

# Addressing Nutrient Deficiencies for Celiac Disease Patients on a Long-Term Gluten-Free Diet

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## Overview

This paper presents a communication plan to increase screening and treatment of nutrient deficiencies in Canadian patients with Celiac Disease on a long-term gluten-free diet.

## Background

Celiac Disease (CD) is an autoimmune disease where the body's immune system reacts to gluten, resulting in inflammation that can lead to a wide range of immediate and long-term health complications; and can only be managed through a gluten-free diet (GFD).<sup>1</sup> In 2019, an Italian study of patients with CD identified nutrient deficiencies for vitamin B12, iron, folic acid, vitamin D, zinc, calcium, and magnesium in those who had been following a GFD for greater than 2 years.<sup>2</sup> Despite having managed CD, ongoing nutrient deficiencies from a GFD can lead to further health complications such as anemia, osteoporosis, and birth defects.<sup>2</sup>



## Mission

In order to decrease the risk of nutrient deficiencies (NDs) on a long-term gluten-free diet (LTGFD), the mission of the communication plan is to provide education to Registered Dietitians (RDs) who support patients in managing CD regarding the occurrence of the issue. The aim is also to promote screening and treatment of NDs by providing practical tips for which NDs to screen for, guidance on communicating the need for screening with the clients' general physician (GP) if RDs do not have the authority to order lab work in their licensing province, along with practice recommendations to correct NDs and for continued monitoring.

## Audience

The audience for this communication campaign will be RDs working in clinical outpatient, community, and private practice settings. These settings are where RDs typically work with clients with CD who have been on a GFD for longer than two years. As this is a large audience, a pilot communication campaign will be trialed with RDs in British Columbia and its impact evaluated prior to national implementation. The material will be available in English for the pilot and will be expanded to include French for the national campaign.

The audience is predominantly female, and all possess postsecondary-level education and familiarity with CD & the impact of nutrient deficiencies. RDs tend to receive their practice information from sources such as Clinical Practice Leads within health authorities, Dietitians of Canada (DC), Practice-Based Evidence in Nutrition (PEN), and health condition-specific organizations such as Diabetes Canada, Heart and Stroke Foundation, and Canadian Celiac Association (CCA).

## Collaborations

Collaborations with the CCA and DC will be key to the success of the plan. Along with advocating for Celiac Disease research, the CCA is recognized as a reliable source of information for patients and practitioners. DC is a professional organization that connects and supports its members while advocating for the role and value of RDs. Both organizations have a large presence in the dietetics field, and focus on nutrition and/or Celiac Disease.

A campaign website will be developed in partnership with the CCA and hosted within the section of their webpage for healthcare professionals. This website will contain detailed information on the background, screening, treatment, and monitoring of nutrient deficiencies related to being on a long-term gluten-free diet. The website will also contain resources for RDs on how to talk to the patient's doctor about being screened, as well as handouts for the patients to approach their doctor about this topic.

DC will act as a secondary partner in promoting the website and the recommendations made by the CCA through social media posts and continuing education opportunities.

## Goals

**Process Goal** 90% of Outpatient, Community, and Private Practice RDs will view digital communication such as a social media post or an email newsletter about the nutrient deficiencies and recommendations for practice.

**Evaluation of Process Goal** Cookies, tracking, social media analytic tools, or a unique redirect URL embedded in the digital communication will show who opens the email or who clicks on the link to a website.

**Outcome Goal** 90% of the audience who were not previously implementing the recommended practices and viewed the digital communication stated that they would start to do so when seeing clients who match the recommended criteria.

**Evaluation of Outcome Goal** Pre-/post- survey of “if” and “what” types of nutrient deficiencies RDs screen for, and the recommendations they made/will make for food-based & supplementary nutrients.

### Barriers

**The Attention Economy** RDs provide nutrition care for a variety of health conditions and stay informed on the latest diet trends. They are constantly updating their knowledge base, and this communication campaign may be displaced by other sources of information for the other areas of practice.

**Potential Solution** Obtain the attention of the audience with clear communication of the purpose of the campaign in the email subject lines, document titles and headers; and communicate through professional channels such as DC’s provincial network groups, Gerry’s List RD Listserv, and the CCA.

**Can’t Give the Audience What They Want** RDs do not have the authority to order bloodwork in many provinces and rely on permitted healthcare practitioners (HCPs) to order labs based on RD recommendations.<sup>3</sup> However, such recommendations may have been dismissed in some circumstances, which can cause the RDs to dismiss the instruction of the campaign – screen for nutrient deficiencies first and treat if necessary.

**Potential Solution** The communication campaign will include an instructional resource on advocating for screening with other HCPs, along with a sample communication template highlighting key rationale points. Another resource in this communication plan will be a handout that the RD gives to the patient to take to their HCP on the importance of screening for NDs.

**Disagreement Among Experts** The CCA’s guidelines for screening currently differ compared to the recommendations posed by the article referenced for this communication plan in terms of nutrients screened and frequency.

**Potential Solution** Discuss the discrepancies with the CCA’s Professional Advisory Council, who oversees the CCA’s practice guidelines, and propose changes based on updated evidence. For the purposes of this communication plan, it is assumed that the proposed changes are accepted and incorporated into updated guidelines.

## Message

### Precaution Adoption Process Model

The Precaution Adoption Process Model is used to understand how people make decisions to act, and what moves them to actually act. The stages of the PAM in relation to the RDs of this communication plan are as follows:

1. Never heard about NDs in clients on LTGFD
2. Heard about NDs but never thought about asking client's GP to screen for them
3. Thinking about asking the GP to screen clients for NDs, but unsure about whether or not to do so
- 4 or 5. Decided whether or not to suggest to the GP to screen clients for NDs
6. If decided to suggest screening to the GP, then actually had communication with the GP about this topic. After screening has occurred, the RD provides instruction to the client on how to treat any identified NDs.

The aim of the plan is to move the audience to acting (Stage 6). However, they will likely be at different stages as some RDs work more frequently with CD clients than others, and vary in the length of time that they have been practicing. Depending on the audience's level of awareness, some may move through the entire range of stages. Others may already be at stage 3, but unsure about how to approach GPs about recommendations for screening.

A table summarizing factors and tools that may influence transitioning between the stages is found in Appendix A.

### Barrier to Moving Between Stages

A barrier to acting is confirmation bias in RDs who have been practicing for longer periods of time. They may be used to utilizing a certain routine in treating CD clients, believe that it is adequate because they have been doing it for so long without any apparent detrimental effects, and do not think there is a need to modify their familiar practice routine.

### Solution

This barrier can be addressed by appealing to the logical and thoughtful "head", as noted in Randy Olson's Four Organs Theory, by presenting objective information such as recent data on the rates of NDs in CD clients along with the health effects of the deficiencies. The plan can also appeal to the client's emotions, the "heart", through clients' stories of how they were impacted by an undetected ND.

### And, But, Therefore

To create a heart-focused narrative for the message, the And, But, Therefore (ABT) statement is told from a patient's perspective: "I have been working with my RD to follow a gluten-free diet since I was diagnosed with CD AND I am finally feeling well enough to start building my family BUT I did not realize that that same diet might actually cause nutrient deficiencies that impact my fertility THEREFORE I am working with my RD to get screened and treated so I don't have to make a choice between my health and my baby."

### Arouse & Fulfill

In order to incorporate an array of tools into one plan, the PAPM model and narrative is combined with the Arouse and Fulfill Model, where audiences' interests would be stirred up, and then guided to a source where they could learn more about the topic. In the Arousal step, there will be an email or a social media post to engage RDs and overcome belief systems that pose as barriers. Next, for Fulfill, there will be a website or an online course that provides education about nutrient deficiencies and how to screen and treat it. Finally, there would be a Follow-Up step with pamphlets or handouts that can empower RDs and patients to go to GPs to get screening. Another complimentary component of the plan, a virtual presentation, will act both as the arouse step in getting dietitian participants interested in the topic, and partially fulfill by providing some education on the subject. Participants will then be directed to the website for additional information and resources.

### Message Development

As the audience is university-educated, the wording and content of the message can be at a level appropriate for healthcare professionals. However, the message will still be simplified to maximize its impact. A catchy phrase can also be memorable. For example, "LTGFD? S&T!" as a complement to another part of the communication plan with education on "Long-term gluten free diet? Screen & treat nutrient deficiencies!" The creation of an acronym or mnemonic can also help RDs remember nutrients of focus. Objective and visual comparisons of nutrient content of traditional foods and their gluten-free counterparts can be presented.

This strategy isn't expected to generate outrage, as both food categories fall within the same national food regulatory standards, the risk is not trivialized, and the audience is not likely to view the two as completely different.

## Medium

A diagram summarizing the following mediums is presented in Appendix B.

### Facebook

#### Advantages

Facebook is an ideal medium for the “arouse” step of the plan. There are many RDs who use this platform, and several RD groups are available where practice questions are discussed. Campaigns can be targeted towards those who have “liked” or “followed” accounts and pages such as DC, health regions & authorities, and prominent RDs. The post format is flexible and can include text, images, videos, and links to a main website. The posts can be amplified through users sharing it to their own pages.

#### Challenges

A consideration for this medium is that a single post will only appear at a certain place in queue in one’s timeline. It will not be re-seen unless the user actively seeks it out, it is re-shared by someone else that they follow, or it is promoted as an ad. Additionally, not all RDs have a Facebook account or actively use it.

#### Solutions

Posting within RD groups of practice will reach a wider RD audience beyond those who are directly connected with the original posting account. Collaborating with accounts such as DC, the CCA, and RDs with a large reach on social media will help to replicate the message, increase views, and facilitate discussion of practice-related questions.

Targeting the posts towards those who are RDs working in healthcare, and strategically timing the posts to approximately 11am-1pm EST on weekdays will increase the chance of practicing RDs seeing it during their lunch breaks and sharing it with colleagues who are not using the platform. Although this will mean that it is posted at an earlier time for those on the West Coast, it will still coincide with their morning coffee break and will continue to be available for viewing at lunchtime.

#### Post Outline

The Facebook post will include a personalized narrative about a client whose life had improved after their LTGFD-related ND was addressed with the help of an RD. Next, a statistic on the prevalence of NDs with LTGFD can be listed, along with prompting for RDs to push for screening and treat their clients for it. Finally, there will be a call-to-action such as, “Click the link below to improve the lives of your Celiac Disease patients”.

An image to include in this post can be a photo of the client whose story is presented, along with a text overlay of the prevalence statistic or a quote from the narrative such as, “I never imagined I would have the energy to keep up with my kids again.”

A sample Facebook post is presented in Appendix C.

### Evaluation

The success of the arouse step can be measured through Facebook analytic data including the number of views, likes, comments, and shares that the post received. The post can include a unique URL link to a main website, in which traffic originating from the Facebook post can be tracked. Facebook also provides the option to track impressions by surveying accounts who have had the post in their timeline, which asks if they recall seeing it.

### Website

As mentioned previously, this medium will act as the “fulfill” and “follow-up” steps of the plan, and is where the aforementioned social media post or an email would guide the user. The content will be housed in the Healthcare Professionals section of the CCA website. This will include information on the prevalence and risks of nutrient deficiencies on a long-term gluten free diet, guidelines for screening and treatment, and resources to help the RDs and their patients take action.

After the campaign is live, users who visit a certain page or resource that is considered part of the “fulfill” part of the plan (e.g., a resource on how to advocate for screening NDs to a patient’s GP) will be randomly surveyed on their website experience, or how useful they found the resource to be.

### Face-to-Face Communication

Communicating face-to-face with the audience in the form of an “Update on Dietetic Practices in Celiac Disease” session will act as a complement to the website. This can be delivered as a video conference during current Covid-19 times. When distancing restrictions are no longer necessary, this can be in the form of an in-person presentation with a remote viewing option available for those who are not able to attend-in person. As an incentive for participation, participants will be able to claim the presentation towards their continuing education credits for ongoing professional certification.

This presentation will be hosted in partnership with DC and the CCA. An ideal spokesperson would be a RD that is involved with the CCA. One individual that comes to mind is Shelley Case; an RD who has published comprehensive guides on the GFD, has collaborated with the CCA, and has experience in delivering training and workshops to various groups of health professionals.

Updated guidelines for screening and treatment of NDs in LTGFD will be presented during the session, reflecting the same information that is embedded in the website. There will also be polls for participants on whether or not they currently recommend screening of ND to the patient’s primary care provider. There will be a section of the presentation addressing perceived challenges, and how to work around them (along with reference to resources available on the website). The same resources will be shared as downloadable documents with the virtual conference, or as printed hand-outs for participants to take after an in-person session.

The presentation will close with a Q&A session and a survey of participants’ impression of the usefulness of this session and whether they will implement the recommendations. Finally, an email address, either that of organization contact’s or the spokesperson’s, will be made available

at the end of the presentation for participants to reach out with further questions. Participant questions will be summarized in a Q&A section in the website.

### Implementation Plan

Months 0-6: Establish partnerships with CCA and Dietitians of Canada. Achieve consensus and acceptance of proposed updates to the CCA practice guidelines. Confirm spokesperson(s) for the campaign.

Months 5-9: Develop, user-test, and finalize first version of digital communications and website.

Months 10-12: BC testing - Pre-test BC RDs, launch website with email digital communications, Post-test after two months. Gather audience feedback on campaign.

Months 13-15: Analyze feedback and adjust the campaign, develop bilingual content. Coordinate presentation logistics and develop content.

Month 16: Pre-test RDs nationally. Launch updated website and social media campaign. Open registration for the presentation and promote it. Collect analytic data on access, users, and reach.

Month 18: Give presentation. Collect feedback and questions. Compile questions into FAQ portion of website.

Month 20: Post-test RDs nationally.

## References

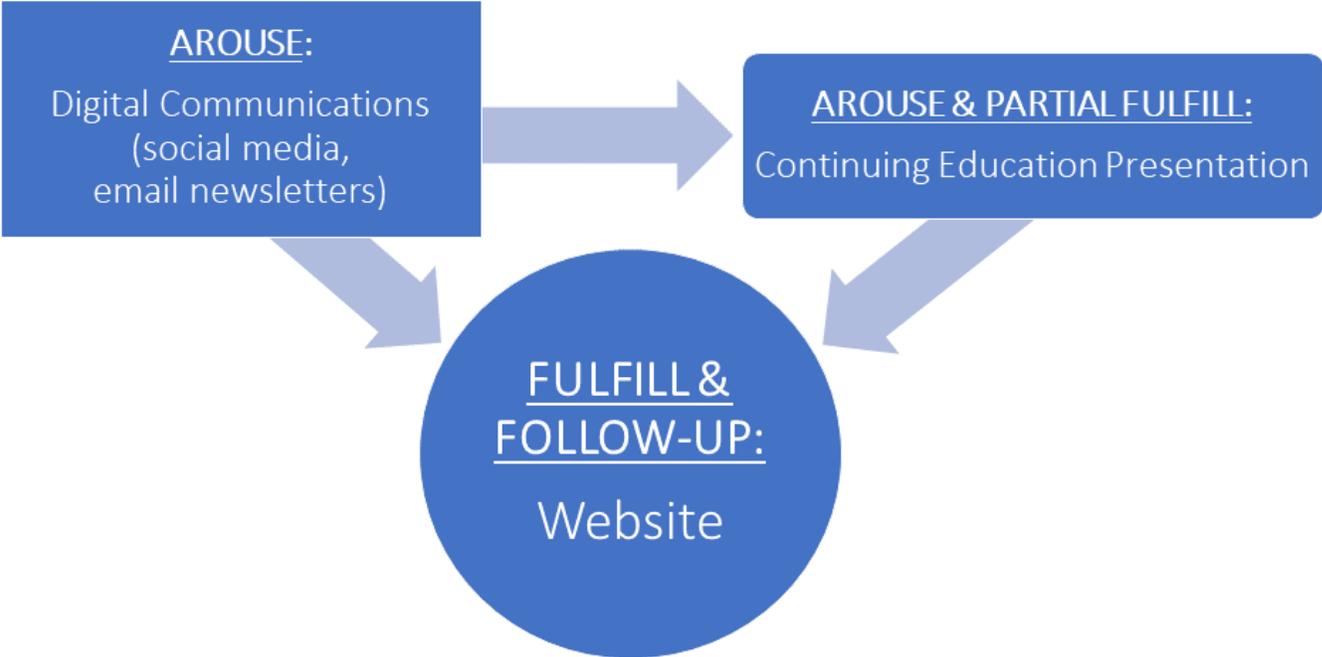
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## Appendix A - Influencing Transitioning Between PAPM Stages

Transition	Factors & Tools
<b>Stage 1 to 2</b>	Educational messages about the risk of nutrient deficiencies in clients with CD on LTGFD
<b>Stage 2 to 3</b>	<ul style="list-style-type: none"> <li>- Communications from trusted organizations or other RDs about having a client screened and treated for NDs</li> <li>- Testimonials from clients whose health have improved as a result of screening and treatment of NDs</li> </ul>
<b>Stage 3 to 4 or 5</b>	<ul style="list-style-type: none"> <li>- RDs' beliefs about the likelihood and severity of ND on clients' health</li> <li>- RDs' beliefs about the ability of the client to comply with recommendations to correct NDs, should they be present</li> <li>- Behaviours of fellow RDs and interdisciplinary team members within their immediate work environment - What is the culture of communication and collaboration? Do the RDs feel comfortable and confident in discussing suggestions with the GP? Do they believe their suggestions will be considered?</li> </ul>
<b>Stage 5 to 6</b>	<ul style="list-style-type: none"> <li>- RD time, effort, and resources available to communicate with the GPs and to follow-up with clients</li> <li>- Instructions on what nutrients to screen for</li> <li>- Recommendations on how to treat NDs (e.g., supplement dosage), and follow-up schedule (e.g., measure serum levels every 6 months)</li> <li>- Support in liaising with GP (e.g., a generic template for RDs to base their conversations off of, or a mentor to help troubleshoot)</li> <li>- Reminders and other cues to action (e.g., a checklist of topics to cover during a nutrition assessment of a client with CD)</li> </ul>

Appendix B - Diagram of Medium Strategies



Appendix C - Sample Facebook Post

 **Canadian Celiac Association** ⋮  
Yesterday at 11:42 AM · 🌐

"I have been working with my registered dietitian to follow a gluten-free diet since I was diagnosed with Celiac Disease, and I am finally feeling well enough to start building my family! However, I did not realize that that same diet might actually cause nutrient deficiencies that impact my fertility. I am working with my dietitian to get screened and treated so I don't have to make a choice between my health and my baby." - Jane D., Langley, BC.

Over 40% of patients with Celiac Disease who have been on a gluten-free diet longer than two years have some form of nutrient deficiency. The treatment for Celiac Disease shouldn't hurt your patients' health. Have them screened and treated for nutrient deficiencies.

Improve the lives of your patients with Celiac Disease. Click to learn more: <https://www.celiac.ca/hea.../management/nutrientdeficiencies>



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