A Program Evaluation Project

Pharmacogenectic Testing: An Answer to The 30-Day Readmission Rates

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Background

- In October of 2012, the Centers for Medicare & Medicaid Services identified 30-day acute care readmissions from long-term care (LTC) facilities as a national quality indicator.
- Nearly 1 in 5 Medicare patients discharged from the hospital, approximately 2.6 million, are readmitted within 30 days at a cost of over $26 billion every year.
- The number of people over the age 65 will increase to approximately 20% of the world population by 2030.
- Psychotropic medications are commonly administered to residents in LTC to manage behavior and psychiatric symptoms.
- It is well documented that older adults are vulnerable to the adverse effects of psychotropic drugs.
- People older than 70 are three times more likely to have adverse drug reactions from polypharmacy and return to the hospital.
- Pharmacogenetics (PGx) is a key component of personalized medicine, providing a tool to individualize drug therapy by choosing the right drug, at the right dose, for the right person.
- PGx examines the entire genome (DNA), characterizing variations in multiple genes affecting metabolic drug responses.
- More than 60 CYP450-derived enzymes are responsible for the metabolism of approximately 90% of medications on the public market.

Objectives

- Increase PGx information to providers and staff
- Reduce 30-day readmissions back to the hospital among residents receiving psychotropic medications at the Regency Village LTC facility.

Method

- Collection of buccal swab for PGx is offered upon admission to LTC and when medical status changes.
- Data was collected from 30 residents: 15 PGx, 15 not PGx
- Handouts on PGx were provided to residents

Analysis

- Descriptive statistics were calculated for resident demographics, with number and percent reported for categorical variables and calculation of mean and standard deviation for continuous variables.
- Per Dawson & Trap (2004), if the expected frequencies of certain cells are small, the chi-squared test should not be used because it will yield biased results.
- Because the sample proportion was inadequate for the desired outcome (only 16.7% of the sample was readmitted) a chi-squared test was not appropriate for the bivariate analysis.
- The bivariate analysis was conducted using Fisher Exact Test, which was more appropriate for this data set.
- For age, the Wilcoxon test was used because distribution was not normal based on analysis using the Shapiro-Wilkes. All other variable were analyzed using the Fisher Exact Test.
- Alpha level were set at 0.05, and all analysis was done in R (R Development Core Team, 2014).

Conclusion/Implications

- No significant association was detected between PGx and readmissions, although there was a higher proportion of PGx in the non-readmit group as compared with the readmit group. There were no significant differences in age between the groups.
- The result is likely due to small proportion of the sample readmitted.
- Further research is needed using a larger sample and modeling to fully analyze this potential association. Research design should also be reconsidered.
- This data could be useful as a pilot study guiding future research.

Bibliography

Dawson, B., Trapp, R. G. (2004). Basic and Clinical Biostatistics. New York, NY: Lange Medical Books.

R Development Core Team. (2014). R: A language and environment for statistical computing. Vienna, Austria: R Foundation for Statistical Computing. Retrieved from: http://www.R-project.org

Results

Table 1. Characteristics of the Sample (N=30)

Variable		Number (%)
Age (years)		85.3 ± 9.5
Gender (%)	Male	7 (23.3)
	Female	23 (76.7)
Race (%)	White	27 (90.0)
	Asian	1 (3.3)
	African American	2 (6.7)
PGT (%)	Yes	15 (50.0)
	No	15 (50.0)
Psychiatric Medications (%)	None	14 (46.7)
	One	16 (53.3)
Anti-Anxiety Medications (%)	None	18 (60.0)
	One	12 (40.0)
Anti-depressant Medications (%)	None	5 (16.7)
	One	22 (73.3)
	Two	3 (10.0)
Readmissions (%)	No Readmits	25 (83.3)
	Readmits	5 (16.7)

Table 2. Percentage of PGT with Readmission (N=30)

		No Readmit Number (%) N=25	Readmit Number (%) N=5	p-value
PGT				0.6539
	Yes	13 (52.0)	2 (33.3)	
	No	12 (48.0)	3 (66.7)	