The Victorian Ambulatory Care Sensitive Conditions Study: reducing demand on hospital services in Victoria

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Abstract

Ambulatory Care Sensitive Conditions (ACSCs) are those for which hospitalisation is thought to be avoidable if preventive care and early disease management are applied, usually in the ambulatory setting. The Victorian ACSCs study offers a new set of indicators describing differentials and inequalities in access to the primary healthcare system in Victoria. The study used the Victorian Admitted Episodes Dataset (1999-2000) for analysing hospital admissions for diabetes complications, asthma, vaccine preventable influenza and pneumococcal pneumonia. The analyses were performed at the level of Primary Care Partnerships (PCPs). There were 12 100 admissions for diabetes complications in Victoria. There was a 12-fold variation in admission rates for diabetes complications across PCPs, with 13 PCPs having significantly higher rates than the Victorian average, accounting for just over half of all admissions (6114) and 39 per cent total bed days. Similar variations in admission rates across PCPs were observed for asthma, influenza and pneumococcal pneumonia. This analysis, with its acknowledged limitations, has shown the potential for using these indicators as a planning tool for identifying opportunities for targeted public health and health services interventions in reducing demand on hospital services in Victoria.

Introduction

Ambulatory Care Sensitive Conditions (ACSCs) are those for which hospitalisation is thought to be avoidable if preventive care and early disease management are applied, usually in the ambulatory setting (Billings, Zeitel & Lukomnik et al. 1993). In theory, timely and effective ambulatory care can help reduce the risks of hospitalisation by: preventing the onset of an illness or condition; controlling an acute episodic illness or condition; or managing a chronic disease or condition (Billings, Zeitel & Lukomnik et al. 1993).

The preliminary analyses from The Victorian ACSCs study offer a new set of indicators describing differentials and inequalities in access to the primary healthcare system in Victoria (Ansari 2001). They also provide an evidence-based platform for policies directed at reducing demand on Victorian hospital services by offering opportunities for targeted community based interventions.

There is increasing pressure on the Victorian public acute and emergency hospital system to meet the demand for inpatient care (Patient Management Task Force paper no.2 2001). To address this problem, the Victorian Department of Human Services is conducting a major project, " Meeting Emergency Demand". The Victorian

ACSCs study analysed a set of priority conditions where hospital admissions can be reduced through improved prevention and primary care. This paper presents the results of analyses of selected conditions at the Primary Care Partnerships (PCPs) level and the implications for reducing demand on the hospital system in Victoria.

Methods

Hospital separation data were obtained from the Victorian Admitted Episodes Dataset (VAED) for the year 1999-2000. The VAED is a minimum dataset containing data on all admitted patient activity submitted by all public and private acute hospitals, including acute facilities in rehabilitation and extended care institutions and day procedure centres (Acute Health Division 2001).

Clinical data are stored as ICD-9-CM codes in twelve diagnosis and procedure fields in the VAED (National Coding Centre 1995). For the purpose of this study, the ACSCs identified using the ICD-9-CM codes in the twelve diagnoses fields of the VAED were diabetes complications (ICD-9-CM 2501-2509) in any diagnosis field; asthma (493) as principal diagnosis only; and influenza and pneumococcal pneumonia (481, 4870, 4871, 4878) in any diagnosis field (Ansari 2001).

Analyses of individual ACSC admissions to hospital require the calculation of admission rates for defined geographic areas. In Victoria, the boundaries of the geographic areas that make up Local Government Areas under the Australian Standard Geographic Classification (ASGC) have changed significantly over the past decade. Currently, there are 200 statistical local areas (SLAs), which make up 78 LGAs. These boundaries have been collapsed into 32 PCP catchment areas.

Population figures by sex and five-year age groups were obtained from the Estimated Resident Population (ERP) figures produced by the Australian Bureau of Statistics (ABS) and were used for calculating admission rates and 95% confidence intervals (CI). Estimates at the LGA level were used to calculate admission rates and 95% confidence intervals for the 32 PCP areas in Victoria. Admission rates were age and sex standardised (direct method) using the Victorian population for 1996 as the reference. Ninety-five per cent confidence intervals for the standardised rates were based on the Poisson distribution.

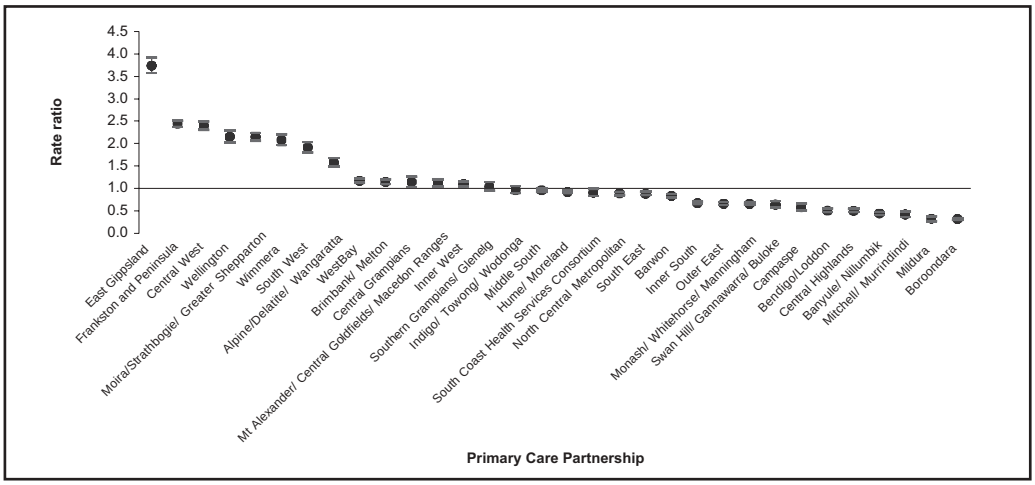
Results

Diabetes Complications

Victoria had 12,100 admissions for diabetes complications in 1999-2000, with an average of 8.06 bed days. The rate of admissions for diabetes complications was 2.56 per 1000, 95% CI (2.53-2.63).

There was a 12 fold variation in admission rates for diabetes complications across PCPs. There are 13 PCPs with significantly higher admission rates than Victoria (Figure 1). Thirteen PCPs had significantly higher admission rates than Victoria's average, contributing just over half of the State's total admissions (6114) for diabetes complications, and 39 per cent of total bed days.

Figure 1: Diabetes complications ACSC admission rate ratios for PCP's 1999-2000 (Victoria=1)



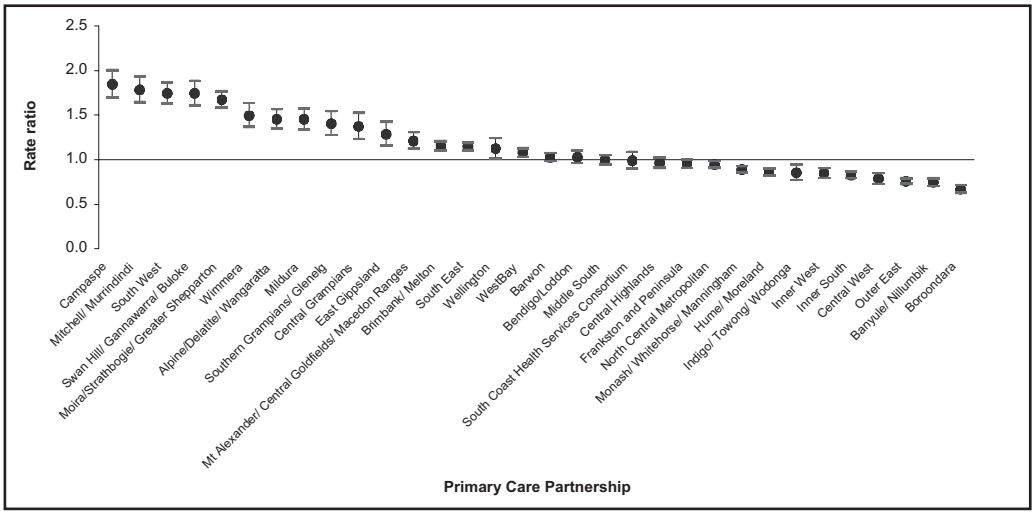
A 35 percent reduction in admissions for diabetes complications in these 13 PCPs and an 18 percent reduction in the remaining PCPs would lead to a 25 percent reduction in the number of admissions for diabetes complications in Victoria, which equates to approximately $8.4 million of hospital expenditure.

Asthma

Victoria had 10 079 admissions for asthma in 1999-2000, with an average of 2.71 bed days. The rate of admissions for asthma was 2.15 per 1000 (2.11-2.19).

Sixteen PCPs had significantly higher admission rates than the Victorian average (Figure 2) contributing about 40 per cent of the State's total admissions for asthma and 38 per cent of total bed days.

Figure 2: Asthma ACSC admission rate ratios for PCP's 1999-2000 (Victoria=1)



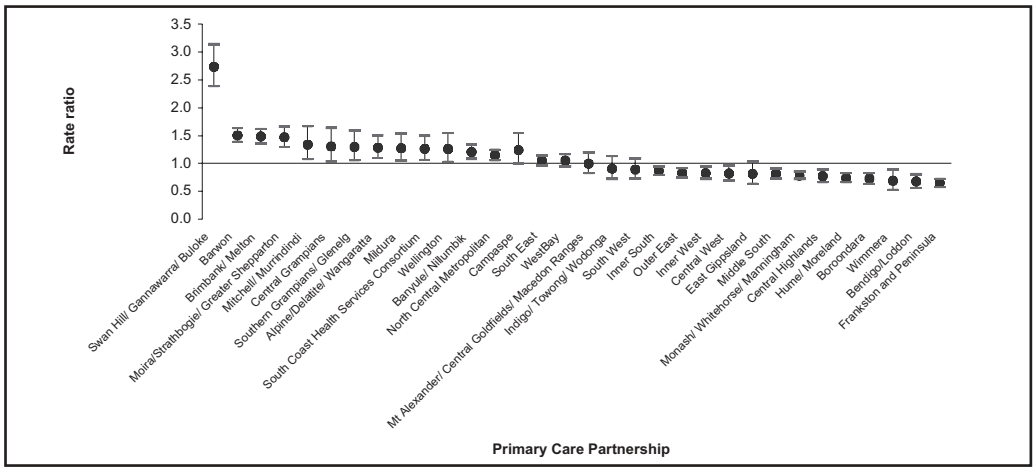
A 40 percent reduction in admissions for asthma in these 16 PCPs and a 23 percent reduction in admissions in the remaining PCPs would lead to a 30 percent reduction for the Victorian total, which would equate to approximately $3.5 million of hospital expenditure.

Vaccine-preventable influenza and pneumococcal pneumonia

Also in 1999-2000, Victoria had 2 079 admissions for influenza and pneumococcal pneumonia, of which 63 percent (n=1312) were due to pneumococcal pneumonia. The rates of admissions were 0.44 per 1000 (0.42-0.46) for influenza and pneumococcal pneumonia, and 0.28 per 1000 (0.26-0.30) for pneumococcal pneumonia. The average bed days were 9.03 and 11.26 respectively.

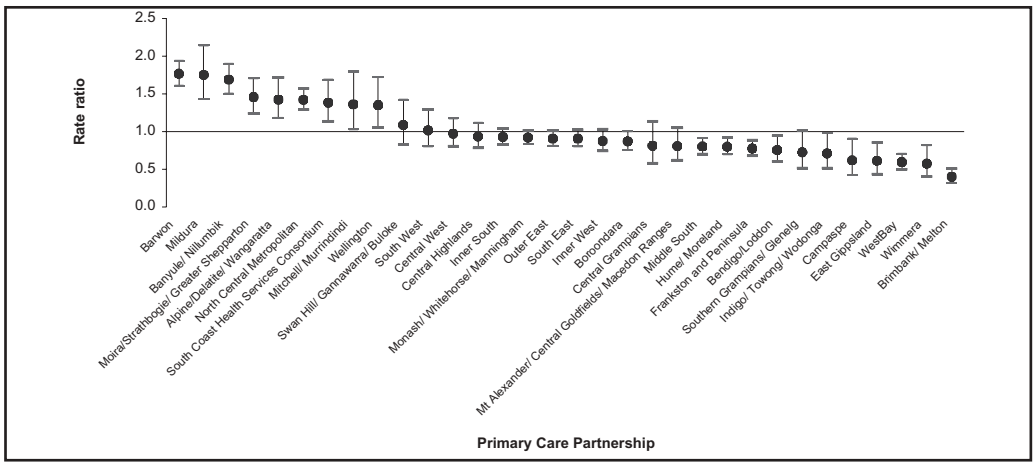
Thirteen PCPs had admission rates significantly higher than the Victorian average for influenza and pneumococcal pneumonia (Figure 3), contributing about 40 per cent of the State's total admissions for influenza and pneumococcal pneumonia and 38 per cent of total bed days. A 40 per cent reduction in admissions for influenza and pneumonia across all PCPs in Victoria would equate to approximately $5.5 million of hospital expenditure.

Figure 3: Influenza and pneumococcal pneumonia ACSC admission rate ratios for PCP's, 1999-2000 (Victoria=1)



Nine PCPs had admission rates significantly higher than the Victorian average for pneumococcal pneumonia (Figure 4), contributing about 35 percent of the State's total admissions for pneumococcal pneumonia and 33 percent of total bed days.

Figure 4: Pneumococcal pneumonia ACSC admission rate ratios for PCP's, 1999-2000 (Victoria=1)



Discussion

Better access to primary health care increases the use of ambulatory care and prevents unnecessary hospitalisations (Bindman, Grumbach & Osmond et al. 1995). Appropriate and timely care have been demonstrated to largely prevent microvascular and macrovascular complications of diabetes (UK Prospective Diabetes Study Group 1998). The test of equity of access involves determining whether there are systematic differences in use of health services and health outcomes among groups and whether these differences result from barriers to primary care services.

Analysis of ACSC admission rates in LGAs identified significant variations among PCP areas. These variations need to be monitored to identify specific catchment areas consistently above expected rates. To the extent that these differences in rates are attributable to access barriers, small area analysis may prove to be a valuable planning and evaluation tool (Billings, Zeitel & Lukomnik et al. 1993). Policy-makers interested in assessing the impact of local access barriers often look for a yardstick to compare how different communities meet the needs of their particular groups. ACSCs may prove to be a useful tool for monitoring service accessibility and need, as well as for providing valuable information for local health planning (Billings, Zeitel & Lukomnik et al. 1993). They will also complement the small-area analysis that forms part of the Victorian Burden of Disease Study (Magnus, Vos & Begg 2001).

Small-area analysis of ACSCs may also help evaluation of the impact of policies and interventions (Billings, Zeitel & Lukomnik et al. 1993). It may provide a new means of assessing the impact of major initiatives in Victoria such as PCPs and integrated chronic disease management programs in improving access to care.

What is driving high rates of ACSCs in some areas compared with other areas in Victoria? This analysis cannot separate the economic, structural and geographic barriers that are traditionally lumped together as 'access barriers' (Billings, Zeitel & Lukomnik et al. 1993; Gulzar 1999). Differences in ACSCs admission rates could also occur as a result of environmental factors, variations in disease prevalence, severity of illness, and propensity to seek primary healthcare (Billings, Zeitel & Lukomnik et al. 1993; Silver, Babitz & Magill 1997). The current analyses do not allow for the exclusion of any of these explanations. Further detailed analyses and investigation would assist in assessing the relative contribution of various factors that are driving the excess rates of ACSCs in Victoria.

Table 1: Approach to interventions for preventing hospitalisations due to Ambulatory Care Sensitive Conditions (ACSCs) and specific recommendations.

Health Care Setting	Potential Interventions (preventing hospitalisations)	Specific Recommendations
Diabetes and complications of diabetes		
• Health education • Primary care • Ambulatory care	• Primary prevention (obesity) • Case detection • Treatment • Monitoring • Treatment of complications	• Development of PCP based working groups to identify clinical and public health interventions relevant to local and rural communities • Regional diabetes coordinators to work across all PCPs to identify service access barriers, and appropriate intervention strategies • Workforce development programs for GPs to improve clinical practices • Development of IT support system across PCPs
Asthma		
• Primary care • Ambulatory care	• Early treatment avoiding complications • Care pathways	• Establishment of integrated care programs across PCPs involving schools, school nurses, asthma educators, community sporting groups and clinicians • Workforce development programs for GPs • Development of IT support system across PCPs
Influenza and pneumococcal pneumonia		
• Primary care • Ambulatory care	• Immunisation • Case detection • Early treatment avoiding complications	• Deployment of immunization coordinators in all hospitals to ensure optimal uptake of flu and pneumococcal vaccines in at-risk groups • Inclusion of pneumococcal and flu vaccines in the National Immunisation Register • Establishment of incentive programs for local community-based immunisation providers to improve coverage of at-risk groups • Establishment of local immunisation committees within PCPs

The study of ACSCs, within its acknowledged limitations, has shown the potential for using these indicators in assessing the operation of the ambulatory health care system at the community level in Victoria. It is now possible to plan strategic programs and interventions that may reduce demand on hospital services in Victoria (Jackson & Tobias 2001; Begley, Slater & Engel et al. 1994; Weissman, Gastonis & Epstein 1992; Billings, Anderson & Newman 1996; Gadomski, Jenkins & Nichols 1998). A number of public health and health services interventions have already been identified from the study information (Table 1). These interventions could decrease pressure on demand for inpatient and emergency care by reducing ACSC attendances in the acute sector.

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