March 20th marked one year since the first confirmed case of COVID-19 in Madagascar, with recent confirmation that the South African variant is also present in the country. Here, PIVOT Lab Technician Jean Mamy uses the hospital's GeneXpert machine to confirm a positive diagnosis.

QUARTERLY IMPACT REPORT

January 1 - March 31, 2021

Dear PIVOT community,

We are proud to present our first Quarterly Impact Report of 2021. We hope this new year is treating you and your loved ones kindly.

This quarter's focus was on universal health coverage in Ifanadiana District following the late-2020 launch of PIVOT's largest-ever expansion. We are pleased to report the unveiling of renovations to two remote health centers (a particular feat, considering each is located more than 50 kilometers from the paved road by footpath) and the hiring of 37 new Ministry of Public Health (MOPH) staff co-recruited with PIVOT. Next quarter, we expect to finish work on 4 more of the facilities currently under renovation and start construction at 3 additional facilities, which will result in increased access to quality primary care for thousands more families in the district.

As we expand our geographic footprint, we maintain an active focus on the quality of services delivered in these remote regions. Clinicians stationed at these primary care centers are being trained and equipped to offer more key services on-site, including screening and/or management of care for conditions like hypertension, diabetes, cancer, and even sickle cell disease. For the first time, clinicians at Tsaratanana Health Center (located 15 kilometers from the paved road) are able to screen for breast and cervical cancer, performing pap smears and biopsies of suspicious lesions to be tested at the nearest referral center. This is a prime example of what will be a game-changer for the management of chronic illness at the level of primary care across the district.

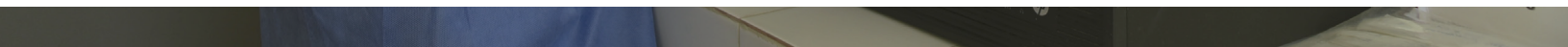
In the background of everything, the COVID-19 pandemic continues. March 20th marked one year since the first case in Madagascar, and PIVOT's clinical and research teams continue to respond for what looks to be a long haul. As vaccine uptake begins around the world, Madagascar awaits vaccines, and – despite borders being closed throughout the pandemic – the confirmation of the South African variant has led to the anticipation of a second wave of infection that could be more severe than the first. To know as much as possible, we look forward to opening the RT-PCR lab next quarter after a year of collaboration and preparation with local partners at Centre ValBio, and to the addition of seroprevalence testing by longitudinal cohort data collectors, who will be going door-to-door to survey families as soon as they are cleared by COVID protocol to do so. As we work diligently to respond to pandemic, epidemics of malaria and tuberculosis continue to require vigilance. We take every opportunity to say that the COVID experience worldwide is much like the everyday lived experience in places like Madagascar, reinforcing that the time is now to focus on strengthening health systems and health equity worldwide.

Thank you for being our partners in doing just that. We hope the report that follows serves as a useful tool for you to engage with our work, as we use it to foster our own transparency and accountability.

Onward together,

Tara Loyd
Executive Director

Matt Bonds
Co-Founder & Scientific Director



IFANADIANA DISTRICT

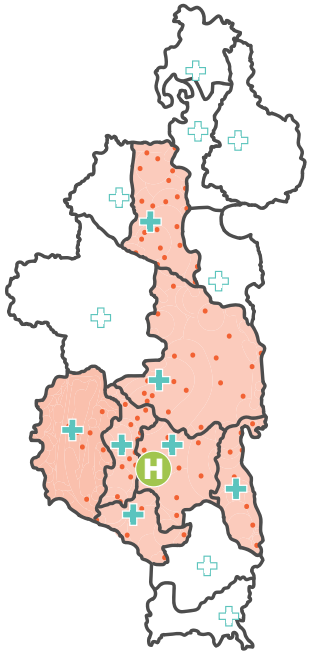
In partnership with Madagascar's Ministry of Public Health, we are transforming Ifanadiana District's public health system into an evidence-based model for universal health coverage that can be sustained, replicated, and scaled.

Total District Population: 187,571

Current Catchment Area: 93,653

Baseline Statistics (2014):

- **1 in 7** under-5 mortality
- **1 in 14** maternal mortality
- **71%** of the population lives >5km walk from nearest health facility
- **49%** of the population lives >10km walk from nearest health facility



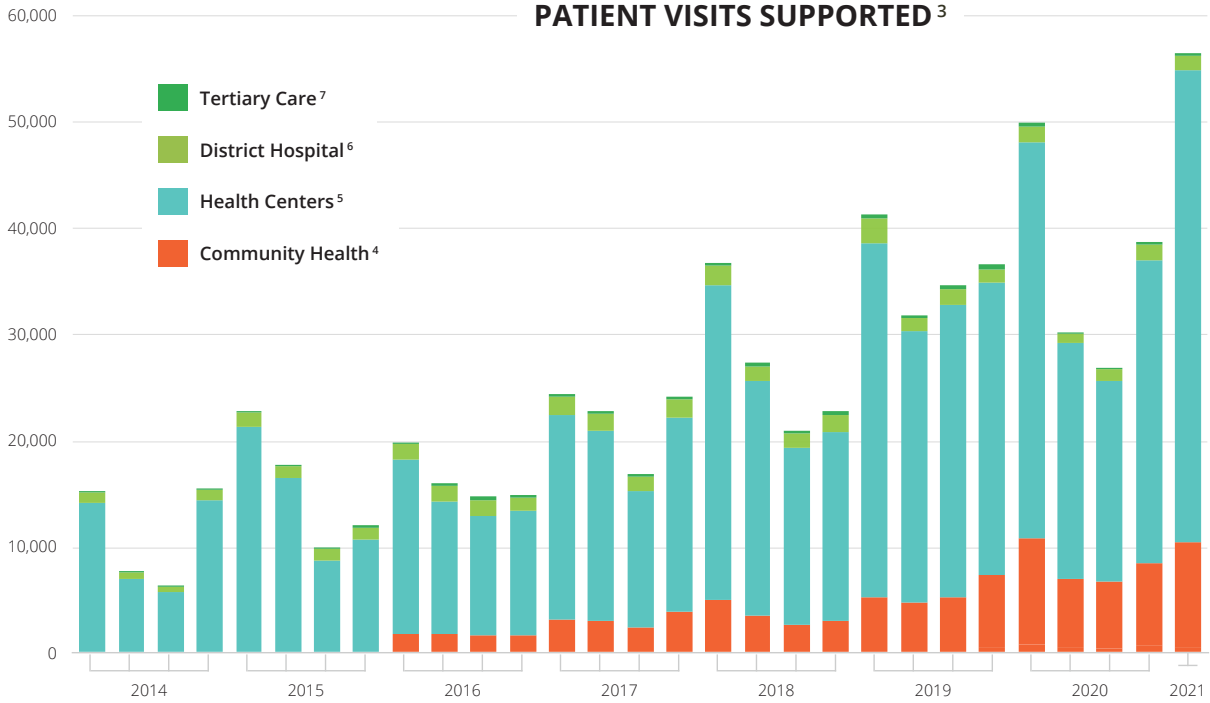
PIVOT's current support to the health system at each level of care:

- 1 district referral hospital
- 7 health centers receiving PIVOT's full model support package[1]
- 8 health centers receiving partial support[2]
  to receive full support by 2022
- 175 community health workers (CHWs)
  serving throughout shaded communes
- 81 community health sites
  basic structures where CHWs receive patients

HIGHLIGHTS & CHALLENGES

- Following a year of development in partnership with USAID ACCESS and Dimagi, **finalized digital tools and began trainings for the use of mobile application CommCare**, to be used by community health workers for streamlined patient management and enhanced community-level data collection.
- **Expanded TB treatment services**, including starting the process to outfit remote facilities with solar panels for refrigeration (which will support a number healthcare activities in addition to TB testing capacity).
- **Increased referrals to tertiary care, reflecting improved quality of care at the district hospital** in the successful identification of patients in need of specialized care, including pediatric oncology patients for chemotherapy as well as patients in need of radiotherapy, accompanied by PIVOT to the capital.
- **Facility-based delivery rates remained below target** across all health centers (43% average) except for Kelilalina (61%), where the maternal waiting home has been most utilized by expectant mothers in the days prior to labor. To address this, **qualitative surveys conducted across communes informed a new plan** to ensure the population is aware that expectant mothers are welcome to board at these facilities at no cost and to install kitchens to better accommodate patients.
- In response to a disturbing uptick in women presenting at the hospital after violent incidents, **launched a new program for addressing gender-based violence in the region**, starting with trainings on how to identify signs of violence inflicted upon women and youth.
- Concerned by a **rise in malnutrition patients lost to follow-up** (reportedly from the financial burden for parents staying at the hospital with a child receiving long-term care), the social work team visited patient homes to better understand their circumstances and challenges, address questions or concerns, and accompany their return to treatment.
- **Struggled to maintain an adequate supply in the hospital's blood bank**, with high malaria season leading to more frequent transfusions, and the prevalence of Hepatitis B in the district rendering some blood donations unusable; launched campaign to encourage PIVOT's 200-person staff to participate in these drives more regularly as community members.
- Carried out the **co-recruitment of 37 new clinical personnel** and the **inauguration of two newly-renovated remote health centers** with the MOPH as milestones in our joint strategy to achieve universal health coverage.
- Observed a **rise in COVID-19 cases** in both the capital and Ifanadiana District, with recent confirmation that the South African variant is present in the country; PIVOT staff **re-invigorated campaigns with local communities about reducing risk of transmission**.

PATIENT VISITS SUPPORTED [3]



THIS QUARTER (JAN-MAR '21)
56,677

ALL-TIME (SINCE 2014)
716,631

Community Health

VISITS (CHILDREN UNDER-5)

10,488
(Target: 6,761)
155% of target achieved

PER CAPITA UTILIZATION [9]

2.8 visits
per child under 5 *(annualized)*

18-Month Community Health Outcomes in Proactive Care Pilot Commune vs. Non-Pilot Communes

	Proactive Care Pilot	Non-Proactive Communes
Percent of Households Visited	87%	0%
Per Capita Utilization Rate	3.9	2.6
CHW Adherence to Protocol	97%	72%
CHW Supervision Rate	92%	90%

Health Centers

EXTERNAL CONSULTATIONS [10] (ALL AGES)

44,445
(Target: 41,565)
107% of target achieved

PER CAPITA UTILIZATION [9]

1.9 visits
per person *(annualized)*

District Hospital

OUTPATIENT VISITS (ALL AGES)

1,441
(Target: 1,400)
103% of target achieved

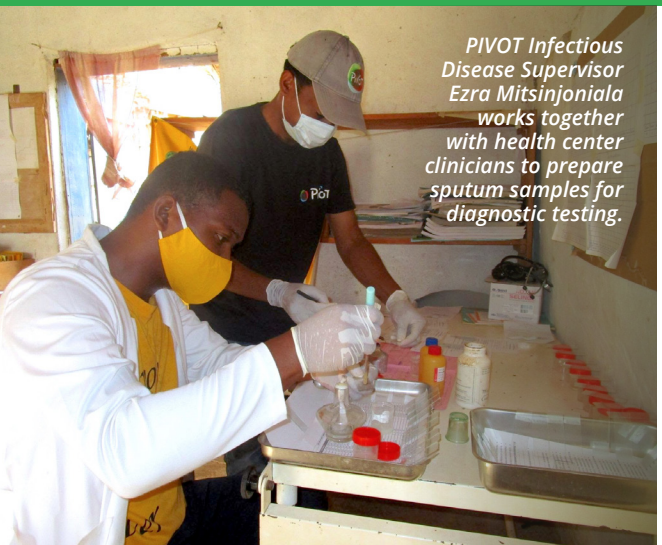
HOSPITALIZATIONS

784
(Target: 772)

BED OCCUPANCY [11]

56%
(Target: 65%)

CLINICAL SPOTLIGHT: TUBERCULOSIS



PIVOT Infectious Disease Supervisor Ezra Mitsinjoniala works together with health center clinicians to prepare sputum samples for diagnostic testing.

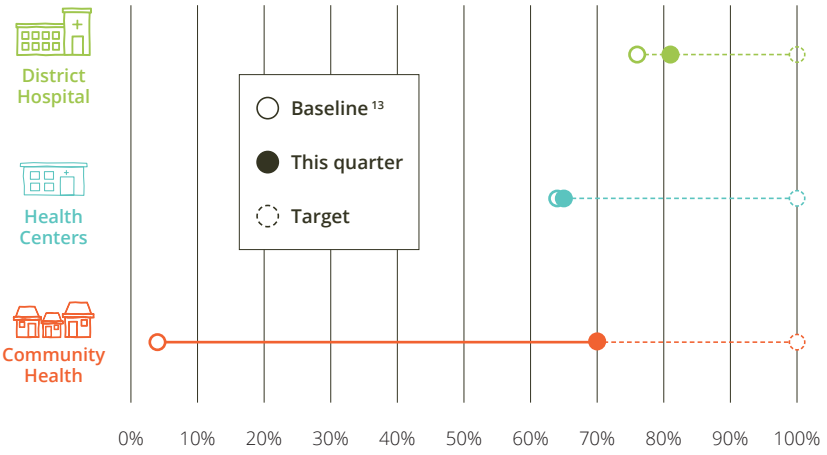
Tuberculosis (TB) is one of the biggest killers in Madagascar. When PIVOT began work in Ifanadiana District, the death rate was an alarming 22% of patients in treatment. In response, we launched support for the MOPH's TB control activities in 2017.

From late 2020 to the present, the success rate among patient cohorts completing treatment has been 90% or above. This is especially notable in our catchment area, where the geography alone creates immense challenges in both identifying TB cases in remote villages and ensuring patients complete their full course of treatment.

This quarter, the MOPH's infectious disease team evaluated the implementation of the revamped TB program. The feedback from this supervision was very positive. They were impressed by the number of cases identified and diagnosed in such a short period of time, and were particularly pleased to see the dramatic drop in the number of patients lost to follow-up thanks to the work of our social workers and community health team.

In recognition of World TB Day on March 24, PIVOT collaborated with Androrangavola Commune to hold a mass sensitization and screening campaign. Of the 60 people designated for screening, 50 had suspected cases. Once lab results confirm their diagnoses, those who have tested positive will be enrolled in a health center-based treatment program.

AVAILABILITY OF ESSENTIAL MEDS [12]



CONTINUUM OF CARE

38% transferred by PIVOT ambulance

29% transferred by taxi bus *with transport fees covered by PIVOT*

33% by other mode of transport *on foot, or by car, tractor, stretcher, etc.*

STAFF

- **230** total PIVOT employees
  - **98%** Madagascar-based
  - **94%** Malagasy
  - **8:3** female:male leadership

- **280** MOPH personnel supported
  - **49** district hospital staff
  - **56** health center staff
  - **175** community health workers

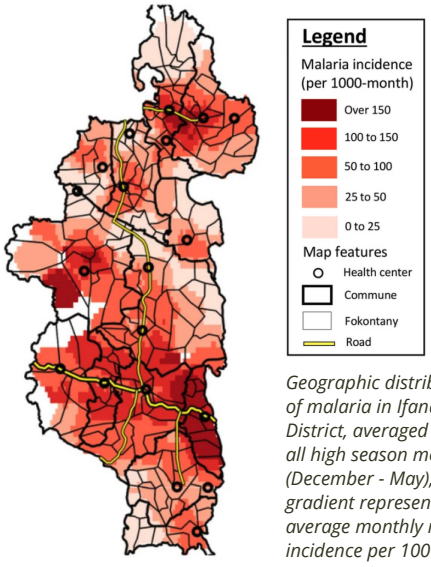
In celebration of International Women's Day, PIVOT staff participated in a district-organized reforestation event, planting trees and setting positive intentions around issues of both gender equity and environmental justice. The day honored those who have fought to advance women's rights around the world who continue to do so today.

INNOVATION SPOTLIGHT: MODELING MALARIA PREVALENCE

Too often, easily-treatable cases of malaria become life-threatening due to lack of timely access to care. We know that rural areas of sub-Saharan Africa, including Madagascar, with the highest rates of infectious diseases in the world are also those with the lowest rates of access to health services. To fight infectious disease, most governments and NGOs rely on data from patients diagnosed at health facilities in order to identify disease outbreaks and allocate the necessary resources. Known as passive surveillance, this method is affordable and serves as the basis for planning control activities, but has a fundamental flaw: **it misses all the sick people who do not (or cannot) access the health system.**

In a recent article by Elizabeth Hyde and collaborators published in the *International Journal of Health Geographics*, PIVOT-affiliated researchers found that passive surveillance in fact missed about 4 out of every 5 cases of malaria, and failed to detect areas of high transmission. Hyde's new method combined geographical data with four years of malaria patient data and statistical models of healthcare utilization to estimate malaria incidence for every community within a health district over time.

This study has the potential to change the game when it comes to managing the burden of disease in Madagascar and similar settings. Per the study, this new method "could be scaled-up thanks to the increasing availability of e-health disease surveillance platforms for malaria and other diseases across the developing world," enabling public health actors to better manage the distribution of resources and reduce the threat of disease transmission among remote communities.



Geographic distribution of malaria in Ifanadiana District, averaged over all high season months, (December - May), with color gradient representing the average monthly malaria incidence per 1000 people.

MATERNAL & REPRODUCTIVE HEALTH

This quarter, we saw a
100%* maternal survival rate [15]
at PIVOT-supported health facilities.

In addition to this, we achieved:

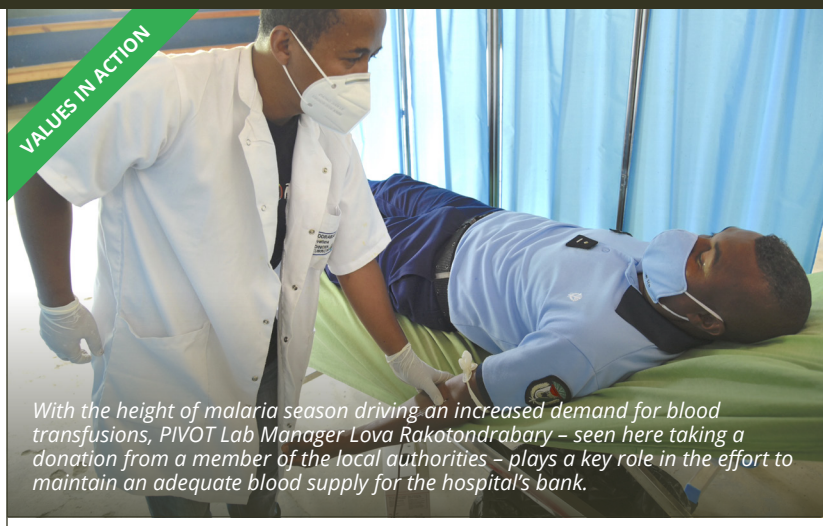
46%
contraceptive coverage rate [16]
(Target: 45%)

43%
facility-based delivery rate [17]
(Target: 40%)

44%
antenatal 4-visit completion rate [18]
(Target: 50%)

SINCE 2014, PIVOT HAS SUPPORTED
8,990
FACILITY-BASED DELIVERIES

* *Maternal survival rate includes only hospital data this quarter; health center data are not yet available.*



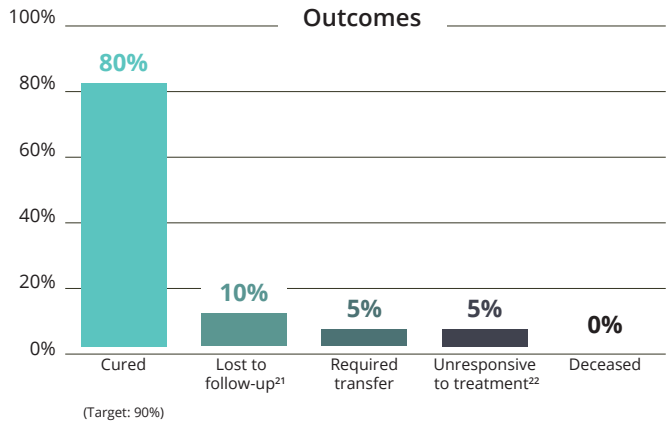
With the height of malaria season driving an increased demand for blood transfusions, PIVOT Lab Manager Lova Rakotondrabary – seen here taking a donation from a member of the local authorities – plays a key role in the effort to maintain an adequate blood supply for the hospital's bank.

MALNUTRITION

HEALTH CENTERS

- **52 children** began treatment for severe acute malnutrition [19]
- **41 children** were discharged from treatment

Outcomes



(Target: 90%)

DISTRICT HOSPITAL

- **18 children** were treated for severe acute malnutrition with complications [20]
- **14** were successfully discharged from intensive treatment (either cured or referred to a health center for continued care)

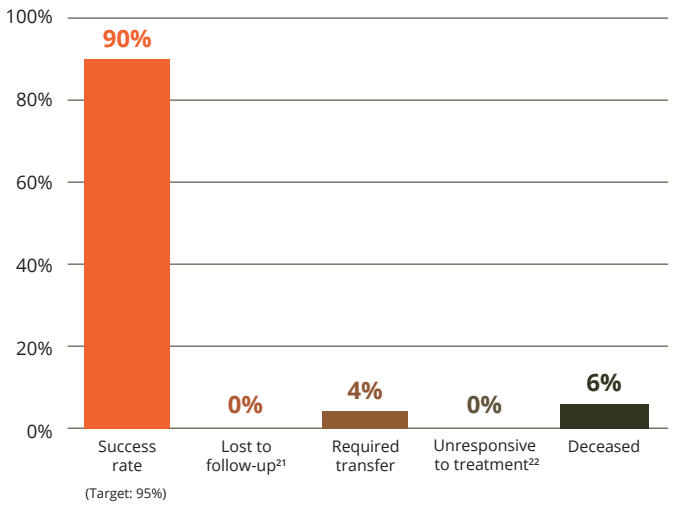
TUBERCULOSIS

This quarter, **61 patients** were enrolled for TB treatment.

- 80% smear positive
- 3% smear negative
- 17% extrapulmonary

Cohort Outcomes

for **50 patients** completing 1 year of treatment:



(Target: 95%)

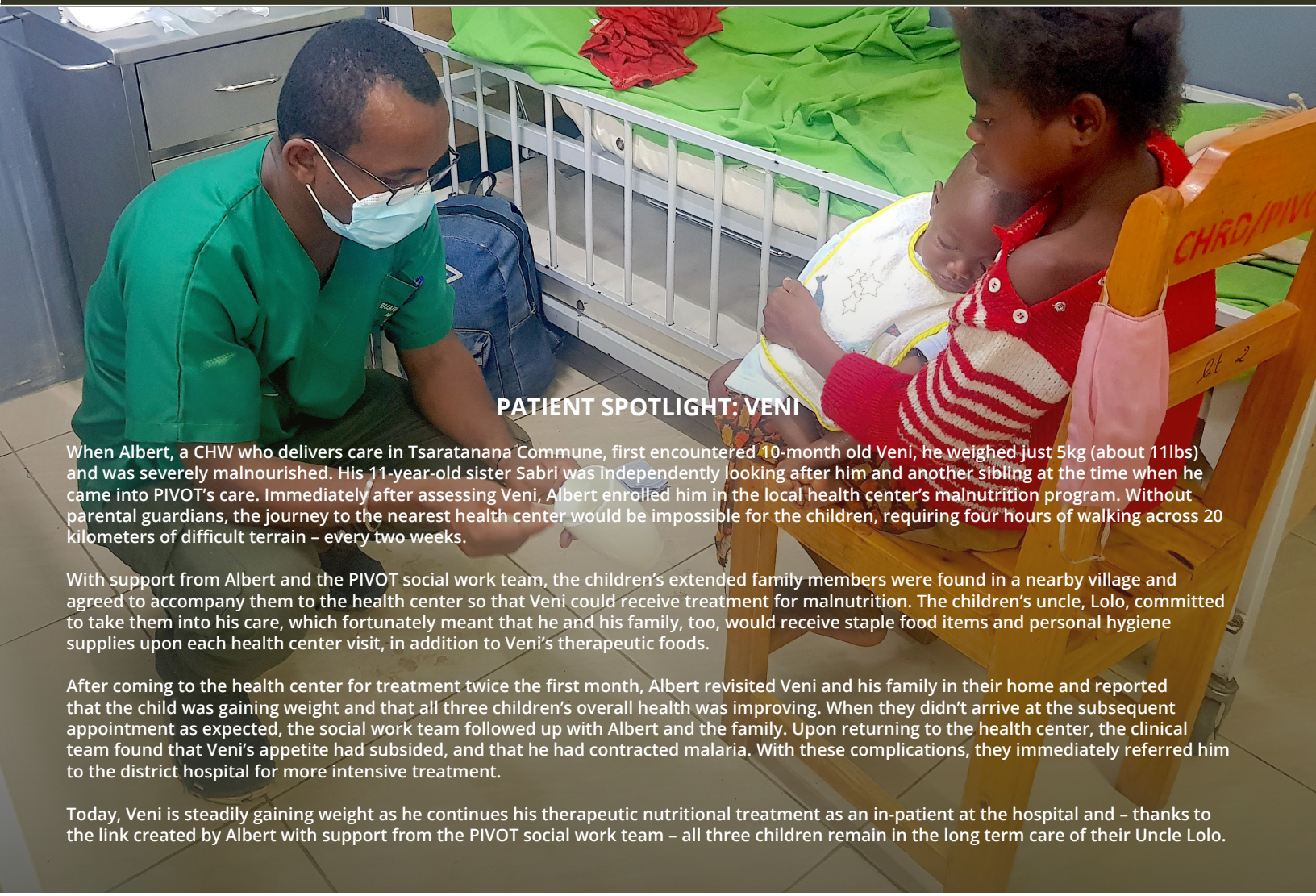
SOCIAL SUPPORT

561 social kits (food and household essentials) distributed to vulnerable patients at the district hospital

170 psycho-social sessions provided for hospital patients

1,192 reimbursements provided for transport to/from care

38,275 meals served to hospitalized patients and their *accompagnateurs* [23]



PATIENT SPOTLIGHT: VENI

When Albert, a CHW who delivers care in Tsaratanana Commune, first encountered 10-month old Veni, he weighed just 5kg (about 11lbs) and was severely malnourished. His 11-year-old sister Sabri was independently looking after him and another sibling at the time when he came into PIVOT's care. Immediately after assessing Veni, Albert enrolled him in the local health center's malnutrition program. Without parental guardians, the journey to the nearest health center would be impossible for the children, requiring four hours of walking across 20 kilometers of difficult terrain – every two weeks.

With support from Albert and the PIVOT social work team, the children's extended family members were found in a nearby village and agreed to accompany them to the health center so that Veni could receive treatment for malnutrition. The children's uncle, Lolo, committed to take them into his care, which fortunately meant that he and his family, too, would receive staple food items and personal hygiene supplies upon each health center visit, in addition to Veni's therapeutic foods.

After coming to the health center for treatment twice the first month, Albert revisited Veni and his family in their home and reported that the child was gaining weight and that all three children's overall health was improving. When they didn't arrive at the subsequent appointment as expected, the social work team followed up with Albert and the family. Upon returning to the health center, the clinical team found that Veni's appetite had subsided, and that he had contracted malaria. With these complications, they immediately referred him to the district hospital for more intensive treatment.

Today, Veni is steadily gaining weight as he continues his therapeutic nutritional treatment as an in-patient at the hospital and – thanks to the link created by Albert with support from the PIVOT social work team – all three children remain in the long term care of their Uncle Lolo.

MORE FROM THIS QUARTER:

CLICK TO READ

Ensuring Personal Protective Equipment (PPE) For All CHWs in Madagascar
In 2020, the Covid-19 Action Fund for Africa was launched as a collaborative dedicated to protecting community health workers (CHWs) serving on the frontlines of the pandemic. As a member of this and the Community Health Impact Coalition, PIVOT has the unique opportunity to serve as the lead in-country partner for securing and distributing PPE to every CHW in Madagascar.

CLICK TO READ

Staff Spotlight: Pauléa ("Léa") Eugénie Rahajatiana
As one of the first staff recruited to the PIVOT team in 2014, Léa has leveraged her skills from years as a professional nurse, her lifelong dedication to public health, and a commitment to continuous learning for the role she holds now: PIVOT's first-ever Deputy Director of Biomedical Services.

CLICK TO READ

Defining Our Commitment to Diversity, Equity & Inclusion
In a personal essay, Engagement Officer Amy Donahue chronicles the first leg of PIVOT's US team's journey to consciously deepen the organization's diversity, equity, and inclusion agenda and step boldly into functional allyship.

PIVOT board member and global health leader **Dr. Paul Farmer** kicked off the new year with a address and words of encouragement for the virtually-assembled PIVOT management team in Madagascar.

Watch the 7-minute recording!

DEFINITIONS

1. **PIVOT full support (for health center):** a health center that receives PIVOT's technical and financial support to ensure that: it is staffed at or above Ministry of Health standards; fees for patient visits are covered; facility infrastructure is improved; and the data system is supported through data quality assessments and feedback
2. **PIVOT partial support (for health center):** a health center that receives PIVOT's financial and technical support to hire staff, perform routine data collection, and address urgent district-wide or facility-specific issues as needed
3. **Supported patient visit:** a patient visit to community health worker, health center, or hospital for which costs of care are reimbursed by PIVOT; patients are not charged a consultation fee
4. **Community health:** disease prevention and health promotion conducted by community health workers (CHWs) outside of health facilities and within a community
5. **Health center:** a health facility offering primary care services for the population of a geographically-defined commune, ranging from 4,500 to 20,800 people (NOTE: In Madagascar, every health center or centre de santé de base (CSB) is designated as either a CSB1 or CSB2; CSB2s are larger and staffed with at least one advanced level clinician; CSB1s are staffed by nurses and midwives; PIVOT support currently focuses on CSB2s.)
6. **District hospital:** a secondary health facility offering inpatient care and specialized clinical services (including dentistry; emergency obstetric care, including caesarean sections; laboratory and radiology; infectious disease treatment; and inpatient malnutrition for children) for the district population; to access care at the district hospital, patients are referred from the health center
7. **Tertiary care:** specialized medical care provided at regional or national health facilities outside of the district
8. **Community health worker (CHW):** an elected community member trained to provide care for common illnesses in their home communities and to refer patients in need of higher levels of care to health facilities; patients served are primarily pregnant women and children under five
9. **Per capita utilization:** annualized rate at fully-supported health centers is calculated using the total number of quarterly health center visits multiplied by four and divided by total catchment area population
10. **External consultation:** new and follow-up outpatient visits with a clinician at a fully-supported health center or hospital
11. **Bed occupancy:** percentage of total hospital beds available that are occupied by admitted patients
12. **Essential medicines:** a subset of total medicines supplied (7 medicines at the community level, 15 medicines at health centers, and 31 medicines at the district hospital) that, informed by international standards, are necessary for providing basic health care in our setting
13. **Baseline:** the assessment of the availability of essential medicines before PIVOT intervention, which was: 2018 at the district hospital, 2014 at health centers, and 2015 at the community level
14. **Standard referral:** a non-emergency referral from a community, health center, or hospital in which patients are counseled to seek specialized care, but are not provided transport by ambulance
15. **Maternal survival rate:** the percentage of health center births in the last quarter for which the mother was discharged alive following delivery
16. **Contraceptive coverage rate:** the percentage of women between the ages of 15-49 in PIVOT's catchment area who use any method of birth control as documented at the health center for a three month period (adjusted for reporting delays)
17. **Facility-based delivery rate:** the percentage of the estimated number of infants expected to be born in the review period who were born at a fully-supported health center
18. **Antenatal 4-visit completion rate:** the percentage of women who gave birth at a fully-supported health center who attended at least four antenatal care visits prior to delivery
19. **Acute malnutrition:** weight for height between -2 and -3 z-scores according to growth standards
20. **Severe malnutrition:** weight for height below -3 z-score according to growth standards
21. **Lost to follow-up:** a patient whose treatment has been interrupted and who has not completed a program of care
22. **Unresponsive to treatment:** a patient whose health outcomes do not improve with treatment for specified disease
23. **Accompagnateur:** a family member, friend, or community member who accompanies a patient to seek care; often to cook, clothe, or otherwise provide necessary day-to-day support for the patient