Uncovering Undisclosed Tobacco Use:
Leveraging third-party underwriting evidence for enhanced risk assessment

Our findings underscore the critical importance of integrating EHR data early in the underwriting process when enhancing tobacco use detection in the past year is priority.

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Introduction

The loss of cotinine from insurance labs has been a top concern since the inception of accelerated underwriting. Cotinine has been universally viewed as a gold standard for identifying current tobacco users for life insurance underwriting purposes. As the insurance industry has moved towards offering products with "fluidless" paths, the frequency with which underwriters have access to this critical test has decreased. Finding an alternative route to identify non-disclosures of tobacco use has become a priority due to the associated mortality implications.

The increasing adoption of third-party evidence, such as electronic health records (E-HRs), medical claims (MC), pharmacy prescription (Rx), and clinical lab testing, has raised a question about how much those digital underwriting evidences can help identify non-disclosed tobacco use. In this report, we shed light on this important topic.

Two research datasets

1. **Analysis #1:** RGA performed a retrospective study on ~900 life insurance cases to assess the value of digital underwriting evidence, specifically MC, E-HR, and LabPiQture (LP), within their program. Our approach to the study was to assess the risk in multiple dimensions.
    a. The first dimension, which we called "foundational," began by determining if a client was a smoker based on evidence likely to be associated with automated underwriting, which included application disclosures, Medical Information Bureau codes (MIB), motor vehicle records (MVR), and Rx.
    b. We then layered in the review of tobacco use found through attending physician's statements (APS), insurance labs, EHR, MC, and LP.
2. **Analysis #2:** RGA analyzed tobacco use on a detailed evidence set with ~5,000 insurance applicants. The dataset reviewed included Rx, MC, and LP along with application disclosures. The tobacco status determined by the three evidences and their relations to self-disclosure is analyzed herein.

Tobacco use status determination with various underwriting evidence

- **Insurance lab (INS Lab):** Cotinine, a produced when nicotine breaks down in the body, has been the gold standard for detecting tobacco use in life insurance underwriting.
- **LabPiQture (LP):** Product from ExamOne that provides both clinical and historical insurance lab results. In our study, we found that all tobacco detection was from historical insurance labs. ~15% of the LP contains insurance labs in data set #2.
- **APS or EHR:** Physicians often record whether a patient is a current, former, or never smoker during visits. These notes and medical codes can be found in both attending physician statements and electronic health records.
- **Medical Claims (MC):** Medical claims data can capture diagnoses and procedure codes related to smoking cessation and treatment.
- **Prescription (Rx):** Tobacco use can be indicated if the individual fills a smoking cessation medication. In study #1, Rx was included in foundational evidence, but tobacco status was almost exclusively found via disclosures, with very few tobacco cessation medications found.

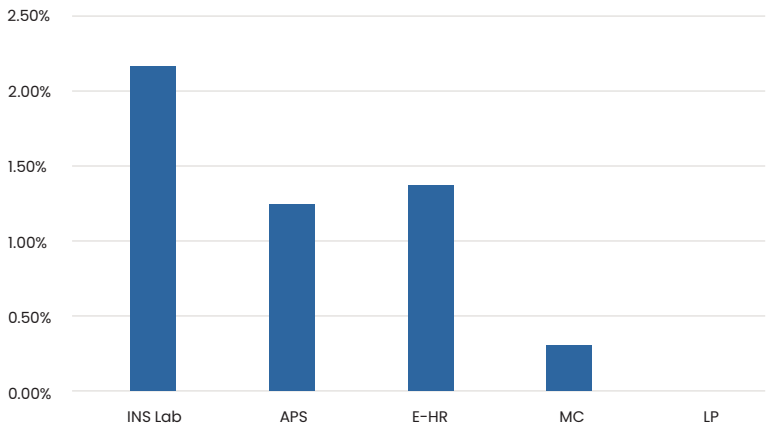
Results

When determining the value of evidence relative to identifying tobacco status, our results were clear.

Analysis #1, as shown in Figure 1, found that the carefully curated insurance labs offered the greatest overall value for tobacco identification, followed by APS & EHR.

EHR's provided the greatest value relative to digital underwriting evidence. While we only assessed current tobacco users, EHR's can also provide additional value for identifying former and never smokers. Medical claims provided the next best indication of tobacco use. In Analysis #1, we were not able to identify any non-disclosed tobacco user via LabPiQture.

Figure 1. Undisclosed smoking detection by undewriting evidence
# of case: INS Lab=333, APS=250, E-HR=226, MC=704, LP=299, data set #1



Analysis #2 found similar findings, as shown in Figure 2, with one main differentiator. In this analysis, we could see the value insurance labs add to LabPiQture relative to tobacco use. By focusing on cases that only had an LP with cotinine test results from prior insurance labs in dataset #2, we found that the LP smoking detection becomes equivalent to insurance labs. This increases the identification of tobacco use significantly enough that it is expected to be consistent with the findings in Figure 1. One caveat is that the insurance labs housed within LP will likely not be as current as traditional insurance labs taken at the time of underwriting.

While there may be value in even less recent tobacco use indications, which can happen with any of these data sources, this research did not attempt to quantify or reflect this value, but rather focused on a stricter time bound of tobacco use in the last year in order to more closely align with many carriers' current underwriting guidelines.

Figures 2 and 3 depict how LP smoking identification overlaps with self-disclosure, indicating that some smokers do indeed disclose tobacco use. Interestingly, we did not see the same overlap with MC or RX. This adds another layer of reliability to the LP findings.

Figure 2. Tobacco use detected among 5,073 applicants who have all three evidence hit, data set #2

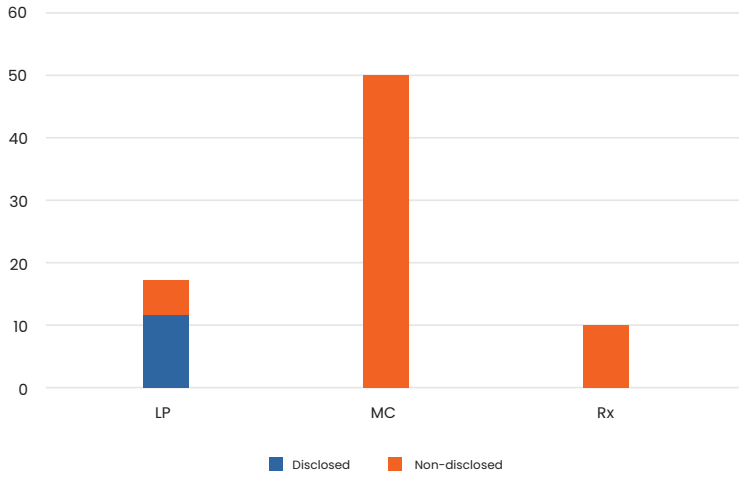
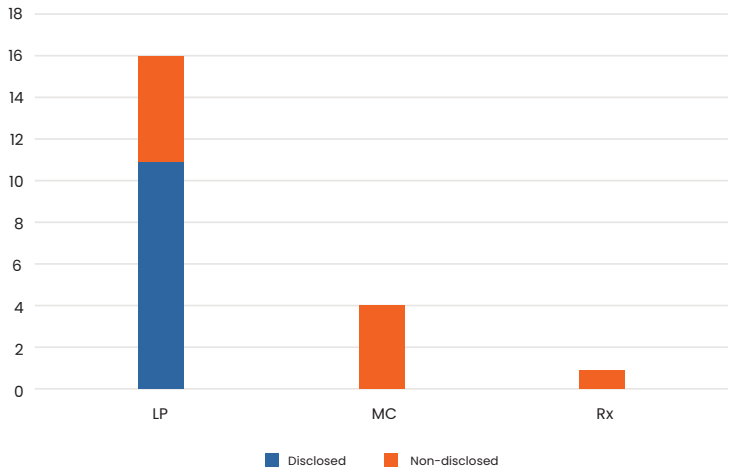


Figure 3. Tobacco use detected among 786 applicants who have all three evidence hit and the LP hit contain nicotine test, data set #2



Conclusion

For the purposes of identifying tobacco users, our analysis indicates that insurance labs remain the gold standard. While there may be value in detecting less recent tobacco use through various data sources, this research did not attempt to quantify or reflect that value. Instead, it focused on a stricter time frame of tobacco use within the last year to better align with many carriers' current underwriting guidelines.

Among the digital underwriting evidence assessed, EHRs performed strongest in identifying tobacco use, followed by MC and then LP. If current tobacco identification is a top priority, our study supports considering EHR data earlier in the underwriting evidence sequencing.