

MAITLAND AFTER HOURS

PRIMARY CARE TRIAL

LOCAL ECONOMIC AND FINANCIAL EVALUATION

REPORT FOR TWELVE MONTHS OF TRIAL

December 2000

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1 Executive summary (financial and economic report)

Key findings are presented under the following four headings: 1) How much does MAGS cost?; 2) How does the regional solution compare to what would otherwise have occurred?; 3) What will improve sustainability of the model?; and 4) What are the key learnings for consideration by decision makers? In addition issues relating to the impact on Maitland Hospital Emergency Department (ED) are discussed.

How much does MAGS cost?

In the period October to end September 2000, a total of 11,424 patients were seen. In the twelve months to end September, the total cost of operating the service itself was \$855,802 (this excludes trial-related costs.) This equates to a per capita cost of \$11.89 for the estimated serviced population of 72,000. Cost per patient seen was \$74.91. When start-up costs of \$13,248 are excluded, the per client seen costs are reduced to \$73.32. Costs were also calculated on a per episode basis, where an episode is a patient who came to MAGS, a patient seen after hours or a patient who was known to have contacted the telephone triage service. The average cost per episode is \$63.29. Some of these episodes may have been provided to the same client. The estimate of 2098 patients who used the telephone triage service is likely to be an underestimate (see Local Evaluation Final Report for more detail).

Table 1 MAGS Expenditure: October 1999 to September 2000

	Total costs	Cost per patient seen
GP Director	\$22,150.11	\$1.94
GP Duty Doctor	\$333,927.68	\$29.23
GP Second On Call (SOC)	\$82,166.77	\$7.19
GP SOC taxi & Security	\$41.50	\$0.00
MAGS Staff	\$371,586.55	\$32.53
Consumables	\$24,525.57	\$2.15
Miscellaneous	\$1,277.00	\$0.11
Patient Transport Costs	\$619.61	\$0.05
Telephone	\$1,259.85	\$0.11
Sub Total recurrent (ex on-going infrastructure)	\$837,554.64	\$73.32
Infrastructure (ongoing)	\$5,000.00	\$0.44
Infrastructure (start up)	\$13,248.09	\$1.16
Sub-Total infrastructure	\$18,248.09	\$1.60
Total Expenditure	\$855,802.73	\$74.91
Patients seen at MAGS	11,315	
Home visits	109	
Total patients seen	11,424	
Telephone triage	2,098	
Total episodes	13,522	
Average cost per episode		\$63.29

How does the regional solution compare to what would otherwise have occurred?

From an economic perspective there are four key differences between the previous and the current model:

- The model of funding after hours care has changed from disparate to regional with a pool of funds from two Commonwealth sources (MBS and infrastructure funding) and Maitland Hospital forming the key funding instrument.
- The cost of providing after hours care at a regional level has increased compared to the previous model on a per-patient seen basis, however, the size of this increase is difficult to estimate. This estimate is influenced by the analysis and estimate of: patients who used the telephone advice service and as a consequence did not require care; practice incentive payments; and the staff costs at Maitland ED. The analysis presented in the Final Report contains better estimates than the Interim Report.
- In the MAGS model, GPs are engaged through a cooperative model that involves being rostered on-duty in the service as well as being on-call, and being paid fee-for-service for duty shifts and call-outs as well as an on-call allowance.
- Access to after hours services was managed through a substantially more integrated triaging process: 1) messages left on GPs answering machines; 2) a telephone home advice service; 3) a telephone triage service; and 4) an on-site triage service.

The following table summarises the total financial costs of providing after hours care to the model, pre and post MAGS. The costs include the following: costs to Maitland hospital (staff, pathology, investigations, pharmaceutical and consumables, contribution to MAGS), costs to the Commonwealth (PIP, MBS, contribution to MAGS), deputising fee paid pre MAGS to MAHMS, and consumer co-payments. Comparison of costs per patient is problematic because triage results in a reduction in the number of patients seen and consequent increase in per patient cost. The additional cost per patient seen face to face is \$18.89. If triage contacts are included as services, the additional cost per episode is \$7.26 but this does not account for the provision of phone advice pre MAGS. Costs are therefore also presented per capita, which provides a better basis for comparison of total cost. The cost per capita is \$19.86, \$1.05 per capita higher than pre MAGS.

Table 2 Summary of overall costs of regional after hours – pre and post MAGS

	Total costs	Total clients face to face	Total used telephone triage	Total episodes	Total regional population	Cost per client seen face to face	Cost per episode	Cost per capita (region)
Pre MAGS	\$1,353,864	17,790	N/a	17,790	72,000	\$76	N/a	\$18.80
12 months Post MAGS	\$1,430,101	15,052	2,098	17,150	72,000	\$95	\$83	\$19.86
Change								
	\$75,885.15	-\$ 2,738.20	n/a	-\$ 640.20	n/a	\$ 18.89	\$7.27	\$ 1.05
% change								
	5.6%	-15.4%	n/a	-3.6%	n/a	24.8%	9.5%	5.6%

What will improve the sustainability of the model?

Factors that will improve ongoing operational viability include: the continued support of GPs for the model, the continued commitment of HAHS, and the resolution of the optimal level of integration with Maitland Hospital ED.

The model is currently viable from a financial perspective: the service is operating within its budget, the ED workload is reduced and the operating costs of ED have reduced (although the exact reduction is unclear). Improved financial and economic sustainability of the model could be achieved through the following five changes:

- clarify the economic benchmark for the fund pool, for example, to represent an agreed combination of funds available to improve the provision of after hours care in the region and funds that would otherwise have been used;
- re-negotiate the capitation rates and contribution rates to ensure they represent the intended benchmark and are sustainable from the perspective of the funders – these revisions can be based on the data collected for this trial;
- reorganise the basis for staff payments by MAGS to make them more consistent with the allocation of time by these staff between the two services;
- explication of both the financial and resource impact of MAGS on Maitland ED and reasons for the difference between the two; and
- re-organising the on-site triaging process to place a greater reliance on patient's ability to self triage between the MAGS service and Maitland ED (already achieved but could be improved further with additional changes, i.e. removing the imperative to triage all patients under 3 and over 70).

What are the key learnings for consideration by decision-makers?

From the broader policy perspective, the key learning is the value of a policy environment that will encourage a regional solution to best practice in after hours care, for example:

- through incentive payments available to practices or services involved in a regional rather than practice solution; and
- consideration of the benefits to an area health service of a regional after hours care system.

From the perspective of a region establishing a best practice model for after hours care, the key learnings include:

- the importance of engaging GPs through a model which provides sufficient choices for level and type of involvement and appropriate financial incentives (this includes consideration of the amounts GPs are willing to pay not to provide after hours care, as evidenced by the fee paid to the former deputising service);
- clear identification of the opportunities to improve on existing after hours care;
- an integrated approach to managing patient access to after hours services;
- considered management of change in relationships between providers of after hours care;

- defining the working conditions required to ensure GPs will participate in providing after hours care (includes financial incentives, frequency of rostering, physical conditions, support staff required, security, etc.);
- defining the mix of services required to ensure a comprehensive system of care.

Was Maitland Hospital disadvantaged by the fund pool?

At this stage it appears that the estimate of the average cost of care for triage category 4 and 5 patients (medical officers, nursing and administration staff, investigations and pathology) is in the order of \$54. This estimate is an improvement on the data used in the Interim Economic Evaluation as it includes the results of an audit of 144 category 4 and 5 clients to determine rate of referrals and average cost of referrals.

It is unclear whether all savings to Maitland ED are in fact apparent through ED financials. For example, savings in investigations will not appear to the department as they are not attributed to individual cost centres. Furthermore, there are fixed costs for the ED department in terms of the minimum number of medical officers required (assumed to be two). As a result the reduction in the number of ED patients did not reduce the number of medical officers in ED on weeknights. In addition, on shifts where there were more than two medical officers (two weekend shifts) one less CMO was employed.

For these reasons, the actual financial savings to ED may be less than their per patient contribution to the fund pool, despite this contribution being a reasonable estimate of the average costs per category 4 or 5 patient, pre MAGS.

In summary, a 60% (for example) reduction in workload does not lead to:

- a proportional reduction in resources required – the high fixed costs in ED prevent this;
- a proportional reduction in the variable resource requirements – the propensity for hospital staff to spend more time with the remaining patients means the variable resources per patient will increase;
- access to any financial savings that in fact occur is limited by, first, the capacity for a reporting system to accurately reflect these savings and second, the hospital or ED's willingness to release these financial resources to a service.

Therefore, the percentage of total pre-service financial resources available as a result of changed practice is substantially less than the percentage reduction in the patient workload.

Has the ED workload increased?

There was a 62% reduction in the number of category 4 and 5 patients seen by ED in the 12 months since MAGS opened compared to the corresponding 12 months a year ago. There was little change in activity in category 1, 2, and 3 patients. While there has been a decrease in nursing staff (one less nurse on average) there has been no change in the medical officer staff on most shifts, with the exception of the weekend, where there are two less CMO shifts. On Sunday there is one more nurse shift than in the previous period.

Initially the triage nurse, who is funded by MAGS, triaged all MAGS and ED patients, increasing the triage workload by about 50%. As a result of changes in triage practice in April 2000, (patients self-triage to either MAGS or ED), the workload of the triage nurse decreased by 33.6% to slightly more than prior to the new service. If changes to the triage

process were maximised there would be substantially less patients than pre-trial being triaged.

While it is clear that both the average number of patients per ED staff member and the total number of patients have decreased, the average workload of the ED staff may not have changed if they are: 1) spending more time with category 1, 2, and 3 patients; or 2) spending more time with other patients in the hospital (CMOs only). Furthermore if there are substantially less 4 and 5 patients, the changed patient mix may lead to a changed experience of workload.¹

¹ In comparison to their peer hospitals, Maitland has a much lower staff to patient ratio. The figures are Maitland has 0.63 staff hours per episode of care, and the comparison hospital has 1.39 staff hours per episode of care for a similar total number of episodes of care. This may be why, in the absence of data to support the contention that workload has increased, Maitland ED staff feel their workload has increased.

2 Framework for the economic evaluation

2.1 Economic cost – existing and previous

The framework is designed to evaluate alternative models of provision of after hours services to the Maitland and Raymond Terrace region in terms of their sustainability and viability.

The first model is that which existed prior to October 1999 and comprised: MAHMS, Maitland ED, GPs who provided after hours services, and GP practices that provided extended hours care. The second model is that which came into place in October 1999. In terms of provider organizations, the difference was MAHMS no longer operated and a new service, MAGS, was introduced (MAGS, however is not a substitute for MAHMS). As a result of the change to the model there were changes in the number and mix of patients seen by each provider. Furthermore, the profile of funding (who funded what) of after hours care changed. The current model includes a dynamic aspect and one key element, the triaging process, was changed 6 months into the trial.²

Key economic indicators are evaluated using the following approach:

- 1) Estimate costs of providing after hours care for the region under current model (12 months);
- 2) Estimate costs of after hours care over the 12 month period prior to MAGS commencing; and
- 3) Estimate the costs that would have been incurred over the last 12 months had MAGS not gone ahead, using three scenarios concerning patient numbers, unit costs and ED staff.

While many of the gaps in the data used in the Interim Report were filled for the Final Report, some gaps remain.

2.2 Sustainability

The value of a viable model of service delivery beyond its period as a trial is in its ability to sustain and improve upon its viability in a real world situation.

Trials provide a systematic learning process, and if lessons are well learnt, then a more sustainable model of service delivery than that originally trialed may be developed. An important example in the trial is the capitation rate used by Maitland ED to determine the basis for its contribution to the MAGS fund pool, which can be more accurately determined as a result of the evidence or service utilisation collected in the trial.

There are, however, characteristics of trial environments that are not necessarily replicable in a real world setting but are vital determinants of effectiveness. In the case of clinical trials of drugs, these characteristics can cause significant differences in the effectiveness of a

² Summary of changes to triage: Previously all patients were assessed by a triage nurse following registration by a clerk. Now those patients who nominate to see a GP do not go through the triage process, but wait in the reception area. The GP clinic nurse is responsible for monitoring patients in the waiting room, taking observations and commencing treatment when appropriate. Current exceptions are patients under 3 and over 70, all of whom still go through the triage process. Reduced triage workload by 33.6%.

drug for a group of patients in a community setting as a result of, for example, different rates of compliance. In the case of trials of service delivery models, trial specific conditions include: special funding; additional enthusiasm from stakeholders; an environment in which risk taking is accepted; and non-routine data is available to review performance in a rigorous way. These features may be important determinates of effectiveness but not necessarily replicable outside a trial setting or in other regions.

Consequently, two issues needs to be addressed in the evaluation of sustainability: 1) aspects of the model that could be changed in order to improve sustainability; and 2) aspects of the model that might not be replicated outside a trial setting, and whose absence may reduce sustainability.

Furthermore, sustainability of a viable model arises from a number of factors, four of which are addressed in this evaluation.

- 1) **Operational sustainability:** The model needs to be workable: institutions need to be able to work together; the workforce needs to be available; and effective services need to be provided. The factors that lead institutions to cooperate in a trial setting need to be either sustained or replaced by other incentives in the “real world” setting.
- 2) **Sustainability of effect:** For some interventions, the gains are “one off”, that is, they can not be expected to re-occur in the same population to the same extent even if the change in health service delivery is maintained. An important example is the gains from improved self-management of a chronic disease. Given the nature of the service and patient group in this trial, it is likely that the effect will be sustainable, however the size of gains relative to usual care may be sensitive to the underlying changes in demand for after hours services in the region. A change in the way that the community uses MAGS and any other available services over time is likely. MAGS will be a driver of this change to some extent, but will have to respond to community driven changes. For this reason, the actual effect or average cost effectiveness of the model is likely to change over time. Alternative definitions of the effect or additional effect of the model are addressed in this report.
- 3) **Financial sustainability:** It needs to be possible to fund the services and activities from the amount funders are willing to contribute to the service’s budget. Post trial, the basis for negotiating the amount funders are willing to contribute may change, as might MAGS costs. The requirement for financial sustainability applies to both Maitland Hospital ED and MAGS.
- 4) **Economic sustainability:** Economic sustainability concerns a wider view of the funding for a service model than straight financials. A broader range of factors need to be considered, for example, unit costs of services such as pathology, costs to consumers, costs borne by ED, services provided in kind. In addition, a model of service delivery is economically sustainable if:
 - additional benefits are greater in value than the additional costs of that model, even if total costs of the model are greater; and
 - the community is willing to allocate resources to obtain this benefit rather than alternative services.

2.3 Informing decision making

A key value of the trial is in informing both further development of MAGS and of models of after hours care in other settings. There are two levels at which this process occurs. First, by informing general policy parameters within which after hours care models could best operate. Second, informing an information package that could be provided to regions and Divisions of General Practice in order to assist them with developing models for regional after hours care systems.

2.3.1 Key policy issues raised by the trial

Three key policy issues (economic) raised by the trial are addressed in this report.

- 1) What criteria of best practice are relevant to after hours care models?
- 2) What should be the economic benchmark for funding from a regional perspective?
- 3) What should be the parameters around a funding model that includes a fund pool?

2.3.2 Informing the development of other models of after hours care

An information package could have two components. The first is a description of the solution developed in Maitland with comments on the key features of regions to which this model could be generalised. The second is a decision framework approach in which the decisions faced, and choices made, by the Maitland After Hours Care Trial are illustrated and the factors which influenced the choices and the effectiveness of these choices are discussed.

The key decisions include:

- 1) Which benchmark of best practice is relevant to the region?
- 2) Which opportunities to improve after hours services should be pursued, with whom and how?
- 3) How should GPs be engaged?
- 4) How should changes in relationships and activities of existing providers be managed?
- 5) How should patients' access to the service be managed?
- 6) How should the model be funded and how much funding is required?
- 7) How should any new services be managed?

2.4 Limitations of data in the context of pooled funds

The process of pooling funds based on best estimates of resources that would otherwise have been used is difficult to operationalise. Data limitations which would otherwise have been limitations in an evaluation become limitations in the estimate of the intended budget. For example, while there is a reasonable basis for the estimate (post-trial) of the Maitland ED contribution, there is far less accuracy in the estimate of the Commonwealth contribution – i.e. the level of MBS activity that would otherwise have occurred. There is an alternative:

- base the estimates on an agreed benchmark for which the data exists pre-trial and have an agreed option to adjust the estimate at the end of a budget period if any additional data arises.

This issue is discussed in the last sections of this report.

3 Estimates of financial and economic costs

This section comprises: a description of the features of the funding models, pre and post MAGS; an estimate of the total costs of the pre MAGS and post MAGS models; and an estimate of what would have occurred, including activity and costs, had the previous model been maintained.

3.1 Funding

The previous funding model comprised the following sources of funds: 1) MBS; 2) Maitland ED as a cost centre and Maitland Hospital; 3) PBS; 4) consumers; 5) GP practices; and 6) Practice Incentive Payments from the Commonwealth (PIP).

The types of activities funded by each funder, pre and post MAGS, and likely changes in funding requirements as a result of the trial are summarised in the following table.

The table indicates the differences in the relationship between funding and service provision as a result of the change in service delivery model. Clearly, the new model has a significant impact on “who funds what” and how much funding is required for a given service. The cost of establishing changed fund arrangements can be substantial, however, the Maitland model was successful in working within the current system in order to change the funding structure of after hours service delivery in the region.

Table 3 Changes in funding requirements

Funder	Services funded – pre MAGS arrangements	Changes in basis of funding services post October 1999
MBS	GP consultations at MAHMS	No longer provided, instead contribution to fund pool based on expected number of consultations over the 12 month period
	GP after hours home visits	Payments continue but a reduced number of after hours home visits provided by GPs to own patients (not home visits organised by MAGS)
	Diagnostics and imaging – referrals by GPs	Continue to be funded through MAGS referrals - patients who would otherwise have attended MAHMS Additional activity through MAGS – patients who would otherwise be seen at ED (assumed to be a lower referral rate for GPs compared to ED)
ED as cost centre	ED staff Two medical officers Nursing staff – 4 to 5 FTEs depending upon shift	ED funded two less nursing staff during MAGS hours, however continues to receive some services from these nurses ED funded one less clinician for a few days after MAGS commenced, but decided to maintain 2 medical officers on weeknights - considered a minimum number. ED funded one less medical officer on weekends. ED also added another nurse on Sundays due to increased numbers
	pathology	Reduction in volume - funded by MBS for patients who would otherwise have attended ED and had a referral for pathology
	overheads payable	Minimal actual change, may be small increase in laundry costs
	consumables	Reduced, consumables used by patients who would otherwise have seen ED and now see MAGS are funded by MAGS
	pharmaceuticals	Reduced by proportion of patients who attend MAGS rather than ED, pharmaceuticals used by MAGS patients paid by MAGS
	Maitland Hospital	imaging (not costed back to ED)
GP Practices	costs of maintaining an after hours service through the practice, not covered by the after hours fee	No longer relevant unless the GP provides an after hours home visit outside the arrangements made by MAGS
	Payments to MAHMS as a deputising service. About 20 GPs used MAHMS for at least some of their after hours cover. The fee for a FTE GP was about \$6000pa	No longer paid
Consumers	co-payments for home visits In 1998 this was an average of \$11 per visit	Continue co-payments if GP visits provided outside of the service Co-payment may be high enough to influence use of GP After Hours by patients when there is a free alternative.
	co-payments to MAHMS	No longer paid as no co-payments apply at MAGS
	costs of travel to ED and MAHMS	The transport service has substituted for private transport on only a limited number of occasions. Home advice seems to be reducing need to travel Home visits are less than before
PIP and other Commonwealth funds	Payments from the Commonwealth to GP practices	Likely to be reduced, depending upon the arrangements of individual GP practices Data not yet available Additional - Infrastructure payments to MAGS Additional – Compensation to MAHMS
PBS	Prescriptions by ED, MAHMS and after hours home visits	May be reduction in prescribing rate leading to change in amount prescribed, but overall reduction limited.

A fund pool that comprised payments from the Commonwealth and Maitland Hospital was developed in order to fund MAGS. The assumptions underlying the fund pool calculations and the actual contributions are described in the following table.

Table 4 Fund pooling model

Contributor	Amount contributed	Basis for contribution
Maitland Hospital	\$200K	\$50 per capita - an estimate of the average (not marginal) cost of seeing a category 4 or 5 consumer Capitation includes – staff time and overheads Excludes pathology, pharmacy and imaging
MBS	\$457K	Based on estimates of MAHMS workload (not demonstrated billing) which may have underestimated procedures, etc. Estimates of GP AH based on 1996 survey
Commonwealth infrastructure	\$279K	Based on predicted gap between cost of services and size of pool (taking into account funds paid back to ED)
Total Commonwealth	\$736K	
Total contribution	\$936K	

While there was a notional contribution of \$409,000 from Maitland hospital (based on pre-trial ambulatory ED caseload in service hours @\$50 per client), the contribution was capped at \$200,000 – corresponding to 4,000 ED patients @\$50 a head. If the post-trial estimate of reduction in ED workload is used (4,697), at the rate of \$50 per client, then the figure of \$234,850 should have been pooled. If the post-trial estimate of cost per client were used (\$54), then the contribution should have been \$253,638.

The contribution from MBS is more difficult to estimate as it contains estimates of the number of people who would otherwise have used GP after hours services apart from MAHMS.

3.2 MAGS financials

The following tables detail the financials for the service component of MAGS. Trial related costs are excluded. The financial cost per patient seen (estimate of \$74.91), includes service pharmaceutical supplies and consumables but excludes the costs of investigations and pathology. The latter costs are not borne by the service but as they are costs of care, they are included in the economic costings. Table 5 also present costs calculates on a per episode basis, where an episode is a patient who came to MAGS, a patient seen after hours or a patient who was known to have contacted the telephone triage service. The cost per episode is \$63.29. Some of these episodes may have been provided to the same client. The estimate of 2098 patients who used the telephone triage service is likely to be an underestimate (see Local Evaluation Final Report for more detail).

Table 5 MAGS Revenue: October 1999 to September 2000

Services Cost	\$457,078
One-off "Gap" Funding	\$279,000
Maitland Hospital Contribution to pool	\$200,00
Total revenue	\$936,078

Table 6 MAGS Expenditure: October 1999 to September 2000

	Total costs	Cost per patient seen
GP Director	\$22,150.11	\$1.94
GP Duty Doctor	\$333,927.68	\$29.23
GP Second On Call (SOC)	\$82,166.77	\$7.19
GP SOC taxi & Security	\$41.50	\$0.00
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Sub-Total infrastructure	\$18,248.09	\$1.60
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Home visits	109	
Total patients seen	11,424	
Telephone triage	2,098	
Total episodes	13,522	
Average cost per episode		\$63.29

3.2.1 Salary costs

The following table illustrates salary costs for each month since October. The average monthly costs for staff are \$67,101. On average, GP services (apart from the GP director) represent 53% of total salaries. The GP provider salary per patient seen at home is \$199.50. The GP cost (ex director, ex home visits costs) per patient seen at MAGS is \$35.79.

Table 7 MAGS salaries costs

	Total hours	Per month												TOTAL FOR 12 MONTHS
		Oct-99	Nov-99	Dec-99	Jan-00	Feb-00	Mar-00	Apr-00	May-00	Jun-00	Jul-00	Aug-00	Sep-00	
GP Director	181	\$5,181	\$1,588	\$2,372	\$2,168	\$2,320	\$855	\$1,771	\$1,190		\$1,557	\$1,741	\$1,404	\$22,147
GP Duty Doctor	2,734	\$15,676	\$23,442	\$32,862	\$33,346	\$25,671	\$26,304	\$40,911	\$26,901	\$30,087	\$27,405	\$25,470	\$25,850	\$333,925
GP SOC														
- On Call	5,464	\$2,371	\$3,359	\$3,695	\$3,701	\$3,241	\$3,488	\$3,618	\$4,005	\$3,523	\$3,496	\$3,488	\$3,542	\$41,527
- Home visits	142	\$1,310	\$1,527	\$3,743	\$1,794	\$1,806	\$1,806	\$1,871	\$436	\$2,104	\$2,002	\$828	\$2,519	\$21,745
- Call in to facility	193	\$132		\$3,331	\$2,155	\$854	\$1,969	\$2,265	\$2,720	\$1,487	\$3,608	\$4,259	\$6,693	\$29,473
Subtotal GP SOC		\$3,813	\$4,886	\$10,769	\$7,650	\$5,901	\$7,263	\$7,754	\$7,161	\$7,114	\$9,106	\$8,575	\$12,754	\$92,745
Total GP		\$24,670	\$29,916	\$46,003	\$43,164	\$33,892	\$34,422	\$50,436	\$35,252	\$37,201	\$38,068	\$35,786	\$40,008	\$448,817
Total other salaries		\$22,110	\$27,058	\$29,863	\$36,467	\$28,258	\$27,142	\$23,718	\$40,522	\$28,898	\$27,736	\$33,618	\$31,041	\$356,431
Total MAGS salary related costs		\$46,780	\$56,974	\$75,866	\$79,631	\$62,150	\$61,564	\$74,154	\$75,774	\$66,099	\$65,804	\$69,404	\$71,049	\$805,248

Duty doctor charges are based on paying a rate of \$122.15 to all doctors

GP Consultants

The GP Consultants are fee-for-service contractors paid at the appropriate sessional rates for GP visiting medical officers determined according to the Hungerford Determination. Travel expenses for the second on call GP are determined according to HUDGP's standard schedule of rates (53 - 58c per km).

MAGS Staff

The service manager, nurses and clerks who work in MAGS are Maitland Hospital employees. The hours worked in MAGS are costed to the MAGS cost centre and billed to HUDGP on a monthly basis.

3.3 Economic and financial costs

The costs of providing after hours care for the region under two alternative models were estimated using the following approach:

- 1 The providers of care under each case were identified: MAGS, MAHMS, Maitland ED and GPs providing after hours care;
- 2 The funders of care were identified: Maitland Hospital; the Commonwealth (via infrastructure grants, incentive payments and MBS) and private (GPs and patients);
- 3 The costs of running MAGS were attributed to each of the two funders, Commonwealth and Maitland Hospital, as follows:
 - the imaging and pathology costs were attributed to the MBS; and
 - the remaining costs were allocated across Maitland and Commonwealth in the same proportion as their fund pool contributions (this is to account for the fact that not all pooled funds were used).
- 4 The costs considered were staff, MBS consultations, imaging, pathology, pharmaceuticals and consumables.
- 5 It was not feasible to derive the reduction in staff costs at Maitland ED from financials and instead a pre MAGS costing based on actual hours worked by staff at the relevant rates for 12 months prior to MAGS was used. The basis for deriving the financial costs attributable to category 4 and 5 clients is described in detail later in this section.

3.3.1 Economic and financial costs pre-MAGS

The total historic financial costs over the 12 months preceding MAGS were estimated using a combination of actual utilisation data and utilisation and unit cost data extrapolated from data available for the current period. The basis for estimates are summarised in the following tables and are detailed in the appendix.

Key assumptions are listed in the text. Detailed assumptions are in the Appendices, including reference to changes made to the interim analysis.

Table 8 Pre MAGS costs of Maitland ED

Cost category activity	Estimate	Comments
Staff	\$ 294,113	Estimate of the total costs attributable to the MAGS equivalent after hours shift and the proportion of all activity allocated to 4 and 5 patients (75% of patients, 62% of time)
Patients	7,543	from EDIS data
Imaging	\$ 96,896	Average costs of imaging from audit of pre MAGS ED clients
Pathology	\$ 51,571	Average costs of imaging from audit of pre MAGS ED clients
Consumables	\$ 5,517	Average costs of consumables for the MAGS clients X total number of ED clients
Pharmacy	\$ 6,961	Average costs of pharmaceutical for the MAGS clients X total number of ED clients
Total	\$ 455,058	Sum of above

The following table illustrates how the portion of total staff costs attributable to category 4 and 5 clients was calculated. The proportion of total clients in each of the five triage categories was calculated. Category 4 and 5 clients represented 75% of total activity pre MAGS. Two sets of “cost weights” were used. The first set is based on discussions with ED staff regarding how many patients of each category could be seen within one hour. The second is a set of weights based on those used in South Australia. The first approach would lead to an estimate of 70% of total resources being allocated to category 4 and 5 clients, whereas under the second approach, 54% of resources would be allocated.

In the base case we used the average of these two rates, 62%. Therefore, while category 4 and 5 clients represented 75% of clients, they used 62% of resources. It is worth noting that the second method includes costs of pathology, pharmaceuticals etc and is therefore likely to lead to less resources being allocated to 4 and 5 compared to the first method. However, what is of interest in this exercise is staff costs – other costs are calculated using clinical audits.

Table 9 Allocation of resources across ED clients

Triage category	Clients	Approach one		Approach two	
		Cost weights	% of total Resources	Cost weights	% of total Resources
1	0.1%	2.3	0%	4.1	1%
2	1.9%	1.4	3%	1.7	4%
3	22.3%	1.25	27%	1.5	41%
4	68.4%	1	67%	0.6	51%
5	7.1%	0.5	3%	0.3	3%

The following table indicates how the total staff costs of \$474,375 was derived. Using the rosters from the pre MAGS period, the costs per staff were calculated for MAGS hours for

each of the four periods indicated in the table: week nights, Saturdays, Sundays and public holidays. The costs per period were weighted by the number of periods. The total costs of \$474,375 were derived. Using the above estimate, 62% of these staff costs were allocated to 4 and 5 clients.

Table 10 Estimate of ED staff costs - Pre MAGS

Period	Number of periods	Nursing - per period and total		Medical – per period and total		Total
Mon to Fri	51	\$ 1,683	\$85,833	\$ 2,080	\$ 106,080	\$ 191,913
Sat	52	\$ 930	\$48,360	\$ 1,055	\$54,860	\$ 103,220
Sun	52	\$ 1,334	\$69,368	\$ 1,704	\$88,608	\$ 157,976
pub holiday	7	\$ 1,334	\$ 9,338	\$ 1,704	\$11,928	\$21,266
Total			\$212,899		\$ 261,476	\$ 474,375

The following table summarises costs of MAHMS for the 12 months prior to MAGS. An estimate of the fees paid by GPs for the deputising service has been included. It is estimated that the total cost of MAHMS for the 12 months prior to MAGS was \$428,356.

Table 11 MAHMS costs, 12 months previous to MAGS

MAHMS		
Cost Category	Estimate	Comments
Total number of consultations	6,247	From data on MAHMS activity
MBS consultations - on site	\$ 215,934	From data on MAHMS activity
MBS procedures - on site	\$ 17,180	From Estimate of MAGS rate of procedures, and adjusted down by 50%
Home visits by MAHMS	\$ 13,994	From MAHMS data
Consumer co-payments	\$ 65,760	Average from MAHMS 6 week survey
Imaging and Pathology	\$ 45,487	From MAHMS 6 week survey data
Deputizing costs	\$ 70,000	Estimate
Total	\$ 428,356	Total of above

The following table summarises the costs associated with after hours visits by GPs. It is estimated that the total cost of after hours GPs was \$520,047, with the PIP cost being a significant portion of this cost.

Table 12 After hours GP visits 12 months prior to MAGS

GP after hours		
Cost category	Estimate	Comments
Number of MBS consultations	4,000	From 1998 survey
Costs MBS consultations	\$ 170,243	From 1998 survey
Consumer co-payments	\$ 60,000	From 1998 survey
PIP	\$ 289,804	\$289,804 PIP based on HIC data of 3 months of PIP
Total costs	\$ 520,047	Sum of the above

The following table summarises the total costs pre MAGS, by funder and provider.

- The three funders are Maitland, the Commonwealth and private (deputising and consumer co-payments)
- The providers are Maitland ED, MAHMS and GP after hours – GPs who provided services to clients during MAGS hours, pre MAGS, outside MAHMS.
- The costs per client are not additive because they are calculated for each provider and each consumer and are weighted to give a figure for the region.
- The cost per patient pre MAGS for Maitland ED was \$60.33
- The total financial costs of providing a services to the region are \$454,058
- The costs per patient are highest for GP after hours, partly as a result of the inclusion of the PIP contribution by the Commonwealth.

Table 13 Total costs, by provider and funder, 12 months prior to MAGS

Provider	Total cost - by funder				Number of patients	Total cost per patient seen by provider or funder			
	Maitland	Commonwealth (inc MBS and PIP for after hours GP)	Private	Total		Maitland	Commonwealth (inc MBS and PIP for after hours GP)	Private	Total
ED	\$455,058	n/a	n/a	\$455,058	7,543	\$60	n/a	n/a	\$60.33
MAHMS	n/a	\$278,602	\$135,760	\$414,362	6,247	n/a	\$45	\$22	\$66.33
GP after hours	n/a	\$425,047	\$60,000	\$485,047	4,000	n/a	\$106	\$15	\$121.26
All	\$455,058	\$703,649	\$195,760	\$1,354,466	17,790	\$60	\$68.67	\$19.10	\$76.14

3.3.2 Economic and financial costs post MAGS

The following table summarises the costs post-MAGS from the perspective of ED. The reduction is due to the reduction in workload. The staff costs were reduced in proportion to the reduction in workload of 62% but then increased by 10% to account for the stepped cost component of staffing costs. In the sensitivity analyses, it is assumed that the premium is 20% rather than 10%.

Table 14 Maitland ED, 12 months post MAGS

Cost category activity	Estimate	Comments
Staff	\$ 122,067	The ED 4 and 5 workload has reduced by 62%, but an additional 10% is included to account for the effect of fixed costs.
Patients	2,846	Patients who arrived in MAGS hours and were seen by ED (category 4 and 5)
Imaging	\$36,559	Per client average from audit of pre MAGS use X number of 4 and 5 clients
Pathology	\$19,458	Per client average from audit of pre MAGS use X number of 4 and 5 clients
Consumables	\$ 2,082	Average costs of consumables for the MAGS clients X total number of ED clients
Pharmacy	\$ 2,626	Average costs of pharmaceutical for the MAGS clients X total number of ED clients
Total	\$182,792	Sum of above

The following table indicates the costs of MAGS over the first 12 months. All staff costs, including administration and GP and service directors are included. The figure for patients includes occasions of service only. The cost per patient would be reduced if the patients who accessed the telephone advice service and as a result did not require face to face care were included.

Table 15 MAGS costs, 12 months

Cost Category	Estimate	Comments
Patients	11,341	From service utilisation data
Imaging	\$66,213	From service utilisation data
Pathology	\$16,174	From financials
Consumables	\$8,276	From financials
Pharmacy	\$10,441	From financials
Salaries	\$805,248	From financials
Total	\$906,352.33	Total from above

The following tables indicate the costs associated with after hours visits by GPs outside the MAGS service.

Table 16 After hours GP visits, 12 months post MAGS

Home visits using GPs other than MAGS		
Number of MBS consultations	782	
Costs MBS consultations	\$39,674	From HIC data and 1998 survey
Consumer co-payments	\$11,730	From HIC Data and 1998 survey
PIP	\$289,804	Estimate based on HIC data
Total costs	\$341,208	Sum of above

The compensation paid to MAHMS is noted but not included in the funding model.

The following table summarises the total costs pre-MAGS, by funder and provider.

- The three funders are Maitland, the Commonwealth and private (consumer co-payments for after hours GPs outside MAGS)
- The providers are Maitland ED, MAGS and GP after hours – GPs who provided services to clients in MAGS hours, outside the MAGS service.
- The cost per clients are not additive because they are calculated for each provider and each consumer and then weighted to give a figure for the region.
- The cost per patient post MAGS for Maitland ED was \$64.23
- The total financial costs of providing a services to the region are \$477,720
- The costs per patient are highest for GP after hours, partly as a result of the inclusion of the PIP contribution by the Commonwealth.

Table 17 Total costs, 12 months post MAGS

Provider	Total cost – by funder				Number of patients	Total cost per patient seen by provider or funder			
	Maitland	Common-wealth (inc MBS and PIP for after hours GP)	Private	Total		Maitland	Common-wealth (inc MBS and PIP for after hours GP)	Private	Total
ED	\$182,792	n/a	n/a	\$182,792	2,846	\$64	n/a	n/a	\$64.23
MAGS	\$294,928	\$611,424	n/a	\$906,352	11,424	\$26	\$54	n/a	\$79.34
GP after hours	n/a	\$329,478	\$11,730	\$341,208	782	n/a	\$421	\$15	\$436.33
All	\$477,720	\$940,901	\$11,730	\$1,430,352	15,052	\$33	\$77.09	\$15.00	\$95.03

3.4 Sensitivity analyses

We performed sensitivity analyses around each of three estimates used in the analysis: ED staff costs, PIP and number of after hours' patients pre MAGS.

3.4.1 ED staff costs sensitivity analyses

The following table indicates the results of sensitivity analyses we performed:

- Assumption One is the base case where 62% of all staff resources are assumed to be allocated to category 4 and 5 clients. This is varied to 70%, 54% and 46.2% in assumptions 3, 4 and 5 respectively.
- Also in the base case, it is assumed that the savings calculated assuming that the reduction in staff costs is proportion to the reduction in activity must be increased by 10% to account for the stepped cost structure within ED – i.e. the relationship between activity and costs is stepped not proportional.

Maitland ED claims it has saved \$120,000 in staff costs. How do these claims fit within the findings of the evaluation?

Assumptions 5 and 6 give two examples of combinations of assumptions concerning resources allocated to 4 and 5 pre MAGS and the size of the premium that results in a saving of \$120,000 in staff costs to Maitland ED. The first combination (assumption 5) assumes that the premium of 20% applies to cost structure and that savings are \$120,000, which would mean that only 46.2% of staff costs pre MAGS were allocated to the 75% of all patients who were category 4 and 5. The second combination assumes that 54% of staff resources are allocated to 4 and 5 but that the premium for cost structure is 24%.

If the actual savings were \$120,00, it would suggest that the stickiness in staff cost structure is very high. It may be that if staff were working close to capacity pre MAGS that the effect of introducing MAGS was to reduce staff by less than would have been the case had Maitland ED been at less than capacity. Furthermore, staff would be spending more time on average with each patient post MAGS, as there has been a substantial change in patient mix.

Table 18 Results of sensitivity of assumptions regarding staff costs to assumptions

	Scenarios/sensitivity analyses - Assumptions are defined by the two shaded rows					
	One	Two	Three	Four	Five	Six
Staff costs total - pre MAGS	\$474,375	\$474,375	\$474,375	\$474,375	\$474,375	\$474,375
Total clients - pre MAGS	10,107	10,107	10,107	10,107	10,107	10,107
Total 4 and 5 clients (as % of total clients)	75%	75%	75%	75%	75%	75%
% of total activity related to 4 and 5 clients	62%	62%	70%	54%	46.2%	54%
Total staff cost of 4 and 5 clients – pre MAGS	\$294,113	\$294,113	\$332,239	\$254,780	\$219,283	\$254,780
Premium to account for cost structure (a % added to the costs that would be expected if full variable costs)	10%	20%	10%	10%	20%	24%
Total savings on staff – post MAGS	\$172,046	\$160,949	\$194,348	\$149,037	\$120,000	\$120,000
Costs to all funders per client pre MAGS	\$76.14	\$76.14	\$78.27	\$74.00	\$71.92	\$74.00
Cost to all funders per client post MAGS	\$95.03	\$95.76	\$96.06	\$93.98	\$93.51	\$94.89
Increase - \$	\$18.89	\$19.62	\$17.79	\$19.98	\$21.59	\$18.89
Increase - %	25%	26%	23%	27%	30%	25%

3.4.2 Practice incentive payments

The PIP figures are estimates only. An important issue is how GPs claim under the new model. A substantial reduction in the PIP would reduce the per-patient cost in the post MAGS model compared to the pre MAGS model. The base case of the model assumes a PIP of \$289K, both pre and post MAGS. If this PIP were reduced by 50% under the new model as a result of changed basis for claims, the post MAGS cost per client for all services would reduce from \$95.03 to \$85.40. The increase compared to pre MAGS would have been \$9.26 and the percentage increase 12%.

3.4.3 Number of after hours patients pre-MAGS

Pre MAGS after hours GP consultations are difficult to estimate for a number of reasons. The model is sensitive to this assumption. The base case assumes 4,000 after hours GP patients. If this is decreased to 2,500 then the cost per patient pre MAGS is increased from \$76.14 to \$77.05. The increase from pre to post MAGS would be reduced to 23%. The reason for this increase in average costs is that the fixed PIP is allocated across a greater number of patients in the base case.

3.5 Per capita costs

The regional after hours model could also be expressed as a per capita cost. The Maitland/Raymond Terrace population is 72,000. In this case the cost per capita of the

previous model was \$18.80 and the new model is \$19.86. We also calculated a cost per episode for post MAGS that included the number of patients known to have used the telephone triage service. This cost was \$83 per episode. It was not possible to calculate a similar estimate for pre MAGS as there was no equivalent data on the level of telephone triaging. However, it is likely that it did occur pre MAGS and this would reduce the cost per episode for pre MAGS accordingly.

In the region of 20% of patients seen by MAGS live outside of MAGS postcode areas. We also know that some Maitland patients seek care outside of the Maitland sub-region. It is likely that the drift out of Maitland is smaller than the drift into Maitland but how much is unclear.

Table 19 Cost per capita, per client seen, per episode – pre and post MAGS

	Total costs	Total clients face to face	Total used telephone triage	Total episodes	Total regional population	Cost per client seen face to face	Cost per episode	Cost per capita (region)
12 months Pre MAGS	\$ 1,353,864	17,790	-	17,790	72,000	\$ 76	\$ 76	\$ 18.80
12 months Post MAGS	\$ 1,430,101	15,052	2,098	17,150	72,000	\$ 95	\$ 83	\$ 19.86
Change	\$75,885.15	- 2,738.20	n/a	- 640.20	n/a	\$ 18.89	\$7.27	\$ 1.05
% change	5.6%	-15.4%	n/a	-3.6%	n/a	24.8%	9.5%	5.6%

3.6 Discussion – comparison of pre and post costs

The main changes relate to the distribution of client load across providers, distribution of funding across funder and the costs per client seen both overall and per funder and per provider.

Table 20 Distribution of clients across providers - pre and post MAGS

	Pre		Post		Difference	
	Number	%	Number	%	Number	%
Maitland ED	7,543	42%	2,846	19%	- 4,697	-62%
MAHMS	6,247	35%	0	0%	- 6,247	n/a
After Hours GPs	4,000	22%	782	5%	- 3,218	-80%
MAGS	0	0%	11,424	76%	11,424	n/a
Total	17,790	100%	15,052	100%	- 2,738	-15%

- MAGS saw 76% of all clients. Prior to MAGS, Maitland ED saw 42% of all 4 and 5 clients in MAGS hours and post MAGS, saw 19%. The total reduction in clients seen by Maitland ED was 62%.
- There was an 80% reduction in the number of clients seen after hours by GPs, outside MAGS or MAHMS.
- There was a 15% reduction in total number of patients seen face to face. This reduction could be accounted for by a combination of the reliability of estimates of pre MAGS

clients for MAHMS and after hours GPs and the use of the telephone triage system post MAGS.

Table 21 Distribution of Expenditure by Provider – pre and post MAGS

	Pre		Post		Difference	
	Number	%	Number	%	Number	%
Maitland ED	\$455,058	34%	\$182,792	13%	-\$272,266	-60%
MAHMS	\$414,362	31%	0	0%	-\$414,362	n/a
After Hours GPs	\$485,047	36%	\$341,208	24%	-\$143,840	-30%
MAGS	0	0%	\$906,352	63%	\$906,352	n/a
Total	\$1,354,466	100%	\$1,430,352	100%	\$75,885	6%

- The total portion of all expenditure accounted for by Maitland ED was reduced from 34% to 13%, compared to the reduction in patient load from 42% to 19%. This reduction in share of total expenditure is partly the result of the reduction in activity and associated costs and also the result of the overall increase of 6% in total expenditure.
- The reduction costs of after hours GPs is less than proportional to the reduction in client load as a result of the assumption of a fixed PIP pre and post.
- MAGS accounted for 63% of total expenditure compared to 76% of all clients.
- Total expenditure increased by 6%.

Table 22 Distribution of funding by Funder – pre and post MAGS

	Pre		Post		Difference	
	Number	%	Number	%	Number	%
Commonwealth	\$703,649	52%	\$940,901	66%	\$237,253	34%
Maitland Hosp/HAHS	\$455,058	34%	\$477,720	33%	\$22,663	5%
Private	\$195,760	14%	\$11,730	1%	-\$184,030	-94%
Total	\$1,354,466	100%	\$1,430,352	100%	\$75,885	6%

- The increase in funding was \$75,885, 6%
- The shift in funding was from Private costs, including the deputising fee, to the Commonwealth.
- Maitland hospital/HAHS experienced little change in their share of total funding however, had the hospital funded at a rate per capita closer to actual financial cost per client, their share of total funding would have been higher.
- The reason why the total portion funded by Maitland/HAHS (from 34% to 33%) was more than the share of expenditure by Maitland ED (from 34% to 13%) is that Maitland Hospital/HAHS also part-funded MAGS.

Table 23 Cost per patient seen, by provider – pre and post MAGS

	Pre		Post		Difference	
	\$	As % of average across all providers	\$	As % of average across all providers	\$	%
Maitland ED	\$60.33	79%	\$64.23	68%	\$3.90	6%
MAHMS	\$66.33	87%		0%		
MAGS	0		\$79.34			
After hours GP	\$121.26	159%	\$436.33	459%	\$315.06	260%
Total	\$76.14	100%	\$95.03	100%	\$18.89	25%

- The cost per client for after hours GPs is high and increased post MAGS because of the PIP payment being apportioned across these clients, and post MAGS over a decreasing number of clients.
- The increase in cost per patient for Maitland ED reflects the stepped cost structure we have assumed. This structure reduces costs by less than the proportional decrease in activity.
- The cost per client increased by \$18.89 from \$76.14 to \$95.03, an increase of 25%. This is in contrast to the 6% increase in total costs. The reason for the difference is the reduction in the denominator, the total number of clients seen face to face, by 15% from 17,790 to 15,052.

4 Improving sustainability

4.1 Operational sustainability

The GP workforce

- **existing arrangements are effective and likely to be sustainable.**

The GP workforce is a key determinant of operational sustainability. A total of 44 out of 66 GPs participated. Sufficient GPs made themselves available for the MAGS roster to make the service viable from the perspective of both MAGS (GPs available for all hours during which the service operated) and individual GPs (participation on a 6 weekly roster basis was considered acceptable). GPs preferred the model to previous arrangements.

Feedback from GP consultations has indicated that GPs are not considering leaving the roster. GP comments regarding roster frequency are pertinent to workforce sustainability. In response to a survey question regarding frequency of rostering, while the majority of GPs are happy with roster frequency there are some GPs who would like a less frequent roster. Feedback about the rostering process is also informative with complaints ranging from "insufficient" to "too frequent" shifts. It seems likely that an increase in roster frequency would be associated with an increased likelihood of GPs dropping out of the roster.

The triaging process

- **the triaging process was changed to a more effective model after 6 months and is likely to be sustainable**

There are three roles of the triage service: 1) Triage on-site; 2) Telephone triage; and 3) Telephone home advice.

The original triaging process for patients who arrive at ED has been replaced with a more effective method that allows patients to self-refer to MAGS without approaching the ED first. This will reduce the waiting time between arrival and triage (increased as a result of the service under the original model). This change was supported by the results of an internal study that indicated that the number of patients initially needing to be triaging increased by 50% then reduced by 33% (to original levels).

The service manager indicated that the triaging process would further benefit from changes to the telephone triaging and advice service. Currently, the willingness for the triage nurse to provide telephone advice is influenced by: 1) the triage nurse's experience in providing this advice; and 2) the triage nurse's workload when the call is answered. Further changes in the triaging process will assist in reducing the workload of the triage nurse (i.e. removing the imperative for all patients under 3 and over 70 to be triaged). Furthermore, improved matching of skills and experience to the task of telephone triage will improve the effectiveness of this service.

It is apparent that the combination of on-site clinical and telephone triage roles are at best difficult if not incompatible. There is a natural focus of triage staff on the on-site work over the telephone role. This extends to becoming involved in non-triage work when the ED is busy. In the extension phase of the trial, the telephone triage and on-site triage aspects of the service will be separated and should lead to greater expertise in the provision of telephone advice by nurses recruited specifically for this purpose

Relationship with pre-existing deputising service

- **the current model of compensation is unlikely to be sustainable**
- **only one model - either MAGS or MAHMS - is sustainable and GP preference is likely to determine which model this is**

The key pre-existing deputising service, MAHMS, was considered to be unviable alongside MAGS. The current arrangement involves a payment from the Commonwealth to the GP who owned and operated MAHMS as a compensation for loss of earnings for the year of the trial. It is unlikely that this arrangement is sustainable on two grounds. First, the evidence indicates that the region's GPs prefer the trial model to the previous arrangement. Second, the feasibility of sustaining this compensation outside a trial setting is likely to be limited.

Would the MAGS model be operationally sustainable if MAHMS were re-opened? Would MAHMS be operationally sustainable if it re-opened while MAGS was still opened? If both the GPs who worked in MAHMS and the practices who deputised to MAHMS have a preference for MAGS, then it is unlikely that MAHMS would be able to operate. There is evidence at this stage that GPs have a preference for MAGS over MAHMS, with better working conditions at MAGS being a key factor contributing to this preference (see the results of the GP survey reported in the Local Evaluation Final Report).

If MAHMS re-opened in some form, which is most likely as an extended hours practice, it is likely that it would see some patients currently seen at MAGS. It is also likely that MAHMS would see some patients with discretionary needs that are not managed at MAGS. It is unlikely that MAHMS would affect MAGS GP staffing because it would not be able to offer a comprehensive service which meets accreditation requirements for GPs. MAHMS may be able to recruit adequate staffing from non-participating GPs but these GPs have chosen to deputise in the past and to not work in MAGS so their likelihood of participating in a MAHMS workforce is low. There are some GPs who would like more shifts at MAGS who could potentially work at another service. Many of the barriers to GPs working in MAHMS that existed pre-trial remain, so recruitment is likely to remain difficult. It would only be viable financially at busy times - early weekday evenings and weekends during the day.

Relationship with Maitland ED

- **from an operational perspective, the existing relationship with the ED department is satisfactory**
- **longer term operational sustainability is dependent upon staffing arrangements between the two groups and the combined workload**

Maitland ED staff expressed satisfaction with the relationship from a purely operational perspective. Two factors influence the sustainability of Maitland ED's relationship with MAGS: overall usage of after hours services relative to capacity, and joint staffing arrangements.

Maitland hospital staff claimed that there would have been an additional medical officer put on in ED had MAGS not commenced, due to increases in 4 and 5 activity in the period prior to MAGS opening. There are limited opportunities to have medical staff working half time during MAGS hours, although the medical officers are on call for the rest of the hospital. It is likely that if medical officers are working closer to capacity while MAGS is in operation, then the operational sustainability of the ED workforce will improve.

The service director is employed directly by MAGS, however, the other nursing staff are hospital employees rostered to the service but funded by MAGS for the hours they are rostered. There is some evidence that to employ staff of a more permanent basis would provide an opportunity to generate a service specific culture, thereby improving the operational sustainability of the workforce. Phase 2 of the trial intends to assess this option, with nursing staff being recruited specifically to work in MAGS.

ED staff would like to see greater separation of the two services, resulting in a co-located but less integrated service than that currently existing. This may lead to improved operational sustainability from the point of view of ED staff satisfaction with the service. Additionally, if the ED grows, there may be less opportunity to share their current space, also necessitating a space close by but not within the ED.

4.2 Sustainability of effect

- **consumers and GPs are satisfied with the quality of care provided by the service**
- **satisfaction is likely to be sustainable, it is not a one-off effect**

This issue of the value of the service provided to patients is addressed within the Local Evaluation Final Report. Sustainability of this effect is likely, provided patient to GP ratios are maintained.

4.3 Financial sustainability

Providing services within the MAGS budget

The level of services provided are within budget, as is indicated in section three of this report.

From the perspective of the **MAGS funding**, two factors will influence the sustainability of the current financial position:

- the basis for and estimate of the Maitland ED contribution;
- the choice of an alternative benchmark against which the contribution from the AHS could be assessed;
- the distinction between reduction in financial and economic resource requirements for Maitland ED;
- the basis for and estimate of the Commonwealth contribution;
- The choice of benchmark against which the Commonwealth contribution could be assessed;
- the use of data from the trial to improve any estimates against a given benchmark, for example: 1) the volume of activity the MBS payment is based on could be revised estimates of activity.

(see Section 5 for a further discussion of these issues)

From the perspective of **MAGS expenditure**, three factors would appear to influence future financial sustainability.

- First, the basis for payments for nursing staff. MAGS staff will only work for the service in phase 2 of the trial and won't perform any work for the ED. This should increase the available hours for each dollar paid by MAGS.
- Second, the effectiveness of the telephone triaging process in improving service efficiency.
- Third, a review of the overall staff requirements in light of the experience of the trial.

It is too early at this stage to estimate whether consideration of these issues would result in an increase or decrease in expenditure.

Commonwealth contributions to MAGS budget

For the purpose of this project financial sustainability from a Commonwealth perspective is defined as having no impact on the total expenditure on after hours care in the region – including expenditure on grants and payments, MBS and PBS.

Section three of this report includes an estimate of the cost per patient to the MBS under the two models. At this stage the results indicate that the alternative model is costing the Commonwealth more than the previous model.

Practice Incentive Program

In the PIP, GPs qualify for three tiers of payment according to stated arrangements for after hours medical care. Arrangements which satisfy the criteria do not guarantee that the GP actually provides the medical care of his/her patients after hours. In the Maitland region MAGS has seen 11,424 patients, while there have been 782 after hours consultations billed to Medicare outside of the system. It is clear that MAGS is providing the majority of care to the patients of non-participating and participating GPs. It is unlikely that the current distribution of PIP to individual GPs reflects this distribution of workload among them.

An arrangement is required where the PIP funds are available to the service or GPs that actually provide the care. In the Maitland region MAGS service data, and HIC data would enable the relative contribution of individual GPs to after hours care in the region to be determined. Locally defined criteria could be devised for the distribution of the PIP for the region in a way which recognizes the degree of involvement of individual GPs in service provision. This type of approach would also offer a mechanism for non-participating GPs to “contribute” to the service so they can satisfy accreditation requirements, addressing the concerns of some participating GPs, and increasing the sustainability of the workforce. In addition to the currently allocated after hours PIP which is in the region of \$290,000, there is an unallocated amount of over \$90,000 per year.

There would also appear to be an opportunity to reduce the additional cost to the Commonwealth through the revision of the basis for the PIP to practices in the region. It would be important in any such arrangement to consider the possible impact of any arrangement which reduces the incentive for GPs to work in the service. Restricting this type of arrangement to the unallocated PIP would limit the risk of a reduction in workforce sustainability. Any such arrangement is likely to be more generally acceptable if consistent with any altered criteria for determination of after hours PIP payments.

Maitland ED contributions to MAGS budget

- **the financial impact on Maitland ED is clearer than at the stage of the interim report, but some uncertainty remains.**
- **improved financial sustainability from the perspective of Maitland ED will occur if the basis for both cash in and cash out rates are reviewed**

Is the model financially viable from the perspective of Maitland Hospital? We considered three alternative definitions of financial viability:

- 1) MAGS can continue to operate with reduced patient numbers within the financial budget that remains after Maitland ED has made capitation payments to MAGS.
- 2) The net reduction in Maitland ED's budget, after payments to MAGS, is equivalent to the actual reduction in financial resources used by Maitland ED.
- 3) The net reduction in Maitland ED's budget, after payments to MAGS, is equivalent to the expected reduction in financial resources used by Maitland ED, where expected reduction is the per capita variable costs of treating a category 4 or 5 patient pre MAGS X the actual reduction in Maitland ED patients numbers.

The first and second of these propositions is difficult to test as a number of factors make it difficult to determine the net reduction in financial costs based on the hospital's financial reports viz:

- imaging is not costed to ED;
- pathology is not costed to the ED;
- it is difficult to allocate costs to time period; and
- while it is possible to use audits to allocate costs of investigations and pathology to MAGS patients, there is no system which monitors these costs, so any figures used are estimates only.

The third proposition is therefore the only one that can be tested. The method we used is summarised as follows:

- 1) Per patient costs for 4 and 5 for pathology and investigations were derived from audits.
- 2) Staff cost for the pre MAGS time period were determined from rosters and allocated to patients using costs weights based on observed behaviour in relation to the time spent by clinicians with the different categories of patients This is likely to overstate the reduction in staff costs for two reasons:
 - a. A portion of clinician costs are likely to be fixed regardless of the number of patients
 - b. The amount of time allocated to patients post MAGS is likely to increase and the staff likely to remain fully occupied if the reduction in staff resources is less than the amount that would be estimated using the above approach.
- 3) Cost of consumables and pharmaceuticals were derived by using the costs per client for MAGS patients, with the additional assumption that the costs of pharmaceuticals were 10% higher for Maitland ED clients compared to MAGS clients (it is likely that GPs write more scripts than the hospital clinicians, however we have assumed a higher rate of use of the formulary).

Table 24 Summary of reduced costs to Maitland ED

	Pre Mags – for each scenario					Post MAGS – for each scenario				
	1	2	3	4	5	1	2	3	4	5
Number of 4 or 5 clients in MAGS hours	7,543	7,543	7,543	7,543	7,543	2,846	2,846	2,846	2,846	2,846
Cost per 4 or 5 client	\$60.25	\$60.25	\$65.38	\$55.11	\$55.11	\$64.14	\$68.03	\$69.79	\$58.49	\$76.80
Total cost of 4 or 5 clients	\$455,058	\$455,058	\$493,184	\$415,725	\$415,725	\$182,792	\$193,889	\$198,616	\$166,468	\$255,058
Total Savings	-	-	-	-	-	\$271,913	\$260,839	\$294,569	\$249,258	\$200,000
% of activity pre MAGS allocated to 4 and 5	62%	62%	70%	54%	54%	62%	62%	70%	54%	54%
Premium added to account for cost structure	-	-	-	-	-	10%	20%	10%	10%	61%

The total reduction in financial costs to Maitland ED is likely to be in the regional of \$250,000 to \$290,000, substantially greater than the \$200,000 contributed to MAGS by Maitland/HAHS. The conditions under which the savings of \$200,000 would be likely include:

- 54% of total financial staff resources were allocated to the 75% of clients who were category 4 and 5 clients pre MAGS; and
- the premium required to cover the stepped costs within the ED cost structure represents an additional 61% over the financial costs that would have been incurred had the remaining 4 and 5 clients required 38% of pre MAGS resources (38% is post MAGS 4 and 5 clients as a proportion of pre MAGS 4 and 5 clients) - this is a substantial premium.

Financial sustainability from Maitland ED's perspective could be improved if:

- there were a better estimate of costs of caring for 4 and 5 clients pre and post MAGS and this estimate was used as a basis for calculating a net payment to MAGS; and
- there were a better understanding of the relationship between a reduction in actual resources (staff, pathology, investigations, etc.) required to maintain pre MAGS levels of care and the capacity for Maitland ED to improve care to patients if the reduction in financial resources is less than this reduction in resource requirements.

4.4 Economic sustainability

In order to assess economic sustainability, it is necessary to develop a benchmark against which resource use can be compared and to estimate economic resource use. The best estimate of the latter is presented in Section 3. A point that is often overlooked is that the benchmark by which economic resource use is assessed need not be usual resources if there has been an improvement in outcomes achieved. In this case, the benchmark is usual resources plus an additional amount that represents what stakeholders are willing to contribute to achieve the expected improved outcomes.

The two benchmarks can be described as follows:

- 1) The costs that would otherwise have been incurred in order to provide after hours care in the region, including private costs such as deputising payments and consumer co-payments and Commonwealth payments such as PIP;
- 2) The total amount the Commonwealth, area health services, GPs and consumers are prepared to pay for a regional best practice model for after hours care (this could be expressed as a premium over the usual care estimate, above).

The fund pool is intended to be an approximation of the first of these, although, as discussed above, there are opportunities to improve the estimate of this benchmark. If the current model is a preferable solution to the previous model, then the second benchmark may be a more appropriate basis for assessment of economic viability and for future funding benchmarks.

The trial was not established to assess improved outcomes in terms of health outcomes and most gains are likely to be in terms of access. However, patient satisfaction was high, waiting time data for ED was variable, but what was not available was the pre MAGS waiting time for after hours GPs.

The additional costs are likely to be in the order of:

- \$75,885 in total (5.6% increase);
- \$18.89 (24.8%) per client seen;
- \$1.05 (5.6%) per capita (considerations regarding uncertainty of size of population will not effect the % increase, only the absolute increase).

Improved economic sustainability could be achieved if there is agreement regarding the economic benchmark and the actual MAGS budget is representative of this amount (less the costs of Maitland ED and continued after hours).

5 Informing policy and other decision making

Two aspects of policy could be informed by the results of the trial economic evaluation. First the broad policy parameters within which after hours models should operate and second, the specific policy options concerning the application of the Maitland model in other regions.

5.1 Broad policy parameters

At this stage it is possible to list options available to decision makers but not to comment in an informed way on the strengths and weaknesses of each of these options.

5.1.1 Defining best practice in after hours care

What are the options regarding the level at which after hours best practice should be assessed?

The options for urban regions include:

- individual GP practices and hospital EDs, i.e. each of the provider agencies are required to demonstrate that the relevant patient base is provided with best practice after hours care;
- groups of common providers such as all EDs and all GPs, i.e. each of the groups of providers are assessed in terms of the effectiveness with which the relevant patient base is provided with after hours care;
- a regional level, i.e. all EDs and other providers of after hours care within a region

Assessing best practice at the level of individual providers is important, but the provision of best practice after hours care across a region requires that a comprehensive mix of services is available, that patients are guaranteed access to high quality care, and that patients are managed by the most appropriate service. These characteristics cannot be delivered by individual providers, particularly in a fee-for-service environment. Best practice should therefore ideally be assessed at regional and individual provider levels.

What are the key features or indicators associated with a best practice model?

A best practice model will:

- Ensure access to appropriate care for the whole population, in terms of waiting time, comprehensive range of services, cost and geographical proximity.
- A mix of services including clinic care, home visits where necessary and access to advice regarding availability of services and home management of simple conditions.
- Have a sustainable workforce, preferably GPs as the preferred provider of ambulatory after hours care. This requires attention to GP working conditions including rosters, pay, support structures, good facilities, most work in facilities, safety.
- Have systematic clinical governance.
- Ensure continuity by means of systematic communication back to GP and ideally access to clinical information at time of after hours service provision

Choice for patients is a desirable characteristic, but if we define a system of care which determines how patients are to be managed according to best practice, then choice may allow patients to over-ride best practice. Patients may then be choosing worse care. If all options are subject to systematic clinical governance then this may be acceptable but only where it is accepted that for a given patient more than one mode of service delivery is consistent with best practice.

Choice for GPs is an issue to be dealt with in setting up a model not a feature of best practice necessarily because it may not be deliverable. The choice they should have is to be free to offer services outside of the system. That is, the model should not preclude (at least deliberately) other service options. The Maitland model does not and does not have to do routine care. Patients may choose to have routine care out of hours but this is a different issue which needs to be met by services operating under daytime funding arrangements set up by GPs who are free to do that if they want. If as in Maitland GPs are too busy to want to do this then this choice may not be part of the system.

The argument that regional approaches are preferable to disparate approaches is a complex one. There are worldwide trends towards organization of services with evidence from Denmark that regional approaches can offer community access to appropriate GP care^{3 4}. The major advantages have been in rationalising the time commitment of the scarce workforce while at least matching previous levels of service (although the service mix changed away from home visits). Similar "systems" have developed in a more ad hoc fashion in some areas of the UK where one GP coop has become predominant⁵. Again the driver for the change has been to rationalise the use of the GP workforce which particularly after hours is a scarce commodity.

Against which benchmark of best practice should models be assessed in practice?

Options for measurable benchmarks include:

- the hours worked by GPs; (per capita and per individual GP)
- degree of integration with which patients' access to services is managed – eg use of central telephone triage; comprehensiveness of referral/ management options
- waiting times/did not waits;
- Presence of systematic quality assurance, training, clinical direction and other characteristics of organizations providing high quality care;
- Communication benchmarks - % letters to GPs within 24 hours, and content of letters measured in audits against defined criteria.
- GP participation rates
- Satisfaction of best practice criteria of comprehensive mix and service configuration as above.
- Patient satisfaction with access and quality.

³ Hansen, B.L.; Munck, A. (1998) Out-of-hours service in Denmark: the effect of a structural change British Journal of General Practice 48:1497-1499

⁴ Christensen, M.B.; Olesen, F. (1998) Out of hours service in Denmark: evaluation five years after reform British Medical Journal 316:1502-1505

⁵ Hallam, L.; Reynolds, M. (1999) 24-Hour Primary Care. Chapter 5: GP out-of-hours co-operatives 63-91

5.1.2 The economic benchmark for funding models

The economic benchmark for funding is essentially a guide to how much should be spent on providing after hours care in a region. Two perspectives are considered in this section. First, that of the funding available to the region, and second the contributions by the two main funders.

What are the options for a regional economic benchmark for funding of a regional model?

- the financial costs that would have been incurred by key providers in the absence of the regional model;
- the economic costs that would have been incurred by the region, including private costs such as deputising fees and consumer co-payments, in the absence of the model;
- Either of above plus the premium providers and funders are prepared to pay in order to have a regional model of after hours care.

What are the options for an economic benchmark for the Commonwealth contribution to such a regional funding model?

- MBS payments that would otherwise have occurred;
- First bullet point above plus a premium for unmet need in the region;
- First bullet point above plus a premium paid to GP practices for involvement in the regional best practice model (this contribution would be paid to the practice and it would be up to a practice whether this payment is then used as part of a service fund pool);
- First bullet point above plus a premium paid to a region or a Division of General Practice for best practice at a regional level.
- First bullet point above plus an allocation of part of the regional PIP.
- An agreed capitation rate for a population informed by the above considerations

An important consideration for the Commonwealth in relation to funding is the risk that changing the incentives provided through a payment may lead to inappropriate changes in service use or mix.

What are the options for an economic benchmark for the area health service contribution to a regional funding model?

- The financial savings to hospitals as a result of any reduction in workload;
- First bullet point above plus a portion allocated to cover fixed costs of providing care to this workload;
- The amount that an area health service is currently funding ED departments and any associated services, less the costs required to provide care for category 1, 2, and 3 patients, less the proportion of category 4 and 5 patients still managed by Maitland ED; and
- First bullet point plus an allocation of part of the regional PIP;
- A premium for workload risk management;
- An agreed capitation rate for a population informed by the above considerations

5.1.3 Parameters around fund pooling arrangements

The parameters within which a fund pooling arrangement could operate include consideration of:

- the basis for capitation estimates;
- choice of economic benchmark;
- the involvement of hospital emergency departments and area health services;
- the degree to which payments to and from the pool reflect actual changes in costs of providing services by individual providers.

5.2 An after hours care “package”

An after hours care package based on the MAGS model could have two components: 1) key features of the model and how these features could be adapted to other contexts and 2) discussion of the decisions, options and choices made by the trial, and the effectiveness of these choices.

At this stage, the evaluation can only start to inform the first component. Further analysis is required to provide an evaluation that would inform the second part of such a package.

The key features of the model are: 1) the benchmark of best practice, 2) opportunities to improve existing practice, 3) engagement of GPs, 4) relationship with existing providers and the management of change in these relationships, 5) management of new services, 6) funding model and 7) managing patient access to services.

The purpose of this section is to review each of these in terms of factors that would need to be considered if this model were adapted to other regions. At this stage the discussion is preliminary only.

5.2.1 Agreement as to benchmark of best practice

There are three key elements to the best practice and the current model: 1) the provision of a regional solution to after hours care; 2) the maintenance of key choices for patients and providers (this is not necessarily consistent with patient and GP preference – these may need to be modified within an appropriate structure of clinical governance as discussed above); and 3) patient access to appropriate information about available services.

In relation to the first of these, existing relationships between providers within a region and the availability of data across all providers within a region are likely to be significant determinants of generalisability of the regional approach to best practice.

The maintenance of key choices or preferences by patients and GPs is probably generalisable across all regions. Examples in the Maitland model include: the right of a GP to opt out of providing care within of a collective model, even if they support the model, (but there may need to be consequence of that such as having to make a financial contribution,

not being able to be accredited⁶) and the opportunity for a patient who has complex needs to see the most appropriate provider. The access to appropriate information within the Maitland model is addressed through the management of patient's access to after hours services.

1) Opportunities to improve existing practice

The opportunities to improve existing practice within the Maitland region were identified through the after hours project in 1996 and then further defined in 1998 as part of the process of developing a tender for the after hours primary care trials.

Issues that could be reviewed in a more focused study for other regions include:

Identify current mix of service providers:

- Define the current service providers including EDs, GP after hours services, deputising services and extended hours practices;
- Describe current mix in terms of share of current funding (by funder), patient load, and expenditure;

Explore attitudes of community members to:

- existing services;
- alternative models;

Explore potential alternative service delivery models with all provider groups. Issues to consider include:

- the willingness of GPs to participate as a workforce;
- the willingness of the ED/ hospital to contribute resources and the impact on;
- and attitudes of, existing private operators.

The following key opportunities to improve existing practice were identified in Maitland:

- engaging the GP workforce in a collective model;
- replacing the existing deputising service;
- addressing the increased workload of the local ED;
- funding through a pool comprising contributions from the Commonwealth and Maitland Hospital; and
- the provision of an effective regional approach to managing patient access; and location of a service within Maitland ED.

⁶ GPs have to have a formal arrangement for after hours care to be eligible for both the PIP and accreditation. In Maitland currently they only have two options - work in MAGS or be on call. Some GPs want to be able to deputise MAGS. The fee for this would need to be significant or a significant proportion of the workforce may decide not to participate. The other alternative is that all GPs are allocated MAGS shifts and then have to find someone else to do them or do them themselves.

Similar opportunities are likely to be present in most regions however, two factors are likely to result in differences across regions in the benefits of taking up any of these opportunities:

- the effectiveness with which GPs are currently providing care through deputising services or individual practices and the sustainability of the existing model; and
- the cost structure of the local ED departments, in particular the actual financial savings to a hospital resulting from a reduction in category 4 and 5 patient workload.

5.2.2 Engagement of GPs

The involvement by GPs in generating options for models of service delivery, methods of payment, hours of involvement and type of involvement, and the ongoing flexibility of these arrangements is an essential step in the engagement of GPs in a regional solution.

The exact model of the GP workforce may not be generalisable to all regions, for example, there may be more GPs living within the region than is the case in other regions or GPs in other regions may be less prepared to form a collective than was the case in Maitland. However, the requirement to develop the model with GPs is a necessary requirement for engagement of GPs.

5.2.3 Relationship between providers (existing and proposed) and managing change in these relationships

The existing deputising service, MAHMS, was financially compensated for the period of the trial. It may be necessary to have similar arrangements in other regions for the first year of the trial, if an existing deputising service is required to cease operating. However, in other regions, the deputising service may in fact become part of the regional model, particularly if there is an existing relationship with the local hospital ED. Satisfaction with existing deputising services will be a significant determinant of the ongoing role of such a service. This particularly applies to GP satisfaction. GPs who are happy with a deputising service will either not want an alternative arrangement, or would seek to enhance the deputising service rather than establish a new service.

The issue of compensation of services which cease to operate as a result of the establishment of a new service needs to be considered. In the case of deputising services, as they are dependent on GP support for their viability, it is the loss of GP support that leads to service closure.

The relationship with Maitland ED has two key components: the financial relationship and the on-site relationship. In generalising the model to other regions the following regionally specific factors would need to be considered, including:

- the size of the ED department and its underlying cost structure, in particular, if its workload is reduced, will there be sufficient change in the costs of providing care to remaining patients to justify any financial contributions to a fund pool? (there is no reason to assume that a tertiary hospital could not be a site for a co-located facility – in fact the higher ambulatory workloads and higher staffing levels suggest that significant workload reductions and realisable savings are more likely);
- the practicality of providing the GP service within or nearby an ED;

- whether there are opportunities to share costs or manage workload across the sites; and
- the relationship between the impact on ED workload and site of GP facility.

5.2.4 Funding model and funding requirements

The Maitland funding model pooled contributions from two funders, the Commonwealth (based on estimates of current expenditure and infrastructure components) and Maitland Hospital, on the basis of an agreed capitation rate.

The main issue relating to generalisation of this funding model is agreement concerning the economic benchmark for the fund-pooling model. These would need to be negotiated on a regional basis and the final model would be regionally specific and reflect factors such as:

- existing efficiency and capacity of service delivery models;
- the cost structure within EDs (what proportion are fixed or stepped costs);
- existing mix of services.
- what the contributors are prepared to pay for a solution to the after hours problem (whether the solution is “best practice” or not)

5.2.5 Managing patient access

The integrated approach to managing patients access to services is a significant element of an after hours practice. The model used within Maitland is likely to be generalisable, with consideration given to factors including:

- the opportunity to use GP answering machines to direct patients to the key service;
- the opportunity to integrate a telephone advisory service, without disadvantaging such a service when the main service is busy (i.e. when the service is busy the triage nurse may have less time available to conduct an advisory service – this issue is being addressed by separating the tasks);
- the relationship with ED.

Appendix One – data

12 months Pre MAGS Maitland ED			
Variables	Estimate	Source of estimate	How estimate was updated for final report
Total number of clients who arrive at ED in MAGS hours, regardless of the triage	10,107	Maitland ED - data from interim report	checked
Total number of 4 to 5 clients at ED who arrived in MAGS hours	7,543	Maitland ED - interim report	checked
Cost of imaging - estimate two	\$ 96,895.87	22% of patients @ \$58.39 per patient	From clinical audit
Cost per patient	\$ 12.85		From clinical audit
Costs of pathology	\$ 51,571.49	15% of patients @ \$45.58	From clinical audit
Cost per patient	\$ 6.84		Derived
Costs of consumables	\$ 5,517	Average costs of consumables for the MAGS clients X total number of ED clients	Estimate based on updated MAGS data
Costs of pharmaceuticals	\$ 6,961	Average costs of pharmaceutical for the MAGS clients X total number of ED clients	Estimate based on updated MAGS data
Average costs	\$ 21.34	Total of the above / total number of clients	Derived

MAHMS

Variables	Estimate	Source of estimate	How estimate was updated for final report
Total number of MAHMS clients	6,576	From the Interim report	checked
Total number of MAHMS clients who were seen on site	6,247	95% of above - 5% were home visits the % of MAGS clients that had procedures, adjusted down by 50% as it is assumed that there would have been a level of self triage to ED	6 week review of MAHMS - NOT updated
Procedure involved	5%	for clients who required procedures	Adjustment not change but MAGS data updated
Average costs to MBS per consultation - no procedure	\$35	MBS schedule - average over a range of hours of on site consultations - from \$57.90 if after 11 (35%) and on site to \$22 if before (65%)	Not updated
Average cost to MBS per consultation where there is a procedure	\$55	the average costs of procedures from MAGS data	NOT updated
Total cost to MBS	\$233,114	Total across all procedures	Derived with updated data
Average cost to MBS	\$37	derived from above	derived with updated data
Number of ref for inv with 266 clients	9	estimate from 6 week survey for 266 clients	not updated
Total number of inv referrals	211.37	rate for 266 x total MAHMS clients	NOT updated
Number of ref for path for the 266 clients	10	estimate from 6 week survey fro 266 clients	not updated
Total number of path ref	235	rate for 266 x total MAHMS clients	not updated
Total costs of inv referrals	\$ 36,557.30	Average cost of MAGS path referrals per referral X number of MAHMS referrals	derived using updated MAGS data open costs
Total cost of path	\$ 8,929.93	Average cost of MAGS imaging referrals per referral X number of MAHMS referrals	derived using updated MAGS data open costs
Total costs of referrals	\$ 45,487.24	Sum of the above	derived using updated MAGS data open costs
Average cost of referrals (overall clients)	\$ 7.28	above/ number of clients	derived using updated MAGS data open costs
Average cost to MBS per client	\$ 44.60	derived as sum of above	derived using updated MAGS data open costs
Home visits by MAHMS	328.80	Home visits are 5% of activity, 7.5% of total workload after 11	5% of work load....
total cost of home visit to MBS	\$ 13,994.01	based on average costs of after hours visits calculated for after hours GPs.	derived using updated MAGS data open costs
Total MBS costs	\$ 292,595.51		derived using updated MAGS data open costs
Patient co-payment	\$10		derived using updated MAGS data open costs
Total patient co-payment	\$ 65,760.00		derived using updated MAGS data open costs

After hours GP

Variables	Estimate	Source of estimate	How estimate was updated for final report
Total number of after hours GP	4000	Based on GP survey data supplemented by HIC data - HIC data does not allow all patients in this group to be identified (eg 6 to 8).	Updated from HIC data review
% of home visits that are in MAGS hours	90%	1, 2, MAGS 601, 602 - after MAGS hours	no change
Cost of MAGS hours visits	\$ 40.71	MBS schedule - 80% at 85% of \$41.25 and 20% at 85% of \$49.55	updated to reflect new costs for MBS and ensure comparability
Cost of outside MAGS hours Visits	\$59	MBS schedule	updated to reflect new MBS costs and ensure comparability
Average costs to MBS of home visits	\$43	MBS schedule	re derived using updated data
Co-payments by patients	\$15	1998 survey	not updated
Total costs to MBS	\$170,243		re derived using updated data
Total costs to Patients	\$60,000		re derived using updated data

Additional funding

Variables	Estimate	Source of estimate	How estimate was updated for final report
Deputizing payments to MAHMS	\$70,000	Estimate of costs to GPs of MAHMS deputizing service	NOT updated
Practice incentive payments	\$ 289,804	Estimate based on May 2000 figures extrapolated - same used pre and post	updated
	50%	% of deputizing costs that are assumed to be funded through the PIP	NOT updated
	\$ 35,000	The Deputizing service cost counted after adjusting for PIP	NOT updated
Estimate 1 Total ED staff costs	\$474,375	Estimate of 49 hours of staffing a week, two medical officers and three to four nursing staff, plus admin staff times 2	checked
Estimate 1 Total proportion of all clients who are 4 or 5	75%	derived	checked
Estimate of Proportion of staff activity attributed to category 4 and 5 clients	62.00%	Based on the cost weights - lowest prportion assumed for category 4 and 5 - changed in sensitivity analysis	checked
Costs attributed to 4 and 5	\$ 294,112.50	This is an estimate only	re-D66derived using updated data

Post MAGS

Telephone triage service			
Variables	Estimate	Source of estimate	How estimate was updated for final report
Number of clients who used service	2098	Minimum number of users	Updated
Number of clients who had home visits after telephone advisory	109	MAGS data collection	Updated
Maitland ED			
Variables	Estimate	Source of estimate	How estimate was updated for final report
Total arrived at ED/MAGS	7,904	MAGS data collection	Updated
Seen by ED in MAGS hours	2,846	MAGS data collection	updated
Of above referred From MAGS	461		
Imaging cost per patient	\$ 12.85	As pre MAGS	Not available
ED total costs of imaging	\$ 36,559.15	derived	rederived with new pre MAGS data
Path cost per patient	\$ 6.84	As pre MAGS	Not available
ED Total costs of pathology	\$ 19,458.10	derived	
ED Total costs of Consumables	\$ 2,081.62	based on avergae cost for MAGS	Rederived from updated figures
ED Total costs of pharmaceutical	\$ 2,626.25	Based on avergae cost for MAGS	Re derived from updated figures
Total costs	\$ 60,725.12	Total of the above	Re derived from updated figures
Ed average costs of above	\$ 21.34	Total / number of ED clients	Re derived from updated figures

MAGS

Variables	Estimate	Source of estimate	How estimate was updated for final report
Seen by MAGS	11,315	service utilization figures	updated
Imaging Cost per patient	\$ 5.85	From MAGS data on utilization	Updated
MAGS Total costs of imaging	\$66,213	From MAGS financials	Updated
Number of pathology referrals	\$ 1.43	From MAGS data on utilization	Updated
MAGS Total costs of pathology	\$ 16,174.00	from MAGS financials	Updated
MAGS consumables cost per client	\$ 0.73		
MAGS Total costs of Consumables	\$ 8,276.00	from MAGS financials	Used the last three month's figures as the earlier figures are likely to be under estimates
MAGS pharm costs per client	\$ 0.92		
MAGS Total costs of pharmaceutical	\$ 10,441.33	from MAGS financials	Used the last three month's figures as the earlier figures are likely to be under estimates
MAGS average costs of above	\$ 8.94	derived	
Number of Mags consultations which included procedure	1,131.50	from 4 week survey; 12% of clients	Procedures audit
% of MAGS consultations that included procedures	10%	two procedure Audits	Audit 1 - 12% audit 2- 8%

Other costs

Variables	Estimate	Source of estimate	How estimate was updated for final report
estimated ED staff costs	\$ 110,969.66	Total costs prior less estimated savings due to reeduced workload - assume no adjustemnt for stepped costs.	based on review of ED costs
ED 4 and 5 work load as % old work load	38%	derived - nov98 to march 99 less nov99 to march 2000	based on review of ED costs
ED staff costs that would have occurred over the 12 months for 4 and 5, had MAGS not been open	\$ 294,112.50	Total for 12 months prior to MAGS - assume no increase in costs comapred to pre MAGS - assumes any increase in workload would have ben aborbed. This is conservative	based on review of ED costs
Estimated reduction in ED costs over period	\$183,143	reduction in 4 and 5 work load X the costs attributed to ED	based on review of ED costs
adjustment factor for sensitivity analyses	10%	assume that the reduction in costs is less than the reduction in patient workload by this percent.	based on review of ED costs
Estimated ED costs allocated to 4 and 5 over the period	\$ 122,066.63	costs attributed previously x ED workload as a % of old workload + increase of sensitivity analysis amount	based on review of ED costs
Savings after adjusting for cost strcutre	\$ 172,045.87		based on review of ED costs
MAGS salaries	\$805,248	Salaries only	based on review of ED costs
Compensation to MAHMS	\$75,000	estimate of Compensation to MAHMS	based on review of ED costs

MAGS and after hours GP Home visits

Variables	Estimate	Source of estimate	How estimate was updated for final report
MAGS	109	From MAGS figures	Need to confirm the previous figure as this is derived from that
After hours GPs	782	estimate only - these clients do have a MBS charge	Using HIC estimate
Average cost of consultation to MBS	\$51	MBS schedule - apply actual proportions of patients to MBS schedule	weighted average recalculate - use same costs for whole 12 months
Average co-payment for outside service	\$15	estimate	NOT updated
Total costs to MBS	\$39,674		Re derived
Total costs to private	\$11,730		Re derived
PIP	\$ 289,804	estimate	Assumed to be same as previous 12 months
Total payments from ED to MAGS on basis of expected clients	\$410,350		Updated
Payments by commonwealth to MAGS full 12 months	\$736,078	457078MBS +279000GAP	