

Diet in Dermatology: Translating Evidence Into Practice

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FRAMEWORK

1. Review risk of potential co-morbidities for each skin disease/ condition
2. Discuss potential triggers: eating patterns/ foods/ nutrients that may worsen skin disease
3. Discuss potential “helpers”: eating patterns/ foods/ nutrients that may help in the treatment of skin disease

PATIENT HANDOUTS

Handouts: <https://www.skinanddiet.com/overview>

Quick Reference Infographics: <https://www.skinanddiet.com/infographics>

REFERENCES

[Katta R, Kramer MJ. Skin and Diet: An Update on the Role of Dietary Change in the Therapy of Skin Disease. Skin Therapy Letter 2018; 23:1-5.](#)

[Katta R, Desai SP. Diet and dermatology: the role of dietary intervention in skin disease. The Journal of Clinical and Aesthetic Dermatology 2014 Jul; 7\(7\): 46.](#)

PSORIASIS

1. Reduce risk of co-morbidities (Patients with psoriasis at elevated risk of CV disease, DM, HTN, dyslipidemia, metabolic syndrome)
 - a. Diets supported by evidence to reduce risk: Mediterranean, DASH
2. Helpers
 - a. Weight loss to improve response to therapy
 - b. Weight loss to improve PASI scores
3. Triggers
 - a. Increased risk of celiac disease
 - b. Gluten-free diet may help those with gluten antibodies

ACTION ITEMS

1. Screen during history and physical: BMI, history of GI symptoms (screen for gluten allergy/hypersensitivity)
2. Educate on increased risk of co-morbidities
3. Eval by primary MD
4. All pts >45 should be screened for DM; consider HgA1C to indicate 3mo of BS
5. If overweight/obese, or with family history, or of certain ethnic groups, or other risk factors, screen at younger age
6. If overweight/obese and with pre-diabetes, refer to diabetes prevention program for both diabetes prevention and weight loss
7. If overweight/obese consider referral to nutritionist

REFERENCES

[Armstrong EJ, Harskamp CT, Armstrong AW. Psoriasis and major adverse cardiovascular events: a systematic review and meta-analysis of observational studies. J Am Heart Assoc 2013; 2:e000062.](#)

[Bhatia BK, Millsop JW, Debbaneh M, et al. Diet and psoriasis, part II: celiac disease and role of a gluten-free diet. J Am Acad Dermatol. 2014 Aug;71\(2\):350-8.](#)

[Debbaneh M, Millsop JW, Bhatia BK, et al. Diet and psoriasis, part I: impact of weight loss interventions. J Am Acad Dermatol. 2014 Jul;71\(1\):133-40.](#)

[Fleming P, Kraft J, Gulliver WP, et al. The relationship of obesity with the severity of psoriasis: a systematic review. J Cutan Med Surg. 2015 Sep-Oct;19\(5\):450-6.](#)

[Ford AR, Siegel M, Bagel J, et al. Dietary Recommendations for Adults With Psoriasis or Psoriatic Arthritis From the Medical Board of the National Psoriasis Foundation: A Systematic Review. JAMA Dermatol. Published online June 20, 2018. doi:10.1001/jamadermatol.2018.1412](#)

[Gisondi P, Del Giglio M, Di Francesco V, et al. Weight loss improves the response of obese patients with moderate-to-severe chronic plaque psoriasis to low-dose cyclosporine therapy: a randomized, controlled, investigator-blinded clinical trial. Am J Clin Nutr. 2008 Nov;88\(5\):1242-7.](#)

[Michaelsson G, Gerden B, Hagforsen E, et al. Psoriasis patients with antibodies to gliadin can be improved by a gluten-free diet. Br J Dermatol. 2000 Jan;142\(1\):44-51.](#)

[Millsop JW, Bhatia BK, Debbaneh M, et al. Diet and psoriasis, part III: role of nutritional supplements. J Am Acad Dermatol. 2014 Sep;71\(3\):561-9.](#)

[Takeshita J, Grewal S, Langan SM, et al. Psoriasis and comorbid diseases: epidemiology. J Am Acad Dermatol. 2017 Mar;76\(3\):377-90.](#)

[Upala S, Sanguankeo A. Effect of lifestyle weight loss intervention on disease severity in patients with psoriasis: a systematic review and meta-analysis. Int J Obes \(Lond\). 2015 Aug;39\(8\):1197-202.](#)

ATOPIC DERMATITIS

1. Reduce risk of co-morbidities
 - a. More research needed, but severe AD may be associated with higher risk of heart disease
2. Helpers
 - a. Synbiotics in adults and children over the age of 1 year
 - b. Healthy fats may reduce TEWL
3. Triggers
 - a. 3 main types of foods allergies that may result in flare of AD
 - b. These include IgE-mediated, immediate-type hypersensitivity/ delayed eczematous reactions which may flare AD up to 48 hours later/ and systemic contact dermatitis, which may also lead to a delayed flare

ACTION ITEMS

1. Food diary and possible testing
 - a. Issue of food allergies in eczema is very complex
 - b. Patient handout: <https://www.skinanddiet.com/diet-and-eczema-food-triggers>
2. Increased fiber in diet via fruits, vegetables, whole grains (if not allergic)
3. Consider synbiotics or increased consumption of fermented foods containing live, active cultures

REFERENCES

[Chang YS, Trivedi MK, Jha A, Lin YF, Dimaano L, Garcia-Romero MT. Synbiotics for prevention and treatment of atopic dermatitis: a meta- analysis of randomized clinical trials. *JAMA Pediatr* 2016; 170\(3\): 236–42.](#)

[Katta R, Schlichte M. Diet and dermatitis: food triggers. *The Journal of Clinical and Aesthetic Dermatology* 2014 Mar; 7\(3\): 30.](#)

[Schlichte MJ, Vandersall A, Katta R. Diet and eczema: a review of dietary supplements for the treatment of atopic dermatitis. *Dermatology Practical & Conceptual* 2016 Jul; 6\(3\): 23.](#)

[Silverwood Richard J, Forbes Harriet J, Abuabara Katrina, Ascott Anna, et al. “Severe and predominantly active atopic eczema in adulthood and long-term risk of cardiovascular disease: Population-based cohort study.” *BMJ*. May 23, 2018. DOI:<https://doi.org/10.1136/bmj.k1786>](#)

ACNE

1. Helpers
 - a. Low glycemic-index diet for 10-12 weeks has been shown to result in clinical improvement, beneficial changes in serum hormone levels, and change in sebum levels. By skin biopsy, has also resulted in less skin inflammation and reduced sebaceous gland size.
2. Triggers
 - a. Role of dairy unknown; may be a trigger in some individuals
 - b. Case series of whey protein supplements triggering severe acne, resistant to treatment
3. More research needed
 - a. Role of zinc, omega-3 fatty acids, fiber, probiotics, antioxidants

ACTION ITEMS

1. Educate on role played by sugar and processed carbs
2. For motivated individuals, consider further education on low glycemic index dietary recommendations
3. Emphasize that diet is only ONE aspect of therapy
4. Consider individual patient and feasibility of dietary change
5. Consider d/c of whey protein supplements
6. Explain that role of dairy remains unknown, but may possibly serve as a trigger in some individuals

REFERENCES

[Bowe WP, Joshi SS, Shalita AR. Diet and acne. *J Am Acad Dermatol* 2010; 63: 124-41.](#)

[Kwon HH, Yoon JY, Hong JS, et al. Clinical and histological effect of a low glycaemic load diet in treatment of acne vulgaris in Korean patients: a randomized, controlled trial. *Acta Derm Venereol* 2012; 92\(3\):241-246.](#)

[Silverberg NB. Whey protein precipitating moderate to severe acne flares in 5 teenaged athletes. *Cutis*. 2012 Aug;90\(2\):70-2.](#)

[Smith RN, Braue A, Varigos GA, Mann NJ. The effect of a low glycemic load diet on acne vulgaris and the fatty acid composition of skin surface triglycerides. *J Dermatol Sci* 2008; 50\(1\): 41-52.](#)

[Smith RN, Mann NJ, Braue A, Mäkeläinen H, Varigos GA. The effect of a high-protein, low glycemic-load diet versus a conventional, high glycemic-load diet on biochemical parameters associated with acne vulgaris: a randomized, investigator-masked, controlled trial. *J Am Acad Dermatol* 2007 Aug; 57\(2\): 247-56.](#)

[Smith RN, Mann NJ, Makelainen H, Roper J, Braue A, Varigos GA. A pilot study to determine the short-term effects of a low glycemic load diet on hormonal markers of acne: a nonrandomized, parallel, controlled feeding trial. *Mol Nutr Food Res* 2008; 52: 718-26.](#)

ROSACEA

1. Reduce risk of co-morbidities
 - a. Population study of close to 50K individuals indicated increased risk of GI conditions/ diseases in pts with rosacea
2. Helpers
 - a. Case series of SIBO (small intestinal bacterial overgrowth) treatment resulting in long-term resolution of rosacea
 - b. Consider measures to support gut flora, including prebiotics and probiotics
3. Triggers
 - a. Consider foods and beverages that result in vasodilation, either directly or via neurogenic vasodilation via role of TRP channels [transient receptor potential channels]
 - b. Hot beverages
 - c. Alcohol
 - d. Capsaicin-related: spicy foods, red pepper, cayenne pepper
 - e. Cinnamaldehyde-related: cinnamon, tomatoes, citrus, chocolate

ACTION ITEMS

1. Screen with history for GI co-morbidities
2. Refer to GI if necessary
3. Education on food and beverage triggers, including handout
4. Consider either food diary or 8-week elimination of potential rosacea triggers

REFERENCES

[Aubdool AA, Brain SD. Neurovascular aspects of skin neurogenic inflammation. J Investig Dermatol Symp Proc. 2011 Dec;15\(1\):33-9.](#)

[Drake L. National Rosacea Society. Hot sauce, wine and tomatoes cause flare-ups, survey finds. Rosacea Review. Fall 2005. Available at: \[https://www.rosacea.org/rr/2005/fall/article_3.php\]\(https://www.rosacea.org/rr/2005/fall/article_3.php\). Accessed November 13, 2017.](#)

[Drago F, De Col E, Agnoletti AF, et al. The role of small intestinal bacterial overgrowth in rosacea: a 3-year follow-up. J Am Acad Dermatol. 2016 Sep;75\(3\):e113-e5.](#)

[Egeberg A, Weinstock LB, Thyssen EP, et al. Rosacea and gastrointestinal disorders: a population-based cohort study. Br J Dermatol. 2017 Jan;176\(1\):100-6.](#)

[Scheman A, Rakowski EM, Chou V, et al. Balsam of Peru: past and future. Dermatitis. 2013 Jul-Aug;24\(4\):153-60.](#)

[Weiss E, Katta R. Diet and rosacea: the role of dietary change in the management of rosacea. Dermatology Practical & Conceptual 2017 Oct; 7\(4\): 31.](#)

SKIN AGING

1. Role of oxidation
 - a. Foods naturally rich in antioxidants
 - b. Fruits, vegetables, whole grains, spices, herbs
2. Role of inflammation
 - a. Anti-inflammatory foods
 - b. Similar to foods naturally rich in antioxidants
 - c. Omega-3 fatty acids
3. Role of glycation
 - a. “Sugar sag”
 - b. Strategies to reduce blood glucose levels

REFERENCES

[Cosgrove MC, Franco OH, Granger SP, Murray PG, Mayes AE. Dietary nutrient intakes and skin-aging appearance among middle-aged American women. *Am J Clin Nutr* 2007 Oct; 86\(4\): 1225-31.](#)

[Fisher GJ, Kang S, Varani J, Bata-Csorgo Z, Wan Y, Datta S, Voorhees JJ. Mechanisms of Photoaging and Chronological Skin Aging. *Arch Dermatol* 2002; 138\(11\): 1462–1470.](#)

[Nguyen HP, Katta R. Sugar Sag: Glycation and the Role of Diet in Aging Skin. *Skin Therapy Letter* 2015 Nov; 20\(6\): 1-5.](#)

[Thring TS, Hili P, Naughton DP. Anti-collagenase, anti-elastase and anti-oxidant activities of extracts from 21 plants. *BMC Complementary and Alternative Medicine* 2009 Aug 4; 9\(1\): 27.](#)

[Vaughn AR, Branum A, Sivamani RK. Effects of Turmeric \(*Curcuma longa*\) on Skin Health: A Systematic Review of the Clinical Evidence. *Phytother Res* 2016; 30: 1243-64.](#)

[Whitehead RD, Re D, Xiao D, Ozakinci G, Perrett DI. You are what you eat: Within-subject increases in fruit and vegetable consumption confer beneficial skin-color changes. *PLoS One* 2012 Mar 7; 7\(3\): e32988.](#)

Reprinted from “Glow: The Dermatologist’s Guide to a Whole Foods Younger Skin Diet” ©Rajani Katta MD 2018

Summary of Skin Conditions and Food Triggers

*Children are at higher risk for nutritional deficiencies. Always speak to your pediatrician before eliminating foods

Skin Conditions	Potential Food Triggers	Recommended Tests
Acne	<ul style="list-style-type: none"> • Sugar and refined carbohydrates • Role of dairy and whey protein varies 	<ul style="list-style-type: none"> • 12-week diet change
Aging Skin	<ul style="list-style-type: none"> • Sugar, refined carbohydrates • Fried foods • Meats grilled at high temperatures • Trans fats 	
Eczema and atopic dermatitis	Type 1 Hypersensitivity Reactions: Eggs, milk, wheat, soy, seafood, and nuts	<ul style="list-style-type: none"> • Skin prick tests or blood tests • Confirm with physician- supervised food challenge
	Delayed eczematous reactions: Eggs, milk, wheat, soy, seafood, and nuts	<ul style="list-style-type: none"> • Food diary • Confirm with physician- supervised food challenge
	Systemic contact dermatitis: Foods related to balsam of Peru, foods high in nickel, processed foods containing propylene glycol	<ul style="list-style-type: none"> • Food diary • Confirm with patch testing
Rosacea	<ul style="list-style-type: none"> • Alcohol • Heat related: coffee, tea • Capsaicin-related: peppers, spicy foods • Cinnamaldehyde-related: tomatoes, citrus, chocolate, cinnamon 	<ul style="list-style-type: none"> • Food diary • 6-week avoidance diet

Psoriasis

- Pro-inflammatory foods (sugar, refined carbs, unhealthy fats) may increase risk of associated systemic diseases

- Gluten may act as a food trigger in a small percentage of psoriasis patients

- Blood tests for gluten antibodies
- Evaluation by GI doctor for those with GI symptoms

*As in other areas, everyone is different, and the research in these areas is evolving. Your dermatologic and medical history will always impact dietary recommendations

ADDITIONAL READING

SKIN CANCER

[Katta R, Brown DN. Diet and skin cancer: The potential role of dietary antioxidants in nonmelanoma skin cancer prevention. *Journal of Skin Cancer* 2015 Oct 25; 2015.](#)

[Chen AC, Martin AJ, Choy B, Fernández-Peñas P, et al. A Phase 3 Randomized Trial of Nicotinamide for Skin-Cancer Chemoprevention. *N Engl J Med* 2015 Oct 22; 373\(17\): 1618-26.](#)

INFLAMMATION

[Buckley DI, Fu R, Freeman M, Rogers K, Helfand M. C-reactive protein as a risk factor for coronary heart disease: a systematic review and meta- analyses for the US Preventive Services Task Force. *Annals of Internal Medicine* 2009 Oct 6; 151\(7\): 483-95.](#)

[Shivappa N, Steck SE, Hurley TG, Hussey JR, Hébert JR. Designing and developing a literature-derived, population-based dietary inflammatory index. *Public Health Nutrition* 2014 Aug; 17\(8\): 1689-96.](#)

MORE ON PREBIOTICS AND PROBIOTICS

[Chang YS, Trivedi MK, Jha A, Lin YF, Dimaano L, Garcia-Romero MT. Synbiotics for prevention and treatment of atopic dermatitis: a meta- analysis of randomized clinical trials. *JAMA Pediatr* 2016; 170\(3\): 236–42.](#)

[Gueniche A., Phillippe D., Bastien P., Reuteler G., Blum S., Castiel- Higounenc I. Randomised double-blind placebo-controlled study of the effect of *Lactobacillus paracasei* NCC 2461 on skin reactivity. *Benef Microbes* 2014; 5: 137–145.](#)

[Hacini-Rachinel, F., Gheit, H., Le Ludec, J. B., Dif, F., Nancey, S., & Kaiserlian, D. \(2009\). Oral probiotic control skin inflammation by acting on both effector and regulatory T cells. *PLoS One* 2009; 4\(3\): e4903.](#)

[Holscher HD. Dietary fiber and prebiotics and the gastrointestinal microbiota *Gut Microbes* 2017; 8\(2\):172–184.](#)

THE DIABETES PREVENTION PROGRAM

[Ratner RE. An Update on the Diabetes Prevention Program. Endocr Pract 2006;12:20-24.](#)

SUMMARY

1. The Medicare Diabetes Prevention Program is a structured intervention
2. For those who meet the criteria, participation in this 1-year program may be covered by Medicare and by some commercial insurance plans
3. Goal: prevent type 2 diabetes in those with prediabetes
4. A minimum of 16 “intensive” core sessions of a CDC-approved curriculum over 6 months
5. Group-based, classroom-style setting
6. Followed by less intensive monthly meetings
7. Overall, 25 sessions over 1 year
8. Reduction of new cases of type 2 diabetes by 58% overall and 71% in those over age 60
9. Instruction and support from Lifestyle Coaches
10. Learn how to incorporate healthier eating and moderate physical activity
11. Learn how to incorporate problem-solving and coping skills into daily lives
12. Focus on small, measurable goals
13. Goal to achieve at least 5% weight reduction

YMCA Diabetes Prevention Program Physician Referral Form

1. BMI >25 (or 22 if Asian)
2. Lab tests indicating pre-diabetes
 - a. Fasting plasma glucose 100-125
 - b. 2-hour plasma glucose 140-199
 - c. Hemoglobin A1C 5.7%-6.4%