

The unexplored benefits of paediatric cardiac humanitarian work in the developing world



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Introduction

Congenital heart disease is the most common type of birth defect with an average incidence of approximately 9.0 per 1000 live births^[1]. There are 1.4 million children born with congenital heart disease in the world every year, with a million of these children being born in low and middle income countries (LMIC). As the rate of infectious diseases has fallen by 50% since 1990, birth defects have become the 4th highest cause of childhood mortality in the world^[1,3]. Consequently, there has been a proliferation of teams from the developed world that visit various LMIC to perform cardiac surgery on children. Whilst these lifesaving endeavours are laudable, what has not been explored are the significant benefits accrued to the visiting international teams during these missions.

Each international team is composed of the same personnel required to carry out paediatric cardiac surgery in their home countries. Each team member delivers their own facet of paediatric cardiac surgical provision whilst working with their counterparts in the local hospital. Deficiencies in equipment and other facilities as well as the paucity of congenital heart disease experience in the local team poses a huge challenge to the visiting team. This variance requires adaptability

and flexibility from each team member who must call upon clinical skills acquired from working in developed health care systems. In addition, as the team is much smaller than the volunteers are used to working with in their respective countries, they must support each other to manage clinically fraught situations. Managing difficult clinical situations can potentially produce an uplifting of the clinical skills within the visiting team which may then translate into improved care for their local populations when they return.

Healing Little Hearts (HLH) is a UK based Charity that sends volunteer doctors and nurses to LMIC to perform cardiac surgery on babies, children and teenagers. Founded in 2009, to date, HLH has performed 2119 surgeries in 14 countries spread out over 160 international cardiac missions. In an average week HLH operates upon 12 children. We compared HLH's surgical activity with Paediatric Cardiac surgical activity during an average week in a cardiac unit in the UK. The National Institute for Cardiac Outcomes Database (NICOR) in the UK, collects data to enable hospitals to monitor and improve the outcomes of cardiovascular patients^[2]. Examination of the database reveals that most paediatric cardiac centres in the UK operate on 6- 8 children in a typical week.

Observations:

Many of volunteers find these experiences so rewarding that they travel numerous times in a year thereby enhancing their own professional development. Often, surgeons with this charity undertake 2 week-long trips per year, operating on approximately 24 children during these trips. This is equivalent to 2 months operating per surgeon in many UK centres. Additionally, from the HLH database it is evident that the teams are a mixture of doctors and nurses from across the developed world i.e. all over the UK,

Europe, North America and Australia. As members of the team come from across the world, they bring varied experience, knowledge and expertise to the bedside which is shared with the local healthcare professionals and amongst the travelling team members who become exposed to different ways of working clinically.

The Challenges

1. The patient

The patients are often more unwell than the cohort of patients looked after in the developed world as a result of delayed diagnoses and other co-morbidities. The late diagnoses can mean that their pre- and postoperative course is more difficult.

2. The environment

Resource-constrained, alien working environments requires an upgrading of the ability and skills of the entire team. The team can no longer rely on high-end technology and instant near-patient testing but instead they must adopt a management method based on clinical skills and the first principles of medicine and nursing. The team often works within an adult ICU which requires considerable adaptation when managing paediatric cases. Resources so readily available back in the UK such as blood products are either not available or associated with considerable delay.

Travelling surgeons frequently have to use adult cardiac surgical instruments for operative procedures. Anaesthetists must anaesthetise and ventilate the patients using machines not entirely suitable for children. Similarly, in the ICU, the team must adapt to adult ventilators. Whilst these challenges result in difficult and testing times for the travelling teams, they transform into unique learning experiences which the teams take back with them to their respective countries.

The Benefits

1 The local team

The local team have often had no prior training or experience in paediatric intensive care or paediatric cardiology. To combat this problem, the travelling teams provide education to the local teams to boost their knowledge and skills. Additionally, a mentorship scheme is established wherein the lead travelling surgeon will train a local surgeon for the entire week to boost his/her skills, competence and confidence. This example of pedagogy has ultimately led to two paediatric cardiac services within India, previously with minimal experience, being signed off as self-sufficient and able to perform life-saving cardiac surgery without assistance from travelling teams

2 The travelling team

New experiences, challenging cases and suboptimal environments provide a positively unique opportunity for each member of the travelling team. These altruistic acts are undoubtedly extremely satisfying and rewarding. In addition, as the entire volunteer team has cared for a much larger number of cases in a typical week than they would do in their own units, it could translate into enhanced expertise within each member of the team. It is also conceivable that a surgeon who has operated on an average of 12 children in a week may return home with his or her operative skills finely honed and that would hopefully produce better outcomes for patients back at home.

The future

Through the continuous training and teaching that occurs during these missions, it gradually builds up confidence, knowledge and expertise within the local teams such that they can become self-sufficient. In a globalised world, trade links between countries could become the template for the sharing of good medical practice across the globe. Using either ongoing relationships or previous historical ties such as the Commonwealth as a template, health partnerships should be established whereby governments of higher income countries should seek to work with governments of LMIC to help build capacity i.e. train and empower local doctors and nurses to carry out and perform the entire range of paediatric cardiac surgery through multiple visits over a medium-term collaboration of 5-10 years ^[4,5].

Conclusion

A burgeoning amount of literature exists about the catastrophic lack of resources available in many parts of the developing world for paediatric cardiac surgery and the benefit that accrues to the children in the poorest countries from charitable visits ^[6,7]. However, there has been virtually no evaluation of the considerable and mutual benefits to both the visiting and the local teams during these humanitarian endeavours. The authors hope that such observations provide a template for the formalising of mutually beneficial and life-saving collaborations between higher and lower and middle income countries. It is our duty to share our developed world

expertise and skills with these less fortunate countries to save lives on an international scale.

References

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Healing Little Hearts is a registered Children's Charity (Charity no. 1130194) which aims to ensure that every child within our reach can access the heart surgery they desperately need. It medical volunteers are all registered and qualified professionals consisting of Cardiac Surgeons, Interventional Cardiologists, Anaesthetists, Intensivists, Perfusionists, Nurses and Cardiac Physiologists. Many of our volunteers come from the UK, other parts of Europe, USA, Australia and India. The Charity volunteers contribute towards saving the lives of some of the poorest children in the world whilst sharing their knowledge, skills and experience with the local teams, by taking time off their work.

