Development of the Informed Consent Form Readability, Understandability, and Actionability of Key Information (RUAKI) Indicator

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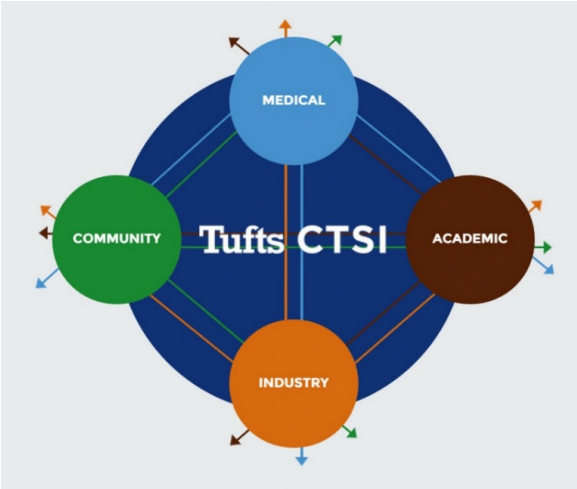

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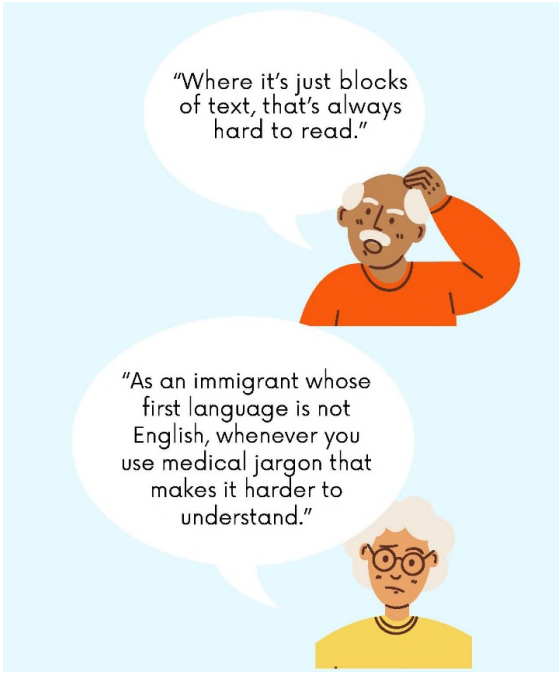
Rationale – Why we did it

The complexity of informed consent forms makes it hard for potential study participants to make informed decisions .

Office for Human Protection (OHRP) Common Rule* requires consent forms begin with concise and focused key information help subjects understand why they may or may not want to participate in research organized and presented to support understanding.



Why: Research informed consent forms are hard to read

* Protection of Human Subjects Regulations, New Common Rule. Vol. 82, No. 12 Fed. Reg, Pg. 7265 (January 19, 2017) General Requirements for Informed Consent, §_.117 a.5.i

Aim – What we did

- **Develop valid and reliable tool** to assess readability, understandability, and actionability of key information on informed consent forms
- **Reduce complexity** and support research informed consent decision-making

What: Develop a tool (checklist) to evaluate and reduce complexity of key information on informed consent forms

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Methods – How we did it

- **Identified criteria for assessment –** reviewed health literacy and plain language measures
- **Established face and content validity –** selected assessment items through expert review
- **Conducted reliability testing –** with study coordinators and others familiar with consent
- **Conducted end user testing –** with study participants to obtain evidence of validity

How: Literature review, expert validation, rater reliability testing, end-user review and virtual focus group

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Results – What we found

Face and Content Validity

- Identified 61 criteria for assessment items
- Defined 3 constructs of interest: readability, understandability, and actionability
- Validated 23 assessment item for inclusion on the initial checklist

Constructs of Interest Definition and Indicators

Construct	Definition	Indicator
Readability	Key information on informed consent form is easy to read when: - Plain language writing and design principles are present - Reading grade level is 8.9 or below - End users (potential study participants) confirm key information is easy to read	- Plain language writing and design items on checklist - Flesh-Kincaid grade level in Word - End users survey -
Understandability	Key information on informed consent form is understandable when: - Key information about the study is included - End users (potential study participants) answer questions about key information correctly	- Key information content items on checklist - End users survey
Actionability	Key information on informed consent form is actionable when: - Concept and process of giving informed consent is explained - End users (potential study participants) are confident about their consent decision	- Action item on checklist - Confidence scales

Defined three constructs of interest: Readability, Understandability and Actionability

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Results – What we found

Inter-rater Reliability

- Twenty-four raters applied the tool to key information on 10 informed consent forms. Items with less then 80% agreement revised or eliminated after each round of testing.
- Eighteen items demonstrated almost perfect percent agreement (.88) and substantial agreement per Fleiss' Kappa (Average = .76) and Gwet's AC1 (Average = .77); and almost perfect intra-rater percent agreement (Average = .84).

Table 4. Inter-rater Reliability Round 4

Percent Agreement, Fleiss' Kappa, Gwet's AC1

Construct Items	Percent Agreement	Fleiss' Kappa	Gwet's AC1
Readability			
language9	0.95	0.87	0.92
language11**	0.50	-0.01	0.01
language13	0.68	0.21	0.47
gradelevel14	0.95	0.87	0.92
org16	1.00	1.00	1.00
design17	1.00	1.00	1.00
design19	0.95	0.83	0.93
design20	1.00	1.00	1.00
image21	1.00	1.00	1.00
numbers22*			
Understandability			
keyinfo1	0.88	0.75	0.78
keyinfo2	0.77	0.53	0.54
keyinfo3	0.85	0.69	0.71
keyinfo4	0.72	0.40	0.47
keyinfo5	0.82	0.62	0.64
keyinfo6	1.00	1.00	1.00
keyinfo7	0.87	0.68	0.77
keyinfo8	0.90	0.76	0.83
Actionability			
action23	0.93	0.85	0.88
Tool Average	0.88	0.73	0.77

* Item had perfect agreement "not applicable" and "not present" both correct answers.
** Items had higher than expected agreement compared to observed agreement causing negative Kappa.

Percent Agreement per Kappa

Poor (0), Slight (0.01–0.20), Fair (0.21–0.40), Moderate (0.41–0.60), Substantial (0.61–0.80), or Almost perfect (0.81–1.0)

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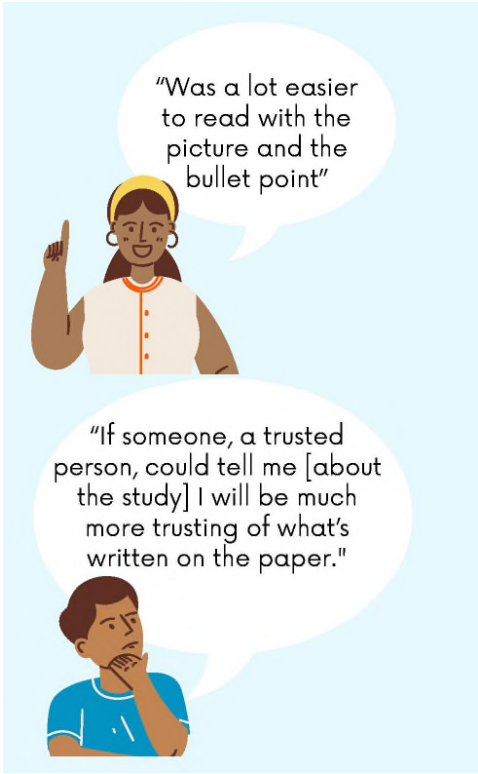
Results – What we found

Construct Validity

– Focus group feedback from 16 end users confirmed key information scored high (94%) by the tool was easier to read than key information scored low (63%)

After reading key information that scored well by the tool:

- 88% said the information was easy to read
- 94% said all the words were familiar
- 88% said sentences were short and to the point
- 69% said the text was big enough to read
- 88% said they could find the information they wanted



RUAKI predicted reading ease confirmed by end users (potential study participants)

RUAKI Indicator Score 63% (Before)

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INFORMED CONSENT TO PARTICIPATE IN RESEARCH

A PHASE 2 TRIAL OF INFLIXIMAB IN CORONAVIRUS DISEASE 2019 (COVID-19).

Key Information: The following is a short summary of this study to help you decide whether or not to be a part of this study. More detailed information is listed later on in this form.

A person who takes part in a research study is called a research subject. In this consent form "you" always refers to the research subject. If you are the legally authorized representative giving permission for the subject to take part in this study, please remember that "you" refers to the research subject.

Why am I being invited to take part in a research study?

We invite you to take part in a research study of an investigational drug, infliximab because you are diagnosed with COVID-19. The name of the study drug is called infliximab or infliximab-abda. A research study is when scientists try to answer a question about something that we don't know enough about. This research study will be referred to as the "study" throughout this form.

What should I know about a research study?

- Someone will explain this research study to you.
- Please also read all of the following information carefully.
- Whether or not you take part is up to you.
- You can choose not to take part.
- You can decide to take part and later change your mind.
- Your decision will not be held against you and it will not affect your ability to get medical care within Tufts Medical Center.
- You can ask all the questions you want before you decide. Do not sign unless you understand the information in it and have had your questions answered to your satisfaction.
- If you sign this form and decide to take part in this research study, keep a copy of the signed form for your records. It has information, including important names and telephone numbers that you may wish to refer to.

Why is this research being done?
COVID-19, which is a respiratory infection caused by a new virus called SARS-CoV2, currently has no approved treatments. In the majority of cases, the infection causes no or mild to moderate symptoms. However, in some cases, the infection can be bad enough to cause a lot of swelling, pain and injury to the lungs and other organs, leading to breathing

A PHASE 2 TRIAL OF INFLIXIMAB IN CORONAVIRUS DISEASE 2019 (COVID-19).
ICF version: 13 Aug 2020

failure needing a tube or machine for you to breathe. It is thought that the body's ways of fighting an infection and the swelling of tissues actually may cause further injury and illness or worsening of medical problems.

The main purpose of this study is to determine if infliximab or its biosimilar called infliximab-abda can safely decrease your need for additional oxygen given to you with a tube or machine. We also would like to know long it takes for you to get better if you are really sick and need intensive care.

A biosimilar is an FDA approved drug that is highly similar to the original drug (infliximab) and has no significant difference in the safety or effectiveness compared to the original drug. The study drug will be referred to as infliximab throughout this consent form, but includes the use of its biosimilar, depending on what is available at the time of treatment.

Infliximab is a type of drug called a "monoclonal antibody". An antibody is a special kind of protein that your immune (defense) system normally makes to fight bacteria and viruses. Infliximab works by shutting down the action of a molecule called tumor necrosis factor-alpha (TNFα) in your body. TNFα is a protein in the immune system that has been shown to play an important role in inflammation, including the severe inflammation associated with severe cases of COVID-19 where the levels of this protein are found to be elevated. The effectiveness and safety of using infliximab in this condition are unknown and need to be evaluated which is why this research study is being conducted.

Infliximab is considered an investigational drug in this study because it has not been approved for marketing by any health authority (including the Food and Drug Administration) for the condition being studied (COVID-19) but it has been approved in multiple countries, including the USA, for a number of diseases including active rheumatoid arthritis and inflammatory bowel disease. Infliximab will be given to subjects enrolled as part of the research study and will not be available to the participants after they complete the participation in the study, unless their treating physician decides to give the drug outside a clinical trial or in the event that the drug becomes FDA approved for this condition.

This study will take place at Tufts Medical Center (TMC) in Boston, Massachusetts. We expect up to 37 subjects will be enrolled in this study at Tufts Medical Center.

How long will the research last and what will I need to do?

If you decide to participate, we expect that you will be in this research study for up to 28 days starting from the day you receive the study drug.

You will be asked to receive at least one dose of the study drug. You may receive another dose 7-21 days later at if the treating physician thinks you should have one. You will be watched carefully for up to 28 days after the first dose or until discharge from the hospital

RUAKI Indicator Score 94% (After)

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INFORMED CONSENT TO PARTICIPATE IN RESEARCH

Phase 2 Trial of Infliximab in Coronavirus Disease 2019 (Covid-19)

Key Information: The following is a summary of this research study to help you decide whether or not to take part in the study. More detailed information is listed later on in this form.

The study drug is called Infliximab

Why am I being invited to take part in this research study?

- We invite you to take part in this research study because you are sick with COVID-19. This research study will try to answer questions about the drug infliximab and COVID-19.

What should I know about the research study and this form?

- Someone will explain this research study to you. Please read all of the information in this summary of the research study.
- You decide whether you want to take part or not. It is voluntary. You can choose not to take part. If you choose to take part, you can change your mind later.
- This research study will take place at Tufts Medical Center. Your decision to take part or not take part will not affect your ability to receive medical care at Tufts Medical Center.
- Please ask all the questions you have about the study. Do not sign this form until you understand all the information and have all of your questions answered.
- If you decide to take part in this research study, you will sign this form to show you choose and consent to take part in the study. Keep a copy of this form because it includes important information you may want later.

Why is this research being done?

- COVID-19 is an infection caused by a new virus called SARS-CoV2. At this time, there is no drug approved to treat COVID-19. COVID-19 can cause swelling and damage to the lungs. This may lead to problems breathing and cause you to need oxygen given in a tube or by machine to help you breathe.
- The main purpose of this study is to find out if the drug infliximab is safe and will help your lungs. We also want to know how long it will take for you to get better after taking infliximab. Especially, if you are really sick and need oxygen given to you with a tube or machine.

- Infliximab is a type of drug called a monoclonal antibody. An antibody is a protein your immune system makes to fight viruses that cause infections. Monoclonal antibodies are made in a laboratory to work as drugs. Infliximab works to reduce swelling by shutting down the action of another protein in the immune system called TNFa. We don't know if infliximab can shut down the action of TNFa in COVID19 or will reduce lung swelling.
- The Food and Drug Administration (FDA) has approved infliximab to treat some diseases. Infliximab is an investigational drug in this study because the FDA has not approved it to treat COVID-19. A biosimilar is a drug that is very close to the original drug, like a generic copy. This study will use both infliximab and a biosimilar called infliximab-abda.
- You will receive infliximab only as part of this research study. You will not be able get infliximab after you complete this study, unless it is approved to treat COVID-19 by the FDA and your doctor decides to give it to you
- This study will take place at Tufts Medical Center (TMC) in Boston, Massachusetts. We expect up to 37 patients with COVID-19 will take part in this study.
- You will not receive any payment for being in the study.

How long will the research last and what will I need to do?

- We expect this study will take up to 28 days starting from the day you first receive infliximab.
- You will get at least one dose of the study drug. You may get another dose 7-21 days later if your doctor thinks it may help you. We will watch you carefully for up to 28 days after your first dose or until you leave the hospital.
- Your will get standard blood tests as part of your usual care in the hospital. The study doctor will ask for extra blood samples for a total of up to 3 times on the 1st, 3rd and 14th days of the study or on the day you go home. If you leave the hospital before the 28th day of the study, we will call you for an update on day 28. We will ask you questions about your health which will take about 30 minutes of your time.
- For more details about what will happen as part of the study, please read **"Procedures to be Followed"** later on in this form.

Is there any way being in this study could be bad for me?

- You will receive your does of Infliximab intravenously (through an IV in your vein). We do not know all the risks involved in getting infliximab intravenously with COVID-19 infection.
- We do know some of the risks and side effects of infliximab. Some patients may get more infections. If you are getting other drugs that affect your immune system, your risk of serious infection could be greater.

Tufts Institutional Review Boards
Submission ID: MODCR-01-STUDY00000564
Date Approved: 10/13/2020

Limitations – What we can't say

- Focused only on small summary section of the informed consent document recently added under the final common rule.
- Consent document key information section cannot be presented as a substitute for full informed consent discussion.
- Despite good percent agreement, inter-rater reliability measured by Kappa was negative for some items is known problem.
- Study only tested small, convenience sample of key information sections (n=10) raters (n=24) and stakeholders (n=16).

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Implications – What we shared

Thank you for participating in the Key Information on Informed Consent Forms Study. We are pleased to share results with you!

Study Results Summary

Why did we do the study?

- Research informed consent forms describe key information about the research study. People need this information to decide if they want to participate in the research study or not.
- Good informed consent forms begin with key information about the study that people can understand and use.
- Our study developed a tool research teams can use to write easy to read key information about their research.
- Easy to read key information on informed consent forms will help more people understand research and benefit from it.

How did we do the study?

- We created a checklist tool to evaluate the reading ease or difficulty of key information on informed consent forms.
- 25 study participants (scientists and health professionals) tested the tool to evaluate key information on 10 informed consent forms. We made changes to the tool based on their feedback.
- 16 participants (people who are not scientists or health professionals) joined a focus group to look at key information evaluated by the tool and talk about what made it easy or hard to read. We made changes to the tool based on their feedback.

What did we learn from the study?

- We learned that people find short key information on informed consent forms easier to read than long blocks of text.
- We learned that scientists can use the new tool to develop easy to read key information about their research.

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What did participants say?

After reading key information that scored well by the tool:

- 88% said the information was easy to read
- 94% said all the words were familiar
- 88% said sentences were short and to the point
- 69% said the text was big enough to read
- 88% said they could find the information they wanted

How will we use study findings?

- This study created a checklist tool called the Readability, Understandability, and Actionability of Key Information (RU-A-KI) Indicator.
- We will use study findings to work with more scientists to see if they can use the tool to develop key information that helps people understand the research and feel more confident about their informed consent decisions.

Next Steps – What we do next

For use with INFORMED CONSENT FORMS

Readability, Understandability, and Actionability of Key Information (RUAKI) Indicator

Purpose: Informed consent forms must BEGIN with a concise presentation of key information, and that key information must be organized and presented in a way that facilitates understanding of why the reader may or may not want to participate in research.[1] The RUAKI indicator is designed to assess key information on informed consent forms for features that make that information easy to read, understand, and act on to make an informed decision.

How to apply:

- Review items on the RUAKI Indicator.
- Read the key information section on the informed consent form (ICF).
- Rate each item on the RUAKI Indicator as present (Yes=1) or not present (No= 0). Rate ONLY the key information section.
- Add total items present, divide by number of items, multiply by 100 to calculate % score.
- The higher the score, the easier the key information is to read, understand, and act on.

Readability		**Rating**	
Language			
1	**Active voice.** Uses active verbs (e.g. will use) rather than passive verbs (e.g. will be used) all or most of the time, more than 90% of the time.	☐ Yes = 1	☐ No = 0
2	**Word choice.** Avoids scientific jargon (i.e. hypertension). Uses words readers are familiar with (i.e. high blood pressure) all or most of the time, more than 90% of the time.	☐ Yes = 1	☐ No = 0
3	**Topic definition.** Provides a definition of the main disease or topic the study is about.	☐ Yes = 1	☐ No = 0
4	**Numbers.** Avoids mathematical calculations including comparison of numeric probability of risk.	☐ Yes = 1	☐ No = 0
5	**8th grade or below.** Reading grade level calculated in Microsoft Word is Flesch-Kincaid Grade Level 8.9 or below.	☐ Yes = 1	☐ No = 0
Design			
6	**Headers.** Sections or chunks of information are labeled with headers. Headers clearly describe sections so readers can scan and find information.	☐ Yes = 1	☐ No = 0
7	**Font type and size.** Font type or style is easy to read. Font size is at least 11-12 point.	☐ Yes = 1	☐ No = 0
8	**White space.** Uses bulleted or numbered lists to increase white space on the page.	☐ Yes = 1	☐ No = 0
9	**Image.** Contains at least one image that is related to the topic of the study. Not a logo.	☐ Yes = 1	☐ No = 0
Understandability			
10	**Purpose of the study**. Includes a statement that says, "the purpose of the study is…" Purpose of the study is stated, rather than implied.	☐ Yes = 1	☐ No = 0
11	**Main reason to join the study – benefits.** Includes description or list of potential benefits to participants or others.	☐ Yes = 1	☐ No = 0
12	**Main reasons not to join the study – risks**. Includes description or list of potential risks to participants.	☐ Yes = 1	☐ No = 0
13	**Information being collected.** Describes the information that will be collected from participants and about participants.	☐ Yes = 1	☐ No = 0
14	**Study procedures.** Describes what participants will need to do AND how much time it will take.	☐ Yes = 1	☐ No = 0
15	**Study is research.** Includes a statement that says, "study is research" or "research study" not just consenting to treatment.	☐ Yes = 1	☐ No = 0
16	**Participation is voluntary.** States that participation is voluntary, that participants have a choice to be in the study or not.	☐ Yes = 1	☐ No = 0
17	**Costs and compensation.** Describes any financial payments (or costs) to study participants.	☐ Yes = 1	☐ No = 0
Actionability			
18	**Consent Process.** Describes the process by which the reader gives their consent, either by signing a document, verbal agreement, via computer, or other.	☐ Yes = 1	☐ No = 0

Total

Divide by 18

Multiply by 100

Score %

How to calculate sore: Add total items present (Yes = 1). Divide by number of items (18 items). Multiply by 100 to get percent score. The goal is 18 / 18 x 100 = 100%.

How to interpret score: The higher the score, the easier the key information is to read, understand, and act on. For example, key information with a score of 94% is easier to read than key information with a score of 77%. Revise items that are not present (No = 0) to increase percent items present score.

[1] Protection of Human Subjects Regulations, "Final Rule". Vol. 82, No. 12, Fed. Reg, Pg. 7265 (January 19, 2018) (General Requirements for Informed Consent, §_.116(a)(5)(i)

Thank you

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- Caitlin Farley, Tufts Institutional Review Board (IRB)
- Linda Hudson, Department of Public Health and Community Medicine, Tufts School of Medicine
- Michael K. Paasche-Orlow, Vice-Chair of Research, Department of Medicine, Tufts University School of Medicine
- Christopher Trudeau. University of Arkansas for Medical Sciences and UA Little Rock Bowen School of Law

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