

**Innovation: Catheter Interventions in Congenital Heart Disease without Catheterization Laboratory Equipment, The Chain of Hope Experience in Rwanda**

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**Introduction:** Thousands of children live in developing countries with untreated but correctable congenital heart disease and most of them will die due to the lack of suitable medical and surgical facilities. We report the feasibility and safety of cardiac catheterization in a developing country without access to a regular cardiac catheterization laboratory. The equipment used for imaging consisted of a mono-plan C-Arm X-Ray system (Siremobil® compact, Siemens) usually used by orthopedists, and a portable ultrasound machine

**Method:** During a week, for 4 consecutive years (2007-2010), a team of 2 paediatric cardiologists, 1 anesthetist, 2 nurses and 1 technician from the Chain of Hope-Belgium ([www.chaine-espoir.be](http://www.chaine-espoir.be)) performed cardiac catheterisation at King Faisal Hospital-Kigali, to treat 47 patients (45 children - 2 adults). This team was working with local personnel (doctors, nurses and technicians) to facilitate the transfer of expertise. At the same moment and in the same hospital, an Australian surgical team was performing open heart surgery (<http://rwanda.ooh.org.au/>), providing a surgical back-up in case of catheterization complication.

**Results:** Treatment, using usual guide-wires and catheters for cardiovascular access, was successful in 45 out of the 47 patients, consisting in 29 patent ductus arteriosus occlusions with coils (n=6) or Amplatzer device (n=23); 3 secundum ASD closure, 12 pulmonary valve stenosis (PS) dilatation (3 critical PS, 1 PS in a Fallot patient, 2 PS in patient with ASD device closure), 3 dilatation of aortic coarctation. Two cases required surgery, 1 ASD closure after embolisation of an ASD device, 1 PDA too large for device closure. No other complication was observed and most of the patients were discharged from hospital the day after cardiac catheterization with good evolution on follow-up

**Conclusion:** Cardiac catheterization can be performed safely and is highly effective in a country with limited resources. This mode of treatment is possible without the support of a sophisticated catheterization laboratory. Working with local staff allows the transfer of expertise.