Cost-Effectiveness Analysis of the Implementation of Single-Dose Vitamin D, Omega 3, or Co-Supplementation on Individuals with Polycystic Ovary Syndrome

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RESEARCH OBJECTIVE

HbA1C (%)

This study aims to assesses the costeffectiveness of vitamin D and Omega-3 supplements on HbA1C levels to reduce prediabetes and diabetes risks in PCOSdiagnosed females.

RESEARCH QUESTION

In women with PCOS, is the implementation of single does or co-supplementation of Vitamin D and Omega-3 a cost-effective method for lowering HbA1C and in turn decreasing prediabetes and diabetes diagnoses and related death?

METHODS

MODEL CREATION

- Generic Markov model
- 8-week duration assumed for each cycle
- 7 cycles to be ran to total a study period of 56 weeks
- All participants enter the model in a prediabetic state
- All participants able to move through the disease states NGT↔ Prediabetes ↔ T2D
- Death is end state for all health states



MARKOV MODEL TRANSITION STATES

- Cost and QALYs discounted at annual rate of 3%
- \$100,000 WTP threshold used as it is a common benchmark for US based costeffectiveness analyses
- Treatment benefits set at 5% for Vitamin D and Omega-3 and 10% for co-supplementation

MARKOV MODEL INPUTS

| Intervention | Cost Per Year | | |
|---------------------|---------------|--|--|
| Vitamin D | \$83.96 | | |
| Omega 3 | \$106.51 | | |
| Vitamin D + Omega-3 | \$190.47 | | |

| Health State | Average Yearly Cost | | |
|--------------------------|---------------------|--|--|
| Normal Glucose Tolerance | \$1970 | | |
| Prediabetes | \$2721 | | |
| Type 2 Diabetes | \$24867 | | |

| Health State | Mean | α | β |
|--------------------------|------|-------|------|
| Normal Glucose Tolerance | 0.84 | 7.11 | 1.35 |
| Prediabetes | 0.71 | 12.72 | 5.09 |
| T2D | 0.68 | 14.13 | 6.59 |









CONCLUSIONS

co-supplementation were D and dominant strategies when applied to a comprehensive perspective including both healthcare and societal costs over 56-weeks.

Vitamin D had the lowest treatment cost for the 56 weeks when compared to all other treatment groups with a total cost of \$357.39.

Base case analysis resulted in incremental cost effectiveness ratios less than or equal to zero for both no treatment and Omega-3

Effectiveness results showed all treatment options having an effectiveness of 0.76 QALY, with all groups have a 0.00 incremental effectiveness when compared to Vitamin D.

A probabilistic sensitivity analysis indicates no treatment as optimal in 97.30% of 1000 simulations.

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