

# 360 Other Medical Conditions

## Definition/Cut-off Value

Diseases or conditions with nutritional implications that are not included in any of the other medical conditions. The current condition, or treatment for the condition, must be severe enough to affect nutritional status. This includes, but is not limited to:

Medical Condition	
Juvenile Idiopathic Arthritis (JIA)	Cardiovascular Disease
Systemic Lupus Erythematosus (SLE)	Persistent Asthma (moderate or severe) requiring daily medication
Polycystic Ovary Syndrome (PCOS)	Cystic Fibrosis

Presence of medical condition(s) diagnosed, documented, or reported by a physician or someone working under a physician's orders, or as self-reported by applicant/participant/caregiver. See Clarification for more information about self-reporting a diagnosis.

## Participant Category and Priority Level

Category	Priority
Pregnant Women	I
Breastfeeding Women	I
Non-Breastfeeding Women	III, IV, V or VI
Infants	I
Children	III

## Justification

### Juvenile Idiopathic Arthritis (JIA)

In 2001, the International League of Associations for Rheumatology reclassified juvenile rheumatoid arthritis as juvenile idiopathic arthritis (JIA) (1). This was done in efforts to be inclusive of both American and European diagnosis criteria and to improve communication between international healthcare providers and researchers (2). JIA is an umbrella term for all forms of childhood arthritis. It is a systemic disease that results in the destruction of joint tissue due to inflammation (2).

Due to differences in nomenclature, it is difficult to estimate the number of children affected with JIA. In the United States, it is estimated that about 1 in 1000 children develop chronic arthritis, mainly JIA (3).

Children with JIA face nutritional impairment due to chronic inflammation, drug side effects, and/or functional difficulties, such as jaw joint stiffness. Nutritional problems often lead to observed lower BMI

and smaller height stature among JIA patients (3). While there is no prescribed diet for children with JIA, dietary fats (e.g., omega-3 fatty acids) can influence inflammation (4, 5). More research needs to be done to know if foods rich in omega-3 fatty acids will be helpful. However, these foods have other health benefits, especially in the prevention of heart disease and can be recommended. The best sources of omega-3 fatty acids are from fish such as salmon, sardines, mackerel, herring and tuna. Other omega-3 sources (less potent than fish, however) include ground flax, flaxseed oil, walnuts and, to a limited degree, green leafy vegetables (5).

### **Systemic Lupus Erythematosus**

Systemic lupus erythematosus (SLE) is a chronic inflammatory and autoimmune disease that can affect multiple organ systems, including the skin, joints, kidneys, heart, and central nervous system. The appearance and progression of this disease is highly variable. The most common symptoms include fatigue, loss of appetite and weight, and skin lesions (butterfly rash on face). (6)

The cause of SLE is not fully known. Genetics is thought to play a role in its development. Environmental factors such as exposure to silica dust particles and cigarette smoking as well as use of estrogen-based oral contraceptives or hormone replacement therapy can increase the risk of the disease (6, 7). The role of exposure to ultraviolet light (UV) in the development of SLE is still not known, though it may worsen SLE symptoms (7). There is no cure for SLE but medical interventions and lifestyle changes can help control it (8).

SLE is common with more than 200,000 cases per year in the U.S. (9). While anyone, including children, can develop SLE, it is most common among women of childbearing ages, 15 to 44 years, and women of color (10). Women who have SLE can safely get pregnant and have normal pregnancies and healthy babies. However, they will be considered to have a “high risk pregnancy” due to an increased likelihood of problems arising during their pregnancy (10, 11). High-risk maternal complications include inflammation of the kidneys, gestational diabetes, and pre-eclampsia; while fetal complications include miscarriage, preterm birth, and intrauterine growth restriction (11).

Typical SLE management uses antimalarial drugs, immunosuppressive agents, biological agents, and some adjunctive therapies (6, 12). Mild cases can be controlled with non-steroidal anti-inflammatory drugs or low-dose glucocorticoids, but more severe cases may require more advanced treatment (12). Glucocorticoids can be associated with side effects including osteoporosis, hyperglycemia and may increase the predisposition to obesity, the risk of developing diabetes, hypertension, and cardiovascular disease (CVD) (12).

Diet quality in people with SLE is important because they are at higher risk of CVD, low bone mineral density, and vitamin D deficiency (13, 14). More than half of the people with SLE have three or more risk factors for CVD (mostly obesity, hypertension, and dyslipidemias) (12). A low-calorie diet high in vitamin- and mineral- rich foods and mono and polyunsaturated fatty acids (MUFA/PUFA) may help control the inflammatory aspects of the disease and the complications and co-morbidities resulting from SLE treatment (15). Some studies have highlighted the importance of specific vitamins mainly A, B<sub>6</sub>, C, D and E, and adequate dietary fiber intake, as well as protein and sodium restriction in reducing co-morbidities and preventing SLE flares (16, 17). For all people with SLE, it remains important to encourage them to stop smoking, avoid being overweight and optimize their blood pressure and lipid profile to decrease cardiovascular risk (13).

## Polycystic Ovary Syndrome

Polycystic ovary syndrome (PCOS) is a hormonal disorder common among women of reproductive age. Most women with PCOS produce excess male sex hormones (androgens) and have many small cysts on their ovaries (18). The prevalence of PCOS ranges from 4 percent to 21 percent, depending on the criteria used to make the diagnosis (19). The exact cause of PCOS is unknown, however, insulin resistance is believed to play a role in the pathogenesis of PCOS (20). In addition, there may be a genetic component, since it is not unusual for multiple women in the same family to have PCOS (18).

Hyperandrogenism (excess male sex hormones) may prevent ovulation and can cause irregular menstrual periods, leading to difficulty conceiving a child or a complete inability to conceive (19). PCOS is the most common cause of infertility (19). For those who achieve pregnancy, there is an increased risk of complications and pregnancy loss (19). Women with PCOS are more likely to develop type 2 diabetes, high blood pressure, problems with the heart and blood vessels, uterine cancer, and metabolic syndrome (18, 19).

About half of all women with PCOS are overweight or obese (19). Treatment for PCOS may include medication to promote ovulation, however, weight loss is the primary therapy for PCOS (18, 20). A reduction in weight of as little as 5% can improve insulin resistance associated with PCOS, and for some women it may improve the hormone imbalance and increase fertility (21). WIC nutrition services should focus on dietary and physical activity guidance to promote weight loss and compliance with healthcare provider treatment.

## Cardiovascular Disease

Cardiovascular disease (CVD), or commonly known as heart disease, is an umbrella term for several types of heart conditions that cause a decrease flow of blood to the heart which can result in a heart attack (22). The most common type of CVD is coronary artery disease (22). CVD is the leading cause of death for women in the United States and is responsible for about 1 in every 5 female deaths (23). Due to the fact that most CVDs develop slowly over decades as plaque builds up and hardens arteries, cardiac disorders in children are not caused by CVD (24). Children with cardiac conditions typically have congenital heart disease and should be assigned risk 349 *Genetic and Congenital Disorders*.

Traditional risk factors for developing CVD include diabetes, smoking, obesity and overweight, physical inactivity, high blood pressure, and high cholesterol (25, 26). Recent discoveries have highlighted differences in how men and women develop and are diagnosed with CVD. Women are more affected by traditional CVD risk factors than men, and some risk factors specific to women go under recognized by their healthcare providers (25, 26).

Women-specific risk factors for CVD are pregnancy and pregnancy-related complications (27). Pre-eclampsia, preterm delivery, gestational diabetes, and polycystic ovary syndrome are all risk factors for CVD (26, 27, 28, 29, 30). If women have any women-specific CVD risk factors, it is recommended to encourage them to discuss their risk for CVD with their healthcare provider.

People with CVD benefit from cardiac rehabilitation which is a program that helps strengthen the heart through physical activity and helps build healthier habits like eating a healthy diet (31). Likewise, a heart healthy diet can prevent the development of CVD, and includes (32):

- Eating high fiber foods
- Eating foods low in saturated fat

- Limiting salt in diet
- Limiting added sugars in diet
- Limiting alcoholic drinks

### **Asthma**

Asthma is a chronic lung disease that causes the airways to become inflamed and narrow (33). Symptoms include wheezing, breathlessness, chest tightness, and coughing of variable severity (34). Asthma attacks may be mild, moderate, or severe enough to become life-threatening events (34).

According to the Centers for Disease Control and Prevention (CDC), asthma affects 25 million people. The prevalence among adults is 7.7%. In children, asthma prevalence is lower among children age 0-4 (3.8%) than older children age 5-19 (9.8%). In addition, asthma is more common in females (9.3%) than males (6.4%). Regarding race and ethnicity, asthma prevalence is higher among Blacks and American Indian or Alaska Natives, 10.7 and 10.4% respectively, compared with Whites (8.0%). Among Hispanics asthma prevalence is 6.5% and among Asians it is 4.5%. Asthma prevalence increases with decreasing annual household income, with the highest prevalence seen in those with incomes less than 100% poverty (11.7%). (35)

In most cases, the cause(s) of asthma is unknown (34). However, people with asthma can reduce the number and severity of asthma attacks by identifying what triggers an attack. Triggers can be different for everyone, but the most common ones include (36):

- Tobacco smoke
- Dust mites
- Air pollution
- Pest (e.g., cockroaches, mice)
- Pet dander
- Plant pollen
- Mold
- Infections
- Exercise
- Strong scents (such as perfumes)

Asthma can't be cured, but its symptoms can be controlled. Treatment includes avoiding the triggers of an asthma attack and medications. There are two types of asthma medicines (36):

- Quick-relief medicines act fast to open up tight airways. They can be used as needed during a flare-up. Quick-relief medicines act fast, but their effect doesn't last long. These kinds of medicines are also called "fast-acting" or "rescue" medicines.
- Long-term control medicines manage asthma by preventing symptoms from happening. They reduce inflammation in the airways, which is the cause of the swelling and mucus. (Quick-relief medicines only treat the symptoms caused by the inflammation.) Long-term control medicines — also called "controller" or "maintenance" medicines — must be taken every day, even when a person feels well.

Inhaled corticosteroids are the most effective and commonly used long-term control medications for asthma. In children, long-term use of inhaled corticosteroids can delay growth slightly, but the benefits of using these medications to maintain good asthma control generally outweigh the risks. (37)

There is no specific diet therapy for asthma, but below are recommendations for reducing symptoms (38):

- Consume a diet to maintain or achieve a healthy weight. Being overweight can worsen asthma. Even losing a little weight can improve symptoms
- Eat plenty of fruits and vegetables. They're a good source of antioxidants such as beta carotene and vitamins C and E, which may help reduce lung inflammation and irritation caused by cell-damaging free radicals.
- Avoid allergy-triggering foods. Allergic food reactions can cause asthma symptoms.
- Consume foods high in vitamin D. People with more-severe asthma may have low vitamin D levels. Milk, eggs, and fish such as salmon all contain vitamin D.

### **Cystic Fibrosis (CF)**

Cystic fibrosis (CF) is a genetic disorder that affects the cells that produce mucus, sweat, and digestive fluids. In people with CF, a defective gene causes these secretions to become sticky and thick. Instead of acting as lubricants, the thick secretions clog ducts and passageways throughout the body, especially in the lungs, pancreas, and intestines. (39)

CF is a rare disease that affects about 35,000 people in the U.S. (40). All babies born in the United States are tested for CF soon after birth as part of newborn screening (40). Early diagnosis is important so that treatment can be started right away, which can help delay or prevent complications of the disorder. CF is a progressive disease and although there have been improvements in screening and treatments, people with CF have a life expectancy of 35 – 40 years, with some living into their 50s (39).

There is no cure for CF. People with CF often experience malnutrition, poor growth, frequent respiratory infections, breathing problems, and chronic lung disease (41). Goals of treatment are to ease symptoms, prevent and treat complications, and slow the progress of the disease (39). Due to the impact of CF on pancreatic enzymes, the digestion and absorption of protein and fats, are greatly impaired (42). Thus, most people with CF must take pancreatic enzymes as well as fat soluble vitamins (A, D, K and E) (42). The focus of nutrition therapy is to ensure adequate intake due to impaired digestion. Nutritional care should be personalized and provided by a specialized CF dietitian, if available, because needs may change dramatically during the progression of the disease (42).

### **Implications for WIC Nutrition Services**

WIC can improve the management of above listed medical conditions through WIC foods, nutrition education, counseling, and referrals to health and community resources. The table below provides additional WIC nutrition services recommendations specific to the disease state:

WIC Nutrition Services Recommendations for Other Medical Conditions	
All Types of Medical Conditions	<ul style="list-style-type: none"> <li>• Reinforce healthcare provider treatment and dietary plan (if applicable)</li> <li>• Refer for medical nutrition therapy (if available)</li> <li>• Recommend a healthy dietary pattern as described in the Dietary Guidelines for Americans</li> </ul>
Juvenile Idiopathic Arthritis (JIA)	<ul style="list-style-type: none"> <li>• Encourage adequate caloric intake</li> <li>• Monitor growth</li> </ul>
Systemic Lupus Erythematosus (SLE)	<ul style="list-style-type: none"> <li>• Encourage stress-relieving activities to prevent flares</li> <li>• Encourage and refer to smoking cessation if participant is a smoker</li> <li>• Encourage use of sunscreen and sun exposure avoidance</li> <li>• Encourage physical activity as tolerated</li> </ul>
Polycystic Ovary Syndrome (PCOS)	<ul style="list-style-type: none"> <li>• Provide dietary and physical activity guidance to support weight loss, if necessary</li> </ul>
Cardiovascular Diseases	<ul style="list-style-type: none"> <li>• Encourage participant to discuss blood cholesterol and triglycerides with health care provider</li> <li>• Recommend healthy food choices to control overweight or obesity</li> <li>• Recommend limiting alcohol, salt, added sugars, and saturated fat as part of a healthy dietary pattern</li> <li>• Suggest dietary fiber food options (e.g., fruit, vegetables, whole grains, legumes)</li> <li>• Encourage stress-relieving activities</li> <li>• Encourage smoking cessation if participant is a smoker</li> </ul>
Asthma	<ul style="list-style-type: none"> <li>• Provide dietary and physical activity guidance to support weight loss, if necessary</li> <li>• Educate on the avoidance allergy-triggering foods if allergies are present</li> </ul>
Cystic Fibrosis (CF)	<ul style="list-style-type: none"> <li>• Provide more frequent growth monitoring</li> <li>• Encourage adequate caloric intake to maintain healthy weight and normal growth</li> </ul>

### Clarification

Self-reporting of a diagnosis by a medical professional should not be confused with self-diagnosis, where a person simply claims to have or to have had a medical condition without any reference to professional diagnosis. A self-reported medical diagnosis (“My doctor says that I have/my son or daughter has...”)

should prompt the CPA to validate the presence of the condition by asking more pointed questions related to that diagnosis.

## References

1. Petty RE, Southwood TR, Manners P, et al. International League of Associations for Rheumatology classification of juvenile idiopathic arthritis: second revision, Edmonton, 2001. *The Journal of Rheumatology*. 2004 February [cited 2020 September]; 31(2): 390-392. Available from: <https://www.jrheum.org/content/31/2/390.long>.
2. Abramowicz A, Kim S, Prahalad S, et al. Juvenile arthritis: current concepts in terminology, etiopathogenesis, diagnosis, and management. *International Journal of Oral and Maxillofacial Surgery*. 2016 July; 45(7): 801-812.
3. Cron RQ, Weiser P, Beukelman T. Juvenile idiopathic arthritis. *Clinical Immunology*. 2019; 5: 723-733.
4. Little EM, Grevich S, Huber JL, et al. Parental perception of dietary invention in juvenile idiopathic arthritis. *The Journal of Alternative and Complementary Medicine*. 2019 June 4; 25(6): 643-647.
5. Harvard Health Publishing. Cambridge (MA): Harvard Medical School. Can diet improve arthritis symptoms? 2013 May [cited 2021 May]. Available from: <https://www.health.harvard.edu/nutrition/can-diet-improve-arthritis-symptoms>.
6. Kiriakidou M, Ching CL. Systemic Lupus Erythematosus. *Ann Intern Med*. 2020 June [cited 2021 Jan 19]; 2;172(11):ITC81-ITC96. Available from: <https://doi.org/10.7326/AITC202006020>.
7. Parks CG, de Souza Espindola Santos A, Barbhैया M, Costenbader KH. Understanding the role of environmental factors in the development of systemic lupus erythematosus. *Best Pract Res Clin Rheumatol*. 2017 June [cited 2021 Jan 15];31(3):306-320. Available from: <https://dx.doi.org/10.1016%2Fj.berh.2017.09.005>.
8. Centers for Disease Control and Prevention [Internet]. Atlanta (GA): Centers for Disease Control and Prevention. Systematic lupus erythematosus. 2018 October 17 [cited 2020 October]. Available from: <https://www.cdc.gov/lupus/facts/detailed.html>.
9. Lupus Foundation of America [Internet]. Washington (DC): Lupus Foundation of America. Lupus facts of statistics. 2016 October 6 [cited 2020 October]. Available from: <https://www.lupus.org/resources/lupus-facts-and-statistics>.
10. Centers for Disease Control and Prevention [Internet]. Atlanta (GA): Centers for Disease Control and Prevention. About heart disease. 2020 September 8 [cited 2021 January]. Available from: <https://www.cdc.gov/lupus/basics/pregnancy.htm>.
11. Petri M. Pregnancy and Systemic Lupus Erythematosus. *Best Pract Res Clin Obstet Gynaecol*. 2020 April;64:24-30.
12. Kuhn, A, Bonsmann, G, Anders, HJ, et al. The diagnosis and treatment of systemic lupus erythematosus. *Dtsch Arztebl Int*. 2015 [cited 2021 Jan 18];112, 423–432. Available from: <https://doi.org/10.3238/arztebl.2015.0423>.
13. Rodriguez Huerta, M, Trujillo-Martin, M, Rua-Figueroa, I, et al. Healthy lifestyle habits for patients with systemic lupus erythematosus: a systemic review. *Semin Arthritis Rheum*. 2016 [cited 2021 Jan 20];45: 463–470. Available from: <https://doi.org/10.1016/j.semarthrit.2015.09.003>.

14. Nguyen M, Bryant K, O'Neill S. Vitamin D in SLE: a role in pathogenesis and fatigue? A review of the literature. *Lupus*. 2018;27(13):2003-2011
15. Islam MA, Khandker SS, Kotyla PJ, Hassan R. Immunomodulatory Effects of Diet and Nutrients in Systemic Lupus Erythematosus (SLE): A Systematic Review. *Front Immunol*. 2020 Jul [cited 2021 Jan 20];22;11:1477. Available from: <https://doi.org/10.3389/fimmu.2020.01477>.
16. Aparicio-Soto, M., Sanchez-Hidalgo, M., & Alarcon-de-la-Lastra, C. An Update on diet and nutritional factors in systemic lupus erythematosus management. *Nutrition Research Reviews*. 2017 [cited 2021 Jan];30(1), 118-137. Available from: <https://doi.org/10.1017/S0954422417000026>.
17. Constantin MM, Nita IE, Olteanu R, et al. Significance and impact of dietary factors on systemic lupus erythematosus pathogenesis. *Exp Ther Med*. 2019[cited Jan 25 2021] Feb;17(2):1085-1090. Available from: <https://dx.doi.org/10.3892%2Fetm.2018.6986>.
18. Johns Hopkins Medicine [Internet]. Baltimore (MD): Johns Hopkins University. Polycystic ovary syndrome. No date [cited 2021 May]. Available from: <https://www.hopkinsmedicine.org/health/conditions-and-diseases/polycystic-ovary-syndrome-pcos>.
19. U.S. National Library of Medicine [Internet]. Bethesda (MD): MedlinePlus. Polycystic ovary syndrome. 2020 August [cited 2021 May]. Available from: <https://ghr.nlm.nih.gov/condition/polycystic-ovary-syndrome#>.
20. Goodman NF, Cobin RH, Futterweit W, et al. American Association of Clinical Endocrinologists, American College of Endocrinology and Androgen Excess and PCOS Society Disease State Clinical Review: guide to the best practices in the evaluation and treatment of polycystic ovary syndrome – part 2. *Endocr Pract*. 2015 December 21 [cited 2021 May]; (12):1415-26. Available from: <https://pubmed.ncbi.nlm.nih.gov/26642102/>.
21. Mayo Clinic [Internet]. Rochester (MN): Mayo Clinic. Polycystic ovary syndrome. No date [cited 2021 May]. Available from: <https://www.mayoclinic.org/diseases-conditions/pcos/diagnosis-treatment/drc-20353443>.
22. Centers for Disease Control and Prevention [Internet]. Atlanta (GA): Centers for Disease Control and Prevention. About heart disease. 2020 September 8 [cited 2021 January]. Available from: <https://www.cdc.gov/heartdisease/about.htm>.
23. Centers for Disease Control and Prevention [Internet]. Atlanta (GA): Centers for Disease Control and Prevention. Women and heart disease. 2021 January 31 [cited 2020 January]. Available from: <https://www.cdc.gov/heartdisease/women.htm>.
24. Mayo Clinic [Internet]. Rochester (MN): Mayo Clinic. Polycystic ovary syndrome. No date [cited 2021 May]. Available from: <https://dx.doi.org/10.3892%2Fetm.2018.6986>.
25. Garcia M, Mulvagh SL, Merz NB, et al. Cardiovascular disease in women. *Circulation Research*. 2016 April 15 [cited 2021 January]; 118: 1273-1293. Available from: <https://www.ahajournals.org/doi/full/10.1161/CIRCRESAHA.116.307547>.
26. Brown HL, Warner JJ, Gianos E, et al. Promoting risk identification and reduction of cardiovascular disease in women through collaboration with obstetricians and gynecologists: a presidential



- advisory from the American Heart Association and the American College of Obstetricians and Gynecologists. *Circulation*. 2018 June 12.
27. Peters SAE, Regitz-Zagrosek V. Pregnancy and risk of cardiovascular disease: is the relationship due to childbearing or childrearing? *European Heart Journal*. 2017 May 14 [cited 2021 January]; 38(19): 1448-1450. Available from: <https://academic.oup.com/eurheartj/article/38/19/1448/3823351?login=true>.
  28. Castela JE, Gago-Cominguez M. Risk factors for cardiovascular disease in women: relationship to lipid peroxidation and oxidative stress. *Medical Hypotheses*. 2008; 71(1): 39-44.
  29. Okoth K, Chandan JS, Marshall T, et al. Association between the reproductive health of young women and cardiovascular disease later in life: umbrella review. *The BMJ*. 2020 Oct 14 [cited 2021 January]. Available from: <https://www.bmj.com/content/371/bmj.m3963>.
  30. Kramer CK, Campbell S, Retnakaran R. Gestational diabetes and the risk of cardiovascular disease in women: a systematic review and meta-analysis. *Diabetologia*. 2019 March 7; 62: 905-914.
  31. Centers for Disease Control and Prevention [Internet]. Atlanta (GA): Centers for Disease Control and Prevention. How cardiac rehabilitation can help heal your heart. 2020 December 28 [cited 2021 January]. Available from: [https://www.cdc.gov/heartdisease/cardiac\\_rehabilitation.htm](https://www.cdc.gov/heartdisease/cardiac_rehabilitation.htm).
  32. Centers for Disease Control and Prevention [Internet]. Atlanta (GA): Centers for Disease Control and Prevention. Prevent heart disease. 2020 April 21 [cited 2021 January]. Available from: <https://www.cdc.gov/heartdisease/prevention.htm>.
  33. Mayo Clinic [Internet]. Rochester (MN): Mayo Clinic. Asthma. 2020 August 11 [cited 2021 May]. Available from: <https://www.mayoclinic.org/diseases-conditions/asthma/symptoms-causes/syc-20369653>.
  34. Centers for Disease Control and Prevention [Internet]. Atlanta (GA): Centers for Disease Control and Prevention. Asthma facts. 2013 July [cited 2021 May]. Available from: [https://www.cdc.gov/asthma/pdfs/Asthma\\_Facts\\_Program\\_Grantees.pdf](https://www.cdc.gov/asthma/pdfs/Asthma_Facts_Program_Grantees.pdf).
  35. Centers for Disease Control and Prevention [Internet]. Atlanta (GA): Centers for Disease Control and Prevention. Asthma data, statistics, and surveillance. No date [cited 2021 May]. Available from: <https://www.cdc.gov/asthma/asthmadata.htm>.
  36. U.S. Food and Drug Administration [Internet]. Silver Spring (MD): U.S. Food and Drug Administration. Manage your asthma. 2018 November 8 [cited 2021 May]. Available from: <https://www.fda.gov/consumers/consumer-updates/manage-your-asthma-know-your-triggers-and-treatment-options>.
  37. Mayo Clinic [Internet]. Rochester (MN): Mayo Clinic. Asthma medications. 2020 June 19 [cited 2021 May]. Available from: <https://www.mayoclinic.org/diseases-conditions/asthma/in-depth/asthma-medications/art-20045557>.
  38. Mayo Clinic [Internet]. Rochester (MN): Mayo Clinic. Asthma diet. 2020 March 21 [cited 2021 May]. Available from: <https://www.mayoclinic.org/diseases-conditions/asthma/expert-answers/asthma-diet/faq-20058105iet>.

39. Mayo Clinic [Internet]. Rochester (MN): Mayo Clinic. Cystic fibrosis. 2020 March 14 [cited 2021 May]. Available from: <https://www.mayoclinic.org/diseases-conditions/cystic-fibrosis/symptoms-causes/syc-20353700>.
40. Centers for Disease Control and Prevention [Internet]. Atlanta (GA): Centers for Disease Control and Prevention. Cystic fibrosis. 2020 May 18 [cited 2021 May]. Available from: [https://www.cdc.gov/genomics/disease/cystic\\_fibrosis.htm](https://www.cdc.gov/genomics/disease/cystic_fibrosis.htm).
41. Johns Hopkins Medicine [Internet]. Baltimore (MD): Johns Hopkins Medicine. Asthma data, statistics, and surveillance. No date [cited 2021 May]. Available from: <https://www.hopkinsmedicine.org/health/conditions-and-diseases/cystic-fibrosis>.
42. Hollander FM, de Roos NM, Heijerman HGM. The optimal approach to nutrition and cystic fibrosis: latest evidence and recommendations. *Current Opinion in Pulmonary Medicine*. 2017 Nov [cited 2021 May];23(6):556-561. Available from: <https://pubmed.ncbi.nlm.nih.gov/28991007/>.