

1 Executive Summary

1.1 Background

NSW Health, like other states, experienced a significant increase in Emergency Department (ED) demand in 2005/06. In August 2007 Booz Allen Hamilton was commissioned to analyse what the key drivers of demand were and to assess underlying root causes contributing to the increase in ED demand. The study was, in particular, focused on exploring the question whether the demand for emergency department services had been increasing as a result of 'demand transfer' from primary care.

The main methodology used in the study was the hypotheses-driven approach. Issues nested in the problem of unexpected increase in ED demand were first identified, and then hypotheses relating to the issues were generated. This was followed by the systematic collection and analysis of data to prove or disprove each hypothesis, and the refinement of hypotheses to reflect the available evidence.

Clearly, the reasons for ED demand increase in the primary care patient cohort group are multi-factorial. Hypothesis related to demand side factors focused on how demand is driven by demographics, e.g. age or patient morbidity, changing patient expectations and behaviours, changing referral patterns and the impact of the government's health campaigns, Medicare payment and providing access to infrastructure services. Supply side factors aimed to understand how the supply side of services for primary care via GPs, in providing access to medical treatment compounded by any changes in GP practice would have an impact on demand transfer of primary care. Furthermore, changes in the provision of ED services for private and public hospitals were investigated whilst also analysing to what extent changes in ambulance policy and practice could have been a contributing factor.

The hypotheses were tested through a suite of analytical tools including

- ▶ Over **35 in-depth interviews** with policy and stakeholders across five states including NSW, VIC, QLD, WA and SA
- ▶ **Quantitative data analysis** of NSW Health EDIS data which included five million patient records
- ▶ Secondary **desk research of other data** sources including the Beach report, AIHWA data, insurance statistics, DOHA data and AGPN data
- ▶ A **national patient survey** of 401 patients and their carers
- ▶ A **qualitative survey of GPs** in NSW to supplement GP data analysis
- ▶ A **survey of 64 Aged Care facilities** in NSW, completed by the Directors of Nursing
- ▶ An **in-depth pilot cluster analysis** was conducted in SSWAHS to test the application of hypotheses at the local level and analyse the interaction and interdependence between general practice, residential aged care facilities

ambulance and ED services. The cluster analysis was based on qualitative and quantitative data for Campbelltown Hospital and Royal Prince Alfred Hospital, and included the analysis of 850,000 EDIS data records and was supplemented by 47 in-depth interviews

1.2 ED Demand Overview

ED demand grew 6.9% annually since 2004/05 for the 59 hospitals that were included in this study. By 2006/07 the number of presentations to the ED as a percentage of the population had reached 30%¹ up from 26% in 2004/05. Of all the patients visiting the ED, 26% had visited on multiple occasions. This indicates a very strong and growing tendency by the general population to use the Emergency Department.

Primary care type patients² consistently made up 44% of all ED presentations overall and are growing at 6.0% annually. Primary care patients in this study are defined as patients who fall into triage categories 4 and 5, were not admitted to any ward and did not arrive by emergency vehicle.

The issue of “primary care patients” attending EDs is worse in rural areas than in metro areas. In AHS such as Greater Western, 58% of all patients attending the Emergency Department, could be classified as primary care patients.

There are two fundamentally different patient cohorts fostering the demand for Emergency Department services with very different needs and motivations. The under 24s are driving the growth in primary care patient attendances with ‘injuries and poisoning’. This diagnosis category makes up 34% of all attendances versus 24% in the over 65+ patient cohort.

The 65+ are represented in triage categories 1, 2 and 3, and are increasing the non-primary care attendances often based on health issues around chronic disease. 22% of all primary diagnosis fall in to the category “factors influencing health status...” and of these attendances 52% were related to follow up exams, procedures and aftercare.

The data indicates that there is significant primary demand transfer of 44% into the EDs, and that both primary care and non-primary care patients are growing at a fast rate.

Given the changes in attitude and expectation towards the provision of health services for patient groups in combination with the changes in the provision of primary care through GP, increase in demand transfer is likely here to stay.

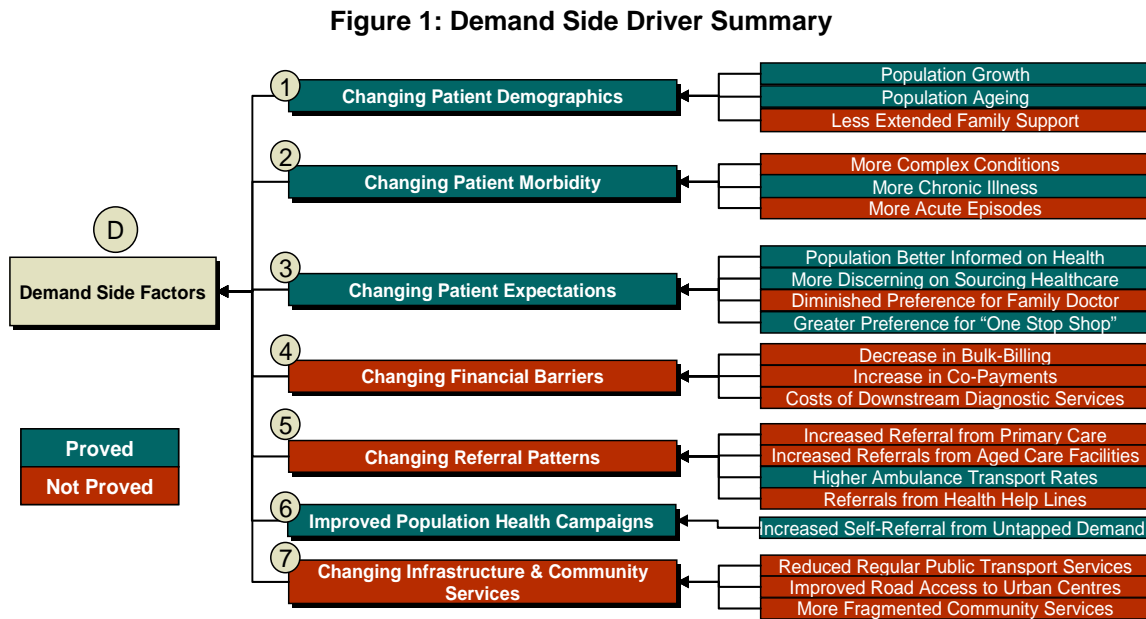
¹ Note: Calculation based on the number of attendances divided by the population rather than individual people to highlight the true volume of attendances.

² Note: Primary care patients are defined as patients who 1. Are in triage categories 4 and 5, AND 2. Did not arrive by emergency vehicle, AND 3. were not admitted to any ward of the hospital. Definition adapted from Masso et al. 2007 in *Emergency Medicine Australia*

1.2.1 Demand Side Driver Overview

Four aspects are contributing to demand in EDs when testing the demand side hypotheses. These factors include changing demographics, changes in patient morbidity, in particular the rise of chronic disease, changing patient expectations and to some extent the impact of improved population health campaigns.

The graph below shows which demand side hypotheses could be proven to have some impact on ED demand.



The key drivers from the demand side, in order of sequence are:

- ▶ **Changing Patient Demographics.** A small proportion of the growth in ED demand can be explained by growth in the population. The average age of patients attending the ED has increased over time, in line with the general aging of the population as per census data. However, younger patients (under 25 years) are growing much faster than older patients (65+ years) and both groups have fundamentally different needs and requirements of ED services
- ▶ **Changing Patient Morbidity.** During the last nine years the prevalence of many chronic diseases in Australia has increased significantly. For example, hospitalisation for osteoporosis and chronic kidney disease increased by 62% and 56% respectively, oral diseases increased by 30%, depression by 26%, osteoarthritis by 17% and colorectal cancer by 12%. Therefore the number of patients who require ongoing medical treatment has grown significantly and this can impact demand for emergency department services on a continued basis.
- ▶ **Changing Patient Expectations.** Patients are generally better informed about their health and frequently investigate health issues online and demand certain test from GPs. Patients are willing to travel a significant distance in order to obtain all the required services in the one place. There are two different age cohorts impacting demand in different ways. The under 25 years age cohort are

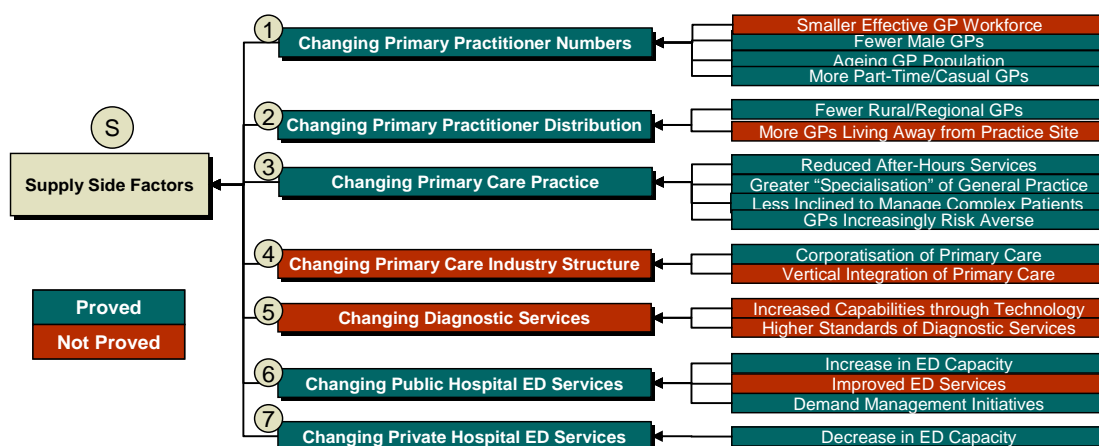
using the ED as a primary care substitute, seeking convenience and wanting to access services all in one place. The 65+ years' cohort is more likely to be using the ED for true emergency services and their growth is driven by the ageing population and more attendances related to chronic disease management

- ▶ **Changing Referral Patterns.** There is a strong trend towards patients bypassing their GP in the decision to attend an ED, with up to 86% of patients self-referring to the ED and relying on their family and friends for advice. A significant proportion of all patients cited GP accessibility as the reason for attending an ED and only 34% thought they really needed hospital or emergency treatment
- ▶ **Ambulance** usage is also increasing rapidly, growing at 10% annually. While ambulance transportations tend to be for non-primary care patients, these patients' cohorts contribute to a high number of overall attendances of the Emergency department. Interestingly, in the last two years, 2005/2006, the largest growth in ambulance transportation in Australia was for the 16-17 and 18-24 age groups, with 13% and 18% respectively.
- ▶ **Aged care facilities** self report that their use of EDs is on the rise and while aged care referrals are currently low, they are likely to grow as the population ages and residential aged care facilities face additional difficulties and begin to refer more patients
- ▶ **Improved Population Health Campaigns.** Patients are informed about a variety of health conditions via advertising and this is potentially impacting their choice to attend the ED earlier. Respondents of the patient survey had a very high level of awareness of advertising related to the condition for which they attended the Emergency Department.

1.2.2 Supply Side Driver Overview

The supply of primary care and the provision of Emergency Department services through private hospitals had the strongest impact on demand in the ED as it affects patients' ability to access the medical care they require. The graph below shows which supply side factors have an impact, either positive or negative, on ED demand.

Figure 2 : Supply Side Driver Summary



- ▶ **Primary Care Practitioner Numbers (Effective Hours).** While the number of GPs relative to the population is growing, GPs are increasingly difficult to access for their patients and patients perceive this change in access to primary care, as evident through the patient survey. GPs have been reducing their average workload overall with the average full workload declining by 9% to 85% down from 93% in 2004/05. GPs are also providing more long consultations, meaning fewer patients can be seen per GP. GPs are also ageing and older GPs tend to work fewer hours. Over the last seven years the GP workforce in the age category 55+ has been increasing from 30% to 39%. Interestingly enough younger GP cohort groups seemed to be also more focused on lifestyle and have cut down on their working hours, with the average under 44 year old doctor typically working 39 hours versus 45 hours in the age group 45-55 years old. In addition, in some of the larger metropolitan division of GPs the workforce is becoming increasingly feminised. With female GPs working on average 13.6 hours fewer than their male counterparts this severely limits access to GPs in those areas. In short the number of effective hours available for consultation for patients has been decreasing
- ▶ **Primary Practitioner Distribution.** Analysis of demand at the rural versus metropolitan area provides compelling evidence that GP supply is a major determinant of demand transfer from primary care into EDs. Rural divisions of GPs have a significantly worse GP:Population ratio compared to the metropolitan divisions, and the Rural AHSs also have the highest presentation of primary care patients within their EDs (in one rural AHS 56% of attendances were primary care patients). Anecdotal evidence suggests that GPs in rural areas often carry out dual responsibilities in the hospital and their private practices, and are referring patients for testing and further diagnosis into the hospital
- ▶ **Primary Care Practice.** Driven by a reduction in effective working hours of GPs, primary care patients are reporting that GP accessibility is by far the strongest factor in the decision to attend the ED rather than a GP. GPs are continuously providing less of their own after hours services meaning that after hours their patients have few choices other than attending an ED. The percentage of GPs providing their own or cooperative after hour services has gone down over the last seven years from 65% to 47%. GPs – potentially due to de-skilling and the increased threat of litigation – are now providing fewer services within their practice electing to refer patients for specialist and testing services. In the last two years clinical treatment carried out in the GP practice has dropped from 39% to 29% in 2005/06. Patients have to make the choice of being referred to multiple places by their GP or attending the ED where all the services are available in one place. As GPs are reducing their working hours for lifestyle reasons, providing fewer services due to legal risks, patients' perceptions about lack of access to GPs are being reinforced
- ▶ **Changing Public / Private Hospital Services.** While public hospital EDs are increasing their bed capacity annually at 4%, the number of private hospitals providing ED services over the past two years has fallen by half. The volume of

attendances that was previously catered for in the private system may have now been diverted into public EDs.

In summary, due to a fundamental shift in patients' expectations and attitudes, combined with their impressions about the perceived access from GPs to comprehensive medical services, we would predict that the growth in ED demand, driven by primary care, is likely to continue. The shifts, in both patients attitudes and behaviour and the delivery of primary care practice implies that the current approach to providing services in the Emergency Department may need to be revisited for its appropriateness and effectiveness.

1.2.3 Cluster Analysis

The cluster analysis was conducted with the aim of understanding the relationship between EDs, GPs, residential aged care facilities, ambulance and patients in the SSWAHS area, with a particular focus on Royal Prince Alfred Hospital (RPAH) and Campbelltown Hospital (CH).

Key findings confirm the interdependence of supply and demand and point to the need to assess each Area Health service for demand transfer at the individual catchment area level. To truly understand and plan for, demand analysis must take into account GP access and needs to be conducted at the hospital by hospital level.

For example, the growth rate for ED attendance with a compounded rate of above 10% has by far exceeded the average growth rate of 6.9% in NSW, with Campbelltown Hospital attendance up at 12.9%. On the demand side these differences appear to be primarily driven by different demographics, with Campbelltown having a much younger and growing population living in the catchment area, while for the Royal Prince Albert hospital the population is on average older.

On the supply side, the GP:Population ratio has worsened in divisions where CH and RPAH are located when compared to 2002/03. This may be one of the contributing factors why the percentage of primary care patients in both hospitals are going up, with CH up from 22% to 28% in 2006/07 and RPAH moving towards 34% of share of 'primary care' patients. However, while the portion of primary care patients is growing, the level is still much lower when compared to NSW average of 44%.

Overall at a qualitative level, based on the interviews conducted with key staff, the cluster analysis confirms that patient attitudes and behaviours are changing, and that there are different age cohorts affecting primary care and non-primary care in different ways. On the supply side, the cluster analysis confirms, that the restricted effective hours of GPs is having a very strong impact on patients demand in EDs.

1.3 Emerging Conclusions

There is a set of 10 emerging conclusions based on the results of this study

1. Demand in **primary care and non-primary care patients is growing** and is likely here to stay, driven by the issues around access to GPs and the fundamental changes in patient attitudes towards GPs
2. There are **two fundamentally different patient cohorts driving demand** – the under 25s driving ‘primary care’ demand and the 65+ driving non-primary care demand – both groups have very different needs
3. There has been a **fundamental attitude shift and behavioural change in patients**, particularly amongst younger cohorts, leading to continued transfer of demand to EDs
4. **GP access is a critical factor** in driving demand transfer into EDs with effective hours and access to after hour services declining
5. **Primary care practice and GP attitudes have changed** and are further confirming the beliefs of patients and are driving patients to EDs, making demand transfer harder to reverse
6. **Demand management initiatives are having a strong impact** as patients are highly aware of these but, based on data available, the extent of influence on managing demand into EDs is unknown
7. There is an **interdependent relationship between supply and demand** which needs **to be considered for future ED demand forecasting**, with a strong hypothesis forming that the lower the GP supply the higher the demand transfer from primary care into ED
8. Understanding demand and supply factors at the hospital level is required to accurately assess growth in EDs as **individual demographic profiles in the catchment area strongly influence local demand**
9. Effectively managing demand **in EDs requires a holistic approach** to further deepen the analysis already conducted, understanding in-depth the two different cohorts, and conducting a geo-mapping study to analyse demand and supply at the individual hospital level
10. Ultimately, fundamental differences in needs for different patient cohort groups will require revising the current approach to care at the ED potentially moving towards a **“tailored business stream model”**

1.3.1 Emerging Conclusions on Future Tailored Initiatives by Hospital

Given that the growth in ED demand is high and likely to continue, driven by both primary and non-primary patient cohorts, it may perhaps be necessary to cater for this shift at the Emergency Department with a different approach to patient care.

Deploying a concept of **tailored business stream** approach could potentially best address the different cohorts within the ED and their different treatment requirements. Examples of different patient groups with different needs can be

illustrated through the typical diagnostic categories of different age groups of under 24s and +65 years olds.

- ▶ Chronic care vs. Acute care patients
- ▶ Minor sports injury vs. Major head trauma

Tailored business streams would address these patients in EDs with a more detailed upfront triage system and different treatment models with the ED. For example, a non-medical model (i.e. nurse care only) could be applied to minor sports injuries, and potentially a more coordinated transfer into community care program for chronic care patients.

1.4 Implications for Part B

The current analysis demonstrates that both supply and demand factors have a significant impact on ED demand, and as current ED forecasting models are more based on demand side factors, future planning work will need to include both supply and demand side variables in the forecasting model. The cluster analysis also showed that there are variations at the local level, and therefore demand forecasting, especially for planning initiatives and models of care, will need to be conducted bottom up at the hospital level.

Based on the analysis to date we envisage that Part B would run in two stages with the aim of finishing with a full demand forecast at the hospital level. The key components of Part B could include:

1. More **quantitative analysis** to further expand on the existing findings, e.g.
 - a. Longer term impact of corporatisation and vertical integration in primary care
 - b. Changes in patients attitudes around preference for a GP, expanding of the patient survey
2. In-depth analysis for **non-primary care patients**, mostly T1-T3 (as they were not the focus of the current report)
3. Further research to **understand the two cohorts driving demand** – the under 24s in primary care patients and 65+ in the non-primary care patients
4. A thorough review of **current demand management initiatives** and their likely impact in light of the current findings
5. **“Geo-mapping” to forecast demand transfer** at the local hospital level taking into account the importance of supply and demand side factors. This would imply building a comprehensive database of all factors influencing demand and supply and determining a correlation between both factors to develop a new concept for demand forecasting
6. Further to Part B, NSW Health should consider developing a **blueprint for a revised approach to Emergency Department care** at the hospital level, tailoring initiatives to each hospital based on a cost benefit analysis and

demand forecasts. This would allow for demand to be more effectively managed by each hospital based on its individual circumstances