

Review of infirmary assessment in a community geriatric assessment service

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The infirmary assessment clinic was established at the Tuen Mun Hospital to assess the elderly registered on the central waiting list for the infirmary. The main purpose of the clinic was to look for appropriate candidates for infirmary placement and to deliver support to those who could remain in the community. A multidisciplinary approach was adopted for the assessment. Sixty-seven candidates were assessed and 51 were found to be qualified, i.e. 24% required a lower level of institutional care. With this rectification of the list, the clinic could save HK\$5.8 million in one year if all assessed candidates were placed in the appropriate level of institutional care for 12 months. Seventy-five per cent of eligible candidates had mental disabilities and 55% had physical disabilities. All mental disabilities could be categorised as dementia requiring support in activities of daily living. A dividing score (Mini Mental State Examination <15^{1,2} and Barthel index <60^{3,4}) was arbitrarily defined as a guiding score for the assessment. Although this was found to be sensitive (84%), it was not specific (62%). The decision was multifactorial and individualised.

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Introduction

The Community Geriatric Assessment Service (CGAS) commenced in August 1994 and included eight different clusters of geriatric teams. One of the aims of the service was to rectify the central waiting list for infirmary beds, as many of the candidates were believed to be misplaced in the list. Expected outcomes included a shortened list for infirmary beds, and the delivery of appropriate support.

To achieve this objective, an assessment clinic was established to serve the clients in our territory which includes Tuen Mun, Yuen Long, and North New Ter-

ritories. The updated list from the Hospital Authority's head office initiated the process. Each candidate was called for assessment according to their order in the list. A multidisciplinary approach was adopted for the assessment. Each candidate was seen by the medical social worker, nurse, occupational therapist, physiotherapist, and doctor. Following this, all disciplines sat in a case conference to decide on the appropriate placement of each individual and to define any further needs support as necessary.

It was decided to review the CGAS after 10 weeks of operation to highlight any deficiencies and to guide its future development.

Subjects and methods

This is a retrospective study by case note review. The study period was from 31 August 1994 to 16 November 1994. The items investigated included the clinic case load, client profile, the distribution of placement destinations, and admission criteria. The assessment scales used were the Barthel index,^{1,2} the Mobility score, and the Mini Mental State Examination (MMSE)³ [Cantonese version].⁴ The Mobility score is

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a measure which quantifies the ambulation of patients; the three items assessed were sitting balance, standing balance, and walking stability. Each item was classified as either satisfactory, fair, or unsatisfactory, with scores ranging from one to three. Hence, the total score ranged from three to nine.

Results

Within the study period, 92 patients were referred from the central waiting list. Of these patients, five died and 20 refused to participate.

The number of patients actually assessed was 67 (47 women, 20 men) and the mean age was 78 years (range, 31 through 97 years). The distribution of placement decisions is shown in Fig 1.

Of the 67 patients assessed, 16 were considered to need a lower level of institutional care, such as care and attention (C&A) home, hostel, or to remain in their own home in the community. The percentage of candidates considered ineligible after this assessment came to 23.9%. This did not include those who had refused to participate or who had died. If included, the non-eligible rate amounted to 44.6%.

There were five criteria for admission to the infirmary,⁵ namely, prolonged rehabilitation with potential of discharge, terminal illness, intensive nursing care, severe physical disability, or mental disability. The distribution according to different criteria is shown in Fig 2.

The total number of clients in Fig 2 exceeds 51 because some individuals had multiple reasons for admission. Nearly 75% (38/51) of clients suffered from mental disability which was the sole or one of the many reasons for their need for infirmary care. Fifty-five per cent (28/51) had some kind of physical disability. These represent the major demands for infirmary care. All of the mental disabilities seen were dementia causing dependent activities of daily living (ADL).

Some of those attending satisfied multiple criteria in the assessment. Physical and mental disabilities overlapped considerably. Almost one third (16/51) of clients had both physical and mental disabilities. Some individuals were admitted for rehabilitation with the potential for discharge. They constituted 3/51 or less than one per cent of the total. Indeed, they overlapped with convalescent patients, which explains the low referral rate.

Table 1. Comparison of functional status and placement

	C&A home (mean ± S.D.)	Infirmary (mean ± S.D.)	P value
MMSE	12.8 ± 8.0	5.2 ± 6.4	*P<0.005
Barthel index	66.0 ± 23.0	29.0 ± 25.0	*P<0.001
Mobility score	7.7 ± 1.3	5.1 ± 2.3	*P<0.001

* = P<0.001

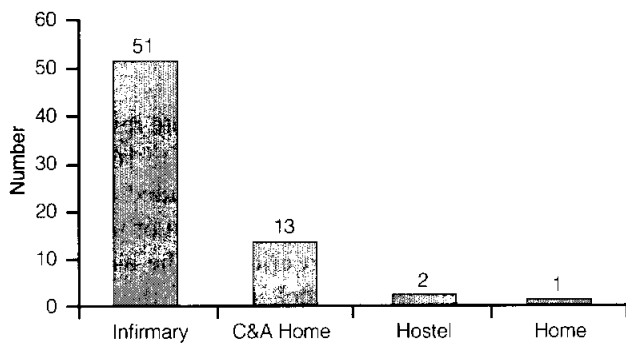


Fig 1. Distribution of placement decisions

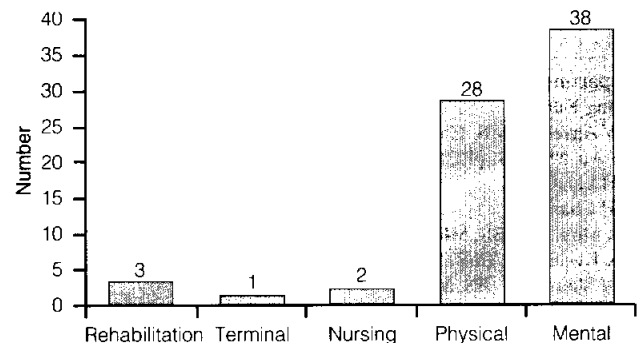


Fig 2. Distribution of different admission criteria

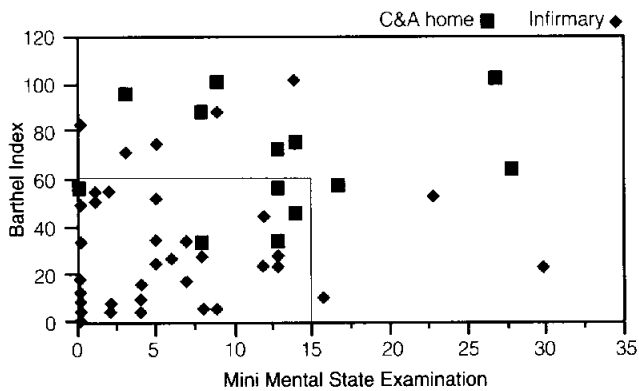


Fig 3. Scatter plot of patients (C&A and infirmary) on two dimensions: Barthel index vs Mini Mental State Examination (Correlation coefficient = 0.41)

The functional status of the two groups deemed eligible for the C&A home and the infirmary are compared in terms of their mean MMSE, Barthel index, and Mobility score using the one-tailed Student t test. The results are shown in Table 1.

The above two categories of clients are very different in terms of their mental and functional capacities. Table 1 gives an overall picture of the disability profile of the two groups. The functional scores of the clients were widely scattered when plotted with two individual dimensions (Figs 3 and 4).

The Barthel index and Mobility score plot showed the most linear relationship (Correlation coefficient = 0.85). If an arbitrary dividing score (MMSE < 15, Barthel index < 60) is chosen as the guiding score for infirmary care, an imaginary rectangle can be drawn on the lower left quadrant of Fig 3. Forty-three of the 51 infirmary candidates fell within this rectangle; eight of the 13 C&A candidates fell outside. The sensitivity and specificity of this dividing score were calculated using the actual placement decision as a guide. The sensitivity was $43/43+8$ (eight infirmary candidates plotted outside the rectangle) = 84%. The specificity was $8/8+5$ (five C&A candidates plotted inside the rectangle) = 62%.

Discussion

The North New Territories region is characterised by the predominance of private homes for the aged which accommodate many frail elderly people. Our sample may not be representative of the whole territory because of the small sample size and the number of refusals. Hence, the present report only serves as a preliminary review of the service.

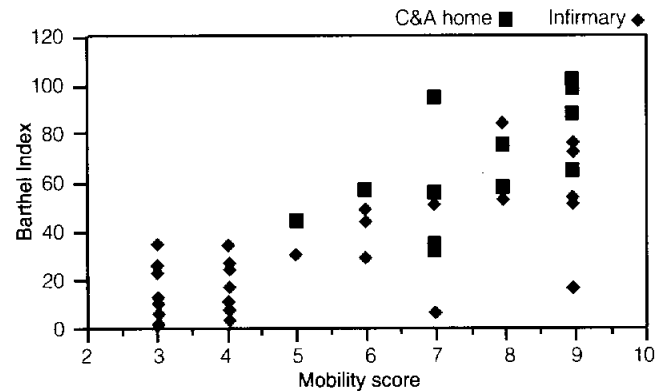


Fig 4. Scatter plot of patients (C&A and infirmary) on two dimensions: Barthel index vs Mobility score (Correlation coefficient = 0.85)

For those who refused to participate, their main concern was that they would be discharged if their condition improved and the present placement was already satisfactory. This concern was common for currently subvented C&A home residents.

The reasons for admission to the infirmary could provide useful information for the future development of the infirmary service. Physical and mental disabilities represented the major demands, being present in 55% and 75% of eligible clients, respectively. All mental disabilities could be classified as dementia causing dependent ADL. However, very few were actively psychotic. What these individuals most need is physical assistance to support their ADL.

Placing clients on the appropriate waiting list has tremendous resource implications, as otherwise, inappropriately placed candidates waste a lot of resources because the running cost of an infirmary bed is much higher than the cost of a C&A bed. The cost-effectiveness of the CGAS can be calculated by estimating the value of resources input and the cost-saving made by more appropriate placement.

Team personnel included a senior medical officer, a registered nurse, a physiotherapist grade 1 and an occupational therapist grade 1. Use of these staff members costs HK\$2114 per half-day session. During the study period, the input was 28 half-day sessions which amounted to $28 \times \text{HK\$}2114 = \text{HK\$}59\,192$.

The monthly running cost of an infirmary bed is HK\$12 000, that of a C&A bed is HK\$6800, that of a hostel place is HK\$4500, and that of remaining at home is nil. Hence, the money saved by the CGAS was: $(16 \times \$12\,000) - (13 \times \$6800 + 2 \times \$4500 +$

1 x \$0) = HK\$94 600 per month of residence. The saving is recurrent and accumulative because otherwise the candidate would have stayed in the more expensive institution for life. If the life expectancy of the candidate is one year (which is very conservative), the amount saved would amount to: HK\$94 600 x 12 - HK\$59 192 = HK\$1.08 million. The money saved per session would be 1.08 million/28 = HK\$38 428. The CGAS could potentially save in one year (150 sessions) = HK\$38 428 x 150 = HK\$5.8 million.

The above calculation is only one of the many approaches for evaluating the cost-effectiveness of the service. The saving is only valid when the candidate is definitely more independent than those requiring infirmary care. For borderline cases, it is arguable that it may be more expensive to keep elderly individuals in the community with support services than to give them infirmary care.

Figure 3 shows the more dependent infirmary candidates crowded in the lower left quadrant of the graph as expected. However, there were quite a number of outliers. The dividing score (MMSE<15 and Barthel index<60) was found to be sensitive (84%) but not specific enough (64%). This means that quite a number of C&A candidates would be placed in the infirmary, if the decision depended solely on these scores. Some patients overlapped exactly when plotted, but belonged to two different categories. The placement decision was a multifactorial one which included the extent of social support, continent state, and the carer's attitude. Hence, the decision is still individualised and not dictated by rigid scores. Because of this, the dividing score can only serve as a rough guideline.

Much of the clinic's emphasis focused on the placement decision, as this is one of the main reasons for referral. More services could be offered to the frail elderly who are referred to the clinic. A multi-disciplinary approach assessed the support needs of the elderly. This particularly applies to those who have decided to stay in the community and those waiting for admittance to the infirmary. It is not uncommon to discover hidden problems—of a medical, social, or psychological nature. Consequently, either specialist clinic, day hospital, day-care centre, meal service, home-helper, financial assistance, or community nursing service care were arranged.

In the future, the clinic will function as a support needs assessment, rather than a placement assessment centre. The placement decision should become only one element of the service. The clinic should aim to cover all of the frail elderly in the community and organise support care so that they can remain in the community. The ultimate target would be early assessment and intervention, thus avoiding unnecessary infirmary admission.

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