Concept Note – Retinal Camera for Children's Diabetes Centers

AIM

To provide retinal cameras to countries that do not have public access to such a camera, in order that diabetic retinopathy (eye disease) can be diagnosed, monitored, and, where necessary treated, so sight can be preserved.

DIABETES : AN ALARMING TREND

Type 1 diabetes is one of the most common life-threatening disorders in childhood around the globe, affecting an estimated 490,100 children under 15 years (IDF Diabetes Atlas, International Diabetes Federation, 2012), and likely a similar number of youth 16-25 years. Insulin injections are required for survival. Close monitoring of blood glucose levels and diabetes education for the child and their family are also vital for normal growth and development, avoidance of serious complications, and good quality of life.

The International Diabetes Federation (IDF) commenced the Life for a Child Program (LFAC) in 2001 to address the high morbidity and mortality of children and youth with diabetes in the developing world. Many of these young people have died undiagnosed or soon after diagnosis. Others remain chronically unwell with poor metabolic control, and develop early and devastating complications. The IDF Life for a Child Program seeks to strengthen child and youth diabetes care in developing countries through the provision of insulin and other supplies, enhanced patient and health professional education, data management, and research. LFAC will help any low-income or lower-middle income country in need, and the Program is currently working in 48 countries, helping ovewr 15,000 children and adolescents.

Retinal camera in operation in Pakistan (the computer monitor shows the first of the five images that will be taken).

Diabetic retinopathy is a common complication of diabetes and frequently results in complete blindness or varying degrees of vision loss. Early changes such as micro aneurysms and small hemorrhages are subtle and only be picked up by expert examination. Retinal photography is the easiest and most accurate way of determining the presence and extent of retinopathy. The process (see pictures) is painless and requires no injections while only taking a couple of minutes.

Five digital pictures are taken of the four quadrants as well as the central area of each eye. These images are then saved on a hard disk and can be reviewed by an expert at the time or at any future stage, and easily transmitted by email to an overseas expert if further advice is needed. When retinopathy has progressed to a certain point, laser therapy is indicated to interrupt the damage and thereby save vision.

Currently there is no public patient access to retinal cameras in a number of the countries that LFAC supports – e.g. Nigeria, Jamaica, Sudan, Mali, Bolivia and India. If retinal cameras are present anywhere at all in each of these countries, access is only available in a limited way in expensive private clinics.

Laser treatment is available in many countries, however if patients needing laser treatment re not diagnosed it will not be done – hence the need for the retinal camera.

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POSSIBLE SITES INCLUDE:	• Nigeria – Lagos University Teaching Hospital, Lagos • Jamaica - Diabetes Association of Jamaica, Kingston • Sudan - Ja'far Ibn Ouf Children's Hospital, (Centre of Sudanese Diabetes Association), Khartoum • Mali – Hopital de Yirimadio, Bamako • Bolivia – Centro con Vivir, Cochabamba • India – DREAM Trust, Nagpur • Nepal – Patan Hospital (adjacent to Kathmandu
IMPLEMENTATION	1. A Memorandum of Understanding will be signed with the recipient center. The Memorandum will define terms including staffing responsibilities, care of the equipment, and use of the equipment. 2. A CR-2 non-mydriatic retinal camera (manufactured by Canon, see picture above, or a similar machine from another manufacturer) will be purchased and shipped to the recipient country 3. An expert volunteer ophthalmologist or technician (sourced via LFAC from diabetes centers in the developing world) will travel to the recipient country and spend a week instructing local technicians and doctors in its use, and establishing a mechanism so that images can readily be sent by email. 4. Follow-up technical and clinical support will be provided by email.
REQUIRED RESOURCES	For each site, USD 24,000 is allocated for the purchase and installation of the camera, and USD 6,000 for the training – total USD 30,000.
IMPACT	The Project will result in: Establishment of a publicly-accessible retinal photography unit in each of the leading diabetes centers in Nigeria, Jamaica, Sudan, Mali, Bolivia and Nagpur (India). This will result in a) Markedly improved screening for diabetic retinopathy in children, youth and young adults with diabetes in these countries, with retinopathy detected early and then treated, thus preserving vision. The camera will be able to be used for other eye pathology as well. b) The unit will become a model for the establishment of other units in the respective country.