

# Predictive value by available data sources

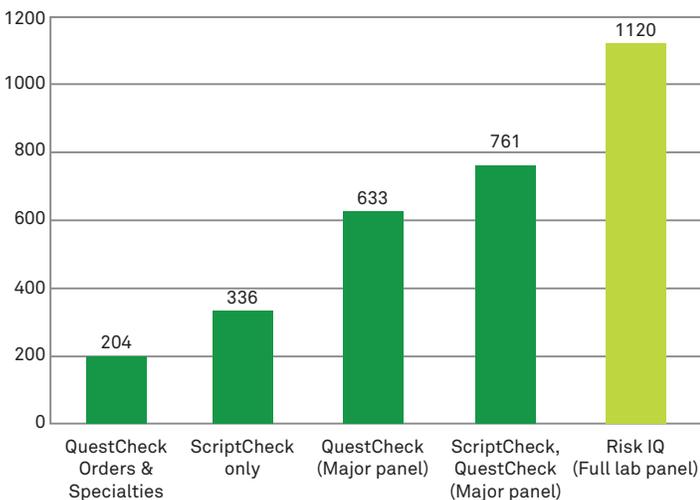
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Risk Identifier™ is designed to generate a score whenever any prescription history (ScriptCheck®) or clinical laboratory history (QuestCheck®) data are returned, but the degree of stratification possible within the model will vary with the available inputs.

The chart below is intended to illustrate the projected mortality risk at the 99th model percentile (ie, the riskiest 1% of applicants) under various scenarios of data availability.

Because absolute death counts were limited in this early study, we used the Risk IQ™ hazard score (relative risk X100) as a mortality proxy.

## RELATIVE RISK OF 99th MODEL PERCENTILE



For the purposes of the graph, Risk Identifier data can be placed in three broad categories, any of which might be present or absent for any given applicant:

1. *ScriptCheck data: Any Rx hit from the prescription database.*
2. *Clinical laboratory history major panel: Any hit containing a Comprehensive Metabolic Panel (CMP), a Complete Blood Count (CBC), or Lipid Panel.*
3. *Clinical laboratory history Orders & Specialties: A hit lacking a major panel. In these cases, modeling is performed on the 'long tail' of rarer clinical results and ordering physician specialties, on an essentially Boolean (present/absent) basis.*



## KEY FINDINGS

Within the Risk IQ model itself, where new, purpose-collected blood, urine, and physical measurement profiles are available, the highest risk 1% of applicants will die at approximately 11.2X the rate of their age and gender-specific peers.

1. *When only Orders & Specialties are available (no clinical laboratory history major panels or prescription history), the Risk IQ-projected relative risk for the 99th percentile is 2.04.*
2. *When only prescription history data is available (no clinical laboratory history data of any kind), the 99th percentile risk is 3.36.*
3. *When only a major panel clinical laboratory history is available (no prescription data), the 99th percentile risk is 6.33 – nearly twice what is possible in a prescription-only scenario.*
4. *When both a major panel with clinical laboratory history and prescription history data are available, the 99th percentile risk is 7.61 – nearly ¾ of what is possible in a fully underwritten (Risk IQ) process.*

## CONCLUSION

While this chart is limited to very high-risk applicants, the relative predictive value of the various scenarios is reasonably consistent across the entire risk distribution.

In fact, at the lowest-risk percentiles, the relative performance of the major panel model is even more pronounced, as a reasonably complete clinical panel allows for more differentiation among low-end risks than does prescription data, where reliable indicators of below-median risk are rare.

## ABOUT THE AUTHOR



Brian Lanzrath is ExamOne's Director of Analytics and a scientist in our research and development department. He has participated in the development of multiple risk assessment and drugs of abuse assays for serum, urine, and oral fluid. Since 2009, his primary responsibilities have been in data analysis, including reflex criteria definition and mortality modeling.

Brian received his Bachelor of Science degree in biology and his MBA in strategic management from the University of Kansas.

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## REFERENCES

Analysis completed on ExamOne life insurance applicants.