

## Personalized Letters Improve Patient Comprehension of Foot and Ankle Pathology and Procedures

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### Abstract

The purpose of this study was to enhance patient comprehension of our institution's communication materials, specifically the standardized forms and information leaflets used in obtaining consent to elective foot and ankle surgery.

Studies have shown poor patient comprehension during the consenting process. Improved document readability has been recommended.

We evaluated the readability of our existing consent forms and information leaflets using five standard indices: Flesch-Kincaid, Gunning fog, Simple Measure of Gobbledygook, Coleman-Liau, and automated readability.

We compared the results with the readability of 50 personalized letters explaining the patient's individual pathology and surgical management plan as an adjunct to the standard consenting process.

Standardized consent forms had the poorest readability, being accessible only to patients having completed higher education. Readability of the patient information leaflets was better, requiring an average reading age of 15–16 years, and that of the personalized letters better still (average reading age: 14–15 years), yet still markedly exceeding the recommended target age of 11–13 years.

We conclude that personalized letters offer an effective low-cost boost to patient understanding of foot and ankle pathology and treatment, but that further improvement is essential if we are to approximate to the recommended targets.

**Keywords** Consent; Readability; Patient information; Foot and ankle surgery

### Introduction

It has been shown that 15% of the adult United Kingdom population are 'functionally illiterate', with a reading age of 11 years or younger [1]. Yet patient educational materials and consent forms are frequently pitched at higher reading ages [2,3] despite General Medical Council (GMC) recommendations [4].

As a result, many patients fail to fully understand either their procedure or their condition, particularly in less familiar specialties such as foot and ankle, hand, and spine, where the array and intricacy of pathologies and procedures can appear daunting.

Non-confusing communication of the volume and depth of information required by patients in order to make informed treatment decisions is a major challenge for health professionals working in these areas.

The 2008 GMC guidelines required clinicians to give patients the information they want or need on all treatment options, to include the associated risks and potential benefits [4].

Information about a procedure should include its purpose and likely benefits, how to prepare for it and what to expect during and afterwards.

The subsequent Montgomery ruling [5] enshrined these guidelines by shifting the emphasis from the 'reasonable doctor' to the 'reasonable patient'.

Doctors must now ensure that patients are aware of all 'material risks' in a proposed treatment and its alternative(s).

This should be supported by written material accessible to those with a reading age of 11–13 years [2].

We aimed to take this guidance further first by evaluating the comprehension of existing standardized consent forms and information leaflets in terms of readability, defined as the ease with which a reader understands a written text, and secondly by comparing the result with the readability of personalized letters conveying the same information to the individual patient.

### Patients and Methods

The existing standardized material consisted of the preprinted consent forms used at our institution for foot and ankle procedures, together with the related patient information leaflets on common

conditions such as hallux valgus, hallux rigidus, and lesser toe deformities.

Readability was assessed using the following five instruments: Flesch-Kincaid grade level [6], Gunning fog index [7], Simple Measure of Gobbledygook (SMOG) index [8] and Coleman-Liau index [9].

Multiple tools are used to assess readability with no gold standard test validated for health specific literature.

We therefore used multiple instruments commonly used in previous readability papers to improve validity of results.

Each produces an approximate representation of the American school grade or formal education level needed to easily comprehend the text.

The algorithms take into account core measures of sentence and word length.

We calculated the mean of the five scores expressed as a school grade (with corresponding age) for ease of comparison with previous studies.

We then ran the same test battery on 50 personalized letters produced for his patients by the corresponding author (NH) explaining the patient's individual pathology and proposed treatment plan, including alternatives, risks and anticipated benefits. We compared the results with those for the existing standardized material (Tables 1 and 2).

Score	Notes
90.0–100.0	easily understood by an average 11-year-old student
60.0–70.0	easily understood by 13- to 15-year-old students
0.0–30.0	best understood by university graduates

**Table 1:** Flesch-Kincaid reading ease: the higher the score, the greater the ease.

Grade	Student age range (at the beginning of academic year)	FOG years of education
First grade	6–7	1 yr
Second grade	7–8	2
Third grade	8–9	3
Fourth grade	9–10	4
Fifth grade	10–11	5
Sixth grade	11–12	6
Seventh grade	12–13	7
Eighth grade	13-14	8
Freshman/9th Grade	14-15	9
Sophomore/10th Grade	15-16	10
Junior/11th Grade	16-17	11
Senior/12th Grade	17-18	12
Higher education	13 plus	

**Table 2:** Gunning fog score, SMOG index, and Coleman-Liau index indicating the number of years of formal education needed for ease of comprehension.

## Results

The consent forms were much less accessible than the information leaflets.

Only those completing higher education or holding a university degree were likely to understand them.

They were pitched at a reading age markedly exceeding that of the majority patient population (Table 3).

Easy comprehension of the information leaflets required a reading age of 15–16 years, equivalent to 10 years of formal education.

The personalized letters lowered this threshold to 14–15 years (approximating to 9 years of formal education).

	Fleschkincaid reading ease score	Fleschkincaid grade level	Gunningfog score	Coleman-Liau index	SMOG index	Average grade level	Corresponding Age
Consent Forms	33.6	13.4	17.4	16.2	12.5	14.7	Higher Education
Information Leaflets	58	8.9	12.5	12.2	9.3	10.2	15-16
Personalised	65	9.5	12.5	9.5	8.7	9.4	14-15

**Table 3:** Readability of the literature materials.

## Discussion

Improving patient comprehension of health care improves compliance and outcomes [10,11]. Comprehension is integral to the consent process and has major medico-legal implications [12,13]. The converse is also true with poor understanding leading to dissatisfaction and a mismatch between patient expectations and results [14].

Our group had already suspected, on an anecdotal if common sense level, that we were able to enhance patient understanding by issuing personalized letters explaining their specific diagnosis, proposed treatment plan and alternatives, including the anticipated benefits and associated risks. Recipients of these personalized letters showed greater overall satisfaction with the consent process and improved recall of postoperative instructions and risks compared to patients issued with consent forms only or even consent forms backed by information leaflets.

Our results emphasize that the consent forms used in our institution, similar to those widely used elsewhere, pitch their language at an inappropriate level. The implication is that for many if not most patients the term 'informed consent' under such conditions is an oxymoron.

The language used in the information leaflets and personalized letters is distinctly more suitable for most patients, scoring reading grade levels of 10.2 and 9.4, equivalent to reading ages of 15 and 14. This is, however, still two or three years/grade levels higher than recommended for patient communication [4].

Producing literature suitable for the recommended reading age of 11–12 is a documented challenge: none of the online literature sampled from 11 academic centers across America complied with recommendations, being pitched an average grade/reading age of 10.5/15 years [15].

Our results confirm the above study in emphasizing the need for training authors and medical professionals to produce appropriate consent forms and patient educational materials. Improvements have been achieved: the Medline Plus website has a readability score of 8.1 for its online patient education material and provides detailed instructions to authors, such as avoiding medical jargon and complex words, shortening sentences, and using bullet points [16]. We took this advice on board when drafting our personalized letters and it helped to improve readability, even considering the relatively esoteric foot and ankle subject matter.

Very few studies have offered more practical solutions to the patient communication problem and recommended adjuncts include videos, multimedia, and models [17-19]. Despite these aids patient recollection remains variable and is often poor [20,21].

Our personalized letters offer a practical solution to a very common problem at very little cost. Although they do not reduce readability to the recommended levels, they improve on the existing materials in our institution and most of the online educational resources we have sampled in other studies. The personal format enables the doctor to tailor the material to the appropriate reading level for each patient. Our anecdotal evidence is that this improves patients' understanding as well as their satisfaction with the consent process.

A limitation of our study was that the personalized letters were addressed to all patients requiring surgery, regardless of pathology. The range and complexity of conditions exceeded the common conditions described in the standardized information leaflets. It may be possible to improve readability further still by addressing personalized letters only to patients with the pathologies described in the information leaflets. Another limitation is that readability scores do not take account of the illustrations often used in leaflets and whose effect on overall comprehension is difficult to estimate. Our existing consent forms do not use illustrations.

We believe that personalized letters are an effective adjunct to patient comprehension of the consent process in all subspecialties, above all in the elective setting, and in particular for patients with more complex pathologies.

## References

- Rowlands G, Khazaezadeh N, Oteng-Ntim E, Seed P, Barr S, et al. (2013) Development and validation of a measure of health literacy in the UK: the newest vital sign. *BMC Public Health* 13: 116.
- De Oliveira GS, Jung M, Mccaffery KJ, McCarthy RJ, Wolf MS (2015) Readability evaluation of Internet-based patient education materials related to the anesthesiology field. *J Clin Anesth* 27: 401-405.
- Patel CR, Sanghvi S, Cherla DV, Baredes S, Eloy JA (2015) Readability assessment of Internet-based patient education materials related to parathyroid surgery. *Ann Otol Rhinol Laryngol* 124: 523-527.
- [http://www.gmcuk.org/static/documents/content/Consent\\_-\\_English\\_1015.pdf](http://www.gmcuk.org/static/documents/content/Consent_-_English_1015.pdf)
- Bolton H (2015) The Montgomery ruling extends patient autonomy. *BJOG* 122: 1273.
- <http://www.dtic.mil/dtic/tr/fulltext/u2/a006655.pdf>
- <http://gunning-fog-index.com>

8. <http://www.readabilityformulas.com/smog-readability-formula.php>
9. <http://www.readabilityformulas.com/coleman-liiau-readability-formula.php>
10. Berkman ND, Sheridan SL, Donahue KE, Halpern DJ, Crotty K (2011) Low health literacy and health outcomes: an updated systematic review. *Ann Intern Med* 155: 97-107.
11. Sheppard ED, Hyde Z, Florence MN, McGwin G, Kirchner JS, et al. (2014) Improving the readability of online foot and ankle patient education materials. *Foot Ankle Int* 35: 1282-1286.
12. Ring J, Talbot CL, Clough TM (2014) Clinical negligence in foot and ankle surgery: a 17-year review of claims to the NHS Litigation Authority. *Bone Joint J* 96: 1510-1514.
13. Bhattacharyya T, Yeon H, Harris MB (2005) The medical-legal aspects of informed consent in orthopaedic surgery. *J Bone Joint Surg Am* 87: 2395-2400.
14. Smith AL, Nissim HA, Le TX, Khan A, Maliski SL, et al. (2011) Misconceptions and miscommunication among aging women with overactive bladder symptoms. *Urology* 77: 55-59.
15. Bjørn E, Rossel P, Holm S (1999) Can the written information to research subjects be improved? An empirical study. *J Med Ethics* 25: 263-267.
16. MedlinePlus (2016) How to write easy to read health materials.
17. Wang C, Ammon P, Beischer AD (2014) The use of multimedia as an adjunct to the informed consent process for Morton's neuroma resection surgery. *Foot Ankle Int* 35: 1037-1044.
18. Batuyong E, Birks C, Beischer AD (2012) The use of multimedia as an adjunct to the informed consent process for ankle ligament reconstruction surgery. *Foot Ankle Spec* 5: 150-159.
19. Beamond BM, Beischer AD, Brodsky JW, Leslie H (2009) Improvement in surgical consent with a preoperative multimedia patient education tool: a pilot study. *Foot Ankle Int* 30: 619-626.
20. Hutson MM, Blaha JD (1991) Patients' recall of preoperative instruction for informed consent for an operation. *J Bone Joint Surg Am* 73: 160-162.
21. Shurnas PS, Coughlin MJ (2003) Recall of the risks of forefoot surgery after informed consent. *Foot Ankle Int* 24: 904-908.