

# THE POWER OF BLOOD

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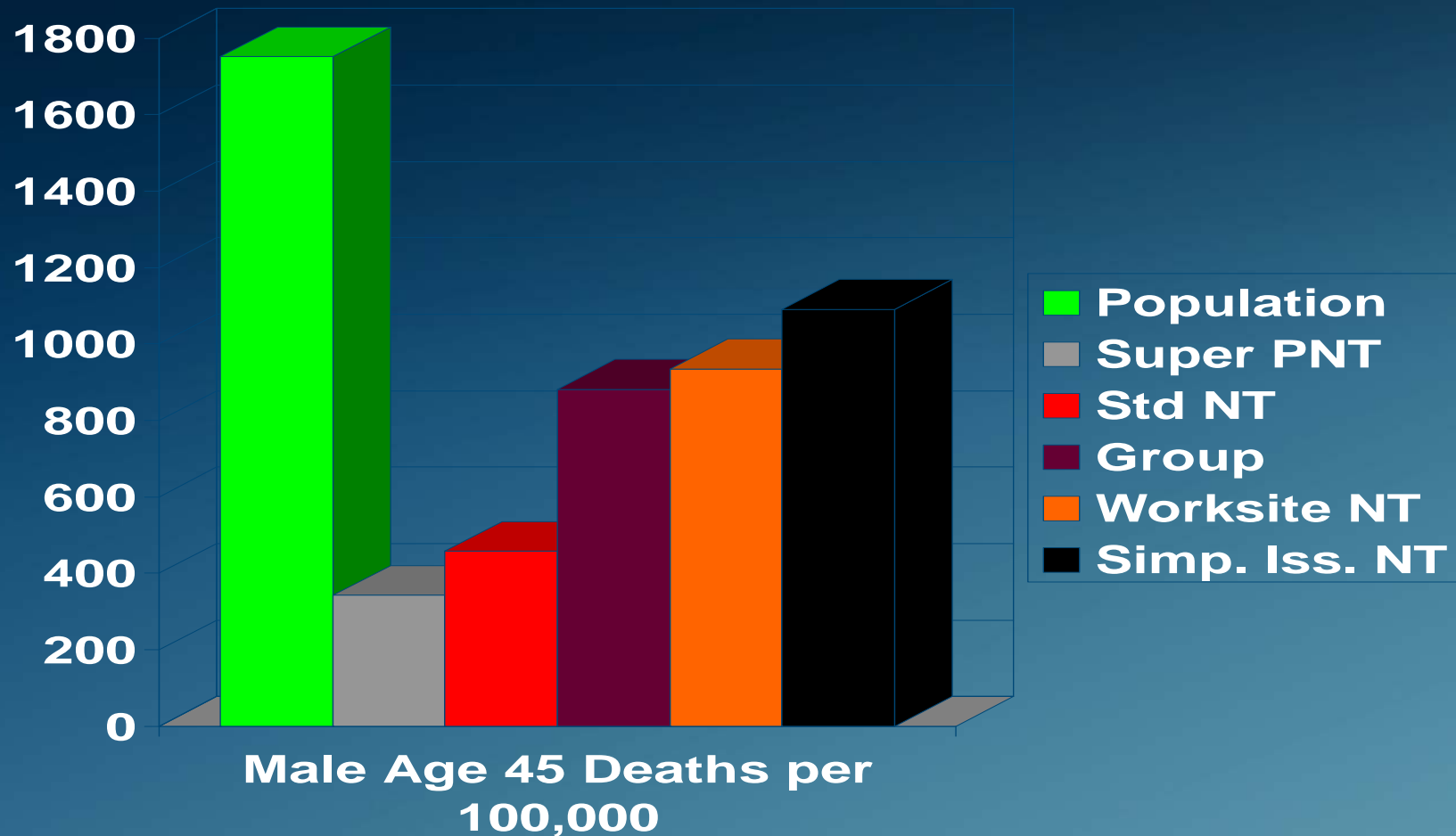
# What is the Power of Blood?

- How close can Simplified Issue mortality get to Fully Underwritten mortality?
- Can other underwriting tools replace blood testing?

# Mortality Results Impacted by...

- The population segment you're drawing from
- The underwriting filter used to measure risk
- A Simplified Issue or Instant Issue program must create a combination of market segment and underwriting filter that produces acceptable mortality

# 5-Year Mortality under Existing U/W



# Underwriting Information Lost from Simplified Issue vs. Fully Underwritten

- Blood - Cholesterol
- Sentinel Effect
- Accurate Height/Weight
- Nicotine Screen (smoking habit honesty)
- Honesty

# Elderly women get life in L.A. insurance killings



Golay



Rutterschmidt

# How valuable is Blood

- The Framingham Heart Study analyzes Heart Disease risks and provides information on the predictive value of Blood and Cholesterol

# Framingham Heart Study

## ■ Predictors of Heart Attacks

Age
Smoking
Systolic Blood Pressure
Total Cholesterol
HDL Cholesterol

- In the absence of blood, Body Mass Index has predictive value, but not as much as cholesterol

# Hard Coronary Heart Disease Risk

10-yr Risk Score	Male	Female
4 or less	1% or less	1% or less
6	2%	1%
8	4%	1%
10	6%	1%
12	8%	1%
14	16%	2%
16	25%	4%
18	30+%	6%
20	30+%	11%
22	30+%	17%
24	30+%	27%
26	30+%	30+%

# Contribution of Age to CVD Risk

Age	Male Score	Female Score
20-34	-9	-7
35-39	-4	-3
40-44	0	0
45-49	3	3
50-54	6	6
55-59	8	8
60-64	10	10
65-69	11	12
70-74	12	14
75+	13	16

# Systolic Blood Pressure and HDL Score

Systolic BP	Male Untreated	Male Treated	Female Untreated	Female Treated
<120	0	0	0	0
120-129	0	1	1	3
130-139	1	2	2	4
140-159	1	2	3	5
160+	2	3	4	6

HDL	Male Score	Female Score
60+	-1	-1
50-59	0	0
40-49	1	1
<40	2	2

# Male Scores for Cholesterol/Smoking

Total Cholesterol	Ages 20-39	Ages 40-49	Ages 50-59	Ages 60-69	Ages 70-79
<160	0	0	0	0	0
160-199	4	3	2	1	0
200-239	7	5	3	1	0
240-279	9	6	4	2	1
280+	11	8	5	3	1
Non-Smoker	0	0	0	0	0
Smoker	8	5	3	1	1

# Heart Attack Risk of an Age 45 Non-smoker with high cholesterol and high blood pressure

No Blood Testing	Heart Attack Risk
Male	2%
Female	1%

With Blood Testing	Heart Attack Risk
Male	13%
Female	3%

# Using Framingham Heart Study data

- 5,000 lives examined every 2 years since 1948
- Health and heart disease tracked over 60 years
- Can create our own insured population
  - Both Fully Underwritten (Blood) and Simplified Issue

## Health Information Available from Framingham Heart Study Data

Total cholesterol

Body mass index

Blood pressure

Use of blood pressure medication

Heart rate

Tobacco use

Medical History – Diabetes

Medical History – Stroke

Medical History – Cardiovascular

## Fully Underwritten (Blood-Tested) Insured Population

<i>Underwriting Item</i>	<i>Preferred</i>	<i>Standard</i>	<i>Substandard</i>	<i>Uninsurable</i>
Diabetes History	None	None	Yes	n/a
Stroke History	None	None	Yes	n/a
Cardiovascular History	None	None	Yes	n/a
Total Cholesterol	Total 220	Total 300	Total 350	Above 350
Systolic Blood Pressure	135	150	175	Above 175
Diastolic Blood Pressure	85	95	114	Above 114
BP Meds	None	Ok	Ok	n/a
Heart rate	100	100	130	Above 130
Build	BMI 27.5	BMI 35	BMI 40	BMI Above 40

## Fully Underwritten Insured Population

Underwriting Class	Issue Age Group	Policies Issued	Deaths Within 6 Years
Preferred NT	30 - 39	61	0
	40 - 49	108	1
	50 - 59	39	2
	60 - 69	19	1
Standard NT	30 - 39	122	0
	40 - 49	367	2
	50 - 59	356	10
	60 - 69	183	8
<b>Grand Total</b>		<b>1,255</b>	<b>24</b>

## Simplified Issue (No Blood) Insured Population

<i>Underwriting Item</i>	<i>Standard</i>	<i>Substandard</i>	<i>Uninsurable</i>
Diabetes History	None	n/a	Yes
Stroke History	None	n/a	Yes
Cardiovascular History	None	n/a	Yes
Total Cholesterol	n/a	n/a	n/a
Systolic Blood Pressure	n/a	n/a	n/a
Diastolic Blood Pressure	n/a	n/a	n/a
BP Meds	None	n/a	Yes
Build	BMI 35	n/a	BMI Above 35

## Simplified Issue Insured Population

Underwriting Class	Issue Age Group	Policies Issued	Deaths Within 6 Years
	30 - 39	214	0
Standard	40 - 49	623	6
NT	50 - 59	679	30
	60 - 69	396	27
Grand Total		1,912	63

## Comparison of Simplified Issue and Fully-Underwritten Mortality

Issue Age Group	Fully Underwritten	Simplified Issue	Mortality Increase
30 - 39	0.0%	0.0%	0%
40 - 49	0.6%	1.0%	52%
50 - 59	3.0%	4.4%	45%
60 - 69	4.5%	6.8%	53%
	1.7%	3.3%	89%

# One more application of Framingham Heart Study data

- Managed Care for Life Insurance
- Preventive Health Screening

# Health Deteriorates

## Fully Underwritten Insureds 6 Years Later

U/W Class	Ages	Policies Issued	Pref	Std	Substandard	Uninsurable
PrefNT	40 - 49	108	37	63	4	3
StdNT	40 - 49	367	17	242	93	13

## Simplified Issue Insureds 6 Years Later

U/W Class	Ages	Policies Issued	Pref	Std	Substandard	Uninsurable
StdNT	40 - 49	623	57	337	179	44

# Health Deteriorates

## Fully Underwritten Insureds 6 Years Later

U/W Class	Ages	Pref	Std	Substandard	Uninsurable
PrefNT	40 - 49	34%	58%	4%	3%
StdNT	40 - 49	5%	66%	25%	4%

## Simplified Issue Insureds 6 Years Later

U/W Class	Ages	Pref	Std	Substandard	Uninsurable
StdNT	40 - 49	9%	54%	29%	7%

# Health Deteriorates

- An American Medical Association 2007 research study states that 21% of the population seeks annual physicals, but only 5% obtain preventive health screening exams if they are asymptomatic.
- One concludes that most lives in an insured population are not subject to preventive health exams and are not currently being screened for significant health issues

# Health can Bounce Back

- Researchers from Yale University found people more likely to modify health habits if newly diagnosed with health problems.
  - 44% of smokers facing a medical diagnosis quit.
  - 14% of smokers not facing a medical diagnosis quit.
- Journal of the American Medical Association reported 71% of patients made and maintained comprehensive lifestyle changes for 5 years with 50% less cardiac events as for the control group.

# More Health Improvement

- *...statins can reduce coronary heart disease death and heart attack rates by 20-50%.*
- *...Harvard researchers found a 20% reduction of heart-disease risk for those who exercised.*
- *...a German study found those physically active only after age 40 were 55% less likely to be diagnosed with heart disease than those inactive all their lives.*

# Mortality Savings

- Mortality savings for fully underwritten portfolio utilizing preventive health screens is 2% of claims.
- Mortality savings for simplified issue underwriting is 3.5% expected claims.
- Assumes most individuals don't follow through on treatment or lifestyle change even after facing a significant health issue.
- 10% and 15% savings for fully underwritten and simplified issue if 100% follow through.

# Preventive Health Screenings

- Life Line Screening ([LifeLineScreening.com](http://LifeLineScreening.com)) offers preventive health screening for insureds across the U.S.
- Preventive Health Screens include:
  - Atrial Fibrillation Screening
  - Carotid Artery Screening
  - Abdominal Aortic Aneurysm Screening
  - Peripheral Arterial Disease Screening
  - Cholesterol, C-Reactive Protein, Glucose Screening

# Conclusions

- Blood can save you money before and after issuing a life insurance policy
- Simplified Issue Mortality can be 50% higher than Fully Underwritten mortality
- Utilizing preventive health screenings can reduce mortality after issue for both simplified issue portfolios and fully underwritten portfolios

# Intelligent Underwriting With Prescription Histories

April 2009

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[www.rxhistories.com](http://www.rxhistories.com)

# How does it work?



- Obtain the Authorization
- Submit the query
- Review the results

# How does it work?

- Results returned in average 15 seconds
  
- Average hit rate = 76%
  - Varies by line of business / insurer
    - Highest in small group health
    - Lowest in low-face life
  - Key driver of variance:
    - Socioeconomic status of applicant pool
  
- Pay by the hit

# What's returned on an Rx History?

- Prescription
  - Brand & Generic name
  - Dosage, quantity
  - Date of fill
  - Risk Indicator (e.g. red, yellow or green)
- Physician
  - Specialty
  - Contact info
- Pharmacy
  - Contact info
- Dates of Eligibility

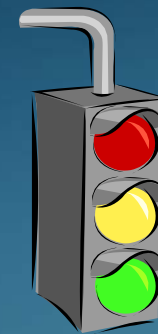
# Milliman uses a Red / Yellow / Green Classification System.

- Every drug is mapped to an underwriting significance

● Significant (e.g. Coumadin)

● Potentially Significant (e.g. Norvasc)

● Likely Not Significant (e.g. Amoxicillin)

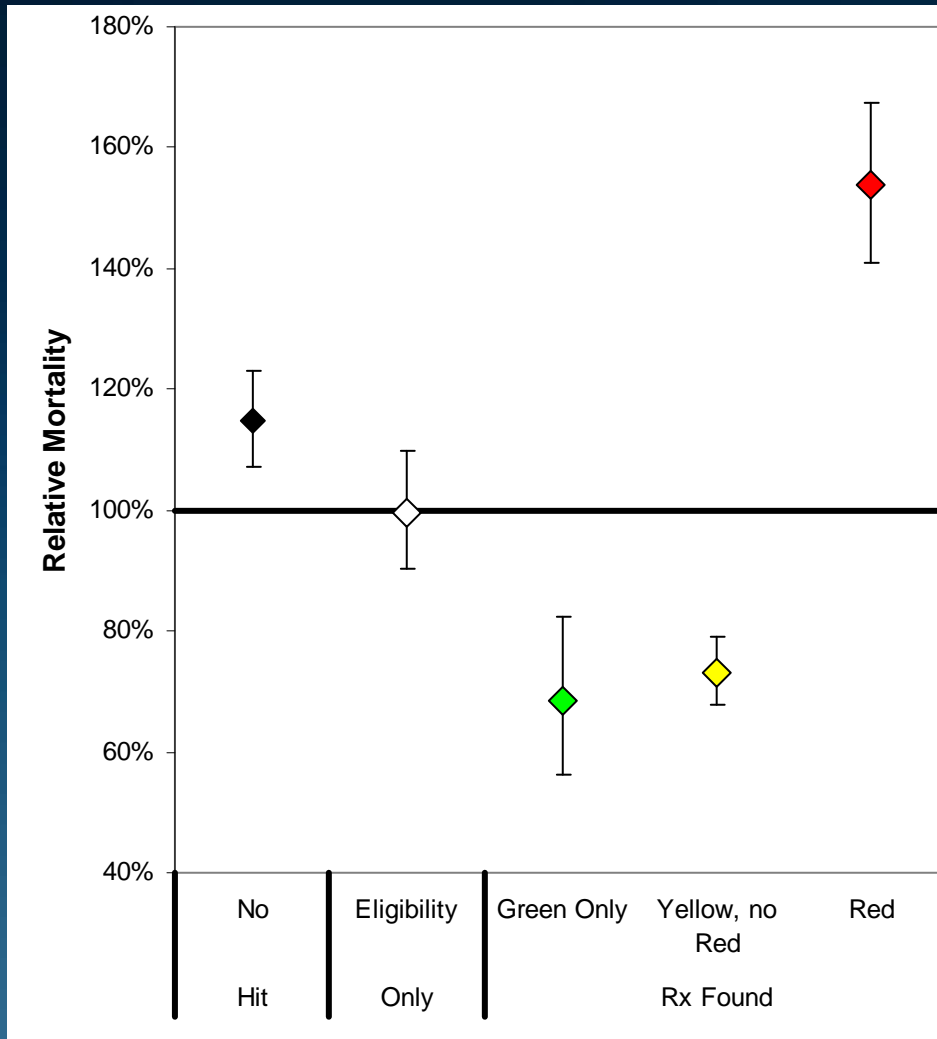


- Separate mappings for Life / Health / LTC
- A seven-level code defines our risk categories
  - Group (antivirals), Class (antiretrovirals), Subclass (protease inhibitors) . . .

# Milliman / RGA: Rx Mortality Study

- 1.1 million insurance applicants (mostly health and LTC) from 2005-2007
- 21 million distinct prescription fills
- 2,530 deaths between 2005-2007 (from Social Security Death File)
- Relative mortality ratios calculated for various subgroups based on prescription history.
- Milliman / RGA study results webinar: Weds January 21 – 10:30 CST

# Mortality Study – Sample Results



- No Hit
  - Slightly worse than average
- Eligibility Only
  - About average
- Green/Yellow Only
  - Significantly better than average
- Red
  - Significantly worse than average