

The Multidimensional aspect of Adherence in a Health-Economic Model; an Application in Chronic Non-Malignant Pain Management

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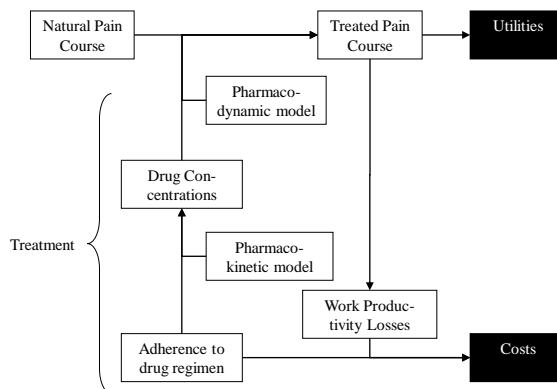
Background

- What is adherence?
 - *“the extent to which a patient’s behavior corresponds with the agreed recommendations from a health care provider”**

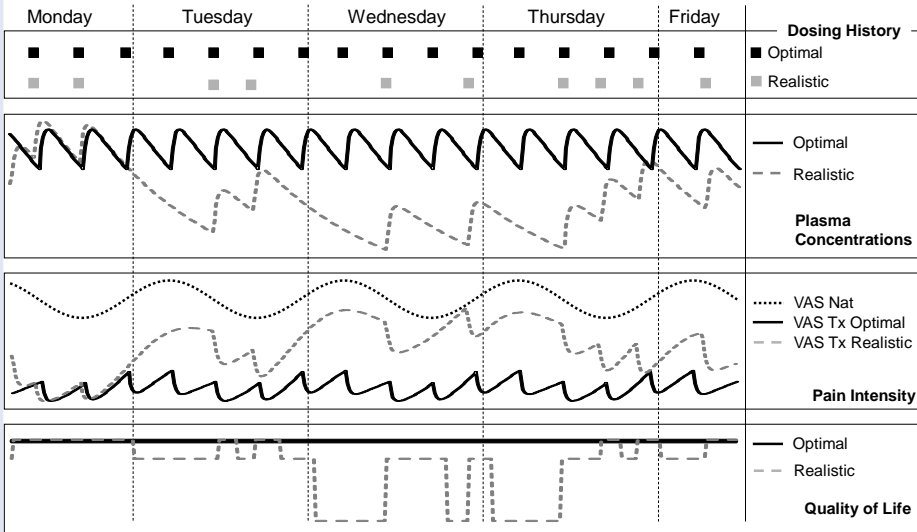


"I don't think that's what the pharmacist meant when he said 'Take for two days and skip a day.'"

Global model structure



Example of patient's history



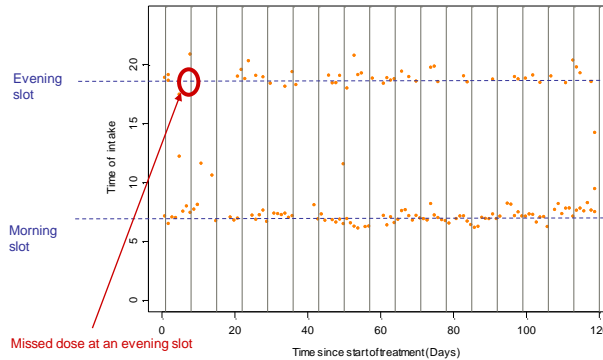
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Adherence to drug regimen

Pharmionic Knowledge Center Database, AARDEX

sample patient: 49 BID



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Model predicting dose intake

- Time slots
 - Breakfast
 - Lunch
 - Dinner
 - Bed time
- Weekdays vs. Weekends
- Previous slot
- Time already on regimen

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Model Analysis

- Optimal QID regimen vs. realistic QID regimen
- Utility data¹
 - 0-40 0.84
 - 41-60 0.76
 - 61-80 0.04
 - 81-100 -0.15
- Cost data
 - \$0.70 per dose²
 - \$190.54 per lost work day³
- Pain threshold to not go to work
 - Survey of 359 people with chronic non-malignant pain
 - Mean of 85

¹Lloyd 2007

²Redbook

³United States Department of Labor

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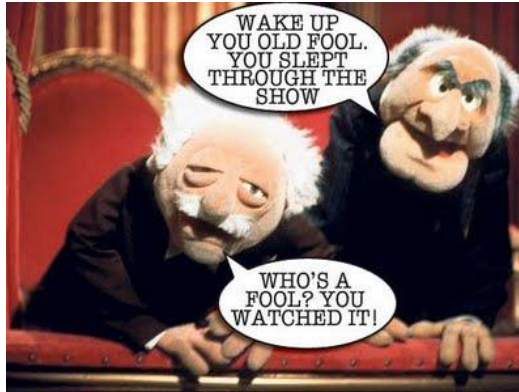
Results over 1 year

- Dosages
 - 214 missed (15%)
- Pain Intensity
 - 9 points higher
 - Much more fluctuation
- Quality of life
 - 0.07 lower (8%)
- Additional work days lost
 - 7.5
- Total cost difference
 - \$1,277

Concluding Remarks

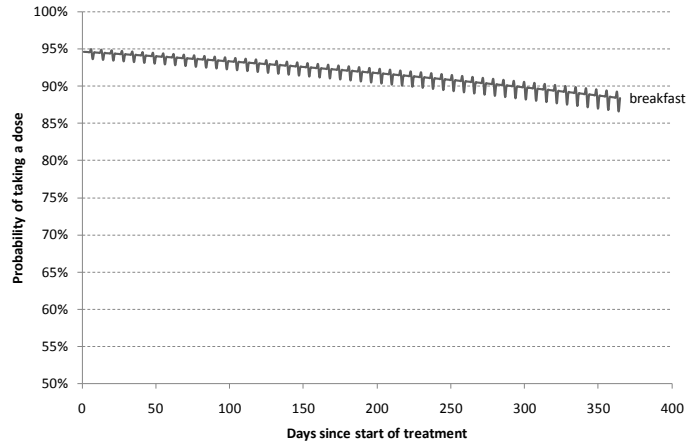
- Mechanism based HE model, incorporating
 - Real life adherence information using EM
 - Effect on symptoms using a PK/PD model
 - Translated to HE outcomes
- CE analysis of therapies with compliance advantage
- Possible to extend with
 - Adverse events
 - Impact of symptoms on dose taking behavior
- Application to other disease areas

Thank you for your attention



Backup

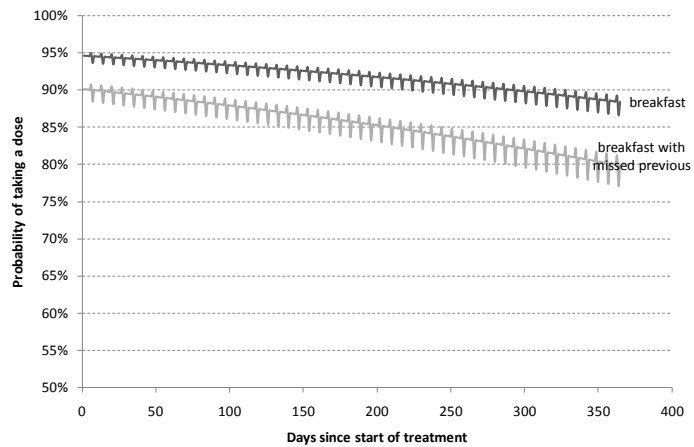
Model describing adherence behavior



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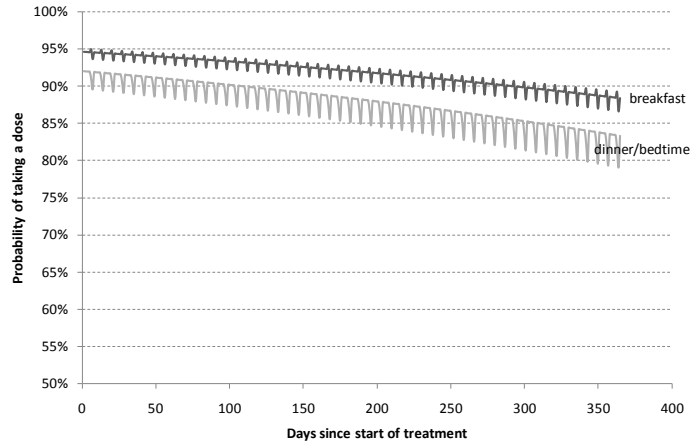
Model describing adherence behavior



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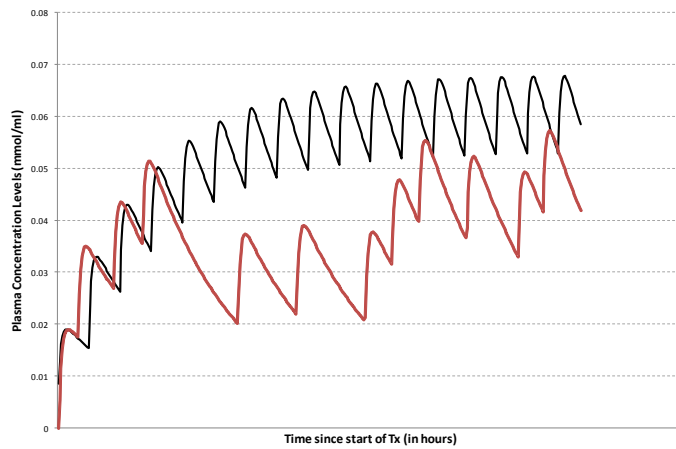
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Model describing adherence behavior



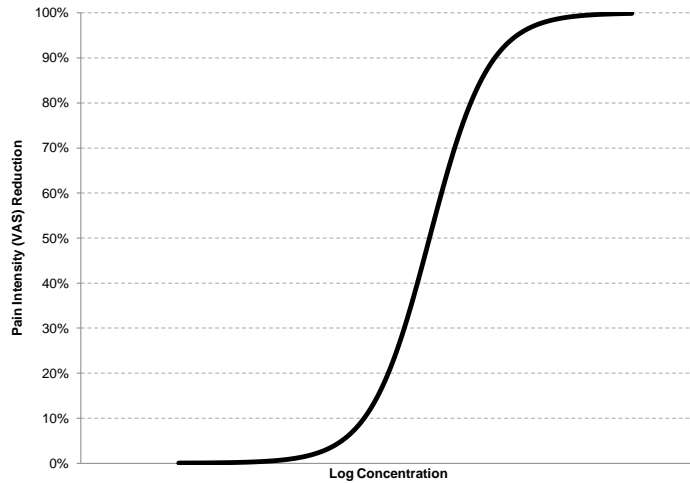
Plasma concentration levels

Pharmaco-kinetic model



Drug Effect

Pharmaco-dynamic model



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Results

	QID realistic	QID optimal	Differences
Concentrations			
Average	0.055	0.064	0.009
St dev	3.670	0.785	-2.885
Pain Intensity			
Untreated Pain (VAS)	74.8	74.8	
Treated Pain (VAS)	34.0	24.9	-9.1
QALYs			
	0.769	0.839	0.070
Dosages taken			
Total	1246	1460	214
WPL			
Total days lost of work	7.6	0.1	-7.5
Costs			
Drug Costs	\$873	\$1,023	+\$150
WPL Costs	\$1,454	\$27	-\$1,427
Total Costs	\$2,327	\$1,050	-\$1,277

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