

Declining mortality and morbidity of advanced HIV disease with the use of HAART in Hong Kong

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Introduction

The decline in AIDS mortality and morbidity with highly active antiretroviral therapy (HAART)^{1,2} may or may not happen in regions outside Western industrialized countries because of

- substandard medical care and limited medical expertise, especially in low-prevalence countries
- differing endemic and opportunistic disease pattern³
- unique socio-cultural contribution to adherence⁴

HAART has been available in Hong Kong since 1997. Its contribution to mortality and morbidity, if any, remains to be evaluated

Methods

Single centre retrospective cohort of patients attending the Government HIV Clinic

- Major inclusion criterion: advanced HIV disease defined by AIDS-defining illness, or CD4 count <200/ μ l.
- Mortality determined annually for decade 1993 to 2002
- Three clinical end points of AIDS and death evaluated with Poisson regression model
 - (a) Death in those with AIDS
 - (b) AIDS in those with CD4 <200/ μ l
 - (c) Death in those with CD4 <200/ μ l
- Actual use of HAART evaluated for relationship with clinical end points

Characteristics of study population

- Represents more than half of known HIV patients being followed up in Hong Kong
- Drugs dispensed in HIV clinic and not filled in pharmacy
- No drug trial has been done

Results

Among those with advanced disease, use of HAART increased sharply in 1997 (Figure 1). Coincidentally, an overall decreasing trend in mortality was evident in the decade 1993 to 2002 (Figure 2). Mortality prior to 1997 was high and relatively unstable. After 1997, it was consistently low.

Figure 1. Prevalence of HAART use in patients with advanced HIV infection

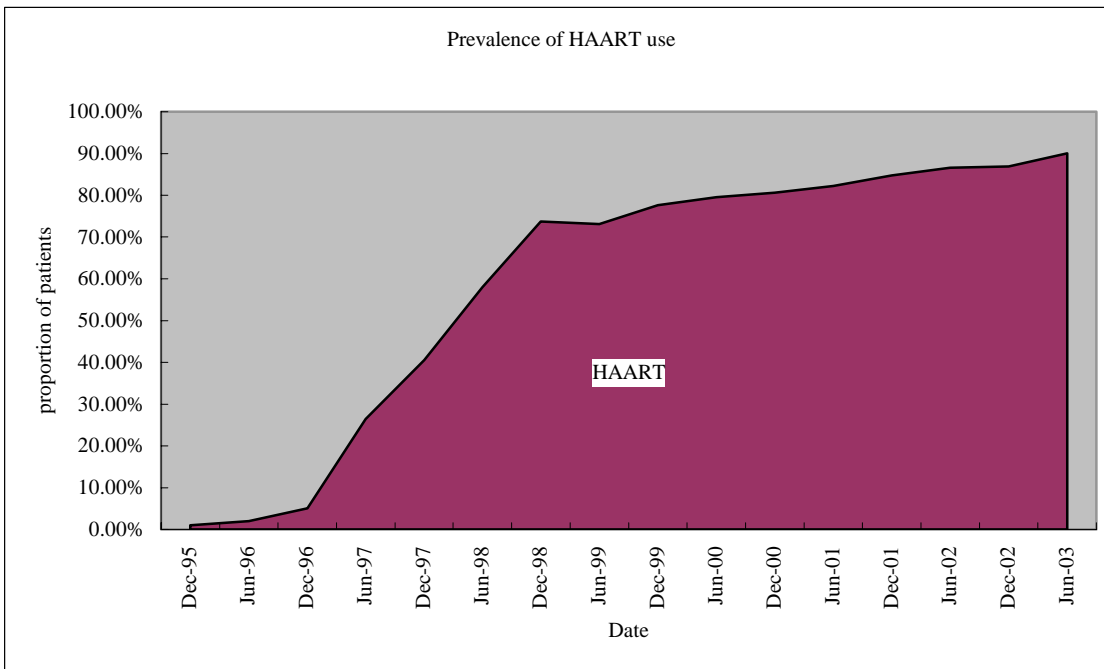
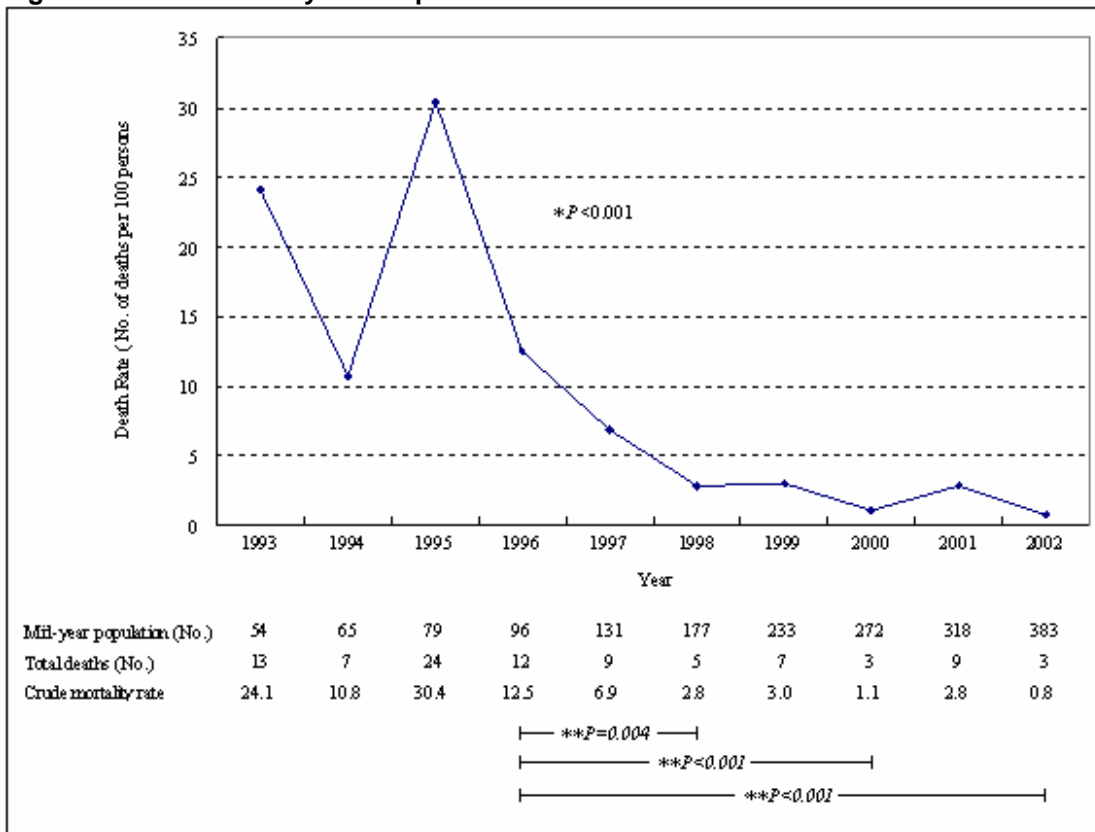


Figure 2. Crude mortality rate of patients with advanced HIV disease from 1993 to 2002



* P value by chi-square test for trend

** P value by chi-square test or Fisher's exact test, using 1996 as reference

By univariate analysis, clinical end points were found to be associated with low baseline CD4 count, calendar periods before 1997, and non-use of HAART, but not baseline viral load. In subsequent multivariate analysis, only use of HAART and baseline CD4 count were significantly associated with the clinical end points (Table 1). Calendar period ceased to be a significant factor. A risk reduction of 79% (for death after CD4 cell count <200/ μ l) to 92% (for AIDS after CD4 cell count <200/ μ l) was evident with the use of HAART.

Table 1. Multivariate analysis of AIDS and death after adjustment of use of HAART, baseline CD4 cell count and calendar period

	Death after AIDS		AIDS after a CD4 cell count <200/ μ l		Death after a CD4 cell count <200/ μ l	
	Adjusted Rate Ratio (*95% CI)		Adjusted Rate Ratio (*95% CI)		Adjusted Rate Ratio (*95%CI)	
HAART		<0.001		<0.001		0.009
Pre-HAART	1.00		1.00		1.00	
Post-HAART	0.13 (0.05 - 0.33)		0.08 (0.04 - 0.19)		0.21 (0.07 - 0.67)	
Baseline CD4 count		0.028		<0.001		<0.001
\geq 100/ μ l	1.00		1.00		1.00	
50-99/ μ l	2.12 (0.69 - 6.45)		8.09 (3.48 - 18.86)		7.74 (2.24-26.71)	
10-49/ μ l	3.02 (1.02 - 8.89)		4.89 (2.33 - 10.23)		4.18 (1.31-13.39)	
<10/ μ l	5.39 (1.64 - 17.65)		19.55 (6.97 - 54.85)		30.49 (8.46-109.9)	
Calendar period		0.188		0.499		0.068
1994-1995	1.00		1.00		1.00	
1996-1997	1.28 (0.61 - 2.68)		0.75 (0.33 - 1.70)		0.77 (0.26-2.25)	
1998-2000	0.61 (0.21 - 1.78)		0.54 (0.23 - 1.26)		0.24 (0.06-0.92)	
2001-Jun 2003	0.43 (0.14 - 1.30)		0.56 (0.23 - 1.40)		0.21 (0.05-0.88)	

* P value and 95% CI derived with Poisson regression model

Summary

- The mortality of advanced HIV disease in Hong Kong showed a declining trend from 1993 to 2002, coincident with the introduction of HAART in 1997
- Using Poisson regression for multivariate analysis, only HAART and baseline CD4 count were significant factors. Calendar periods were not.

Conclusion

Both the mortality and morbidity of advanced HIV disease in Hong Kong have declined. This improved prognosis was not associated with calendar periods per se. It was attributable to the use of HAART.

References

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