Creating a new cardiac service: the Brisbane experience

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KEY WORDS

Paediatric Intensive Care Unit, amalgamation, merge, staff, change management, change dynamics

ABSTRACT

Objective
This article discusses the creation of a new paediatric cardiac surgical service via the merging of two units.

Setting
In 2005, the Queensland Government made a commitment to improve health outcomes for Queensland's children. This pledge included a review of paediatric cardiology and paediatric cardiac surgery. A recent cluster of deaths following cardiac surgery at The Prince Charles Hospital (TPCH) and concerns expressed by clinicians regarding the adequacy of the service, resulted in the review being commissioned. A panel of well respected, eminent professionals were appointed with the brief to review the adequacy of paediatric cardiac services in Queensland, to determine the optimal configuration of the cardiac service and to also make recommendations to ensure a high quality of service in the future.

Conclusion
The process of amalgamating the two units and creating a new cardiac service has increased output in terms of surgical cases. The care of cardiac children in Queensland is now undertaken from a major specialist children's hospital. However, the costs associated with the amalgamation have been high, particularly in terms of training staff and development of infrastructure. The dynamics of change whilst prioritised by management resulted in a highly stressful working environment and a number of staff resigned. Eighteen months post merge, the morale within the unit has improved and staff are working positively towards a cohesive unit.

INTRODUCTION

An extensive review of the care of paediatric cardiac services in Queensland provided at The Prince Charles Hospital (TPCH) in Brisbane, Queensland was performed in 2006 (Mellis report 2006). The recommendation was made that children with congenital and acquired heart disease would be better managed within a dedicated, tertiary, paediatric hospital (Mellis 2006). Extensive negotiations occurred between Queensland Health, Mater Health Services and the existing paediatric cardiac service, located at TPCH. What transpired over a two year timeframe was the creation of a new paediatric cardiac service at the Mater Children's Hospital (MCH).

In May 2008, the Queensland Paediatric Cardiac Service (QPCS) was established at the MCH in Brisbane. Surgeons, perfusionists, medical and nursing staff were recruited to create this service within the existing Paediatric Intensive Care Unit (PICU). The ten bed PICU developed into 19 beds. Significant infrastructure was designed and construction took place over 18 months within a working unit. Additionally, cardiac catheter laboratories and dedicated theatre space were developed. An existing ward within the hospital was redesigned to care for the cardiac patients and their families. Some medical and nursing staff from TPCH agreed to join the new service, and existing MCH, PICU staff voluntarily spent time in various units within Australasia to either learn or consolidate their paediatric cardiac intensive care skills. This ensured that the service was sustainable from a nursing perspective. The aim of this review was to describe the impact of creating a new paediatric cardiac service on human resources, staff retention, change management, infrastructure, medical and nursing care planning for cardiac patients and management.

Since 1964 paediatric cardiac surgery has been conducted in Queensland at TPCH in conjunction with adults with acquired and congenital cardiac disease. On average, six paediatric cardiac surgical cases per week were performed (Mellis 2006). The PICU at TPCH was an annex of the adult unit and was supported by a Paediatric Cardiac High Dependency Unit and a Paediatric Ward. An extensive network of health professionals at TPCH supported children and their families throughout hospitalisation and provided co-ordinated ongoing care including liaison with community health service and groups.

The model of centralised cardiac care is not uncommon, replicated in a number of hospitals internationally (Pearson 1997). However, it is now acknowledged that paediatrics have greatly improved outcomes when cared for in dedicated paediatric tertiary hospitals (Pearson 1997; Aylin 2004; Wilson 2008; Marcin 2005; Jenkins 1995). This understanding coupled with the recent cluster of increased mortality at TPCH prompted a review of the service and an audit of outcomes. Statistical analysis of the TPCH versus Starship (Auckland, N.Z) outcomes confirmed that TPCH trended towards a higher mortality rate, yet given the small numbers these figures were not statistically significant (Mellis 2006). The review also highlighted the unsustainability of three PICU's in Brisbane; the fragmented service delivery; the poorly resourced paediatric aspect of TPCH and dysfunctional staff dynamics. The centrepiece and agreed consensus of the review was the recommendation that a single children's hospital for Queensland would better serve the needs of Queensland children (Mellis 2006). These recommendations would be developed and implemented over many years. In the interim, the paediatric cardiac service was to be transferred to one of the two existing PICU's in Brisbane. These recommendations were reported to State Cabinet in June of 2006. Ultimately, the MCH, a public hospital administered by the Mater Health Services was chosen to accommodate the QPCS.

METHODS

Literature Review An extensive literature search on Medline and Cinahl via Ovid, was performed to find similar descriptions of a merge of two medical services.

Human resources and change dynamics A working party was established to manage human resources. The current staff numbers and abilities with cardiac care were assessed, and the number of staff predicted to accept a transfer to the MCH with the Cardiac Service was identified. Significant training and staff recruitment need was identified. Projected staff requirements was calculated on a predicted occupancy of 80%. In terms of managing the change, there was an acknowledgement from the outset of the potential impact of change on staff from both units. The effect on staff retention and morale was also identified as significant, with a need to manage this issue pro-actively.

Building and infrastructure Children at TPCH were cared for in a four bed area within an adult ICU. The MCH PICU consisted of ten beds. The new PICU needed to accommodate medical and surgical patients with all PICU beds having the capacity to care for the entire range of possible PICU admissions. The increased PICU beds brought the total number of beds including cardiac PICU beds to 19. The ward area needed reconfiguration to better meet the needs of cardiac children, and in particular a 'Close Observation' area was designed and built

Care path planning The established routine for cardiac pre and post operative management from TPCH was determined. The process was reviewed in consultation with the newly appointed Director of the Queensland Paediatric Cardiac Service. New cardiac care pathways were developed for use in the new service. Trials were performed at TPCH prior to the amalgamation with improvements made where required.

Costings Costings were delineated between establishment of the new service and the ongoing management of the service.

FINDINGS

Literature review

Limited academic literature was available on the topic of PICU's or ICU's amalgamating. There have been similar merges in Paediatric cardiac units in the past. Green Lane Hospital in New Zealand transferred their paediatric cardiac service to Starship Hospital in 2003 following an extensive review (Wilson 2008). In the U.K, cardiac care for children transferred from an adult based hospital to Bristol Children's Hospital, and yet another merge of paediatric services occurred in Canada in recent years. Despite this, there is very little literature on the subject of merging units. The existing literature discusses corporate mergers wherein the immediate staff and environment remain constant. Literature that discusses the emic perspective of merging clinical environments is rare to non-existant.

Human resources

Paediatric clinical staff from TPCH were offered the opportunity to transfer with the Queensland paediatric cardiac service. Unfortunately, the number of staff that opted to transfer was inadequate to sustain the service. A number of MCH staff rotated to TPCH for a period of up to three months however this was not sufficient to provide adequate numbers of nursing staff with the appropriate knowledge and skill level required for paediatric cardiac services. To address the shortfall a plan was devised to send MCH nursing staff to work in other cardiac units across Australasia. This plan required a great deal of resources both to sustain the staff being sent but also as a means of creating a learning environment in the host unit whilst simultaneously maintaining a working roster at 'home'. Units that hosted the MCH nursing staff were Westmead Children's Hospital, Sydney, Royal Children's Hospital, Melbourne and Starship Hospital, Auckland, New Zealand. Fifteen MCH, PICU nursing staff volunteered to go to these units from 3-12 weeks. Six ward nursing staff were also sent to similar ward settings in the host hospitals.

The experience yielded from this time varied by individual and by host unit. Some nursing staff found the experience fantastic, and gained a vast amount of knowledge relating to paediatric cardiac surgery. Some staff found the experience intimidating and overly challenging. With our sincere gratitude, the staff and educators in the respective hospitals invested considerable time in the MCH nursing staff. It was understood that by accepting the MCH nursing

staff it imposed considerable strain on these units and it was greatly appreciated.

Creating one team - change dynamics

Creating the infrastructure for the new QPCS and educating staff whilst challenging, significantly pales in comparison to the challenge of merging two medical and nursing teams into one and generating a multidisciplinary team that would provide excellence in care. Communication was highlighted early in the process as the vital key requisite to keep staff morale high and enable staff to cope with the extensive change placed upon both their working environment and working relationships. The principles of effective change management were emphasised throughout the amalgamation. Hospital management at the MCH employed an independent and neutral group which was staffed by psychologists who specialise in facilitating organisational change, to work with both teams and provide support throughout the merge period. The goal of the program was threefold and included:

1. identifying current strengths within the change process;
2. discussing any current issues, and challenges stakeholders may be encountering; and
3. identifying the most appropriate change management strategies to be implemented on both campuses, to ensure a smooth transition of the Queensland Paediatric Cardiac Service to the MCH.

Focus group and individual consultations were offered to all staff prior to, during and following the merge. Participation was voluntary and whilst a synopsis of topics discussed was presented to management, the staff involved and their comments were treated confidentially. Staff were encouraged to speak liberally about how they perceived the changes and what they foresaw as the units merged. Myths abounded - not malicious, but largely misinformed. These sessions helped to dispel untruths and identified areas of concern for management. Some of the major concerns cited by staff effected by the merging of two units were:

- loss of unique identity
- high degree of uncertainty
- fear of the merge changing successful team dynamics
- concern about stress levels for clinical staff and management
- difference in unit culture creating conflict
- transport issues and significant concern regarding the impact of an increased commute
- altered shift pattern - moving from a eight and ten hour shifts to 12 hour shifts
- loss of confidence in service delivery
- loss of rapport in relationships
- loss of supportive working environment
- poor financial incentive
- fear of working in a new environment
- grief of losing familiar work environment and work relationships
- concern for those staff that are left behind
- fear of the media picking up on 'low morale=poor service' image
- impact on skill mix giving the loss of staff not merging
- perceived inexperience at MCH
- uncertainty of working under new management
- concerns regarding how children and families were managing the transition
- increased work load due to larger unit and less experienced staff
- concern that confirmed annual leave requests would be lost
- perceived sense of a 'takeover'
- perception that senior MCH nursing management do not value their expertise and were nonplussed about difficulties associated with the transfer
- perception that input is not valued by other team members

The independent team also used these sessions to guide staff to identify perceived strengths associated with this extensive change process. Staff

acknowledged that continuity of care would improve in a stand-alone paediatric specialist hospital, and that this was an opportunity to develop a new identity and a culture free of dysfunction and they identified significant personal resources to apply to the move. Staff were also asked what they perceived would aide them throughout the transition period. The following answers were amongst those provided:

- consistent, reliable and regular communication;
- flexible rostering;
- advice on managing stress;
- mock scenarios conducted at MCH prior to the move;
- extensive orientation; and
- planned social activities to facilitate team bonding.

An extensive report was prepared by the facilitating team which was distributed to management and liaison staff. This enabled management to understand what the major areas of concern were for staff and develop appropriate strategies to manage these concerns.

The staff from TPCH were offered a monetary incentive to relocate to the MCH with the transfer of Queensland Paediatric Cardiac Services (QPCS). This was paid after 12 months and then again at 24 months, with an agreed 'ruling' of no redeployment within the hospital for the first six months and free car parking for a period of time, as TPCH staff were accustomed to free car parking at TPCH. Despite the incentives offered only 12 Full Time Equivalent's (FTE's) chose to shift to the Mater PICU. The cardiac ward attracted 29.4 FTE staff.

Unfortunately there were no such incentives for the MCH team. The MCH staff endured a huge load throughout the construction period, the additional educational requirements and the phenomenal recruitment of staff. The impact on MCH nurses was verbally acknowledged by management but at times staff felt very exhausted from the impact of sustained and substantial changes over a prolonged period of time whilst still maintaining a high standard of care to the patients and their families.

Building and infrastructure

Designs for the expansion of the existing MCH PICU, operating cardiac theatre and cardiac catheter lab were developed and after broad consultation and collaboration; construction began in February, 2007.

Construction within a functioning unit was challenging - all services needed to remain operational and compromises abounded. Retrieval equipment was housed on a different floor of the hospital, stores and medication rooms shifted, beds closed, dust, and workmen traipsing through the unit, cementing and scouring floors and drilling and jack hammering for hours on end. On many occasions patients needed ear protection applied. Construction work continued over an 18 month period. New storerooms, isolation rooms, staff tea room, parent interview rooms, parent accommodation, office space and nine new paediatric intensive care bed areas were created taking the total for PICU to nineteen. A cardiac catheter lab was created, as was a new operating theatre, and areas for perfusionists within theatre. The paediatric oncology service was transferred to the RCH (Brisbane) to make space for the provision of a cardiac ward. This ward area was renovated to better suit children with cardiac disease processes and their families. Cardiac monitoring capability was established which articulated seamlessly between theatre, PICU and the ward. This enabled continuity of monitoring throughout the child's admission with electronic storage of all events.

During the planning phase there was overall goodwill on both sides. Liaison staff were nominated for each hospital who worked tremendously hard to promote communication between management, clinical staff, engineers and contractors. The liaison staff diligently oversaw physical change and patient movement. However there were some miscommunications and assumptions made on both campuses prior to the merge with deleterious results. An example of this was the instillation of telemetry into the cardiac ward. As per the cardiologists request, telemetry was installed throughout the cardiac ward. Commissioning of telemetry for each bed area only

occurred. This was not sufficient and the literal interpretation unfortunately excluded bathrooms, corridors and importantly the play room. The process of reviewing this shortfall in telemetry involved re-requisitioning engineers and ordering equipment from the original source plus its instillation, a process which caused stress, delays and increased costs.

Care path planning

PICU and ward occupancy, in addition to patient movement was estimated using the TPCH model that was in place prior to the amalgamation. It was anticipated that the Average Length Of Stay (ALOS) in PICU was five days; which included two days in the immediate acute post-operative phase and three days within the intensive care unit but considered to be High Dependency patients. Transfer to the ward was expected to occur on day six with another five to seven days as an inpatient in the cardiac ward. Within six months the ALOS within PICU was reduced to three days. This has ensured that activity can increase up to ten cases per week.

Staff work routines have altered with the new bed area set ups and the altered physical layout of the unit. Some change has been as a consequence of new technology and different equipment. Additional Clinical Support Nurses (CSN) were required for each shift to support the disproportionate number of junior staff. Clinical Nurse Facilitators (CNF) were also employed to support educational needs at the bedside. Other staff employed included perfusionists, cardiac catheter laboratory technicians and nurses, and an Extra Corporeal Life Support (ECLS) Nurse Coordinator. Senior nursing and medical members from both the MCH and TPCH units underwent ECLS training in Melbourne at the RCH Melbourne prior to the merge. Another cohort followed shortly thereafter.

Costings

Total budget cost for current paediatric services in 2005/6 was $190,264,554 (Mellis 2006). MCH budget was $71,300,00 and TPCH was $11,643,754 (Mellis 2006). Costs associated with the development of the QPCS were in the region of $40m.

DISCUSSION

TPCH staff undertook orientation to their new workplace at MCH which encompassed learning the clinical information system. This occurred in the month immediately prior to relocating to the MCH. The plan once relocated was for the TPCH staff to work in a supernumery capacity for the initial period and then be 'buddied' with Mater staff in the first few weeks, however clinical demand, inadequate staffing and winter season commencing reduced both of these periods considerably. A number of simulated cardiac based scenarios had been conducted with staff from both units. This gave all staff the opportunity to work together and identify any difficulties with equipment, systems and processes prior to the merge.

The merge occurred on the 20 May, 2008. On this day an exquisitely detailed plan was executed ensuring the safe transfer from TPCH to MCH of children and staff to both the PICU and the newly established cardiac ward. The physical transfer of non-essential equipment occurred in the week prior to the move. Regular elective surgery at the MCH and TPCH was deferred in the week prior to the transfer of services so as to minimise inpatient numbers. Throughout the transfer, provisions were made in case of an emergency admission, unavoidable surgery, and deterioration in patient status or chest re-opening. Contingency plans were made for every conceivable event. Fortunately the transfer occurred according to plan, with nil adverse events. Prior to the merge an invitation was extended to all cardiac children and their families to attend an orientation session at the MCH where they were shown the ward area, the Emergency Department and the Outpatient Clinics.

The QPCS is now over two years post the amalgamation and paediatric cardiac surgery presently conducting up to ten cases per week. Overall unit activity has been high, running at a median of 80% capacity (ANZPIC data 2008/9). There had been a number of teething issues and not surprisingly there was some conflict amongst staff. The workload on all PICU clinical staff has

grown extraordinarily. The staff that relocated from TPCH have had various experiences since the merge. Some are sincerely happy with the new work environment and are enjoying the challenges of both a cardiac and general PICU. Some however, have experienced varying degrees of difficulty in settling into the new work environment. A significant number - approximately 50%, have resigned. Some of the difficulties stem from corporate and cultural differences between Queensland Health and the Mater Hospitals. Different customs and technology within the unit have also been cited as stressors. Staff have stated that the sheer size of the unit has been difficult to grasp as they were used to a much more intimate unit and felt they were previously able to develop close working relationships with their colleagues. This has been compounded somewhat by 12 hour shift pattern that results in staff not seeing familiar colleagues for weeks at a time.

Staff working in the paediatric cardiac ward have had a slightly different experience in their transition period. They were fortunate to transfer over with a secure senior nursing staff complement. Many staff had transferred from the ward and/or hospital in the period between the announcement of the move and the actual move date. Of those that did stay on for the transfer, many were junior staff. Rotations of ward staff from MCH to TPCH were attempted prior to the merge. Only two staff accepted this challenge with mixed results rendering the project somewhat unsuccessful. Cardiac ward staff had great difficulties establishing the team following the merge but this problem has abated. Several ward staff have resigned since the merge.

Management continued to support staff during this transition period. However, in hindsight a change management practice that may have improved outcomes, including staff retention would have been having a greater presence of the change facilitators within the clinical areas for the first few months post merge. This may have reduced conflict between staff and minimised detrimental behaviours. Morale was low yet has improved over the last twelve months. Most staff from both hospitals found the experience exhausting and sick leave was high in the first six months post merge, which is an understandable phenomenon. The majority of staff continues to work towards creating a cohesive unit. Throughout, patient care has not been compromised. Clinical incidents are not in excess of ordinal figures, parents and children whilst not formally surveyed, appear to be satisfied with the immerging service. Physical layouts of the work areas may be suboptimal but staff are creatively managing this and are adapting appropriately.

CONCLUSION

This entire change process for Queensland Paediatric Cardiac Services had one goal - to optimise care for children in Queensland with cardiac disease. The creation of the QPCS was only one step in the process towards creating a single Queensland Children's Hospital wherein the RCH (Brisbane) and the MCH will amalgamate into one late 2014. Construction of this hospital has commenced amidst much controversy, and hopefully lessons learned from the transfer of paediatric cardiac services will be used to inform the much bigger amalgamation to the Queensland Children's Hospital.

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