

ACE-PREVENTION PAMPHLETS

INDIGENOUS POPULATION RESULTS PAMPHLET 2

COST-EFFECTIVENESS OF DIABETES PREVENTION

1. MAIN MESSAGE

- Screening for pre-diabetes and following with lifestyle or pharmacological treatments to prevent or delay the onset of diabetes is cost-effective
- Screening in the Indigenous population should be targeted at younger ages (e.g. from age 30) than in the general population (screening recommended from age 45) due to the younger age at onset of diabetes

2. BACKGROUND

Studies measuring the epidemiology of diabetes in the Indigenous population have shown prevalence of up to four times greater than Australian population prevalence. The Burden of Disease and Injury in Aboriginal and Torres Strait Islander Peoples, 2003 found diabetes was responsible for 8.9% of the total burden of disease in Indigenous Australians. Little is known about the epidemiology of pre-diabetes, a health state indicating people are at high risk of developing diabetes, in the Indigenous population. The economic impact of diabetes is large, and access to treatment can be diminished in rural areas.

3. INTERVENTIONS

We reviewed the diabetes literature to identify a range of interventions that prevent or delay the onset of diabetes in people with pre-diabetes. In order to identify people who have pre-diabetes, a screening program in primary care was modelled. People visiting an Aboriginal Community Controlled Health Service are invited to participate in a screening program, involving a fasting blood glucose test and an oral glucose tolerance test. Those with pre-diabetes are then eligible for a preventive intervention. Two target age groups, 30+ and 45+ are examined.

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PROJECT LEADERS

PROF THEO VOS (UQ)

PROF ROB CARTER (DEAKIN)

PAMPHLET AUTHOR

MELANIE BERTRAM

FOR FURTHER INFORMATION

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ACE-PREVENTION



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From the review process, we selected three pharmaceutical interventions and three lifestyle intervention programs for cost-effectiveness analysis:

- a) **Pharmacotherapy: Acarbose:** A drug treatment that prevents the release of glucose from carbohydrates. Treatment is 100mg three times per day.
- b) **Pharmacotherapy: Metformin:** A drug treatment that lowers the level of glucose in the blood. Treatment is 850mg two times per day.
- c) **Pharmacotherapy: Orlistat:** A drug treatment that prevents the body from absorbing fat from foods. Treatment is 120mg three times per day.
- d) **Lifestyle: Diet:** Involves group counselling by a dietician weekly for one month, monthly for the next three months and three monthly thereafter.
- e) **Lifestyle: Exercise:** Involves group counselling by an exercise physiologist weekly for one month, monthly for the next three months and three monthly thereafter.
- f) **Lifestyle: Diet & Exercise:** Involves group counselling by both a dietician and an exercise physiologist weekly for one month, monthly for the next three months and three monthly thereafter.

4. CHOICE OF COMPARATOR

The comparator to the interventions is current practice. There is currently no systematic screening in place for pre-diabetes in Australia and no pharmaceutical treatments are approved for pre-diabetes on the PBS. In determining the optimum mix of interventions, we assume none of the interventions of interest are currently in place.

5. INTERVENTION COST-EFFECTIVENESS

All interventions are likely to be cost-effective, particularly if targeted at the younger age group, where greater health gain can be achieved. Exercise alone, diet alone and orlistat are dominated by other lifestyle or pharmacological interventions.

Table 1: Cost-effectiveness ratios and probability of being cost-effective for three diabetes prevention interventions following screening from age 30 or 45

Intervention	Screening in 30+		Screening in 45+	
	Cost-effectiveness ratio (\$/DALY averted)	Probability cost-effectiveness ratio < \$50,000/DALY	Cost-effectiveness ratio (\$/DALY averted)	Probability cost-effectiveness ratio < \$50,000/DALY
Diet & Exercise	\$ 15,000 (\$9,000- \$26,000)	100%	\$ 17,000 (\$11,000 - \$25,000)	100%
Acarbose	\$17,000 (\$3,000 -\$60,000)	95%	\$24,000 (\$11,000-\$62,000)	96%
Metformin	\$18,000 (\$8,000 – \$31,000)	100%	\$21,000 (\$14,000 - \$33,000)	100%

A combination of metformin and diet & exercise, the two most cost-effective interventions, is also good value for money with an incremental cost-effectiveness ratio of \$7,000/DALY to add a second intervention at ages 30 and above.

6. CONCLUSIONS

Screening to identify people with pre-diabetes, followed by preventive interventions is highly recommended for Indigenous Australians from age 30 upwards. The interventions are far more cost-effective in the Indigenous population than in the Australian population as a whole due to the much higher potential for health gain despite the greater cost of delivering the screening intervention through Aboriginal Community Controlled Health Services.

Results are based on effectiveness data in non-Indigenous populations. While the effectiveness of drugs is likely to be similar between populations (as long as adherence is the same) there is more doubt how appropriate the available evidence on effectiveness of diet and exercise interventions is to predict outcomes in Indigenous Australians. Individual diet and exercise interventions may be less appropriate in the Indigenous population. In order to calculate the cost-effectiveness of more culturally appropriate interventions, efficacy trials must first be undertaken.

For more information on this topic area, please visit website www.sph.uq.edu.au/bodce-ace-prevention

7. ABOUT ACE-PREVENTION

To aid priority setting in prevention, the Assessing Cost-Effectiveness in Prevention Project (ACE-Prevention) applies standardised evaluation methods to assess the cost-effectiveness of 100 to 150 preventive interventions, taking a health sector perspective. This information is intended to help decision makers move resources from less efficient current practices to more efficient preventive action resulting in greater health gain for the same outlay.



ACE–PREVENTION PAMPHLETS

PAMPHLETS IN THIS SERIES

Methods:

- A. The ACE-Prevention project
- B. ACE approach to priority setting
- C. Key assumptions underlying the economic analysis
- D. Interpretation of ACE-Prevention cost-effectiveness results
- E. Indigenous Health Service Delivery

General population results

1. Adult depression
2. Alcohol
3. Blood pressure and cholesterol lowering
4. Cannabis
5. Cervical cancer screening, Sunsmart and PSA screening
6. Childhood mental disorders
7. Fruit and vegetables
8. HIV
9. Obesity
10. Osteoporosis
11. Physical activity
12. Pre diabetes screening
13. Psychosis
14. Renal replacement therapy, screening and early treatment of chronic kidney disease
15. Salt
16. Suicide prevention
17. Tobacco

Overall results

1. League table
2. Combined effects

Indigenous population results

1. Cardiovascular disease prevention
2. Diabetes prevention
3. Screening and early treatment of chronic kidney disease