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Publication Details

This article was originally published as Siminski P, Bezzina A, Lago L, Eagar K, Trends in primary care presentations at emergency departments in New South Wales (1999-2006), *Australian Journal of Primary Health*, 14(3), 2008, 45-52.

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Abstract

This paper examines trends in potential 'primary care' presentations at EDs, comparing these with other ED presentations and to primary care attendances in the community.

Methods

The study draws on EDIS data (Emergency Department Information System), which at December 2005 covered 76 per cent of attendances in New South Wales, and MBS data from Medicare Australia. Annual counts of potential 'primary care' presentations to EDs are compared with those of other ED presentations and to primary care presentations in the community. Changes in the percentage of ED presentations that are potentially for primary care are examined, as are changes in the percentage of total primary care presentations seen in EDs. Trends in age standardised presentation rates are also calculated for each of the three series.

Results

Primary care presentations at EDs increased marginally in the period under consideration, as did primary care presentations in the community. There was a substantial increase in other ED presentations. The proportion of ED presentations potentially for primary care decreased over the period. The proportion of primary care presentations seen in EDs and the proportion seen in the community changed little.

Discussion

Decline in the proportion of potential 'primary care' presentations to EDs may have been impacted by new guidelines for the application of triage categories in 2001. However trends over time do not show acute alterations with the introduction of the guidelines and the trends continue to hold for the subsequent period after introduction of new guidelines.

Conclusion

'Primary Care' presentations at EDs are not responsible for recent changes to ED overcrowding in New South Wales, at least not for hospitals covered in the EDIS database. Future research might consider more specific trends in rural EDs.

Disciplines

Business | Health Policy | Social and Behavioral Sciences

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Trends in Primary Care Presentations at Emergency Departments in New South Wales (1999-2006)

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‘Primary Care’ presentations at EDs are not responsible for recent changes to ED overcrowding in New South Wales, at least not for hospitals covered in the EDIS database. Future research might consider more specific trends in rural EDs.

Introduction

Frequent media reporting suggests that Emergency Departments (EDs) in Australia are increasingly over-crowded with non-urgent cases that might best be treated in a community primary care setting (Mascarenhas, 2007; Robotham, 2006). This question has been the focus of vigorous debate among policy makers and clinician groups (Australasian College for Emergency Medicine, 2001, 2004; NSW Legislative Assembly, 2003a, 2003b). Policy makers have considered strategies to divert primary care attendees such as co-located primary care facilities with EDs (Mascarenhas, 2007).

Despite the level of debate and interest, the discussions have been based on limited evidence. The purpose of this paper is to add to this evidence to inform future debate and strategic planning. We examine the trend in ‘potential primary care attendances’ at EDs in New South Wales and compare this to other ED presentations and to primary care attendances in the community.

Literature Review

Internationally, most previous empirical work on ‘primary care’ presentations in EDs has focused identifying the absolute proportion of primary care presentations relative to total ED volume over short time periods (Gribben, 2003; Sempere-Selva, Peiro, Sendra-Pina, Martínez-Espín, & López-Aguilera, 2001; Sprivulis, 2003). One study examined the use of community services by patients identified as having presented to an ED for a primary care-type problem (Martin et al., 2002). These snapshots of ‘primary care’ cases have been reported to account for anywhere between 10% and 83% of total ED presentations (Gribben, 2003; Martin et al., 2002; Sempere-Selva, Peiro, Sendra-Pina, Martínez-Espín, & López-Aguilera, 2001; Sprivulis, 2003). This

range reflects not only differences in Emergency Departments and health systems but also the lack of agreement in what actually is a “primary care”, “inappropriate” or “general practice” type patient. Definitions of this patient group vary according to the context. They are often determined by consensus of the reviewing group e.g. primary care physicians or emergency physicians and often in a retrospective fashion. Formal review of the definition has been reported elsewhere (Bezzina, Smith, Cromwell, & Eagar, 2005). As a result of the difficulties in defining ‘primary care’ presentations, we have adopted an existing definition (Bezzina, Smith, Cromwell, & Eagar, 2005) and have focused on trends rather than absolute numbers.

Most previous studies have focussed on a single ED (Martin et al., 2002; Sempere-Selva, Peiro, Sendra-Pina, Martínez-Espín, & López-Aguilera, 2001; Sprivulis, 2003), though one study examined attendances at twelve EDs in New Zealand (Gribben, 2003).

Despite an extensive literature search, we were unable to identify any previous large multi-centre study that has investigated trends over time in the share of ED volume accounted for by apparent ‘primary care’ patients nor any study that compared such trends to that of primary care presentations in the community.

Methods

This study draws on two administrative data sets - EDIS (Emergency Department Information System), and Medicare data. At December 2005, EDIS covered 61 EDs in New South Wales, representing 76 per cent of attendances (NSW Department of Health, 2006). The EDs covered by this system include all major departments in New South Wales. The departments not included are a selection of small, rural, GP run services and some very small metropolitan units. The coverage of EDs has increased

in EDIS over time. To maximise comparability over time, any ED that was not represented in the data throughout the period from 1999-2000 to 2005-06 was excluded from all analysis. A total of 6.0% of attendances were excluded on this basis. The maximum proportion excluded for a given year was 11.6% in 2005-06. Based on a review of the literature (Bezzina, Smith, Cromwell, & Eagar, 2005) and following previous empirical work (Masso, Bezzina, Siminski, Middleton, & Eagar, 2007; Siminski et al., 2005), ED attendances were classified as “potential primary care” (PPC) when they met all of the criteria below:

- low urgency and/or acuity (Category 4 or 5 on the Australasian Triage Scale)
- did not arrive by ambulance
- were presenting for a new episode of care and
- were not admitted.

Whilst it would also have been preferable to further limit the definition to those who were self-referred, source of referral was not available in EDIS across departments over the period under consideration. We use the prefix “potential” to highlight that not all such patients would have been appropriate to manage within a community setting. At the outset it needs to be very clear that the retrospective nature of the data review and the limitations of the definitions used mean that absolute numbers in this assessment are not real numbers of primary care presentations and as such it would be misleading to draw conclusions from these. Our *a priori* assumption however is that the trends in the group we have defined will reflect the trends in any group of “real” primary care presentations to Emergency Departments.

Primary Care attendances in the community were defined to include Medicare Benefits Schedule groups A1 ‘General Practitioner’; A14 ‘Health Assessments’; A18 ‘GP attendance associated with PIP incentive payments’; A22 ‘GP after-hours

attendances to which no other item applies'; and M2 'Unreferred Attendances - Practice Nurse Items'. The data used are administrative records for the NSW population, obtained online from Medicare Australia (Medicare Australia, 2007a). Groups A22 and M2 were introduced to the schedule in 2004-05 and 2003-04, respectively. Medicare Australia advises that the introduction of new items to the schedule should be interpreted as a genuine increase in service volume rather than a reclassification of existing services (Medicare Australia, 2007b).

All presentations to Primary Care (including follow up visits) in Medicare data base are considered whereas the ED related definition includes only first presentations since the assumption is that follow up visits would by definition have been deemed appropriate for ED.

The motivation of the study is to examine the extent to which changes in ED volume are attributable to PC presentations. Thus we begin by presenting a time series of crude counts for each of the three categories of attendances (PPC ED; non-PC ED; PC community), indexed to 1.00 in 1999-2000. There is no need to conduct tests of statistical significance, since we use population data.

Next we present a time series of the proportion of ED presentations that are PPC, which is equal to the number of PPC ED presentations divided by total ED presentations in each period. This is followed by a time series of the percentage of total primary care presentations that occur at EDs. This is defined as the number of PPC ED presentations divided by the sum of PPC ED presentations and PC Community presentations. The levels of both percentages need to be treated with some caution, given the definitional and coverage issues described above. The focus is on the change in each series over time.

To further investigate these trends, we calculate age standardised presentation rates. These were calculated for each of the three types of attendances using the administrative data and the estimated resident population for NSW (Australian Bureau of Statistics, 2006). These rates were directly standardised to the 2000-01 state population, using five-year age categories for ED presentations and ten year categories for PC community attendances due to data availability. (More precisely, the age categories for PC community attendances were 0-4 years; 5-14; 15-24; 25-34; 35-44; 45-54; 55-64; 65-74; 75-84; 85+. This is not expected to have a substantive impact on the results). The choice of 2000-01 was arbitrary, but the use of other years makes no substantive difference to the findings. This is demonstrated in the results section. Direct age standardisation is a statistical technique that removes the effect of differences in age structure between populations (Fleiss, Levin, & Paik, 2003). The presentation rates should be interpreted cautiously, since the hospitals covered in the data do not service the entire NSW population. For this reason we do not show presentation rates. Instead, we index presentation rates to 1.0 in 1999-2000, since our interest is in how the series change over time.

The study was approved by the University of Wollongong / Illawarra Area Health Service Human Research Ethics Committee and permission to use the EDIS data was granted by NSW Health.

Results

Presentations

In 2005-06, there were 1.53 million presentations to the EDs included in the analysis, an increase of 13.8% over 1999-2000. The main results are shown in Figure 1, which presents an annual index of crude (not standardised) ED and community primary care

presentations between 1999-2000 and 2005-06. The scale is indexed at 1.00 to the count in 1999-2000 for each series. It is clear that non-PC presentations increased by a greater proportion than PC presentations. Non-PC presentations increased by 19.7% between 1999-00 and 2005-06. PC presentations increased by 6.4% over the same period, including a 6.7% increase in presentations from 2004/05 to 2005/06. There were 34.7 million primary care attendances in the community, having increased by 7.5% since 1999-2000. Whilst community PC attendances are dominated by Group A1 (at least 92% in each year), all of the increase was due to Groups A22 and M2, which were introduced to the schedule in 2004-05 and 2003-04, respectively.

[FIGURE 1 ABOUT HERE]

This discrepancy between growth in PC and non-PC attendances is observed for metropolitan EDs (19% increase for non-PC attendances; 5% for PC attendances) and non-metropolitan EDs (23% increase for non-PC; 12% for PC). Similar patterns were found for EDs in teaching hospitals (18% for non-PC; 10% for PC) and in non-teaching hospitals (22% for non-PC; 4% for PC).

The percentage of ED attendances that are potentially for primary care are shown in Figure 2 and the percentage of all primary care attendances (including attendances in the community and ED potential primary care attendances) that occur in EDs are shown in Figure 3. These data show that PC presentations have steadily decreased as a fraction of ED volume, by a total of 2.9 percentage points. As a proportion of all PC presentations, those that occur at EDs have remained steady at around 1.8%.

[FIGURE 2 ABOUT HERE]

[FIGURE 3 ABOUT HERE]

Age standardised presentation rates

An index of age standardised presentation rates are presented in Figure 4. As is the case for crude presentations, the age standardised non-PC attendance rate increased by more than the corresponding PC attendance rate (12.3 percentage points compared with 3.1 percentage points). The discrepancy is smaller than the discrepancy on raw presentations (13.3 percentage points). This reflects the fact that the heaviest users of non-PC ED care (the elderly) have increased as a fraction of the population, while the heaviest users of primary care at the ED (infants) have decreased in absolute and relative terms. Nevertheless, the difference in the increase of the two series remains substantial.

The discrepancy between PC ED and non-PC ED presentation rates was found for both genders in every 5 year age group under 60 years and over 80 years. For 60-79 year olds, however, age standardised PC presentation rates increased by more than that of non-PC rates for both genders. For 60-79 year old males, the PC rate increased by 9.2% and the non-PC rate increased by 1.2%. The corresponding increases for 60-79 year old females were 9.8% and 4.6%.

The standardised rate of PC attendances in the community exhibited a similar trend to the PC-ED rate. It decreased by 4.0% between 1999-2000 and 2002-03, before returning to 1999-2000 levels by 2005-06. The results are not sensitive to the reference year for standardisation. For example, with 1999-2000 as the reference year, the corresponding growth in rates between 1999-2000 and 2005-06 are 3.1% for PC-ED presentations, 12.3% for non-PC-ED presentations and 0.3% for PC-Community.

With 2005-06 as the reference year, the corresponding percentages are 3.1%, 11.9% and 0.2%, respectively.

[FIGURE 4 ABOUT HERE]

Discussion

These data provide a foundation for review and future discussion of the issue of 'primary care' in ED. It is the first assessment of actual trends using a formalised definition of 'potential primary care' rather than subjective impressions or proxies such as triage categories in isolation. To the authors' knowledge, similar exercises have not been published in the academic literature.

This work cannot and does not attempt to address issues such as the efficacy of provision of alternative services, relative resource needs between PPC and non-PPC patients nor what drives patient choice of service they attend. Further it does not consider philosophical issues as to whether ED should provide a component of primary care as a safety net.

Whilst several criteria were used to define potential primary care presentations, the results were driven by a gradual fall in the proportion of presentations classified into triage 4 or 5, from 65.6% in 1999-2000 to 57.9% in 2005-06.

There is undoubtedly further room for investigation. The approach utilised here is retrospective and, by virtue of that, uses an imperfect definition for potential primary care. In an absolute sense our data, premised on our definition, show that the PC cases are 44 to 41% of overall presentations. However the nature of the application of the definition is such that it captures a much broader group than 'real primary care' cases. There is no way of knowing the precise proportion. However, a snapshot study done in Australia and using similar definitions found the proportion of absolute

presentations for 'primary care' to be as low as 10% (Sprivulis, 2003). The absolute proportion we have captured must be clearly understood as indicative of trends in primary care cases rather than of absolute numbers.

The limitation in the definition will bias the numbers of PC presentations upwards. On the other hand, the incomplete geographical coverage of EDIS results in a downward bias in all ED presentations, affecting comparisons with community attendances. The results are only valid for the set of hospitals covered in the analysis. They should not be generalised to hospitals not included in the EDIS database over the entire period under consideration. The results do hold, however, for both metropolitan and non-metropolitan hospitals that are in the EDIS database. Future research might consider more specific trends in rural EDs.

The findings must also be considered in the context of progressive health system changes over the last 10 years. The results are contingent on the assumption that norms of assignment to triage categories have not changed over the period. Whilst there has been no substantive change to the actual triage criteria and benchmarks, the possibility of changes to norms of practice cannot be ruled out. Indeed in 2001 the National Triage Scale (NTS) became the Australasian Triage Scale (ATS) and whilst the categorisation and the associated benchmarks remained the same, more comprehensive descriptors were provided to aid in judging the footprint of each triage category. In particular this focussed on the subsets of mental health and paediatric presentations (McCallum, 2006). Yousif, Bebbington & Foley (2005) determined that indeed there was an associated practice shift in their Emergency Department after the introduction of the new scale with a tendency to triage less into lower acuity categories 4 and 5 with decreases of 15% and 67% respectively. Counter to this, the NSW EDIS data shows no marked alteration around the time of the introduction (Late

2001). Trends in proportions of ED PC presentations were falling from 1999 onwards without any appreciable change to the gradient after the 2001 – 2002 timeframe (Figure 4) until 2003 - 2004. In absolute numbers ED PC presentations began falling in the 12 months prior to the introduction of new descriptors. In addition the new descriptors provided a focus on paediatrics and mental health and yet changes in the paediatric group are not significantly different to other age groups. Furthermore, similar conclusions are drawn even if the analysis is restricted to the ATS period. Between 2002-03 and 2005-06, PC presentations increased in raw terms by 5.9%, compared to 8.6% for non-PC presentations.

In addition there are practice changes related to disposition decisions where cases that previously mandated admission after emergency care are now managed via “ambulatory care/ hospital in the home” services. There is potentially a growing population of these patients who are not genuine primary care cases, as they require significant acute diagnostic work up and the introduction of intravenous treatment regimes. However, they are low acuity (e.g cellulitis, mild to moderate severity pneumonia with no associated co-morbidities) and would be caught in our definition of “potential primary care” as they would not be admitted.

Of note is the sharp increase in 2005-06 in PC and non-PC presentations to Emergency Departments. The available data do not allow a clear understanding as to potential causes for this. Notably the relationship between PPC and non-PC presentations remains fairly constant. While potential primary care presentations as we define them here do constitute a large proportion of ED attendances they are, relative to the overall cohort of primary care cases, consistently a marginal group, constituting less than 2% of total primary care attendances.

Conclusion

Far from being a key cause of ED presentation increases; primary care presentations appear to have declined as a proportion of all ED presentations. On an age-standardised basis, PPC presentation rates have increased slightly over the period under consideration (3.0%), compared with a 12.2% increase in other ED presentations. Any increase in overcrowding being driven by an increase in volume, is attributable to non-PC cases.

Acknowledgments

We acknowledge the valuable comments provided by Janette Green and the anonymous referees. The State Commonwealth Research Issues Forum (SCRIF) through the NHMRC funded this study. New South Wales Health provided EDIS data.

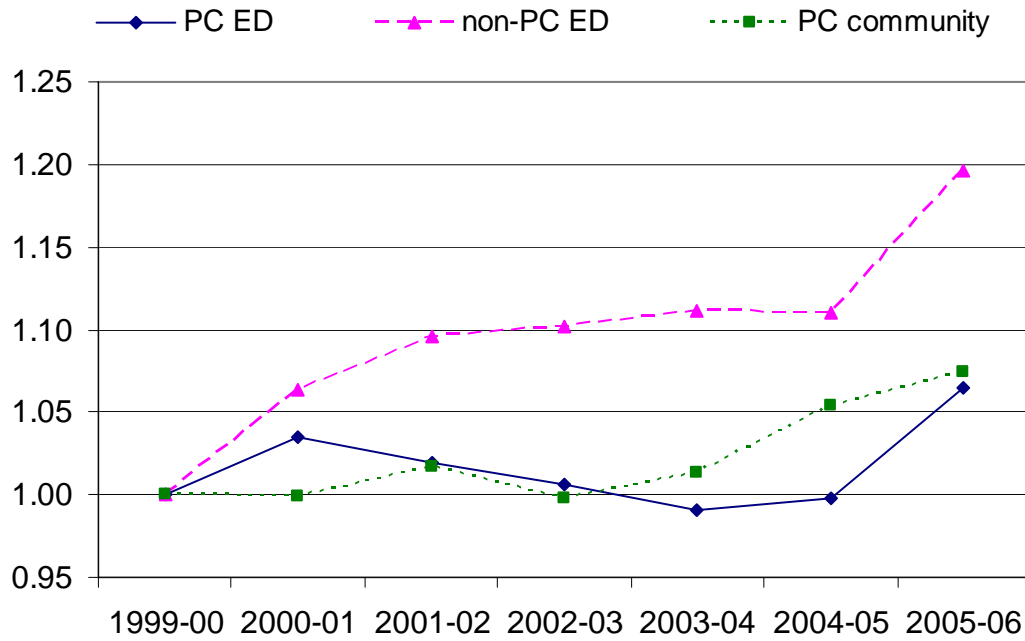
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Figure 1 Index of ED and PC Community Presentations (1999-2000 = 1.00)



Notes:

PC ED = 'Potential primary care' presentations at EDs

Non-PC ED = Other presentations at EDs

PC community = Primary care presentations in the community

Figure 2 Percentage of ED attendances that are potentially for Primary Care

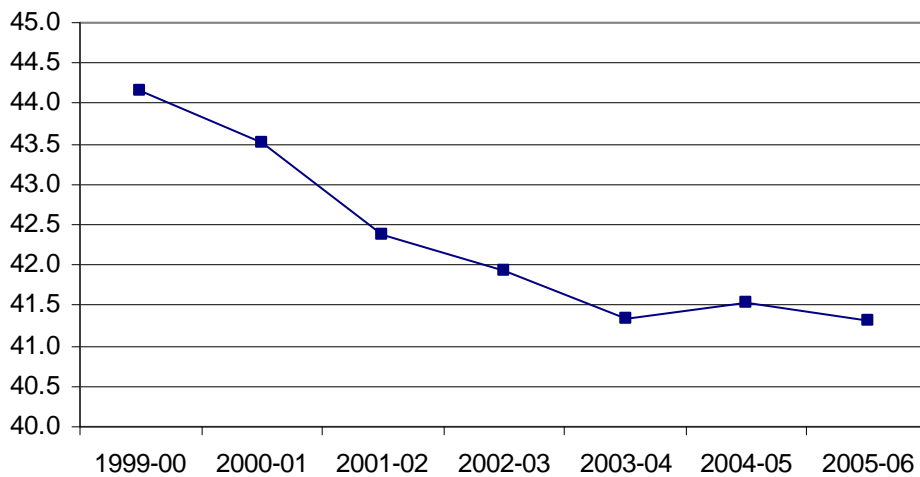


Figure 3 Percentage of Primary Care attendances that are in EDs

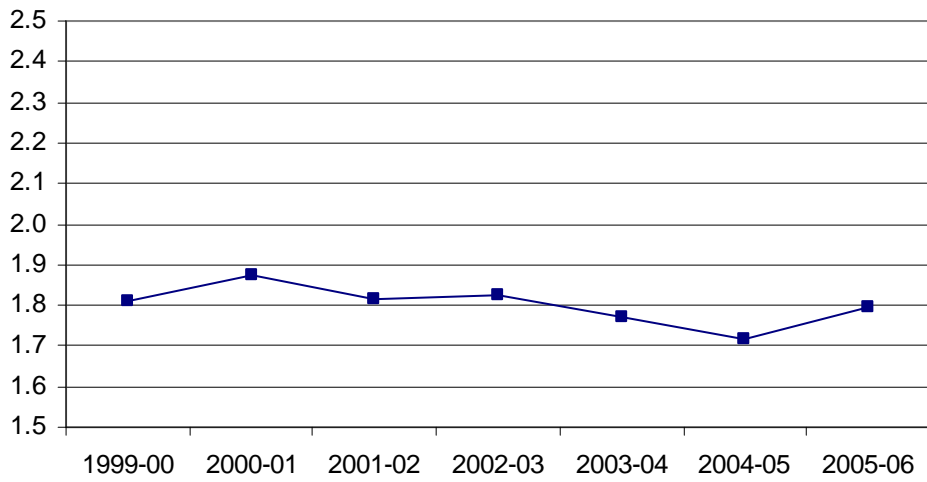
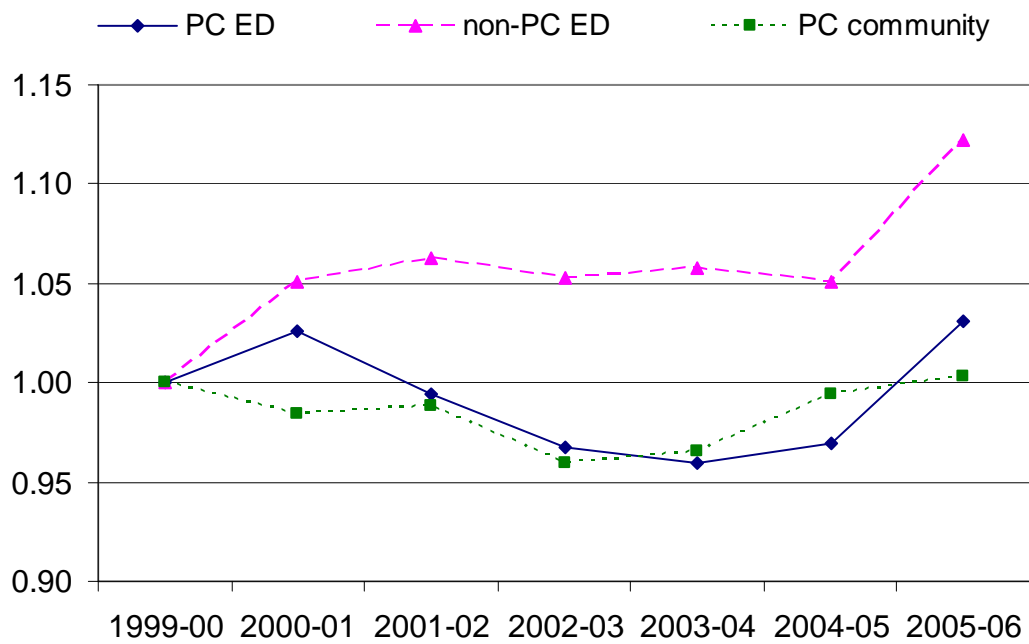


Figure 4 Index of age standardised presentation rates (1999-2000 = 1.00)



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 PC ED = 'Potential primary care' presentations at EDs
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