

Long Term Care International Forum

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Cognitive Underwriting -- Its Impact on Profitability

Dawn E. Helwig

Milliman & Robertson, Inc.

(312) 726-0677

Cognitive Claims - Who Cares?

Prevalence of Alzheimer's

<u>Age</u>	<u>Percent</u>
65-74	3.0%
75-84	18.7%
<u>85+</u>	<u>47.2%</u>
Total 65 +	10.3%

The Cost of Cognition



- Average Length of Claim:
 - Cognitive - approx. 4 Years
 - Non-Cognitive - approx. 2 Years
- Dementia #1 cause of LTC claims (LifePlans) and costliest cause

The Dementia Detection Dilemma

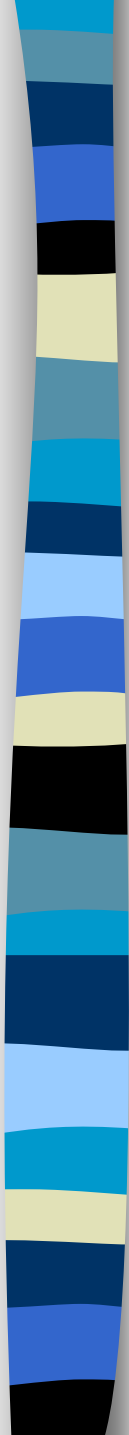
- < 25% of medical records mention it, when it exists.
- When mild or moderate: < 4% Mention
- Day to day variability
- Stigma!



Initial Indicators

- Loss of orientation to time & place
- Attention deficiency
- Short term memory loss
- Inability to comprehend verbal commands
- Loss of verbal fluency
- Loss of computational skills
- Poor judgment





Drum

Curtain

Bell

Fish

Nose

Parent

Moon

Garden

Hat

School



Tests to Try

- Mini-Mental State Exam (MMSE)
 - The “gold standard”
 - Max score of 30; “failing” <23
- Short Portable Mental Status Questionnaire (SPMSQ)
 - One of the simplest
 - Used in NLTCS
 - 10 questions; <6 correct indicates impairment



Tests To Try

(Continued)

- Cognitive Capacity Screening Exam (CCSE)
 - 30 questions; < 20 Correct “Fails”
- Mattis Dementia Rating Scale
 - Takes 30-45 minutes
 - Adequate performance assumed for all items below most difficult one passed.
 - Mixed results; small samples



Tests to Try

(Continued)

- Cognistat or Neurobehavioral Cognitive Status Exam (NCSE),
 - Provides scores in several areas
 - Single item serves as screen for most test areas
 - Not specifically designed to detect dementia, or for geriatrics
 - Quick to use for unimpaired (5-10 minutes)



Tests to Try

(Continued)

- Delayed Word Recall (DWR)
 - Importance of words used, sentencing concept, & “filler” used.
 - 10-item test, good at detecting mild dementia.
- 7-Minute Screen
 - Used enhanced word recall, to differentiate between normal memory loss & dementia.
 - Added clock drawing to assess non-verbal.
 - Useful “quick” instrument.



Tests to Try (Continued)

- Telephone Interview of Cognitive Status (TICS)
 - Adaptation of MMSE
 - 11 items
- Minnesota Cognitive Acuity Screen (MCAS)
 - Telephonically administered
 - Incorporates Delayed Word Recall Test



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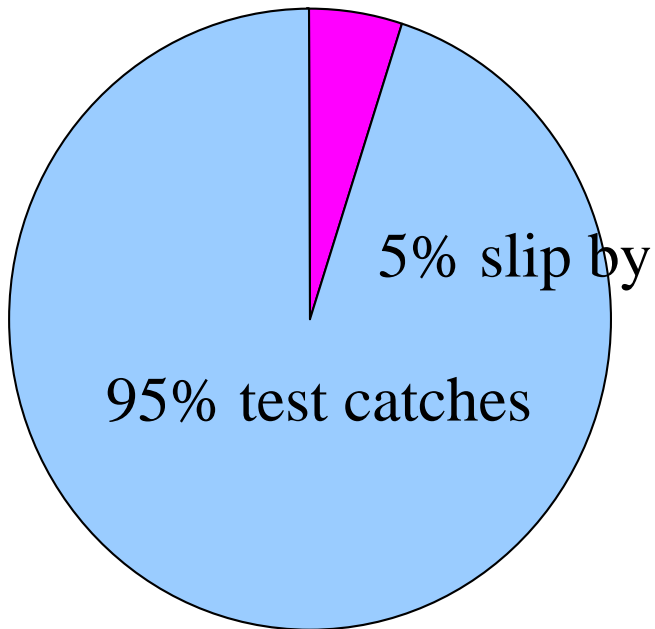
Testing the Tests

- Reliability - Similarity of results when testing the same person twice
- Sensitivity - Correct identification of truly impaired (i.e., no false negatives)
- Specificity - Correct identification of truly non-impaired (i.e., no false positives)

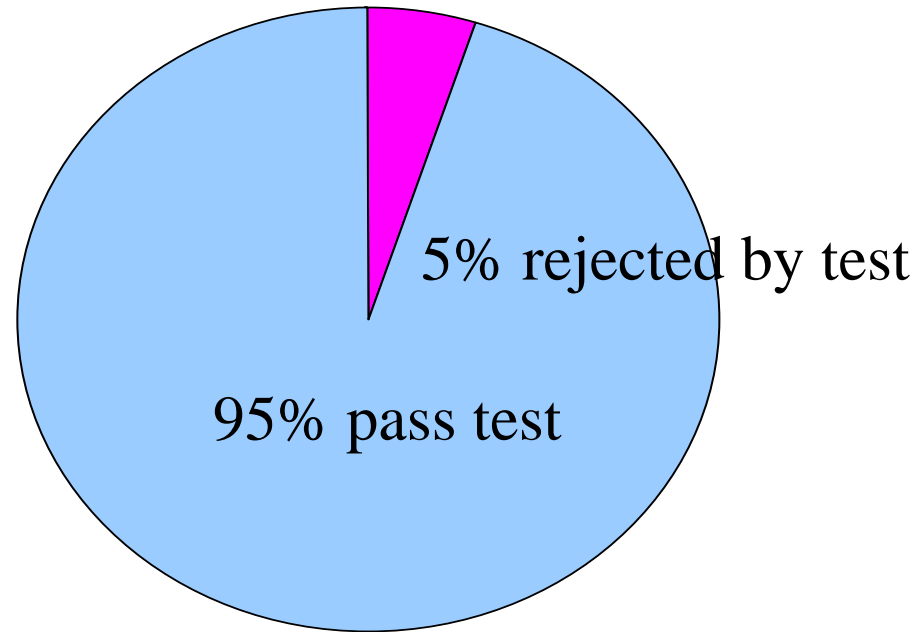
Example

95% Sensitivity & 95% Specificity

True Impaired



True non-impaired





“Best Case” Results*

<u>Test</u>	<u>Sensitivity</u>	<u>Specificity</u>
MMSE	.920	.920
SPMSQ	.920	.870
CCSE	.730	.820
Mattis	.620	N/A
Cognistat	1.000	.470
DWR	.960	1.000
7-Minute	.920	.960
TICS	.940	1.000
MCAS	.975	.985

* Used Maximum from Range of Values

Million Dollar Question

Better to:

Eliminate all bad, & maybe some good?

Or

Retain all good, & maybe get some bad?





Actuarial Model

- Projects lifetime premiums and claims & resulting difference (“contribution to expenses & profits”) for block of LTC issued.
- Uses sensitivities, specificities, & differences in costs of CI & Non-CI claims, to estimate results of each test.



Starting Point - “Loose” Underwriting- End up with 10% > 65 who are CI

Selection Factors

Issue Age

Duration

57

67

77

1

.86

.83

.68

2

.87

.86

.75

3

.90

.88

.81

6

.99

.93

.90

11

1.00

.95

.98

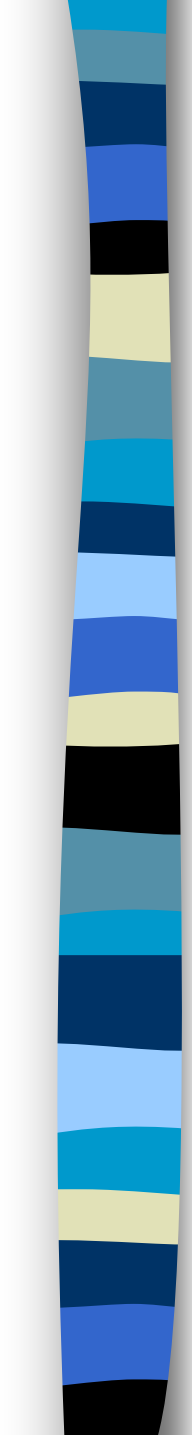


Medical Reject Rates Loose Underwriting

Issue Age

Reject Rates

67	5%
72	15
77	25
82	35
87	40
Avg.	14.2%



Close Your Eyes



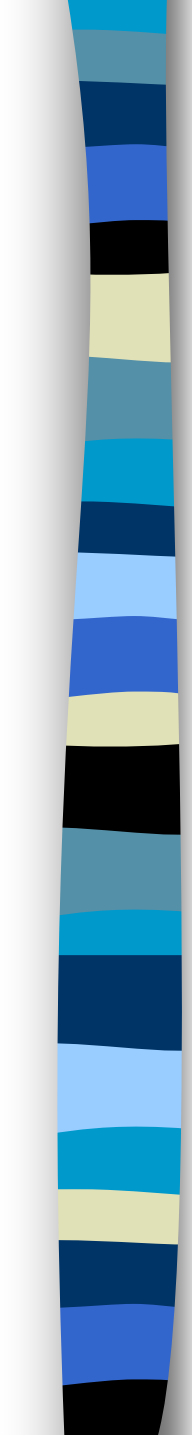
Number of false negatives accepted and false positives rejected affect:

- Reject rates
- Selection wear-off rates (CI's are immediate claims)
- Resulting lifetime premiums
- Resulting lifetime claims



Resulting Reject Rates Expected (Avg.)

Loose Und.	14.2%
MMSE	17.5
SPMSQ	19.2
CCSE	20.5
Mattis	27.0
Cognistat	33.0
DWR	14.9
7-Minute	16.1
TICS	14.8
MCAS	15.4



Resulting Ratios of Claims to Premiums (Lifetime)

Loose Und.	64.6%
MMSE	57.9
SPMSQ	58.1
CCSE	63.3
Mattis	67.1
Cognistat	55.6
DWR	56.7
7-Minute	57.8
TICS	58.3
MCAS	56.3



Resulting Contribution to Profits & Expenses Over Lifetime (per 1,000 applicants)

In Thousands

Loose Und.	\$1,927.7
MMSE	2,210.9
SPMSQ	2,155.2
CCSE	1,845.1
Mattis	1,504.2
Cognistat	1,869.9
DWR	2,356.8
7-Minute	2,255.1
TICS	2,266.8
MCAS	2,362.3



Other Considerations

- Some tests have wide ranges of reported sensitivities & specificities; table used best.
- 4% reduction in sensitivity -- reduced profit by \$70,000.
- Cost of performing different tests varies.
- Assumed 50% of sales < 65, but no cognitive screening there.