



REPORT

eMed at MMPF Maroua Medical Mission 2017

MMPF eMed Network

Providing specialized clinical support to both volunteer providers and patients through the MMPF telemedicine platform, overcoming geographical barriers, to improve health outcomes during the CASEC Medical Missions, and to provide patient follow-up post mission.

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Message from the eMed Lead Physician

August 2017

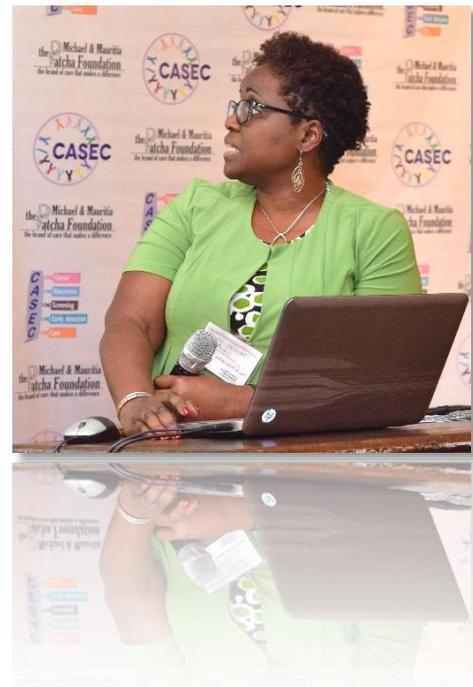
On behalf of the Patcha foundation, I would like to take this opportunity to thank our enthusiastic medical volunteers who signed up and were available for tele-consultation during the 2017 medical mission. The specialties spanned primary care to radiology, public health to obstetrics and gynecology. Thank you for carving out time from your busy schedules to make yourselves available to provide consultant services. Your participation was invaluable as challenging cases were encountered.

We take this opportunity to express our warmest gratitude. Your hard work and dedication is one of the reasons the 2017 medical mission was a resounding success. We thank you for your enthusiasm and the genuine dedication you continue to display with your participation in the eMED Whatsapp group. It is both a privilege and a humbling experience for me to witness your volunteerism on a daily basis. We all breathe a collective sigh of relief when one of the patients we consult on improves and goes home. This brings to mind a recent case presented on the Whatsapp group, that of a centenarian who was brought to the hospital in Cameroon in a semi-comatose state. The discussions ranged from medical management to ethical considerations. I was encouraged by the quality of the discourse. I was thrilled that with appropriate management, he showed remarkable improvement. Thank you for sharing your skills and knowledge to help improve the lives of people you may never meet.

Without you, we simply could not do it! Words cannot express how much we appreciate your generosity in knowledge and time. Spread the word and help us recruit more volunteers for the 2018 medical mission and for the MMPF eMed program.

Very respectfully,

Anne E. Burnley, MD, MHS, MS
eMED Lead Physician



MMPF Maroua MM2017 eMed/Telemedicine Report

The 2017 MMPF Medical Mission took place in [Maroua](#), the capital city of the Extreme North region of Cameroon. The MMPF eMed/Telemedicine platform and its components which were piloted during the 2016 MMPF medical mission were fully implemented during the 2017 medical mission. The MMPF eMED/Telemedicine platform uses information and communication technologies for synchronous and asynchronous communications. The components of the platform are **WhatsApp** for instant collaboration between providers and **Vsee** for remote live consultations. The purpose of the Patcha Foundation's eMed program (<http://patchafoundation.org/services/mmpf-e-med/>) is to:

- Provide specialized clinical support to both our volunteer providers and patients
- Overcome geographical barriers by connecting users who are not in the same physical location (intra-country and inter-country)
- To improve health outcomes and provide follow-up for patients

Program Benefits

- Telemedicine has been advocated in situations in which health professionals in remote locations have little or no access to specialists for assistance with complex cases Telemedicine also provides opportunities for learning and professional development by facilitating the dissemination of general information and remote training of health-care professionals

The MMPF e-Med Network

Technical Infrastructure and Components

Asynchronous (Store-and-send) Component

MMPF e-Med Google groups

- Restricted and moderated email group of providers across the globe
- Members are vetted by Program leads
- Used to exchange detailed information about patients whose cases are being discussed
- Medium for information exchange and mentoring

Synchronous (Real-time/Interactive) Component(s)

Global MMPF secure Vsee Network & MMPF restricted secure eMed WhatsApp Group

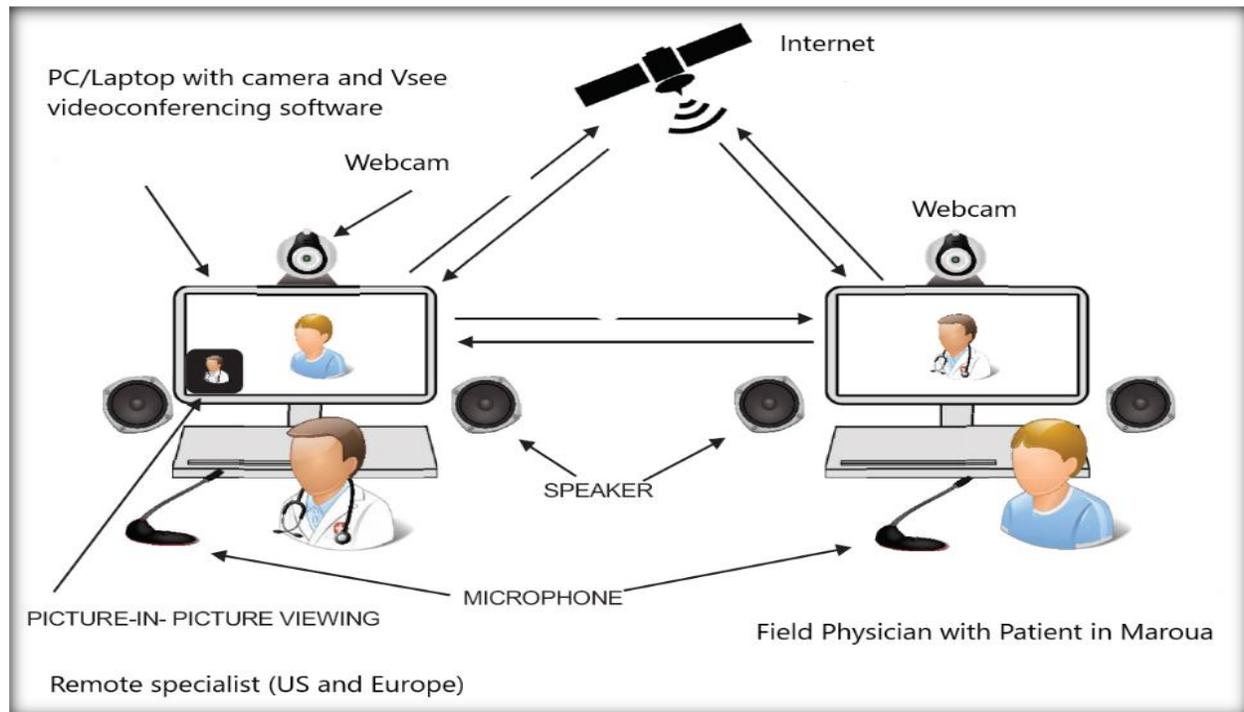
- [Vsee](#) is the best real-time Telemedicine videoconferencing solution we have tested and used extensively. This system is also used by top organizations in the US (e.g.NASA)
- Vsee uses 50% less bandwidth than most of the easily available video conferencing solutions- skype, imo, viber, Facetime, ViDyo etc.
- Vsee uses a highly optimized, auto adapting algorithm protocol and code for low bandwidth situations, such as 2g and 3g which are encountered in most developing countries.

- Vsee supports application screen sharing, 3 to 4 way-Video Conferencing, endpoint to endpoint encryption, real time chat and is HIPAA compliant. It is available on several types of end points and operating systems such as PC/laptops, tablets, mobile phones and supports both IOS and Android systems.
- Vsee allows for instantaneous exchange of files and images (e.g. x-rays)
- WhatsApp complements Vsee by also supporting the instantaneous exchange and transfer of patient information, including high resolution images.

The MMPF eMed program/Network currently has approximately 90 Physicians and other allied health professional who participate and use the network on a daily basis. Members are spread around the globe and span several different medical specialties. More than half of the members of the program were physically present at the Maroua mission. MMPF eMed is thus fully integrated into all Medical Mission activities and is heavily relied upon. Volunteer physicians separated by geographical distance from the medical mission site, can fully participate in mission activities without leaving the comfort of their desks

Setup

The plan for eMed in Maroua was to equip each clinical department/specialty (a total of 7) with an eMed station. Each station would have a laptop or desktop computer with a 23 inch external monitor, a high resolution (Hires) webcam, external speakers and microphones to facilitate remote consultations. These workstations would be connected to the internet over individual cellular broadband routers with a rate of at least 2Mbps. Headphones with microphones would also be available for environments in which excessive background noise interfered with communication between remote physicians and patients.





Typical MMPF eMed field station setup

Program leads established a schedule of available remote specialists to provide live assistance and support (consultation) to the field clinical teams through Vsee and WhatsApp during the mission. The group of physicians resident in Europe were available from 9 AM to 1 PM local time while the group resident in the US were available from Noon until 4 PM Local time.

Pre-mission testing had identified Nexttel Communications as the carrier with the best cellular data connectivity in Maroua. Five Nexttel broadband routers were provided by the elites of the Grand North region and other sponsors for use by the eMed team.



The Nexttel routers had a theoretical speed of up to 150Mbps although the actual speed on Nexttel's 3G network was closer to 5Mbps. The WiFi signal range of each router was 250 square meters and could sustain 32 simultaneous network connections. Based on these technical capabilities, the eMed field Tech team (MMPF digital) created a meshed network with a range of 2000 square meters to cover the entire grounds of the Maroua hospital. This was done by strategically positioning all 5 routers for maximum and optimum coverage. With this setup, MMPF Digital was able to provide free WiFi internet access to the field eMed team and more than 160 MMPF volunteers for the duration of the mission.



eMed field Tech team (MMPF Digital) members Mr. Michael Adamu and PaJoe Chungong doing network setup

Most of the mission team, including the eMed field team (MMPF Digital) arrived in Maroua 2 days later than scheduled due to transportation delays and had less than 2 hours to setup. Consultations were well underway before the network was set up. Additionally, some specialties (Pediatrics, Family Practice, Dental, Ophthalmology, Pharmacy and Laboratory Services) were setup in makeshift tents, hence lost some degree of quietness. Space within these tents was restricted limiting the availability of dedicated areas for a typical MMPF eMed station setup. The field team resorted to using individual webcam equipped laptops and headphone/microphones to mitigate the effects of surrounding noise. Most of the patients in the Maroua area were not fluent in either French or English, so attending physicians had to depend on local interpreters to communicate with patients.



Physicians attending to patients in the makeshift Family Practice unit



eMed stations on makeshift stands

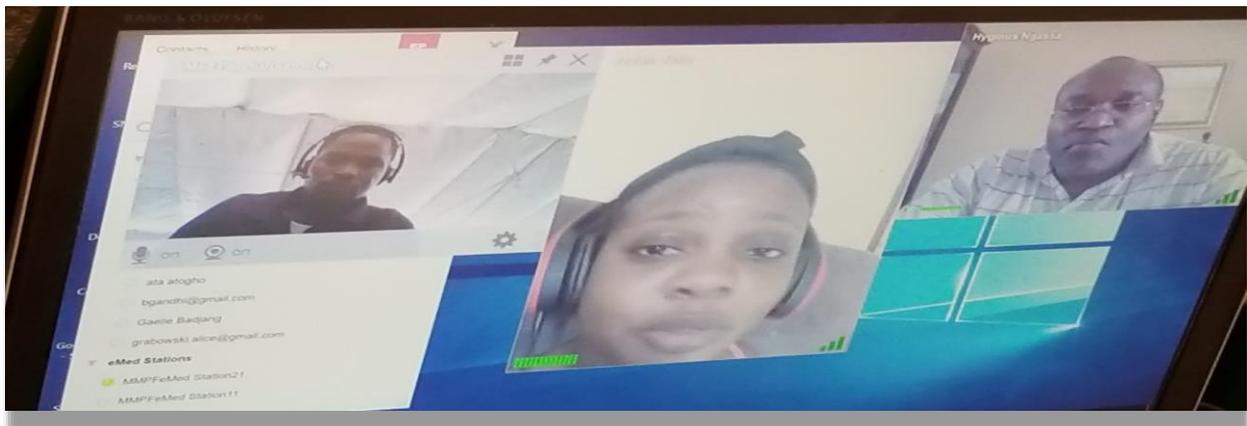
None of these temporary challenges prevented the total adoption and use of the MMPF eMed/Telemedicine platform. All remote specialists were available on vsee for the total duration of their pre-assigned shift for remote consultation with patients. Field Physicians took advantage of the availability of remote specialists to get help with the most complex cases. Vsee afforded some patients the opportunity to have 3 and sometimes 4 Physicians from 3 different continents (Africa, Europe and the US) consulting and discussing their conditions in real time.



Several images of mission field physicians consulting with their remote colleagues in several different continents during the MMPF MM2017 in Maroua, Cameroon

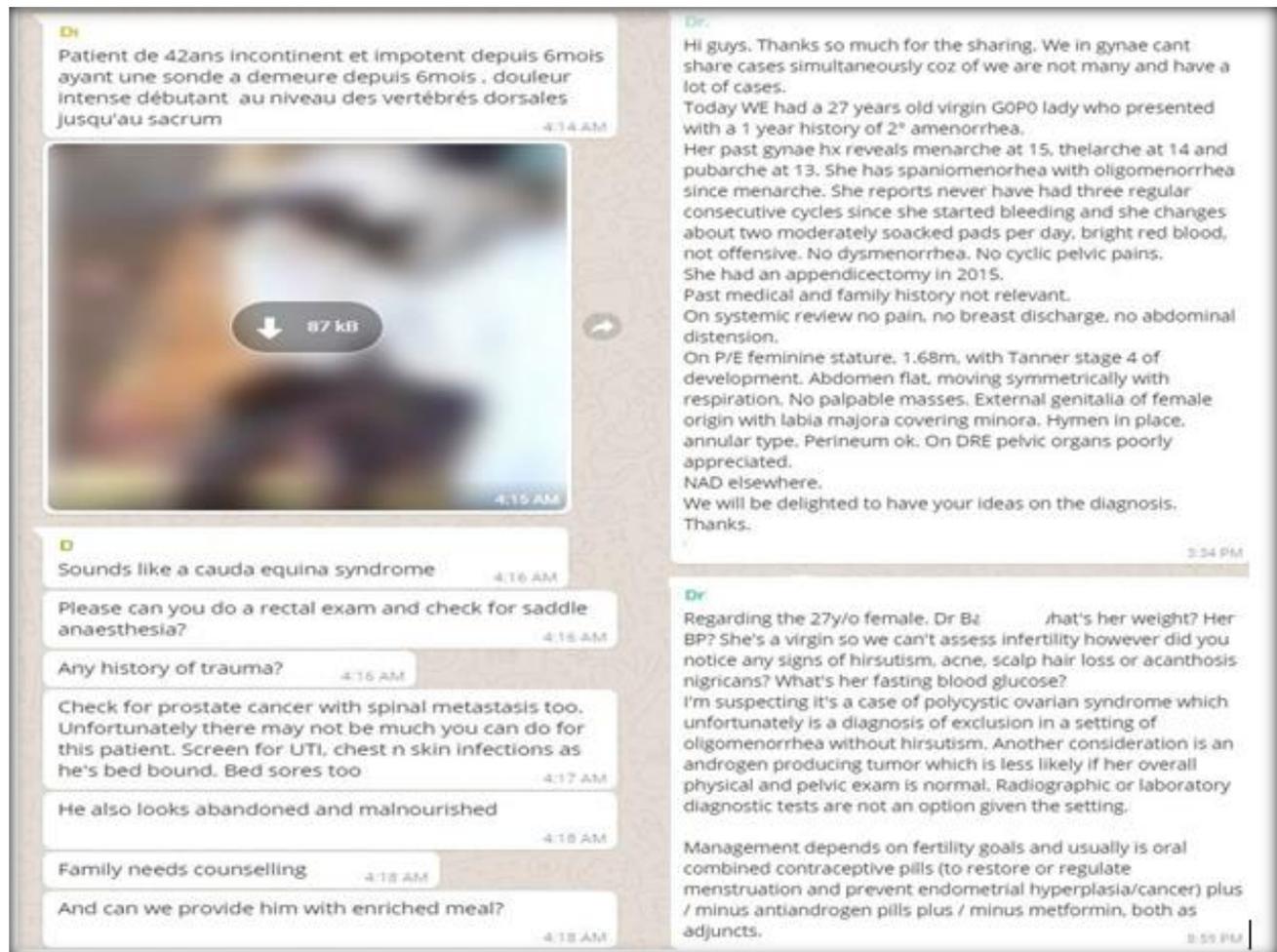


Few images of mission field physicians consulting with their remote colleagues in several different continents during the MMPF MM2017 in Maroua, Cameroon



Three-way live video consultation at the MMPF MM2017 in the extreme North region of Cameroon with Dr. Amta in Maroua, Dr. Judwin in Birmingham UK and Dr. Ngassa in Italy

The restricted **eMed WhatsApp** group was used by all (even field physicians) to present complex cases, provide help to their on the ground counterparts and exchange high resolution images of certain conditions in realtime.



Sample case presentation and discussion on MMPF secured WhatsApp group during mission

The Way Forward

The MMPF eMed Telemedicine platform holds a lot of potential in information exchange and care delivery in limited resource and other remote practice areas. The MMPF eMed program/network has been expanded beyond the medical missions and is being utilized on a regular basis as an invaluable tool to improve outcomes

Some short term objectives include:

- Growing the network by increasing membership so that more physicians and, by extension, the wider community will benefit from the resource.
- The lack of specialized medical services leaves whole segments of the population vulnerable. This is a problem that is not unique to Maroua. To address this shortfall, and the resultant preventable mortality and morbidity, MMPF is working to set up eMed centers in health centers located in remote and underserved communities. eMed centers will come equipped with sophisticated diagnostic tools that can be monitored remotely via VSEE. Some of the equipment include a stethoscope, a sonography machine and EKG machine. There is a clear need for this level of diagnostic expertise to diagnose and manage a wide array of conditions including cardiac as well as pregnant patients.
- The use of vsee (Video Telemedicine) component in other practice settings for example to offer assistance, guidance or expertise otherwise not available in the operating room during surgery.
- The use of the MMPF eMed platform as a learning and knowledge sharing tool, with clinical cases presented regularly for discussion; new, alternate and innovative treatment shared; and ground-breaking research information disseminated.



We foresee the MMPF eMed program and Telemedicine as a whole being used by individual clinicians as well as health facilities to fill the care gap, and improve outcomes, by providing the bridge between local practitioners and innovative, specialized care available globally.

Dr. Stalla Patcha Adamu

President, The Patcha Foundation

Personal Stories and Impressions.



Dr. Amta Pierre at the MMPF MM2017 in Maroua

Je suis très ravie d'avoir été associé au projet de la mission de Maroua. Je retiens de cette mission que du bonheur...

Du bonheur dans l'assistance sociale, dans l'expérience, et aussi la formation. Parlant de la formation l'aspect télémedecine m'a encore bien plus apporté. Cette innovation reste pour moi une approche idéal dans notre contexte où il y'a pas de spécialiste ou très peu. La région de l'extrême nord n'a quasiment pas de cardiologue par exemple.

Personnellement j'ai faire recours a VSee, plusieurs fois pendant la mission de Maroua mai j'ai 4 situations qui m'ont bien marquée.

I am very pleased to have been associated with the Patcha Foundation's Medical mission in Maroua. I hold nothing but happiness in my heart for the mission..

Happy for the social assistance the mission provided, in the experience, and also the training opportunity. Speaking of training, the MMPF eMed program and its Telemedicine aspect added much more to the effectiveness of the outcomes. This innovation is, for me, an ideal approach in our context where there's a lack of enough specialists or none at all. The far North region, as an example, has virtually no cardiologist.

Personally I used the eMed platform and especially VSee several times during the mission in Maroua There are four specific situations/cases that encountered and that I can remark on

le cas d'un enfant qui s'est présenté avec des difficultés à mouvoir ses membres et le tronc, évoluant depuis presque plusieurs années mas se rappel de tout et reste très intelligent Par Vsee, j'aveugle diagnostics il s'agit d'une multiples sclérose en plaque. Un diagnostic rare et que seul le neurologue on

le flair de poser. Je n'avais jamais vu cela. Le simple fait qu'on a enfin dit à l'enfant son vrai problème la bien rassurer que ce n'est pas de la sorcellerie.

There was the case of a child who came in with difficulties moving his limbs and trunk, problems which evolved over a period of several years. In partnership with my colleagues who were available through the MMPF eMed/Telemedicine network and on Vsee during the mission, we were able to diagnose this child's condition as multiple sclerosis. This was a rare diagnosis and only the neurologist could diagnose. I had never seen that before this mission. The mere fact that we could finally tell this child his real problem was reassurance that he was not the victim of witchcraft.

le cas de cette dame qui à présente un masse sur la partie antérieure du coup, avec l'aide des autres confère plus spécialisé nous avons conclus a une hyperthyroïdie probablement d'origine métaphasique de la thyroïde. Ça aussi c'était pour moi un cas école. Et la dame a eu ses vrais problèmes. Malheureusement Je ne sais pas ce qu'elle est devenue.

There was the case of this lady who came in with a mass in the anterior part of the neck. Again, with the help of my other colleagues more specialized and available on Vsee, we diagnosed her condition as hyperthyroidism with probable metastasis of thyroid origins. This too was for me a school event and reassuring to the patient who finally was aware of her real problem. Unfortunately I do not know what became of her.

la situation la plus triste est celle de une petite fille de 14 ans. Qui a fait autant de centre de formation sanitaire et dont le diagnostic n'a jamais été posé. Avec Vsee, nous avons conclus a une cardiopathie dilate très sévère qui a été confirmé à échographie par l'équipe de Dr Cabral. Malheureusement elle est morte 1e semaine plus tard. Et si son diagnostic était posé plus tôt ? Puisque il y'a pas ou très peu les cardiologues? En plus le moyen financier dans un contexte qui est le nôtre ce n'est pas évident du tout.



Dr. Amta Pierre in Maroua discussing Hadidja's case with Dr. Nkafu Bechem in London, England

The saddest situation was that of a little girl of 14 years. She had already been to so many Doctors and health centers but her problem was never diagnosed. After consulting with my colleagues through the MMPF eMed/Telemedicine platform, we were able to diagnose her condition as a severe cardiomyopathy. This was also confirmed by the MMPF Medical Mission Cardiologists on site, Dr. Cabral through an ultrasound. Unfortunately she died just a week after the medical mission and before we could further help her. Her life would have been saved if this diagnosis was made earlier. Hers is a good example of the problems faced in our area due to the lack of a cardiologist

Autant de bonne expérience avec vsee, tout ressèment encore alors que j'étais au bloc je me suis rendu compte que je pouvais avoir de l'aide même de loin en utilisant vsee.

Recently while in the Operating room doing surgery, it dawned on me that through the use of the MMPF eMed/Telemedicine platform, I could actually get assistance from any of my colleagues resident anywhere in the world as was the case during the mission



En conclusion c'est une très bonne innovation pour nous qui sommes très loin des spécialistes avec les réalités de chez nous pas du tout évident. Vivement que le projet aboutissent pour que les cas comme Hadidja (fille de 14 ans décéder de sa pathologie) ne puisse plus arriver. Merci a vous Fondation Patcha. Que dieu vous bénisse.

In conclusion, the MMPF eMed/Telemedicine program is a great innovation especially for those of us who work in an environment where the problem of very few or none existence of specialists such as cardiologists is acute. Hadidja's (14 year old girl died of her heart condition) life would have been saved if the diagnosis were made earlier as we did during the mission and through the use of the MMPF eMed platform. I say thanks to the Patcha Foundation. God bless you.

My MMPF Maroua MM2017 eMed experience.

With a lot of enthusiasm, I happened to be part of this wonderful mission to Maroua with the Patcha Foundation in June of 2017. I was really excited because the previous year was awesome; 5 days in the West Region of Cameroon, working with the cervical cancer screening team of Bingo Hospital.



Dr. Therese Gaelle Badjang

What struck me this year was this innovative program, the MMPF eMed Network. I was fortunate to discuss interesting cases with some of the best Gynecologists across the world in real time.

We discussed a series of cases:

A young breastfeeding woman with a swollen breast identified as a breast abscess/breast neoplasia. A cytoponction was done and sent for analysis and she was

placed on broad spectrum antibiotics. The evolution was marked by a regression of the mass but persistence of a bloody discharge. Unfortunately up till now we do not yet have the results of the pathologist's analysis.

The second case was a young lady with secondary amenorrhea and delayed sexual development. A series of investigations were requested but we could not trace her after.

The main recommendation one could make is to put in place a system/network through which patients could easily be traced after the mission.

I'm eagerly waiting the next mission. Thank you Patcha Foundation

Dr. Therese Gaelle Badjang

My MMPF Maroua MM2017 experience

I am Dr. Mrs. Tenu Tiaya Elodie, a General Practitioner at the District Hospital in Mbengwi, North West region of Cameroon. The MMPF 2017 Medical Mission was my first experience with the PATCHA Foundation. I was so touched by the depth of poverty and affliction I saw, that I have been speechless all this while. The needs of the people who came from far and near was so great but the will and determination of our team to assist them was greater.

I was particularly moved by the 22 year old mother of two who came in with painful breast swelling of seven months duration which without proper investigations had been hastily tagged as breast cancer.



Dr. Mrs. Tenu Tiaya Elodie

She was started on chemotherapy in a local clinic and ran the risk of losing her breast by surgery. We were in such a dilemma, it is only after we had a Videoconference consultation via Vsee with a specialist in the United States, Dr. Olaku and got more orientation that I was a little calm. I realized then that Telemedicine is like having the hospital team brainstorm on an admitted patient. I could also read the joy on these women's faces to know that they are cared about by people from far and near.

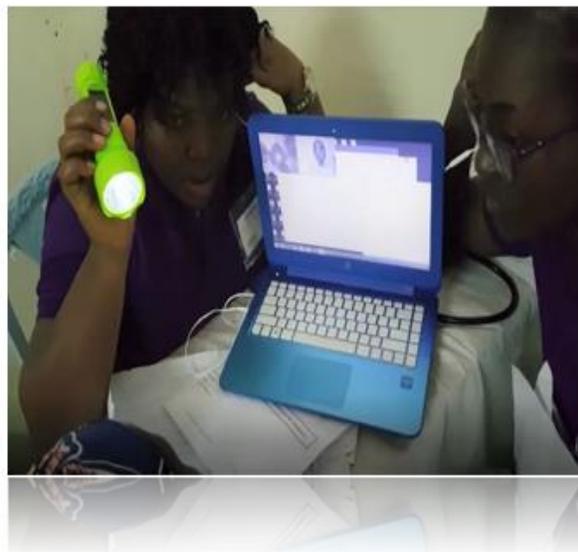
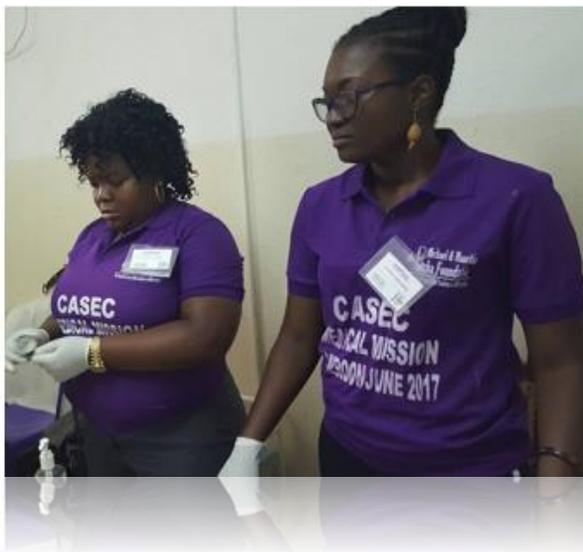
I was so delighted to be part of that smile rejuvenating team, I am so proud to be part of a straight ride on a crooked line. When I can share my testimony I get a feeling like I'm re-living the scene. Unfortunately I was so busy working my ass out that I didn't think of taking pictures of myself at work. Anyway though

they will only be for my personal consumption, I believe those in my heart are the best pictures to behold. I just can't wait to be part of the team of MMPF 2018 Medical Mission by God's grace.

"There are people dying, well if you care enough for the living, make it a better place for you and for me..."

God bless PATCHA Foundation God bless Cameroon

Dr. Mrs. Tenu Tiaya Elodie



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