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At the Intersection of Health, Health Care and Policy

By Andres Garchitorena, Ann C. Miller, Laura F. Cordier, Ranto Ramananjato, Victor R. Rabeza, Megan Murray, Amber Cripps, Laura Hall, Paul Farmer, Michael Rich, Arthur Velo Orlan, Alexandre Rabemampionona, Germain Rakotozafy, Damoela Randriantsimaniry, Djordje Gikic, and Matthew H. Bonds

In Madagascar, Use Of Health Care Services Increased When Fees Were Removed: Lessons For Universal Health Coverage

ABSTRACT Despite overwhelming burdens of disease, health care access in most developing countries is extremely low. As governments work toward achieving universal health coverage, evidence on appropriate interventions to expand access in rural populations is critical for informing policies. Using a combination of population and health system data, we evaluated the impact of two pilot fee exemption interventions in a rural area of Madagascar. We found that fewer than one-third of people in need of health care accessed treatment when point-of-service fees were in place. However, when fee exemptions were introduced for targeted medicines and services, the use of health care increased by 65 percent for all patients, 52 percent for children under age five, and over 25 percent for maternity consultations. These effects were sustained at an average direct cost of US$0.60 per patient. The pilot interventions can become a key element of universal health care in Madagascar with the support of external donors.

Andres Garchitorena (andres
.garchitorena@gmail.com) is a
postdoctoral fellow in the
Department of Global Health
and Social Medicine, Harvard
Medical School, in Boston,
Massachusetts.

Ann C. Miller is a principal
associate in the Department
of Global Health and Social
Medicine, Harvard Medical
School.

Laura F. Cordier is monitoring
and evaluation manager at the
nongovernmental organization
(NGO) PIVOT in Ranomafana,
Madagascar.

Ranto Ramananjato is a
statistician at the Institut
National de la Statistique
(INSTAT), in Antananarivo,
Madagascar.

Victor R. Rabeza is a
statistician at INSTAT.

Megan Murray is a professor
in the Department of Global
Health and Social Medicine,
Harvard Medical School.

Amber Cripps is former
deputy country director at the
NGO PIVOT.

Laura Hall is former medical
director at the NGO PIVOT.

Paul Farmer is a professor in
the Department of Global
Health and Social Medicine,
Harvard Medical School.

In 1948 the United Nations Universal Declaration of Human Rights established health as a basic human right.[1] Yet at least 400 million people worldwide lack access to essential health services.[2] In 2010 the World Health Organization (WHO) launched a major initiative to promote universal health coverage, which aims to ensure access to high-quality health services and protection from financial risks (that is, catastrophic spending) for all people.[3,4] There is now strong evidence and consensus in the global health community that even small user fees can reduce access to essential health services for the poor.[5–8] Removal of out-of-pocket payments through the implementation of prepaid schemes (such as national health insurances) or targeted fee exemptions is at the core of most universal health coverage strategies.[6] Several sub-Saharan African countries are making substantial progress toward universal health coverage,[9] but experience on the whole has been heterogeneous.

Madagascar consistently ranks among the world's ten poorest nations and faces enormous challenges in financing and expanding health coverage. Its national health policy, in place since 2003, requires that most drugs and medical supplies be paid for at the point of care, and it includes a system of "equity funds" to subsidize access to free medicines for the poorest patients.[10] The system, which relies on local authorities to identify indigent patients and manage the equity funds raised from the sale of medicines, has shown mixed results in identifying the most vulnerable[10,11] and covers less than 1 percent of the Malagasy population.[12] Funds recovered by the local health system through the sale of medicines provide only a marginal contribution to

Michael Rich is an associate physician in the Department of Global Health and Social Medicine, Harvard Medical School.

Arthur Velo Orlan is a program manager at the Madagascar Ministry of Public Health, in Antananarivo.

Alexandre Rabemampionona is former medical inspector for Ifanadiana at the Madagascar Ministry of Public Health.

Germain Rakotozafy is regional health director for Vatovavy-Fitovinany at the Madagascar Ministry of Public Health.

Damoela Randriantsimaniry is former secretary general at the Madagascar Ministry of Public Health.

Djordje Gikic is former country director at the NGO PIVOT.

Matthew H. Bonds is an associate professor in the Department of Global Health and Social Medicine, Harvard Medical School.

the national health budget,[12] while out-of-pocket payments represent about 40 percent of total health expenditures nationally.[13] In a country where 82 percent of the population subsists on less than US$1.90 per day,[13] it has become a national priority to remove fees at the point of service to achieve universal health coverage.

During a time of unprecedented expansion of internationally funded health services in most developing countries, a 2009 coup d'état in Madagascar resulted in the halving of official development assistance (from US$42 to US$21 per capita) for the country and substantial reductions in the government's health budget.[13,14] In 2014 Madagascar had the lowest reported per capita health spending in the world, at US $13.56.[13] Democratic elections in 2014 resulted in the removal of international sanctions, giving the government of Madagascar a unique opportunity to advance an ambitious health agenda. A national policy for universal health coverage was signed in December 2015, focused primarily on developing a national health insurance system that pools contributions from taxes, external donor grants, and other sources (a "basket fund"), to create a prepaid system that reduces fees at the point of service.[12] Unfortunately, limited evidence exists in Madagascar to inform policies for universal health coverage, which should rely on rigorous comparisons of different fee-exemption interventions and targeted groups; quantifications of expected changes in health service demand to set appropriate targets and adapt the workforce if needed; and estimations of costs to determine feasibility and budget allocation.

Since 2014 two pilot programs to remove access barriers by providing primary health care services free of charge were implemented in a rural district of Madagascar. A district is an administrative division with a population of about 150,000–300,000 comprising one reference hospital and several major health centers (one per commune, the subdivision of a district). These initiatives were complemented by a baseline districtwide household demographic and health survey and by expanded monitoring and evaluation of public health facilities. We used data from the survey and the public health facilities' monitoring and evaluations in a quasi-experimental district-level study design. Our aim was to characterize health care access and associated barriers in the district population and among vulnerable groups before the interventions, and to measure the impact of the two fee-exemption programs on different types of care and targeted populations. The study was intended to provide direct evidence to use in projecting costs and impacts of removing fees

at the point of service, in accordance with universal health coverage policies.

Study Data And Methods

SETTING AND INTERVENTIONS This study was carried out in the district of Ifanadiana, which is located in a mountainous rainforest area of the Vatovavy-Fitovinany region in southeastern Madagascar. The region had some of the worst health and socioeconomic indicators in the country, as revealed by the latest national Demographic and Health Survey in 2009.[15] Ifanadiana's 2014 mortality rates for mothers and children under age five were 1,044 per 100,000 and 145 per 1,000, respectively.[16] That was more than double the average mortality estimates for Madagascar as a whole. In 2014 nearly three-quarters of the district's population lived in extreme poverty.[16]

▶ **INTERVENTION 1:** The conditions of the Vatovavy-Fitovinany region prompted the World Bank to include it in a project for Emergency Support to Critical Education, Health, and Nutrition Services, implemented in five regions in extreme need across Madagascar.[17] The health component of this project aimed to increase access to health care by providing an essential package of services at no cost for children under age five and pregnant women. The program was implemented in Ifanadiana at all thirteen major health centers but did not cover the district's six other health centers, which were classified as basic health centers (additional health centers in larger communes, offering only basic health services and staffed only with nurses and midwives). Section 1 of the online Appendix provides more details about the centers.[18] The essential services covered prevention of and treatment for a wide range of conditions. The program was initiated in Ifanadiana in February 2014 and was carried out by local nongovernmental organizations through a voucher system. Every woman attending the health center for antenatal, delivery, or postnatal care (first six weeks) or escorting a child under age five with any illness received a voucher from a program agent. After consultation at the health center, the patient could preset her voucher at the center's dispensary to receive free medicines prescribed by the center's Ministry of Health staff.

▶ **INTERVENTION 2:** In early 2014 Madagascar's Ministry of Health also partnered with a nongovernmental organization, PIVOT, to create a model health district for the country based on the WHO's framework of six building blocks of health system strengthening.[18] Ifanadiana was chosen as the place to test the model health district interventions. This program's first phase

focused primarily on the catchment area of four major health centers, representing approximately one-third of Ifanadiana's population. In these health centers, supply-side initiatives such as infrastructure renovations and support for different clinical programs have been progressively implemented over the first two years.

The most discrete policy change implemented in this area was a program to eliminate point-of-service payments for all patients seeking care at the four targeted health centers. This program, supported by PIVOT, began in October 2014 and covered costs of forty essential medicines and twenty medical supplies (these are listed in online Appendix Exhibit B).[19] The program is not limited to a restricted target demographic but rather reimburses the Ministry of Health on behalf of patients for the most common medicines and supplies (such as antibiotics, paracetamol, and oral rehydration products) prescribed to all patients not covered by the World Bank program in these four health centers (that is, children under five and pregnant women). Some additional health system strengthening activities span the entire district, such as hiring medical and non-medical staff at health centers to comply with Ministry of Health policies, training medical staff to improve quality of care, and establishing a referral ambulance network to facilitate access to secondary care. The PIVOT and World Bank program interventions are described in detail in the Appendix, Section 1.[19]

DATA SOURCES A cross-sectional household survey was designed by researchers at Harvard Medical School to obtain demographic, health, and economic information from 1,522 households in the Ifanadiana district. Questionnaires were adapted from Madagascar's Demographic and Health Survey,[15,20] with additional questions from other internationally validated surveys. The Madagascar National Institute of Statistics (INSTAT) carried out data collection, survey coordination, training, and oversight . A two-stage stratified sampling strategy was designed to be representative at the district level and two stratum levels: within and outside of PIVOT's initial intervention area (achieved by sampling each subpopulation independently). For this, eighty population clusters (a group of villages close to each other geographically), half from each stratum, were selected at random from the total available based on maps from the 2009 census. Individual households were then identified within the clusters on a map, and twenty households per cluster were selected at random to participate. Between April and May 2014, individual face-to-face interviews were conducted in the 1,522 sampled households with all women ages 15–49 and men ages 15–59 (both usual res-

idents or visitors). A household questionnaire was also administered to the head of the household to provide general information on behalf of all household members. All residents, including children, had weight and height (or length in the case of infants) measured. Ethical approval, consent, and permissions were granted in Madagascar, as explained in the Appendix, Section 2.[19] The study was also reviewed by the Harvard Medical School Institutional Review Board.

HEALTH CARE UTILIZATION Data on monthly utilization—defined as the number of new individuals attending the health center for outpatient consultations per month—were obtained from the Ministry of Health for all nineteen major and basic public health centers in Ifanadiana district from January 2013 to December 2015. Data were extracted from the health centers' monthly reports to the district, which are aggregated from the health centers' registries every month by Ministry of Health staff. After May 2015, Ministry of Health criteria for reporting utilization rates changed; health care utilization data were subsequently gathered directly from the registries to ensure consistent estimations. Costs of the programs per patient, estimated from data on numbers of beneficiaries and amounts of medicine reimbursements, were obtained from the World Bank program and PIVOT accounts. Information on the catchment population of each health center was obtained from official Ministry of Health records. We also used Ministry of Health data to calculate the monthly number of medical staff (nurses, midwives, and doctors) at each health center, and we validated this information through in-person interviews with staff members from all health centers and through PIVOT internal data on joint PIVOT–Ministry of Health recruitments. We obtained dates of major infrastructure renovations and monthly numbers of ambulance referrals from PIVOT internal data.

DETERMINANTS OF ACCESS TO CARE Data included health information on illness, pregnancy, and health-seeking behavior; demographic information on patients' age, sex, and number of household members; socioeconomic information on patients' annual income, indicators of household members' wealth and level of education; and geographic information on distance to health care facilities and roads. The response variable "access to health care" was defined as the probability of seeking medical care at a health care facility (health center or hospital) when a person was in need because of a reported illness or pregnancy and was constructed as a dummy variable (details are presented in Appendix Exhibit E).[19] We carried out three sets of analyses to study separately access to health care

in the general population (all household members) and two vulnerable populations: children under age five and pregnant women. Access to care was modeled using logistic regressions in generalized linear models to study the effect of socioeconomic and geographical barriers while controlling for relevant confounders. Multivariate model selection was based on adjusted Akaike Information Criteria for complex surveys.[21] Analyses were performed with R software and the R package "survey."[22]

IMPACT OF FEE EXEMPTIONS ON HEALTH CARE USE We modeled the impact of each program on utilization rates using interrupted time-series analyses with control groups.[23] Consistent with our baseline analyses of survey data, this analysis addressed three outcome variables of health care use: outpatient care for all patients (excluding maternity care); outpatient care for children under five; and maternity care including all prenatal, delivery, and postnatal care visits. For each model we studied the impact of the two programs that were designed to reduce financial barriers by assessing both the level of change (immediate impact) and the slope of change (impact over time) associated with each program.[23] We controlled for linear and seasonal trends in utilization rates in the absence of the programs and for baseline differences in each type of health center (basic health centers not receiving any program; major health centers receiving at least World Bank program support; and PIVOT-supported major health centers receiving both types of support). We also accounted for other nonfinancial programs such as completion of major infrastructure renovations, monthly number of ambulance referrals, and monthly number of medical staff at each health center. Utilization rates at each health center were modeled using negative binomial regressions in generalized linear mixed models, with a random intercept introduced for each health center. Multivariate model selection was performed through stepwise procedures based on Akaike Information Criteria. Model estimates reflect the ratio of change in utilization rates associated with each explanatory variable. These analyses were performed with R software and R package "lme4."[24] Further details on variable description and statistical analyses are available in the Appendix, Section 2.[19]

LIMITATIONS Our study had several limitations. First, our pilot is based on one of the 119 health districts in Madagascar. Ifanadiana is representative of many rural districts in the country in terms of health and socioeconomic indicators, especially the poorest southeastern part of the country, but results might not be generalizable to urban districts and to areas with significantly different geographical or sociocul-

tural characteristics.[15–17] Second, concerns over data quality when using official Ministry of Health data in low-income countries have been previously reported.[25] Data quality was maintained through a program of joint Ministry of Health–PIVOT cross-examinations that were carried out every three months at a subset of health centers to compare monthly reported data with Ministry of Health registry data, and results from these cross-checks revealed occasional errors in the reporting of utilization rates (see the Appendix, Section 4).[19] Third, even though we used robust methods for time-series analyses and control for multiple confounders,[26] other interventions or contextual factors (for example, improvements in quality of care, attitudes and practices of health staff, and community sensitization) may have affected utilization beyond what we were able to control for in our analysis. Finally, improved heath care use is a necessary but not sufficient condition for greater intervention coverage. It does not necessarily translate into greater health equity or better population health outcomes,[27–29] which are the ultimate goal of this type of intervention.[30]

Study Results

BARRIERS TO HEALTH CARE ACCESS IN THE POPULATION AT BASELINE Survey data revealed that 87.2 percent of households (1,324) and 58 percent of children under age five (736) reported illness in the previous weeks. Of those, only 27.7 percent and 22.7 percent, respectively, sought treatment at a health facility (see Appendix Exhibit G).[19] Only 16.6 percent of the 986 women in the district who had a live birth in the past five years received care at a health care facility for antenatal, delivery, and postnatal care (all three types, at least one reported visit of each). Exhibit 1 shows the spatial distribution of household health-seeking behavior in the district, which reveal geographical and socioeconomic patterns in access to health care. In 2014, Ifanadiana had an area of consistently better health care access along the paved road (crossing the district from west to east), where 25–65 percent of households that reported illness sought treatment at a health center. In the rest of the district, where the deficient transportation infrastructure (nonpaved roads and trails) impairs people's capacity to travel, only households located within five kilometers of a major health center were more likely to seek treatment (15–35 percent of those reporting illness). This was not true for basic health centers, which had little influence in the treatment-seeking behaviors of nearby populations (Exhibit 1). Furthermore, these patterns almost overlapped
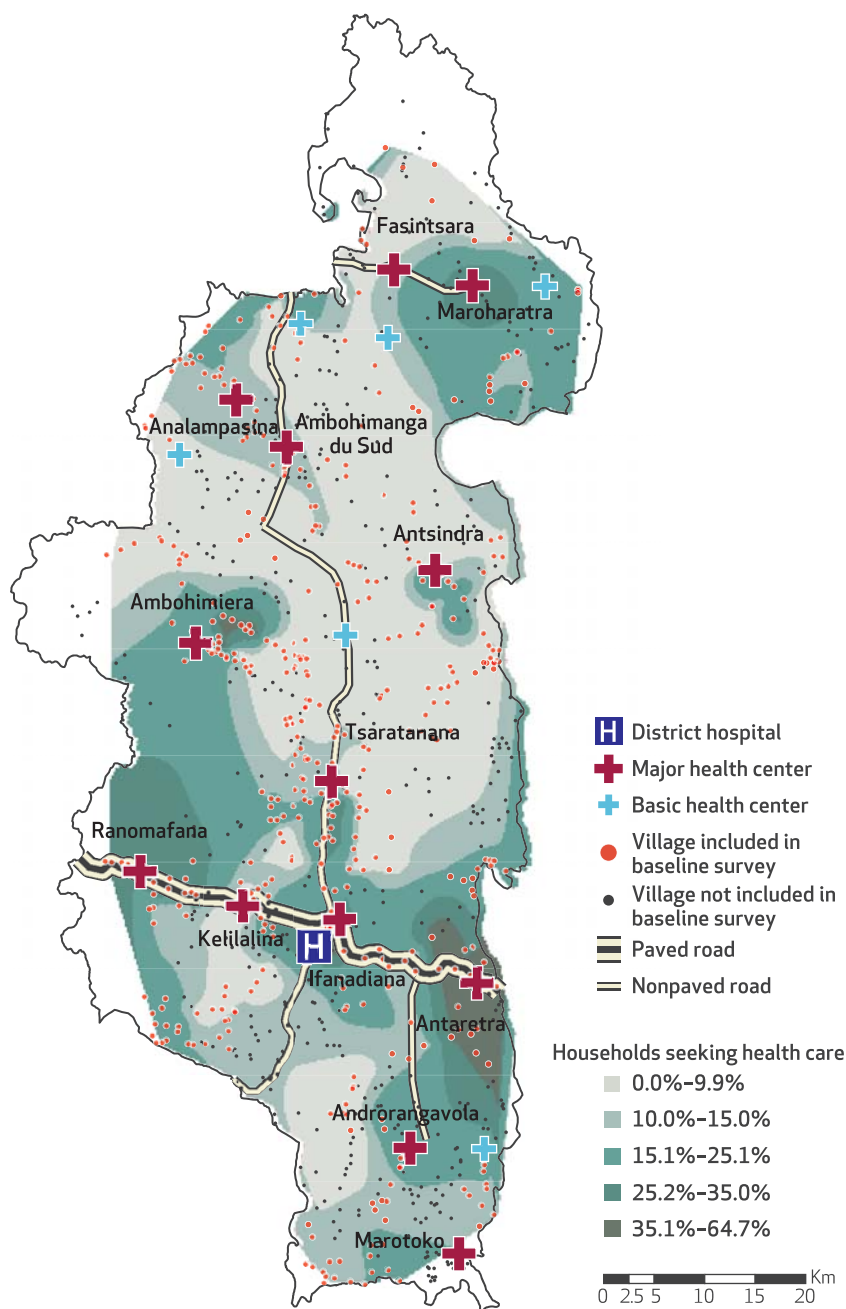
with a gradient of wealth distribution in the district, where the areas of lowest care-seeking behavior (0–15 percent, around the center of the district and the far south) were consistently the poorest (see Appendix Exhibit F).[19]

Socioeconomic and geographical factors significantly predicted health care access for all household members, children under age five, and pregnant women, even after relevant demographic and severity-related factors were controlled for in multivariate analyses (Exhibit 2). Among economic factors, household income predicted higher access for any illness of household members (odds ratio: 1.49), whereas household wealth (a composite index of household ownership of durable assets) predicted higher access for maternity care (OR: 3.51). In addition, the mother's educational attainment predicted higher access for child illnesses (OR: 2.11) and maternity care (OR: 3.26). Among geographical factors, distance to the health center was consistently associated with lower access for child illnesses (OR: 0.81) and for maternity care (OR: 0.74). Being farther than 5 kilometers from a health center and from a main paved road was associated with lower access for illnesses of household members (OR: 0.64 and 0.50, respectively).

IMPACT OF FEE EXEMPTIONS ON HEALTH CARE USE The two programs' removal of point-of-service fees was associated with health care utilization increases of nearly two-thirds for all patients, more than half for children under age five, and more than 25 percent over two years in maternity consultations. Exhibit 3 presents the results of multivariate analyses of the time series of utilization rates (outpatient visits) in district health centers during the period 2013–15. We observed significant seasonality in utilization for all types of care (weaker for maternity care) and a significant impact of lagged utilization on the utilization dynamics (Exhibit 3). Baseline outpatient utilization rates were higher at major health centers than at basic health centers for all patients (relative change: 1.60) and for children under age five (RC: 1.44) but not for maternity care. Each additional health care provider (including midwife, nurse, or doctor) present in the health center increased utilization (RC: 1.09), but we did not find that the infrastructure renovations or the implementation of the referral ambulance network had a significant effect on utilization (Exhibit 3).

The World Bank program, targeting children under age five and pregnant women, was associated with increases in these two targeted populations: for children under age five (RC: 1.29) and for maternity care consultations (RC: 1.14) annually (slope of change; or 1.28 after two years)

EXHIBIT 1

Spatial distribution of household health-seeking behavior in Ifanadiana District, Madagascar, 2014

SOURCES Author's analyses of 2014 household survey data. Spatial layers for the administrative limits and health centers were provided by the Institut National de la Statistique (INSTAT). **NOTES** The map displays the mean proportion of households seeking care at a health center when at least one member of the household reported illness in the previous four weeks. Average values of eighty spatial clusters, which include 20 households each, were estimated using R statistical software and R package "survey." To obtain a continuous raster layer for Ifanadiana from these eighty values, we performed natural neighbor interpolation between the clusters using tools available in ArcMap, version 10.2.2. Interpolation could only be performed for areas situated between at least two surveyed villages, leaving some parts of the district blank (notably, near the edges of the district boundary).

EXHIBIT 2

Factors associated with health care access in Ifanadiana District, Madagascar

Variable	Access for all household members (N = 1,324)		Access for children under age 5 (N = 736)		Access for pregnant women (N = 986)	
	Univariate	Multivariate	Univariate	Multivariate	Univariate	Multivariate
Baseline probability (intercept)		0.13****		0.38*		0.34
SOCIOECONOMIC FACTORS (ODDS RATIO)						
Wealth score ($\log_{10}$)	1.91***		2.70***		14.93****	3.51**
Household per capita income ($\log_{10}$)	1.96****	1.49***	1.88**		3.79****	
Education of head of household[a] or of mother[b,c] ($\log_{10}$)	1.10****		2.86***	2.11**	13.70****	3.26**
Household average education[a] ($\log_{10}$)	1.12****					
GEOGRAPHICAL FACTORS (ODDS RATIO)						
Distance from health center (km)	0.90***		0.80****	0.81****	0.65****	0.74****
Distance from health center > 5 km	0.50****	0.64*	0.30****		0.14****	
Distance from main road (km)	0.99		0.99		0.97	
Distance from main road > 5 km	0.45***	0.50**	0.39 ***		0.19****	
Distance from secondary road (km)	0.99		0.98		0.96	
Distance from secondary road > 5 km	0.83		0.81		0.66	
DEMOGRAPHIC FACTORS (ODDS RATIO)						
Number of household members ($\log_{10}$)	1.00		0.37		0.12***	0.15***
More sick males[a] (yes/no) or sex of child[b]	0.88		1.20			
Sick under age 5[a] (yes/no), child age[b], child order[c] ($\log_{10}$)	1.28**	1.53***	1.02		0.29****	
Sick over age 50[a] (yes/no), mother's age[b,c] ($\log_{10}$)	1.00		0.98		0.80	
SEVERITY FACTORS (ODDS RATIO)						
Days lost[a] ($\log_{10}$), complication[b], small child[c] (yes/no)	4.83****	4.91****	1.32		0.75	
Number of sick household members[a]	1.12***					

SOURCE Author's analyses of 2014 household survey data, using information available in the household survey and women's individual survey. **NOTES** Binomial generalized linear models with survey design. Odds ratios from univariate and multivariate results. Statistical models accounted for survey weights. A version of the exhibit with 95% confidence intervals is in Appendix Exhibit H (see Note 19 in text). [a]Variable included in household model only. [b]Variable included in child model only. [c]Variable included in maternal model only. *$p < 0.10$ **$p < 0.05$ ***$p < 0.01$ ****$p < 0.001$

(Exhibit 3). This program was also associated with a moderate increase in all outpatient visits (RC: 1.13). In PIVOT-supported health centers, where the reimbursement program was expanded to all patients, we estimated an additional increase for all outpatient consultations (RC: 1.52) and for children under age five (RC: 1.29), but no change in maternity consultations (Exhibit 3). Combined, the removal of point-of-service fees from the World Bank and PIVOT programs resulted in a 65 percent increase in utilization for all patients, a 58 percent increase for children under age five, and a 28 percent increase in maternity consultations by the end of the study period. Results from these multivariate analyses accurately predicted observed rates of utilization at the health centers (see Appendix Exhibit I).[19]

The direct costs of the two reimbursement programs were low. In the period from the beginning of each program until December 2015, 90,200 people benefited from fee exemptions in Ifanadiana health centers, with an average cost of US$0.60 per patient (Exhibit 4). The cost for each health center was below US$500 per month when both programs were implemented, which covered virtually all patients at the primary level; this cost decreased to about US$100 per month for health centers that covered only children under age five and maternity consultations under the World Bank program (Exhibit 4).

Discussion

Universal health coverage is a unifying goal of the global health movement to ensure basic human rights, meaningfully improve the health of disadvantaged populations, and boost human potential for economic development.[31] A return to democracy in early 2014 and eligibility for official development assistance has provided Madagascar with an opportunity to advance its health agenda and catch up to the progress made by other developing countries in the past decade. The central goal of the Madagascar government's universal health coverage effort is to remove or reduce point-of-service payments through insurance mechanisms. This strategy raises fundamental questions about the potential costs and impacts of various strategies toward reaching the intended goals. We demonstrate that removing point-of-service fees for a

Impact of reduction of financial barriers on health care utilization in Ifanadiana District, Madagascar

Variable	Outpatient visits for all household members (N = 616)		Outpatient visits for children under age 5 (N = 628)		Outpatient visits for pregnant women (N = 627)	
	Univariate	Multivariate	Univariate	Multivariate	Univariate	Multivariate
Baseline monthly outpatient visits (intercept)		13.34****		6.50****		8.30****
UNDERLYING TRENDS (RELATIVE CHANGE)						
Linear trend	1.06*		1.11***		1.11****	
Seasonal trend[a]	1.46****	1.32****	1.52****	1.35****	0.96*	0.94***
Lagged trend (1-month lag)	1.80****	1.50****	1.89****	1.55****	1.44****	1.27****
DIFFERENCES BETWEEN HEALTH CENTERS (RELATIVE CHANGE)						
All major health centers (versus basic health centers)	3.57****	1.60****	3.55****	1.44***	3.76****	
PIVOT major health centers (versus all others)	4.50****		3.58****		2.89***	
Total catchment population	1.13****		1.12****		1.16****	1.09***
Density of catchment population	1.03****		1.03****		1.04****	
IMPACT OF NONFINANCIAL PROGRAMS (RELATIVE CHANGE)						
Medical staff increase	1.24****	1.09***	1.25****	1.09***	1.18****	1.09****
Infrastructure improvement	2.40****		2.25****		1.50****	
Referral network improvement	1.04****		1.04****		1.02****	
IMPACT OF WORLD BANK FINANCIAL PROGRAM (RELATIVE CHANGE)						
Immediate (level of change)	1.49****	1.13**	1.79****	1.29****	1.32****	
Over time (slope of change)	1.26****		1.35****		1.27****	1.14****
IMPACT OF PIVOT FINANCIAL PROGRAM (RELATIVE CHANGE)						
Immediate (level of change)	2.57****	1.52****	2.35****	1.29***	1.48****	
Over time (slope of change)	2.28****		2.04****		1.53****	

SOURCE Author's analyses of 2013–15 health center utilization rates, using information available in health center registries and monthly reports to the district. **NOTES** Negative binomial generalized linear mixed models, univariate and multivariate results. All models include a random intercept at each health center. To facilitate interpretation, regression coefficients (log-link) were back-transformed and are expressed as relative change. A version of the exhibit with 95% confidence intervals is in Appendix Exhibit J (see Note 19 in text). [a]Seasonal trend was constructed as $[sin(2\pi(Month_i + \theta/12)]$, where θ was the horizontal shift that best fit the data. $*p < 0.10$ $**p < 0.05$ $***p < 0.01$ $****p < 0.001$

number of inexpensive essential medicines, medical supplies, and services in a poor rural district effectively eliminates existing financial barriers to accessing primary health care. Consequently, the two fee exemption programs studied here had immediate effects on utilization rates; the impact was larger when all patients benefited from exemptions through the two

complementary interventions. These effects were sustained over the study period.

These results and the effects observed are consistent with experiences accumulating across sub-Saharan Africa in the past fifteen years where payments at the point of care have been removed at the national or local level.[8,28,32–34] In Madagascar a temporary removal of user fees

Average direct cost and beneficiaries of the reimbursement program for PIVOT (4 health centers, all patients) and the World Bank (13 health centers, pregnant women and children under age 5) by December 2015

	Cost per beneficiary (US$)	Cost per health center per month ($US)	Beneficiaries per health center per month	Total (US$)	Total beneficiaries
PIVOT	$0.69	$395	570	$23,679	34,221
World Bank	0.55	103	187	30,783	55,979
Both[a]	0.60	498	757	54,462	90,200

SOURCE Author's analyses of 2014–15 data on number of beneficiaries and direct costs of reimbursements, obtained from World Bank and PIVOT accounts. **NOTES** The start date for the World Bank program was February 2014. For the PIVOT program it was October 2014. [a]Cost per beneficiary represents average costs for both programs in the district (total beneficiaries/total US$). Because the programs are complementary, the cost and beneficiaries per month at each health center was obtained by summing up average values for each program (PIVOT + World Bank). Average cost per beneficiary for a health center with both programs in place is $0.66 (757/498).

across the country during the 2002 political crisis was associated with a sudden increase of 20 percent in primary care utilization.[34] Following national user-fee eliminations, Kenya, Uganda, and South Africa experienced immediate increases of 30–50 percent in the use of curative services.[26] Community-based health insurance programs that removed user fees in rural Rwanda were associated with a doubling in primary care utilization,[33] and pilot fee-exemption projects targeted at vulnerable populations in several countries of Western Africa have achieved increases in utilization that nearly reached the level of population health need after a few years.[8]

It has been suggested that improvements in coverage following user-fee exemptions can contribute to reductions in maternal and child mortality rates.[35] It is worth noting that the effect of fee exemptions on maternity care was smaller than for outpatient visits, increasing baseline levels by only 14 percent annually. Although greater increases have been found at the district level in Burkina Faso,[35] fee exemptions have been associated with only moderate national increases in facility-based delivery in Ghana, Senegal, and Sierra Leone.[32] A systematic review suggested that the effects of fee exemptions on the use of preventive services may be more apparent over the long term.[26] Furthermore, our analyses revealed that maternity care at baseline was associated with a mother's educational attainment, which could explain why fee-exemption programs in Ifanadiana might not achieve larger effects unless additional barriers are addressed. As further interventions continue to strengthen the district's health system and existing interventions are scaled up, a combination of longitudinal population surveys and health system data will provide key insights on the evolution of health indicators in Ifanadiana. Through robust research, this data platform will allow evaluation of the impact across geographical areas and socioeconomic groups, informing health policy for the country.

Policy Implications

Several sub-Saharan African countries have successfully integrated evidence from pilot fee-exemption projects with national universal health coverage planning.[8] Our pilot results on the impact and associated costs of two complementary fee-exemption interventions in Ifanadiana, Madagascar, provide a rigorous (though geographically constrained) evidence base for decisions on specific strategies for universal health coverage in the country. The study suggests that subsidizing free access to essential medicines can be an effective way of substantially increasing health care access for a wide segment of the Malagasy population. Although the direct costs per patient (US$0.60) were low and could be affordable at scale, both fee-exemption interventions were funded by external donors, and the Malagasy government would need external support to implement a similar strategy nationally. Information provided here can be used for cost-benefit analyses by government and donors to determine the scope of out-of-pocket payments that can be covered through national insurance mechanisms, depending on resources committed to universal health coverage. For instance, the World Bank and the Global Fund recently announced a $24 billion commitment to accelerate universal health coverage in Africa in the next three to five years.[36] If access to essential medicines is fully covered as part of the national universal health coverage strategy, careful implementation, monitoring, and evaluation will be necessary to ensure that coverage for these medicines is effectively integrated into the formal health system. ∎

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