NCD Casebook Training Facilitator

Protocol 1: CVD Risk/HTN/DM Cases

Use the NCD patient card and register

CVD Risk/HTN/DM Case 1

Triage

Matthew C is 45 year old gentleman who comes to the health facility. He lives at Poplar Rd in Mukoko in Bukulula, and his mobile number is 079 234 8763. His date of birth 21 January 1972.
He works as an office clerk and was referred to the Health Centre as the Occupational nurse at work tested his sugar and got a reading of random11.7mmol/l on 14/01/2017. BP 134/87mmHg. According to Mr MC, his father had diabetes and was managed with pills, but he died at the age of 52 from a "big bleed in the brain". His mother is alive and well, and his oldest sister who is 47 years takes pills for "high blood". He is married to Christina and they have 2 children. She is willing to support him with his new health problem. Her mobile no is 077 235 1684.

He comes to the Health Centre on 25/01/2017 with his wife Christina. His current weight is 85 kg and height 1.72m. He was told not to eat or drink anything for 10 hours. His finger prick sugar test is 7.8mmol/L, his blood pressure 142/92, repeat BP 140/90. Urine dipstick shows 2+ glucose, 1+protein and no ketones. He is generally well, and this is the first time that he has really been sick and has no known drug allergies. He and his wife were counselled and tested negative for HIV. He explains that he walks 30 minutes to and from work every day. He does not drink alcohol, nor smoke. He has never had TB

Fill in BMI.

Advise that you will take blood for creatinine to assess kidney function, cholesterol and also for HbA1c which will give an indication of the average glucose over the preceding three months.

You explain to Matthew and Christine that he will need to be enrolled in chronic care at the Health Centre.

What is CVD risk? Fill in patient card. What is CVD risk?

Would is your treatment plan?
When to follow-up?

Matthew is able to come in 2 weeks. Arrange a follow up date in two weeks' time.

In 2 weeks, Matthew returns for his lab results. His total cholesterol is 6mmol/l. HbA1c 7% and creatinine is 71 (60-100). 140/84

Fill in patient card. CVD risk?

CVD Risk/HTN/DM Case 2

Visit 1

02/02/2017 Mary J is a single mother of 2 teenagers. She is 48 years old and works in the kitchen of a nearby hotel. She and her children live with her mother and older sister in Oranji. She tells you that her address is 87 Geranium Rd, Oranji, and that her mobile number is 075 264 7621. Her date of birth 21 July 1969.She came into the health centre complaining of painful knees. A routine screening blood pressure was 176/102 mm/Hg. She is overweight and walks with a limp due to the pain in her knees. She does not complain of a headache or swollen feet and is not short of breath.

She is surprised to hear that her blood pressure is high, but says that it was high a few months before that but she had thought it was just due to "stress". She smokes 5 loose cigarettes a day and does have a few drinks after her weekend shifts. She is on her feet all day and takes care of her children so does not have time for physical activity especially with her knees. She does not have a partner and tested negative for HIV three months prior to this visit and it is documented in her card. You repeat the blood pressure and note that it is 164/100mmHg.

You counsel Mary on her raised blood pressure and lifestyle risk factors - obesity, smoking and alcohol use. You advise her that as this is the second episode of documented high blood pressure it will be necessary to enrol her in Chronic Care (last time it was 160/98 mmHg). Besides having her children, she has never been in hospital and does not know of any drug allergies.

Her mother is quite well, though she does take a "sugar pill" and must be careful with what she eats.

On examination Mary weighs 80 kg and she is 1,62m tall. She has no pedal oedema and heart sounds are normal. Random glucose is 6.7mmol/L. Urine dipstick shows 1+ protein, no ketones.

You advise Mary on lifestyle measures and start her on a diuretic to control her blood pressure. You take blood for cholesterol and creatinine and arrange for her to come back to see you in 2 weeks' time.

Fill in her patient card.
What is her BMI?
What is her CVD risk?

You take blood for cholesterol and creatinine and arrange for her to come back to see you in 2 weeks' time.

Visit 2

17/02/2017 Mary comes back to see you for follow up. She is looking better and says that her knees are not as painful as before. Mary is pleased to tell you that she is managing to do a little bit more exercise and has no side effects from her diuretic. She has decreased her smoking to 2 a day, and still has 2-3 beers on the weekends.

Her blood pressure is now 156/87 mmHg which you tell her is better than before, but still a bit high. Her cholesterol is 6.7 and her creatinine 91. You repeat her urine dipstick and find that she continues to have 1+ protein, no ketones.

Calculate CVD risk. What is your treatment plan?

Update the patient card.

You advise Mary that she will also need to be on an ACE inhibitor for better blood pressure control and also a statin for her raised cholesterol and cardiovascular risk.

You give Mary her new treatment, counsel her on how to take it and possible side effects and ask her to come back to see you in a months' time.

Visit 3

16 March 2017 Mary comes back to see you and is well. She has been walking to work and has cut back on fatty foods and excess starches. She now weighs 78 kg, and she is very happy with her weight loss, saying she feels more comfortable. The only problem that she reports is a dry cough that she thought was a flu, but it has not gone away.

You remind her that the new blood pressure treatment, the ACE Inhibitor can cause a dry cough. She says she remembers you warning her about this side effect, and she is relieved now that she knows what is causing it as she didn't actually feel sick and there is nobody with TB in her family.

Mary's blood pressure is now 136/87 mmHg, and she is clinically well.

Update the patient card. What is your treatment plan?

Visit 4

14 April 2017 - Mary comes to see you. She is doing well and has no new complaints. Her blood pressure is 128/84 mmHg, no leg swelling, weight 76 kg and she has reduced her smoking to 1 cigarette a day. She tells you that she has decided to stop drinking. You tell her that you are happy with her progress and that her blood pressure is well controlled, and she is doing well with her lifestyle interventions. She also has been going up and down the stairs at work and happy to tell you that she is physically active at least 2.5 hours per week.

Arrange for Mary to be seen in 3 months for her 6 month follow-up.

Update the patient card.

CVD Risk/HTN/DM Case 3

Elias J is a 44 year old man who attends the health centre regularly to collect his ARVs which he has been on for the past 6 years. He is doing well on treatment and his viral load is suppressed on his current regimen (tenofovir/lamivudine/efavirenz). He is married and his wife is also doing well on ARVs. They run a small kiosk from their house and he says that he does not have much time to exercise.

As part of his annual check-up at the health centre he was found to have a raised blood pressure of 157/94mmHg. His random glucose is 10.2 mmol/l but he reported eating cake and having a soft drink before coming to the clinic.

You ask him to please come back to see you the following morning without having anything to eat or drink.

<u>First visit</u>

11 November 2016. Elias returns to the health centre to see you and comes with his wife Sara. You repeat his blood pressure and it remains elevated at 155/92, but his fasting sugar is 5.7mmol/l.

Elias says that both his mother and his father suffered from high blood pressure and that his father died of a stroke when he was 62 years old. Elias says that he does get short of breath when walking up the hill to church. He is a non-smoker and does not drink alcohol, although he says he does have a "sweet tooth".

You counsel Elias on the fact that he has high blood pressure and that he needs to be very careful with his diet and his sugar intake as he has impaired glucose tolerance which could progress to diabetes.

Elias's height is 1.71m and his weight 84 kg. He is clinically well, and his chest is clear. He has no symptoms of TB. Urine dipstick shows 1+ proteinuria and 1+ glucose. He does not have any ketones.

You advise Elias that you will enroll him into chronic care for Hypertension and that this will require more frequent visits until he is stable on his treatment, but that his ARV's and blood pressure treatment will be packed together.

You take blood for creatinine, cholesterol, HbA1c and for viral load as this is due in December anyway. Start Elias on an ACE inhibitor. You choose not to start a diuretic as he on tenofovir and already has impaired glucose tolerance. Advise Elias on possible side effects on the ACE inhibitor.

Confirm the information on the HIV patient card and transfer it to the Hypertension patient card.
They live at 16 Jula Crescent, Lalalangi. His mobile number has changed – 0781 648321. His date of birth is 03 March 1972.

Arrange to see Elias in a month, or to come back sooner if he has any problems.

Second visit
08 December 2016 - Elias come to see you, he is doing well and does not have any side effects on his new medication. His weight has not changed. His blood pressure is 137/88 mmHg and urine dipstick is clear. Blood results show a creatinine of 83, eGFR > 60, cholesterol of 4.78 and Viral load lower than detectable. His HbA1c is 5.8%.

Complete the patient card and arrange for Elias to collect his treatment regularly and to follow up in three months' time.

CVD Risk/HTN/DM Case 4

17 August 2016 - Johanna M is a 62 year old woman who is transferring in from Masaka as she has moved to Joringa to live with her daughter after her husband died the previous year. She and Rebecca, her daughter, now live on Impala Lane, Plot #23 with her daughter. Her phone number is 0782 643321.

She is a known hypertensive diabetic on treatment and she says she is usually well controlled on her treatment. She has a transfer letter from Masaka which states that she is taking the following medication:

- bendroflumethiazide 5 mg daily
- enalapril 10 mg daily
- metformin 1000mg twice daily

She has no known drug allergies. She does not smoke nor drink alcohol.

She says that she started on treatment more than ten years ago, and has no problems with her current treatment though there was a blood pressure pill that made her legs swell so she stopped it and that she has not had any blood tests for the past year.

She reports that she does feel thirsty and wakes up four times at night to pass urine. She has some burning of her feet which is worse at night

Johanna's blood pressure is 134/87 mmHg, her random glucose is 10.9mmol/l. her height is 1.58m and her weight 68 kg. Her waist circumference is 102cm. Urine dipstick shows 1+ protein, 2+ glucose, no ketones. She is clinically well with no oedema.

Fill in the patient card.

You complete the register and patient card for Johanna, write up her prescription and explain to her how the collection of chronic treatment works in your facility. You counsel Johanna on the fact that her blood pressure is well controlled, but that it looks like you will need to get her sugar under control. She admits that with the move and the new routine, she sometimes forgets to take her treatment and that her daughter cooks very well and they are lucky enough to be able to drink sodas several times a week.

Fill in the patient card.

Before Johanna leaves the clinic you take her annual blood tests including creatinine, cholesterol and HbA1c. You arrange a follow up date for her for one month's time.

2nd visit 14 September 2016)
Johanna and her daughter Rebecca come to the clinic. They have brought her medication with them. Rebecca provides you with her mobile phone number (0782 643322). Johanna says that she feels a bit better. She is not as tired and is sleeping better as she is not waking to go to the toilet as often.

On this visit, her blood pressure is 127/84mmHg and fasting glucose 8.2mmol/l. Weight is 69 kg. Her blood results show creatinine of 94, eGFR 58.89. Cholesterol 6.5mmol/l and HbA1c of 7.2%.

Update the patient card. What is your treatment plan?

3rd visit (10 December 2016).
Johanna feels well and her feet have improved. Her weight is 67kg, BP 126/82, fasting glucose 6.2mmol/l.

Update the patient card. What is your treatment plan?

CVD Risk/HTN/DM Case 5

Visit 1 (15 April 2016)
David M is a 52 year old male who presents to your health centre with a throbbing headache which has persisted for the past 3 days. He is accompanied by his wife, Denise, who says that she has been trying to get him to come to the health centre for over a year now to have someone check his health. He has had similar periods of headache which eventually go away on their own. On review of systems, he states that it has been more and more difficult for him to walk because of a sensation of burning in both of his feet and feeling unsteady when he walks. He always says that he is often

thirsty but seems to need to urinate often as well, especially at night. He takes no medications and is unaware of any drug allergies.

He smokes 10 cigarettes per day and drinks 3 Nile Specials most days (even more on the weekends). He does not complain of any chest pain presently but says that over the past year he has experienced episodes of chest pressure in the mid chest which resolves on its own. He works as a security guard for a petrol station near his home. David and Denise have 2 children who live with them in their home in Masaka on Jacaranda St, Plot 4. His mobile number is 0787 112486. Denise's mobile number is 0787 112487.

Of note, Mr M had an older brother who died when he was 54 years old. He does not know the reason why but he recalls that he also had frequent headaches and often complained of burning pain in his legs and poor eyesight. His father died of a stroke; client is not sure of age. His mother is still alive and has blood pressure.

On exam, he appears to be in mild distress with him occasionally rubbing the sides of his head. You check his blood pressure and find it to be 185/100mmHg. You repeat the blood pressure 3 minutes later and find it to be 180/110. His random blood glucose is 12.0 mmol/L. His weight is 90 kg, he is 1.75 m. Urine dipstick shows 2+ protein, no ketones.

Fill in the patient card. What is your treatment plan?

Visit 2 (18 April 2016)

Mr M returns to the health centre after going to the hospital. He was diagnosed on April 17 with angina as a diagnosis in addition to his hypertension and diabetes. He had laboratory work done there: His lab results from 15 April include total cholesterol 7mmol/L, serum creatinine 110 umol/L, Hb A1c 8.5%. Medications that he was discharged on include bisoprolol 5mg, enalapril 20mg, low-dose aspirin, and atorvastatin 40 mg.

Weight today is 90 kg. His BP 168/95; BP 170/90. You ask him if he has taken his medicines. He says that he missed a few doses of enalapril and bisoprolol and that he has too many pills now. With his Hb A1c results, you perform a foot exam and do not observe any foot ulcers but you observe decreased proprioception and sensation with monofilament exam.

Do you need to calculate a CVD risk % on Mr M? What is Mr M's CVD risk?

Update the patient card. What is your treatment plan?

Visit 3 (23 May 2016)

Mr M returns to the health centre with his wife Denise. He seems more energetic and excited to tell you that he has been taking all of his medications using the alarm on his mobile phone to remind him. He has not had any signs or symptoms suggestive of low blood sugar. He has not had any more headaches or chest pain. He does not complain of a new cough. He has started to walk a little more each day but admits he has not yet been able to walk 30 minutes each day. He has decreased his smoking to 5 cigarettes daily and now only drinks 1-2 Nile Specials on the weekends.

On exam, his blood pressure is 155/90 mmHg and 150/90 mmHg A random blood glucose is 8.5 mmol/L. His weight is now 87 kg.

Update the patient card. What is your treatment plan?

Visit 4 (22 August 2016)

Mr M returns to the health centre with his wife Denise. He continues to appear healthy and in no acute distress. He continues to take his medications without any missed doses. He has not had any complaints with the addition of the amlodipine. He denies symptoms of hypoglycaemia, chest, pain, or headache. He and his wife are now able to walk 30 minutes every day, even weekends. He no longer smokes and limits his alcohol intake to the weekend, usually just one Nile Special on either Saturday or Sunday.

On exam, his blood pressure is 135/80 mmHg and 130/90 mmHg. A fasting blood glucose is 7.5 mmol/L. HbA1c is 7%. His weight is now 85 kg. His foot exam is unchanged (no ulcers, mildly improved sensation)

Update the patient card. What is your treatment plan?

Protocol 2 (COPD/Asthma) Cases

Asthma/COPD Case 1

Triage

Josiah M is 55 year old gentleman who lives in Uganda. His date of birth is 25 Feb 1962. He works at the local mail office and was referred to the Health Centre with worsening shortness of breath over the last 5 months. His mobile is 078 387 8305. He lives in Kitamba in Kalungu.

He presents to the Health Centre on 25th September, 2017 with his sister Maria. He has a history of smoking 15 - 20 cigarettes per day for about 10 years. He has tried to quit once in the past. He gets exercise through his job but it is difficult for him to do moderate activity due to his shortness of breath. Recently he has found it more difficult to walk long distances. He has a minor cough once in a while. He takes no medications. He has not had any recent illnesses and denies alcohol or other drug use. Both he and his wife tested HIV negative last month and no history of TB. There is no significant family history, although his father used to drink. He is married with one son.

What things can you do in clinic right now to assess his shortness of breath?

You proceed to ask about any history of other diseases such as heart failure, which would change acute management. You also ask about other medicines such as herbals but he does not take them. You also ask more about the cough and find out there is sometimes white sputum. He never had these symptoms before last 5 months. He has no allergies to drugs or the environment. He asks if it is something he should worry about, as he has so far been able to work and take care of his family. His shortness of

breath (SOB) has been progressively getting worse when he walks quickly so he worries that it will interfere with his work, although he notes there are times when it gets better. He notes that he has SOB does happen many days of the week especially when he is busy at work but is better on weekend when resting.

Weight is 80kg and height 1.69m. BP 125/95 mmHg, P 70 and RR is 18br/min. SpO2 98% No peak flow available in clinic

Fill in patient card. Any other questions to ask him.

He is SOB when hurrying. He does not feel that he has to stop for breath when walking at his normal pace. He can still walk 100 m without being SOB.

What things does he need to be educated on during this visit? What severity level is his COPD? When should he follow up?

Complete the Patient Card correctly for him.

Asthma/COPD Case 2

Visit Date- 2 February 2019
Martha is a 37 year old female who lives in Uganda. Her birth date is 25 Jan 1982. She works at a tea factory and lives in the village of Mpunda in Kirongo parrish in Kyenjojo District. She presents to the health centre with recent difficulty breathing, nocturnal cough and wheeze. She has a history of asthma, but has had poor follow up care due to transportation difficulties.

Vitals: T 37ºC Weight: 60kg Height 1.59m BP: 100/90 mmHg HR 80 bpm regular RR 22

She does not smoke and has no drug use history. She notes that she has gone to the hospital in the past when she could not breathe and would be helped by medicines there. She took off of work to come to the health facility and is worried about her work since her family needs the money. There is no cough or recent illnesses she notes. She takes no other medications. She is HIV negative and is married with two children.

Fill in patient card.

What can you ask her to assess her current situation?

She had cough and fever last week. She no longer has fever but still with cough and some difficulty breathing for 2 days and wheezing. She notes she has had intermittent episodes of wheezing, with slight chest tightness in the past but does not have symptoms all the time.

Other important questions?

What physical exam signs should you look for?

She is breathing quickly, but you do not see intercostal retractions. She is able to speak in sentences, but you can hear her wheezing and coughing.

What stage is her asthma at?

What is the treatment plan?

Patient is looking more comfortable after taking the salbutamol. You monitor for 1 hour and then advise her to continue the salbutamol inhaler every 2-4 hours at home, then 4-6 hours as needed.

When should she follow-up?

What is the best way to ensure follow up care? Counselling at next visit?

Complete the Patient Card correctly for her.

Asthma/COPD Case 3

Visit Date: 1 March 2019
Robert N is a 15 year-old boy who came to the health centre with his mother to follow-up of his asthma. He was in the hospital recently for his asthma and was told to come to his village health facility for follow-up. His date of birth is January 11, 2004. He lives in Lunaa in Pader. His mother is Evelyn. Her phone number is 077 552 2382.

He has no other medical history and is now doing better. Last time he came here, the clinic was busy, and he was sent home with salbutamol pills. He says he is fine but occasionally has wheezing fits, and then when it gets bad, he has to go to the hospital.
Vital: Ht 180 cm wt 77kg P 75 RR 15 SPO2 99%

Fill in patient card.

What can you ask him to assess his asthma severity?

His mom tells you that he was not given an inhaler for home. They gave him a prescription during this last hospital visit but the pharmacy did not have. He does have oral salbutamol tablets at home that he takes when he needs. She thinks that he has problems with dust because last time he had a coughing fit was when she right after she was cleaning the house which was very dusty. He tells you that he does not smoke or drink alcohol.

He was told how to use an inhaler in the hospital once when he was younger but prefers the pills which are at home. After speaking to the boy, he says he doesn't think he has asthma. He said he just has wheezing fit once in a while. When you ask how often, he tells you maybe he has symptoms 1-2 times per week and 2-3 times/month at night. He does note that he sometimes will start wheezing when he is playing sports with friends and gets disappointed.

What is his diagnosis?

What is your treatment plan?

What is the best way to show him how to use the inhaler? When should he follow-up?

Complete the Patient Card correctly for him.

Visit 2 (5 May 2019)
Robert returns and says that he is doing better. He feels happy that he can play football without wheezing. He reports improved nighttime symptoms and says that he still uses the salbutamol inhaler approximately 1-2 times per week especially with sports. He reports no hospitalizations, and that he is doing well in school.
Vitals: ht wt 77kg P 70 RR 15 SPO2 100%

Asthma/COPD Case 4

Visit date- 12 November 2018
Mr MJ walks into the OPD short of breath. He is 55 years old complains of having breathing problems for the last few weeks. He had been given a salbutamol inhaler but it is getting worse. He feels like he cannot breathe well. His date of birth is September 1963. He does not know the day. He is from Lukoma in Gulu. He is married with 4 children who are all grown now. His wife is Christine. His mobile no is 077 123 6548. Her mobile no is 077 786 2534.

What is the next step?

Vitals T 38 BP 140/92 mmHg PR 74 regular, RR 23 br/min weight 84 kg, height 1.82m SpO2 95%.
He tells you that he has problems with breathlessness and sputum production daily for past few years, worse with more activity, like walking. He is breathing heavily but is able to answer questions. He notes that he has been feeling unwell at home. He has been coughing and producing yellow sputum.
He notes he has a history of high blood pressure and high cholesterol. His doctor in his home village suggested diet changes, so he is not on any medication right now.

What do we do now?

He admits to smoking for 30 years about 5-10 cigs/day. He drinks beer sometimes but not everyday. He is leaned over a bit and breathing heavily. He does not have crackles or leg edema. He does have wheezing.

Fill in patient card.
What do you think is his diagnosis?
What are important differentiating factors from pulmonary oedema in CVD and COPD?

-Pulmonary edema from CVD

-heart failure	-fatigue -shortness of breath, worse with exercise and while lying down and may wake the person at night -may have wheeze and crackles (rales)
Chronic obstructive pulmonary disease (COPD)	-Shortness of breath, may initially be noticed on exertion -cough with small amount of sputum production, generally in morning but may progress -wheezing -chest tightness -symptoms may be worse in morning -history of smoking or inhalational exposure

What is the treatment plan?

What other things would it be important to educate this individual about?

-Counsel what COPD is. Discuss confirmation of diagnosis if referral can be made for spirometry.
-Counsel on how to use an inhaler with spacer
-Counsel on prevention of disease progression and other strategies.
-Discuss smoking cessation.
- Once stable would want him to follow-up for his hypertension and cholesterol

Protocol 3: Rheumatic Heart Disease Cases

RHD CASE 1

Mr KM, 30 year old male from Mbarara. Contact details Mobile: 0763659865
Next of Kin: RM, Brother, Mobile: 0747871485

Visit 1: 4 March 2016
Mr KM presented with a 4 month history of progressive shortness of breath. He complains of central chest pain and irregular palpitations on effort. He reports having woken at night with attacks of frightening breathlessness and finding he was unable to lie flat.
On further questioning he remembers being told that when he was 8 years old he had suffered from a serious illness. He spent some time in hospital with very high fever, swollen knee joints. His family could not give more information and living in a remote area, he had never followed up at the hospital after discharge. He remembers his mother saying he reacted badly to one of the medications. He think it may have been a penicillin allergy. Mr KM reports smoking 1 -2 cigarettes a day and taking alcohol on special occasions.

On examination: Lying on the bed with the head elevated, mild oedema. Temperature 36.2 C BP 100/50mmHg, PR 82 bpm regular. Heart left parasternal heave, murmur, Abdominal examination - tender hepatomegaly

Classify according to Acute Care. Refer patient to hospital.

Visit 2: 11 March 2016

Mr KM down referred from the hospital for chronic care at the Health Centre.

ECHO: mitral stenosis

ECG: sinus tachycardia

Medication:

1. Furosemide 40 mg daily
2. Enalapril 2.5mg twice daily
3. Warfarin 5 mg daily

Enrol patient in chronic care.

Would you start secondary Rheumatic Fever prophylaxis? What would you use?

	Intramuscular benzathine benzylpenicillin dose by patient weight	Interval of benzathine benzylpenicillin injections	Oral alternative treatments (dose)	Duration
WHO, 2001[7]	<30 kg: 600 000 IU; ≥30 kg: 1 200 000 IU	21 days if high risk; 28 days if low risk	Phenoxymethylpenicillin (250 mg twice a day); sulphonamide (<30 kg: 500 mg daily; ≥30 kg: 1000 mg daily); erythromycin (250 mg twice a day)	No carditis: for 5 years or until 18 years of age*; resolved carditis†: for 10 years or until at least 25 years of age*; moderate to severe RHD or surgery: lifelong
Australia, 2006[60]	<20 kg: 600 000 IU; ≥20 kg: 1 200 000 IU	28 days; 21 days if high risk‡	Phenoxymethylpenicillin (250 mg twice a day); erythromycin (250 mg twice a day)	No carditis: for 10 years or until 21 years of age*; resolved carditis or mild RHD: for 10 years or until 21 years of age*; moderate RHD: until 35 years of age; severe RHD or surgery: until at least 40 years of age
India, 2008[91]	<27 kg: 600 000 IU; ≥27 kg: 1 200 000 IU	15 days if <27 kg; 21 days if ≥27 kg	Phenoxymethylpenicillin (250 mg twice a day in children; 500 mg twice a day in adults); erythromycin (20 mg/kg; maximum dose 500 mg)	No carditis: for 5 years or until 18 years of age*; mild to moderate carditis or healed carditis: for 10 years or until 25 years of age*; severe RHD or postintervention: lifelong or until 40 years of age
USA, 2009[78]	<27 kg: 600 000 IU; ≥27 kg: 1 200 000 IU	28 days; 21 days if having recurrent attacks	Phenoxymethylpenicillin (250 mg twice a day); sulphonamide (<27 kg: 500 mg daily; ≥27 kg 1000 mg daily); macrolide (dose variable)	No carditis: for 5 years or until 21 years of age*; resolved carditis: for 10 years or until 21 years of age*; RHD: for 10 years or until 40 years of age*; consider lifelong if high risk

Benzathine benzylpenicillin is the preferred antibiotic according to all guidelines. RHD=rheumatic heart disease. *Whichever is longer. †Healed carditis or mild mitral regurgitation. ‡For moderate to severe carditis, valve surgery is recommended if the patient has good adherence to monthly treatment, or after recurrence despite monthly injections.

Table: **International recommendations for secondary prophylaxis of acute rheumatic fever**

Dispense medication, schedule follow up and record data on the RHD card.

Visit 3: 7 April 2016

Mr KM reports feeling better and being able to walk to work without getting tired. Oedema subsided and he is able to lie flat at night.

Dispense chronic medication and arrange follow up monthly.

RHD CASE 2

Mr EA, 34 year old Male from Lira.

Visit 1: 2nd Feb 2016

Mr A presents with 3 month history of palpitations, shortness of breath on exertion. Recently he complains of orthopnoea and paroxysmal nocturnal dyspnoea. He now complains of shortness of breath at rest. He also complains of dizziness and lower limb

swelling. He had seen private practitioners and had received furosemide and other unspecified medications sporadically with little improvement.

Contact details Mobile: 0754567867
Next of Kin: MK, Brother, Mobile: 0754871232

Comorbidities

He has no known drug allergies, no prior surgery and No known chronic illnesses like Hypertension, Diabetes or chronic lung diseases. He neither smokes cigarettes but occasionally consumes alcohol.

Examination
Initial examination reveals a very sick young man in obvious respiratory distress, wasted, mild bilateral pitting paedal oedema, pallor, and no jaundice. No peripheral stigmata of Infective endocarditis
Vital signs: Wt- 56 Kg, Ht- 168cm HR 102bpm regular, BP- 90/62mmHg, RR- 28bpm, SPO2 88% on Room air, Temp-36.3^{0}C
The Pulse is regular, small volume, the JVP was elevated. Apex beat is displaced to the 7th anterior axillary line. Heart sounds 1&2 were heard, loud systolic murmur loudest over the Aortic area radiating down the left sternal border and to the neck. He is in respiratory distress with fine basal crackles. Has reduced breath sounds on the right with stony dullness on that side. Abdominal examination reveals a mildly tender hepatomegaly of 4cm No Ascites demonstrated. The rest of your examination is unremarkable.

CLASSIFY ACCORDING TO ACUTE CARE.
What is your initial emergency management?
What is your provisional diagnosis?

Visit 2 – 4 February 2016
Mr A returns from the hospital feeling much better with the following results and medication. Weight 54kg
Investigations
Laboratory results: CBC: WBC-6.11x103/ul, Hb-8.7g/dl, Plt-362x103/ul, Creat-68.5umol/L, K- 4.8mmol/L, Na-142mmol/L, INR- 2.5, CRP 141.29mg/L
ECG: Sinus tachycardia, HR 110bpm, Left atrial enlargement
ECHO: Rheumatic heart disease with severe MS, moderate AS, moderate AR and severe pulmonary hypertension
CXR: increased cardiothoracic ratio, Right sided pleural effusion
Cardiology diagnosis: RHD with Severe MS, moderate AS, and Moderate AR complicated with:
1. Congestive Heart failure
2. Severe pulmonary hypertension
3. Anaemia

Management Plan
He was admitted at the hospital and discharged on
1. Furosemide 40mg twice daily orally
2. Enalapril 2.5 mg twice daily orally
3. Ferrous sulphate 200mg twice daily orally
4. Folic acid 5 mg daily orally
5. Warfarin 5mg once daily orally
6. Intramuscular benzathine penicillin G 1.2 MU/month
7. Patient awaiting date at Heart Institute for surgical consultation.

Mr A needs to be enrolled in Chronic Care at your facility. ***Complete the RHD card.***
Link with Auxillary for counselling on fluid restriction, warfarin and rheumatic heart disease. Target INR 2 -3.
Arrange follow up date one month, with new INR result.

Visit 3: 3 March 2016
He reported some improvement on treatment though still had SOB on exertion. He had gone to the Uganda Heart institute and enrolled in the Rheumatic heart Disease registry and was informed to follow up with you until there was an opening for surgery. Examination was significant for mild bilateral basal crackles and bilateral pitting oedema. HR 96bpm, BP 90/60mmHg, SPO2- 92% on Room air, Temp- 36.6^0C. Weight 56kg.
INR was 1.8
Plan:
1. Maintain furosemide
2. Add spironolactone 25 mg once daily orally
3. Increase enalapril 5 mg twice daily orally
4. Increase warfarin to 5/7.5mg on alternate days
5. Continue with IM monthly benzathine penicillin 1.2MU/month

Arrange follow up date.
Visit 4: 16 July 2016
Mr A complains of palpitations and shortness of breath. He reported being adherent to his oral medications but had missed two IM benzathine penicillin doses due to lack of transport to go to a nearby health center.
O/E: Sick looking, bilateral pitting oedema, mild pallor, no jaundice. Bibasal crackles.
Vitals: Pulse 121bpm irregular, BP – 80/55mmHg, RR 18bpm, SPO2 – 91%RA, Temp – 37.1^0C
CLASSIFY ACCORDING TO ACUTE CARE
What is your initial emergency management?
What is your provisional diagnosis?

Visit 5: 19th July 2016
Mr A returns from the hospital
Labs: INR 8.4, Hb- 8.6g/dl, B/s- negative, CBC- WBC- $9.2x10^3$/ul
ECG: Atrial Fibrillation with rapid ventricular response, HR 126 bpm

Management Plan:

1. Increase Furosemide 60 mg twice daily
2. Maintain spironolactone and enalapril
3. Add Digoxin 0.125mg once daily orally
4. Continue ferrous sulphate and folic acid
5. OMIT warfarin until INR stable
6. Repeat INR in 3 days
7. Counsel patient about need for adherence and dietary awareness on warfarin
8. Restart benzathine penicillin G at 1.2MU/month

Complete the RHD card, arrange monthly follow up with clinician at the health centre.

RHD Case 3

Initial Visit: 12th March 2017

History

Mrs S T a 32 year old female from Kawempe, Kampala. She presents to your health center with complaints of shortness of breath (SOB), palpitations and progressive lower limb swelling for 2 months. She is a Para 2+0, and is currently using IUD for contraception. Her past medical and surgical history are not significant for any chronic illness. She has no family history of cardiac disease. She neither drinks alcohol nor smoke cigarettes and has no known allergies.
Contact details Mobile: 0754561232 Next of Kin: Mr JT, husband, Mobile:0753219864

O/E: Young lady, febrile, mild jaundice of the sclera, mild pallor, bilateral pitting oedema. Wt- 59kg, Ht 161cm
Vitals: HR 128bpm irregular, BP- 90/65mmHg, Temp- 36.40C, RR-32bpm, SP02- 91% on room air
She has fast breathing with bilateral fine basal crackles. Her JVP is elevated, apex is in the 6th ICS, anterior axillary line. Herat sounds heard with a loud murmur heard into the axilla. The Abdomen is soft with a tender hepatomegaly 3cm. The rest of the examination was unremarkable.

CLASSIFY ACCORDING TO ACUTE CARE
What is your provisional diagnosis?
What is your initial management?

Investigations

Labs: CBC: WBC-13.6x103/ul , Hb-9.2g/dl, Plt-354x103/ul, Crea - 79.5umol/L, K-4.1mmol/L, Na-138mmol/L, INR- 1.6, Malaria slide: No malaria parasites seen
ECG: Atrial fibrillation with a rapid Ventricular response, HR 134bpm, Left atrial enlargement
ECHO: Rheumatic heart disease with severe MS, moderate mitral regurgitation, left atrial enlargement and severe pulmonary hypertension. No vegetation's seen.
CXR: suggestive of pulmonary edema, cardiac shadow not markedly enlarged.

Diagnosis: RHD with severe MS, moderate MR complicated by
1. Atrial Fibrillation
2. Congestive heart failure

Down referral plan of Care
1. Furosemide 40mg twice daily orally
2. Bisoprolol 5mg once daily orally
3. Warfarin 5mg once daily
4. Benzathine penicillin G 1.2 MU intramuscularly monthly
5. Monitor monthly and review Heart Hospital 6 months.

Patient improved on treatment, repeat INR was 2.2. Arrange to review in one week

Visit 2: 19th March 2017
Mrs ST reports marked improvement in effort tolerance and feeling much better. She attended Mulago and enrolled in the Rheumatic heart disease registry and informed to follow up at the local health centre until an opening for surgery was available
She had no major complaints apart from mild dyspnoea on moderate exertion. Examination revealed HR 94bpm, irregular, BP 95/70mmHg, SP02-97% on RA, RR 13bpm. Chest was clear
Repeat INR- 2.4
Plan: Continue treatment as per discharge. Arrange follow up in one month

Visit 3 : 17 April 2017
Mrs ST reports feeling well. Weight 55 kg, BP 98/75 mmHG, PR 96bpm irregular. Benzathine penicillin administered intramuscularly and chronic medicines dispensed.
Arrange follow up 1 month.

Visit 4: 20 August 2017
Patient came for review after repeated attempts failed to call her for the subsequent reviews. She hesitantly noted that she had stopped the injections but continued with the other treatments. Reason for stopping the injection was that she was told by a health care worker that these injections treat syphilis.
She had a cough and mild SOB, no limb swelling. HR 102bpm, irregular, BP- 90/64mmHg, SP02-93%, RR-18bpm, Temp- 36.6^0C
INR-1.3, Hb 11.1g/dl
Plan:
1. Counsel on adherence to treatment.
2. Antibiotics Amoxyclav 625mg twice daily orally for x 5 days
3. Continue with furosemide and bisoprolol
4. Increase warfarin to 5/7.5mg alternate days
5. Counsel about diet, avoid green vegs
6. Restart Benzathine Penicillin G 1.2MU monthly
7. Review in one week with to repeat INR

Visit 5: 27 August 2017
Mrs ST feels well. HR 94bpm, irregular, BP- 96/61mmHg, SP02-96%, RR-14bpm, Temp- 36.6^0C. INR 2.5

Plan

1. Continue chronic medicines as prescribed
2. Continue warfarin 5/7.5 mg alternate days
3. Arrange monthly follow up.

Complete the RHD card.