Readability of After Visit Summaries: Comparing the Level of Information in After Visit Summaries from Internal Medicine and Family Medicine Residencies

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Abstract

Written advice can improve compliance with medical instructions. The Centers for Medicaid and Medicare Services expect physicians to provide a summarized report following at least most patient encounters. We analyzed 400 after visit summaries (AVS) provided to patients at Internal Medicine and Family Medicine residency clinics. The Flesch-Kincaid Grade Level Test and the Flesch Reading Ease Score were used to evaluate readability. We demonstrated that AVS are usually written at a level that is too high to be helpful to patients. We conclude that patient visit summaries are not written to the appropriate recommended grade levels of <- 8th grade for the average patient population. Further studies are needed to show if appropriate grade level summaries will improve quality of care.

Introduction

- Patients may forget up to 50% of info provided during a consult within 5 minutes
- Written advice can improve recall and compliance with medical instructions
- Center for Medicare & Medicaid Services (CMS) mandate clinicians provide after visit summaries to patients after most office visits
- Healthcare organizations recommend that patient education materials be written no higher than 6th-8th grade reading level
- Physicians overestimate their patient's literacy skills and can struggle to convey complex medical information
- Patient education materials are often written by physicians at too high a reading level
- We hypothesize that similar to patient education materials, office visit summaries are written at too high a level

Methods

- Retrospective review of AVS provided to adult patients in Family Medicine and Internal Medicine residency clinics
- AVS from residents of all levels and attendings randomly sampled from Jan. 1 2016-March 31, 2016
- 200 AVS per program analyzed for readability using the universally accepted Flesch-Kincaid Grade Level Test and the Flesch Reading Ease Score.
- Wilcoxon Rank Sum and Fisher's Exact Test were used to compare variables
- A scorecard comprised of components of the ideal AVS based on CMS was also used

Results

Variables	Overall N=400
Patients' Age, Years (mean, SD)	53.5 (17.6)
Patients' Gender (Male, %)	146 (36.5)
Patients' Race (N, %)	
Caucasian	188 (47.0)
African American	81 (20.3)
Hispanic	118 (29.5)
Asian/Other	13 (3.25)
Physician's Year of Training (N, %)	
PGY 1	100 (25.0)
PGY 2	99 (24.8)
PGY 3	101 (25.3)
Attending	100 (25.0)
Updated Medication List (Yes, %)	287 (71.8)
Updated Problem List (Yes, %)	216 (54.0)
Time and Location of Next Scheduled or Expected Appointment (Yes, %)	209 (52.3)
Lab or Diagnostic Tests Ordered (yes, %)	143 (35.8)
Acronyms (Yes, %)	206 (51.5)
Symbols (Yes, %)	8 (2.00)
Undefined Medical Jargon (Yes, %)	178 (44.5)
Precautions (Yes, %)	200 (50.0)
Medication Instructions (Yes, %)	210 (52.5)
Diagnosis or Differential (Yes, %)	400.0 (100.0)
Diagnosis in Lay Terms (Yes, %)	140 (35.0)

Table 1. **Family Medicine & Internal Medicine Scorecard Results & Demographics**

Variables	Kinkaid ≤8th grade reading level N=81	Kinkaid ≥65 reading score N=36
Updated Medication List (Yes, %)	56 (69.1)	26 (72.2)
Updated Problem List (Yes, %)	44 (54.3)	20 (55.6)
Time and Location of Next Scheduled or Expected Appointment (Yes, %)	53 (65.4)	24 (66.7)
Lab or Diagnostic Tests Ordered (Yes, %)	31 (38.3)	11 (30.6)
Acronyms (Yes, %)	42 (51.8)	18 (50.0)
Symbols (Yes, %)	3 (3.70)	2 (5.56)
Undefined Medical Jargon (Yes, %)	24 (29.6)	5 (13.9)
Precautions (Yes, %)	48 (59.3)	24 (66.7)
Medication Instructions (Yes, %)	47 (58.0)	24 (66.7)
Diagnosis or Differential (Yes, %)	81 (100.0)	36 (100.0)
Diagnosis in Lay Terms (Yes, %)	46 (56.8)	25 (69.4)

Table 2. **Family Medicine & Internal Medicine Readability Scores & Scorecard Results.**

Results

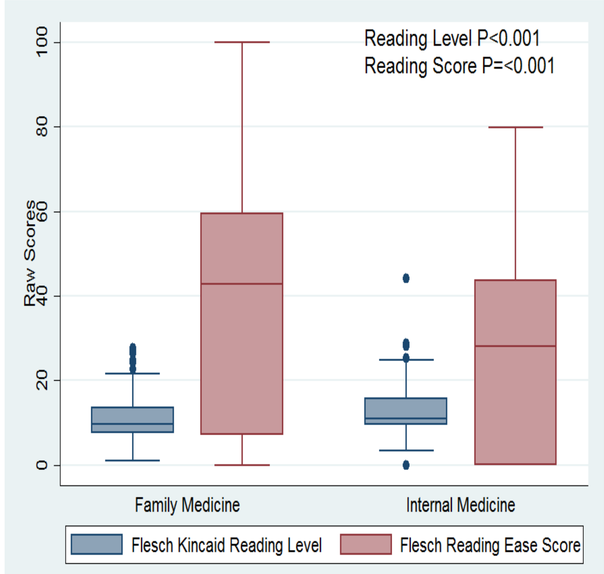

Figure 1. **The Median & IQR of Reading Level and Score between specialties**

Scores	Overall N=400	Family Medicine N=200	Internal Medicine N=200		P-value
				Coeff (95% CI)[1]	
Flesch Kinkaid Reading Level (mean, SD)	11.9 (5.17)	11.1 (5.07)	12.7 (5.15)	0.38 (-0.15, 0.93)	0.16
Flesch Reading Ease Score (mean, SD)	31.8 (25.0)	37.6 (26.5)	26.1 (22.1)	-2.92 (-5.44, -0.40)	0.02
				OR (95% CI)[2]	
Flesch Kinkaid Reading Level (≤ 8th grade level, %)	81 (20.3)	60.0 (30.0)	21 (10.5)	0.60 (0.44, 0.81)	0.001
Flesch Reading Ease Score (> 65, %)	36 (9.0)	31 (15.5)	5 (2.50)	0.42 (0.25, 0.73)	0.002

Table 3. **Association between Specialty and Reading outcomes.**

[1]Coeficients (95% CI) were calculated using Multiple Linear Regression after adjusting for patient's age, updated medication lists, ascertainment of next visit, Using symbols, Undefined Medical Jargon, providing medication instructions, and using diagnosis in Lay Terms.

[2]Odds Ratios (95% CI) were calculated using Multiple Logistic Regression after adjusting for patient's age, updated medication lists, ascertainment of next visit, Using symbols, Undefined Medical Jargon, providing medication instructions, and using diagnosis in Lay Terms.

Discussion

In both residency programs, after visit summaries (AVS) were written at a level too advanced for most patients to comprehend. The overall FKGL had a mean of 11.9 and a mean FRES of 31.8. The FKGL indicates the average AVS requires the reading skill of a college graduate. The FRES score classifies the difficulty of reading the average AVS as "difficult" or "very difficult" to read.

AVS written by the Family Medicine residency program were found to be written at a lower grade level with a greater reading ease than those written by the Internal Medicine residency program.

Despite this, both programs were more complex than current recommendations by some margin. As a result, we recommend that physicians strive to explain terminology in their respective fields to aid in patient comprehension. Training to that end could be potentially be piloted in these same residency programs. After visit summaries (AVS) are made to improve memory recall and compliance with medical instructions from office visits. Emphasis ought to be placed on the use of shorter sentences with simpler, patient-friendly vocabulary to improve readability.

Conclusions

- Effective patient centered communication is a challenging goal
- Patient-oriented information should be produced at appropriate levels of literacy (to <- 6-8th grade for the average patient population)
- Patient visit summaries are too often written at too high of an educational level across two specialties
- Physicians would potentially benefit from training to improve the readability of their writing
- Further studies are needed to show if appropriate grade level after visit summaries will improve quality of care