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MODELLING THE IMPACT OF CASUAL AND REGULAR PARTNERSHIPS ON HIV INCIDENCE AMONG HOMOSEXUAL MEN IN AUSTRALIA

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INTRODUCTION: Data on the sexual practice of homosexual men in Australia have indicated that between 1996-2003, the relative proportions of these men engaging in unprotected anal intercourse (UAI) with regular partners (UAIR) has been higher than those with casual partners (UAIC). However, since 1996 the annual rate of increase in men engaging in UAIC has been greater than that for UAIR. The aim of this study is to assess the relative contributions of casual and regular partnerships to HIV incidence among homosexual men in Australia using a mathematical model.

METHODS: A mathematical model was developed of HIV transmission among homosexual men in Australia during 1995-2004, distinguishing unprotected anal intercourse between casual (UAIC) and regular (UAIR) partnerships. For 2004-2010, the effect of changes in risk levels for either casual or regular partnerships were compared with a null model of stable risk levels.

RESULTS: The models suggested that in 1995, about 40% of incident cases were attributed to UAIC, increasing to more than 65% in 2004 despite some reduction in risk behaviour among homosexual men with casual partners. From 2004, a stable risk level resulted in a plateau of about 400 cases per year. A 10% annual UAIC increase resulted in a 61% increase in incidence by 2010, compared to a 27% increase for a similar increase in UAIR. Conversely, a 10% annual decrease in UAIC resulted in a 38% drop in incidence compared to 20% for UAIR.

CONCLUSIONS: The models suggest that since 1995, there is an increase in the contribution of casual partnerships in HIV incidence. Continued UAIC increases would result in an increased proportion of incident cases attributable to casual partnerships, and

a dramatic increase in overall HIV incidence, much more than that expected from a similar UAIR increase.

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