# Telemedicine Clinic
## *Rattanakiri*
## Referral Hospital
## December 2011

**Report and photos compiled by Rithy Chau and Sovann Peng, SHCH Telemedicine**

On Tuesday December 20 and Wednesday December 21, 2011, Rattanakiri Referral Hospital (RRH) staffs began their TM clinic. Patients 5 new cases were examined, and the data were transcribed along with digital pictures of the patients, then transmitted and received replies from their TM partners in Boston and Phnom Penh.

The following day, Thursday December 22, 2011, the TM clinic opened again to receive the same patients and other follow-up patients for further evaluation, treatment and management. Finally, the data for treatment and management would then be transcribed and transmitted to Nurse Peng Sovann at SHCH who compiled and sent for website publishing.

**The followings detail e-mails and replies to the medical inquiries communicated between TM clinic at RRH and their TM partners in Phnom Penh and Boston:**

From: **Hospital Rattanakiri Referral** <kirihospital@gmail.com>
Date: Tue, Dec 13, 2011 at 3:53 PM
Subject: Telemedicine Clinic December 2011 at Rattanakiri referral hospital
To: "Kathleen M. Kelleher" <kfiamma@partners.org>, "Paul J. M.D. Heinzelmann" <paul.heinzelmann@gmail.com>, Joseph Kvedar <jkvedar@partners.org>, Rithy Chau <rithychau@sihosp.org>, Kruy Lim <kruylim@yahoo.com>, Cornelia Haener <corneliahaener@sihosp.org>
Cc: Bernie Krisher <berkrish@gmail.com>, Noun SoThero <thero@cambodiadaily.com>, Ed & Laurie Bachrach <lauriebachrach@yahoo.com>

Dear All,

Please be informed that the TM clinic at Rattanakiri Referral Hospital will be held on Wednesday, December 21, 2011 beginning at 8:00am local time for one full day. We expect to enter and transmit the patient data to those of you at SHCH and at Partner in Boston that evening.

Please try to respond before noontime the following day, Thursday, December 22, 2011. The patients will be asked to return to the hospital that afternoon on Thursday to receive treatment along with a follow up plan or referral.

Thank you very much for your cooperation and support in the project.

Best regards,
Channarith Ly

From: **Hospital Rattanakiri Referral** <kirihospital@gmail.com>
Date: Wed, Dec 21, 2011 at 12:43 PM
Subject: Rattanakiri Telemedicine Clinic December 2011, Case#1, PP#RK00366, 68M
To: "Kathleen M. Kelleher" <kfiamma@partners.org>, Joseph Kvedar <jkvedar@partners.org>, "Paul J. M.D. Heinzelmann" <paul.heinzelmann@gmail.com>, Rithy Chau <rithychau@sihosp.org>, Kruy Lim <kruylim@yahoo.com>
Cc: Bernie Krisher <berkrish@gmail.com>, Noun SoThero <thero@cambodiadaily.com>, Ed & Laurie Bachrach <lauriebachrach@yahoo.com>

Dear all,

There are five new cases for Rattanakiri Telemedicine clinic in December 2011. This is case number 1, PP#RK00366, 68M (photos had not been taken)

Best regards,
Polo/Sovann

**Rattanakiri Provincial Hospital Telemedicine Clinic**
**with**
**Sihanouk Hospital Center of HOPE and Partners in Telemedicine**

**Patient:** **PP#RK00366, 68M (Osinlar Village)**

**Chief Complaint:** Fatigue on/off x 10y

**HPI:** 68M, monk, with known diagnosis of DMII since 2000 and got treatment with Chinese Antihyperglycemic drug taking 2t qd and several years later, he was advised to take Glimicron 80mg 2t qd. In 2007, he had injury on right foot and got treatment with hospital in Phnom Penh and became completely healed. In the past 10 days, he had blood sugar checked with result still high so he added Glibenclamide 5mg 2t qd, bought local pharmacy. He said he has on/off fatigue and numbness on both feet. He denied of polyuria, polyphagia, polydypsia, fever, cough, SOB, abdominal discomfort, oliguria, dysuria.

**PMH/SH:** Unremarkable

**Family Hx:** None

**Social Hx:** Cig smoking and alcohol drinking, stop both for 20y

**Medication:**
1. Glimicron 80mg 2t qd
2. Glibenclamide 5mg 2t qd

**Allergies:** NKDA

**ROS:** Unremarkable

**PE:**
**Vital Signs: BP: 132/84 P: 76 R: 20 T: 36.5$^{O}$C Wt: 75kg**

**General:** Look stable

**HEENT:** No oropharyngeal lesion, pink conjunctiva, no icterus, no neck mass, no lymph node palpable, no JVD

**Chest:** Clear to auscultation bilaterally, no rales, no rhonchi; H RRR, no murmur

**Abdomen:** Soft, no distension, (+) BS, no HSM, (+) bowel sound, no surgical scar

**Extremities/Skin:** No leg edema, no foot wound

**MS/Neuro:** MS +5/5, motor and sensory intact, DTRs +2/2, normal gait

**Lab/Study:**
Done on 20 December 2011
FBS: 204/mg/dl, RBS:360mg/dl U/A: glucose 3+, protein 1+

**Assessment:**
1. DMII

**Plan:**
1. Glibenclamide 5mg 1t po bid
2. Metformin 500mg 1t po bid
3. Captopril 25mg 1/4t po bid
4. Draw blood for Lyte, Creat, Glucose, tot chole, TG, HbA1C at SHCH

**Comments/Notes: Do you agree with my assessment and plan?**

**Examined by: Nurse Sovann Peng** **Date: December 21, 2011**

Please send all replies to kirihospital@gmail.com and cc: to rithychau@sihosp.org

From: **Fiamma, Kathleen M.** <KFIAMMA@partners.org>
Date: Thu, Dec 22, 2011 at 8:35 PM
Subject: Fwd: Rattanakiri Telemedicine Clinic December 2011, Case#1, PP#RK00366, 68M
To: kirihospital@gmail.com
Cc: MPH MHS PA-C Rithy Chau <rithychau@sihosp.org>

Kathy

Sent from my iPhone

Since Glimicron and Glibenclamide are in the same class of medicine, you are correct to discontinue and use Glibenclamide. His blood sugar [FBS: 204/mg/dl, RBS:360mg/dl, U/A: glucose 3+, protein 1+] is quite high, so I would recommend the max dose of meds, i.e. glibenclamide 10 mg bid and metformin 1000 mg bid. Given the slighly high blood pressure and proteinuria, captopril should start at 25mg bid as well.

Ideally with such high sugars, I would prefer to start him on insulin to control his blood sugar. Since he is not overweight, he is likely more than just insulin resistant, he is likely already insulin deficient since he has diabetes for over 10 years.

Heng Soon Tan, MD

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From: **Hospital Rattanakiri Referral** <kirihospital@gmail.com>
Date: Wed, Dec 21, 2011 at 12:51 PM
Subject: Robib TM Clinic December 2011, Case#2, KA#RK00367, 47F
To: Rithy Chau <rithychau@sihosp.org>, Kruy Lim <kruylim@yahoo.com>, Cornelia Haener <corneliahaener@sihosp.org>, "Kathleen M. Kelleher" <kfiamma@partners.org>, Joseph Kvedar <jkvedar@partners.org>, "Paul J. M.D. Heinzelmann" <paul.heinzelmann@gmail.com>
Cc: Bernie Krisher <berkrish@gmail.com>, Noun SoThero <thero@cambodiadaily.com>, Ed & Laurie Bachrach <lauriebachrach@yahoo.com>

Dear all,

This is case number 2, KA#RK00367, 47F and photos.

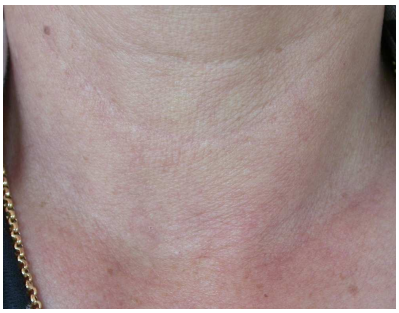
Best regards,
Polo/Sovann

**Rattanakiri Provincial Hospital Telemedicine Clinic**
**with**
**Sihanouk Hospital Center of HOPE and Partners in Telemedicine**

**Patient:** **KA#RK00367, 47F (Village VII, LBS)**

**Chief Complaint:** Neck lump x 2months

**HPI:** 47, housewife, presented with a small lump on the left side of anterior neck and neck tension. She denied of dysphagia, palpitation, heat intolerance, tremor, insomnia, weight loss, GI discomfort, oliguria, dysuria, leg edema. She went to consult with local doctor and was advised to consult with Telemedicine clinic.



**PMH/SH:** Unremarkable

**Family Hx:** None

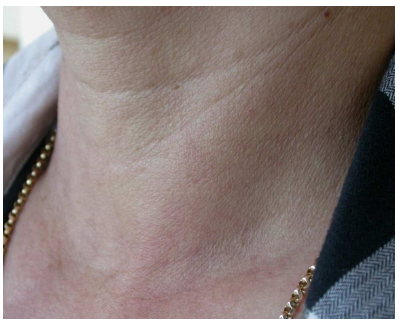
**Social Hx:** No cig smoking, no Alcohol drinking, no tobacco chewing

**Medication:** None

**Allergies:** NKDA

**ROS:** Regular menstruation, LMP on November 20, 2011

**PE:**
**Vital Signs: BP: 90/65** **P: 70** **R: 20** **T: 36.5$^{O}$C** **Wt: 57kg**



**General:** Look stable

**HEENT:** No oropharyngeal lesion, pink conjunctiva, no icterus, mass about 2 x 4cm on left side of neck, smooth surface, mobile on swallowing, no tender, no bruit, no lymph node palpable, no JVD

**Chest:** Clear to auscultation bilaterally, no rales, no rhonchi; H RRR, no murmur

**Abdomen:** Soft, no distension, (+) BS, no HSM, (+) bowel sound, no surgical scar

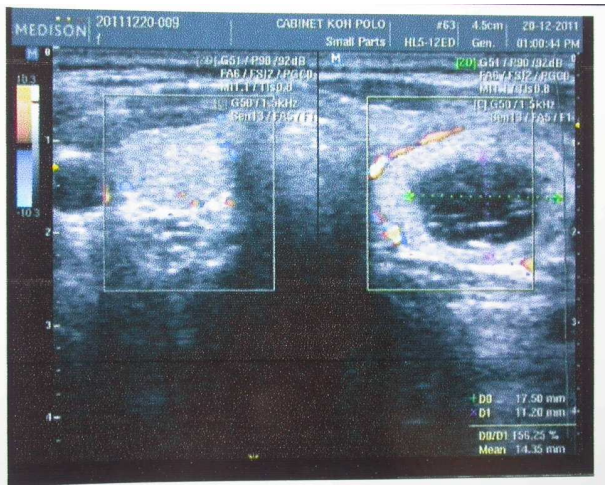
**Extremities/Skin:** No leg edema, no lesion

**MS/Neuro:** MS +5/5, motor and sensory intact, DTRs +2/2, normal gait

**Lab/Study:**

Done on 20 December 2011

Neck mass ultrasound: Nodular goiter with cyst formation




**Assessment:**

1. Thyroid cyst
2. Nodular goiter

**Plan:**

1. Draw blood for TSH and Free T4 at SHCH

**Comments/Notes: Do you agree with my assessment and plan?**

**Examined by: Nurse Sovann Peng Date: December 21, 2011**

Please send all replies to kirihospital@gmail.com and cc: to rithychau@sihosp.org



**From:** Barbesino, Giuseppe,M.D.
**To:** Fiamma, Kathleen M.
**Cc:** rithychau@sihosp.org ; ROBIB
**Sent:** Thursday, December 22, 2011 5:10 AM
**Subject:** RE: Robib TM Clinic December 2011, Case#2, KA#RK00367, 47F

I agree with findings and plan. The ultrasound appearance of the mass is highly suggestive of a thyroid (colloid) cystic nodule and size (1.7 cm) is not very concerning. TSH should be sent because it could be a "hot" nodule, but if TSH is normal, no further test is necessary.

Giuseppe Barbesino M.D.

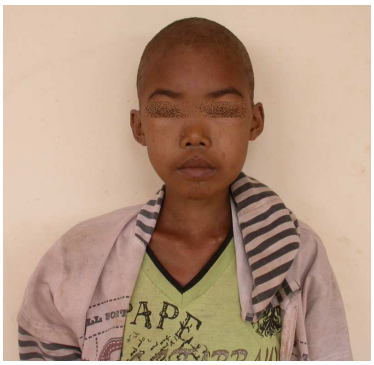
From: **Hospital Rattanakiri Referral** <kirihospital@gmail.com>
Date: Wed, Dec 21, 2011 at 12:58 PM
Subject: Rattanakiri TM Clinic December 2011, Case#3, ST#RK00368, 13M
To: "Paul J. M.D. Heinzelmann" <paul.heinzelmann@gmail.com>, Joseph Kvedar <jkvedar@partners.org>, "Kathleen M. Kelleher" <kfiamma@partners.org>, Rithy Chau <rithychau@sihosp.org>, Kruy Lim <kruylim@yahoo.com>
Cc: Bernie Krisher <berkrish@gmail.com>, Noun SoThero <thero@cambodiadaily.com>, Ed & Laurie Bachrach <lauriebachrach@yahoo.com>

Dear all,

This is case number 3, ST#RK00368, 13M and photos.

Best regards,
Polo/Sovann

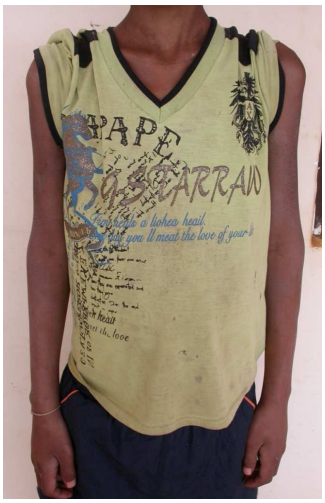
# Rattanakiri Provincial Hospital Telemedicine Clinic
# with
# Sihanouk Hospital Center of HOPE and Partners in Telemedicine



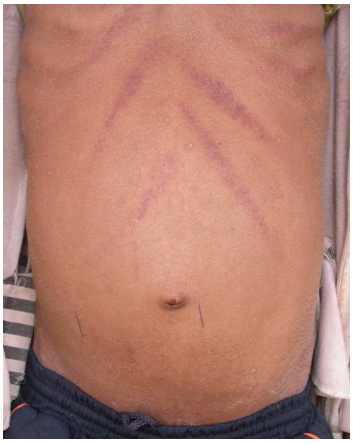
**Patient: ST#RK00368,** Male, 13 years old from Somtrork, Rattanakiri province, Cambodia.

**Chief Complaint:** Edema of the face, upper and lower limbs (generalized), distended abdomen, which also caused some thoracic complaints. The patient was admitted to the emergency department, where they suspected nephrotic syndrome. BP was 92/65 mmHg, HR was 76 BPM, Temp 35.2 ℃ (normal: 36.5 – 3 7.5). Respiratory rate was 24/min, $SpO_2$ was 100%. The patient's weight was not noted on admission.

**HPI:** The patient was admitted to the hospital 3 months ago with malaria. He was treated for 3 days with Artesunate+Mefloquine and was discharged after completing this treatment schedule. During and after this period, he experienced oliguria, not measured by fluid balance but noticeable to the patient and his father. The edema (first abdominal distension, then generalized) started one month ago with at the beginning a slightly increased production of urine which decreased then again. There is also loose stool, 2 times every day which has been present for over one month. In addition the patient has a cough, sometimes productive (white mucus). Although never objectively measured, the patient did complain about a fever. The patient is known with a poor appetite, but can eat and drink. His diet consists mainly of rice, some vegetables, but almost never meat.



The patient did not develop any new complaints, but his general condition seemed to weaken very gradually: He could walk outside by himself until 2 days ago. During his stay at pediatrics, there was no fever.
Treatment was started at the ER for nephrotic syndrome: Furosemide and prednisolone.
Upon transfer to pediatrics department a KCl supplement was added.
This treatment was continued because of generalized edema.
2nd day: vitamin B1 was added PO because of malnutrition.
3rd day: Zinc supplements PO were added for diarrhea.
4th day: Added metronidazole and ciprofloxacine.
6th day: Stopped metronidazole and zinc, switched to multivitamin complex
7th day: (See treatment plan below) Stopped furosemide and cipro. Added Chlorphenamine maleate and bromhexin.



**PMH/SH:**
- 2003: Pneumonia
- 2011: Malaria

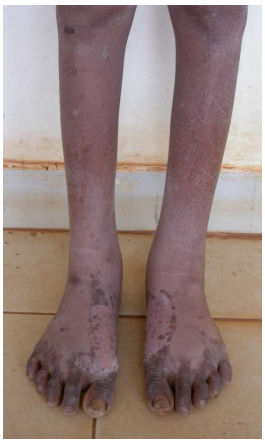
**Social Hx:** The patient lives on a farm in the woods in the Ratanakiri Province in Cambodia. He is part of one of the many groups of indigenous inhabitants of the region. He helps out with work on the farm, and he was able to help until his malaria episode. There are 6 other children in his family.
In his village there have been several reported cases of generalized edema and ascites without a clear diagnosis.

**Allergies:** None known.

**Family Hx:** 2 other children in the family with a distended abdomen and who are very skinny. They are 15 and 18 years old.

**ROS:**
General: According to the patient there was fever during a certain period. Also weakness and general malaise.
Respiratory: Cough, white sputum. No other complaints.

Cardiovascular: Pitting edema, generalized. Thoracic pressure, probably due to ascites.
Gastro-intestinal: Loose stool, 2 times a day. With mucus, no obvious blood (black/red), muddy colour.
Urogenital: Oliguria, dark colour. No sexual activity.

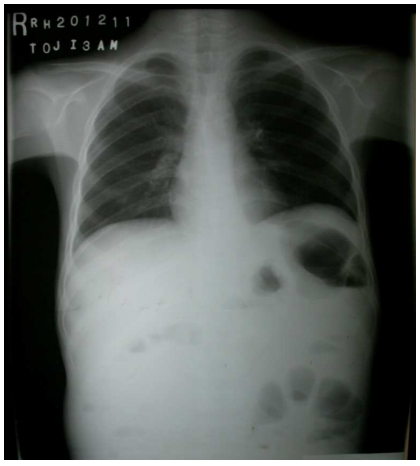


**PE: 20 dec 2011**

**Vital Signs:**

| | | | |
|---|---|---|---|
| **BP** | **90/50 mmHg** | After furosemide was stopped in the morning (some signs of dehydration) vitals were checked again in the afternoon. → | **98/54 mmHg** |
| **P** | **106 BPM** | | **92 BPM** |
| **R** | **24/min** | | |
| **O2sat** | **97 %** | | |
| **T** | **36.5 ℃** | | **35℃** |
| **Wt** | **32 kg** | | |

**General:** The patient is very weak. He can't walk by himself and had to be supported by his father when coming to the clinical examination room. He looks extremely skinny and the edema seems to have decreased a bit. His overall condition seems worse than when he was first admitted to the pediatrics department about 1 week ago.




**HEENT:** The patient's eyelids are still swollen. There are no oropharyngeal lesions, no inflamed mucosae, no neck mass, no palpable lymph nodes. There are no complaints concerning vision, throat, nose. Examination of the ears is normal. There are some bluish grey/brown spots in the eyes (conjunctiva).

**Chest:** The patient is extremely skinny. You can easily see his ribs under his skin. There are "coining" markings on his skin. This is traditional technique patients use when they get sick. When a stethoscope is put up to his chest, the membrane doesn't touch the skin between his ribs. It is easier to listen to the lungs on the back of the patient. As far as discernable, there are no irregular heart sounds. There is tachycardia. Over both lungs, you can hear ronchi.

**Abdomen:** The patient has a moderately distended abdomen without scars. The abdomen itself is soft. There are no tender spots. Bowel sounds are normal. There is no palpable hepato- or splenomegaly. Percussion of the abdomen shows shifting dullness.

**Musculoskeletal:** No painful spots in the musculoskeletal system. The patient can move by himself, but has limited strength, as mentioned before.

**Neuro:** Reflexes are not clearly present. Upper limb reflexes seem delayed and lower limb reflexes seem absent.

**GU:** The urine has a dark colour.

**Rectal:** There is a good sphincter tone. There are no palpable masses, and there is no blood on the glove. Colocheck test is positive for occult blood.

**Previous Lab/Studies:**
*14 dec 2011*
Urine dipstick: no blood, glucose, protein or bilirubin. Specific gravity was normal, pH was 6.

*15 dec 2011*
Ultrasound abdomen: Normal liver, pancreas, kidneys and spleen. There is much gas and liquid in the intestines.
Serology: Negative for HBsAg, ACHCV
Bloodwork:

- WBC 9900/$mm^3$. Hb 13 g/dl. Hct 34 %

- Glucose 36 mg/dl (No fluoride tube, left out too long?)
- Creatinine: 0.8 mg/dl
- SGOT: 50
- SGPT: 40
- No possibility to test albumine.

*16 dec 2011*
Urine: Dipstick negative for blood, glucose, protein, bilirubin. Normal specific gravity. pH 8.0. Few cells are seen on microscopic exam.
Unable to get blood results with electrolytes.

*19 dec 2011*
New bloodwork:
- Negative malaria smear
- Hct: 41%
- WBC 14.000 / $mm^3$
  - Eosinophiles: 04%
  - Neutrophiles: 66%
  - Lymphocytes: 28%
  - Monocytes: 02%
  - Basophiles: 00 %

*20 dec 2011*
HIV serology: negative
New bloodwork (electrolytes not available)
- Hemolysis
- Hb: 16 g/dl
- Htc: 43 %
- Platelets: 431 000
- WBC: 16300 $mm^3$.
  - Eosinophiles 02 %
  - Neutrophiles 67%
  - Lymphocytes 29 %
  - Monocytes 02%
  - Basophiles 00%

Glucose POCT: 94 mg/dl

Fecal occult blood test: positive

Chest X-ray attached

**Lab/Studies Requests:**
AFB sputa colouring
Stool sample for parasites
Bloodwork: electrolytes.

**Assessment:**
*Differential diagnosis:*
1. Malnutrition: protein and vitamin deficiency
2. Infection: parasite/bacterial/peritoneal TB => Schistosomiasis

**Plan:**
1. Albendazole 400mg 4 days
2. Metronidazole IV 250mg tid
3. B-Complex IV 10cc qd for 3days
4. Protein supplement (Xango + Ensure)

5. Multivitamin supplement 1t po qd
6. Bromhexin 1t po qid prn
7. CPM

**Comments/Notes:**

**Examined by: Dr. Peter/MA Polo** **Date: 20th December 2011**

Please send all replies to kirihospital@gmail.com and cc: to rithychau@sihosp.org



**From:** Paul Heinzelmann
**To:** Fiamma, Kathleen M. ; Rithy Chau ; Robib Telemedicine
**Sent:** Thursday, December 22, 2011 7:46 AM
**Subject:** Re: FW: Rattanakiri TM Clinic December 2011, Case#3, ST#RK00368, 13M

This is an interesting but unfortunate case. Likely there are multiple factors involved in this generalized edema. (Essentially loss of protein from whatever cause, forces fluid to move out from the blood vessels into surrounding tissues.)

Causes to consider:

**Malnutrition** is certainly on the list of contributors. But the rapid change in status suggests more than just that. As you noted, albumin would be helpful in assessing nutritional status, but it appears that wasn't available.

**Proteinuria** - loss of protein through the kidneys.
It makes sense to consider that, but it seems unlikely as there was no protein on the urine dips. Also creatinine is normal, suggesting functioning kidneys. (Likely the BUN would be elevated if that was done as he is likely dehyrated.) Other signs of dehydration include dark urine and tachycardia. His normal urine specific gravity is perplexing however.

{If proteinuria is still being considered, the patient's history of recent malaria raises the suspicion of secondary renal failure or glomerulonephritis. This is not commonly seen with malaria, but does occasionally affect children who are infected with malaria. A formal urinalysis with a microscope would typically show red cell casts.}

**Protein-losing enteropathy** - loss of protein through GI tract
This seems more likely a major cause of this patient's edema, as positive findings include diarrhea with mucus and POS stool guiac. This can happen from any inflammatory condition of the intestines. As you have noted, parasites seem likely culprit.

You mention *schistosomiasis* - this seems quite possible, but no lymph node, liver or spleen enlargement were described in this patient, which is frequently seen in more advanced cases, but is reasonable to consider and treat if this is in fact endemic to this province (hepatic/intestinal schistosomiasis is not endemic to all provinces of Cambodia). *Is it found in Rattanakiri?* His normal liver enzymes are reassuring. ...

Recent use of antibiotics and now diarrhea mean that *Clostridium difficile* is also a possibility.

***Summary:***
Protein loss is causing edema. This is a fairly complicated case, but I suspect its from the intestines not the

kidneys. I generally concur with your assessment/plan assuming that there are some limitations to what can be done there. Ideally this patient would be admitted to an inpatient setting to further asses as above, and with careful hydration and careful monitoring of fluid inputs/outputs to track fluid balance and manage the problem of acute dehydration/third spacing along with nutritional support. Ideally a colonoscopy would be done at some point, but I realize this is likely not an option. I agree that electrolytes, creatinine be followed and TB should be ruled out.

Thank you for your thoughtful assessment of this patient, and I hope this email helps. Best of luck with this complicated case.

Paul

Paul Heinzelmann, MD

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From: **Hospital Rattanakiri Referral** <kirihospital@gmail.com>
Date: Wed, Dec 21, 2011 at 1:00 PM
Subject: Rattanakiri TM Clinic December 2011, LV#RK00369, 55F
To: Joseph Kvedar <jkvedar@partners.org>, "Kathleen M. Kelleher" <kfiamma@partners.org>, Rithy Chau <rithychau@sihosp.org>, Kruy Lim <kruylim@yahoo.com>, "Paul J. M.D. Heinzelmann" <paul.heinzelmann@gmail.com>
Cc: Bernie Krisher <berkrish@gmail.com>, Noun SoThero <thero@cambodiadaily.com>, Ed & Laurie Bachrach <lauriebachrach@yahoo.com>

Dear all,

This is case number 4, LV#RK00369, 55F and photo.

Best regards,
Polo/Sovann

**Rattanakiri Provincial Hospital Telemedicine Clinic**
**with**
**Sihanouk Hospital Center of HOPE and Partners in Telemedicine**

**Patient:** **LV#RK00369, 55F (Village I, LBS)**

**Chief Complaint:** Fatigue and polyuria x 10 years

**HPI:** 55F presented with symptoms of fatigue, polyuria, polydypsia, polyphagia, generalized muscle pain and weight loss, She got consultation in Phnom Penh and blood sugar checked with result 218mg/dl and diagnosed with DMII and treated with 2 kinds of antihyperglycemic drug. In 2007, she changed her living place to Rattanakiri so she missed her follow up in Phnom Penh and got treatment with on/off Metformin 500mg and Glibenclamide 5mg 1t po bid and traditional medicine (not afford to buy medicine). Now she presented with symptoms of fatigue, polyuria, polyphagia, polydypsia and numbness/tingling on both feet. She denied of fever, cough, SOB, GI discomfort, dysuria, hematuria, edema and legs wound.

**PMH/SH:** Unremarkable

**Family Hx:** None

**Social Hx:** No cig smoking, no tobacco chewing, casual alcohol drinking

**Medication:**

1. Metformin 500mg 1t po bid (stopped 2months)
2. Glibenclamide 5mg 1t po bid (stopped 2months)
3. Traditional medicine (stopped 6months)

**Allergies:** NKDA

**ROS:** 6y post menopause

**PE:**
**Vital Signs:** **BP: 118/79** **P: 81** **R: 20** **T: 36$^{O}$C** **Wt: 62kg**

**General:** Look stable

**HEENT:** No oropharyngeal lesion, pink conjunctiva, no icterus, no neck mass, no lymph node palpable, no JVD

**Chest:** Clear to auscultation bilaterally, no rales, no rhonchi; H RRR, no murmur

**Abdomen:** Soft, no distension, (+) BS, no HSM, (+) bowel sound, no surgical scar

**Extremities/Skin:** No leg edema, no foot wound, (+) posterior tibial and dorsalis pedis pulse

**MS/Neuro:** MS +5/5, motor intact , sensory loss with light touch from ankle down, DTRs +2/4, normal gait

**Lab/Study:**

Done on 21 December 2011

FBS: 401/mg/dl U/A: glucose 4+, protein 1+

**Assessment:**

1. DMII with PNP

**Plan:**

1. Metformin 500mg 1t po bid
2. Amitriptylin 25mg 1/4t po qd
3. Draw blood for Creat, Glucose, Tot chole, TG, HbA1C at SHCH

**Comments/Notes: Do you agree with my assessment and plan?**

**Examined by: Nurse Sovann Peng** **Date: December 21, 2011**

Please send all replies to kirihospital@gmail.com and cc: to rithychau@sihosp.org



From: Fang, Leslie S.,M.D.
Sent: Thursday, December 22, 2011 4:49 PM
To: Fiamma, Kathleen M.
Subject: RE: Rattanakiri TM Clinic December 2011, LV#RK00369, 55F

Agree with diagnosis of diabetes mellitus with peripheral neuropathy and nephropathy.

She would probably need more than one agent for control of her blood sugar

Leslie S. T. Fang, MD PhD

From: **Hospital Rattanakiri Referral** <kirihospital@gmail.com>
Date: Wed, Dec 21, 2011 at 1:04 PM
Subject: Rattanakiri TM Clinic December 2011, Case#5, HS#RK00370, 47F
To: Rithy Chau <rithychau@sihosp.org>, "Paul J. M.D. Heinzelmann" <paul.heinzelmann@gmail.com>, Joseph Kvedar <jkvedar@partners.org>, "Kathleen M. Kelleher" <kfiamma@partners.org>, Kruy Lim <kruylim@yahoo.com>
Cc: Bernie Krisher <berkrish@gmail.com>, Noun SoThero <thero@cambodiadaily.com>, Ed & Laurie Bachrach <lauriebachrach@yahoo.com>

Dear all,

This is the last case of Rattanakiri TM Clinic December 2011, Case#5, HS#RK00370, 47F and photo. Please reply to the cases before Thursday noontime then the patients will come to get the treatment in that afternoon.

Thank you very much for your cooperation and support in this project.

Best regards,
Polo/Sovann

**Rattanakiri Provincial Hospital Telemedicine Clinic**
**with**
**Sihanouk Hospital Center of HOPE and Partners in Telemedicine**

**Patient:** **HS#RK00370, 47F (Village I, LBS)**

**Chief Complaint:** Fatigue and polyphagia x 9 years

**HPI:** 47F presented with symptoms of fatigue, polyphagia, polyuria, polydypsia and weight loss in 2002, She had consultation and blood sugar checked 170mg/dl, diagnosed with DMII and treated with Chlopropramide 250mg 1t po qd and increased to 11/2t qd because blood sugar still not controlled. Several years later, She had blood sugar checked with elevated blood sugar and was treated with Metformin 500mg 1t po bid and Glibenclamide 5mg 1t po bid; the blood pressure also elevated (160/?) so she took Amlodipine 5mg 1t po qd, bought from local pharmacy.

**PMH/SH:** Nephrotic syndrome when she was 20 years old

**Family Hx:** Father with DMII

**Social Hx:** No cig smoking, no tobacco chewing, no EtOH

**Medication:**
1. Metformin 500mg 1t po bid
2. Glibenclamide 5mg 1t po bid
3. Amlodipine 5mg 1t po qd

**Allergies:** NKDA

**ROS:** Unremarkable

**PE:**
**Vital Signs: BP: Rt 168/104 Lt 171/103 P: 97 R: 20 T: 37$^{O}$C Wt: 62kg**

**General:** Look stable

**HEENT:** No oropharyngeal lesion, pink conjunctiva, no icterus, no neck mass, no lymph node palpable, no JVD

**Chest:** Clear to auscultation bilaterally, no rales, no rhonchi; H RRR, no murmur

**Abdomen:** Soft, no distension, (+) BS, no HSM, (+) bowel sound, no surgical scar

**Extremities/Skin:** No leg edema, no foot wound, (+) posterior tibial and dorsalis pedis pulse

**MS/Neuro:** MS +5/5, motor and sensory intact, DTRs +2/4, normal gait

**Lab/Study:**
Done on 21 December 2011
FBS: 187/mg/dl U/A: glucose 1+, protein 3+

Creatinine: 2.0 [0.5 – 1]

**Assessment:**
1. DMII
2. HTN
3. Renal failure (proteinuria)

**Plan:**
1. Metformin 500mg 1t po bid
2. Glibenclamide 5mg 1t po bid
3. Captopril 25mg 1/2t po bid
4. Draw blood for Lyte, Creat, Glucose, Tot chole, TG, protein, albumin, HbA1C at SHCH

**Comments/Notes: Do you agree with my assessment and plan?**

**Examined by: Nurse Sovann Peng** **Date: December 21, 2011**

Please send all replies to kirihospital@gmail.com and cc: to rithychau@sihosp.org



From: Fang, Leslie S.,M.D.
Sent: Thursday, December 22, 2011 4:45 PM
To: Fiamma, Kathleen M.
Subject: RE: Rattanakiri TM Clinic December 2011, Case#5, HS#RK00370, 47F

Agree with assessment and plan

The etiology of her renal insufficiency is not clearcut because of the prior history of nephrotic syndrome at age 20.

?focal sclerosis with persistent proteinuria and renal insufficiency
?diabetic nephropathy with renal insufficiency

In any case, she would benefit from tight blood pressure control. I agree that she would benefit from ACEI from a reanl standpoint.

Leslie S.T. Fang, MD PhD

# Thursday, December 22, 2011

## Follow-up Report for Rattanakiri TM Clinic

There were 5 new patients seen during this month TM clinic at Rattanakiri Referral Hospital (RRH). The data of 5 cases was transmitted and received replies from both Phnom Penh and Boston, and other 12 patients came for follow up and refill medication only. Per advice sent by Partners in Boston and Phnom Penh Sihanouk Hospital Center of HOPE as well as advices from PA Rithy on site, the following patients were managed and treated per local staff:

[Please note that in general the practice of dispensing medications at RRH for all patients is usually limited to a maximum of 7 days treatment with expectation of patients to return for another week of supplies if needed be. This practice allows clinicians to monitor patient compliance to taking medications and to follow up on drug side effects, changing of medications, new arising symptoms especially in patients who live away from the town of Banlung and/or illiterate. Nearly all medications and some lab tests not available/done at RRH are provided by SHCH to TM patients at no cost]

### Treatment Plan for Rattanakiri TM Clinic December 2011

**1. PP#RK00366, 68M (Osinlar Village)**
**Diagnosis:**

1. DMII

**Treatment:**

1. Glibenclamide 5mg 1t po bid (#200)
2. Metformin 500mg 1t po bid (#200)
3. Captopril 25mg 1/4t po bid (buy)
4. Draw blood for Lyte, Creat, Glucose, tot chole, TG, HbA1C at SHCH

**Lab result on December 22, 2011**

| | | |
|---|---|---|
| Na | =135 | [135 - 145] |
| K | =4.5 | [3.5 - 5.0] |
| Cl | =103 | [95 - 110] |
| Creat | =124 | [53 - 97] |
| Gluc | =11.5 | [4.2 - 6.4] |
| T. Chol | =9.6 | [<5.7] |
| TG | =2.1 | [<1.71] |
| HbA1C | =9.8 | [4.8 – 5.9] |

**Recommendation:** Add Simvastain 10mg 1t po qhs

**2. KA#RK00367, 47F (Village VII, LBS)**
**Diagnosis:**

1. Thyroid cyst
2. Nodular goiter

**Treatment:**

1. Draw blood for TSH and Free T4 at SHCH

**Lab result on December 22, 2011**

| | | |
|---|---|---|
| TSH | =1.88 | [0.27 - 4.20] |
| Free T4 | =13.27 | [12.0 - 22.0] |

**Recommendation:** Keep observe

**3. ST#RK00368, 13M (Somtrork Village)**
**Diagnosis:**

1. Malnutrition: protein and vitamin deficiency
2. Trichinelosis?
3. Schistosomiasis?

**Treatment:**

1. Albendazole 400mg 4 days
2. Metronidazole IV 250mg tid
3. B-Complex IV 10cc qd for 3days
4. Protein supplement (Xango + Ensure)
5. Multivitamin supplement 1t po qd
6. Bromhexin 1t po qid prn
7. Draw blood for CBC, Lyte, Creat, Glucose, Tot chole, Albumin, Protein, Ca2+, LFT at SHCH

**Lab result on December 22, 2011**

| | | | | | |
|---|---|---|---|---|---|
| WBC | =13.7 | [4 - 11x10$^9$/L] | Na | =121 | [135 - 145] |
| RBC | =5.1 | [4.6 - 6.0x10$^{12}$/L] | K | =2.1 | [3.5 - 5.0] |
| Hb | =13.8 | [14.0 - 16.0g/dL] | Cl | =89 | [95 – 110] |
| Ht | =42 | [42 - 52%] | Creat | =61 | [53 - 97] |
| MCV | =83 | [80 - 100fl] | Gluc | =6.1 | [4.2 - 6.4] |
| MCH | =27 | [25 - 35pg] | T. Chol | =2.2 | [<5.7] |
| MHCH | =33 | [30 - 37%] | Albu | =10 | [38 - 54] |
| Plt | =420 | [150 - 450x10$^9$/L] | Protein | =34 | [66 - 87] |
| Lym | =4.2 | [1.0 - 4.0x10$^9$/L] | Ca2+ | =0.69 | [1.12 – 1.32] |
| Mxd | =0.5 | [0.1 - 1.0x10$^9$/L] | SGOT | =132 | [<37] |
| Neut | =9.0 | [1.8 - 7.5x10$^9$/L] | SGPT | =79 | [<42] |

**Recommendation:** Give Calcium and Vit D supplement

**4. LV#RK00369, 55F (Village I, LBS)**
**Diagnosis:**

1. DMII with PNP

**Treatment:**

1. Metformin 500mg 1t po bid (#200)
2. Amitriptylin 25mg 1/4t po qd (#25)
3. Draw blood for Creat, Glucose, Tot chole, TG, HbA1C at SHCH

**Lab result on December 22, 2011**

| | | |
|---|---|---|
| Creat | =96 | [44 - 80] |
| Gluc | =22.8 | [4.2 - 6.4] |
| T. Chol | =5.1 | [<5.7] |
| TG | =2.2 | [<1.71] |

HbA1C =14.5 [4.8 – 5.9]

**Recommendation:** Add Glibenclamide 5mg 1t po bid

**5. HS#RK00370, 47F (Village I, LBS)**
**Diagnosis:**

1. DMII
2. HTN
3. Renal insufficiency

**Treatment:**

1. Metformin 500mg 1t po bid (#100)
2. Glibenclamide 5mg 1t po bid (#100)
3. Captopril 25mg 1/2t po bid (buy)
4. Amitriptylin 25mg 1/4t po qhs (#25)
5. Draw blood for Lyte, Creat, Glucose, Tot chole, TG, protein, albumin, HbA1C at SHCH

**Lab result on December 22, 2011**

| | | |
|---|---|---|
| Na | =133 | [135 - 145] |
| K | =4.1 | [3.5 - 5.0] |
| Cl | =103 | [95 - 110] |
| Creat | =143 | [44 - 80] |
| Gluc | =8.5 | [4.2 - 6.4] |
| T. Chol | =11.7 | [<5.7] |
| TG | =15.1 | [<1.71] |
| Albu | =42 | [38 - 54] |
| Protein | =70 | [66 – 87] |
| HbA1C | =8.4 | [4.8 – 5.9] |

**Recommendation:** Add Fenofibrate 100mg 1t po bid

## Patients who came for follow up and refill medicine

**1. NH#RK00010, 55F (Village III)**
**Diagnosis:**

1. HTN
2. DMII
3. VHD (AI/MR)

**Treatment:**

1. Atenolol 50mg 1t po bid (#200)
2. Chlorpropramide 250mg 1t po bid (buy)
3. HCTZ 25mg 2t po qd (#200)
4. Captopril 25mg 1t po bid (buy)

**2. EB#RK00078, 41F (Village IV), KON MOM**
**Diagnosis:**

1. CHF
2. Incompleted RBBB

**Treatment:**

1. Captopril 25mg 1/2t po qd (buy)
2. Digoxin 0.25mg 1t po qd (#100)
3. Spironolactone 25mg 1t po bid (#200)

**3. UP#RK00093, 58F (Village I)**
**Diagnosis:**

1. Hyperthyroidism

**Treatment:**

1. Carbimazole 1t po bid
2. Propranolol 40mg 1/4t po bid
3. Draw blood for Free T4 at SHCH

**Lab result on December 22, 2011**

Free T4 =43.32 [12.0 - 22.0]

**4. PS#RK00149, 29F (Village I)**
**Diagnosis:**

1. Euthyroid goiter

**Treatment:**

1. Draw blood for Free T4 at SHCH

**Lab result on December 22, 2011**

Free T4 =16.48 [12.0 - 22.0]

**5. OT#RK00155, 45F (Bor Keo)**
**Diagnosis:**

1. HTN
2. DMII

**Treatment:**

1. Metformin 500mg 2t po bid (#400)
2. Captopril 25mg 1/2t po bid (#buy)
3. Atenolol 50mg 1/2t po bid (buy)
4. ASA 300mg ¼t po qd (#25)
5. Amitriptylin 25mg 1/2t po qhs (#50)
6. Insulin NPH 23UI qAM and 5UI qPM
7. Draw blood for Tot chole, TG and HbA1C at SHCH

**Lab result on December 22, 2011**

T. Chol =6.7 [<5.7]
TG =3.8 [<1.71]
HbA1C =13.0 [4.8 – 5.9]

**6. KK#RK00231, 45F (Village I)**
**Diagnosis:**

1. DMII

**Treatment:**

1. Glibenclamide 5mg 1t po bid (buy)
2. Metformin 500mg 1t po bid (#200)
3. Captopril 25mg 1/4t po qd (buy)
4. ASA 300mg 1/4t po qd (#25)
5. Draw blood for Creat, Glucose, LFT and HbA1C at SHCH

**Lab result on December 22, 2011**

Creat =62 [44 - 80]
Gluc =8.7 [4.2 - 6.4]
AST =41 [<31]
ALT =68 [<32]
HbA1C =11.0 [4.8 – 5.9]

**7. SV#RK00256, 43M (Village I)**
**Diagnosis:**

1. DMII
2. HTN
3. Hypertriglyceridemia

**Treatment:**

1. Glibenclamide 5mg 1t po bid (#200)
2. Metformin 500mg 2t po bid (#200)
3. Captopril 25mg 1/2t po bid (buy)
4. Fenofibrate 100mg 1t po qd (buy)
5. Draw blood Creat, tot chole, TG and HbA1C at SHCH

**Lab result on December 22, 2011**

| | | |
|---|---|---|
| Creat | =95 | [53 - 97] |
| T. Chol | =6.7 | [<5.7] |
| TG | =4.3 | [<1.71] |
| HbA1C | =11.6 | [4.8 – 5.9] |

**8. KC#RK00260, 44F (Village V)**
**Diagnosis:**

1. DMII

**Treatment:**

1. Metformin 500mg 1t po bid (#120)
2. Draw blood for Creat, Tot chole, TG and HbA1C at SHCH

**Lab result on December 22, 2011**

| | | |
|---|---|---|
| Creat | =80 | [44 - 80] |
| T. Chol | =6.1 | [<5.7] |
| TG | =1.3 | [<1.71] |
| HbA1C | =7.6 | [4.8 – 5.9] |

**9. VC#RK00268, 66M (Bey Srok Village)**
**Diagnosis:**

1. DMII
2. HTN

**Treatment:**

1. Metformin 500mg 2t po qAM and 3t qPM (#300)
2. Glibenclamide 5mg 2t po bid (#300)
3. Captopril 25mg 1/2t po bid (buy)
4. ASA 300mg 1/4t po qd (#25)

**10. CT#RK00318, 31F (Village I)**
**Diagnosis:**

1. DMII

**Treatment:**

1. Metformin 500mg 2t po bid (#200)
2. Draw blood for Creat, HbA1C at SHCH

**Lab result on December 22, 2011**

| | | |
|---|---|---|
| Creat | =59 | [44 - 80] |
| HbA1C | =9.9 | [4.8 - 5.9] |

**Recommendation**: Add Glibenclamide 5mg 1t po qd

**11. TS#RK00320, 51M (Village V)**
**Diagnosis:**

1. DMII

**Treatment:**

1. Glibenclamide 5mg 2t po bid (#200)
2. Captopril 25mg 1/4t po bid (buy)
3. Draw blood for Creat, Tot chole, TG and HbA1C at SHCH

**Lab result on December 22, 2011**

| | | |
|---|---|---|
| Creat | =111 | [53 - 97] |
| T. Chol | =5.9 | [<5.7] |
| TG | =1.9 | [<1.71] |
| HbA1C | =12.1 | [4.8 – 5.9] |

**Recommendation**: Add Metformin 500mg 1t po bid

**12. HY#RK00341, 41M (Village VI, Labansirk commune)**
**Diagnosis:**

1. DMII
2. HTN

**Treatment:**

1. Metformine 500mg 1t po bid (#200)
2. Glibenclamide 5mg 2t po bid (#200)
3. Atenolol 50mg 1/2t po qd (#50)
4. Captopril 25mg 1/2t po bid (buy)
5. Amitriptylin 25mg 1/4t po qhs (buy)
6. Draw blood for tot chole, TG and HbA1C at SHCH

**Lab result on December 22, 2011**

| | | |
|---|---|---|
| T. Chol | =6.3 | [<5.7] |
| TG | =3.4 | [<1.71] |
| HbA1C | =7.3 | [4.8 – 5.9] |

**Recommendation**: Add Simvastatin 10mg 1t po qhs

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Note: *While visiting Rattanakiri Referral Hospital for TM Clinic this month, Rithy Chau discovered at least 5-10 more cases to patient* ***ST#RK00368*** *admitted at the hospital who came from the same village (Somtrork, O' Yadaw District) and at least half were discharged home before the symptoms were resolving. Those who were discharged home did not want to stay any longer at the hospital because they felt that they were not getting any better and wanted to seek other care (traditional/spiritual) in their village. Our SHCH team visited this village and discovered at least 10 more cases (besides ones admitted to the hospital) at the village who developed similar symptoms and signs—fever, body edema, GI problem, pale, weakness. We treated them with the limited medications we brought with us. After returning to the provincial town, Rithy informed the hospital technical advisor and telemedicine project manager, MA Koh Polo, who informed the health department infectious diseases team and requested them to go to the village to investigate more. We suggested that the village population of Somtrork be treated with Albendazole 400mg bid one week for helmintic/parasitic infection spread from domestic or wild animal—considering Schistosomiasis as one of the causes (which required praziquantel treatment) since there was a river water source close by the village.*

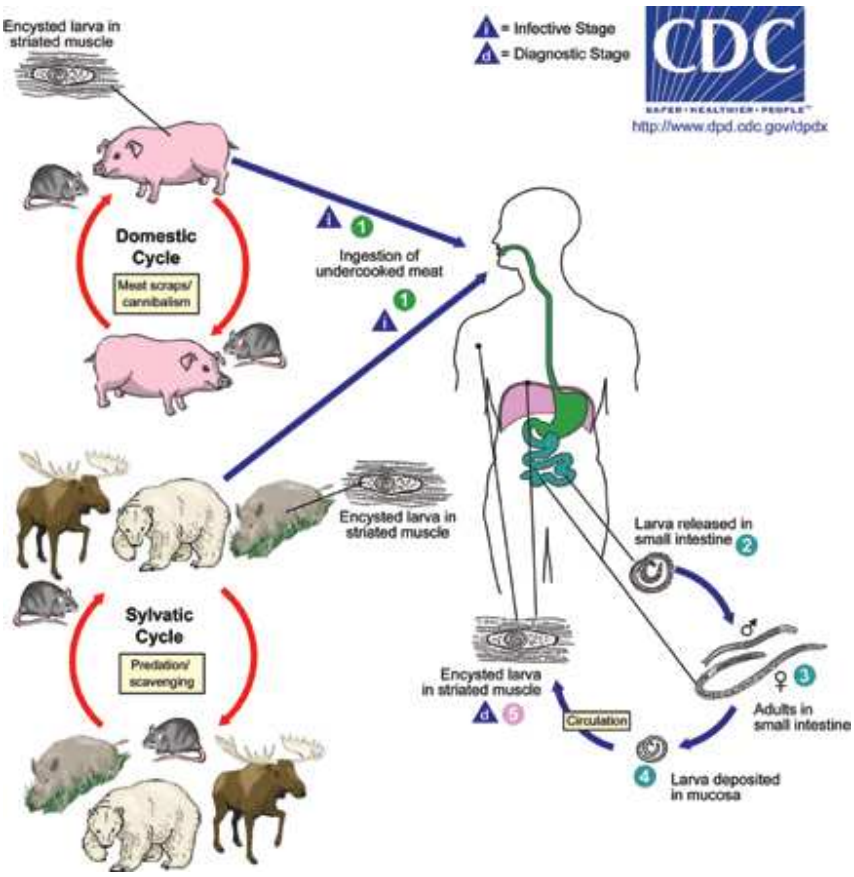
*After returning to Phnom Penh, we received an update on the situation a few days later that the Banlung health department team discovered a possible parasite infection from pig and strongly suspected an infection of trichinellosis. They said that they lack proper equipments/supplies to test specifically for this infection, but the signs and symptoms were almost identical to past year infection in villages of the adjacent province, Stung Treng. They extended the treatment with Albendazole for a total of 2 weeks.*

FYI on Trichinellosis (http://www.dpd.cdc.gov/dpdx/html/Trichinellosis.htm):

## Causal Agents:

Trichinellosis (trichinosis) is caused by nematodes (roundworms) of the genus *Trichinella*. In addition to the classical agent *T. spiralis* (found worldwide in many carnivorous and omnivorous animals), several other species of *Trichinella* are now recognized, including *T. pseudospiralis* (mammals and birds worldwide), *T. nativa* (Arctic bears), *T. nelsoni* (African predators and scavengers), *T. britovi* (carnivores of Europe and western Asia), and *T. papuae* (wild and domestic pigs, Papua New Guinea and Thailand). *Trichinella zimbabwensis* is found in crocodiles in Africa but to date there are no known associations of this species with human disease.

## Life Cycle:




Depending on the classification used, there are several species of *Trichinella*: *T. spiralis*, *T. pseudospiralis*, *T. nativa*, *T. murelli*, *T. nelsoni*, *T. britovi*, *T. papuae*, and *T. zimbabwensis*, all but the last of which have been implicated in human disease. Adult worms and encysted larvae develop within a single vertebrate host, and an infected animal serves as a definitive host and potential intermediate host. A second host is required to perpetuate the life cycle of *Trichinella*. The domestic cycle most often involved pigs and anthropophilic rodents, but other domestic animals such as horses can be involved. In the sylvatic cycle, the range of infected animals is great, but animals most often associated as sources of human infection are bear, moose and wild boar.

Trichinellosis is caused by the ingestion of undercooked meat containing encysted larvae (except for *T. pseudospiralis* and *T. papuae*, which do not encyst) of *Trichinella* species 1. After exposure to gastric acid and pepsin, the larvae are released from the cysts 2 and invade the small bowel mucosa where they develop into adult worms 3. Females are 2.2 mm in length; males 1.2 mm. The life span in the small bowel is about four weeks. After 1 week, the females release larvae 4 that migrate to striated muscles where they encyst 5. Diagnosis is usually made based on clinical symptoms, and is confirmed by serology or identification of encysted or non-encysted larvae in biopsy or autopsy specimens.

## Geographic Distribution:

Worldwide. Most common in parts of Europe and the United States.

## Clinical Features:

Light infections may be asymptomatic. Intestinal invasion can be accompanied by gastrointestinal symptoms (diarrhea, abdominal pain, vomiting). Larval migration into muscle tissues (one week after infection) can cause periorbital and facial edema, conjunctivitis, fever, myalgias, splinter hemorrhages, rashes, and peripheral eosinophilia. Occasional life-threatening manifestations include myocarditis, central nervous system involvement, and pneumonitis. Larval encystment in the muscles causes myalgia and weakness, followed by subsidence of symptoms.

## Laboratory Diagnosis:

The suspicion of trichinellosis (trichinosis), based on history, clinical symptoms, and eosinophilia, can be confirmed by specific diagnostic tests, including antibody detection, muscle biopsy, and microscopy.

### Diagnostic findings

- Microscopy
- Antibody detection

## Treatment:

Several safe and effective prescription drugs are available to treat trichinellosis. Treatment should begin as soon as possible and the decision to treat is based upon symptoms, exposure to raw or undercooked meat, and laboratory test results. Steroids are used for infections with severe symptoms, plus albendazole*, with mebendazole* as an alternative. For additional information, see the recommendations in The Medical Letter (Drugs for Parasitic Infections).

* This drug is approved by the FDA, but considered investigational for this purpose.

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FYI on Schistosomiasis (http://www.dpd.cdc.gov/dpdx/HTML/Schistosomiasis.htm):

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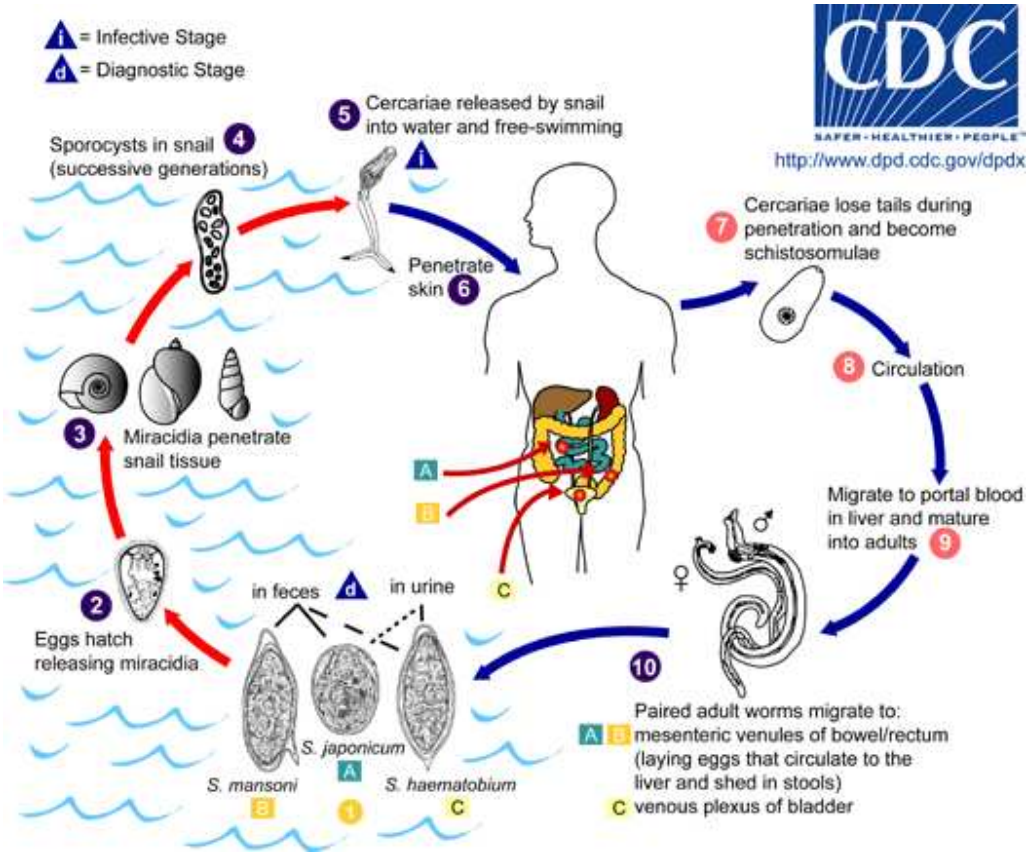
## Causal Agents:

Schistosomiasis is caused by digenetic blood trematodes. The three main species infecting humans are *Schistosoma haematobium, S. japonicum,* and *S. mansoni.* Two other species, more localized geographically, are *S. mekongi* and *S. intercalatum.* In addition, other species of schistosomes, which parasitize birds and mammals, can cause cercarial dermatitis in humans.

## Life Cycle:




Eggs are eliminated with feces or urine 1. Under optimal conditions the eggs hatch and release miracidia 2, which swim and penetrate specific snail intermediate hosts 3. The stages in the snail include 2 generations of sporocysts 4and the production of cercariae 5. Upon release from the snail, the infective cercariae swim, penetrate the skin of the human host 6, and shed their forked tail, becoming schistosomulae 7. The schistosomulae migrate through several tissues and stages to their residence in the veins (8, 9). Adult worms in humans reside in the mesenteric venules in various locations, which at times seem to be specific for each species 10. For instance, *S. japonicum* is more frequently found in the superior mesenteric veins draining the small intestine A, and *S. mansoni* occurs more often in the superior mesenteric veins draining the large intestine B. However, both species can occupy either location, and they are capable of moving between sites, so it is not possible to state unequivocally that one species only occurs in one location. *S. haematobium* most often occurs in the venous plexus of bladder C, but it can also be found in the rectal venules. The females (size 7 to 20 mm; males slightly smaller) deposit eggs in the small venules of the portal and perivesical systems. The eggs are moved progressively toward the lumen of the intestine (*S. mansoni* and *S. japonicum*) and of the bladder and ureters (*S. haematobium*), and are eliminated with feces or urine, respectively 1. Pathology of *S. mansoni* and *S. japonicum* schistosomiasis includes: Katayama fever, hepatic perisinusoidal egg granulomas, Symmers' pipe stem periportal fibrosis, portal hypertension, and occasional embolic egg granulomas in brain or spinal cord. Pathology of *S. haematobium* schistosomiasis includes: hematuria, scarring, calcification, squamous cell carcinoma, and occasional embolic egg granulomas in brain or spinal cord.

Human contact with water is thus necessary for infection by schistosomes. Various animals, such as dogs, cats, rodents, pigs, hourse and goats, serve as reservoirs for *S. japonicum*, and dogs for *S. mekongi*.

## Geographic Distribution:

*Schistosoma mansoni* is found in parts of South America and the Caribbean, Africa, and the Middle East; *S. haematobium* in Africa and the Middle East; and *S. japonicum* in the Far East. *Schistosoma mekongi* and *S. intercalatum* are found focally in Southeast Asia and central West Africa, respectively.

## Clinical Features:

Many infections are asymptomatic. Acute schistosomiasis (Katayama's fever) may occur weeks after the initial infection, especially by *S. mansoni* and *S. japonicum*. Manifestations include fever, cough, abdominal pain, diarrhea, hepatosplenomegaly, and eosinophilia. Occasionally central nervous system lesions occur: cerebral granulomatous disease may be caused by ectopic *S. japonicum* eggs in the brain, and granulomatous lesions around ectopic eggs in the spinal cord from *S. mansoni* and *S. haematobium* infections may result in a transverse myelitis with flaccid paraplegia. Continuing infection may cause granulomatous reactions and fibrosis in the affected organs, which may result in manifestations that include: colonic polyposis with bloody diarrhea (*Schistosoma mansoni* mostly); portal hypertension with hematemesis and splenomegaly (*S. mansoni*, *S. japonicum*, *S. mansoni*); cystitis and ureteritis (*S. haematobium*) with hematuria, which can progress to bladder cancer; pulmonary hypertension (*S. mansoni*, *S. japonicum*, more rarely *S. haematobium*); glomerulonephritis; and central nervous system lesions.

## Laboratory Diagnosis:

Microscopic identification of eggs in stool or urine is the most practical method for diagnosis. Stool examination should be performed when infection with *S. mansoni* or *S. japonicum* is suspected, and urine examination should be performed if *S. haematobium* is suspected.

Eggs can be present in the stool in infections with all *Schistosoma* species. The examination can be performed on a simple smear (1 to 2 mg of fecal material). Since eggs may be passed intermittently or in small amounts, their detection will be enhanced by repeated examinations and/or concentration procedures (such as the formalin-ethyl acetate technique). In addition, for field surveys and investigational purposes, the egg output can be quantified by using the Kato-Katz technique (20 to 50 mg of fecal material) or the Ritchie technique.

Eggs can be found in the urine in infections with *S. haematobium* (recommended time for collection: between noon and 3 PM) and with *S. japonicum*. Detection will be enhanced by centrifugation and examination of the sediment. Quantification is possible by using filtration through a Nucleopore® membrane of a standard volume of urine followed by egg counts on the membrane.

Tissue biopsy (rectal biopsy for all species and biopsy of the bladder for *S. haematobium*) may demonstrate eggs when stool or urine examinations are negative.

**Diagnostic findings**

- Microscopy
- Antibody detection can be useful in both in clinical management (e.g., recent infections) and for epidemiologic surveys.
- Morphologic comparison with other intestinal parasites

## Treatment:

Safe and effective drugs are available for the treatment of schistosomiasis. The drug of choice is praziquantel for infections caused by all *Schistosoma* species. Oxamniquine has been effective in treating infections caused by *S. mansoni* in some areas in which praziquantel is less effective. For additional information, see the recommendations in The Medical Letter (Drugs for Parasitic Infections).

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# The next Rattanakiri TM Clinic will be held in March 2012