
Counties Manukau
Acute Demand Management Group (ADMG).

Frequent Adult Medical Admissions
Final Report

April 2003

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1 Executive Summary

1.1 Background

The Frequent Adult Medical Admissions (FAMA) project has been described elsewhere in the project proposal documents. However in a nutshell it is a project whereby South Auckland Health identified adult medical patients admitted 2 or more times to a medical ward at Middlemore Hospital for a total of 5 or more bed days in the 12 months leading up to 30th June 2002.

This list of patients was forwarded to the patient's nominated 'usual GP' via one of three contracted IPAs (EastHealth, First Health or ProCare). The GP decided in association with practice nurses and potentially the patient, whether the patient would benefit from participation in an intense monthly general practice care planning / case management programme. The major benefit had to be a reduction in future hospital usage for the patient as compared to prior hospital usage.

General practice (GP and Practice Nurse) visits for patients were intended (though not mandated) to be free where they were part of the FAMA schedule of monthly practice nurse visits and quarterly GP visits.

All patients had to be enrolled prior to 31st August 2002.

The data relating to the project is presented as at the 28th February 2003.

1.2 Major Outcomes

South Auckland Health identified 1541 potential enrolees. Of these the GPs enrolled 375. Reasons for non-enrolment are outlined below, however the 375 actually account for 44.5% of all the possible enrolees as explained below.

Patient enrolment is recorded by ethnicity, however there is not a denominator of ethnicity for all patients presented by South Auckland Health.

Whilst patient completion of scheduled visits reduced with each visit throughout the programme overall around 80% of the total expected GP visits were completed and around 50% of the total practice nurse visits were completed.

The project did not have a control group, therefore outcomes in terms of hospital bed days or similar are only as compared with might be expected based on the year prior to FAMA, which therefore

introduces confounders around the climate and the time of year as well as other potential confounders. However one confounder that was eliminated was that patients in FAMA could not simultaneously be enrolled in any other chronic care management programme.

Bearing this in mind the results of FAMA extrapolated for a full year showed a reduction in hospital bed days used of 5.57 per person compared with the year prior to the project and even show a reduction when compared with the same cohort of patients 2 years prior to FAMA.

Further the 30 day readmission rate showed approximately a 40% reduction when compared with the year prior to FAMA and a 24.5% reduction when compared to the same cohort 2 years prior to FAMA.

Hospital usage was reduced across all ethnicities although the relative usage of hospital varied slightly from one ethnicity to another as discussed in section 4.5 below.

Patient and Provider Satisfaction surveys have been designed and distributed however results have yet to be collated and presented.

1.3 Key Performance Indicators

The table below summarises the performance indicators of this project as set out in the contract schedules for EastHealth, First Health and ProCare. Further detail around each result is outlined later in the report.

Key Performance Indicator	Target (%)	Target (n)	Actual (%)	Actual (n)
Number of patients enrolled	50%	600	44.5%	375
EastHealth	50%			48
First Health	50%			96
ProCare	50%			231
Reasons given for non-enrolment	Actual	Actual		
Deceased			15.6%	192
Not known to practice			16.1%	198
Not likely to benefit			17%	205
Unlikely to be able to comply with programme			6%	75
Unlikely to be admitted			5%	59
Other reasons			5%	63
Number of quarterly GP visits completed*	80%	300	57.9%	217*
Number of monthly practice nurse visits completed	75%	1688	49.4%	969**
Patient drop out rate and time of patient withdrawal from the programme.	Actual	Actual	See text	See text
Number of days in hospital for enrolled patients (per patient per year)	Dec. by 30%	8.18	Dec by 47.7%	6.11
Number of admissions to hospital for enrolled patients	Dec. by 30%		Dec by 47.3%	

Number deceased	Actual	Actual	6.7%	23
Rate of 30 day readmission of patients to hospital	Actual	Actual	Dec by 40.5%	
Number of patients eventually admitted to hospital	Actual	Actual	42.7%	137
Number that left because they no longer needed the service	Actual	Actual	See text	See text

* Includes only First Health & ProCare figures and excludes the initial GP visits. Including the initial visits increases the number of completed visits to 543 or 83% of the expected number.

** Includes only First Health & ProCare figures and includes the initial enrolment visits.

1.4 Conclusions

Although FAMAs evaluation has clear methodological flaws, these were fully understood at the point at which the project was approved.

The project was intended to be predicated on a model of care previously demonstrated successful in randomised controlled clinical trial (the South Auckland COPD Project).

The level of enrolment in the project was below that expected, although when certain factors that were beyond the control of the enrolling GP are taken into account the percentage of patients enrolled is not tremendously different to that targeted by the project (44.5% of evaluated patients enrolled compared with a target of 50%).

The results of the project give significant reason to believe there is reasonably likely to be a real beneficial effect of this approach to identifying and managing adult patients with a high likelihood of being admitted to a medical ward at Middlemore Hospital within the next year.

The future potential direction of this project might include GPs being able to enrol patients without them necessarily meeting the existing hospitalisation criteria where the GP believe that the patient will meet the criteria in the next year without access to a programme such as this.

Overall the project needs to be incorporated into a more sustainable funding stream and to be brought further into line with respect to the other chronic care management programme within the Counties Manukau region.

2 Enrolment

2.1 Number of Patients Enrolled

The project was predicated on an estimate of 1500 patients meeting the criteria for inclusion as outlined in the patient eligibility criteria. It was further estimated that approximately 80% (1200) of the eligible population would be assessment by their GPs for enrolment in the project and the target was that 50% (600) of these patients would actually be enrolled.

During the course of the project 1541 NHI numbers pertaining to individual patients were identified by South Auckland Health as meeting the patient eligibility criteria.

Of these 1232 (79.9%) were presented to the GPs (listed by South Auckland Health as the patients usual GP) for assessment for enrolment in the project. Note that this is an important distinction as 198 (16.1%) of these patients were in fact unknown to the practice.

Of the 1034 patients presented to the correct GP, a further 192 (15.6%) were found to be deceased prior to assessment for enrolment.

Of the remaining 842 eligible patients assessed by their GP for enrolment in the project, 375 (44.5%) were actually enrolled.

Note that within the bounds of privacy laws, significant efforts were undertaken by all IPAs and South Auckland Health to minimise the number of patients not evaluated because they were unknown to the GP initially recorded by South Auckland Health as the patient's usual GP. However the extent to which this could be successfully achieved was seriously limited by the cut off date (31st August 2002) for final enrolment into the project.

2.1.1 East Health

Enrolled patients	48
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2.1.2 First Health

Enrolled patients	96
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2.1.3 ProCare

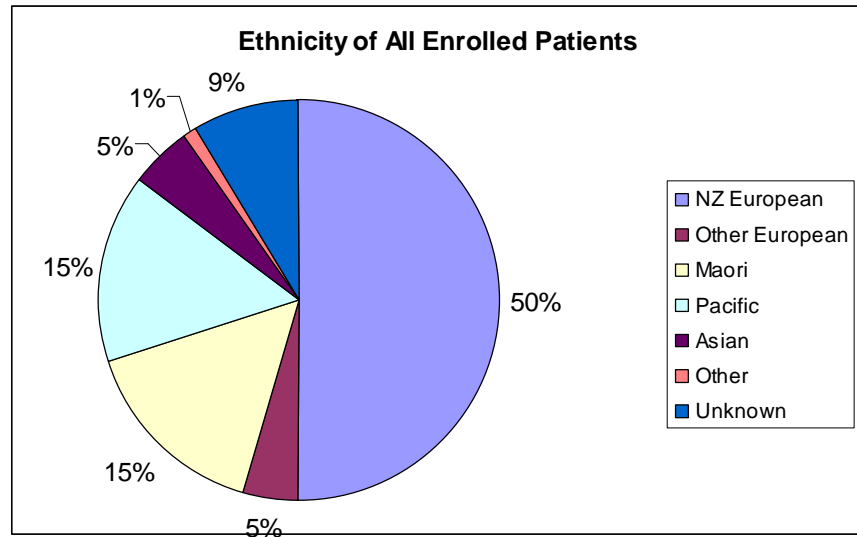
Enrolled patients	231
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2.2

Ethnicity of Enrolled Patients

Ethnicity was recorded for 91.5% of all enrolled patients. Whilst some patients evaluated but not enrolled did have ethnicity recorded and reported by the practices, this was not a requirement of the programme, therefore reporting on ethnicity of non-enrolled patients is substantially less complete.

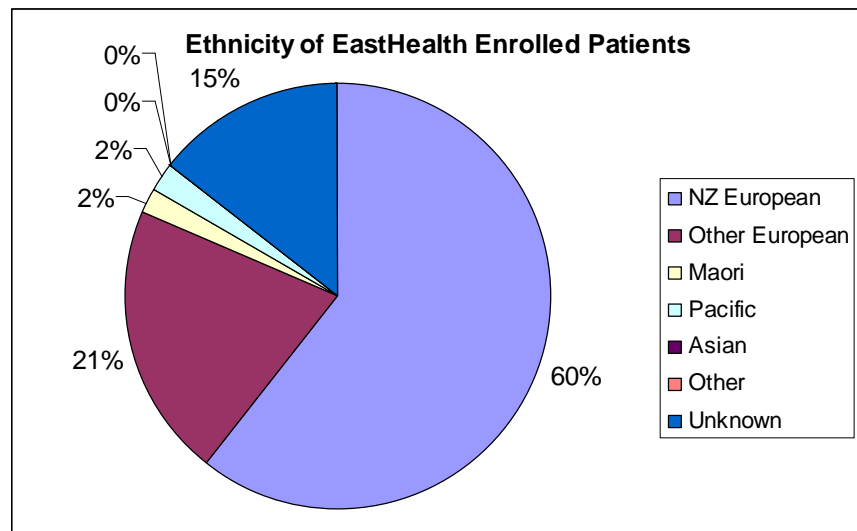
Of the 375 enrolled patients the following graph describes their ethnicity:



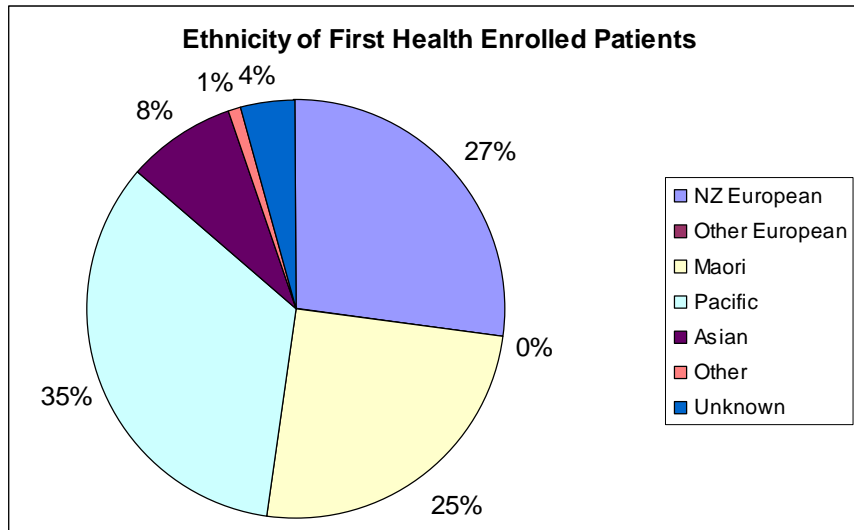
2.2.1

Ethnicity by IPA Contract

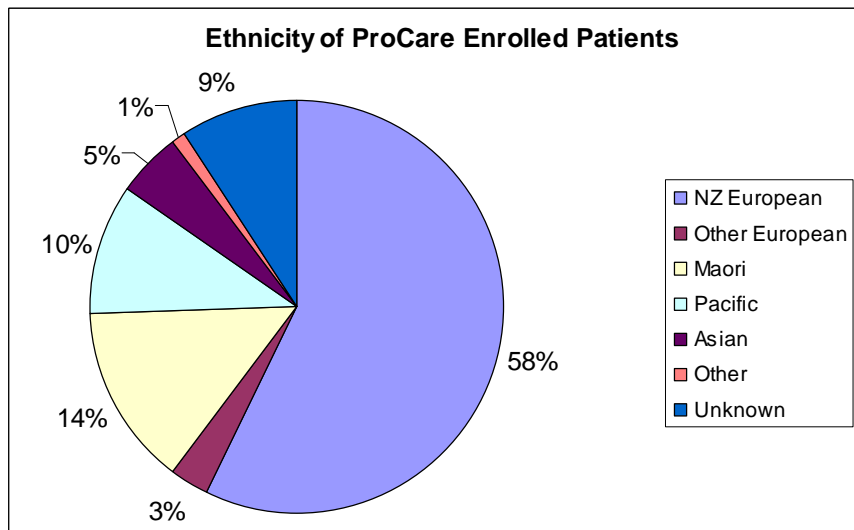
2.2.1.1 EastHealth



2.2.1.2 First Health



2.2.1.3 ProCare



2.3 Reasons for Non-Enrolment

The data outlined below is depicted in the graph at the end of this section.

2.3.1 Deceased patients

Of the list of 1232 patients evaluated by practices for inclusion in the programme 192 (16%) are deceased.

2.3.2 Not a patient of this practice

Of the list of 1232 patients evaluated by practices for inclusion in the programme 198 (16%) are considered by the practice not to be one of their patients. This number has fluctuated as we become aware of other practices that identify these as their patients. Further the list of

these patients has been forwarded to South Auckland Health for them to contact the patients to re-identify the practice the patient considers to be their usual general practice. At this stage I do not believe we have received an updated list from this process.

2.3.3 Patient declined to participate

Of the list of 1232 patients evaluated by practices for inclusion in the programme 58 (5%) have declined to participate in the programme.

2.3.4 Patient unlikely to be admitted to hospital

Of the list of 1232 patients evaluated by practices for inclusion in the programme 59 (5%) have been assessed by the general practice team as unlikely to require hospital admission in the next 12 months.

2.3.5 Patient unlikely to benefit

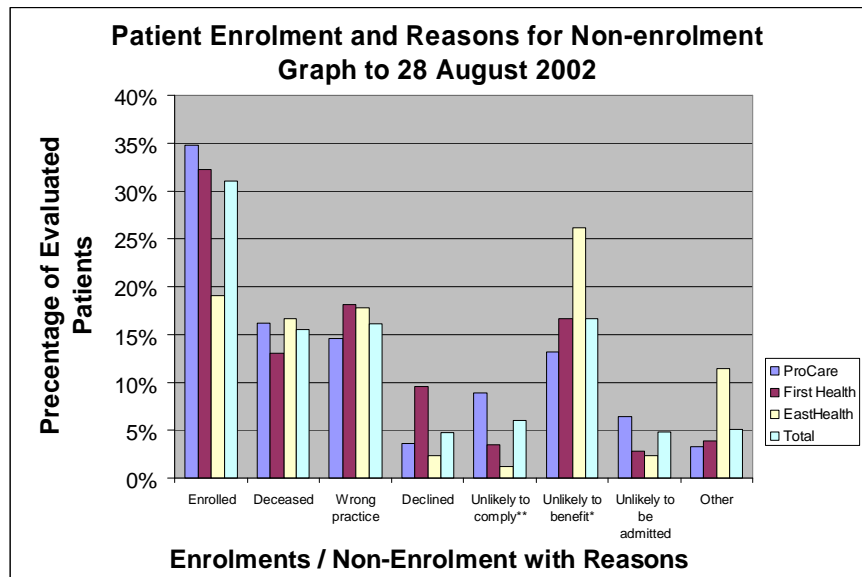
Of the list of 1232 patients evaluated by practices for inclusion in the programme 205 (17%) have been assessed by the general practice team as unlikely to benefit from enrolment in the programme. Predominantly these are likely to be people for whom hospital admissions are considered unavoidable in the next 12 months. However it is possible that this could be interpreted also as people who might fall into either category 3.3.4 above or 3.3.6 below. It should be noted however that no patient has been included more than once in these figures.

2.3.6 Patient unlikely to be able to comply with the programme

Of the list of 1232 patients evaluated by practices for inclusion in the programme 75 (6%) have been assessed by the general practice team as unlikely to be able to comply with the programme. This is likely to be for a multitude of reasons including intellectual handicap, stroke, in rest-home or private hospital care and undoubtedly a range of other reasons.

2.3.7 Other Reasons

Of the list of 1232 patients evaluated by practices for inclusion in the programme 63 (5%) have not been enrolled for a number of other reasons, the most notable of which being practices not prepared to participate and patients either having moved out of Auckland or being unable to be contacted. Some patients (11) are already enrolled in other programmes.



Notes:

* “Unlikely to benefit” includes patients where the GP believes patient enrolment in the programme is unlikely to prevent admissions. This is likely to be because the GP is aware that the patient will require admission to hospital in the next 6 to 12 months and that these would be considered appropriate and unavoidable.

** “Unlikely to comply” includes a significant number of patients in rest-homes and private hospitals. Whilst there may be additional clinical reasons why these patients are unlikely to comply with the programme, in future excluding these patients from the programme may be considered more carefully by practices.

3 Service Delivery

3.1 Patient Scheduled Visits

The data presented here is the last available data for each IPA.

The overall figures show visit completion rates dropped off over time, which is to be expected. The visit rates were below targeted percentages in most cases. It is likely that claims are still being received by IPAs at present although these will now be getting fewer pertaining to the first 6 visits of the project.

3.1.1 Total Visit Figures

Enrolled patients	375
First visit completed	369 (98.4%)
Second visit completed	304 (81.1%)
Third visit completed	218 (58.1%)
Fourth visit completed	181 (48.3%)
Fifth visit completed	137 (36.5%)
Sixth visit completed	88 (23.5%)

3.1.2 East Health

Figures provided here are as at 10th February 2003 and may be an under-estimate due to as yet un-received claims.

Enrolled patients	48
First visit completed	43 (90%)
Second visit completed	31 (65%)
Third visit completed	26 (54%)
Fourth visit completed	24 (50%)
Fifth visit completed	15 (31%)
Sixth visit completed	5 (10%)

3.1.3 First Health

Figures provided here are gross numbers. They are aggregated for all patients managed through the First Health contract and they are as reported in the March (Final) 2003 report from First Health.

Enrolled patients	96
First visit completed	96 (100%)
Second visit completed	70 (72.9%)
Third visit completed	54 (56.3%)
Fourth visit completed	57 (59.0%)
Fifth visit completed	30 (31.3%)
Sixth visit completed	6 (6.3%)

The contract targeted 80% of the quarterly GP visits to be completed. First Health completed 153 GP visits in total which is 79.7% of the expected number. However only 59.4% of the 2nd expected GP visits were completed.

The contracted targeted 75% of the monthly nurse visits to be completed. First Health practices completed 300 nursing visits which is 52.1%.

3.1.4

ProCare

Figures provided here are as at 10th April 2003 and may be an underestimate due to as yet unprocessed claims.

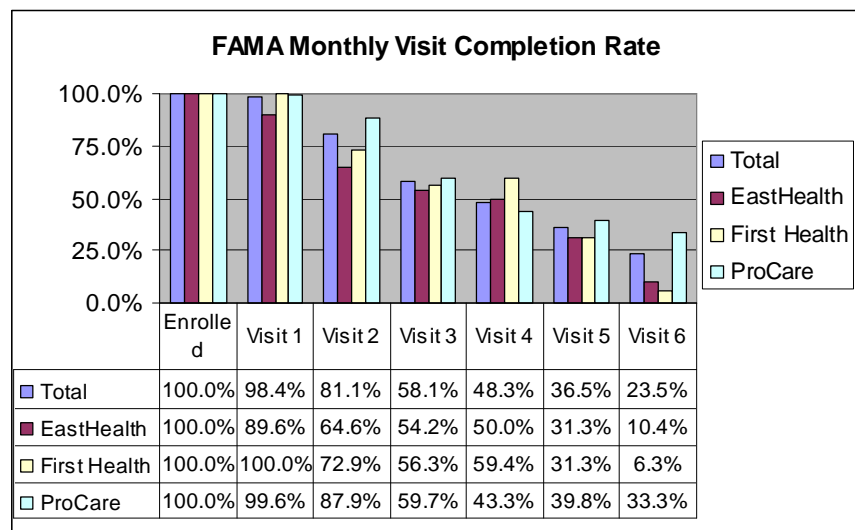
Enrolled patients	231
First visit completed	230 (98.7%)
Second visit completed	203 (89.0%)
Third visit completed	138 (60.8%)
Fourth visit completed	100 (43.8%)
Fifth visit completed	92 (40.2%)
Sixth visit completed	77 (33.8%)

The contract targeted 80% of the quarterly GP visits to be completed. ProCare completed 390 GP visits in total which is 84.4% of the expected number. However only 160 (69.3%) of the 2nd expected GP visits were completed.

The contracted targeted 75% of the monthly nurse visits to be completed. ProCare practices completed 669 nursing visits which is 48.3% of the expected number.

3.1.5

Graph



3.2 Patient 'Drop-Out' Rate

The total numbers of patients either dying or choosing to leave the service are very small and therefore have not been further analysed by ethnicity.

Owing to the lack missing data from EastHealth it is not possible to accurately calculate the overall drop out rates. However as First Health and ProCare account for 87.2% of all enrolled patients the drop out rate calculated from this sample should be a reasonable approximation of the overall acceptability of the programme.

The combined drop out rate (First Health and ProCare) reported from the practices due to death of the patient is 13 or 4%.

Other reasons for drop out are reported on an inconsistent basis between the IPAs as detailed below.

3.2.1 Number of patients deceased while enrolled

3.2.1.1 East Health

No data

3.2.1.2 First Health

7 patients (7.3%) died during the project as reported by the practices.

3.2.1.3 ProCare Health

6 patients (2.6%) died during the project as reported by the practices.

3.2.1.4 South Auckland Health

Data from South Auckland Health suggests that 23 of the 344 patients they have hospital data on died subsequent to enrolment. This represents 6.7%.

3.2.1.5 Comments

Assuming the 13 deceased patients recorded by the practices are included in the 23 patients identified by South Auckland Health the death rate during the project was about 6.7%. This rate is for enrolled patients only; therefore it is not necessarily reflective on the entire population evaluated for enrolment.

For comparison the death rate for the 12 months leading up to the trial was at least 16% as 16% of NHIs provided by SAH had died after having met the criteria of 2 or more admissions for greater than 5 days total stay in hospital in the 12 months leading up to 1st July 2002.

This data is unable to state categorically the effect of the project on patient death rates owing to the lack of a control group. However the figures presented do provide any alarming reason to suspect the project in any way increased death rates amongst participants.

3.2.2 Patients that left because they no longer needed the service

The rate of patients not completing scheduled visits can be discerned from the graph above showing which visits were completed. However some further data has been provided below as supplied by each of the IPAs involved.

3.2.2.1 East Health

No data

3.2.2.2 First Health

23 patients were recorded as 'failing to keep appointments' and a further 5 patients moved practices during the project and were therefore lost to First Health.

3.2.2.3 ProCare Health

Four patients (1.7%) actively declined to continue with the service following completion of the enrolment visit. A further 6 patients (2.6%) did not complete any other visits to the practice under the programme following the enrolment visit Although they did not specifically indicate that they no longer wished to continue with the service.

4 Hospitalisation Data

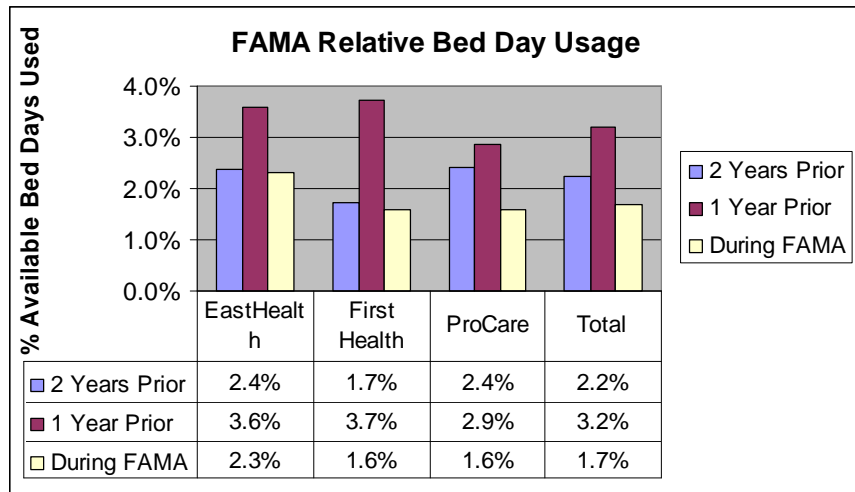
Hospital data has been supplied by South Auckland Health. The data relates to 344 of the 375 enrolled patients. Of these 23 were found to have died subsequent to enrolment and were therefore excluded from the hospital bed day analysis.

The data presented here are generally data comparing hospital utilisation by FAMA enrolled patients during the FAMA project as compared to the 12 months before the FAMA project and sometimes the period between 12 and 24 months before the FAMA period.

It must be noted that there is no control group in this project and a number of potential confounders can be identified that might alter the interpretation of the results. These are discussed in the Discussion section of the report below.

4.1 Number of days in hospital for enrolled patients

The graph below shows the hospital bed days used for the periods “2 years prior to FAMA”, “1 year prior to FAMA” and “During FAMA”. The figures are in percentages and adjust for the mismatch in time intervals (i.e. the ‘During FAMA period was less than 1 year). This adjustment is made by using the number of days spent in hospital divided by the total number of possible days that a patient could have spent in hospital (i.e. 365 in a full year).



The graph shows that in the year prior to FAMA 3.2% of the available bed days were used by the 321 patients for whom we have hospital data and who survived through to the end of the project. (As noted above deceased patients were removed from the analysis)

During the FAMA project only 1.7% of the available beds were used. Note that this figure is adjusted to account for fewer bed days being

available owing to the period “During FAMA” being less than one year.

This can be extrapolated to a saving of 3.02 bed days per patient during the FAMA period as compared with the expected bed days based on utilisation in the preceding 12 months. Further extrapolating the “During FAMA” period to a full year would result in a saving of 5.57 bed days per patient per year.

The number of Bed Days per patient per year in the 12 months prior to FAMA was 11.69. The reduction during FAMA was equivalent to 47.7%. Note that the project targeted a 30% reduction in bed days used.

	EastHealth	First Health	ProCare	Total
Actual bed days reduction per person during FAMA compared with 1 year before FAMA	2.54	4.47	2.47	3.02
Annualised bed days reduction per person during FAMA compared with 1 year before FAMA	4.76	7.79	4.66	5.57
Percentage bed days reduction per person during FAMA compared with 1 year before FAMA	36.2%	57.5%	44.4%	47.7%
Total bed days reduction during FAMA compared with 1 year before FAMA	209	678	886	1789

In total this translates to a saving of 4.9 hospital beds per year.

4.1.1 Two years prior to FAMA

It is also worth noting that a separate analysis of the bed days used when compared with 2 years prior to FAMA suggests a reduction of 2 days per person per year or a reduction of 24.5% for this cohort of patients. Of course all the usual caveats about season still exist for the calculation compared with 2 years ago, but there is a trend amongst the cohort to increased hospital use from 2 years prior to FAMA to 1 year prior to FAMA followed by a decrease in usage to less than the use 2 years prior to FAMA.

4.2 Number of admissions to hospital for enrolled patients

	EastHealth	First Health	ProCare	Total
Number of Patients Analysed	44	87	190	321
Total Admissions during FAMA	31	83	143	257
Total Admissions 2 years before	73	130	383	586

FAMA				
Total Admissions 1 year before FAMA	111	281	506	898
Expected Annualised Admissions 'During FAMA'*	58	145	270	473
Expected Admissions reduced during FAMA compared with 1 year before FAMA	53	136	236	425
Percentage Reduction for Expected Admissions versus 1 year prior	47.7%	48.4%	46.6%	47.3%

* Based on a linear extrapolation of the admission data from the 'During FAMA' period for a full 12 months.

4.3 Number of patients without readmission to hospital

Readmission rates are one element that one might expect to be significantly affected by a programme such as FAMA, owing to the better use of patient held care plans and the potentially stronger relationships between patients and their general practices.

The results show a substantial reduction in 30 day readmission rates from 19% in the year prior to FAMA down to 9.7% during the FAMA period. As with all the results this is without a control group, therefore it is just a 'trend' and not necessarily 'cause and effect'.

It is also important to note that the data systematically understate the 'During FAMA' readmissions by up to 16.7% as the data will cover index admissions in February 2003 without the 30 day follow up to the end of March 2003. Allowing for this correction the 30 day readmission rate might be up from 9.7% to 11.3%. This figure is still substantially less than the 19% figure for the previous year.

The reduction in readmission rates is therefore between 40.5% and 48.9% as compared to the year before FAMA. Our target was to reduce readmissions by 30%.

Graph of FAMA 30 Day Readmission Rates

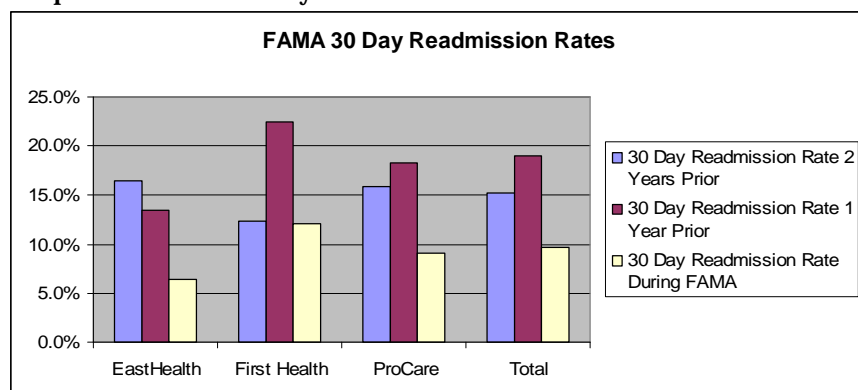


Table of Data Used to Calculate 30 Day Readmission Rates.

	30 Day Readmission Rates			Total
	EastHealth	First Health	ProCare	
Total Admissions 2 Years Prior	73	130	383	586
Total Admissions 1 Year Prior	111	281	506	898
Total Admissions During FAMA	31	83	143	257
30 Day Readmissions 2 Years Prior	12	16	61	89
30 Day Readmissions 1 Year Prior	15	63	93	171
30 Day Readmissions During FAMA	2	10	13	25
30 Day Readmission Rate 2 Yrs Prior	16.4%	12.3%	15.9%	15.2%
30 Day Readmission Rate 1 Yr Prior	13.5%	22.4%	18.4%	19.0%
30 Day Readmission Rate During FAMA	6.5%	12.0%	9.1%	9.7%

4.4 Number of patients eventually admitted to hospital

All patients had been admitted to hospital in the year prior to enrolment in the FAMA project as this was the entry criteria for the programme.

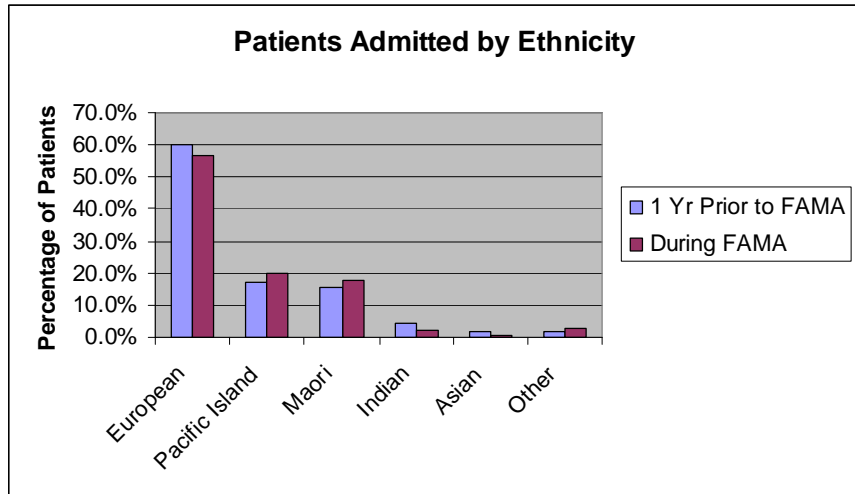
During the FAMA project 137 (42.7%) of the 321 patients for whom hospital data was available were admitted to hospital one or more times. Therefore 57.3% of the enrolled patients were not admitted to hospital during the period of the FAMA project.

4.5 Hospital Admissions by Ethnicity

South Auckland Health has provided a breakdown of hospital admissions in the year prior to FAMA and during FAMA of admissions by ethnicity. This data pertains to only 296 of the FAMA patients and is not broken down by IPA.

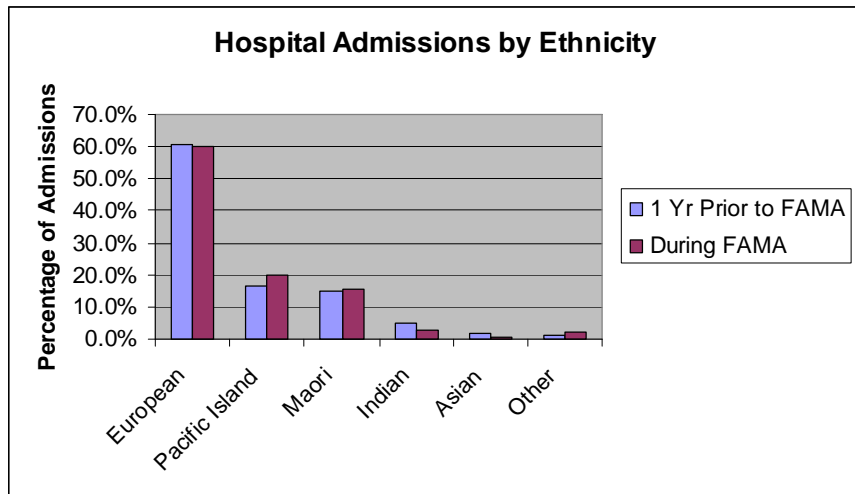
4.5.1 Ethnicity of Patients Admitted

The graph below shows that compared with the year prior to FAMA, a slightly lower fraction of patients admitted during FAMA were European, Indian or Asian and a slightly higher fraction were Maori, Pacific or Other ethnicities. However the overall reduction in numbers of individuals having one or more admissions was so much lower that all ethnicities realised a significant gross reduction in the number of individuals admitted one or more times to hospital.



4.5.2 Hospital Admissions by Ethnicity

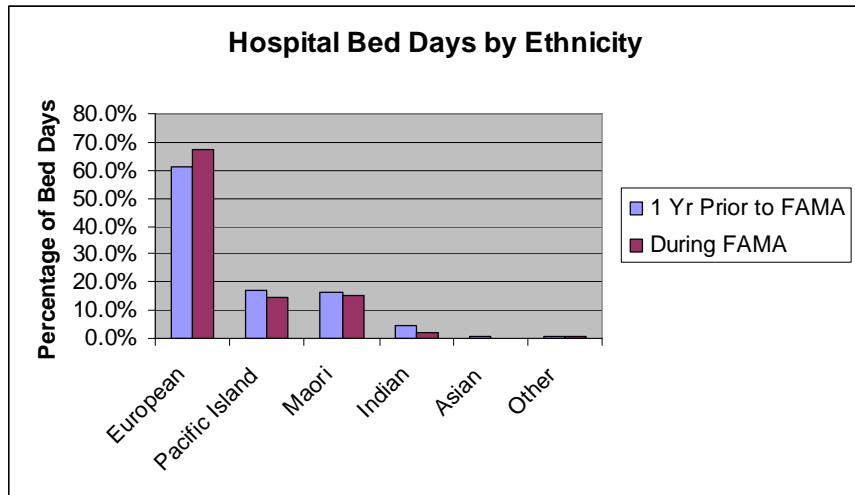
Where the above graph looks at individuals admitted one or more times, the graph below looks at the total number of hospital admissions by ethnicity. The trends are similar to the above graph but much less pronounced i.e. the relative proportions of hospital admissions are similar by ethnicity from 1 yr prior to FAMA to the during FAMA period although Pacific people again account for a slightly larger fraction of the hospital admissions. Once again the total number of admissions is so much lower that even though the proportion appears higher, there was still a gross reduction in the number of hospital admissions for Pacific people during FAMA.



4.5.3 Total Bed Days by Ethnicity

This graph shows a marked difference to the previous graphs such that when total days in hospital are considered by ethnicity it is Europeans that have an increased fraction of bed day usage as compared with all other ethnicities during FAMA as compared to the year prior to FAMA.

However in keeping with all the other graphs, these fractions do not detract from the overall gross reduction in total bed days used during FAMA across all ethnicities.



5 Patient Satisfaction Survey

5.1 Results

Yet to be completed.

6 Provider Satisfaction Survey

6.1 Results

Yet to be completed

7 Discussion

7.1 General Discussion