

OUTREACH GERIATRICS SERVICE TO PRIVATE OLD AGE HOMES IN HONG KONG WEST CLUSTER

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Summary

In Hong Kong, a large proportion of institutionalized elderly people are residing in private old age homes (POAHs). Unfortunately, the quality of care is generally poor in POAHs and most of the staff are untrained. Starting from July 1999, Community Geriatric Assessment Teams (CGATs) have been providing service to the POAHs. Hitherto, the effectiveness of CGAT service in POAHs is still unknown. This study examines the impact of Hong Kong West CGAT service in POAHs in terms of Accident and Emergency (A&E) Department attendance, hospital admissions, hospital bed-days, polypharmacy and multiple clinic follow-up. 316 residents of age 60 or above being seen by CGAT for 6 months were studied. The residents were of poor functional state and cognition, with polypharmacy and multiple pathology. Incontinence, impaired vision and hearing were common. The average regular drugs and outpatient clinics were reduced by 10% and 54% respectively after ≥ 6 months of CGAT intervention. Subgroup analysis of 142 subjects being seen by CGAT for one year or more showed 19% and 22% reductions in A&E attendance and acute hospital admissions respectively (A&E: 1.43 ± 0.17 vs 1.77 ± 0.2 , $p < 0.05$; acute hospital: 1.27 ± 0.16 vs 1.63 ± 0.18 , $p < 0.05$). Moreover, 43% and 32% reductions in acute hospital and convalescence hospital bed-days were found in the post-CGAT year (acute hospital: 4.8 ± 0.67 vs 8.4 ± 1.0 days, $p = 0.001$; convalescence hospital: 10.5 ± 2.2 vs 15.5 ± 2.5 days, $p < 0.05$). The results suggest that CGAT service to POAHs in Hong Kong is an effective health care delivery model.

Keywords: Community Geriatric Assessment Team, private old age homes, outcome study

Introduction

Hong Kong is a cosmopolitan city with a population of over six million. As in other parts of the world, demographic change has led to increase in the number of elderly people. The percentage of elderly people of age 65 or above was 10.1% in 1996¹. It is estimated that the elderly population would reach 11.7% by the year 2001. Urbanization and Westernization in Hong Kong have resulted in the popularity of small nuclear families while traditional Chinese extended families are uncommon nowadays. This change of family structure has led to the increase in demand for old age homes (OAHs) to care for the functionally impaired older persons². Both subvented and private old age homes (POAHs) exist in Hong Kong³. There are three types of subvented OAHs, namely old age hostels, care and attention homes and nursing homes. The hostels are for more independent elderly subjects while the latter two are for more dependent persons. Very disabled older people are cared for in infirmary units which are long stay hospital beds. The quality of care in subvented homes are usually good and geriatric input is available as most subvented homes have been regularly visited by Community Geriatric Assessment Teams (CGATs) since 1994⁴. However, because of the great demand from the ever growing elderly population, the average waiting time for entering these institutions is more than three years.

As a corollary to the inadequacy of the subvented homes, there is increase in number of profit making POAHs in Hong Kong. The POAHs are usually crowded, their standard of care poor and the staff mostly untrained⁵. In addition, two recent local surveys have shown that the POAH residents are frail and are frequent consumers of

hospital services^{6,7}. Prior to the commencement of CGAT service to POAHs in July 1999, geriatric input was not available and medical supervision in POAHs was limited to visits by general practitioners with little geriatric training.

Accident and Emergency (A&E) Department attendance as well as hospital admissions are common among elderly subjects in Hong Kong. It was reported that about half of the inpatients in a typical medical ward were geriatric patients aged 70 or above⁸. The study also showed that those from old aged homes actually constituted 28% of all acutely admitted elderly patients and nearly half of them were from POAHs. Another local report found that the cumulative hospitalization rate over six months in POAHs was 50%⁶. In addition, recurrent readmission was more common in elderly subjects living in OAHs⁹. The elderly patients from POAHs were usually physically frailer than those from their own homes and subvented OAHs¹⁰. Hence, the demand of aged people, especially those from POAHs for health care services in Hong Kong is really enormous.

In order to provide a seamless health care system in Hong Kong, the Hospital Authority has emphasized the need of extending the health services to the community. In line with this direction, nine CGATs were established in 1994⁴. Initially, they aimed at providing services to the subvented OAHs such as old age hostels and C&A homes only. Since July 1999, all the CGATs in Hong Kong have also been providing services to the private old age homes. At present, there are totally 12 CGATs serving different districts in Hong Kong.

The Hong Kong West CGAT is a multi-disciplinary team composing of geriatricians, geriatric health nurses, physiotherapists, occupational therapists, medical social workers, pharmacist, dietitian and podiatrist. The team is based at Fung Yiu King Hospital, a 296 bed geriatric rehabilitation and convalescence hospital located in Sandy Bay, Pokfulam, Hong Kong. The Hong Kong West CGAT serves the Central, Western and Southern Districts of Hong Kong, which are districts with a high proportion of elderly people. Recent studies in these districts have shown that the percentage of elderly subjects aged 65 or above is 10.7%, higher than the overall average of 10.1% in Hong Kong¹¹.

The Hong Kong West CGAT developed its service to the POAHs in several phases. The first phase started in July, 1998 with a Community Geriatric Assessment Service (CGAS) commenced on four POAHs. The second phase commenced in

September 1998 with the additional coverage of 4 more homes. The third phase began in July 1999 when the coverage was extended to a total of 14 homes. In November 1999, the fourth phase came and the number of POAHs visited by the team increased to 21, covering approximately 60% of all the POAHs in the district. The individual capacities of the 21 POAHs ranged from 40 to 293 residents per home.

One of the objectives of extending geriatric services from hospital to the community is to reduce unnecessary A & E attendance and hospital admissions. In addition, it is desired that by introducing geriatric input, the problems of polypharmacy and multiple clinics attendance can be reduced. In the long run, their staff can have more time to improve the health care and quality of life of the residents. To date, some studies have demonstrated the benefits of CGAS to subsidized homes⁴. However, whether CGAS is also effective in POAH is still unknown, as well designed study in this area is still scarce.

This study aims at examining the benefits of Hong Kong West CGAT POAH services, especially in terms of A & E attendance, hospital admission rates, number of hospital bed-days, polypharmacy and multiple clinics follow-up.

Methods:

The first 14 POAHs covered by Hong Kong West CGAT were included in the study. The POAHs were visited by eight geriatric health nurses who performed screening on all the residents of age 60 or above. Geriatric health nurses were specialist nurses with more than two years of experience in geriatrics. In addition to screening, they advised the POAH staff on various aspects of geriatric nursing care. They also encouraged the POAH staff to contact them during office hours for ad hoc problems of the elderly clients. Through screening, the background data of the subjects was collected on a standardized form. For every subject, information on demographic and socio-economic background was collected. Abbreviated Mental Test (AMT) (Cantonese version) and Barthel Index 20 (BI) were scored for mental and physical status respectively^{12,13}. The presence of common geriatric problems such as incontinence, polypharmacy and pressure sores was noted. The geriatric health nurses also recorded those who needed special procedures such as urinary catheterization, nasogastric tube or gastrostomy tube feeding.

Brief visual and hearing assessment were performed in each subject. The older persons were

classified to have visual impairment if they could not read newspaper prints clearly, watch television with clear image and/or count fingers held in front of them correctly with the use of corrective devices. Those who needed louder than normal voice for communication were classified as impaired hearing.

After assessment by geriatric health nurses, the elderly subjects who had common geriatric problems, polypharmacy, frequent readmission, multiple pathology and clinic attendance were selected to receive regular CGAT medical attention by the visiting geriatricians. As part of the comprehensive geriatric assessment, special efforts were made by the geriatricians to reduce polypharmacy and multiple clinic attendance. The various specialist outpatient clinics were informed that their patients were being visited by CGAT and asked if they would like to continue follow-up in their respective clinics. After the initial assessment, the elderly persons would be seen again regularly by the CGAT geriatricians, usually every 4 to 8 weeks. In addition, elderly residents with ad hoc medical problems may be referred to the Elderly Assessment Clinic in the geriatric day hospital of Fung Yiu King Hospital for timely medical consultation and early intervention by the geriatricians during office hours.

The elderly subjects who had been seen regularly by geriatricians of CGAT for at least six months were included in the study. Those who had defaulted or died within six months after first seen by CGAT doctors were not included into the study. The number and types of diagnosis laid down by the CGAT doctors were recorded. In addition, the number of regular medications and outpatient clinics attended by the older subjects six months before and six months or more after the first CGAT doctor visit was calculated. The subset of residents who had been seen by the CGAT for over one year was further analyzed. The number of A&E attendance, acute and convalescence hospital admissions in the year before and after CGAT medical intervention were traced by using the Hospital Authority In-patient Administrative

System (IPAS). The number of hospital bed-days in both acute and convalescent hospitals during the year before and after CGAT medical intervention was also obtained from the IPAS.

Statistical analysis

Descriptive statistics were performed in demographic characteristics, number of diagnoses and medications, AMT and BI scores, A & E attendance, number of acute and convalescence hospital admissions, and number of hospital bed-days. Continuous valuables were expressed as mean \pm standard error of the mean (mean \pm SEM). Paired student t test was used to compare the differences between the means. Pearson's correlation was used to assess the relationship between the number of medications and diagnoses as well as AMT scores and BI scores. Statistical significance was accepted as $p < 0.05$. The statistical analysis was done by the Statistical Package for Social Science (Windows version 7.5; SPSS Inc, Chicago, United States).

Results:

A total of 316 elderly subjects were studied. The individual capacities of the 14 POAHs included in the study varied from 40 to 215 residents. The average duration of follow-up by the CGAT after the first doctor's visit was (mean \pm SEM) 359.4 \pm 7.57 days (range 180 to 677 days). The demographic

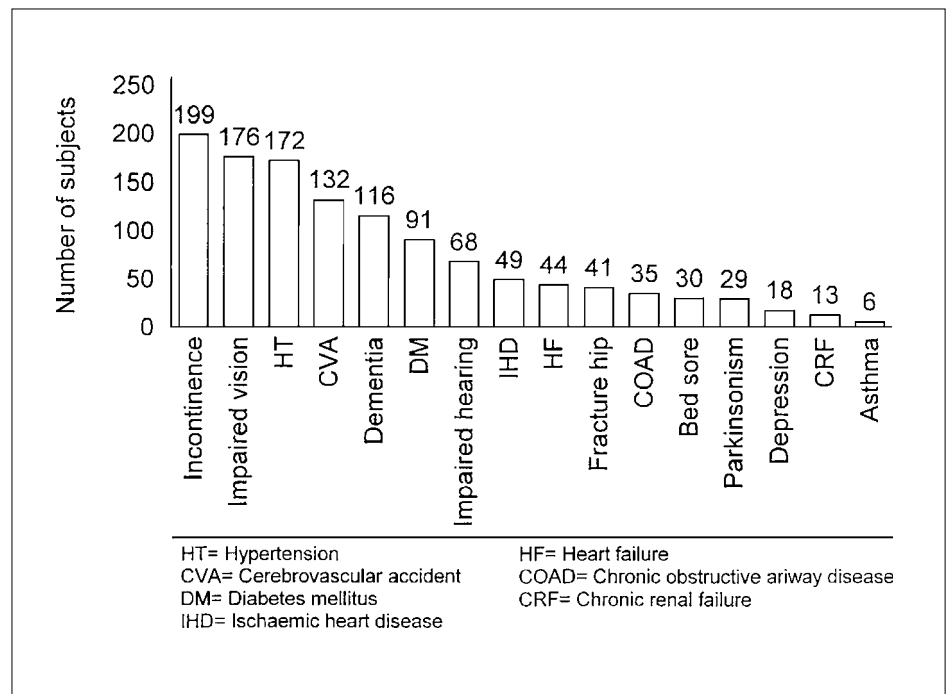


Figure 1 : Common problems and diagnoses of the POAH subjects (N=316)

valuables, initial number of diagnoses and medications, and AMT and BI scores were all tabulated in table 1. Significant correlation was found between AMT and BI scores (Pearson's correlation $r = +0.54$, $p < 0.01$). The number of diagnoses also correlated with number of regular medications and outpatient clinics (Pearson's correlation $r = +0.39$ and $+0.36$ respectively, both $p < 0.01$). The frequencies of the common problems and diagnoses were shown in (figure 1).

The average number of regular medications was reduced by 10% after six months or more of CGAT intervention as compared with initial assessment (mean \pm SEM)(3.12 ± 0.12 vs 2.8 ± 0.1 , $p = 0.001$). Among the 316 studied subjects, the number of elderly persons taking over five regular drugs before and after six months or more of CGAT intervention was reduced from 70 to 48 subjects. In addition, a 54% decrease in the number of outpatient clinics was seen after 6 months or more of CGAT intervention (mean \pm SEM)(1.48 ± 0.05 vs 0.67 (0.04, $p < 0.001$). The number of subjects having three

outpatient clinics or more prior to and after CGAT services was decreased from 38 to only 8 subjects.

After one year of CGAT intervention, there was a 19% reduction in A & E attendance as compared to the year before CGAT services (mean \pm SEM)(1.43 ± 0.17 vs 1.77 ± 0.2 , $n = 142$, $p < 0.05$)(figure 2). Twenty two percent reduction in acute hospital admissions was found in the year after CGAT follow-up as compared to that prior to receiving services (mean \pm SEM) (1.27 ± 0.16 vs 1.63 ± 0.18 , $n = 142$, $p < 0.05$) (figure 3). Although about 12% decrease in convalescence hospital admission was found before and after CGAT service, it did not reach statistical significance (mean \pm SEM) (0.71 ± 0.12 vs 0.81 ± 0.13 , $n = 142$, $p > 0.05$) (figure 3). When the number of bed-days was examined, 43% and 32% reduction in number of acute hospital and convalescence hospital bed-days respectively were observed in the post CGAT year as compared to the year before the follow-up (mean \pm SEM) (Pre-versus post-CGAT intervention; acute hospital: 8.4 ± 1.0 vs 4.8 ± 0.67 , $p = 0.001$; convalescence hospital: 15.5 ± 2.5 vs 10.5 ± 2.2 , $p < 0.05$) (figure 4).

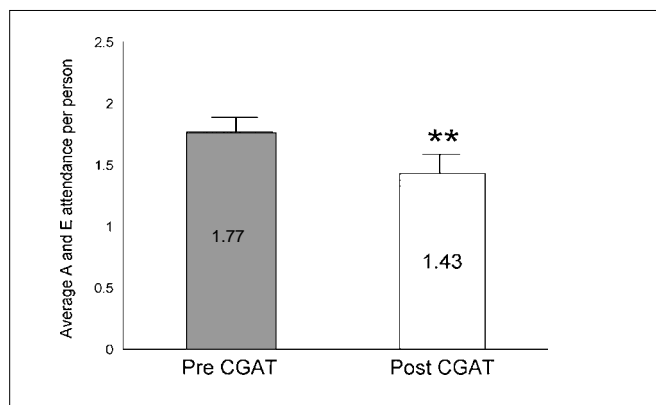


Figure 2 : Number of average A and E attendance per person in the year before and after CGAT intervention (N=142) (** $p < 0.05$)

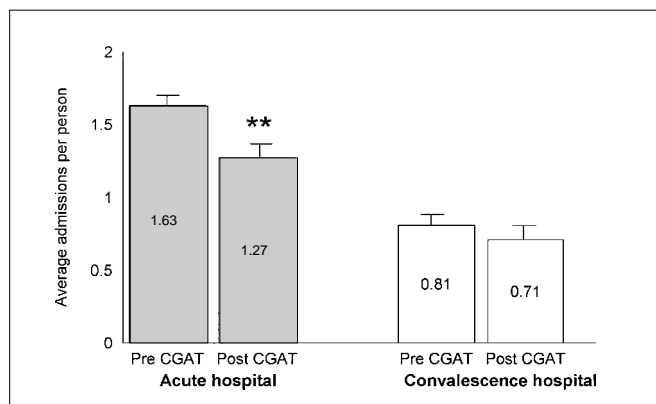


Figure 3 : Average number of admissions to acute and convalescence hospitals in the year before and after CGAT intervention (N=142) (** $p < 0.05$)

Discussion

Outreach geriatric assessment service had been pioneered in Australia since the 1980's. The Aged Care Assessment Teams (ACATs) have now become an important component of the Australian aged care system¹⁴. The ACATs play an important role in determining the eligibility of admission to residential care and arranging prompt provision of community services. Unlike the Hong Kong model, the ACATs do not provide direct medical care to the older persons, as this is primarily the responsibility of the family physicians in Australia. Apart from providing specialist geriatric service, the CGATs in Hong Kong provide certain degree of primary health

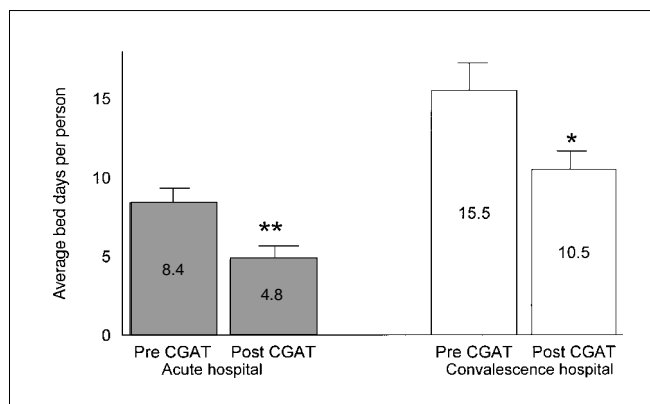


Figure 4 : Average acute and convalescence hospitals bed days per person in the year before and after CGAT intervention (N=142) (* $p < 0.05$; ** $p = 0.001$)

Table 1. Demographic and background information of the POAH residents

	Number	(%)	Values (Mean \pm SEM)
Total subjects	316		
Male	101	32	
Female	215	68	
AMT scores			4.05 \pm 0.17 (n=296)*
AMT scores < 6	193	61	
AMT scores = 0	57	18	
BI scores			10.1 \pm 0.39 (n=312)*
BI scores < 10	137	43.3	
BI scores = 0	40	12.6	
Duration of follow-up (counted from first doctor's visit)			359.4 \pm 7.57 days (range 180 to 677 days)
Number of diagnosis			4.15 \pm 0.09 (range 1 to 9)
Diagnoses \geq 5	53	16.8	
Number of regular drugs			3.12 \pm 0.12 (range 0 to 10)
Regular drugs \geq 5	70	22.1	
Number of outpatient clinics			1.48 \pm 0.05 (range 0 to 5)
Outpatient clinics \geq 3	38	12	
Urinary catheterization	9	2.8	
Nasogastric feeding	16	5.1	
Gastrostomy feeding	1	0.3	

* AMT and BI scores were available in 296 and 312 subjects respectively.

care services in the aged homes. One of the reasons is the insufficient primary care support to the local aged homes by the general practitioners, particularly those with geriatric experience¹⁵.

When the CGAS was pioneered in 1994 in Hong Kong, its service in the aged homes was mainly limited to the government subvented homes⁴. The decision of extending its service into the private sector is indeed a bold one. The private homes largely outnumber the subvented ones, and the quality of care is in general inferior and the carers are usually untrained and with insufficient nursing and medical knowledge. Most of the residents are frail with multiple geriatric problems.

The frailty of the POAH residents selected to receive regular CGAT follow-up after initial screening by geriatric health nurses was well demonstrated in this study, in which multiple pathology, polypharmacy and common geriatric problems predominated. Their basic activity of daily living (ADL) was highly dependent as shown by an average BI score of around 10/20 (table 1). Forty subjects (12.6%) out of the 316 had BI scores of 0/20 (table 1). This indeed was a great contrast to the results of a survey in the Central and Western districts which showed that only 1% community elderly subjects were totally ADL dependent¹¹. As a matter of fact, high degrees of dependency and frailty were also reported by two POAH surveys in other Hong Kong districts^{6,7}. Previous studies

reported that the prevalence of incontinence in elderly over the age of 60 living in community was 3.2% while that in the care and attention homes were 23.3%¹⁶. In the present report, urinary incontinence was found in 63% of the studied subjects (figure 1). In another survey done in Hong Kong, urinary incontinence was found in 40% of the POAH residents⁶. The high prevalence of urinary incontinence in POAHs could be related to the frailty of the POAH residents as well as the policy of many POAHs to put more dependent clients on diapers. Impaired vision and hearing were found in 56% and 21% of the studied subjects respectively (figure 1). The high prevalence of incontinence, impairment of vision and hearing detected here spoke for itself that measures targeted to these issues would be essential to improve the quality of life of the POAH residents.

The dependency of POAH subjects could be partly explained by the high prevalence of cognitive impairment and the significant positive correlation between BI and AMT scores. The average AMT score in the POAH subjects was 4/10, with 61% having AMT score <6/10 (table 1). This was again a marked contrast to the dementia prevalence of 6.1% in the local community dwelling older population¹⁷. On the other hand, there were relatively few subjects with pressure sores, nasogastric tube and gastrostomy feeding. This might be an underestimation as most of the subjects requiring non-oral feeding and/or with pressure

sores were usually very frail and some of them might have died or admitted to infirmary care in hospital within six months after CGAT initial assessment before they could be included into the analysis.

Polypharmacy in elderly patients could lead to problems such as drug side effects, adverse drug reactions, higher chance of drug interactions, risk of drug non-compliance, and increased drug expenditure¹⁸. The reduction in number of medications by 20% was the result of the effort and determination of the CGAT to minimize polypharmacy. As a matter of fact, it is not an easy task as most of the POAH residents had multiple pathology and the number of diagnoses was shown in this study to correlate with the number of medications positively. As a corollary to their multiple pathology, elderly patients usually needed frequent and multiple clinics attendance¹¹. This unfortunately caused much hardship to older patients, especially those with impaired mobility, who needed to travel to various clinics for follow-up. Moreover, much of the valuable time of the POAH staff was spent to escort their residents to attend various outpatient clinics. It also increased the workload of the Non-emergency Ambulance Transport Service (NEATS) as well as the already overcrowded hospital and general outpatient clinics. The present study demonstrated that CGAS to POAH could reduce more than half of the outpatient clinic attendance. Hence, the POAH staff could have more time and energy to improve the quality of care to the residents. It was also encouraging to see that many specialists in the outpatient specialty clinics recognized the above benefits of CGAS and had referred their patients to CGAT for long term management.

The issue of whether CGAS is able to attenuate A&E attendance and hospital admissions is addressed in this study. Reduction of A&E service as well as acute hospital admissions was well demonstrated. The establishment of Elderly Assessment Clinic in Fung Yiu King Hospital represented the effort and dedication of the Hong Kong West CGAT to reduce the demand for A&E and acute hospital services. This allowed timely medical consultation for patients follow-up by CGAT in Fung Yiu King Hospital during office hours. Those elderly subjects with problems such as simple chest infection, fever, urinary tract infection, decreased general condition and deteriorated pressure sores were directly admitted to Fung Yiu King Hospital. Without the Elderly Assessment Clinic, these patients would have to attend the A&E and be admitted to an acute hospital. This also explained why the difference in convalescence hospital admissions after CGAT intervention was

not shown to be statistically significance in this study, as more elderly patients were clinically admitted to Fung Yiu King Hospital hospitals via Elderly Assessment Clinic instead of the A&E department. Moreover, the POAH subjects with CGAS support usually stayed in acute and convalescence hospital shorter (figure 4). One possible explanation was that the hospitals were able to discharge their patients earlier, as any remaining problems could be expertly handled by the CGAT in the private institutions.

The present results suggest that the Hong Kong West CGAT has won the first battle in POAH service by demonstrating the aforementioned benefits. Inpatient hospital services are expensive especially in acute hospital settings. Although cost saving is not calculated in this study, the significant attenuation of both acute and convalescence hospital bed days, together with decreased A&E and outpatient clinics attendance, and fewer medications per person all suggested that CGAS is an effective health care delivery model. Further study to examine the cost-effectiveness of CGAT service to POAHs is needed. In addition, there are yet many more challenges ahead in the POAHs for the CGAT to overcome, particularly in the field of promoting the standard of care and quality of life of the POAH residents.

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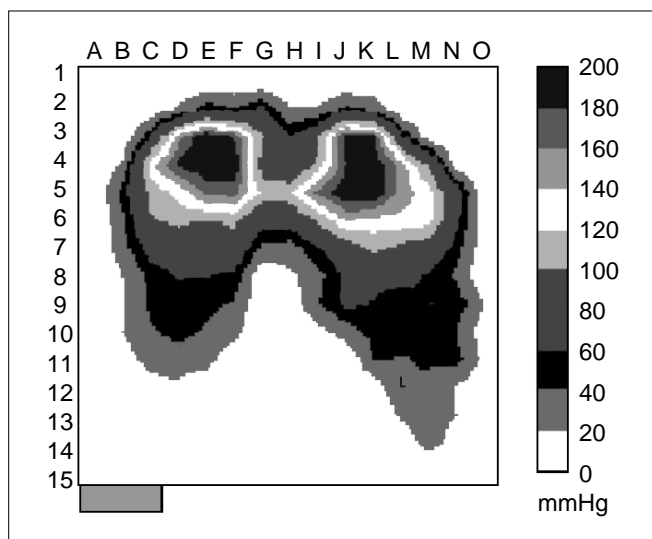
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LEARNING POINTS

1. **After 6 months of CGAT intervention, there was mean reduction of 10% on regular medication used and 54% reduction in specialist clinics follow up.**
2. **After 1 year of CGAT intervention, there were 19% reduction in Accident & Emergency attendance and 22% reduction in acute hospital admissions.**
3. **Acute bed days occupied was reduced by 43%, whilst that of post- acute bed days occupied was reduced by 32%.**

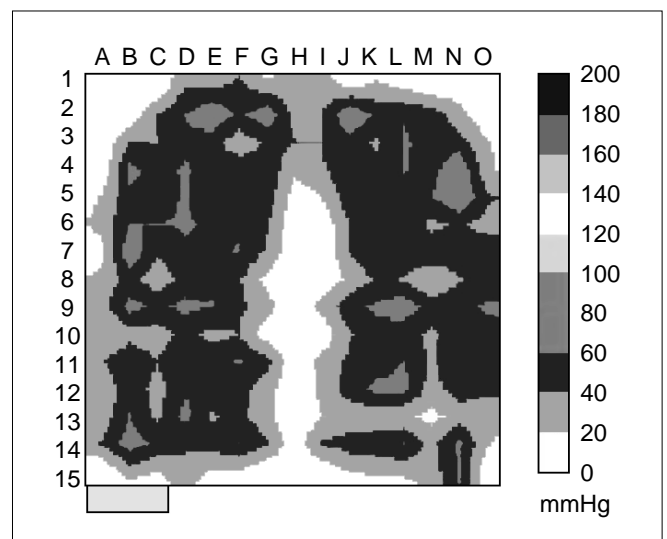
Pressure mapping to help design pressuring relieving devices.

Pressure Reading Without Cushion



Control after 2 hours
Weight: 70kgs
Average Pressure: 61.3mmHg
Maximum Pressure: 200mmHg

GelCell Pressure Reading



Gelcell after 2 hours
Weight: 70kgs
Average Pressure: 41.5mmHg
Maximum Pressure: 80mmHg