

Teamwork in pediatric heart care

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ABSTRACT

Pediatric cardiac specialties, pediatric cardiology (pediatric cardiac surgery and pediatric cardiac anesthesiology and intensive care) are only now being recognized as distinct specialties in most parts of the world. There has been a tremendous growth in knowledge in these specialties in the last 30-40 years with dramatic improvements in outcome.

Pediatric cardiac care thrives on team work. The cohesiveness of the team of caregivers has a direct impact on the patient outcomes and efficiency of the system. The development of hybrid heart procedures in pediatric heart care represents an important benchmark in a team-based approach to patient care where a group of specialists with specific skills work closely together for ensuring the best possible patient outcome. Establishment of a cohesive team requires organization of group of team members with diverse skills to come together through good mutual understanding, under a leadership that actively promotes team harmony. Excellent communication among team members is a core requirement. The barriers for development and sustenance of a successful team must be recognized and overcome. They include egos of key team members as a source of conflict, time for interactions, disproportionate rewards and recognition for members of the team and traditional hierarchical arrangements. Special attention must be paid to motivating non-physician staff.

Keywords: Harmony, resonance, cohesiveness

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INTRODUCTION

Pediatric cardiac specialties, (pediatric cardiology, cardiac surgery, cardiac anesthesiology and intensive care) are only now being recognized as distinct specialties in most parts of the world.^[1] The dramatic improvement in outcome for newborns, infants and children with heart diseases is one of the success stories in modern medicine. Much of this is attributed to progress in technology and a tremendous growth in knowledge in these specialties in the last 30-40 years. However, improved interdisciplinary collaboration has also been an important contributor to improving outcomes.^[2] Pediatric cardiac professionals can only function as a team. Individual members can do very little by themselves. The cohesiveness of the team of caregivers has a strong and direct impact on patient outcomes and efficiency of the system. Yet, teamwork has received surprisingly little attention in scientific forums. Most of us can readily recall instances where better communication, collaboration and cooperation could have made a substantial difference in outcomes. The ability to work within a team is a vital attribute to all pediatric cardiovascular professionals today. Today's

trainees in individual specialties will need to focus on developing the interpersonal skills required to work with each other.

This article will specifically examine the following aspects relating to teamwork in pediatric heart care:

1. Evolution of the team based approach
2. Key requirements for establishment of a cohesive team
3. Barriers in the development and sustenance of a successful team
4. Future challenges

EVOLUTION OF TEAM APPROACH

In its initial years the model of pediatric heart care that existed in a number of institutions (particularly in India) can be described as a linear one. Essentially the cardiologist (often not a dedicated full time pediatric cardiologist) performed the diagnostic work up and sent the patient to the surgeon. The surgeon looked at the written case records and performed the operation largely based on assessment of the written case records, often after a substantial delay necessitated by a long surgical waiting list. Postoperative care was almost

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entirely delivered by the surgical team (typically these were overworked surgical residents). After discharge, most of the follow-up happened in the surgeon's clinic. This process allowed surgery in relatively straightforward lesions in relatively older patients. However, with the recognition that many congenital heart defects needed correction in the newborn period or infancy, the failings of this model became apparent.

A number of factors contributed to the linear model. Roles were strictly compartmentalized perhaps because of conditioning in the training years. Cardiologists perceived that their role was limited to diagnosis alone. The cardiologist's insight into a number of surgical issues was limited. Surgery for congenital heart defects was performed by surgeons who also performed adult heart surgery. There were few formal forums for discussions on individual patients. The cardiologist did not participate in postoperative intensive care and therefore did not understand a number of very significant post operative issues that would clearly benefit from his/her inputs.

In spite of the obvious failings of this model, it was hard to abandon old ways. Prevailing rigid mindsets prevented collaboration and cooperation. Cardiac surgeons and, to a lesser extent, cardiologists had developed into stereotypes. Cardiologists thought of surgeons as arbitrary, unscientific, and rigid with little willingness to listen to honest feedback and change their established ways. Surgeons thought of cardiologists as being too theoretical and unwilling to work as hard as they do. Prevailing institutional hierarchies also contributed to the rigidity of the system. The authoritarian senior surgeon often intimidated many junior members of the program, and this further contributed to communication barriers.

In the late 80's and early 90's catheter interventions were introduced for the first time on a regular basis in many programs. The role of the pediatric cardiologist changed and was no longer confined to diagnosis. They could now offer 'correction' in selected patients. Over the next decade the scope of catheter interventions grew rapidly and more and more defects could be 'fixed' in the catheterization laboratory. There was potential for competition and perhaps even conflict between surgeons and surgery and cardiologists and interventions (quite like what sometimes happened to their adult counterparts). Fortunately, however, both groups of professionals have learned to recognize their respective roles over time. More importantly, the surgeon is needed to bail out the interventional cardiologist in the event of complications (such as a device embolization). Similarly, catheter interventions are occasionally required early in the postoperative period to deal with residual issues. Many patients require both modalities for optimal results. Arguably, the development of interventions has

contributed to the paradigm shift and fostered better interdisciplinary cooperation.

The advancements in imaging have also contributed significantly to evolution of the team approach. Cardiologists are now able to provide very specific insights that the surgeon seeks. These insights often cannot be communicated through a written report and require dialog and discussion. Numerous examples exist. Some of the obvious ones include two ventricle repairs in complex situations such as double outlet right ventricle (DORV) with a remote ventricular septal defect (VSD), multiple muscular VSDs,^[3] post operative assessment and valve repairs. Most surgeons today constantly seek subtle refinement in technique to improve immediate and long-term outcomes. Insights from imaging contribute immensely.

Some questions for which answers are often sought through imaging include: Can we avoid a trans-annular patch in a patient with tetralogy of Fallot? Can the use of a conduit be avoided in a given patient with DORV? How best can a given muscular VSD be approached?

The increasing reliance on transesophageal echocardiography for immediate postoperative assessment of repair has necessitated the presence of the cardiologist in the operation room. This has resulted in valuable exchange of information and has greatly facilitated collaboration.

The emergence of pediatric cardiac intensive care as a distinct discipline requiring specialized focus has been a significant development.^[4] Pediatric cardiologists and anesthesiologists in many large and successful programs in the West have chosen to devote their entire careers exclusively to cardiac intensive care. This has contributed to improved care and outcomes. A number of issues in the early postoperative period require an excellent understanding of cardiovascular physiology for correct management. With increasing complexity of corrective and palliative operations, there are frequent situations where a refined understanding of altered physiology makes an important difference. With increasing numbers of heart surgeries performed in the newborn period, it is also often necessary for the pediatric cardiologist to be actively involved in preoperative stabilization.

As a result of the above developments the model of pediatric heart care has changed considerably over the years. A reasonably effective model for pediatric cardiac care that can be applied to many limited resource settings is shown in the Figure 1. This model essentially underscores the fact that the patient does not belong to anyone in particular. The pediatric heart program as a whole is collectively responsible for the patient. Once admitted to the program, individual members look after specific issues.

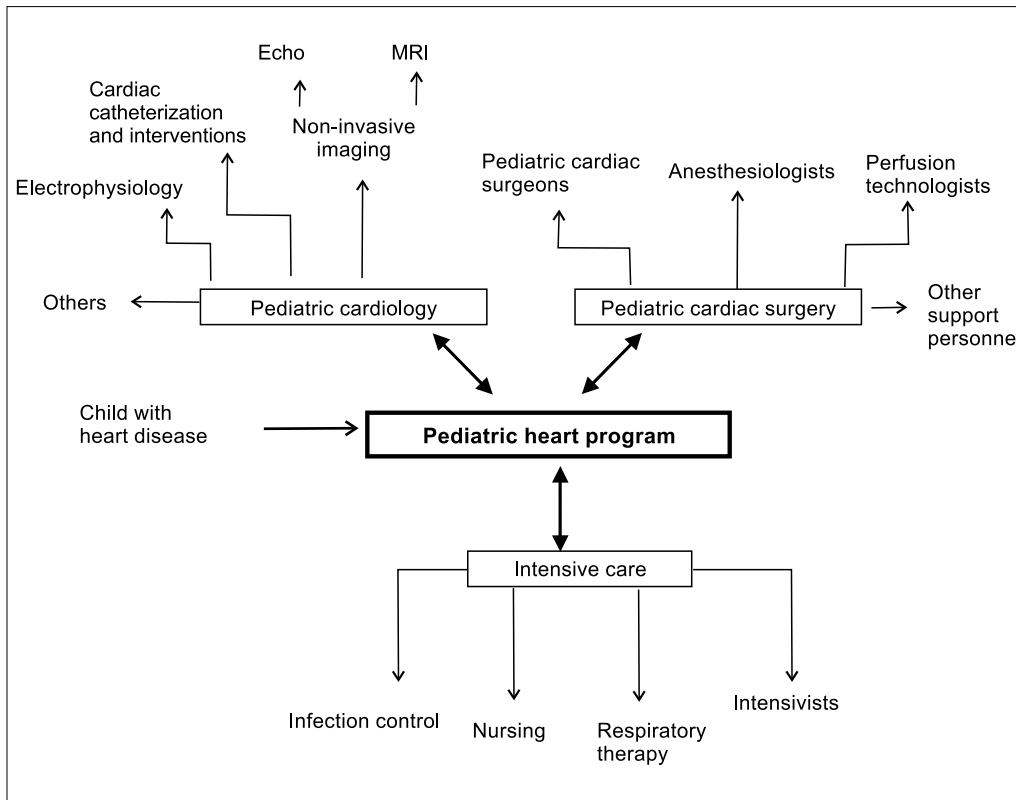


Figure 1: A basic model for delivery of pediatric heart care in modern tertiary referral centers

KEY REQUIREMENTS FOR ESTABLISHMENT OF A COHESIVE TEAM

Skills of individual team members: A reasonable level of basic competence (skill and experience) of all key senior members of the team in their respective areas (pediatric cardiology, pediatric cardiac surgery, anesthesia/intensive care) is a minimum requirement for the team to function. Significant incompetence in one area will become a weak link in the chain, offset the skills of other team members, and eventually result in the entire team becoming dysfunctional. While a shortfall in surgical skills may be most glaring and immediately visible because it often has dramatic consequences, deficiencies in other team members can be subtle and become apparent over a period of time. It is exceptional to have highly skilled and experienced professionals in all key areas at the start of the program. Often, these skills develop over a period of time as the pediatric heart program develops. During the period of maturation of the program, key team members need to encourage, support and nurture each other. Needless to say this cannot happen without mutual respect and trust. Objective performance measures of the individual areas are useful in ensuring quality improvement.

Understanding each other: This is a core requirement. Surgeons in particular need to be understood. The years that they spend in training, the physical and mental stress

that they undergo on a daily basis, the responsibility they shoulder towards the patient’s family, could all translate into some changes in personality that may be hard to accept initially. Similarly other team members may be conditioned by their respective backgrounds. One way to improve the process of understanding is develop a keen interest in each other’s specialty. For example, the cardiologist may need to step into the operation room and watch an open heart surgery. The specific difficulties encountered are better understood this way. Watching the process of coming off bypass is particularly educative. Similarly, the surgeon should take an active interest in what the cardiologist does. The surgeon’s inputs can enormously improve the quality of information provided by imaging.

Communication: Poor communication of patient details is often at the root of a number of potential conflicts. No effort should be spared to communicate as precisely as possible in a language that is understood by all team members. Meticulous documentation in case records is an essential requirement. Combined weekly meetings help the process immensely. Additionally, individual team members need to be proactive in a variety of situations, for example, when a newborn with a complex defect presents as an emergency and requires surgery at short notice thereafter. Here the cardiologist will need to take the extra effort to communicate the diagnosis comprehensively to the surgeon. The surgeon,

on his part, needs to ensure that all specific surgical concerns are clarified. In the post operative period, good communication is vital at all times. Situations with changes in the caregivers (from OR to ICU, from ICU to step-down units) are particularly vulnerable to lapses in communication with potentially serious consequences. Communication with the patient's family needs careful attention and can be a potential source of conflict among team members. As far as possible, a consensus should be reached among key team members on what needs to be communicated to the family. This is especially vital when the patient is not progressing along expected lines.

Dealing with disagreements: A diverse group of caregivers is necessary for comprehensive pediatric cardiac care and disagreements are inevitable in the face of diversity. Without trust, mutual respect and good communication, differences in opinions can translate into conflicts and eventually, resentment. It is necessary to address these differences and resolve them regularly in an amicable fashion.

Formal forums for collective decisions: Combined meetings for preoperative decision making should be conducted at regular (typically weekly) intervals. All team members should attend the meeting. This meeting serves as an important opportunity to clarify doubts, discuss specific preoperative concerns, plan specific strategy in potentially difficult situations, and anticipate and prepare for post operative issues. A comprehensive presentation of patient data and imaging information followed by thorough discussion is often a valuable learning experience for everyone, particularly the trainees. An additional forum for collective decision making is the daily ICU round. Ideally, this needs to be in the form of combined rounds involving senior members of anesthesia / intensive care, cardiology and cardiac surgery. Patients who are not progressing along expected lines need in-depth discussion and, often, inputs from all three areas.

Role of the leadership: The leadership, while recognizing individual roles of the team players, should place a premium on harmony. Perhaps the most significant requirement for creation of a cohesive team is in creating a collective sense of responsibility towards the patient. The leadership needs to work proactively towards this end. In highly successful programs all team-members share a common vision of excellence in outcomes and are deeply committed to this end. The leadership also needs to motivate members particularly in the face of adversity. Specific attention needs to be paid to the nursing cadres because a loss of motivation among them has very direct consequences on outcomes. Sharing patient outcomes among all team-members at regular intervals enables continued focus and facilitates collective responsibilities.

Regular review of performance: Collective introspection

at specified intervals, through mortality and morbidity meetings, are absolutely vital. The specific contributors to mortality and morbidity need to be identified precisely and addressed in a non-judgmental fashion. Additionally, overall outcomes need to be reviewed annually to determine how the unit as a whole is performing.

BARRIERS TO DEVELOPMENT AND FUNCTIONING OF A COHESIVE TEAM

Ego of individuals: Like in most teams our egos offer the most serious and direct threat to successful functioning of a team. Ego essentially manifests through the notion that "I am right and others are not". In the short term this often translates into stubborn adherence to a viewpoint in spite of evidence to the contrary, often at the cost of patient outcomes. In the long-term, a sense of resentment develops among some team members. Eventually there is a breakdown of communication and the team becomes dysfunctional. By far this is the most common cause of teams breaking down. Dealing with one's ego requires constant introspection among all team members. All criticisms should be issue based and not individual based. Solutions to problems should be sought through collective introspection, and blaming each other should be scrupulously avoided. Cultivating awareness and mindfulness in vulnerable situations help greatly and can avoid careless statements. In spite of the best of efforts, individual sentiments often get hurt. It is important to recognize resentments when they arise and deal with them promptly through a process of reconciliation. Fortunately, for pediatric cardiac specialties, a genuine respect for the contribution of the various team members develops over time and this is facilitated by an exchange of information among specialties. Respect for one another and a collective commitment to the patient are the best antidotes to the damaging effects of ego.

Rewards and recognition: While all team members make critical contributions to patient outcomes, not everyone is compensated equally. Some of the most glaring inequities are visible in programs in India and other developing countries where nurses receive a tiny fraction of the compensation that the senior consultants receive, unlike in the West. As a result, there is an extremely high turnover among the least paid members of the team that comes at the cost of compromising outcomes. Serious inequities in salaries, rewards and recognition translate into resentment and envy. The leadership and administration need to recognize all members of the team privately and publicly as and when necessary. A genuine interest of the leadership in the welfare of all the team members is vital. This is especially true for those who are directly responsible for the patient (e.g. the nurse at the bedside and the resident doctors). It is also important to recognize and acknowledge the contribution of

the highly skilled technicians (e.g. perfusionists, cath lab technologists) who are often vital contributors to successful programs.

Time: It is challenging to find spare time for meetings and combined rounds in the face of an increased caseloads and frequent emergencies. Regular meetings conducted regularly in a congenial atmosphere involving all the team members contribute vitally to nurturing the team spirit. Other efforts to enhance bonding among team members outside the professional environment are also perhaps useful and may not always amount to a waste of time. They contribute to preventing rapid burnout among the team members.

Traditional hierarchy (Who is the boss?): The hierarchal structure of many programs is dictated by cultural influences and institutional traditions. While a chain of command is necessary to maintain a basic level of discipline, a rigid hierarchy can result in development of significant communication barriers that can seriously hurt patients. For example, reluctance to communicate a residual surgical issue to the senior surgeon (out of fear!) can result in a serious delay in corrective measures. Having one person dictate all important management decisions can result in a situation where most team members become passive spectators who merely carry out orders. The leadership should encourage each team member to think through situations and develop a sense of deep involvement. Institutional protocols and systems developed through a collective and consensual process should dictate and guide most management decisions. All team members should have the opportunity to develop these protocols and suggest changes. Whenever a patient is not progressing along expected lines, opinions should be sought from all concerned members looking after the patient. Lessons from unexpected situations should be incorporated into institutional protocols.

The question that is often asked is: "Who is the boss?" The surgeon sometimes feels he is the 'undisputed captain of the ship'. However, leadership roles are different at different stages of the care. In most mature programs, the cardiologist is responsible for preoperative assessment. The surgeon is responsible for planning and execution of decision in the operation room. The intensivist is overall in-charge of post-operative intensive care. Trust and respect of the leader in each of these segments is important, as also the willingness to hand over the baton of leadership at each of these junctures, while continuing the intensity of overall involvement.

FUTURE CHALLENGES

Already, distinctions between individual specialties are becoming increasingly blurred. For example, anesthesiologists perform a significant amount of perioperative transesophageal echocardiography to

test adequacy of repair. Cardiologists are increasingly involved in intensive care. The development of hybrid heart procedures represents an important benchmark in a team-based approach to patient care where a group of specialists with specific skills work closely together for ensuring the best possible patient outcome.^[2,5] In many institutions, hybrid procedures are offered for almost all newborns with hypoplastic left heart syndrome. Hybrid options exist for muscular VSD, selected cases of patients with branch pulmonary stenosis, and for completion of the Fontan operation. Because of these developments individual specialties are likely to come closer in the coming years, and pediatric heart care will be even more dependent of the cohesiveness of a team of caregivers with diverse training backgrounds.

Pediatric cardiac care is now being delivered in a number of limited resource settings.^[1] Assembling a comprehensive team on the lines of programs in developed nations is challenging, expensive and largely unrealistic. Modifications will need to be made and the "the best possible arrangement" with the available resources should be used to deliver care.^[1,6] Some degree of multitasking becomes inevitable. Modifications of the model shown in the Figure 1 may be needed whenever there are shortcomings in human resources. For example, a dedicated pediatric cardiac intensivist would be a rare commodity in most programs in limited resource settings. However, the need for active involvement of the cardiologist in intensive care is recognized by most progressive pediatric heart programs. Many programs in these settings have developed a model wherein postoperative intensive care is jointly delivered by anesthesiologists, pediatric cardiologists and pediatric cardiovascular surgeons.

CONCLUSIONS

Today, effective pediatric heart care is virtually synonymous with good team work. Pediatric cardiac professionals at all levels need to recognize that they can only function through a cohesive team and should consciously work to contribute towards ensuring harmony of the team at all times.

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