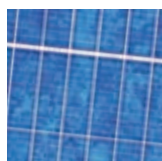




A pre-med student at Penn had the lofty and perhaps unrealistic goal of bringing more power to a hospital in The Gambia that sorely needed it. Four years later, the organization she founded has installed more than 100 solar panels at Sulayman Junkung General Hospital.



# POWER AND



# LIGHT

*By Paul Blore*

Top: The newly installed solar panels outside the hospital draw the attention of local boys. Left: Part of the celebration for the new solar power system involved traditional dances.

“Thank God for the light.”

These are the words of Saidu Beyai, principal nursing officer at Sulayman Junkung General Hospital in The Gambia, recalling a case from the maternity ward.

Before dusk one morning, the midwives at SJGH are suddenly thrown into a tumult when a mother-to-be arrives in the throes of labor. Of course the midwives have faced this situation before, but now the circumstances are particularly difficult: the baby is in complete breech presentation, sitting cross-legged at the opening of the birth canal. Among the risks of a breech presentation is oxygen deprivation if either the umbilical cord becomes compressed or the head gets trapped in the mother’s pelvis. This kind of delivery is not the ideal anywhere in the world, but maternal mortality increases dramatically outside of the First World.

Through the coming hours, the midwives do everything they can to turn the odds in favor of survival for both mother and child. At last, the delivery is a success and the mother can hold her newborn child. The midwives breathe a sigh of relief, knowing that a little more than a year ago,



Michael Hall tends to a patient.



Kathryn Hall had the honor of switching on the hospital's solar panels.

the delivery would have been done by candlelight – and the outcome might have been much different.

“It was a nightmare to perform emergency surgeries when the lights are gone and the generators are gone,” says Kebba Badjie, chairman at Sulayman Junkung. “People who are very sick, or hooked to oxygen concentrators . . . you know you are going to have life terminated.”

Because Sulayman Junkung is one of only five major hospitals in the tiny West African country, people traveled great distances to receive treatment. But what they found when they got there was not always what could ensure their recovery – and certainly not what we have come to expect in the West.

Despite being constructed in 2003 as a major regional hospital, its distance from the power grid made it necessary to generate electrical power on site. The generators were unreliable at best, often sputtering to a stop. Sometimes it would be days before repairs were successful. Operations had to be postponed until electricity returned, diagnostic procedures were not always available, no blood bank could be maintained, and drugs and vaccines were unusable because of frequent loss of refrigeration.

The unreliability of power was especially discouraging given that 16 percent of the hospital's annual budget went to fuel alone – “the biggest overhead we have,” according to Badjie. Round-the-clock health care is an expensive business, and the hospital could not afford to keep the generators on past 2:00 a.m. Beyai, the principal nursing officer, notes

that in the case of the breech birth, the 5:00 a.m. arrival of the mother would have meant calling the generator operator to have him activate the generator, “and only if the generator had been working at that particular time.”

### What a Volunteer Saw

In 2006, a 20-year-old pre-med student from the University of Pennsylvania saw these conditions with her own eyes. Through Operation Crossroads Africa, which provides summer volunteer opportunities for students, Kathryn Cunningham embarked on a short-term volunteer trip to the hospital. The Gambia has eight local tribal languages, but it is a former English colony and English is taught in the schools. So she was able to communicate with the people there. Although she reports that she had to find The Gambia on a map, she had grown up hearing stories about West Africa. Her father spent years in Togo with the Peace Corps before Kathryn was born. What she saw in The Gambia, however, eventually changed her life and Sulayman Junkung forever.

Now married to Michael Hall, a fellow medical student at Penn, Kathryn Hall had roles at the hospital that changed frequently. But she recalls two instances that profoundly affected her. The first involved a premature baby who was having trouble breathing but was otherwise healthy. Without the power to run an

incubator or to give life-saving oxygen, the baby died the next day. “That was the moment I realized that things were drastically different from home,” says Hall, lamenting that something so simple would have made all the difference. “It was also the first time I saw a baby die.”

In the second instance, a learning opportunity quickly turned into a tragedy. Hall was called to the labor ward to observe what was expected to be a routine delivery. After hours of attempts with little progress, the only recourse was to deliver by C-section . . . but only once the lights could come on. When they finally delivered the baby hours later, it was clear that the C-section had come too late and the child had died in the womb. The midwife, who was the mother's sister-in-law, dropped the customary Gambian stoicism and broke into tears, nearly passing out. Without having scrubbed in, Hall was urged to join the delivery team and help resuscitate the baby for “the longest 20 minutes of my life.”

The mother survived but nothing could be done for the child – not at this late stage. An ultrasound could have assessed the complications and allowed the delivery team to schedule the C-section much sooner. Again, power meant the difference between life and death.

As heartbreaking as these occasions were, what Hall witnessed were all-too-familiar to the hospital staff. As she prepared to leave the country, she knew



The solar panels are a good choice for a country that does not see rain for six months out of the year. Below, the OR staff can be more confident with a stable source of electricity.

that she would not leave the memories behind. She wondered aloud to Badjie, the chairman, how she could help from home. Hardly expecting a concrete answer, she was surprised when Badjie reached into his back pocket and pulled out an estimate for the installation of a solar power system large enough to run the entire hospital. He had long known that the expense of fuel, the unreliable generators, and the distance from the grid were keeping him from providing the standard of health care he desired. Badjie had the answer to the hospital's power woes – but not the means to acquire the \$300,000 or so that was needed.

### Passion + Goals = PUG

Although daunted by the sum, Hall was impressed by his initiative and promised to do what she could. Back in the United States, she began talking to anybody who would listen. She found that many people would lend an ear, and many were willing to lend a hand as well. Her passion for the cause was contagious. More individuals joined her in her efforts, eventually leading to the formation of the organization Power Up Gambia (PUG).

According to the tenets of Power Up Gambia, access to the best possible health care is a human right and international development must involve sustainable solutions. The PUG team has an influential backer, Paul Farmer, M.D.,

Ph.D., the Presley Professor of Social Medicine at Harvard Medical School and co-founder of Partners in Health, the international health and social justice organization. Hall had the opportunity to meet Farmer in 2009, when he came to Penn to deliver the Renee C. Fox Lecture. The work PUG is doing, says Farmer, “succeeds in uniting the two great struggles of our time: the struggle for social justice and that for ecological justice.” (Farmer was one of the recipients of an honorary degree in May from the University of Pennsylvania.) The PUG team can also claim to have followed an outline for international development put together by the Energy Team of the U.S. Agency for International Development, called the “Step-Wise Approach to Power Your Health Facility” – without even being aware they were doing so. It was simply the approach that arose organically from the brainstorming and action taken by the “Core Team” of the organization.



The people who have gravitated to the cause have diverse backgrounds and interests that have helped to flesh out the organization's mission and capabilities. While the board includes individuals with years of experience working on behalf of charitable causes, the core is a group of enthusiastic students and young adults who meet in their free time and collaboratively drive the momentum of the organization. Most members are drawn from Penn's School of Medicine (about 10 students), and others credit the word-of-mouth of these students for their own motivation to join. Among the current Penn medical students is Andy Fisher, who has a background in bioengineering and spent six years working and studying in hospitals in Pittsburgh and Philadelphia; he serves as PUG's technology specialist. Tanya Keenan, who holds degrees in neuroscience and political science from the University of Pittsburgh, formerly coordinated relations with Rotary Clubs, which PUG describes as “a great contributor and an enthusiastic friend.” Jen Abraczinskas, a graduate of La Salle University whose background is in chemistry and biochemistry, served as director of volunteers and interns. Like Hall, both Keenan and Abraczinskas are now members of PUG's board.

This summer, Fisher and two other first-year Penn medical students, Scott Grossman and Evan Werlin, will be going to The Gambia. They will visit sites that PUG has supported as well as potential sites of future projects. Like earlier visits, theirs is funded by the Global Health Programs of Penn's School of Medicine. PUG also reports that three M.B.A. students in The Wharton School are helping the organization create a strategic plan for the next several years.

This kind of global engagement is very much in the spirit of The Penn Compact, articulated by Amy Gutmann, Ph.D., Penn's president, and championed as well by the Office of the Provost.



## Moving Beyond Phase I

Through their grassroots fundraising efforts, Power Up Gambia raised enough money to accomplish “Phase I,” an installation of 18 solar panels to power the hospital’s water pumps at Sulayman Junkung. Previously, the pumps had also relied on the generators, meaning there were times when sanitation was impossible and staff would scrub in for surgery as one poured water over the hands of another. After the successful unveiling of Phase I, PUG then had the momentum and the results to garner more support. By May 2008, the group had raised \$350,000, enough to complete the installation of the remaining 96 panels, along with 6 tracking units.

In a nation with an infant mortality rate of 70 out of 1,000 live births (the rate in the United States is seven out of 1,000), every little bit can help improve an infant’s chances. Since the inaugural celebration in March 2009, the improvement at Sulayman Junkung General Hospital has been remarkable. “Some years back, before the installation, we had been registering stillbirths,” says Chairman Badjie, “up to six deaths in a year.” But for the entire year that followed the installation, the hospital had not registered any deaths during delivery, whether among



Sesh Sundararaman, left, a Penn medical student, visited The Gambia last year.

infants or mothers. Sadly, the same is not true at any other hospital in The Gambia.

The hospital has seen improvements outside of the maternity ward as well. Microscopes that once sat idle as the staff sought to diagnose malaria, bacterial infections, and STDs by visual inspection are now put to appropriate use. Laboratory results are now timely and reliable. Constant refrigeration allows the hospital to keep vaccines and other supplies that require cold temperatures, as well as a blood bank and test samples. Hall is quick to point out that nothing has improved the situation on the ground more than the ability keep the lights on at night, and Badjie agrees. “A simple thing and ordinary, especially in the west,” he says,

but in The Gambia, “it is a luxury that has made a difference in the lives of people.”

Although the hospital had oxygen concentrators, refrigeration units, and ultrasound equipment before solar panels were installed, the improvement in the 15 hospital’s capabilities has been noticed by other organizations. They in turn donated equipment or sent volunteer medical staff. Badjie cites improved morale and greater retention among the staff. “Imagine the stress and trauma workers undergo when they couldn’t do anything when the lights go. Now you have sustained electricity. It’s a great relief in the way people work and also in quality.” The credibility of the hospital has gotten a boost, and the administrators have seen an increased and steady influx in patients as a result of greater overall confidence. The hospital staff and the greater community all take pride in the installation.

## A Trio of Awards

In 2008, Kathryn Cunningham Hall received a Do Something Award for founding Power Up Gambia. The aim of Do Something is to “inspire, empower, and celebrate a generation of doers: young people who recognize the need to do something, believe in their ability to get it done, and then take action.”

Last year, Hall received the 2009 Ten Outstanding Young Americans Awards from the United States Junior Chamber. Among the young achievers of the past

who have been similarly honored are John Kennedy and Bill Clinton. Hall’s work with PUG exemplifies the Jaycees creed: “That earth’s great treasure lies in human personality, and that service to humanity is the best work of life.”

Also last fall, the staff of Power Up Gambia helped the Delaware Chapter of People to People International celebrate its 25th anniversary at a gala dinner in Wilmington. On that occasion, Hall received the Delaware Chapter’s 2009 International Community Award.

## To Replace Jugs of Water

At the time of the Phase I installation, a worker from the satellite clinic in the village of Somita showed up unannounced. He had walked 15 kilometers to explain the clinic’s needs to Hall. Several board members subsequently assessed the clinic and were struck by the dedication of the staff, the governance by the community, and the cleanliness of the facility – a true feat in arid West



On a visit to Sulayman Junkung, Kathryn Hall accompanies the staff on rounds.

Africa, where red dust seems to permeate everything. As a result, Power Up Gambia made the decision to change from a one-time project to an continuing mission, and the board approved the clinic in Somita as the next major project.

Sesh Sundararaman, a Penn medical student, reported on his visit to Somita in a PUG newsletter last fall. Noting the shortage of water at the clinic, he wrote that it consisted of large jugs filled every day from a village tap: “These jugs allow the staff to clean the clinic, take quick showers, provide drinking water to patients, and nothing more. They cannot scrub in for births or bathe and sanitize the pregnant mother, relying on mineral spirits and hand sanitizer for most of their procedures.” This summer, in addition to installing solar panels, PUG will install a tank at the clinic for continuous water. Sundararaman, who spent most of his childhood between California and Western Africa, serves as director of monitoring and evaluation for Power Up Gambia.

Now a full-fledged 501(c)(3) organization, Power Up Gambia is careful not to give handouts. Instead, it identifies communities that exhibit initiative and can be their own agents of change. Members of PUG are also doing more than putting a temporary band-aid on a chronic problem. While solar power is an obvious choice for a country that does not see

rain for six months out of the year, PUG strives to provide sustainable solutions in other ways. They have formed a partnership with the University of Strathclyde in England to create a training program at Gambia Technical Training Institute. The technicians would be equipped with the skills necessary for the long-term maintenance of the installations. With the solar



The chairman of Sulayman Junkung, Kebba Badjie, right, reads a statement at the installation ceremony.

industry booming, local specialists in the field of solar installations are in high demand and could draw technicians from all over the continent.

As Power Up Gambia expands the scope of its capabilities and begins to approach bigger donors, the team remains adamant about maintaining a grass-roots feel. From the start, the members have kept the overhead low so that donations would have the greatest impact in The Gambia. Only one employee is paid, and

on a part-time basis: the executive director, Lynn McConville. (Hall took a smaller role when she entered her clinical rotations.) Individual members of the team are encouraged to engage in their own fundraising efforts, and a large portion of activities are led by a Power Up Gambia undergraduate chapter at Penn. Michael Reiche, who earned his B.A. degree in biochemistry and M.S. degree in chemistry at Penn in May, was founder of the undergraduate group as well as director of student chapters. PUG hopes to replicate these chapters at other universities, colleges, and secondary schools.

The PUG team takes pride in knowing that other young people are inspired to take action for social change, such as two young girls who had friends donate money in lieu of birthday and bat mitzvah gifts, and area classrooms that organized events and sales on PUG’s behalf. “I don’t ever want to stop hearing from people who wanted to help in their own small way,” says Hall.

Badjie once said, “We are waging a war against darkness – darkness that will go away with solar.” Indeed, Power Up Gambia has recently spent a lot of time considering its future role in The Gambia and looks forward to fulfilling one of its newly outlined goals: that every Gambian child be born in the light. ♥

*Paul Blore, a 2005 graduate of Juniata College, lived in The Gambia for four months, volunteering with a variety of community-oriented projects. He is now a member of PUG’s Core Team, directing communications and public relations.*

*Power Up Gambia invites you to consider supporting its work in your own way, whether through making a tax-deductible donation, organizing an event, or starting a PUG chapter. Visit [www.PowerUpGambia.org](http://www.PowerUpGambia.org) or write to [info@powerupgambia.org](mailto:info@powerupgambia.org) for more information.*