

Midwest Surgical Association

Readability of discharge summaries: with what level of information are we dismissing our patients?



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Abstract

BACKGROUND: We assessed the health literacy of trauma discharge summaries and hypothesize that they are written at higher-than-recommended grade levels.

METHODS: The Flesch–Kincaid grade level (FKGL) and Flesch reading ease scores (FRES), 2 universally accepted scales for evaluating readability of medical information, were used.

RESULTS: A total of 497 patients were included. The mean patient age was 56 ± 22 years. Average FKGL and FRES were 10 ± 1 and 44 ± 7 , including 132 summaries classified as very or fairly difficult to read. A total of 204 (65%) patients had functional reading skills at grade levels below the FKGL of their dismissal note; only 74 patients (24%) had the reading skills to adequately comprehend their dismissal summary. Total 30-day readmissions were 40, 65% of whom were patients with inadequate literacy for dismissal summary comprehension.

CONCLUSIONS: Patient discharge notes are written at too advanced of an educational level. To ensure patient comprehension, dismissal notes should be rewritten to a 6th-grade level.

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Health literacy, which is defined as an individual's capacity to obtain, interpret, and understand information needed to make health-related decisions, is considered one of the best predictors of a person's health status.¹ Disparity between the literacy of the average US adult and patient health information is increasingly cited as a barrier to patient involvement in their own care.² Poor or limited health literacy is shown to add more than \$73 billion of added costs to the US health care system each year.¹ Patients with poor health literacy are at a higher risk for seeking emergency care and have more frequent hospital admissions that are associated with longer lengths of stay.^{1,3,4} National adult literacy surveys show that nearly half of the US population is either "functionally illiterate," with a reading grade level of 0 to 5, or "marginally literate," with a grade level of 6 to 8.⁵

A large portion of the US population may have deficiencies in comprehending available patient health information. Thus, the National Institutes of Health, the US Department of Health and Human Services, and the American Medical Association advise writing health information at a 6th-grade level to be effectively understood by the average adult.^{1,6,7} The aim of this study is to assess the readability of patient hospital dismissal summaries and compare this to the patient's educational level. We hypothesize that current dismissal summaries are written at higher-than-recommended grade levels. Furthermore, we highlight deficiencies and focus on areas of improvement to create patient-centered dismissal summaries with enhanced readability.

Methods

After obtaining institutional review board approval, we retrospectively searched our prospective trauma registry for all adult patients (≥ 18 years of age) admitted to the trauma service from August 1, 2014, to December 31, 2014. Exclusion criteria included all in-hospital deaths and patients not discharged from the hospital with a dismissal summary. Furthermore, as our dismissal summaries are written in English, we excluded all English as a second language (ESL) patients. Patient records were then reviewed for demographic and clinical parameters, including age, sex, race, marital status, highest level of education obtained, mechanism of injury (MOI), Injury Severity Score (ISS), hospital length of stay (LOS), and dismissal disposition. Extended LOS was defined as greater than the 75th quartile. Hospital disposition was divided into dependent (where patients would have the assistance of health care providers, eg, nursing home, outside hospital, rehab center, hospice, and home with health assistance) and independent (with no further health care assistance eg, home without health assistance) locations. Patients with a traumatic brain injury (TBI) were identified, and their Glasgow Outcome Score (GOS) on discharge was collected. The primary outcomes were hospital readmissions and documented calls to the service within 30 days from the date of discharge.

Hospital dismissal summary

Once the pertinent data were collected from the trauma registry, the hospital dismissal summary was extracted from the electronic medical record. The dismissal summary is composed of 2 sections, the first of which details the patient's hospital course with information commonly intended for care providers; this is individualized for each patient based on patient presentation and hospital course. The second section is designed for patients and consists of information for further care. This section is derived from a common template and customized to each patient given the variation in their injuries and hospital course.

Flesch readability formulas

The Flesch–Kincaid grade level (FKGL) and Flesch reading ease scores (FRES) were developed in the 1940s by Rudolf Flesch and use sentence length and word complexity to calculate the readability of a text. Longer and more complex sentences require the reader to maintain more concentration to understand the meaning of a sentence.⁸ At the same time, complex words require more effort on the part of the reader to comprehend their meaning and thus, attain a higher score. The FRES quantifies how easy it is to read the text; scores commonly range from 0 to 100, with a higher score indicating that the material is easier to read. A reading ease score less than 50 indicates that the material is difficult to read, and a score less than 30 implies that the text is very difficult to read. The service writing the dismissal summary was noted, and a comparison of readability among different services was determined.

A digital copy of the written material was made as a Microsoft Office Word 2010 file (Microsoft Corporation, Redmond, WA, USA). All additional information not directly related to patient care was deleted, and only running text was kept. After correcting for grammatical errors and spelling mistakes, the readability of the text was determined using Microsoft Office Word's built-in calculator to calculate the FKGL and FRES, 2 universally accepted scales for evaluating the readability of medical information.

Continuous data is presented with a mean $\pm$ standard deviation (and quantiles as appropriate). Categorical data are presented as counts and percentages; the chi-square test was used to assess for an association between two categorical variables. Associations between continuous and categorical variables were measured with a *t*-test, and correlation between two continuous variables was assessed with a Spearman's rank correlation coefficient. The association of a binary variable with an ordinal variable (patient functional reading level) was analyzed with a Cochran Armitage Trend Test. Statistical significance was defined as a *P* value of $\leq .05$. Analysis was performed using JMP version 9.0 (SAS Institute Inc., Cary, NC, USA).

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