Dr. Mitch, EMA Program Director, explains the medical importance of having a power grid at the Rain Tree clinic:

“The single biggest killer of children under 5, both in the world and in Karen State, is pneumonia. Pneumonia is an infection in the small air sacs of the lungs. Most cases are fairly easily treated with antibiotics that are readily available. In severe cases, however, the lung’s ability to absorb oxygen is affected. The problem in these severe cases is that the patient can die from hypoxemia before the day or two it takes for the antibiotics to start to work. Usually, supplemental oxygen can bridge the gap and give the body enough time for the medicines to impact the infection.

In remote rural areas, we can get oxygen in two ways. We can carry in compressed oxygen in steel tanks. These are heavy and often only available in larger cities. Furthermore, they only hold enough oxygen to treat a patient for a few hours. Considering the difficult nature of travel in Karen State, carrying in enough compressed oxygen for every patient with severe pneumonia is simply not practical. A second way to get oxygen into these remote areas is by using an oxygen concentrator. This machine concentrates oxygen from the air and can provide a constant supply of oxygen.

However, it requires a continuous electricity supply. Many clinics and small hospitals in remote areas are not connected to the national power grid, necessitating the use of alternative energy sources. Although we have tried generating electricity from small hydropower plants in local rivers, rainy season often turns relatively calm rivers into raging torrents, destroying everything in its wake. Because of the cloud cover, solar power also becomes significantly less effective during the rainy season. In our experience, the most effective arrangement has been a combination of solar panels backed up by a small diesel generator. The solar panels charge a bank of batteries which run an inverter to produce 220volts of ac current. This in turn runs the oxygen concentrator. When the solar panels can’t keep up with the demand, a small diesel generator can help keep the batteries charged. This kind of local power grid, can also run other technology that is needed in order to provide quality healthcare: medical laboratory equipment, refrigeration for vaccines, communication devices and computers. The simple fact is that many lives will depend on these remote clinics having a good power supply. ”

- Dr. Mitch, EMA Program Director