

# Cost-Effectiveness of Xanomeline and Trospium Chloride for Schizophrenia in the United States

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## Background

- Schizophrenia is a chronic psychiatric disorder that affects an estimated 3.9 million people in the US
- Annual economic burden is \$343 billion and is driven mainly by indirect costs<sup>1</sup>
- Unmet needs remain in managing schizophrenia as treatment options primarily include antipsychotics, which act on dopamine receptors and have limited effectiveness on negative and cognitive symptoms

## Objective

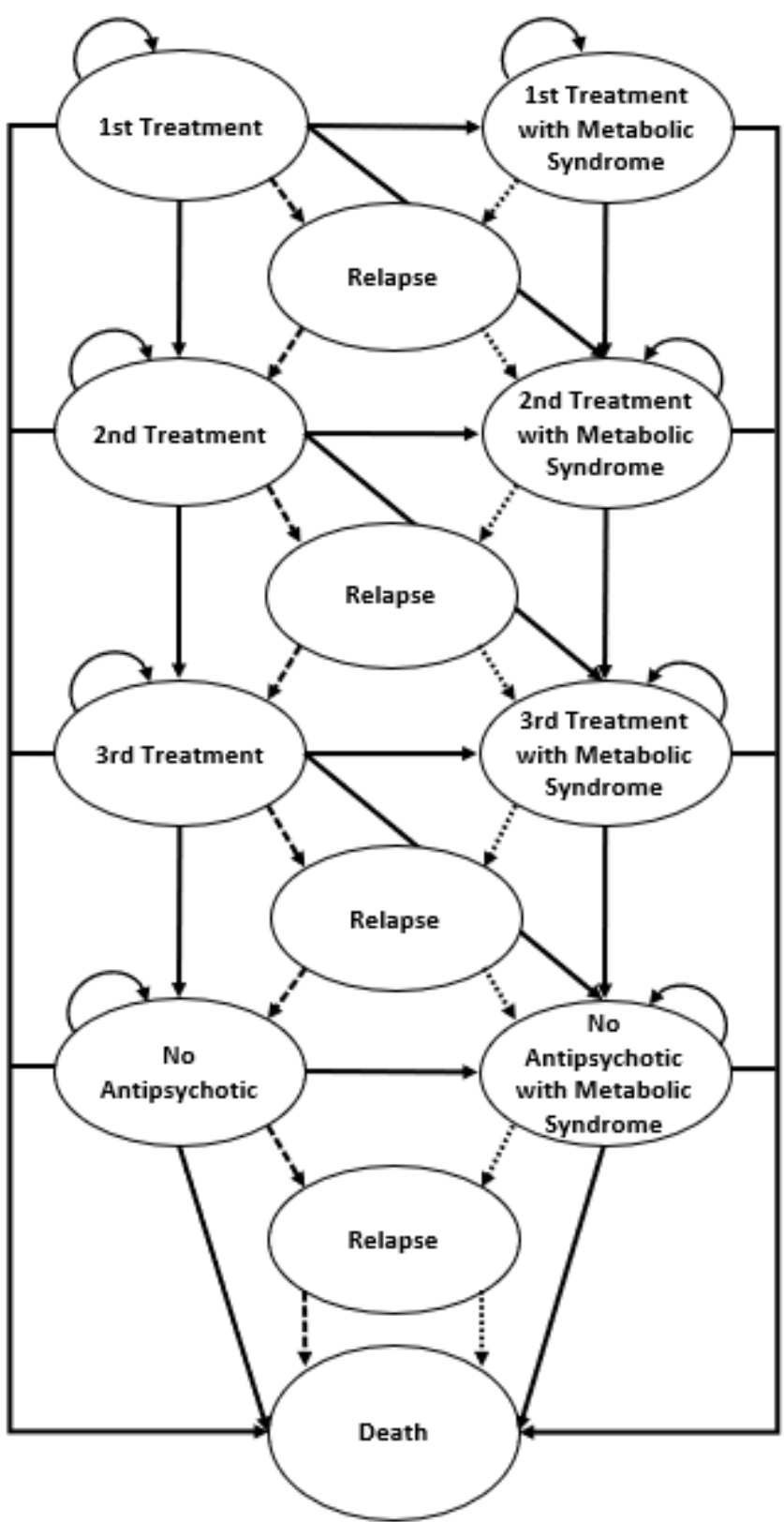
- Estimate cost-effectiveness of xanomeline and trospium chloride from a US healthcare system and societal perspective, compared with aripiprazole, a second-generation antipsychotic (SGA) over a lifetime time horizon

## Methods

- Three-month cycle length was applied in the Markov model to capture the dynamic aspect of schizophrenia and observe the adverse effects and efficacy of the medication
- Mortality rates derived from National Vital Statistics Reports life tables then converted to three-month probabilities
  - These were adjusted by the excess mortality risk due to schizophrenia and comorbidities

## Methods

Figure 1. Markov Model Structure



Each of the alive health states included sub-health states for no metabolic syndrome, metabolic syndrome, cardiovascular disease (CVD), diabetes, and CVD & diabetes. Relapses were also captured as events occurring within each health state.

### Population and Assumptions

#### Population

- Mean age 44 years old
- 65% of patients with schizophrenia have a caregiver<sup>2</sup>
- 37% of patients are employed<sup>3,4</sup>

#### Background Healthcare Costs

- Emergency department visit, home care, inpatient, outpatient, medication, additional healthcare resource utilization due to relapse

#### Assumptions

- Starting population did not have metabolic syndrome, CVD, or diabetes
- Individuals discontinued and switched to next treatment due to their own volition, inefficacy, or adverse events
- Small part of the population stopped antipsychotic therapy
- Xanomeline and trospium chloride did not cause increased risk of developing metabolic syndrome
- Each relapse associated with 65 days of missed work

## Results

### Comparative Results

Table 1. Comparative Results

Deterministic Results Healthcare Perspective		
	Xanomeline and Trospium Chloride	Aripiprazole
Costs	\$636,239	\$616,834
QALY	9.18	8.87
ICER (\$/QALY)	\$62,404	
Deterministic Results Productivity Loss		
Costs	\$5,324,879	\$5,875,216
Deterministic Results Caregiver Time		
Costs	\$1,053,806	\$1,049,259
Deterministic Results Modified Societal Perspective		
Costs	\$6,378,685	\$6,924,475
ICER (\$/QALY)	-\$1,755,188	

### One-Way and Probabilistic Sensitivity Analyses

Figure 2. One-Way Sensitivity Analysis

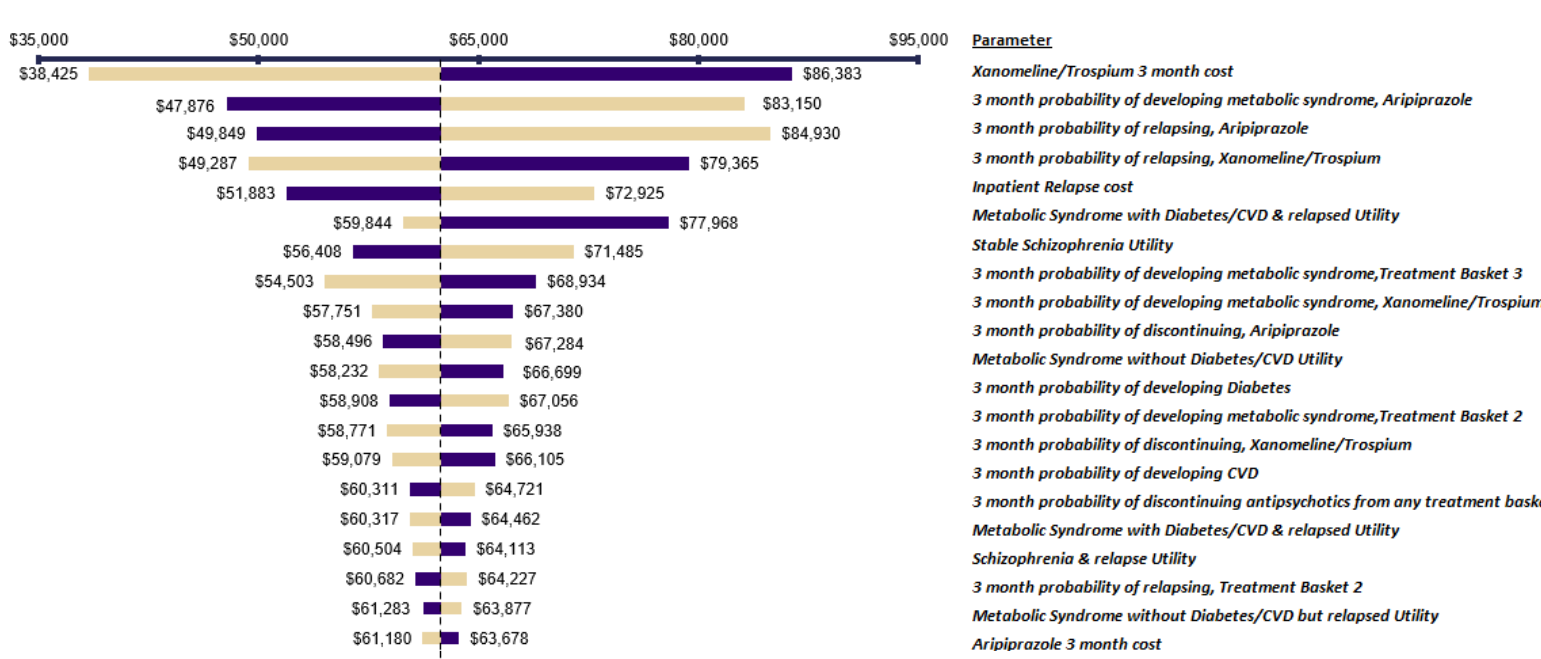


Figure 3a. Probabilistic Sensitivity Analysis Healthcare Perspective

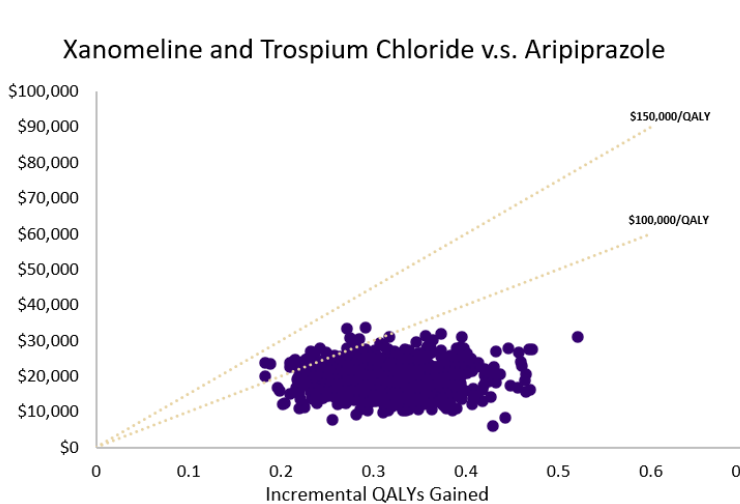
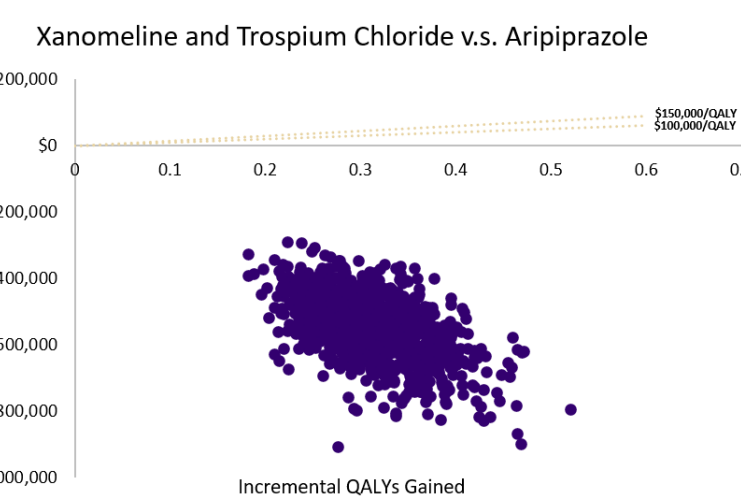


Figure 3b. Probabilistic Sensitivity Analysis Modified Societal Perspective

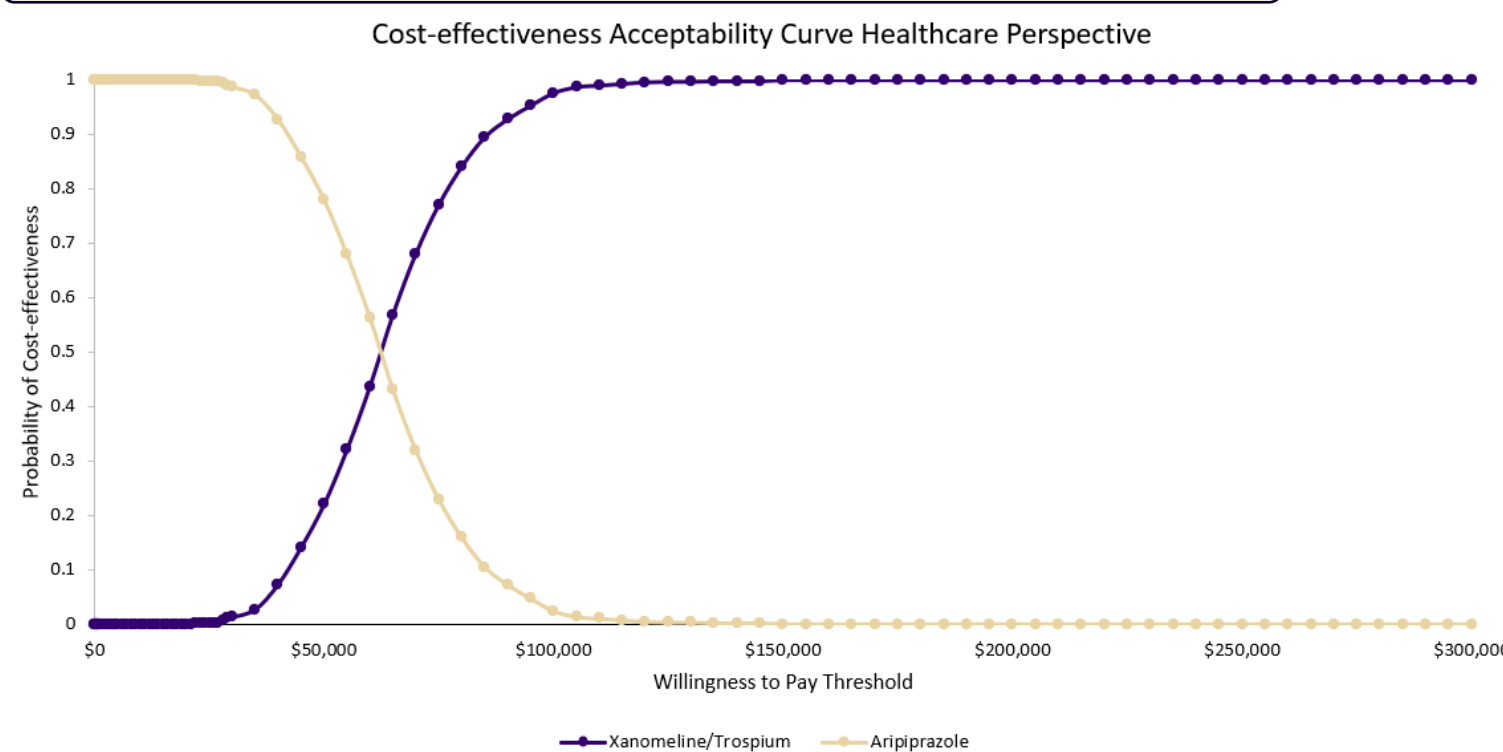


- Xanomeline and trospium chloride was 97% cost-effective at a willingness-to-pay (WTP) threshold of \$100,000/QALY compared to aripiprazole
  - 99.9% cost-effective at a WTP threshold of \$150,000/QALY
- Main drivers were the cost of xanomeline and trospium chloride, probabilities of developing metabolic syndrome in aripiprazole, probabilities of relapsing for both medications

## Results

### Cost-effectiveness Acceptability Curve

Figure 4. Cost-effectiveness Acceptability Curve



- The curve shows that xanomeline and trospium chloride is cost-effective compared to aripiprazole at WTP threshold above \$65,000/QALY

## Conclusion

- At a WTP of \$100,000/QALY or \$150,000/QALY xanomeline and trospium chloride is cost-effective compared to aripiprazole
  - Primarily driven by model assumptions regarding rates of metabolic syndrome development and relapse

## Limitations

- Currently there is limited data on the rates of developing metabolic syndrome or relapse while taking xanomeline and trospium chloride
  - Introduces uncertainty into the health state transitions
- Does not incorporate increases in CVD medical costs as the population ages
  - Potentially underestimates long-term healthcare expenditures
- Societal perspective included in the model does not capture spillover effects on other sectors, such as criminal justice, or direct medical costs paid by patients

## References

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