A case study report illustrating the impact of the Care Capacity Demand Management Mix & Match process on a Ward in a New Zealand DHB. Prepared by the Safe Staffing Healthy Workplaces Unit
Transforming the environment of care: A DHB Case study

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EXECUTIVE SUMMARY

It is important to tell this story because this ward, among hundreds across the NZ health system, was facing the same challenges as everyone else; how to deliver consistent, high quality, sustainable services when this is constantly in tension with the requirement to do this within tight fiscal constraints and increase service volumes? Can it be done? This is the story of a service and an organisation that took on this challenge head on.

In less than 12 months, this ward went from being in significant crisis to being a resilient service that is functioning well and with structures in place to continue to grow and improve. The majority of the credit must go to the clinical and support staff who were involved as these were the people who actually made the change; it is also important to observe the vehicle for change that was used by the staff; which were the tools and processes of the Care Capacity Demand Management (CCDM) Programme.

The CCDM Programme is designed to assist DHB’s to be resilient - to achieve high quality outcomes under varying conditions. The theory behind the CCDM Programme is that if there is the right base staffing design in place, high quality information is being used to support decision making, the ward is operating within maximum productive capacity, and emergent system variation is being managed, then consistent, high quality, sustainable services should follow. This case study provides valuable insights about what can happen when this theory becomes reality.

The case study that is presented has some important lessons about the value of power:

- The power of good quality information to support good decision making and to sustain change
- The power that emerges when the people who actually work in a service are supported to work things out for themselves and to make change
- The power of good processes and tools to support change
- The power of resisting the temptation to put in quick fixes in response to poorly understood problems
- The power of focusing on success and actively trying to replicate the conditions in which it happens
- The power that comes when people at all levels of an organisation truly share accountability for the quality of the service
- The power that emerges when you give staff even a small amount of space in which to unlock their creativity and passion for what they do

The preliminary results show that good data used well resulted in effective decision making and service re-design. A modest injection of resources based on good evidence has resulted in exponential improvements to the quality and completeness of care, and to the satisfaction, performance and resilience of the staff. Productivity gains are evident although because these are generally aggregated they cannot be as easily linked to the individual changes processes that were employed.

Resilient organisations study success and then aim to replicate these conditions. This is a story of success.
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TRANSFORMING THE ENVIRONMENT OF CARE:

THE STARTING POINT

This ward agreed to be the pilot of the Mix & Match process for the DHB. Mix & Match is one of the 3 interventions of the CCDM programme. A number of issues were present in the ward environment and had come to the organisations attention and there was a consensus that the M&M process was designed specifically to address some of these.

The ward was at an all time low in terms of morale and there were performance and internal team conflict issues contributing to this. The variability between demand and capacity was proving difficult to predict or manage and there was concern regarding the risk this posed to patients, staff and the organisation. A known deficit in capacity was not proactively managed in terms of mobilising additional capacity or limiting demand, resulting in significant mismatches between what patients needed in terms of care and what was able to be provided.

In addition to this highly challenging situation the national accreditors arrived to assess the ward. The accreditation report required a number of urgent priorities to be acted on immediately. The CNM was summoned to the CEO’s office;

“That was nearly it for me. It was the closest I have ever been to leaving my career, my profession that day” (CNM)

Expecting criticism the CNM was surprised when the CEO stated that the organisation had let the CNM and the ward down by not ensuring that they had what they needed to provide a safe high quality service. This reflected the (then) CEO’s awareness that service designers share accountability with front line staff in ensuring successful care delivery. The accreditors report had made visible an organisational blind spot around how the service was actually operating that the ward staff had been unable to communicate effectively to the rest of the organisation using current mechanisms. Although the immediate emphasis was on responding to the accreditation report requirements as quickly as possible, it was clear that this situation required more than a quick fix response; an in depth analysis of how the ward was functioning and resourced was also required. The reports generated out of these processes (Accreditation, Work Analysis and TrendCare) provided the basis for an extensive and effective diagnosis of how the ward came to be where it was.

This diagnosis prompted extensive change processes at the clinical and service design level. These changes were based on the principles of the Care Capacity Demand Management (CCDM) Programme, principally the need to set a safe and consistent staffing base, the value of work environment and work process redesign, and the use of sentinel metrics to alert and signal success or failure.

This case study report documents the changes that were made in the ward over a 12 month period and uses the data that was available pre and post change to assess the impact.
PRINCIPLES OF CCDM

Four principles underpin the CCDM approach. These are:

1. Optimising **organisational resilience**; that is the organisation’s ability to sustain production and outcomes in varying situations
2. Designing and operating the system in a way that stays within the boundaries of **maximum productive capacity**
3. **Addressing the organisational blind spot** through providing sensitive and sentinel data to inform decision making at all levels of the system
4. A focus on **studying and replicating success** (doing more of what is working) rather than studying and eliminating failure pathways

All four principles were to varying degrees addressed in the Ward redesign journey.

ORGANISATIONAL RESILIENCE

A resilient organisation is one that can continue to sustain outcomes under varying conditions. Resilient organisations use forecasting to set the base resource design that will maximise productive capacity. Resilient healthcare organisations are able to adapt and respond in order to consistently ensure a quality experience for patients, provide a quality work environment for staff and make best use of allocated resources.

In this ward, failure to resource around predictions was a major contributor to the issues as was severe limitations in the ability to respond effectively to variation in demand or capacity.

MAXIMUM PRODUCTIVE CAPACITY

Maximum productive capacity describes the functional operating limits of a service or organisation beyond which the system will begin to degrade and sacrificing decisions will need to be made. In an optimal service design, staffing, and associated resourcing has been developed from high quality data about demand, acuity, volumes, staffing numbers, skill mix, budgets and resources. This base design needs to provide sufficient capacity to meet the predicted demand in such a way that all required care is provided, harm events are minimised, and staff get all their breaks and complete the delivery of care within their contracted hours. Budgets are set against evidence of actual demand and capacity and are achieved without significant variance to volumes and production targets. The upper limit of maximum productive capacity can accommodate some stretch provided sufficient buffering has been built into the system to rapidly increase, decrease or redistribute demand and/or capacity.

The case study reveals a service that was not planned around the notion of maximum productive capacity and which therefore frequently exceeded their ability to sustain service without sacrificing options being used.
TESTING THE LIMITS OF MAXIMUM PRODUCTIVE CAPACITY

A service can, and often will, operate in a stretch situation on a daily or shift by shift basis. This is because demand does not appear according to an organised schedule and surges will occur. Equally capacity is subject to deficits due to illness, recruiting delays and inadequate skill mix. Stretch can generally be managed with good planning and sufficient buffer capacity. However, unrelenting stretch without the ability to flex up and down in response to surges will exhaust staff and damage morale and resilience. A ward at full stretch is walking a fine line between productive capacity and risk and harm entering the picture. The tipping point comes when maximum staffing productivity is exceeded for more than a very short time after which the system and the service begin to degrade quite rapidly.

Data collected clearly shows that the ward was generally operating in stretch and beyond. This had predictable negative consequences some of which were observed by the accreditation team and some of which were observable in the CCDM data.

OPERATING IN THE DEGRADED ZONE

A service functioning in the degraded zone no longer has the ability to achieve all of the things it needs to achieve; sacrificing decisions will be made to reduce adverse outcomes as much as possible. The options available include sacrificing the financial bottom line, for example by pulling in unbudgeted resources, sacrificing production and flow, for example queuing, delays, cancellations, sacrificing staff wellbeing through requiring high levels of discretionary effort. Ultimately if these strategies fail to be effective the only thing left to be sacrificed is service quality. This can be seen in care rationing (missed, incomplete, sub standard or unduly delayed care). Negative impacts can be observed on the day and over time in such things as patient harm and error, poor team communication and decision making, absenteeism and poor staff retention, and failure to meet budgets, volumes and targets. The degree of impact and harm can be correlated to the level of degradation and the length of time the service was operating beyond their maximum productive capacity.

This case study provides a vignette of the consequences of operating a degraded service working beyond maximum productive capacity.
The Care Capacity Demand Management Programme (CCDM) is designed to assist DHB's to better and more consistently match the demand for care with the capacity required to meet it. This supports the DHB to operate primarily within maximum productive capacity while maintaining safe high quality care and an effective engaged workforce. The programme has 3 interventions designed to support the DHB with its primary purpose. These interventions are both service based and whole of organisation in application.

**MIX & MATCH – GETTING BASE STAFFING AND RESOURCING RIGHT**

Mix & Match is designed to enable a service to establish its staffing model including the number of staff, mix of staff and staff scheduling against demand. The process also identifies opportunities to optimise work practices, flow and the efficiency of the environment. Predictable variation in demand is factored into the base staffing design and should include flexibility of staffing and the provision of buffer resources to deal with patterns of variance. Accurate matching of the base staffing and resourcing model to predicted demand is a key determinant of organisational resilience.

To date the activity on the ward has primarily involved changes generated through the Mix & Match process.
VARIANCE RESPONSE MANAGEMENT- PLAN B

Variance Response Management (VRM) is a system of tools, processes and strategies designed to assist DHB’s to manage any deviation from planned demand and/or planned capacity. This enables the DHB to;

- gain a ‘total picture’ of demand and capacity in real time,
- establish consistent response processes at all levels of the organisation,
- improve data and how it is collected and used,
- improve capacity distribution processes and
- initiate performance reporting at all levels of the organisation.

Effective VRM enables a service to detect early signs that the system is stretched or degrading and to mount effective responses to bring the situation under control with minimal negative consequences.

At the time of writing the ward was just beginning to operationalise this part of their strategy.

THE SUPERSET – INTELLIGENT INFORMATION TO MONITOR RESILIENCE

The Super Set data focuses on the use of high quality trusted data to help the organisation determine its performance against the 3 sides of the resilience triangle below. Safe high quality patient care is the primary concern of every DHB. In order to achieve this DHB requires a motivated, engaged, appropriately skilled and well supplied workforce; all of which needs to be balanced with limited healthcare resources that must be used judiciously.

These are the 6 indicators (the Safe Six) that represent the minimum set to begin this process;
Considered together these metrics act as flags in the system to identify if things are working well or not. When flags are not being raised this is an indication that the current design is delivering a resilient service and should be replicated. When flags are consistently being raised this is an indication to apply the diagnostic tools and solution based strategies available within the CCDM Programme.

At the time of writing this report, the ward is still developing its formal work around the Core Data Set. However many of the metrics were collected during the course of the year and were used to diagnose issues and to inform change processes.

**A POINT IN TIME: THE FIRST DATA COLLECTION**

A staff survey was conducted immediately ahead of the winter of 2011. This survey captured staff perceptions around the quality of services, the functionality of the work environment, how staff were supported and what impacts were being experienced.

Data around patient numbers, patient types, flow, length of stay, dollars spent, and patient acuity were being generated via the various organisational systems and data bases.

At the time the winter staffing plan for the ward included short term contracts for RN’s to match the winter workload peak. Recruitment had not been successful due to a lack of suitable candidates and the contracts remained unfilled. Despite the gap in capacity this caused there does not appear to have been any strategic planning associated with managing the winter demand of the ward.

**STAFF SURVEY AND WORK ANALYSIS DATA: PRE CCDM INTERVENTION**

**STAFF PERCEPTIONS OF CARE STANDARDS AND THE CARE ENVIRONMENT**

The survey required staff answer a range of questions around patient care, care delivery, the care environment, work practice and team functioning.

**STAFF PERCEPTIONS OF THE STANDARD OF CARE BEING VERY GOOD OR EXCELLENT**

In the 2011 survey staff were asked to describe their perception of the standard of care provided on the ward. Less than half the respondents rated the care as good or excellent. This was significantly lower than general responses from the overall survey respondents across the 11 DHBs who have been surveyed.
Figure 3: Number who rated as very good or excellent

Figure 4: Percentage rating work effort as too hard or exhausting

STAFF PERCEPTIONS OF WORK EFFORT REQUIRED TO MAINTAIN STANDARDS OF CARE

Just under 80% of respondents said that the effort required to maintain the current standard of care was too high or exhausting. This level of effort was clearly not sustainable and staff who rated their workloads negatively also showed negative impacts on absenteeism levels, burn out, dissatisfaction and intention to leave.

Other data provided evidence that staff were at the maximum threshold of their work effort and that they frequently compromised their own breaks and worked outside their contracted hours in order to try to maintain the standard of care. A quarter of the staff shortened their lunch break (24.9%) and a further 15.3% missed lunch all together. Almost half of the staff got their first 10 minute break. Almost none were taking the second 10 minute break and 34.3% did not achieve either 10 minute break.
In the winter of 2011 there were a high number of staff working past the end of the shift in order to complete work and maintain care standards. The duration of time staff stayed after their shift ranged from 15 minutes to 50 minutes. This discretionary time is generally very poorly captured through standard organisational processes.

**Figure 5: Working past the end of the shift**

Work needing to be completed and workload volume were the principle reasons staff worked outside contracted hours. The following staff ratings illustrated a perception of a highly stressful workload and work environment.
**STAFF PERCEPTIONS OF WORKLOAD**

![Workload Perceptions](image1.png)

**Figure 6: Workload perceptions**

Almost half the staff felt that the ward received more work than was manageable often or always. 58.3% believed that patient needs often or always exceeded the resources of the shift. Retrospective data on ward patient acuity and utilisation from the previous 3 years showed little change however staff felt that patient acuity and dependency were often or always at unmanageable levels.

**STAFF PERCEPTIONS OF THE ADEQUACY OF THE STAFFING DESIGN**

![Perceptions of the adequacy of the staffing design](image2.png)

**Figure 7: Perceptions of the adequacy of the staffing design**

A third (33.3%) of the staff team felt that there were insufficient numbers of qualified staff available to meet the needs of patients.

The lack of administrative staff meant that after hours and on weekends RN’s and HCA’s were doing high volumes of clerical work which reduced their capacity to provide direct care to patients.
The plight of the ward was not obvious to the majority of the organisation (representing the blind spot referred to earlier). The staff reported a lack of support from other services that impacted on the ward particularly in the form of demand for specialist care to be provided in other clinical units such as Emergency Department and the ICU. A clear gap became evident between the wider organisation's perceptions of the work the service was doing and the reality.

THE QUALITY/ SAFETY OF PATIENT CARE

INCIDENTS AND COMPLAINTS

All DHB’s collect data on service failure. Common metrics collected are incidents and patient complaints. The table below illustrates the number of complaints and incidents recorded during the winter of 2011.

![Figure 8: Incidents and complaints July-September 2011](image)

These data include complaints and incidents that ranged from medication errors and incomplete information to commentary on the ward environment and quality of the food. This type of data is often either fairly generic or if investigated, causation can be traced back to a unique set of circumstances that are unlikely to be replicated. Therefore while this data is important it generally is not sufficient on its own to enable good problem diagnosis and therefore appropriate change to be instituted. For this reason the CCDM Programme focuses on another form of data that is more sensitive and which can be considered a precursor to failure. This is therefore amenable to intervention before harm or serious service failure occur. The metric used gathers information about completeness of care.

INCOMPLETE CARE: CARE RATIONING

As stated above a DHB is achieving its primary purpose when patients are receiving ALL of the care they require. Incomplete care results in a compromise of quality and often of safety. This can put the patient on a trajectory towards harm. The CCDM programme uses the term care rationing to describe incomplete care. Care rationing is defined as care that is either omitted completely, delayed unduly or completed to a sub-optimal level that falls below professional best practice standards.
The table below describes rationed care in detail. This data was collected directly from staff during the in-depth work analysis (Mix & Match part 1).

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Care omitted often</td>
<td>27.3%</td>
</tr>
<tr>
<td>Care unduly delayed</td>
<td>18.2%</td>
</tr>
<tr>
<td>Suboptimal delivery</td>
<td>26.1%</td>
</tr>
</tbody>
</table>

**Figure 9: Staff perceptions of care rationing**

Staff were reporting care rationing as a feature of care around 25% of the time. This data can be examined in great depth. Work analysis allows for interpretation of care rationing data by:

- totals (how many activities were rationed),
- category (were they omitted, delayed, or delivered to a suboptimal level)
- type (which activities were rationed)
- by shift worked
- by day of the week.

Care rationing always occurs in a context and invariably involves staff having to make the decision to sacrifice one or more activities over others. Being able to examine the data to this level of detail allows patterns to emerge that can contribute to accurate diagnosis of the staffing and resource design least likely to result in care being incomplete. Care rationing can result from deficit in hours provided, where available hours are invested, high variation in demand flow, team cohesion and individual experience/work practice.
All care rationing is undesirable and represents incomplete care. Incomplete care carries the risk of compromise of quality and of safety. The most highly rationed items during the data collection period were monitoring vital signs, updating the care plan, maintaining the environment, patient requests for assistance and administering education.

**STAFF PERCEPTION OF ORGANISATIONAL VALUES AND PRIORITIES**

**THE MESSAGE STAFF HEAR FROM THE ORGANISATION**

Staff were asked to rank the predominant message they hear from the organisation. During the winter of 2011 only 26% of staff believed that the message being given by the organisation was that patient safety and quality of care was prioritised over volumes, targets and budgets. Just on 40% believed that the organisation valued targets, volumes and budgets over patient safety and quality care.
OTHER MARKERS OF WORKFORCE WELLBEING

INTENTION TO LEAVE

Because factors independent of the work environment, such as the economy, affect staff retention rates, intention to leave can be a better marker of overall satisfaction. In the 2011 survey 36.4% of staff indicated an intention to leave in the next 12 months.

WORK RELATED STRESS LEAVE

In the 2011 survey one in four (25%) of staff reported taking work related stress leave in the last 6 months.

NOXIOUS WORKPLACE BEHAVIOUR

In the 2011 survey 1 in 4 staff reported that poor relationships and/or bullying were a regular feature.

SHIFT VARIANCE AND BED UTILISATION

Figure 12: HPPD variance and bed utilisation 2011 week 1

The first week of work analysis period showed large variance in the match of hours required to hours provided and service utilisation ranging from 80-120%.
The second week showed even greater variation indicating a poor match between demand and capacity and service utilisation ranging from 70-120%.

### 2011 DATA SUMMARY

Overall the data from mid 2011 painted a picture of a stressed service, with stretched and distressed staff frequently operating outside their maximum productive capacity. A high degree of demand variance was evident with correspondingly poor matching of capacity. Patient impact was evident in the staff perception of care quality and care rationing data.

### WHAT CHANGED – PROCESSES AND PEOPLE

The process of change began almost immediately following the collection of CCDM data and the auditors report.

### MIX & MATCH – WORK ANALYSIS AND STAFFING METHODOLOGY

The Mix & Match tool applies a sophisticated approach to determining appropriate staffing hours, skills mix and scheduling. Mix & Match contrasts with historical staffing methods which tend to be based around a projection of how many beds will be occupied. Bed occupancy (or vacancy) was also the predominant method for establishing if the service had capacity.
The issue with this approach is that a bed is simply a piece of furniture and is only one part of assessing whether the resources (care capacity) are in place to provide a safe and effective service. In order to establish accurate and effective capacity (staffing base establishment) a ward or service must be able to account for the total demand needing to be matched. This can be achieved by measuring direct clinical demand in hours per patient day (HPPD acuity), the number of patients using the service (utilisation), what work needs to be done that is not directly associated with the patient (non-core) and what factors increase or decrease the work (context variables).

The two part Mix & Match process was undertaken by the ward over the following two months.

PART 1 WORK ANALYSIS

This in depth analysis of the work of a ward takes a 2 week snapshot of all work activity; what the activity is, who it is done by and when it occurs. Data is collected directly from staff then coded and processed into graphs resulting in an 80-100 page report on the work environment. Each report contains a number of observations and recommendations which become the work plan of the ward.

There were 13 recommendations in the ward’s first part 1 report covering a range of process and resourcing improvement opportunities, along with the recommendations from the accreditation process. Given the wards capacity challenges, making headway on these recommendations was challenging. This changed when the CNM was seconded into a dedicated change leadership role in order to focus on the accreditation and work analysis recommendations. Multiple strategies were employed including:

- Intensive education on improving the quality of TrendCare data – focusing on accurate patient categorisation and actualisation. In addition staff received targeted education on the staff allocate screen in order to more accurately account for work that impacts on staffing capacity. The business rules for TC in this service as well as the default settings for staffing roles were also reviewed.
- A 30,60,90 day plan emerged from staff focus groups around the work analysis report. This targeted the environmental, team and work practice issues that had been identified. The majority of the change processes to address these were staff led with the support of the service leaders.
- The Super 6 group (made up of 5 senior nurses & an allied team representative) was formed voluntarily by staff with a particular interest in improving the areas identified in the 30, 60, 90 day plan
  - Trial and purchase of equipment for isolation rooms to reduce delays in critical monitoring of isolation patients.
  - The Model of Care was extensively overhauled with gains in teamwork and team work practice and clarity of the service philosophy and purpose
  - Evidence based best practice was used to make changes to handover resulting in a more efficient, effective and accurate process
  - Information packs and communication processes for patients and families were developed.
- A service level response plan to deal with variance was developed and agreed
- Utilisation of the Acute Assessment Unit was reviewed
- An employee of the month award was established with staff voting for winners each month.

The clinical staff, CNM, ACNM, Educator and service and operations managers report a positive change in the culture and teamwork of the service which was based on an increase in support for the leadership, increased willingness to lead and embrace staff led change initiatives, reduction of bullying and negative team behaviour, increased understanding of FTE establishments, increased understanding of TrendCare and its value to staff and the service.
**PART 2 – BASE STAFFING**

In direct contrast to the more common model of starting from the budget and calculating what capacity can be afforded the Part 2 process starts from an evidence base of the total demand on the service. The process then calculates what capacity would be required to provide complete, safe high quality care to every patient. The needs of staff and the service are factored in.

Historical utilisation and acuity data for the ward identified a distinct seasonal pattern, so two part 2 processes were performed reflecting this difference. As a result the following changes were made.

- Five short term winter contracts were extended to 5 months in duration and filled. (2 HCa’s, 3 RN’s)
- This included an increase in HCA FTE to match workload peaks during the day (floating shift 1000-1630). This FTE is in place as part of the winter plan.
- There was an increase of clerical FTE extending past 4.30pm on weekdays and covering weekends. This is a permanent increase in FTE that exists year round.
- One of the short term contract RN’s became a PM shift resource nurse without a patient load to manage flow and trouble shooting. This is a winter plan resource and exists for 5 months of the year and is shared with an associated specialist unit.

**“PM resource nurse perhaps the most brilliant of all initiatives” (staff comment)**

**THE SUPER 6**

The Part 1 work analysis report and 30,60,90 day plan identified a number of in-house changes (both process and social) that could be led by the staff team. The ward staff were canvassed for interest in leading ‘in-house’ change processes and 5 senior nurses and an allied team member volunteered. This group became known as the Super 6 and led the majority of change processes identified. This is a permanent group of change champions who are provided with a paid day per month to facilitate evidence based change processes on the ward. Change process research supports engagement of dynamic team members to assist in transformative change at the ground floor level to facilitate accurate solutions and an on-going culture of innovation (Anderson, D. & Ackerman Anderson, L. (2010)^1

**ESTIMATE OF RESOURCES FOR CHANGE PROCESSES**

The expenditure to support the changes above was modest and will have been offset by positive changes in the standard of care, workload efficiency and use of resources. The only full time FTE increase was clerical, with the other FTE increases being short term seasonal increases in association with the winter staffing plan. There was also a cost associated with the purchase of equipment for the isolation rooms however this can be factored against the time that was being invested to undertake terminal cleaning of equipment after every patient observation. The Super 6 are supported to do their staff led service improvement work through a paid workday a month.

This modest investment in the ward environment and staff team has had a significant positive impact on the ward, particularly on patient care, staff morale and satisfaction with the care they provide. The evidence of this is provided by the findings below which compares the data collected at baseline with the same data collected 8 months later.

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^1 Dean Anderson & Linda Ackerman Anderson. (2010) Beyond Change Management: how to achieve breakthrough results through conscious change leadership (2nd Ed) Pfeiffer (Wiley) San Francisco. C.A.
Where possible there is real value in including as much quantitative design data as possible in this report comparing such things as service utilisation, case weighted budgeted volumes versus actual volumes, budget variances, sick leave totals and accrued annual leave totals.

A SECOND POINT IN TIME – THE IMPACT OF CHANGE

Eight months after the Part 1 work analysis report was released the 13 recommendations had been met and the staffing establishment changes suggested by Part 2 had been made. System data was reviewed and the staff were resurveyed to determine the impact of Mix & Match on the patient care and staff markers assessed in the original online survey.

2012 STAFF SURVEY RESULTS

STAFF PERCEPTION OF STANDARD OF CARE BEING VERY GOOD OR EXCELLENT

Figure 14: Staff perception of care being very good or excellent comparison

In 2012 the number of staff who perceived the standard of care provided on the ward was very good or excellent more than doubled from 41% to 86%.

“You can see from the comparative data the difference that just a few pairs of hands have made to this ward. It’s been fantastic” (Lead GM)
STAFF PERCEPTION OF WORK EFFORT REQUIRED TO MAINTAIN THE STANDARD OF CARE

Figure 15: Staff reported work effort - comparison

In 2011 79.3% of staff said the work effort required to maintain the standard of care was too hard or exhausting. In 2012 39.8% say that work effort required was too high with almost 60% of respondents saying the required work effort is about right. It is a very interesting finding that ratings of overwork have reduced significantly at the same time that perceptions of service quality have doubled. This suggests a link between time to do the work and the quality of the work that is achieved. This supports the resilience model's assertion that degraded systems will have negative impact on quality.

PERCEPTIONS OF THE ADEQUACY OF THE STAFFING DESIGN

Figure 16: Perceptions of the staffing design - comparison

Staff perception that they were under resourced with the correctly skilled staff has dropped by from 33% to 6%. The team now feel that on the whole they have sufficient qualified staffing resources when they need them.

With the permanent increase in clerical FTE the lack of administrative staff is no longer an issue. This has resulted in a decrease in clerical tasks being performed by RN’s out of hours and freed them instead to provide more direct uninterrupted care to patients and families.
An improvement in the ability to communicate their workload to the organisation has resulted in an increase in support from other services. This involves other staff coming to assist the unit with deployed in capacity or by not requesting that specialist staff leave the ward to assist with procedures or care elsewhere. As the ward embeds the whole of organisation VRM strategies further improvement in this area would be anticipated.

**STAFF PERCEPTION OF WORKLOAD**

![Bar chart showing staff perception of workload comparison](image)

**Figure 17: Staff perception of workload - comparison**

Overall these results reflect a more resilient workforce who feel less overwhelmed by their workload than they did in the winter of 2011. Staff are significantly less likely to perceive that their work is unmanageable and significantly less likely to perceive that patient demand exceeds ward resources.

Column 3 shows that staff perceived a drop in acuity. In fact patient acuity has not changed (and would not change through Mix & Match). This is perhaps a reflection of their perceived greater ability to cope with patient acuity and volumes which makes them interpret this as a drop. The perception of dependency has also improved though less markedly than the other indicators. This is likely to reflect the nature of the care environment where the Model of Care encompasses the dependent patient and their family.

**STAFF PERCEPTION OF CARE BEING COMPROMISED OFTEN**

![Bar chart showing staff perception of care being compromised often comparison](image)

**Figure 18: Staff perception of care being compromised often - comparison**
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The changes described above represent modest resource investment and effective staff led change within the framework of the Mix & Match processes. The impact of this, reflected in this graph, is dramatic. A 33.3% drop in staff perception that care is compromised often reflects a transformative change in the delivery of complete care for patients. In addition, the perception that the care being delivered is at a high standard of safety and quality will have a significant impact on staff satisfaction.

**STAFF PERCEPTION OF CARE RATIONING**

![Graph showing staff perception of care rationing](image)

*Figure 19: Staff perception of care rationing - comparison*

Similarly impressive improvement in care being omitted or delivered sub-optimally is also noted. The small change in the percentage of care delayed may suggest that there is room for further work around smoothing demand, reviewing scheduling and optimising work practices.

**WARD INCIDENTS AND COMPLAINTS**

Both patient related incidents on the ward and complaints dropped in number.

![Graph showing ward incidents and complaints](image)
THE MESSAGE STAFF HEAR FROM THE ORGANISATION

The data below compares 2011 perceptions (in red) with 2012 perceptions (in pink).

**Figure 20: The message staff hear from the organisation - comparison**

This data reflects a significant change in the perception of staff about the organisations’ priorities. This suggests greater congruence between the workforce and the organisation, and has resulted in the perception by staff that they make a highly valued contribution to the success of the organisation.

OTHER MARKERS OF WORKFORCE WELLBEING

**INTENTION TO LEAVE**

Because factors independent of the work environment, such as the economy, affect staff retention rates, intention to leave can be a better marker of overall satisfaction. A shift was observed in this area between the 2011 and 2012 surveys.

In the 2011 survey 36.4% of staff indicated an intention to leave in the next 12 months. The 2012 rate of intention to leave was 7.4%. Ironically for the first time in years the ward has a waiting list of people wanting to come and work in paediatrics.

**WORK RELATED STRESS LEAVE**

In the 2011 survey one in four (25%) of staff reported taking work related stress leave in the last 6 months. In the 2012 survey this had dropped to 10%.

**NOXIOUS WORKPLACE BEHAVIOUR**

In the 2011 survey 1 in 4 staff reported that poor relationships and/or bullying were a regular feature. In the 2012 survey no staff reported this.
COMING TO WORK WHEN UNWELL

There was little change in the rates of staff reporting coming to work when unwell and this is reflective of a general culture prevalent in all sites surveys. Verbatim comments suggest it is predominantly related to not wanting to let workmates down and to a lesser extent to an ethic of care.

“I personally can feel the difference when I walk onto the ward. There’s processes put in place, there’s systems put in place…..staff are much happier and work more closely as a team” (Lead GM)

CONCLUSION

The ward in this case study was clearly in crisis at the time that the CCDM work was implemented and when the auditors visited. What happened next was the result of the organisation getting behind this service and working with them to ‘invest in success’. The majority of the change processes were ‘ground led/top fed’ and this has contributed to how much of the changes have been sustained and built on in a sector where many changes fail. The changes were made in a considered way and based on good quality information.

The processes that have been used and the actions that have followed have had a transformative impact on the ward. All key markers for patients and staff have shown improvement, often dramatic improvement. Staff describe high value improvements in the quality and safety of care they provide. This is corroborated by the data describing the completeness of care (drop in care rationing) and in complaints and patient incidents which have dropped noticeably post Mix & Match. For staff the increased satisfaction with the care they are supported to provide has resulted in across the board improvements to their perception of the workload, the way the work is organised and the environment of care. There is greater respect for and support of the ward leadership team and across the board improvements in the markers for teamwork.

“keys to success – Super six group, forming a partnership with management & ownership –staff buying into it” (staff member)

A key underpinning tenet of Resilience Engineering is the value of studying what works and then doing more of it. This ward has provided their DHB and the sector generally with an excellent example of a successful approach to safe staffing and healthy workplaces using CCDM tools and strategies. The ward has provided some good evidence of proof of concept for CCDM and efforts should be made to learn from and replicate this approach in other settings. CCDM includes a full quality cycle; flag the issues, use good quality metrics to diagnose, respond, review, and redesign.

“there are changes in culture, staff are offering help to each other......I can only see an upward surge for this ward” (Lead GM)