

Fatal Asthma in Singapore

Tow Keang Lim,¹ *M Med (Medicine), FAMS, FRCP (UK)*, Oh Moh Chay,² *M Med (Paeds), FAMS, FRCPCH (UK)*

The occasion of World Asthma Day in 2012 provides us with an opportunity to review the state of asthma care in Singapore. This is also a decade after the initiation of the Singapore National Asthma Program (SNAP). At the apex of the burden of disease is fatal asthma. The Global Initiative for Asthma's (GINA) global burden of disease report ranked Singapore as an intermediate risk country for asthma prevalence but a high-risk country for asthma deaths.¹ This suggests that, even though we practise medicine in a rich country with relatively few barriers to the best medical care, the quality of asthma care and control in Singapore is still below the global average.

The asthma mortality data in the GINA burden of disease report dates from mid 1990s. Asthma mortality in the Singapore population aged 5 to 34 years has fallen from about 7 per million population between 1994 and 1998 to about 2 per million population between 2006 and 2010. We have linked this decline in asthma deaths to the rising use of inhaled steroids.² This shift over from short-term symptom relief treatment to long-term control is most striking in government polyclinics following the advent of the SNAP.³ But our polyclinics only manage 25% of asthmatics while general practitioners (GPs) look after the majority.⁴ Nevertheless, asthma-related deaths have also declined in most countries and especially in northern European countries with comprehensive health care systems such as Sweden where asthma deaths are currently below 1.0 per million population aged 1 to 34 years.⁵ Thus, despite much improvement, we see a persistent problem of higher than expected asthma-related deaths in Singapore.

An insight into this persistent problem of fatal and near fatal asthma in Singapore may be gleaned by looking at the asthmatics who have been admitted to our intensive care units (ICUs) with severe acute asthma exacerbations. We studied 332 adult patients who were admitted to the ICUs of 3 large public hospitals for acute severe asthma, of which 7% were fatal, from 2006 to 2012.⁶ There was no decline in the frequency of asthma admissions to the ICUs over the 5-year study period. We categorised the severity of asthma

in these patients according to the World Health Organization (WHO) asthma consultative group's "uniform" definition of asthma.⁷ This method was designed to account for the diversity of asthma care around the world. It employs an algorithm which consists of asthma control, current treatment, response to treatment and future risks. According to this classification, 67% of our patients with fatal and near fatal disease in the ICUs had "untreated asthma". Most of them were young asthmatics who only seek treatment for acute attacks in either primary care clinics or emergency departments, were not receiving regular reviews and none were on appropriate control medication. Truly treatment-resistant asthma constituted less than 10% of the whole study population.

The pattern of high-risk behaviour which relies mainly on episodic symptom relief care is also noted in most of the asthmatics hospitalised in non-ICU wards. A simple indicator of poor asthma control and excessive reliever use is the rate of "consumption" of the metered dose inhalers (MDI) for salbutamol. Since GINA recommends appropriate asthma reliever usage of no more than once per week in the day time and once per fortnight night-time, a MDI unit of 200 doses should last one year or longer. We have known for over 20 years, following the epidemics of asthma deaths in the 1980s, that excessive reliever use is a powerful risk marker for asthma deaths, yet some patients in Singapore even try to purchase these relievers as over the counter cures without their doctors' prescription.^{8,9} Today, we rarely see asthmatics with chronic iatrogenic Cushing's syndrome from daily steroid usage but the preference for cheap oral medication persists and thus, a growing number of patients are taking large doses of oral steroids several times per year for acute asthma with no preventive strategy in between. This is also highly inappropriate and will incur long-term steroid complications without reducing the risk of fatal asthma. Thus, suboptimal treatment appears to be a main factor for fatal and near fatal asthma in Singapore. In particular, we need more effective interventions to cope with untreated yet poorly controlled asthma at the primary

¹Division of Respiratory and Critical Care Medicine, NUHS

²Division of Medicine, KKH

Address for Correspondence: Prof Tow Keang Lim, Department of Medicine, NUHS Tower Block, Level 10, 1E Kent Ridge Road, Singapore 11928.

Email: tow_keang_lim@nuhs.edu.sg

care level.

In focus group interviews with primary care doctors, Dr Tan Ngiap Chuan highlighted various barriers to effective asthma management in Singapore.⁹ These include medical training of doctors, disease diagnosis, patient preference, drug costs in the context of local primary healthcare system and policy changes. A simple tool which may enable the busy GP to overcome some of these communication and perception barriers and commence more patients on effective control treatment for asthma is the Asthma Control Test (ACT).¹⁰ The ACT score which is the most widely validated composite asthma control score is also freely available to all patients and doctors. The ACT score will quickly detect poor asthma control, focus the patients and doctors on the need for long-term control as the main goal, allow continuous monitoring at home, and help initiate a long-term control strategy. It has been employed in the SNAP since 2008.

Fatal asthma should be a “never event” in Singapore. We have the resources and tools to avert this outcome. In order to achieve practical results, we must help our patients identify and eliminate barriers to changes in the ways they cope with their asthma which are meaningful and effective in their own lives.

REFERENCES

1. Masoli M, Fabian D, Holt S, Beasley R. The global burden of asthma: executive summary of the GINA Dissemination Committee report. *Allergy* 2004;59:469-78.
2. Lim DL, Ma S, Wang XS, Cutter J, Chew SK, Lim TK, et al. Trends in sales of inhaled corticosteroids and asthma outcomes in Singapore. *Thorax* 2006;61:362-3.
3. Chong PN, Tan NC, Lim TK. Impact of the Singapore National Asthma Program (SNAP) on preventor-reliever prescription ratio in polyclinics. *Ann Acad Med Singapore* 2008;37:114-7.
4. Shu SQ. Primary care survey 2010. Available at: http://www.moh.gov.sg/content/dam/moh_web/Publications/Information%20Papers/2011/Primary%20Care%20Survey%202010%20-%20Profile%20of%20Primary%20Care%20Patients.pdf Accessed 4 May 2012.
5. Bergstrom SE, Boman G, Eriksson L, Formgren H, Foucard T, Hörte LG, et al. Asthma mortality among Swedish children and young adults, a 10-year study. *Respir Med* 2008;102:1335-41.
6. Lim TK, Pabakaran L, Abisheganaden J, Chua G, Heng BH, Sun Y. The WHO classification of severe asthma in intensive care patients. *Eur Respir J* 2011;38(suppl 55):P880.
7. Bousquet J, Mantzouranis E, Cruz AA, Ait-Khaled N, Baena-Cagnani CE, Bleecker ER, et al. Uniform definition of asthma severity, control, and exacerbations: document presented for the World Health Organization Consultation on Severe Asthma. *J Allergy Clin Immunol* 2010;126:926-38.
8. Suissa S, Ernst P, Boivin JF, Horwitz RI, Habbick B, Cockcroft D, et al. A cohort analysis of excess mortality in asthma and the use of inhaled beta-agonists. *Am J Respir Crit Care Med* 1994;149:604-10.
9. Tan NC, Tay IH, Ngoh A, Tan M. Factors influencing family physicians' drug prescribing behaviour in asthma management in primary care. *Singapore Med J* 2009;50:312-9.
10. Cloutier MM, Schatz M, Castro M, Clark N, Kelly HW, Mangione-Smith R, et al. Asthma outcomes: Composite scores of asthma control. *J Allergy Clin Immunol* 2012;129:S24-33.