

## Applicant Medical and Smoking History Nondisclosure in the Life Insurance Marketplace

*Information asymmetry risk for simplified issue, accelerated, and full underwriting?*

**AN APPLICANT'S SELF-DISCLOSED MEDICAL AND SMOKING HISTORY** continues to be critically scrutinized during the life insurance application process for simplified, accelerated, and full underwriting. Increased mortality risks are known for many diseases and practices, including hypertension, diabetes, kidney disorders, heart disorders, and tobacco use.

While full underwriting has definitive medical and smoking status verified by the laboratory and professional paramedical exam, the simplified “no-exam” term life insurance products rely more on the applicants’ accuracy of disclosing their medical and smoking status.

Because they have a disease that had not been diagnosed at the time of application, many applicants cannot accurately disclose specific medical conditions. Other applicants may only know of their condition described in another way (e.g.,

“sugar” instead of diabetes). Finally, applicants can intentionally fail to disclose their medical and smoking history.

To assess the risk that applicant nondisclosure poses to life insurers and other risk-taking parties, ExamOne, which provides paramedical and laboratory testing for life insurance companies, analyzed data to compare nondisclosure of risk—either intentional or unintentional—with incidence of disease risk and tobacco use as demonstrated by recorded laboratory and paramedical examination results.

### Medical Disease and Smoking Prevalence in the General Population

As seen in Table 1, the prevalence of the leading morbidity and mortality risk factors continues to be very high throughout the general population. While individuals normally know their smoking history, medical diseases and risk factors like diabetes, pre-diabetes, hypertension, hypercholesterolemia, heart disease, and heart failure are often undiagnosed and not known by individuals in their normal lives.

The prevalence of cigarette smoking declined from 24.7 percent in 1997 to the current prevalence of 16.8 percent in 2014.<sup>1</sup> However, the use of e-cigarettes has increased to 12.6 percent in 2014; the long-term health effects of their use is relatively unknown. Diabetes and pre-diabetes prevalence continues to rise, with the increased weight and obesity of the general population leading to increased morbidity and mortality. Up to 70 percent of individuals with pre-diabetes will eventually develop diabetes during their lifetime.<sup>2</sup>

### ExamOne Tobacco History and Medical Disease Studies

#### *Applicant Tobacco Nondisclosure*

Our initial study published in the *Journal of Insurance Medicine*<sup>3</sup> looked at approximately 6.2 million life insurance applicants for whom both tobacco-use interview questions and a confirmatory urine cotinine test were completed between 1999 and 2012. These applicants were evaluated for consistency between self-reported and laboratory-confirmed tobacco-use status. Tobacco history nondisclosure—false-negative self-reporting,



or FNSR—was found to be 19.3 percent overall at a laboratory urine cotinine cutoff of 0.5 ug/ml (a cutoff used by most life insurers during this period). Smoking history nondisclosure was found to be strongly associated with men, applicants younger than 30 or older than 60, and low cotinine positivity rates in the applicant’s state of residence. Policy face value was also moderately predictive, with values greater than \$500,000 associated with moderately higher tobacco use history nondisclosure.

Follow-up applicant tobacco nondisclosure rates for all applicants tested for urine cotinine for January 2014–March 2016 (27 months and approximately 4 million applicants) was 22.9 percent overall at a laboratory urine cotinine cutoff of 0.3 ug/ml (a cutoff used by most life insurers during this period). This was consistent with our 1999–2012 analysis of the percentage of applicants who do not accurately disclose their tobacco history. (See Table 2.)

More detailed analysis of tobacco nondisclosure is shown in Table 3. In regard to gender, there appears to be a high, but consistent, nondisclosure rate among both males and females. There is an increase in nondisclosure rates in the 18–29 and the 60+ age groups. There is also a significant increase in nondisclosure rate to 27.6 percent for policy sizes greater than \$500,000. Overall tobacco nondisclosure at individual carriers ranged from a low of 13 percent to a high of 47 percent.

#### Applicant Medical History Nondisclosure

ExamOne analyzed all applicants for January 2014–March 2016 (27 months) who received a paramedical medical examination and insurance laboratory results to study medical history nondisclosure

**Table 1. Prevalence of Leading Morbidity and Mortality Risk Factors**

Disease/Smoking (U.S.)	Prevalence (% of population)	Population (Millions)
Smoking	16.8%	52.5
Diabetes	9.3%	29.1
Pre-Diabetes	27.5%	86.0
Hypertension	29.0%	70.0
Heart Failure	2.1%	5.1
Heart Disease	11.5%	27.6
High Cholesterol	33.5%	33.5

Source: CDC 2014

**Table 2. Applicant Tobacco History Nondisclosure**

Tobacco Non-Disclosure	Rate	Criteria (Cutoff)
Year	% of urine cotinine positive applicants who nondisclosed	ug/ml
1999-2012	19.3%	0.5
2014-2016*	22.9	0.3

Source: ExamOne Data  
\*27 months

for risk of the following disease states (see Table 4):

- **Pre-diabetes**, utilizing hemoglobin A1C laboratory results
- **Diabetes**, utilizing hemoglobin A1C laboratory results
- **Hypertension**, utilizing the paramedical blood pressure measurement
- **Heart failure or heart disease**, utilizing NTproBNP (N-terminal pro-brain natriuretic peptide) laboratory results.

The pre-diabetes risk medical history nondisclosure rate was extremely and consistently high among all applicants, gender, age groups, and policy size. Individual carriers’ overall nondisclosure rates ranged from 85 percent to 100 percent. The reason for the high nondisclosure rate may result from an applicant’s intentional failure to report his or her medical history, but it is more likely that the applicant has an undiagnosed disease risk of pre-diabetes that would only be found by laboratory testing. Because the prevalence and nondisclosure rates of pre-diabetes in the

population is extremely high, there is ongoing risk of morbidity and mortality as these individuals’ disease state worsens to definitive diabetes.

The diabetes risk medical history nondisclosure rate was very high (> 44 percent). There was not much difference between males and females. However, there was a significant increase in the nondisclosure rate among 18- to 39-year-olds and in policy sizes greater than \$500,000. While still high, the nondisclosure rate for ages 60+ was lower than the other age groups. Individual carriers’ overall nondisclosure rates ranged from 30 percent to 52.8 percent. The reason for the high nondisclosure rate may result from an intentionally nondisclosed medical history or undiagnosed diabetes. Undiagnosed disease risk of diabetes is usually diagnosed by laboratory testing.

The hypertension risk medical history nondisclosure rate was very high (> 56 percent). Male nondisclosure was higher than for females. There was a significant

**Table 3. Tobacco Nondisclosure (2014-2016)**

Condition	Confirmation Criteria	All Applicants	Males	Females	18–29 y.o.	30–39 y.o.	40–49 y.o.	50–59 y.o.	60+ y.o.	Policy Size \$0-499K	Policy Size \$500K
Tobacco	Urine COT>0.3 ug/ml	22.9%	23.2%	22.3%	25.8%	23.1%	22.1%	20.8%	24.1%	21.7%	27.6%

Source: ExamOne Data

**Table 4. Medical History Nondisclosure (2014-2016)**

Condition	Confirmation Criteria	All Applicants	Males	Females	18-29 y.o.	30-39 y.o.	40-49 y.o.	50-59 y.o.	60+ y.o.	Policy Size \$0-499K	Policy Size \$500K
Pre-Diabetes	A1c 6.0-6.4	93.2%	93.4%	93.1%	96.4%	95.9%	95.4%	93.2%	88.9%	92.8%	94.6%
Diabetes	A1c > 6.4	44.2%	43.9%	44.5%	54.5%	55.3%	49.7%	45.9%	33.6%	43.0%	49.2%
Hypertension	Systolic BP ≥ 140	56.8%	59.2%	50.5%	86.8%	76.2%	64.2%	54.2%	40.4%	53.8%	67.0%
Heart Failure/ Disease	NT-ProBNP ≥ 125 pg/ml	94.7%	93.7%	96.0%					94.7%	94.7%	94.1%

Source: ExamOne Data

increase in the nondisclosure rate among 18- to 49-year-olds, with 18- to 29-year-olds having nondisclosure rates greater than 86 percent and 30- to 39-year-olds having nondisclosure rates greater than 76 percent. While still high, the nondisclosure rate for ages 60+ was lower than the other age groups. There was also an increase in nondisclosure in policy sizes

greater than \$500,000. Individual carriers’ overall nondisclosure rates ranged from 37 percent to 82 percent. The reason for the high disclosure rate may result from an intentionally nondisclosed medical history or undiagnosed diabetes. Undiagnosed disease risk of hypertension is initially diagnosed and monitored by measured blood pressure.

The heart failure/disease risk medical history nondisclosure rate was extremely and consistently high (> 93 percent) among all applicants, genders, and policy size. The 60- to 74-year-old age group was analyzed because the majority of NT-proBNP laboratory testing is performed in this age group. The reason for the high nondisclosure rate may result from an intentionally nondisclosed medical history from the applicant, but it is more likely that the applicant has an undiagnosed disease risk of heart failure and left ventricular heart function that would only be found by laboratory testing or more costly cardiac testing. Undiagnosed disease risk

of heart failure and left ventricular dysfunction can be cost-effectively diagnosed by utilizing NTproBNP laboratory testing.

**Summary**

The prevalence of leading mortality and morbidity risk factors like smoking and hypertension, along with disease risks including diabetes, pre-diabetes, heart failure, and heart disease, continues to be high in the general population. Insurers rely on accurate and reliable information in order to assess and price the risks that they are underwriting. Information asymmetry appears to be taking place in the marketplace, where there is very high medical history and smoking nondisclosure rates, potentially placing the insurer or risk-taking party at an increased risk. □

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