) and at least once during the first 1 to 2 weeks to evaluate visual acuity, IOP, and status of the anterior segment (A: II)
- In the absence of complications, perform additional postoperative visits during a 6-week period to evaluate visual acuity, IOP, and status of the anterior segment (A: III)
- Schedule more frequent follow-up visits, as necessary, for patients with postoperative complications such as a flat or shallow anterior chamber or evidence of early bleb failure, increased inflammation, or Tenon's encapsulated bleb formation (A:III)
- Undertake additional treatments as necessary, including injection of anti-fibrotic agents, repair of bleb leaks, bleb massage, suture lysis, bleb needling, or other surgical revisions of the bleb or surgical procedures to correct a flat anterior chamber to maximize the chances for a successful long-term result
- Explain that filtration surgery places the eye at risk for endophthalmitis for the duration of the patient's life, and that if the patient has symptoms of pain and decreased vision and the signs of redness and discharge, he or she should notify the ophthalmologist immediately

RECOMMENDED GUIDELINES FOR FOLLOW-UP GLAUCOMA STATUS EVALUATIONS WITH OPTIC NERVE AND VISUAL FIELD ASSESSMENT(B: III) *			
Target IOP Achieved	**Progression of Damage**	**Duration of Control (months)**	**Approximate Follow-up Interval (months)****
Yes	No	≤6	6
Yes	No	>6	12
Yes	Yes	NA	1–2
No	Yes	NA	1–2
No	No	NA	3–6

Counseling / Referral

- It is important to educate and engage patients in the management of their condition.
- Patients should be educated about the disease process, the rationale and goals of intervention, the status of their condition, and the relative benefits and risks of alternative interventions so that they can participate meaningfully in developing an appropriate plan of action (A: III)
- Patients should be encouraged to alert their ophthalmologists to physical or emotional changes that occur when taking glaucoma medications (A: III)
- The diagnosis of glaucoma can itself lead to negative psychological effects and to fear of blindness.
- Glaucoma affects the patient's visual and health-related quality of life in many ways this includes employment issues (e.g., fear of job loss and insurance from diminished ability to read and drive), social issues (e.g., fear of negative impact on relationships and sexuality), and loss of

independence and activities that require good visual acuity (e.g., sports and other hobbies). The ophthalmologist should be sensitive to these problems and provide support and encouragement. (A: III)

- Some patients may find peer-support groups or counseling helpful.
- Patients considering keratorefractive surgery should be informed about the possible impact laser vision correction can have on reducing contrast sensitivity, altering visual field testing results, and decreasing the accuracy of IOP measurements. (A:III)

Recommendations

- If the diagnosis or management of POAG is in question, or if the condition is refractory to treatment, consultation with or referral to an ophthalmologist with special training or experience in managing glaucoma should be considered.
- Patients with substantial visual impairment or blindness can be referred to and encouraged to use appropriate vision rehabilitation and social services. (A: III

Reference

1. ICO International Clinical Guidelines, 2010 Adapted from the American Academy of Ophthalmology Summary Benchmarks, November 2006 (www.aao.org)

1.4.10 REFRACTIVE ERRORS

1.4.10.1 Myopia

Diagnosis of Myopia

- Comprehensive eye and vision examination
- Emphasis on patient history
- Check whether Myopia is Simple, Nocturnal, Pseudomyopia, Degenerative or Induced
- Visual acuity
- Refraction
- Ocular Motility, Binocular Vision, and Accommodation
- Ocular Health Assessment and Systemic Health Screening

Ancillary Tests

- Fundus photography
- A- and B-scan ultrasonography
- Visual fields
- Fasting blood sugar (e.g., to identify causes ofinduced myopia)

Management

- Optical Correction (spectacles or contact lenses)
- Medical (Pharmaceutical)
- To stop accommodation: Cycloplegic agents: Atropine 1% Twice daily for treatment of pseudomyopia
- For pediatric patients

- Infants and toddlers: It is generally not necessary to correct myopia of less than about 3D
- Preschool children: Myopia of more than 1.00-2.00 D should be corrected. If the myopia is left uncorrected, the preschool myopic child should be examined at 6-month intervals.
- Vision screening programs should use distance visual acuity of 6/12, or 1.00 D of myopia, as the criterion for referral
- Adolescent and Adult
- Significant degree of myopia to improve distance visual acuity
- In cases of high exophoria or intermittent exotropia, a prescription for fulltime wear of the full refractive correction for myopia is warranted.
- An option for the patient with very low ametropia is to try to improve the visual environment before prescribing lenses. For example, an option for parents of a grade school child with 0.50 D of myopia who complains of difficulty seeing the chalkboard from the back of the classroom is to ask the teacher to move the child toward the front of the room.
- Myopic Astigmatism: In cases of compound myopic astigmatism, some cylinder correction should generally be incorporated in the prescription when the amount of astigmatism is>0.50 D

Patient Education

- Inform parents of children with myopia almost always increases in severity until the progression slows or stops in the mid to late teens.

- Instructions should be given concerning the frequency of wearing spectacles or contact lenses.
- Educate patients and parents about the importance of regular follow-up care.
- Patients with degenerative myopia should be advised to have annual or frequent eye and vision examinations, depending upon the severity of ocular changes.

1.4.11 HYPEROPIA

Clinical assessment

- Patient History
- Chief complaint, health history, family history, use of medication, medication allergies, and vocational and avocational vision requirements
- Clinical Examination
- Visual acuity for distance and near
- Refraction (Cycloplegic in children and young adults)
- Ocular Motility, Binocular Vision, and Accommodation
- Ocular health assessment

Management

- Optical correction
- Vision therapy
- Modification of the patient's habits and environment (reduction in visual demand)
- Young Children (birth-10 years of age)

- With low to moderate hyperopia, but without strabismus, amblyopia, or other significant vision problems:
    - Usually require no treatment.
- With occasional evidence of decreased visual acuity, binocular anomalies, or functional vision problems
    - May signal the need for treatment.

- Older Children and Pre-Presbyopic Adults (Ages 10-40 Years)
    - No symptoms
        - Corrections not required. Any hyperopia with symptoms should be treated
    - Accommodative or binocular dysfunction associated with uncorrected low-to-moderate hyperopia
        - Either optical correction or vision therapy

Patient Education

- Education about hyperopia is especially important for parents and children for whom amblyopia, strabismus, and learning-related issues are critical.
- All patients, regardless of age with the characteristics of having a refractive error, should also receive education about how their visual environment and their personal habits affect their visual status.

Follow-up

- Younger children with significant hyperopia require intensive follow-up and treatment starting as early as 3-6 months of age.
- Children with hyperopia may require follow-up as often as every 3-6 months, depending upon the concern for development of strabismus and/or amblyopia.
- For asymptomatic adults, a follow-up every 1 or 2 years is generally sufficient.

1.4.12 PRESBYOPIA

Clinical assessment

- Patient History: Obtaining information about occupation and vocational activities

Ocular Examination

- Visual acuity. Both distance and near
- Refraction
- Binocular Vision and Accommodation
- Ocular Health Assessment and Systemic Health Screening

Management

- Management will be specific to the occupational and vocational needs of the patient
- Optical correction with spectacle lenses
- Optical correction with contact lenses
- Incipient presbyopia

- The patient who does little near work, or who does not experience significant difficulties or discomfort from doing near work, does not require correction.
- Functional presbyopia
- Patients with functional presbyopia should be corrected and it's advisable to increase the power of the addition gradually over 6 to 12 months to avoid patient adaptation difficulties.

Patient Education

- Patients using multifocal and bifocal lenses may experience adaptation difficulties and need appropriate education.
- Initial review after prescription in 3 months
- Additional Follow-ups are required every 2-3 years

Reference

1. The American Optometric Association optometric clinical practice guideline care of the patient with myopia

2. The American Optometric Association optometric clinical practice guideline care of the patient with Presbyopia

3. The American Optometric Association optometric clinical practice guideline care of the patient with hypermetropia

1.4.13 OCULAR TRAUMA

1.4.13.1 EYELID LACERATION

Clinical assessment

- History: determine mechanism of injury
- Complete ocular examination
- Determine the depth of the laceration

Ancillary test

- In case of any suspected head injury
    - Cranial x-ray
    - CT scan of brain and orbits

Management

Medical

- Tetanus prophylaxis
- Systemic antibiotics if contamination or foreign body is suspected: Cloxacilline 500mg 3 times daily for 5-7 days
- OR, available broad spectrum antibiotic
- Non-Steroidal Anti-Inflammatory : Brufen 400 mg 3 times daily for 3-5 days.

OR

Surgical

- Eyelid lacerations repair
- Clean the area of injury and surrounding skin (Povidone–Iodine)

- Local subcutaneous anesthetic (2% Lidocaine with Epinephrine)
- Irrigate the wound aggressively with saline in a syringe
- Explore the wound carefully for foreign bodies
- Isolate the surgical field with a sterile eye drape
- Place a drop of topical anesthetic (Proparacaine)
- Non-marginal eyelid laceration repair: See steps above. Then close the skin with interrupted 6-0 nylon sutures
- Apply antibiotic ointment (Bacitracin) to the wound t.i.d (3 times a day)
- Marginal lacerations: Margin should be well apposed with 6-0 nylon sutures and should be cut long and fixed on the skin to avoid corneal irritation

Follow-Up

- If non absorbable sutures are used (e.g., silk), eyelid-margin sutures should be left in place for 5 to 10 days, and other superficial sutures for 4 to 7 days.

1.4.14 CORNEAL ABRASIONS

Clinical assessment

- Stain
- Measure and draw the abrasion
- Evaluation for AC reaction
- Corneal infiltrates or penetrating trauma
- Eversion the eye lids to rule out any foreign body

Management

- Pad the eye overnight
- Application of topical antibiotic ointment or drops: Chloramphenicol q.i.d 3-5 days
- Pain relief: Cycloplegic eye drops (Homatropine 2%, qid) and give oral analgesic drugs (Ibuprofen 400 mg, PRN)

Initial Follow-up

- Within 24 hours and subsequent follow-up after 2-3 days
- Continue antibiotic cover for 2-3 days beyond healing of the epithelial defect
- If corneal ulcer develops, manage according to guidelines as given under infective keratitis

1.4.15 CORNEAL FOREIGN BODY

Clinical assessment

- Documentation of the visual acuity which may require the use of topical anesthetic
- Drawing its location
- Evaluating for AC reaction, corneal infiltrates, corneal laceration or penetrating trauma
- Rule out perforation by performing Siedel's test

Evert the eye lids to make certain that there is no foreign body present

Management

- Good illumination using a slit lamp (an operating microscope is preferred)

- Remove the foreign body using the step wise protocol, starting with the least invasive methods
- Once foreign body has been removed it is important to eliminate any remaining cellular debris or rust
- Subsequent management is similar to corneal abrasion
- X-ray if it's a penetrating injury and to rule out any IOFB
- Removal of corneal foreign body
    - If patient is cooperative and there is no evidence of perforation then the foreign body can be removed under topical anesthesia using a slit lamp or an operating microscope.

Step wise approach

- Smaller objects may simply involve a direct stream of sterile irrigating solution.
- A more tenaciously stuck corneal foreign body can be removed using a moistened cotton-tipped applicator.
- More deeply embedded objects may require a 26-gauge bent needle tip

Recommendations

- It is important to inspect the fornices and palpebral conjunctiva for additional foreign matter, after ruling out perforation.
- Eliminate any remaining cellular debris or rust, as well as any ragged or non-viable epithelial tissue surrounding the wound.
- If perforation is suspected follow the treatment protocol for corneal perforation.

1.4.16 CORNEO-SCLERAL LACERATION

Clinical assessment

- Check visual acuity
- Check ocular motility
- Evaluate the conjunctiva, sclera, and cornea, checking for extension beyond the limbus in cases involving the corneal periphery
- Evaluate the depth of the Anterior Chamber and compare with the fellow eye
- Medical and surgical clearance for general anesthesia
- Appropriate consent

Ancillary tests

- Ultrasound
- X-ray orbit

Management

- Disrupted lens , incarcerated vitreous, intraocular foreign bodies should be removed , restoration of the normal anatomic relationship like repair of iridiodialysis
- It is useful to follow a hierarchical protocol starting with:
- The simplest laceration and methodically progressing to more complex injuries and repair techniques
- Minimize scarring and prevent distortion of the wound by proper suturing techniques
- Use of a traumatic needles and inert mono-filament suture materials

- Any iris tissue which is adherent should be removed from the wound an intact iris lens diaphragm should be retained, if possible

Preventive Measures/patients education

- The most important aspect of ocular trauma is prevention.
- Education regarding masterly watchful inactivity and supervised play, the concept of child-proofing of houses, schools and play areas, the hazardous nature of firecrackers, and road safety measures is critical.

1.4.17 RUPTURED GLOBE

Clinical assessment

- History related to the trauma
- Visual acuity
- Motility
- Check for proptosis , severe subconjunctival hemorrhage (especially involving
- 360 degrees of bulbar conjunctiva, often bullous), a deep or shallow AC compared to the fellow eye, peaked or irregular pupil, lens material in the AC.

Ancillary tests

- X-ray or CT scan when appropriate
- Ultrasound if necessary (carefully)

Management

- Admit patient and prepare for GA

- Systemic antibiotics should be administered within 6 hours of injury or at the earliest possible time. For adults, give Cefotaxime1g i.v. every 8 hours or Vancomycin 1 g i.v. every 12 hours
- Administer tetanus toxoid
- Analgesia before and after surgery

1.4.18 TRAUMATIC HYPHEMA

Clinical Assessment

- History of trauma, time and type of injury, medication with anticoagulant properties (Aspirin, NSAIDs], personal and family history of sickle cell disease/trait, Symptoms of coagulopathy
- Visual acuity
- Check for IOP
- Corneal clarity
- Quantify the hyphema and check for presence of clots
- Perform a dilated retinal evaluation when possible

Ancillary test

- Ultrasound when necessary
- Screen for sickle cell trait or disease when suspected

Management

- Hospitalization with bed rest or to limited activity: > 50% of hyphema, blood dyscresia, sickle cell, elevated intra-ocular pressure, severe trauma
- Elevate head of bed to allow blood to settle

- Place a shield (metal or clear plastic) over the involved eye at all times especially in children.
- Atropine 1% solution b.i.d. to t.i.d.
- Use topical steroids (Prednisolone acetate 1% 4 to 8 times per day)
- Antifibrinolytic agent ; Aminocaproic acid :50 mg/kg PO every 4 hours for 5 days, Tranexamic acid
- For increased IOP (>30 mm Hg)
    - Start with a beta-blocker (e.g., Timolol or Levobunolol 0.5% b.i.d.)
    - If IOP still high, add topical alphaagonist (e.g., Apraclonidine 0.5%, or Rimonidine 0.2% t.i.d.) or topical Canhydrase Inhibitor (e.g., Dorzolamide 2%, or Brinzolamide 1% t.i.d.)
    - If topical therapy fails, add Acetazolamide (500 mg p.o., every 12 hours for adults,) or Mannitol (1 to 2 g/kg IV over 45 minutes every 24 hours)

Surgical

- Indications for surgical evacuation of hyphema
    - Corneal stromal blood staining
    - Significant visual deterioration.
    - Hyphema that does not decrease to <50% by 8 days.
    - IOP >60 mm Hg for >48 hours, despite maximal medical therapy.
    - IOP >25 mm Hg with total hyphema for >5 days.

Follow-Up

- Patient with < 50% hyphema can be discharged if they can comply with follow-up
- The patient still has hyphema on discharge , should be seen daily for 3 days
- The patient should be instructed to return immediately if a sudden increase in pain or decrease in vision is noted
- After the initial close follow-up period, the patient may be maintained on a long-acting cycloplegic (e.g., atropine 1% solution q.d. to b.i.d. Topical steroids may be tapered
- The patient must refrain from strenuous physical activities for 1 week after the complete resolution of the hyphema
- Four weeks after resolution of hyphema: Do gonioscopy and dilated fundus examination with scleral depression for all patients

PART 2: Oral health

2 ORAL HEALTH GUIDELINES

2.1 Introduction

Data reported in the Annual Health Statistics Booklet 2013 shows that oral diseases contribute to 26% of overall morbidity in Rwanda and it is the first cause of OPD in Rwanda. Information from the planning workshop confirms that the burden of disease of oral health is mainly represented by dental caries and abscess (periapical, periodontal, cellulitis, Ludwig angina) and gum and periodontal disease.

Facility data of CHUK shows that 60% of total outpatients have dental caries. The burden is mainly explained by low dental hygiene and a diet rich of sugar. The burden is recently affecting more children, mainly for the new living styles coming with urbanization. Brushing (teeth, tongue) correctly can prevent the risk of having dental caries up to 90%.

The gum and periodontal disease it's prevalent in aged people. Access to service is not high as many aged people don't feel the need to come for consultation. It is a treatable condition and can be prevent with oral hygiene. If not treated appropriately it has an impact on diabetes.

2.2 Package of services at different level – Oral Health

Facility Level	Providers	Clinical Services	Lab/Equipment	Imaging Services	Surgery
Referral or Specialty Hospital	Interns General Dentists Residents Maxillo facial surgeons Orthodontist Pediatric dentist Periodontist Endodontist Implantologist Prosthodontist Restorative dentist Lab technicians (for both Prosthodontics and Orthodontics) Oral pathologist Dental nurse/General nurses	Diagnosis and All treatment priorities for oral conditions, Specialized treatment procedures for all oral health specialty Trauma that needs advanced management Craniofacial surgery Elaboration of clinical guideline	Apart from general medical equipment High level Prosthetics & Orthodontic lab immunostaining Histopathology Specialized equipment • Complete Dental unit • Maxillofacial complete set • Orthodontic complete set • Prosthodontics complete set • Restorative complete set • Endodontic complete set • Implant complete set	CT scan (Cone beam), MRI, Digital X ray: peri-apical Orthopanthomogram 3D Ultrasound	Advanced maxillofacial services Craniofacial surgery Orthodontic treatment Prosthodontic
Provincial Hospital	Pediatric dentist Periodontist Endodontist Prosthodontist Restoratives dentists Lab technicians (for both	Diagnosis and Treatment priorities for oral conditions, Mentorship of district hospitals Basic surgical	Apart from general medical equipment, Moderate level Prosthetics and Orthodontics lab Histopathology lab Specialized equipment • Complete dental unit	Peri-apical Orthopanthomogram 3D Ultrasound	

Facility Level	Providers	Clinical Services	Lab/Equipment	Imaging Services	Surgery
	Prostodontics and Orthodontics) General Dentists Dental nurse/General nurses	procedures and biopsy Minor Trauma (above district hospital level)	• Restorative set • Endodontic set • Prosthodontic set • Orthodontic set • Periodontology set		
District Hospital	General Dentists Dental Hygienist Dental Assistant	Diagnosis and early stage treatment Preliminary diagnosis, General treatment Mentorship and supervision of health centres Monitoring prevention of oral diseases in health centres Minor trauma in both adults and children	Apart from general medical setting Specialized equipment • Complete dental unit • Minor oral surgery set • Restorative set • Endodontic set	Orthopantomogram Periapical x-ray	Restoration- Minor surgery Prosthodontics Periodontal treatment-Scaling, root planning, surgery Screening of precancerous lesion and other tumors Prevention – pediatric Goal-2 chairs in 5 years
Health Center	Dental therapist /Dental hygienist Dental nurse/General nurse	Primary prevention of oral diseases (Prophylactic scaling, root planning, ART, Fluoride application)	Specialized equipment • Simple dental unit • ART set • Prophylactic set • Scaling set	Periapical x-ray	Primary prevention of all oral conditions and diseases ART,

Facility Level	Providers	Clinical Services	Lab/Equipment	Imaging Services	Surgery
		Screening of premalignant lesion) Information Education and Communication (IEC) to community Mentoring community health workers Emergency treatment such simple extraction)	• Tooth extraction set • Teaching models and charts		Goal-1 dental chair per HC
Community	Community Health Workers, Schools, community-based organizations	Oral health education and promotion Referral of patients to Health Centers	Teaching models and charts	None	Oral health education and promotion at community, schools

2.3 Bacterial infections

2.3.1 DENTAL CARIES

Definition

It is a multifactorial disease of the calcified tissue of teeth characterized by demineralization of the inorganic portion and destruction of the organic substance of the tooth resulting in cavitation.

Causes

- Oral Bacteria (streptococcus and lactobacillus)
- Predisposing factors include susceptible tooth surface, time of exposure, acids and refined sugars as well as immune response diseases and post-irradiation

Signs and symptoms

- White spot which progress into cavitation
- Dentine irritation of the pulp (hyperemia) may occur
- Discomfort or toothache or sensitivity to hot or cold foods and beverages
- Change in texture of the lesion from hardness to softness (pathognomonic sign)
- Change in colour, white spot to brown-yellow, then black lesion
- Severe swelling or pain in the jawbone

Clinical Diagnosis

- Visual examination – view of colour changes
- Tactile examination – probe the cavities

Investigations

- Radiography of the tooth – radioluscency which shows presence of cavities:
    - Intraoral periapical radiograph IOPA
    - Occlusal radiograph
    - Bitewing radiograph
    - OPG (Orthopantomogram) - optional
- Fiber optic trans-illumination

Complications

- Reversible or irreversible pulpitis
- Pulp necrosis (death of the pulp)
- Periapical periodontitis
- Periodontal/dental alveolar abscess
- Dental sinus
- Ludwig's angina
- Osteomyelitis of the jaw bone

Management

- Depends on the pathological stage and progression of the lesion:
- When the lesion is limited within the enamel:
    - Oral hygiene
    - Dietary control instructions / counseling

- Use of topical fluorides (mouth wash, fluoridated toothpastes; chair-side clinical prevention methods, varnishes, gels)
- Apply preventive measures: fluoride varnish or gel – for smooth surfaces, and/or fissure sealants

- When the lesion involves dentine : **DENTINITIS**
  - Signs and symptoms
    - Presence of cavitation
    - Discomfort; toothache or sensitivity to physical and chemical stimulus: cold, hot and sweet food
    - Change in texture of the lesion from hardness to softness (pathognomonic sign)
    - Change in colour, white spot to brown-yellow may be black lesion
    - Pain on probing
  - Investigations
    - Radiography of the tooth - radiolucency which shows presence of cavities : intra oral periapical radiography (IOPA)
    - Occlusal radiography
    - Bitewings radiography
    - Ortho panthomogram radiography(OPG)
    - Fiber optic trans-illumination
  - Complications
    - Pulpitis

- Management

- Local anesthesia
- Preparation of the cavity
- Dry the cavity
- Place a lining material: calcium hydroxide. Zinc oxide IRM
- Place a base: Zinc oxide-eugenol, Glass ionomer cement. Phosphate cement
- Place a permanent restorative material: Amalgam, composite, Glass Ionomer Cement
- Prescribe a mouthwash for oral hygiene
- When the lesion has affected the pulp but has not caused pulpexposure, refer to treatment of pulpitis.

2.3.2 DENTAL ABSCESS

Definition

It is a circumscribed purulent infection of the periodontal tissues, distinguished according to the location and the origin of infection.

Causes

- Odontogenic infection
- Trauma
- Periodontitis
- Predisposing factors include immunosuppressing conditions, post-irradiation, and immunosuppressive drugs

Signs and symptoms

- A cute or mild pain

- Fever and malaise
- Localized lymphadenopathy
- Fluctuating swelling localised at the periapical region or extended to facial spaces
- Facial asymmetry due to the swelling
- Tender shiny skin, with raised local temperature

Investigations

- X-ray
- Bacteriology: direct microscopy
- Pus swab for culture and sensitivity

Complications

- Fascia spaces infection
- Cellulitis
- Ludwig's angina (Flagmore)
- Osteomyelitis
- Mediastinitis
- Septicemia
- Death

Management

Surgical

- Disinfection of the site of the abscess
- Incision and drainage of the abscess
- Irrigation with Povidone iodine or Hydrogen Peroxide 3%

Pharmaceutical management

- Mouthwash with antiseptic
- Amoxicillin caps PO, 500mg x 3/day/7 days +
- Metronidazole tabs PO, 500 mgx3 per day/7days
- Paracetamol PO 500mgx3/day/5days

Alternative treatment

- Amoxicillin-clavulanic acid: caps 625mg x 3/day/7 days for adults and syrup 50mg/kg/day divided in three doses/7days for children
- Cloxacillin caps PO:, 50-100 mg/kg/day divided in 3 doses for 7 days
- Ibuprofen tabs PO, 30mg/kg/day/in three doses for 5 days
- Erythromycin tabs PO: 250-500mgx3/day/7days for adults; syrup 12.5 – 25mg/kgx4/day/5days

Recommendations

- Regular dental check up twice a year
- For patient with some systemic conditions (hypertension, diabetes, rheumatic heart diseases):
    - Particular attention to oral hygiene
    - Regular check up every trimester
    - Request a medical report from the treating doctor
    - Any procedure should be done under antibiotic prophylaxis
    - Close collaboration between the two treating doctors (physician and dental surgeon)

2.3.3 CHRONIC PERIODONTITIS

Definition

Is the presence of gingival inflammation at sites where there has been apical migration of the junctional epithelium into root surface with concomitant loss of connective tissue and alveolar bone.

Causes

- Accumulation of plaque retention factors e.g. calculus, overhanging fillings etc.
- Associated with specific bacterial agents:
- More spirochetes
- More anaerobic (90%) and G-(75%).
- P. gingivalis, P. intermedia, AA, Eikenella corrodens, treponema denticola etc. Porphyromonas Gingivalis invade host cells. Some virus: EBV1, HCMV.

Clinical signs and symptoms

- Gingival inflammation (colour and texture alteration)
- Bleeding on probing
- Periodontal pocketing
- Loss of clinical attachment
- Loss of alveolar bone
- Enlargement or recession of the gingiva
- Root formation exposure
- Increased root mobility
- Drifting of teeth

- Exfoliation of teeth
- Halitosis
- Severe pain

Investigations

- Periapical x-ray and
- OPG x-ray

Complications

- Facial cellulitis
- Dental abscess
- Jaw osteomyelitis
- Recurrence of periodontitis
- Tooth loss
- Tooth flaring or shifting

Management

- In case of periodontitis it has been recommended that severity can be characterized on the basis of clinical attachment loss as follows:
- Slight = 1 or 2 mm of clinical attachment loss (CAL)
- Moderate = 3-4 mm of CAL
- Severe = 5mm or more of CAL

Non-pharmaceutical management

- Clean the mouth with gauze soaked in saline
- Frequently rinse mouth with saline especially after meals

- Advise patient or next of kin on a good diet
- Keep good oral hygiene by brushing teeth (Charter's or
- Stillman's technique) and flossing after every meal
- Scaling and root planning / curettage (goes to surgical)

Pharmaceutical management (optional)

- Amoxycillin Caps PO:, 500mg x3/day/7 days + Metronidazole tabs PO 500mgx3/day/ 7 days for adults; 25mg/kg divided in 3 doses/day/7days + Metronidazole tabs PO:, 50mg/kg/day in 3 dozes/7 days for children
- Ibuprofen tabs PO, 30mg/kg/day/in 3 doses/5 days

Alternative treatment

- Paracetamol tabs PO:, 60mg/kg/day in three doses 3-5 days
- Cloxacillin caps PO, 50-100 mg/kg/day divided in 3 doses for 7 days
- Erythromycin tabs PO, 250-500mgx4/day/5days for adults; Syrup 12.5 – 25mg/kgx4/day/5days
- Phenoxymethyl penicillin tabs PO: 250-500mgx4/day/5days for adults; Syrup 12.5 – 25mg/kgx4/day/5days

Surgical

- Type I (Slight periodontitis CAL 1-2mm)
- Full mouth scaling, root planning
- Type II (Moderate Periodontitis CAL 3-4mm)
- Full mouth scaling, root planning and periodontal splinting for mobile teeth if mobility of grade II
- Type III Severe Periodontitis CAL >5mm) –

- Periodontal surgery (gingivoplasty, tooth extraction for hopeless teeth of grade 3 mobility.

2.3.4 AGGRESSIVE PERIODONTITIS (AP)

Definition

It is characterized by the rapid loss of attachment and bone, occurring in otherwise clinically healthy patient. The amounts of microbial deposits are inconsistent with the disease severity and familial aggregation of diseased individual is observed. It can be localized (LAP) or generalized (GAP).

Causes/Risk factors

- Microbiology: A.A, capnocytophaga sputigena and mycoplasma sub-species and spirochetes
- Immunologic: 75% of patients with LAP have dysfunctional neutrophils, thus increase in chemotactic response
- Host response characterized by defect in either neutrophils or monocytes in GAP
- Genetic factors- familial clustering of neutrophil abnormalities
- Environmental factors: smoking, more teeth affected by clinical attachment loss (CAL) than non-smokers

Investigations

- OPG (orthopantomogram)
- IOPA (Intraoral periapical x-ray)

Management

- Extractions of the involved teeth
- Periodontal therapy, frequently maintenance visit is a must.

- Antibiotics as adjunct to periodontal therapy
    - Tetracycline for two weeks along with scaling and root planing or Doxycycline 100mg/ day may be used.
    - Use of Chlorhexidine o.2% useful during therapy

Recommendation

- Meticulous plaque control always a must

2.3.5 ABCESSES OF PERIODONTIUM

2.3.5.1 Gingival abscess

Definition

It is a localized purulent infection that involves the marginal gingiva or interdental papilla.

Cause

- A cute inflammatory response to foreign substance forced into the gingiva

Signs and symptoms

- Localized swelling of marginal gingiva or papilla
- A red, smooth, shiny surface, soft sponge
- Can be painful and appear pointed
- No previous periodontal disease

Management

- Elimination of foreign bodies
- Drainage through sulcus with probe or light scaling
- Ammoxicillin 500mg 3x / day/ 7 days

- Brufen 400 mg x3/day/ 5 days
- A mouth wash such as Rexedine
- Follow up after 24 – 48 hours

2.3.5.2 Periodontal abscess

Definition

It is a localized purulent infection within the tissue adjacent to the periodontal pocket that may lead to the destruction of periodontal ligament and alveolar bone. Can be associated with preexisting chronic periodontitis.

Factors associated with abscess development

- Occlusion of pocket orifice (by healing of marginal gingiva following supragingival scaling)
    - Furcation involvement
    - Systemic antibiotic therapy (allowing over growth of resistant bacteria)
    - Diabetes mellitus

Signs and symptoms

- Smooth, shiny swelling of the gingiva
- Painful, tender to palpation
- Purulent exudates
- Increased probing depth
- Mobile and / or percussion sensitive teeth
- Tooth usually vital

Table 1: Periodontal vs. Periapical abscess

Periodontal abscess	Periapical abscess
Vital tooth	No vital tooth
No caries	Caries
Pocket	No pocket
Lateral radioluscency	Apical radioluscency
Mobility	No/ minimal mobility
Horizontal percussion sensitive variable	Vertical percussion sensitivity
Sinus tract opens via keratinized gingival	Sinus tract opens via alveolar mucosa

Management

- Anesthesia
- Establish drainage
- Via sulcus is preferred method
- Surgical acces for debridement
- Incision and drainage
- Extraction if treatment failure
- Other treatment considerations
- Limiter occlusa; adjustement

- Antibiotics (if indicated due to fever, malaise, lynphadenopathy, inability to obtain drainage)
- Penicillin is the antibiotic of the first choice
- Do a periodontal evaluation after resolution of acute symptoms

In case of allergy to penicillin, give Erythromycin, Azithromycin or Clindamycin.

2.3.5.3 Pericoronal Abscess

Definition

A localized purulent infection within the tissue surrounding the crown of a partially erupted tooth. The most common adjacent to mandibular third molar in young adults is usually caused by the impact of debris under the soft tissues.

Signs and symptoms

- Operculum (soft tissue flap)
- Localized red swollen tissue
- A rea painful to touch
- Tissue trauma from opposing tooth common
- Purulent exudates, trismus, lymphadenopathy, fever, and malaise can be present

Management

Pharmaceutical

- Antibiotics and anti-inflammatory drugs for 7 days

Surgical

- Curettage (irrigate under pericoronal flap

- Tissue re-contouring (distal wedge resection)
- Extraction of involved and / or opposing tooth
- Culture and sensitivity
- Follow up

2.3.6 REFRACTORY PERIODONTITIS

Definition

These are cases which do not respond to any treatment contrary to the thoroughness of treatment and frequency. It is different from recurrent periodontitis which is a result of recurrence after treatment (incomplete treatment).

Causes/ Risk factors

- Abnormal host response
- Resistant strains of pathogenic species
- Failure to eliminate plaque, retentive factors such as furcation involvement, irregular root surface, palato-gingival groove etc.
- Smoking and systemic disease may result in generalized lesion, which may not respond to treatment.

Signs and symptoms

- Refractory periodontitis cases can be identified either by presenting new areas of attachment loss or progressive attachment loss in already treated sites.

Management

- Antibiotics therapy : Doxycycline, Clindamycin, Metranidazole and non steroidal anti-inflammatory: Brufen

- Periodontal therapy
- Intra-sulcular irrigation with 10% Povidone iodine or Chlorhexidine

2.4 Trauma of oro-facial tissues

2.4.1 CROWN FRACTURE, ROOT FRACTURES

CONDITION	Crown fracture	Root fracture
Definition	Fractures of teeth that affect the crowns of teeth	Fractures that involve the roots of the teeth
Causes	Trauma	- Sports - RTA (minor accidents) - Collisions and falls - Cycling accidents - Epileptic seizures - Iatrogenic damage during extraction of teeth, endoscopy procedure, endotracheal intubation
Predisposing factors	Sports, RTAs, aggression, collisions, and falls	
Clinical signs and symptoms	- Sensitivity to cold and warm stimulus - Dentine exposure - Tender to percussion - Mobility of the tooth	- Short duration pain or biting - Sensitivity to temperature change - Fracture lines may be visibly evident

	- Bleeding of exposed pulp tissue	- Tooth mobility
Investigations	- Dental radiography (Periapical x-ray, OPG) - Transillumination - Pulp vitality test (electric pulp test or cold test)	- Dental radiography (Periapical x-ray) - Cone-beam computerized tomography
Complications	- Tooth discoloration - Pulp necrosis - Gingival retraction - Pulp canal obliteration -Pathological root resorption - Disturbance in physiological root resorption - Premature tooth loss	- Resorption - Canal obliteration - Ankylosis - Loss of alveolar bone

Management

Surgical

Crown Fracture

Treatment depends on the type of crown fracture

If incomplete crown fractures:

- Apply fluoride varnish or jelly repeatedly for one week
- Follow up for vitality of the tooth after 4 – 6 months.

If fracture with loss of a portion of enamel:

- Smoothen the sharp edge
- Apply Fluoride varnish or jelly over the affected surface.
- When bigger part missing, restoration with acceptable dental restorative material (glass ionomer-GIC, composite, amalgam) or prosthetic crown

If fracture involving portion of enamel and dentine:

- Restore damaged portion with acceptable dental restorative material (GIC, Composite, amalgam) or prosthetic crown of the enamel and dentine with pulp exposure:

If immediate

- Clean and do pulp-capping with material (i.e. calcium hydroxide) + base + permanent filling material.
- Follow up: radiographic and clinical examination every 6 months.

If after 24 hrs

- Do pulpotomy or pulpectomy and restoration of damaged part of the tooth

Exposure of the pulp. Tooth with open apex and no infection or displacement:

- Pulp capping or partial pulpotomy or pulp extirpation with calcium hydroxide and.
- Follow up for vitality.
- Do pulpotomy in a tooth with necrotic pulp
- Do pulpectomy when apex closes
- If fails, proceed with with extraction of the tooth

Root fracture

Depend on type of root fracture- (Oblique, vertical or transverse)

- Reposition and do rigid splinting for minimum of 8 weeks
- Fractures at cementoenamel junction (CEJ) are treated by pulpectomy and post retained crown restoration
- Fractures at the middle third of the root or vertical to the axis of the root should be extracted. A prosthetic appliance may be prescribed
- Fractures at the apical one third are treated by pulpectomy followed by surgical removal of the fractured portion
- Orthodontic extrusion or crown lengthening

Alternative treatment: if conservative treatment fails

- Extraction

Pharmaceutical

Crown Fracture

- Analgesics PRN anti inflamatory
- Chlorhexidine 0.1- 0.2% mouth wash PRN
- If there is open wound:
    - Tetanus toxoid IM 0.5 ml once or
    - Doxycycline tabs PO 100mgx2/ day/7days for adults

Root fracture

- Analgesics PRN
- Chlorhexidine 0.1-0.2% mouth wash PRN
- If there is open wound

- Tetanus toxoid IM 0.5 ml once
- Amoxycillin caps PO 500 mg x4 /day /4-7 days or
- Doxycycline tabs PO 100mgx2/day/7days for adults

2.4.2 ALVEOLAR FRACTURE

Definition

It is an isolated fracture of the alveolar bone or associated with other adjusted tissues.

Causes

- RTA
- Collisions and falls
- Sports
- Iatrogenic trauma (extraction of teeth, endoscopy, endotracheal intubation)

Complications

- Teeth loss
- Osteomyelitis
- Misaligned teeth

Investigation

- Periapical x-ray or OPG

Management

- Should be treated is an emergency, the patient must be treated the same day for good results.
    - Alveolar bone immobilization, reduction and fixation/ splinting (use wires or composite)
    - Removal of comminuted fractures of alveolar bone
    - Do not do extraction: Fix the tooth
    - Rigid wire or composite splinting of a tooth of a fractured tuberosity to other standing teeth for 45 days

2.4.3 AVULSION, INTRUSION AND LUXATION

	Avulsion	**Intrusion**	**Luxation**
Definition	Complete displacement of a tooth from its socket	Apical displacement of the tooth into alveolar bone, with fracture of the alveolar socket.	Displacement of a tooth in a labial, lingual, or lateral direction
Causes	Motor vehicle accidents, Fights, Falls, Eating hard foods, Sports, Iatrogenic		
Signs and symptoms	Avulsed or missing tooth, Empty bleeding socket, Bleeding and swollen gums, Pain	Bleeding and swelling mouth, Toothache, Tooth pushed into the socket, the tooth is shorter than	Swelling, Mouth bleeding, Pain

	Avulsion	Intrusion	Luxation
		normally	
Investigations	Periapical X-ray, OPG, Lateral oblique chest X-ray if the tooth was not retrieved	Periapical, OPG, Lateral oblique, digital imaging	
Complications	Replacement resorption, Ankylosis, Osteomyelitis,	Alveolitis, Resorption, Pulpitis, Tooth loss, Tooth bud hypoplasia, Pulp necrosis	
Management	Non–pharmaceutical, Pharmaceutical and Surgical		
Non pharmaceutical	Application of cold pack - No biting on splinted teeth - A diet of soft foods - Maintenance of good oral hygiene		
Surgical	-Reimplantation of the avulsed tooth if the patient come in a maximum of two hours after avulsion - Immobilization with splints	If intrusion less than half of deciduous tooth: -Observe for re-eruption If the intrusion is more than half of deciduous tooth:	Immediate repositioning and splinting Follow-up at least 5 years Consider root canal therapy in case of pulp

	Avulsion	Intrusion	Luxation
	- Root canal therapy in case of pulp necrosis	- Extract and wait for a permanent tooth If intrusion of the permanent tooth, - Immediate repositioning and splinting - Follow-up at least 5 years - Consider root canal therapy in case of pulp necrosis	necrosis
Pharmaceutical	Mouth rinsing with 0.1 % chlorhexidine twice a day until completion of gingival healing - Caps 500mg x3/day/7 days for adults; 25mg/kg divided in 3 doses/day/7days for children - Paracetamol tabs PO, 300-500mg x3/day in adults; 10 – 15 mgs/kgx3/day/3-5days - Tetanus toxoid im 0.5mg once		
Alternative treatment	Cloxacillin 50-100 mg/kg/day divided in three doses for 10 days - Ibuprofen 30mg/kg/day/in three doses for 5 days - Erythromycin: 250-500mgx4/day/5days for adults; Syrup		

	Avulsion	Intrusion	Luxation
	12.5 – 25mg/kgx4/day/7-10 days - Phenoxymethyl Penicillin tabs PO: 250-500mgx4/day/10 days for adults; Syrup 12.5 – 25mg/kgx4/day/10 days		
Recommendation only for avulsion	- No re-implantation for avulsed primary tooth - If tooth avulsion has taken less than one hour, re-implant immediately - Tooth avulsion has taken 1 hour to 2 hours, soak in normal saline a for 20 minutes, , and replant an accepted dental fluoride solution for 20 minutes, rinse with saline, and replant - Avulsion of more than 3 hours, no re-implantation unless the tooth was preserved in a storage media soon after avulsion - Recommended storage media include saliva of involved patient, milk, normal saline, hank solution, viaspan. Time for preservation in a storage media is 6 – 96 hours		

2.4.4 MAXILLARY FRACTURE

Definition

It is a break of one or both maxillary bone(s)

Causes

- RTA
- A ltercation and falls
- Sports

Types

- Leffort I: It a traverse fracture that separates maxillary alveolar from mid face skeleton
- Leffort II: Fracture separating nasomaxillary segment from zygomatic and upper lateral mid face
- Leffort III: Craniofacial disjunction
- Palatal fracture

Signs and symptoms

- Pain
- Facial asymmetry
- Bruising around eyes
- Visual problems
- Contusion and ecchymosis
- A ir way obstruction
- Premature occlusion or non occlusion
- Mobility of the fractured segment
- Extensive hemorrhage
- Malocclusion
- Deformity
- Hypoesthesia
- Crepitus from bony fractures

Investigations

- OPG, water's view x-ray
- CT- scan
- Skull face and lateral

Complications

- Persistent diplopia
- Facial disfigurement
- Malunion
- Sinusitis
- Osteomyelitis
- Pseudorthrosis
- Blindness

Management

- Advanced Trauma Life Support (ATLS) principles (ABCDE)
- Restore occlusion
- Restore function
- Restore aesthetics
- History and physical examination is very necessary

Components of advance trauma life support (atls)

Note: Maxillofacial injuries both soft tissue and hard tissue may compromise the airway

Primary Survey

- Airway + cervical spine control
    - If palate is collapsed on roof of mouth, scoop with finger and try to elevate
    - If tongue is pushed back in direction of pharynx, pull forward with forceps
    - Apply suture to hold in place if needed. Lay patient on the side
    - With severe nose injury, suck to clear the blood and insert nasopharyngeal tube if need be.
    - If needed in very severe injury, perform tracheostomy with cuffed tube
    - Apply local pressure or nasal packs soaked in liquid paraffin
    - Perform direct suture of spurting bleeders
- Breathing
    - Rule out head injury or chest injury that may impair breathing
    - If the patient is not breathing or oxygen saturations are low, intubate and ventilate
- Circulation
    - Monitor vital signs (BP and pulse)
    - Monitor urine (insert a urinary catheter if the patient is unconscious)
    - Administer fluids to maintain hemodynamic stability
    - Monitor fluid management
    - Give tetanus toxoid 0.5ml IM once
- Disability
    - Check for consciousness and other neurological deficits (Glasgow Coma Scale (GCS) as well as doing an examination of all cranial nerves

Table 2: Glasgow Coma Scale

Serial	Category	Specific function Score	Score
1	**Eye opening (E)**	Spontaneous	4
		To voice	3
		To pain	2
		Nil	1
2	**Best verbal response (V)**	Oriented, converses	5
		Converses but confused	4
		Inappropriate words	3
		Incomprehensible words	2
		Nil	1
3	**Best motor response (M)**	Obeys	5
		Localizes pain	4
		Flexion withdrawal	3
		Flexion abnormal	3
		Extension	2
		None	1

Glasgow Coma Score

- Score = E + M + V (the higher the score the better the prognosis)
- Trend is more important than present level of consciousness
- Resuscitation: Any patient transportation should be done with adequate resuscitation equipment

Secondary Survey

- Treatment of first choice
- Surgical management
- If simple maxillary fractures, do IMF/MMF using arch bars ,IVY loops and wiring for 45 days
- Open reduction
- Dental splints if palatal fracture
- Pharmaceutical management
- Tetanus toxoid 0.5 ml IM single dose
- Alternative treatment
- Open reduction immobilization and fixation with titanium bone plates osteosynthesis with plates and screws
- Reconstruction if severe deformity

2.4.5 MANDIBULAR FRACTURE

Definition

It is the breakage of one or more parts of the mandible.

Causes

- Fights
- Contact sports
- Road traffic accidents

Classification

- Mandibular fractures may be classified according to their location
- Symphyseal fractures
- Parasymphyseal fractures
- Body, angle, vertical ramus, coronoid process
- Condylar fracture

Signs and symptoms

- Pain
- Deformities
- Bony crepitus
- Tenderness on palpation or pressure
- Trismus
- Jaw deviation
- Inability to close mouth
- Hematoma
- Swelling
- Tempomandibular joint disharmony
- Mobility of the bone
- malocclusion

Investigations

- OPG, Posteroanterior, anteroposterior x-rays, true lateral or lateral oblique mandibular views
- X-ray
- CT scan

Complications

- Malunion and malocclusions
- Osteomyelitis
- Ankylosis
- Trismus
- Paraesthesia
- TMJ problems
- Pseudo arthrosis

Management

- Surgical management
- Closed reduction by IMF/MMF for 6 weeks in adults, and weeks for children
- Rehabilitation/ physiotherapy
- Pharmaceutical management
- Ibuprofen PO 400 mg x3/day for 5 days in adults; 200mgx3/day/5days in children using arch bars , IVY loops or suspension screws and wiring
- Open reduction :Osteosynthesis with plates and screws
- Amoxicillin Caps 500mg x3/day/7 days for adults; 25mg/kg divided in 3 doses/day/7days for children
- Alternative treatment
- Diclofenac sodium tabs PO 50mgX3/day/3days
- Tramadol tabs PO or IV, 50 – 100mg x every 4-6 hours not exceeding 400mg/day

2.4.6 CONTUSION

Definition

It is a mechanical injury resulting in hemorrhage beneath unbroken skin, with no bruises.

Causes

- Traumatic brain injury
- Muscle rupture
- Muscle cramps
- A ny brunt injury

Signs and symptoms

- Skin color change
- Hematoma
- Pain
- Epistaxis
- Loss of consciousness
- Unequal pupillary response
- Paralysis

Investigation

- Plain appropriate facial bones x-rays

Complications

- Fractures
- Hematoma
- Compartmental Syndrome (organs pressure effects)
- Suprainfection

Management

- Non-pharmaceutical
- Airway maintenance
- Massage of the affected area to improve blood flow
- Ice compression
- A diet of soft foods
- Pharmaceutical
- Anti inflammatory as first choice
- Paracetamol tabs PO, 300-500mg x3-5/day in adults; 10 – 15 mgs/kgx3/day/3-5days
- Mannitol 20% 1gm/ kg to reduce intracranial pressure
- Dexamethasone tabs PO, 5 mgx1/3 days
- Alternative treatment
- Ibuprofen PO 400 mg x3/day for 3-5 days in adults; 200mgx3/day/5days in children
- Surgery
- If evidence of fracture, manage it accordingly

2.4.7 ORAL LACERATIONS AND FACIAL TISSUE INJURY

Definition

Oral lacerations are tear-like wounds on the skin or mucosa.

Cause

- Blunt trauma (sports, falls, RTA etc.)

Signs and symptoms

- Pain
- Bleeding from irregular or regular shaped wound
- Open skin or mucosa looks like cut, tear or gash

Complications

- Oral infections
- Gingivitis
- Loss of teeth

Management

- Pharmaceutical
    - `Cleaning of the wound with either an antiseptic solution or saline solution
    - Tetanus IM injection 0.5 ml
    - Amoxycillin caps PO 500 mg x4 /day /4-7 days in case of infection
    - Ibuprofen tabs PO, 30mg/kg/day in 3 divided doses for 3-5 days
- Surgical under local or general anesthesia depending on the injury
    - Primary closure of the laceration with absorbable catgut sutures in oral cavity and silk suture on skin when less than 12 hours
    - Consider secondary closure if the wound has been open for 24 hours or more (consider contamination)

2.4.8 DISLOCATIONS OF THE TEMPORAL MANDIBULAR JOINT

Definition

Displacement of the mandibular condyle from the articular groove in the temporal bone anteriorly, posteriorly or laterally.

Causes

- Anterior dislocation
- Trauma when mouth is open
- Extreme mouth opening such as in yawning, intubation during general anesthesia, dental extraction, vomiting, passionate kissing, seizures, eating, yelling, singing and endoscopy

Predisposing factors

- Use of phenytoin, congenitally shallow mandibular fossa
- Hypermobility syndrome, history of previous trauma or dislocation
- Weakness of the joint capsule
- Ito the associated ligaments and dystonic reaction

Signs and symptoms

- Anterior dislocation
- Under bite or prognathia (open mouth-failure to close mouth after dislocation)
- Pain in the jaw
- Posterior and Lateral dislocation
- Pain in the jaw

- Trismus
- Difficulty in speaking or swallowing
- Malocclusion
- Deviation of the jaw from affected side (unilateral dislocation)
- Temporomandibular joint ankyloses
- OPG
- TMJ true lateral view with an open or closed mouth
- CT scan
- MRI

Complications

- Chronic recurrent dislocation
- Ischemic necrosis of condylar head
- Traumatic damage of articular disc
- Malocclusion
- Mandibular osteomyelitis

Management

- Non-pharmaceutical
- Assessment of ABC in case of fracture
- A diet of soft foods for the first few days after reduction
- Muscle relaxation before reduction by massaging masseter muscle
- Patients refrain from wide jaw opening for 1-2 weeks after reduction

- Closed manual reduction (for anterior dislocation)
- Place patient in the sitting position
- Clinician stands in front facing the patient
- Wrap both thumbs with gauze
- Place gloved thumbs on the patient’ s inferior molars bilaterally, as far back as possible
- Fingers of the clinician are curved beneath the angle and body of the mandible
- Apply downward and backward pressure on the mandible using thumbs while slightly opening the mouth
- Pharmaceutical
- Paracetamol PO 500mgx3/day/5days in adults; 10-15mg/kg x3/day/3-5 days
- Alternative treatment
- Muscle relaxation before reduction: Midazolam IV 1 mg/ ml Titrate in 0.9% Normal saline until desired effect is achieved, wait an additional 2 or more minutes to evaluate the effect (no more than 2.5 mg should be given over a period of 2 minutes)
- Lidocaine 2% local anaesthesia injection directly into the TMJ
- Ibuprofen PO 400 mg x3/day for 5 days in adults; 200mgx3/ day/5days in children
- Surgical
- Open reduction for dislocations associated with fractures and for chronic dislocations

2.4.9 GUNSHOT WOUNDS

Definition

It is the penetrating body trauma resulting from a gunshot.

Cause

- Gunshot crosscuts with many entrance areas

Signs and symptoms

- Blood, fluid or vomitus in the ears and mouth
- Post auricular ecchymosis (battle sign)
- Periorbital ecchymosis (“raccoon eyes”)
- Wounds on head, face, mouth or neck, examine for the cervical spine injury
- Entrance/exit of a bullet
- Severe bleeding
- Tachycardia
- Hypotension
- Hypovolemic shock

Investigations

- OPG, skull face and lateral , CT-scan and MRI

Complications

- Facial deformity
- Infections
- Formation of fistula
- Fractures that do not heal
- Osteonecrosis

Management

- Non pharmaceutical
    - Stabilization of the patient by basic life support (ABC)
    - Assess GCS (Glasgow Coma Scale)
    - Place a cervical collar and back-board, in case of cervical injury
    - Transport a patient when stable to an equipped center
    - Do a thorough/detailed assessment for a stable patient
    - Clean the wound gently with antibacterial solution 1-2 times/day
    - Debride the wound to remove necrotic tissues
    - Remove foreign bodies
    - Do loose primary closure for facial wounds
- Surgical
    - Debridement of necrotique tissue; daily dressing and reconstruction after infection pashas passed.
- Pharmaceutical
    - Antibiotics; anti-inflammatory and mouth wash

2.4.10 ANKYLOSIS OF TEMPORAL MANDIBULAR JOINT

Definition

- It is the inability of a patient to open the mouth due to either fibrous or bone union between condyle head and glenoid fossa.

Causes

- Trauma of any cause to the joint (RTA, falls, birth forceps delivery etc.)
- Congenital or birth defect
- Infection of the joint from adjacent tissues
- Enlargement of the coronoid process
- Z ygomatic arch fracture
- Inflammations (rheumatoid arthritis, osteoartheritis)
- A nkylotic condition (i.e. ankylosing spondylitis)

Signs and symptoms

- Restricted mouth opening
- Poor oral hygiene and dental carries
- Facial asymmetry if only one side is affected
- Mandibular micrognathia and bird face deformity
- Class II malocclusion with posterior cross bite or anterior open bite
- Absence of condyle movement
- Difficulty in breathing and swallowing
- Snoring whilst sleeping

Investigations

- OPG x-Ray, CT- scan and MRI

Complications

- Failure of good oral hygiene practices
- Mal-alignment of teeth (malocclusion)
- Chronic headache
- Chronic facial pain
- Septic arthritis

Management

- Non-pharmaceutical
- Physical therapy (massage and electrical stimulation)
- Comprehensive psychological rehabilitation
- Do jaw-opening physiotherapy after surgery for not less than six months
- Pharmaceutical management
- Analgesics
- Ibuprofen tabs PO, 30mg/kg/day/in 3 doses for 5 days or
- Paracetamol tabs or syrup 10 – 15 mg/kg x3/day/3- 5days
- if rheumatoid arthritis, give Tramsinolone 40-80mg single dose
- Surgical management
- Treatment of first choice
- Excision of ankylosis

- Arthroplasty with or without autogenous, alloplastic or allogenic replacement
- Condylectomy if the ankylosis is intra-articular or an osteotomy of a part of the ramus if the coronoid process and zygomatic arch are also affected
- Total condylectomy and joint replacement (autogenous, allogenic, alloplastic)
- Myotomy
- Coronoidectomy or coronoidotomy
- Alternative treatment
- Complex facial deformity or asymmetry can be corrected by bone grafts, distraction osteogenesis, orthognathic surgery - aggital plit osteotomy, genioplasty, or Extended sliding Genioplasty

2.5 Oral Facial Malignant Tumours

2.5.1 BURKETT'S LYMPHOMA

Definition

It is a fast growing non-Hodgkin's lymphomas affecting the jaws, may also involve the visceral organs.

Causes

- African Burkit's lymphoma is associated with Epstein-Barr virus
- Predisposing factors include malnutrition, malaria and HIV-1

Signs and symptoms

- Typical jaw tumour is the most common at a young age with:
    - Painful Swelling of the jaw
    - Teeth Mobility
    - Halitosis
    - Lymphadenopathy
    - Sweating at night
    - Malaise
    - Diarrhea if involving the abdominal viscera
    - Loss of weight
    - Fasciès de Batraciens
    - Exophthalmia

Complications

- Infection
- Excessive bleeding
- Excessive bruising

Investigations

- Histology
- FBC
- Further analysis may include
    - Chest x-ray
    - CT Scan
    - MRI

Management

- Chemotherapy
- Medication for nausea and vomiting
- Immunotherapy may be used along with chemotherapy
- Bone marrow transplant in case chemotherapy has destroyed all patient immune system cells
- Combination of chemotherapy (Cyclophosphamide, Vincristine, Cytarabine, Doxorubicine, Methotrexate, Etoposide, Ifosfamide)
- Give Promethazine as second choice

2.5.2 ORAL SQUAMOUS CELL CARCINOMA

Definition

It is a cancer or malignant tumor of the oral mucosa or facial skin.

Causes

- Idiopathic
- Predisposing factors include tobacco and alcohol use, long time exposure to sunlight and Human Papilloma Virus (HPV) infection

Signs and symptoms

- Ulcer or sore that does not heal within two weeks
- A lump or thickening in the mouth or lip
- A white or red patch on the gums, tongue, tonsils, or oral mucosa that does not scrape off
- Numbness of the tongue or other structures of the mouth
- Difficulty in moving of the jaw or tongue
- Teeth mobility
- Swelling of the jaw that causes dentures not to fit very well
- Difficulty chewing or swallowing
- Sore throat or a feeling of something caught in the throat

Investigations

- Histology
- X-ray of the head, neck, and chest
- Ultrasound of visceral in case of suspected metastasis
- MRI
- CT scan

Complication

- Metastasis to distant organs (lung, liver etc.)

Management

- Non-pharmaceutical
    - Stop tobacco use
    - Radiotherapy
- Pharmaceutical
    - Chemotherapy
- Surgical
    - Treatment of OSCC is a multidisciplinary approach and options depend on
        - the staging of cancer
        - Location of the tumor
        - The patient's age and general health

Note: Stage 1 and II: Surgical excision with wide margin, then curative radiotherapy

2.5.3 KAPOSI'S SARCOMA

Definition

It is a cancerous tumor of connective tissue (vascular origin)

Causes

- Associated with HHV-8 (Human Herpes Virus-8)
- Predisposing factors include: Immunocompromised, conditions (HIV/AIDS)

Signs and symptoms

- Lesions may first appear on the feet or ankles, thighs, arms, hands, face, mouth or any other part of the body
- Bluish-red or purple plaque or nodules on the skin
- Oral lesions characterized by red, blue, or purple plaque or nodules encountered primarily, not exclusively on the palate
- Generalized lymphadenopathy with or without skin lesion
- Wide spread lesions in immunocompromised patients

Investigation

- Histology

Management

- Non-pharmaceutical management
    - Low-dose irradiation and intra-lesional chemotherapy (refer to cancer treatment)
- Pharmaceutical management
    - Treat with antiretroviral for HIV patients
    - Chemotherapy (refer to cancer treatment)
- Surgical management
    - Surgical excision for a small solitary localized lesions

2.5.4 OSTEOSARCOMA

Definition

It is a primary malignant tumor of the jawbones.

Cause

- Idiopathic

Signs and symptoms

- Pain and swelling of the affected site
- Elevated local temperature
- Paraesthesia of the lower lip if tumour on the mandible
- Displacement of the eye upward in case of maxillary involvement
- Swelling bone hard initially, soft after perforation of the bone
- Fast growing lesion and bleeds easily

Investigations

- Imaging
- Plain facial radiographs (OPG, lateral skull view, PA)
- CT scan
- Bone scintigraphy
- Biopsy

Management

It is managed by combination of surgery, irradiation and chemotherapy

- Non-pharmaceutical
    - Psychological support
    - Fluid intake for dry oral cavity
    - `Avoid spicy foods
    - Improve oral hygiene
    - Nutrition support
- Pharmaceutical
    - Localized osteosarcoma
        - Cisplatin 100 mg/m2 J1 and Adriamycin 25 mg/m2, J1-J2-J3, 6 cycles every 3 weeks
    - Metastatic osteosarcoma
        - More intensive chemotherapy with cisplatin, high dose
        - High dose Ifosfamide and Adriamycin
- Surgical
    - Any T, N0M0; low grade (G1)
        - Radical surgery alone, high grade (G2-G3):
        - Induction chemotherapy + Radical surgery + Postoperative radiotherapy
    - Any T, N1M1
        - Chemotherapy + radical surgery if possible

- Recommended follow up
    - Every 2 months for first 2 years
    - Every 6 months for 3-5 years
    - Once a year after 5 years
    - Dental examination and panoramic x-ray every 6 months
    - Chest spiral CT scan every year if possible
    - MRI head and neck every year if possible
- Salvage treatment for loco-regional disease:
    - Palliative
    - Chemotherapy/radical surgery/radiotherapy
- Salvage treatment for metastasis disease
    - Chemotherapy
    - Radical Surgery of the metastasis if possible

Recommendations

- Radical surgery-mandibulectomy or maxillectomy
- Reconstruction primary of good prognosis
- Consider obturators or use of plates if no reconstruction

2.5.5 BASAL CELL CARCINOMA

Definition

It is an ulcerated skin cancer in the facial region.

Causes and risk factors

- Sunlight or ultraviolet radiation
- Predisposing factors include: light skin color over exposure to x-rays or other forms of radiation
- Use of cosmetics that contain hydroquinone

Signs and symptoms

- Slow growing and painless skin swelling/lesion that is pearly or waxy, white or light pink or brown
- Skin sore that bleeds easily, does not heal with oozing or crusting spots in a sore
- Appearance of a scar-like sore
- A sore with a depressed (sunken) area in the middle and rolled edges

Investigation

- Histology

Complications

- Untreated basal cell cancer can spread to nearby tissues or structures, causing damage (around the nose, eyes, and ears).

Management

Treatment varies depending on the size, depth, and location of the basal cell cancer

- Surgery
    - Excision of the tumor using one of the following procedures:

- Surgical excision
- Curettage and electrodessication and cryosurgery
- Laser surgery

- Radiation therapy, in spread of cancer, or tumors that can't be treated with surgery

2.5.6 VERRUCOUS CARCINOMA

Definition

Low-grade tumor variant of squamous- cell carcinoma.

Causes

- Human Papilloma Virus suspected
- Predisposing factors: tobacco chewing or snuffing, alcohol consumption, betel nut chewing, chronic inflammation, poor dental hygiene, ill-fitting dentures and immunocompromised people

Signs and symptoms

- Slow growing exophytic, whitish mass with a cauliflower like papillary or verruciform surface
- Bone invasion and rapidly fixation to underlying periosteum with gradual destruction of jawbone
- Ulceration or fistulation
- Painful non-malignant lymphadenopathy

Investigation

- Histology

Complications

- Recurrence
- Local metastasis
- Irradiation without surgery leads to high grade squamous cell Carcinoma

Management

- Surgical
    - Excision of the lesion or laser therapy with 0.5-1 cm of normal tissue depending on size and location

2.5.7 MALIGNANT PLEOMORPHIC ADENOMA

Definition

It is a malignant tumor of the salivary gland that arises from the benign counterpart commonly in parotid gland.

Causes

- Unknown
- Predisposing factors includes: long standing or recurrence of pleomorphic adenoma, irradiation and size of pleomorphic adenoma and advanced age

Signs and symptoms

- Longstanding history (average 10–15 years) of pleomorphic adenoma
- Sudden period of rapid growth (average, 3–6 months).
- Pain and facial nerve paralysis

Investigations

- Histology
- CT scan
- MRI

Complication

- Metastasis

Management

- Surgical
    - Resection (superficial or total parotidectomy)

2.5.8 ADENOID CYSTIC CARCINOMA

Definition

- It is malignant neoplasm of salivary glands.

Cause

- Idiopathic

Signs and symptoms

- Initially painless, slow growing mass in the mouth or face
- Pain and nerve paralysis advanced stage

Complications

- Recurrence
- Metastasis

Investigations

- Histology
- CT Scan
- MRI

Management

- Surgical
    - Aggressive surgical resection
- Postoperative radiotherapy

2.6 Oral Facial Cysts

Definition

It is a benign pathologic cavity within bone or soft tissue, containing fluid other than pus.

Causes

- Unknown
- Suspected to arise from remnants of odontogenic epithelial
- Predisposing factors include: constant irritation from dental caries, periodontal infection and trauma

Signs and symptoms

- Slow growing and painless
- Swelling and disfigurement
- Teeth displacement
- Progressive teeth mobility
- Absence of teeth

Investigations

- Periapical x-ray, OPG, CT scan, MRI
- FNA
- Histology

Complications

- Supra-infection with bacterial
- Pathological fracture

Management

- Pharmaceutical
    - Analgesics and antibiotics after surgery
- Surgical
    - Enucleation for small cysts
    - Marsupialization for large cysts that cannot be removed in total

Recommendation

- In case of keratocyst it is now classified as a tumour that is locally aggressive, after removal smear the cavity with Carnoy's Solution.

2.7 Cleft Lip, Cleft Palate

Definition

Birth defects in which the tissue of the lip or palate doesn't form properly during fetal development, leaving a partial or complete split in between.

Causes

- Syndromic-genetic inheritance
- Non-syndromic: interaction of genetic and environmental factors
- Predisposing factors include: genetic factors, environmental factors i.e. maternal alcohol consumption, maternal smoking, and avitaminosis, etc.)

Signs and symptoms

- A notch or split in the lip either partial or complete, unilateral or bilateral
- A notch or split in the palate partial or complete, unilateral or bilateral
- Extension of the notch or split may involve other areas of the face (Syndromic)
- Speech difficulties
- Flow of drinks through nose
- Change in nose shape
- Mal-aligned teeth

Complications

- Repeated ear infections
- Delayed/failure in speech
- Poor growth

Management

- Non-pharmaceutical
- Counseling on breast feeding
- In case child is not able to feed; consider nasoalveolar molding and feeding obturator
- Surgical
- Three to six months: - Cleft lip repair, pin-retained prosthesis when indicated
- One year: - Cleft palate repair for soft palate, change of the prosthesis and two supportive prosthesis for continued maxillary molding
- Three to four years: - Cleft palate repair of hard palate
- Age six to nine years: - consider orthodontics for correction of maxillary defects
- Age nine years and above- bone grafting of premaxilla

PART 8: Ear, Nose and throat

4 EAR NOSE AND THROAT GUIDELINES

4.1 Conditions of the ear

4.1.1 ACUTE OTITIS MEDIA

Definition

It is an inflammation of the middle ear cavities lasting less than 3 weeks

Causes

- Viral
- Bacterial (Streptococcus pneumoniae, Haemophilus influenzae, Moraxella catarrhalis etc)
- Predisposing factors include poor living conditions, adenoids, sinusitis, allergic rhinitis, tonsillitis, asthma, Cranial facial abnormalities, etc

Signs and symptoms

- Fever
- Sometimes convulsions in children
- Crying in children with ear scrubbing
- Diarrhea
- Vomiting
- Otalgia
- Otorrhea
- Impaired hearing
- Redness and sometimes bulging of the eardrum

Complications

- Secretory otitis media (Glue ear)
- Chronic otitis media with perforation
- Acute mastoiditis sometimes with periosteal abscess
- Intracranial (meningitis, brain abscess, subdural abscess, etc)
- Facial paralysis
- Labyrinthitis
- Hearing impairment

Investigations

- Pus swab for laboratory analysis
- FBC

Management

Elimination of predisposing or risk factors

- Pharmacological treatment
    - First choice treatment
        - Amoxicillin, Po 1000mgx3/day/10-14 days for adults; 50mg-100mg/kg day/10-14 daysinj children
        - Otrivine(Xylometazoline)1% nose drops x2/day/ 5 day maximum for adults. Then for children use Otrivine 0.5% nose drops
    - Alternative treatment
        - Amoxicillin+clavuranic acid (amoxiclav) Oral, 625mgx3/ day/8-10 days in Adults;

Syrup x 3 weight graduation/day/10- 14 days in children OR

- Oracefal (cefadroxyl): 1gx2/day/10days for adults and 50mg/kg/day divided into two doses for children OR
- Zinnat (cefuroxime): tabs 250mg x2/day/7days

- Surgical Treatment
  - Myringotomy and sometimes ventilating Tube insertion
  - Surgical treatment of complications

Recommendation

- Patients representing with recurrent Acute Otitis media should be referred to an ENT specialist

4.1.2 CHRONIC SUPPURATIVE OTITIS MEDIA (CSOM)

Definition

A chronic inflammation of the middle ear lasting more than 6 weeks

Causes

- Inadequate management of otitis media
- Predisposing factors are: Frequent upper respiratory tract infections, poor living conditions, poor housing, hygiene and nutrition, analphabetism

Signs and symptoms

- Recurrent or persistent ear pus discharge or otorrhoea through a tympanic membrane perforation
- Large perforation of the eardrum on examination
- Impaired hearing

Complications

- Extracranial complications
- Subperiosteal abscesses
- Facial nerve paralysis
- Suppurative labyrinthitis
- Hearing impairment
- Neck abscesses
- Intracranial complications
- Lateral sinus thrombophlebitis
- Brain abscess
- Otitic hydrocephalus
- Meningitis

Investigations

- Pus Cultures
- Audiogram
- CT-scan

Management

It is aimed at eradication of infections and closure of tympanic perforation

- First choice treatment
    - Aural toilet by medicines' droppers combine with topic antibiotics (Ofloxacine ear drops x 2/day/ 10-14 days)
- Alternative treatment
    - Aural toilet by medicines' droppers combine with Polydexa ear drops x 2/day/ 7-10 day
- Surgical Treatment
    - Tympanoplasty
    - Mastoidectomy

4.1.3 DIFFUSE OTITIS EXTERNAL

Definition

It is an inflammatory process of the external auditory canal and/or the Auricle

Causes

- Bacterial infection
- Fungal infection
- Allergy
- Trauma

Signs and symptoms

- Discomfort , Itching and Pain in the ear
- Ear discharge
- Erythema and swelling of the external auditory canal
- Impaired hearing

Complications

- Stenosis of external auditory canal
- Osteititis
- Septicemia
- Facial nerve palsy

Investigations

- Swabs for laboratory analysis
- Investigations depending on suspected predisposing factors (Blood sugar, FBC)
- C Scan (especially in malignant Otitis external)

Management

- Non-pharmacological treatment
    - Dry mopping of the external auditory canal
- Pharmacological treatment
    - Topical Anti-Microbial
        - Terra cortryl ointment local application renewable every two days until symptoms subside

        - Candiderm cream local application renewable every two days for 10 days
    - Systemic Antibiotic
        - Cloxacillin PO 500mg x3/day/7days in adults and 50-100mg/kg/day divided in 3 doses in children
        - Ciprofloxacine 500mg x 2/day (In cases of malignant Otitis externa) until bone scan becomes normal
    - Anti- Inflammatory
        - Ibuprofen PO 400mgx3/day/5days for adults; 200mgx3/day/5days in children

Recommendations

- In cases of persistent otitis external. Refer the patient to an ENT specialist
- Treatment of refractive Otitis externa should be guided by culture and sensitivity results

4.2 Conditions of the pharynx (Throat)

4.2.1 PHARYNGITIS

Definition

It is a diffuse inflammation of the mucous membrane lining the pharynx

Causes

- Viral infection
- Bacterial infection
- Irritation due to Gastric reflux, very cold drinks etc
- Fungal infection
- Chronic rhino-sinusitis

Signs and symptoms

- Sore throat (is the main complaint)
- Fever and Chills
- Headache
- Joint pain and muscle aches
- Swollen and tender sub-mandibular lymph nodes
- Redness of the mucous membrane lining the pharynx sometimes pus exudates, edema of uvula
- Dysphagia

Complications

- Blockage of the airway (in severe cases)
- Middle ear infections
- Peritonsillar abscess (quinsy)
- Retropharyngeal and parapharyngeal abscesses
- Sinusitis
- Rheumatic fever
- Acute glomerulonephritis

- Septicemia
- Bronchitis or pneumonia
- Rheumatic heart disease
- Septic arthritis

Investigations

- Throat swab for lab analysis
- FBC

Management

- Non-pharmacological treatment (for viral and mild bacterial infections)
    - Drink warm liquids such as lemon tea or tea with honey
    - Humid inhalation e.g.5% alcohol menthol
- Pharmacological treatment
    - First choice treatment
        - Amoxicillin, Po 1000mgx3/day/8 days for adults; 50mg-100mg/kg day/8 days Amoxicillin syrup 250mg/5ml, 50-100mg/kgx3/day/8days for children
        - Ibuprofen 400mgx3/day for 5 days, Child; ibuprofen 5-10mg/kgx3/day/5 days
        - Antiseptics; Adult: hextril, betadine or sonatec guagings x2-3/day for 5days.
    - Alternative treatment

- Amoxicillin+clavuranic acid (amoxiclav) Oral, 625mgx3/day/8 days in Adults; Syrup x 3 weight graduation/day/8 days in children OR
- Oracefal (cefadroxyl): 1gx2/day/8days for adults and 50mg/kg/day divided into two doses for children OR
- Zinnat (cefuroxime): tabs 250mg x2/day/7days

Recommendations

- Pharyngitis due to virus should be treated conservatively.
- Gastro-oesophageal reflux disease should be treated with proton-pump inhibitors (like omeprazol) and referred to internal medicine

4.2.2 TONSILLITIS (ACUTE & RECURRENT)

Definition

It is an inflammation of the tonsils

Causes

- Bacterial infection
- Viral infection
- Fungal infection

Signs and symptoms

- Pain on swallowing (odynophagia)
- Fever, chills
- Foul smell

- Headache
- Enlarged and tender sub-mandibular lymph nodes
- Swollen red tonsils sometimes with white spots

Complications

- Middle ear infections
- Peritonsillar abscess (quinsy)
- Abscess of the pharynx
- Sinusitis
- Rheumatic fever
- Acute glomerulonephritis
- Septicemia
- Bronchitis or pneumonia
- Rheumatic heart disease
- Septic arthritis

Investigations

- Swab for laboratory analysis
- complete blood count,
- streptococcal screen

Management

- Non-pharmacological
    - Rest in a quiet, warm place and try to sleep
    - Ensure enough fluids, as dehydration can make a patient feel worse

- Pharmacological treatment
    - First choice treatment
    - Amoxicillin, Po 1000mgx3/day/8 days for adults; 50mg-100mg/kg day/8 days
    - Amoxicillin syrup 250mg/5ml, 50-100mg/kgx3/day/8days for children
    - Ibuprofen 400mgx3/day for 5 days, Child; ibuprofen 5-10mg/kgx3/day/5 days
        - Antiseptics; Adult: Hextril, betadine or sonatec guagings x2-3/day for 5days.
    - Alternative treatment
        - Amoxicillin+clavuranic acid (amoxiclav) Oral, 625mgx3/day/8 days in Adults; Syrup x 3 weight graduation/ day/8 days in children OR
        - Oracefal (cefadroxyl): 1gx2/day/8days for adults and 50mg/kg/day divided into two doses for children OR
        - Zinnat (cefuroxime): tabs 250mg x2/day/7days
- Surgery
    - Tonsillectomy indicated in Chronic repetitive tonsillitis