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HOSPITAL ADMISSIONS FOR AMBULATORY CARE SENSITIVE CONDITIONS NORTH COAST AREA HEALTH SERVICE 2001 TO 2006

THREE PAGE SUMMARY

Background

The continued increase in hospital admissions, beyond population growth, is one of the major issues facing health services throughout NSW. Recent reports indicate that people who lived in remote or very remote areas of NSW were more than twice as likely to be hospitalised for potentially avoidable conditions compared to those living in metropolitan areas [1, 2, 3, 4, 5, 6, 7]. Reducing avoidable hospital admissions through early intervention, preventive care and early disease management (usually delivered by general practitioners or other primary health care) will lead to improved health outcomes and enable better management of hospital resources.

Currently there are no agreed definitions of avoidable hospital admissions. An indirect measure of avoidability focuses on hospital activity, or admissions of people with ambulatory care sensitive (ACS) conditions. These are conditions for which hospitalisation is considered potentially avoidable through preventive care and early disease management, usually delivered in the primary care setting [2] . Analyses of hospitalisation rates for ACS conditions are also used as an indicator of access to, and quality of primary care.

There is surprisingly little, if any, hypothesis-driven research on the factors that predispose people to frequent and avoidable hospitalisation in rural settings and specifically, how these differ to urban dwellers. A wide range of complex and interacting factors reportedly account for hospitalisation rates for ACS conditions [2, 7, 8]. Central to this research question is the notion of 'access' and how this influences health service use, health outcomes and quality of life [3].

A greater understanding of how these factors [i]affect admission patterns for rural patients is needed. This research project investigates multiple admissions for ACS conditions. The analysis uses hospital admissions data linked for individuals over a 5 year period from July 2001 to June 2006.

Objectives

The primary objectives of this study were to:

1. Quantify the extent of multiple hospital admissions and hospital admissions for ACS conditions in the NCA;
2. Identify which potentially avoidable conditions are responsible the largest proportion of avoidable admissions and describe these in detail; and
3. Describe multiple admissions for selected ACS admissions in a sample of SLA's in the NC

Methods

The study population covered nearly 500,000 persons across North Coast NSW (formerly the North Coast Area Health Service (NCAHS)). A more detailed sub-analysis of five smaller sub-regions representative varying socio-economic profiles of the North Coast population was performed. The following *priority* ACS conditions: Angina; COPD; Diabetes; Heart Failure; Pyelonephritis; Cellulitis; Asthma. Data were analysed on all hospital admissions for all NCAHS residents from 1 July 2001 to 30 June 2006, linked by person. After exclusions for unplanned admissions there were a total of 269,831 persons with 633,956 admissions, resulting in a total of 2,335,157 bed days within NCAHS hospitalisations over the 5 year study period.

Results

On average 15% of the NCAHS population were admitted to hospital at least once per year during the five year study period. Eleven percent of all admissions in the NCAHS during the study period were ACS admissions, accounting for around 12% of all bed days. Of those persons with multiple ACS admissions, 60%

were readmitted on separate occasions for different ACS conditions. While 80% of people admitted for non-ACS conditions had no comorbidities, only 50% admitted for ACS conditions had no comorbidities.

There was substantial variability in the indirectly standardised rate of hospitalised persons, admission and bed days associated with ACS conditions between the selected SLAs. Compared to the NCAHS average the annualised rates of hospitalised persons, admission and bed days for ACS conditions ranged from around 15% lower in Ballina to 20-40% higher for the other selected SLAs.

One in five bed days related to ACS admissions was due to ACS COPD. Around 40% of people admitted for ACS COPD had multiple admissions. Over 20% of persons admitted for ACS COPD had three or more admissions and this was more than double the proportion for the other selected conditions. Nearly 4% of people admitted for ACS COPD had eight or more admissions, more than 4 times the other selected conditions (which are all less than 1%). More than 30% of persons with eight or more ACS COPD admissions had no comorbidities. The median age of the index admission for ACS COPD was similar for those persons with single and multiple admissions. Over the five year period those people with multiple ACS COPD admissions consume more than 42,000 bed days, with more than one-half of those multiple admissions having a LOS of 6 days or longer. The number of patients admitted with three or more ACS COPD admissions (n=861) was more than 50% higher than the next highest ACS category, and they consumed 33,530 bed days, more than double the next highest ACS category. The number of bed days for patients admitted with eight or more ACS COPD admissions (n=11705) was more than five times the next highest ACS category.

Around 75% of persons admitted with ACS Heart Failure had only one ACS admission, while only around 15% had no other admissions during the five year study period. The majority of persons with ACS Heart Failure admissions (including multiple admissions) had a range of comorbidities that may have contributed to their admission. The median age of the index admission for ACS heart Failure was similar for those persons with single and multiple admissions.

Seventy seven percent of persons admitted for ACS asthma had only one ACS admission and 40% had no other admission. The majority of persons admitted for ACS asthma had no comorbidities. While more than one-half of females admitted for ACS Asthma were older than 30 years of age while the median age for males was 8 years of age.

More than one quarter of persons admitted three or more times for ACS Diabetes were less then 50 years of ages. More than one-half of the female ACS Cellulitis admissions were younger than 65 years of age at their first ACS Cellulitis admission, while the median age of men was 50 year old, suggesting men in particular require improved management of this condition.

Conclusions

This analysis demonstrated substantial variability in the rate of ACS hospitalisation between SLAs within the NCAHS. At least some of the factors associated with this wide variation between SLAs variation may be modifiable, including access to primary health care, addressing admission practices including availability of resources (ie: hospital beds), and population based health status[9], such as socio-economic disadvantage.

The results of this study will inform the development of targeted primary health care strategies to reduce potentially avoidable hospital admissions. The analytical methods implemented by the project can be used to evaluate strategies and interventions at both the local (eg: hospital) and regional (eg: AHS) level to reduce hospital admissions for potentially avoidable conditions. This is particularly relevant for chronic health conditions amenable to effective primary health care such as Angina, COPD, Diabetes, Heart Failure and Asthma.

The increased frequency of comorbidities in persons with ACS admissions compared to non-ACS admissions indicates these patients may have more complex clinical diagnoses requiring more intense clinical care that influences admission decisions and leads to the comparatively longer LOS. The majority of persons with ACS

Heart Failure admissions (including multiple admissions) had a range of comorbidities that may have contributed to their admission, suggesting that strategies to reduce ACS Heart Failure admissions would need to address a range of other comorbidities. Further, it appears that additional strategies targeting post adolescent females with asthma may be required.

Our data suggest that ACS COPD places a heavy burden on the health system, a finding consistent with other reports[10] Improved case management and primary health care of COPD may offer the greatest potential to reduce ACS admissions and bed days. More than 30% of persons with eight or more ACS COPD admissions had no comorbidities, suggesting that there may be scope to manage at least some of these persons with frequent COPD admissions out of hospital. As the number of bed days for patients admitted with eight or more ACS COPD admissions was more than five times the next highest ACS category, it is likely that even small reductions in the number of persons admitted for ACS COPD may produce substantial reductions in the number of bed days used by this ACS disease category.

We were unable to link measures of the number of hospital beds in a community to the data analysed here. Further work could focus on developing standard methods for quantifying bed availability for hospitals within NCAHS, making it possible to compare bed availability, associated bed days and ACS admissions in selected NCAHS hospitals. Other areas for further research include; obtaining additional data on patients to assess whether more health care improves health status; understanding the relative contributions of such factors to readmissions, such as failures in discharge planning, insufficient outpatient and community care, and severe progressive illness; whether comprehensive case management on the first admission may reduce the number of ACS readmissions for the same ACS condition responsible for the current admission, and whether this also reduces future ACS admissions for other conditions.

Improved understanding is required on how to care for people with ambulatory care sensitive conditions both inside and outside hospital, how this might reduce rehospitalisation and what the magnitude of any potential reduction may be. Ensuring a safe transition for people with such conditions from a hospital to the community or a nursing home requires patient centred care that transcends health system organisational boundaries. Continued investigation of hospitalisation using the linked hospitalisation data will strengthen the foundation for designing and providing improved patient centred care.

Moreover, given the challenges involved with delivery of rural and remote primary health care delivery, there is a critical need for information about the types of interventions that would best reduce frequent and avoidable admissions and maximise quality of life, in rural areas.

References

[1] Population Health Division. *The health of the people of New South Wales - Report of the Chief Health Officer*. Sydney: NSW Department of Health. Available at: www.health.nsw.gov.au/publichealth/chorep/. Accessed (September 2009).

[2]Page A, Ambrose S, Glover J, Hetzel D. *Atlas of avoidable hospitalisations in Australia: ambulatory care-sensitive condition*. Adelaide: PHIDU, University of Adelaide and AIHW, 2007. Available at www.publichealth.gov.au/publications/atlas-of-avoidable-hospitalisations-in-australia%3a-ambulatory-care-sensitive-conditions.htm

[3] Ansari Z, Laditka JN, Laditka SB: Access to health care and hospitalization for ambulatory care sensitive conditions. *Med Care Res Rev* 2006, 63(6):719-41.

[4] Brameld KJ & Holman C. Demographic factors as predictors for hospital admission in patients with chronic disease. Aust NZ J Public Health 2006:30(6):52-566.

[5] AIHW 2008a. Australia's Health 2008, Cat. No. AUS 99, Canbera

[6] AIHW 2008b, Rural, regional and remote health: indicators of health status and determinants of health, Rural Health Series No.9. Cat. No. PHE 97, Canberra

[7] Centre for Epidemiology and Research. The Health of the people of New South Wales – report of the Chief Health Officers- Summary Report 2010. http://www.health.nsw.gov.au/publichealth/chorep/. Last accessed September 2011

[8] Muenchburger H & Kendall E. Predictors of preventable hospitalisation in chronic disease: priorities for change. Journal of public health policy 2010;31:150-163

[9] Andrulis DP. Access to care is the centerpiece in the elimination of socioeconomic disparities in health. *Ann Intern Med.* 1998;129(5): 412–416

[10] Sullivan SD, Ramsey SD. Lee TA. The Economic Burden of COPD. Chest 2000;117:55-95