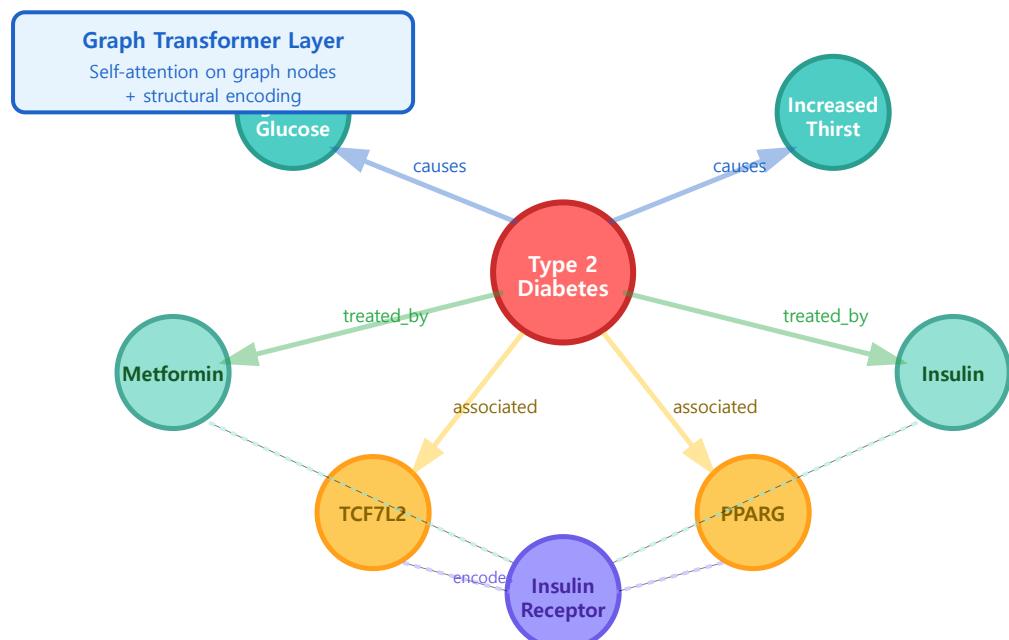


# Graph Transformers for Medical Relationship Modeling

## Medical Knowledge Graph Example

● Disease ● Symptom ● Drug ● Gene ● Protein



### Graph Structure

- Nodes: entities (diseases, genes)
- Edges: relationships
- Message passing learning

### Transformer on Graphs

- Self-attention mechanism
- Structural position encoding
- Long-range dependencies

### Applications

- Drug repurposing
- Comorbidity prediction
- Biomarker discovery

### Knowledge Graphs

- Disease-symptom networks
- Drug-protein interactions
- Gene regulatory pathways



## Relational Intelligence

Graph Transformers excel at modeling complex medical relationships, achieving **25-40% better performance** on tasks involving entity interactions compared to sequence-based models.