

The four stages of health degradation due to glycation (high sugar), lipid oxidation (vegetable oils), and malnutrition and their associated physiologic effects			
	Arterial health	Glucose metabolism	Immune system and hormonal health
stage 1	<ul style="list-style-type: none"> •lipid cycle disruption (see page 187) •fatty streaks develop inside arteries due to lipoprotein damage and the resulting deposition inside arteries •Intimal thickening develops in damaged areas due to lower oxygen tension 	<ul style="list-style-type: none"> •cross-linked cell membranes •upregulated RAGE receptors •glucose transporters slow to respond to insulin due to stiffened cell membranes •exaggerated insulin response after meals 	<ul style="list-style-type: none"> •hyperreactive inflammatory responses due to chronic upregulation of pro-inflammatory cytokines and other mediators
stage 2	<ul style="list-style-type: none"> •diffuse intimal thickening develops •in the kidney, this reduces oxygen delivery to juxtaglomerular cells resulting in elevated diastolic blood pressure and exaggerated response to stress, or “white coat hypertension” 	<ul style="list-style-type: none"> •insulin levels become chronically elevated due to increased burden of cells with stiff and abnormally functioning membranes 	<ul style="list-style-type: none"> •increasingly over-reactive inflammatory responses disrupt hormonal and growth signals •cross-linked cell membranes further disrupt hormonal signalling
stage 3	<ul style="list-style-type: none"> •hypertension develops due to chronic renin-angiotensin stimulation •increased lipoprotein deposition in arterial lumen leads to atherosclerosis 	<ul style="list-style-type: none"> •prediabetes develops •reduced oxygen and nutrient delivery to heart muscle leads to collagen deposits in the myocardium, stiffening the muscle and leading to diastolic heart failure 	<ul style="list-style-type: none"> •disrupted repair cycles due to lack of sleep and chronic inflammation lead to connective tissue swelling •hormone receptor down-regulation
stage 4	<ul style="list-style-type: none"> •continued shear stresses and fat buildup in the artery lead to “vulnerable plaques” which can rupture, leading to heart attacks (see pages 196-7) 	<ul style="list-style-type: none"> •chronically elevated glucoses accelerate the process of membrane damage and collagen cross-linking, leading to full-blown diabetes 	<ul style="list-style-type: none"> •hormonal disruption leads to osteoporosis, circadian rhythm disruption •immune disruption impairs immune surveillance

Typical test results and symptoms associated with the four stages of health degradation due to glycation (high sugar), lipid oxidation (vegetable oils), and malnutrition			
	Arterial health	Glucose metabolism	Immune system and hormonal health
stage 1	<ul style="list-style-type: none"> • high <i>post-meal</i> triglycerides 	<ul style="list-style-type: none"> • feeling a “sugar low” or tiredness resolved by eating sweets 	<ul style="list-style-type: none"> • allergies and asthma • hives/itchy rashes • slow resolution of colds and other infection • frequent headaches
stage 2	<ul style="list-style-type: none"> • suppressed HDL • chronically elevated LDL and/or triglycerides • carotid ultrasound test shows abnormal intima-media ratio • blood pressure over 130/80 when stressed or sick 	<ul style="list-style-type: none"> • glucose tolerance testing shows glucose intolerance • blood test shows elevated insulin levels • weight gain 	<ul style="list-style-type: none"> • irregular and/or painful periods • weight gain • skin changes: acne, dark blotches, dryness • short and/or narrow-boned stature • crooked teeth • narrowed airways
stage 3	<ul style="list-style-type: none"> • blood pressure over 140/90 • endothelial dysfunction develops, causing ED and exercise intolerance 	<ul style="list-style-type: none"> • fasting sugar level over 90 • HgbA1c (reflects average blood glucose) over 5.5 • exercise intolerance due to diastolic dysfunction • echocardiogram shows diastolic dysfunction • nocturnal foot pain and heel callous thickening 	<ul style="list-style-type: none"> • joints stiff on wakening (due to connective tissue damage) • low estrogen and testosterone levels • infertility and early menopause • low bone density (due to reduced hormone receptivity)
stage 4	<ul style="list-style-type: none"> • blockages on angiograms, vulnerable plaques on intra-arterial ultrasonography 	<ul style="list-style-type: none"> • fasting sugar level over 125 • HgbA1c over 6.5 • urinalysis shows <i>microalbuminuria</i> (protein in urine) • retinal exam shows abnormal blood vessels 	<ul style="list-style-type: none"> • chronic fatigue • osteoporotic bone fractures • cancer • autoimmune disease (lupus, multiple sclerosis, myasthenia gravis, thyroiditis, etc.)

Steps for Including The Four Pillars in Your Diet

Starting with the Easiest First

1. Drink more milk.
Best choice: raw, organic, whole.
Next best: whole, organic.
If lactose intolerant, choose yoghurt. Do not buy low-fat or fat-free dairy.
2. Buy sugar-free peanut and nut butters, the kind with the oil on top (all that oil is typically absorbed by sugar molecules in brand-name peanut butters). Avoid those that use palm oil, they tend not to taste very good.
3. Buy sprouted grain bread instead of whole wheat or white. Popular brands are Ezekiel and Alvarado Street Bakery. These are usually sold in the refrigerated or freezer section because they are preservative-free and need to be refrigerated. Many are wheat-free as well.
4. Instead of boxed cereals or instant oatmeal, eat toast with butter, sugar-free peanut butter, or poached eggs for breakfast instead.
5. Use fresh, seasonal vegetables instead of frozen whenever possible. Season with salt and add generous amounts of butter and your kids will love them. Steam vegetables (like broccoli, asparagus, carrots, and cauliflower) instead of boiling, which leaches vitamins and minerals.
6. Buy Bubbies or other brand lacto-fermented pickles and sauerkraut and use as condiments/side dishes instead of chips or cookies at lunch. Save the juice when the jar is empty for salad dressing and to use as a starter for making your own sauerkraut.
7. Never use margarine or low-fat, low-cholesterol “spreads.” Buy organic butter from pastured animals. Popular brands are Organic Valley and Horizon.
8. Choose healthy oils (see table listing of Good Fats and Bad on page 173).
9. Make your own salad dressing. Even easier, pour olive oil then balsamic vinegar over your salad (pouring the oil before the vinegar helps it stick better). Use a ratio of approximately 2:1 oil to vinegar. For extra flavor fast, add 1 Tbsp of the juice in the Bubbies pickle or sauerkraut jars.
10. Boil a dozen eggs to keep on hand for a quick lunch.
11. Eat large salads three to five times a week. Don’t bother with iceberg lettuce. For variety, experiment with other greens, including radish leaves, arugula, beet greens, or whatever looks particularly fresh. Add celery, carrots, sprouts, capers, pine nuts, sunflower seeds.

12. Use fresh herbs often. Add basil to salads with tomatoes; add parsley to hamburger; add garlic to butter for vegetables; rosemary to chicken; mint to beef stews or fatty roasts; ginger to stir-fries.
13. Instead of canned tuna, buy salmon or mackerel *with bones in*. Mix with olive-oil based mayonnaise or small amounts of regular mayo and mustard to use for lunch as a replacement for nitrate-laden sandwich meats.
14. Eat liver once a week.
15. Eat soups made with bone stock once or twice a week.
16. Use bone stock rather than water as the base for making rice, mashed potatoes, noodle dishes, etc.
17. For variety, substitute beets or turnips for baked potatoes.
18. For light desserts that give a sweet finish to your meal, drink Kombucha or wine.
19. Use bone-in chicken, turkey, and red meats whenever possible.
20. When eating boneless cuts of beef, like fillet, serve with bone-stock gravy (also known as demi-glace).
21. Buy fatty cuts of meat, like New York strip, and sear the fat on the grill before cooking to enhance flavor.

What You Need to Cut from Your Diet:

1. Vegetable oil
2. Added sugar and honey (to tea, coffee, etc.)
3. Soda
4. Juice, except fresh squeezed. (Why not just eat the fruit? It's got more fiber and more antioxidants!)
5. Energy bars and "health" bars
6. Boxed cereals
7. Fried fast foods
8. Powdered "proteins," and powdered milk
9. Salad dressings made with any kind of vegetable oil, including canola
10. Low-fat products, including milk, cheese, salad dressings, cookies, and other baked goods
11. Snacks and desserts—if you want to lose weight

Appendix C

Our Four Pillar Menu

Breakfast

Cream-top yoghurt flavored with any combination of:
jelly, vanilla extract, chopped fresh fruit, dried fruit, nuts

Raw whole milk (1 cup) with cream (2-3 Tbsp) added to 1/4-1/2 cup toddy
(cold-brewed coffee)

Breakfast porridge:

Can be made with steel-cut oats, barley, brown rice, and more, including
wheat berries and quinoa, both of which can be germinated first

Non-germinated cereals/etc. can be live-culture processed overnight by
soaking in warm water with whey, miso, yoghurt, sourdough starter or other
activating agent

Flavor with cream or butter, and experiment with spices, especially
cinnamon and nutmeg, as well as herbs (mint) and citrus zest, or nut and
dried fruit combinations (walnuts and cranberries, raisins)

If making without overnight soaking, use stock as the flavor base instead of
water

Sprouted-grain bread, toasted and spread with butter, butter and fish eggs,
peanut butter, or your favorite sugar-free nut spread

Poached eggs on sprouted-grain toast

Crepes with vanilla-extract-flavored whipped cream and chopped fresh fruit

Avocado halves with coconut cream and a pinch of salt

Lunch: Healthy “Fast Food”

Hard-boiled eggs with salt

Sardines with sauerkraut in a bowl

Sardines on sprouted-grain toast with mustard and sauerkraut

Liverwurst with mustard on crackers or sprouted grain toast

Peanut butter with wheat germ on you name it: sprouted grain bread/
apples/celery

Smoked oysters on crackers

Fresh and sprouted tahinis and “spreads” (chickpea and/or sesame seed based, often sold by raw/vegan organic food manufacturers) on sprouted grain tortilla topped with fresh salsa

Milkshake or eggnog with banana and hazelnut extract (eggs must be washed and from a safe source)

Melted cheese on sprouted grain corn tortilla, topped with fresh salsa

Cucumber and tomato squares sprinkled with pine nuts, olive oil, balsamic vinegar, and a splash of (preferably lacto-fermented) pickle or sauerkraut juice (for salt)

Assemblage: raw nuts, peeled carrots, boiled eggs, slices of raw milk hard cheeses

Beverages

Kombucha

(A probiotic- and B-vitamin-rich fruity, natural soda with a trace of alcohol)

Brewed teas

Tomato juice

Unsweetened fruit juice, especially if home-grown fruit is available

Toddy coffee topped with whipped cream sweetened with vanilla extract and sprinkled with 1 tsp chopped up chocolate bar

Appendix C

Dinner With Luke and Cate

Nitrate-free chunk-style sausage on sprouted-grain tortilla topped with cheddar cheese and fresh salsa

Liver (see recipe, following page) with fresh salad

Beef heart strips, grilled rare and topped with bone marrow medallions and demi-glace sauce, side of broccoli and garlic butter sauce

Homemade pasta and tomato-sausage sauce, side of fresh salad

Roast whole chicken with rosemary and giblets, sliced potatoes, and string beans

Chicken soup made with chicken stock, legs/thighs/and wings with homemade dumplings, side of fresh salad

Oxtail soup, side of fresh salad

Homemade pizza dough topped with pasta sauce, organic mozzarella, and whatever topping we have on hand: mushrooms, peppers, pine nuts, chicken, onions, cheddar and other cheeses, etc.

Zucchini, tomato, and onion trio fried in garlic butter and topped with vinegar-beef stock reduction sauce and finely chunked feta cheese

Filipino-style salmon head soup

Scrambled eggs with cheese, naturally cured bacon, and buttered toast

Steak with mushrooms flavored with bacon fat and drizzled in onion demi-glace sauce, asparagus with fresh Italian dressing

Grilled New York strip or porterhouse steak with wild rice and garbanzo beans cooked in chicken broth, with curly purple kale

Desserts

Kombucha or unpasteurized beer

2 oz dessert wine

Home-made cookies and milk

Dark chocolate, 1/2 oz max

Selected Recipes

Homemade Chicken Broth/Stock

The most common cooking question I get is, *How do I make bone stock?* Here is an easy chicken stock recipe from my friend Larry Ells, executive chef at the Grand Hyatt Kauai in beautiful Poipu. We've added white wine to his recipe for flavor and because the acid extracts more bone minerals into the broth.

Ingredients

Chicken bones, either fresh, or freshly frozen, 5 lbs. If you can find a butcher who sells them, include up to 50 percent chicken feet, thoroughly washed and toenails clipped off, for extra collagen
Carrots, washed and cut into slices or cubes, 2 medium
Celery, washed and cut into slices or cubes, 3 stalks
Leek (optional but very good) well washed and cut, 1
Onion, peeled and diced, 1 large
White wine, 4-6 oz
Bay leaf, 2 each
Kosher salt, pinch
Black peppercorns, 6 to 8
Italian parsley, fresh and rinsed, whole, small bunch

How to Make it:

Cover the chicken bones and feet with cold water. Bring to a simmer and drain, and then rinse well. Return the bones and feet to the pot, again cover with cold water and add all other ingredients. Bring pot back to a low simmer, and simmer uncovered for about 4 hours. As the stock cooks, some grey foam will collect on top. Skim the foam with a spoon and discard.

When the stock is done, allow to cool for about 10 minutes and then very carefully strain stock into a metal or glass container and cool loosely covered at room temperature for about 30 minutes and then chill thoroughly. Use immediately or store in 3/4 full Tupperware containers and freeze.

Use for making mashed potatoes, gravies and sauces, or quick soups for the family, with the addition of fresh vegetables and meats.

This recipe yields about 3 gallons of very good stock. The shelf life if refrigerated is 3 days. If frozen, 3 months. One large, fresh stewing hen may be substituted for the chicken bones and feet. Blanch, and rinse as you would with the bones and feet. Remove the meat from the hen as soon as it is cool enough to handle, and chill thoroughly as well. The meat has a shelf life of 3 days. If frozen, one month.

Sandy's Miracle Liver Recipe

We include this one organ meat recipe to show that you can get such tidbits to taste good and it doesn't take a culinary arts degree. This Filipino adobo-style (marinated in soy sauce) dish is Sandy's own creation. Her children love it and so do we!

Ingredients

1 cow's liver, cleaned (about one pound)
4-6 cloves garlic
1/8 cup soy sauce (naturally brewed, not hydrolyzed)
2-4 Tbsp olive or peanut oil
Pepper

Prep and cooking time: 20 minutes
Serves 3 to 4

How to Make it:

Using a sharp chef's knife, dice the garlic and set aside. Slice the liver into one inch cubes. Pour oil into a large, flat-bottomed frying pan, coating the bottom, turn heat to medium, toss in the garlic and heat until it starts to sizzle. Saute garlic a few seconds, stirring. Add liver and cook briefly on each side until evenly brown and blood starts oozing out, about 2 to 3 minutes. It should smell savory and good by this point.

Working quickly, grind very generous amounts of black pepper over the meat, about 1/4 to 1/2 tsp, then add the soy sauce into the pan, not pouring over the liver (to avoid washing off the pepper) and place lid over the top. Turn off heat, leave on hot stovetop and let sit for five to ten minutes until the blood turns pale brown. Serve with juice over rice, or over noodles with a sprinkle of parmesan cheese. Oddly enough, this liver will also taste good the next day!

Have a Favorite Four-Pillar Recipe? Share it Online at:

DrCate.com

Shopping, Reading, and Resources

Shopping Rules for Finding Quality Food:

1. Natural: If something couldn't have existed 200 years ago, skip it
2. Variable: If all units (chickens, cheese, tomatoes, etc.) are identical size and shape, that's a bad sign
3. Flavorful: If a given item lacks intensity of taste (without added MSG, hydrolyzed proteins, or sugar), don't buy it again
4. Seasonal: Avoid foods that are frozen or canned
5. Local: Packages should identify source

Reading:

A Revolution in Eating: How the Quest for Food Shaped America, Columbia University Press, 2005

Evolution in Four Dimensions: Genetic, Epigenetic, Behavioral, and Symbolic Variation in the History of Life, The MIT Press, 2006

Excitotoxins: The Taste That Kills, Health Press, 1996

Handbook of Food Additives, The Chemical Rubber Co, 1968

Health and the Rise of Civilization, Yale University Press, 1989

In Defense of Food: An Eater's Manifesto, Penguin Press, 2008

Mirror, Mirror...The Importance of Looks in Everyday Life, State University of New York Press, 1986

Mrs. Hill's New Cook Book: A Practical System for Private Families, In Town and Country. With Directions for Carving and Arranging the Table for Dinners, Parties, etc., Together with Many Medical and Miscellaneous Receipts extremely useful in Families, Applewood Books (Facsimile Edition of the 1867 original)

Natural Causes: Death, Lies and Politics in America's Vitamin and Herbal Supplement Industry, Broadway, 2006

Appendix D

Nutrition and Physical Degeneration, Price-Pottenger Nutrition Foundation, 2008

On the Take: How Medicine's Complicity with Big Business can Endanger Your Health, Oxford University Press, 2004

Overdosed America: The Broken Promise of American Medicine, HarperCollins, 2004

Preserving Food without Freezing or Canning: Traditional Techniques Using Salt, Oil, Sugar, Alcohol, Vinegar, Drying, Cold Storage, and Lactic Fermentation, Chelsea Green Publishing Co, 1999

Seeds of Deception: Exposing Industry and Government Lies about the Safety of the Genetically Engineered Foods You're Eating, Yes! Books, 2003

Selling Sickness: How the World's Biggest Pharmaceutical Companies are Turning Us All into Patients, Nation Books, 2005

Survival of the Prettiest: The Science of Beauty, Anchor, 2000

The Cambridge World History of Food, Cambridge University Press, 2000

The Cholesterol Myths: Exposing the Fallacy that Saturated Fat and Cholesterol Cause Heart Disease, NewTrends, 2000

The River Cottage Meat Book, Ten Speed Press, 2007

Wild Fermentation: The Flavor, Nutrition, and Craft of Live Culture Foods, Chelsea Green Publishing Co, 2003

Resources:

EatWild.com: Excellent information on where to buy pasture-raised meats and eggs. Organized by state.

RealMilk.com: Volunteer chapter leaders from the Weston A. Price foundation post sources of fresh dairy on this web site.

SlowFoodUSA.org: Supports consumption of good, clean, and fair food. Members join local convivia.

LocalHarvest.org: Interactive map for finding farmers markets, CSAs (Community Supported Agriculture), and events, including workshops for learning artisanal food production techniques.

About The Authors

Luke Shanahan, MFA studied creative writing at the University of Iowa workshop and earned his MFA from the University of Arizona where he won several awards for fiction. He has taught college English, has freelanced for a number of newspapers and magazines including The Pacific Journal and the Garden Island Newspaper, and runs creative writing and screenplay workshops on Kauai. He is building a nonprofit organization FRESH that will bring families together around food and reconnects people to their culinary roots.

Dr. Cate Shanahan studied epigenetics and biochemistry at Cornell University's Molecular Biology program, attended Robert Wood Johnson Medical School, and completed specialty training in Family Medicine at the University of Arizona. In 2001 the authors moved to Hawaii, where Dr. Shanahan noticed that older patients who were raised on an entirely different, more natural diet tended to be the healthiest in their family, and that they also looked different, with angulated facial features, better-aligned joints, and sturdier bones. Applying her knowledge of biochemistry and molecular biology to the study of food and human growth, she recognized that cheap fats and refined carbohydrates interfere with normal cell signals, and that traditional diets can help restore function. She has traveled across the country to share this information with fellow physicians in formal lectures and meetings.

Other Publications:

Aging Skin: What Lies Beneath? The Pacific Journal, Fall, 2008

Friendly Bacteria: Can They Stop the Superbugs? The Pacific Journal, Fall, 2009

Lecture Titles:

Rich Cell, Poor Cell: How Peasant Food Can Save Your Life

The Third Parent: Why Your DNA Depends on a Healthy Earth