An Actuarial Challenge to the Insurance Industry:
A Logical and Realistic Solution to Achieve Stability and Universal Access in the Individual Health Insurance Market

Actuarial Challenge – Round One Submission

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Executive Summary

The solution proposed in this paper directly addresses the underlying cause of the present instability and lack of universal access in the individual health insurance market. That is, too many unhealthy individuals being treated with expensive and ineffective methods resulting in costs that are out of control. This solution does not rely on legislative changes, but calls on the expertise of the insurance industry and its actuaries to design financial incentives for physicians to educate their patients about an approach that has the ability to significantly improve health and reduce costs. This food as medicine concept has been scientifically proven to not only prevent, but reverse the chronic costly conditions faced by Americans today (including heart disease, diabetes, high blood pressure, and obesity) without any negative side effects. There are simply no other drugs, medical procedures, or insurance mechanisms that have been shown to successfully address such a wide range of health conditions. An unbiased and logical review of the evidence leaves little doubt this approach provides the optimal solution for improved health and reduced costs. However, the vast majority of the population and even many in the medical and insurance fields are unfamiliar with this concept. Therefore, this solution seeks to increase awareness of this approach on a much wider scale and change provider reimbursement to make treatment using this concept an option for everyone.

A successful implementation of this solution will result in the reduction of health care costs allowing premium rates to stabilize and then decrease. As a result, the number of uninsured will decline and insurers will increase their participation in a growing and stable market. While this solution is focused on and benefits all stakeholders in the individual market, it could easily be expanded to and see similar cost reductions in the employer group insured, self-insured, Medicare, and Medicaid markets. There are no additional government mandates relative to the ACA, although it does require leadership on the part of the insurance industry and increased responsibility among physicians and consumers. With this increased responsibility, however, comes the opportunity for reward as well. Potentially lucrative incentive compensation is provided for those physicians who are effective at addressing the underlying cause of patient health conditions using the approach. Patients benefit from this increased quality of care and have the ultimate reward by regaining control over their health.

Introduction

While the Affordable Care Act (ACA) brought significant change to the individual health insurance market, recent political developments suggest that further changes are likely. With that in mind, it is more important than ever to have a realistic and effective solution that meets the goals of increasing stability and moving toward universal access in the individual market. The solution proposed in this paper can be implemented without any legislative changes and can function and thrive independent of which political party controls the executive and legislative branches. It has the ability to achieve the desired goals whether the ACA remains fully intact, is repealed, or faces some other outcome. However, it is highly recommended that three key ACA provisions remain unchanged. Those provisions are: (1) guaranteed access regardless of pre-existing condition, (2) individual mandate to purchase insurance, and (3) subsidies for individuals with lower incomes, which together with this proposal will help bring about stability and greater access in a more rapid fashion. Other provisions such as the risk-adjustment program, special enrollment periods, and 3:1 age rating limitation could certainly benefit from various improvements, but as these elements are neither the primary cause of nor will their modification be a solution to the market instability they are not a focus of this proposal.

The Cause of Instability and Lack of Universal Access

This proposed solution directly addresses the cause of the problem--too many unhealthy individuals being treated with expensive and ineffective methods resulting in costs that are out of control. There has justifiably been much attention to the fact that the individual health insurance market enrolled more unhealthy individuals than expected. But this is only a symptom of the problem, not the root cause. Increasing the number of healthy enrollees in the individual insurance pool would help spread costs among a larger population and potentially have some dampening effect on future rate increases, but there is no evidence to suggest rates would actually decrease.[1] As it is, even before 2017 rate increases take effect, nearly half of the uninsured are unable to afford coverage because of the high cost.[2] These uncontrolled costs not only hamper the ability to achieve universal coverage, but also have caused the instability in the market with many insurers exiting and those remaining taking large rate increases. In today's individual health insurance market, where more than 40% of those with or eligible for coverage have at least one chronic condition, there is simply no way to meet the objectives of a stable market and universal coverage without first directly addressing these underlying health conditions and their corresponding high costs.[3]

Proposed Reform Solution and the Food as Medicine Concept

[1] There is evidence that the proportion of non-elderly individuals without insurance who describe themselves as or have characteristics of being in fair or poor health is similar or even greater to that of non-elderly with insurance. See the following two sources:
Kenneth Feingold et al., *Health Insurance Marketplace: Uninsured Populations Eligible to Enroll for 2016*, U.S. Department of Health & Human Services, Office of the Assistant Secretary for Planning and Evaluation, (October 15, 2016), accessed November 29, 2016, https://aspe.hhs.gov/basic-report/health-insurance-marketplace-uninsured-populations-eligible-enroll-2016
Paul D. Jacobs et al., "Changes In Health Status And Care Use After ACA Expansions Among The Insured And Uninsured," *Health Affairs* 35, No. 7 (2016): 1184–1188.
[2] Bianca DiJulio et al., "Kaiser Health Tracking Poll: December 2015," Kaiser Family Foundation, (December 17, 2015), accessed November 29, 2016, http://kff.org/health-costs/poll-finding/kaiser-health-tracking-poll-december-2015/
[3] Jacobs et al., 2016.

Controlling and reducing health care costs are at the center of this proposed reform. The solution is to implement a proven way to address both poor health and significantly reduce (not just slow the growth of) health care costs on a widespread basis. By reducing costs, insurance will become more affordable, experience greater demand from consumers, and be more desirable for insurers to offer which will stabilize the individual insurance market and move toward universal coverage. It calls for insurers to:

(1) Initiate and lead an effort to educate their insureds about a simple and safe approach that has been documented to not only prevent, but reverse many of the most common chronic and costly health conditions and reduce and eliminate the need for prescription drugs and expensive surgical procedures.
(2) Develop and implement compensation and financial incentives for physicians and other health care providers to offer this approach as a primary treatment option for their patients.

The focus of the educational effort is the concept of food as medicine. Before describing the educational effort in greater detail it is useful to understand what the food as medicine concept is, what it is not, and most importantly how it can improve health, reduce costs, and stabilize and expand insurance markets. Everyone knows healthy eating, however defined, is beneficial for health with information on this topic more widely available today than at any time in human history. However, this information clearly has not resulted in better health. Obesity has increased nearly 200% since the early 1960s and spending on health care is now 18% of GDP, double the level from 1980.[4] Largely due to a constant stream of new research studies, often focusing on a single food or nutrient, the public is confused about how to actually eat healthy. As a result, even those with good intentions give up trying to sort through the headlines and just eat whatever catches their eye in the supermarket or restaurant. That being said, while food as medicine does involve healthy eating, the primary focus is the fact that for many of the most common chronic and costly conditions, the human body has the ability to rapidly and safely reverse and eliminate these conditions without prescription drugs or surgery when given the correct fuel. This concept is unknown to a vast segment of the population. As evidence, no one would consider buying an expensive car and using the wrong fuel since the connection between the proper fuel and automobile performance is clear. But many people give little thought to using the optimal fuel (food) in their own body. The connection between food and human health is, at best, ambiguous in an environment where food is often viewed more as entertainment than fuel and many chronic health conditions are thought to be caused by genes or aging.

So how does one know for certain what the optimal food is? Studies are released on a regular basis concluding that one food or another is either good or bad for health, but rather than relying on a handful of academic studies concerning specific foods, the answer becomes clear when reviewing the large volume of research and real world experiences of millions in the U.S. and around the world demonstrating the benefits of whole food plant-based nutrition (WFPBN). This nutritional approach has been proven to rapidly eliminate symptoms, stop the progression, and in many cases reverse numerous chronic and other conditions such as such as heart disease, diabetes, high blood pressure, obesity, and even some cancers. In so doing it has allowed individuals to stop taking medications that had been prescribed for life and avoid expensive and

[4] The 18% is for all health care spending in the economy, not just in the individual market.
National Center for Health Statistics, *Health, United States, 2015*. (Hyattsville, MD.: GPO, 2016), 293.
Cheryl D. Fryar et al, *Prevalence of Overweight, Obesity, and Extreme Obesity Among Adults Aged 20 and Over: United States, 1960–1962 Through 2013–2014*, National Center for Health Statistics, (July 2016).

potentially risky surgeries that they previously thought were the only realistic option. So while it may be impossible to ever definitively settle a debate about the optimal food for the body, as physician Dr. Michael Greger observed, if all WFPBN could do was “reverse our number one killer of men and women [heart disease], then shouldn’t that be our default dietary recommendation until proven otherwise?”[5]

Understanding Whole Food Plant-Based Nutrition (WFPBN)

To provide further definition, WFPBN consists of foods made from plants with a minimal amount of processing. Some examples are rice, beans and other legumes, whole-grain products including pasta and bread, potatoes, fruits, and vegetables. Excluded are animal products such as meat, dairy and eggs as well as foods containing artificial ingredients or extracted plant components, such as vegetable oils. Over the past several decades, there has been a constant stream of various fad diets so the question arises, how is this any different? Most importantly, this approach should not be thought of as a diet at all, where short-term changes are made to achieve certain weight goals, but rather a prescription for permanent lifestyle change to optimize health outcomes and lower health care costs. While "permanent lifestyle change" may sound drastic, for someone living with a chronic health condition who has already experienced a negative impact to their lifestyle, WFPBN provides an opportunity to take control over their health, which today is often dictated by a battery of pills, many with harmful side effects. WFPBN has no limits on calories or number of meals per day and no proprietary packaged food, drinks, or formulas to buy.

The approach is successful because of two primary reasons. First, while many dietary approaches require participants to eat less or limit calories lead to food cravings and are unsustainable long-term, a WFPBN approach encourages consumption of as much whole plant-based foods as desired, without targeting any exact proportion of carbohydrates, fat or protein. These foods typically have a low calorie density and provide a feeling of fullness with a smaller number of calories than an equivalent amount of non-WFPBN food. Second, while there may be a perception that WFPBN consists mainly of salads or vegetables, nothing could be further from the truth. Fruits and vegetables are certainly an important component, but these alone do not satisfy most appetites.[6] Many favorite traditional dishes such as burgers, pizza, sloppy joes, mashed potatoes, lasagna, and burritos can be prepared consistent with and can be at the center of WFPBN.

Research Demonstrating the Ability of WFPBN to Significantly Reduce Costs

More than 85% of total health care spending is for individuals having one or more chronic conditions.[7] Even though WFPBN can easily be adopted by anyone without formal guidance from physicians or nutritionists, it is helpful to review examples from some of the established

[5] Michael Greger, "My Testimony Before the 2015 Dietary Guidelines Committee," (January 16, 2014), accessed November 29, 2016, http://nutritionfacts.org/2014/01/16/2015-dietary-guidelines-committee/

[6] John A. McDougall, *The Starch Solution: Eat the Foods You Love, Regain Your Health, and Lose the Weight for Good,* (New York: Rodale, Inc., 2012), 5-8. McDougall uses the term starches to describe the whole grains, legumes, and starchy vegetables (e.g. potatoes) that provide a feeling of fullness along with the necessary energy, while pointing out that a diet overly focused on fruits or non-starchy vegetables, while very healthy, does not provide sufficient calories and may lead to filling up on unhealthy foods to compensate.

[7] "Chronic Disease Overview," Centers for Disease Control, accessed November 29, 2016, http://www.cdc.gov/chronicdisease/overview/index.htm.

physician-supervised programs that help individuals with these conditions understand and implement such a change. These programs, and others like them, offer a wealth of published peer-reviewed research documenting both the significant cost savings and the rapid and effective medical outcomes achieved.

Arguably the most prominent of such programs was developed by Dr. Dean Ornish, who for nearly 40 years has treated patients with WFPBN and other lifestyle changes rather than drugs and surgery. An analysis of nearly 4,000 patients enrolled in his program found that the adherence rates exceeded 85% after one year.[8] Evidence from a controlled trial showed 99% of patients assigned to the Ornish program had either stopped the progression or reversed their existing heart disease after five-years and had 2.5 times fewer cardiac events than the control group.[9] A different study of those who were eligible for either bypass surgery or angioplasty showed participation in the Ornish program saved an insurer nearly $30,000 per patient over a three-year period compared to the control group.[10] Another insurer reported patients reduced health care costs by 50% after the first year while a matched control group showed no reduction in costs. Two years after starting the program none of the Ornish group had hospital admissions for chest pain compared to 50% of the control group.[11] After review of this and other evidence, the Centers for Medicare and Medicaid Services (CMS) concluded the Ornish program was effective as it showed "significant regression" or reversal of coronary atherosclerosis, reduced the need for bypass or angioplasty and led to significant reduction in all of the following cardiac risk factors: (1) LDL cholesterol, (2) triglycerides, (3) Body Mass Index (4) blood pressure, and (5) required medications.[12] While the Ornish program had been covered by some private insurers previously, this determination in 2010 made the program eligible for reimbursement for Medicare beneficiaries with heart conditions meeting certain criteria.[13]

Dr. Caldwell Esselstyn has used WFPBN to treat high-risk heart patients who had been told by their doctors there was little else that could be done for them. A study that tracked these patients over an average of nearly four years showed of the 89% that followed the WFPBN approach 94% showed improvement in symptoms with 22% demonstrating actual reversal of their existing heart condition. Less than 1% of the patients had a subsequent cardiac event after adopting WFPBN, compared to 62% of the patients who started, but did not adhere to the nutritional treatment.[14]

Heart disease is certainly not the only chronic condition that benefits from WFPBN. Dr. John

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[8] "Evidence Based Medicine Redefining the Standard of Care in Coronary Heart Disease," The Dr. Dean Ornish Program for Reversing Heart Disease™, accessed November 29, 2016, http://rehab.ucla.edu/workfiles/Dean Ornish/Ornish/ScienceBehindProgram.pdf

[9] K. Lance Gould, Dean Ornish et al., "Changes in Myocardial Perfusion Abnormalities by Positron Emission Tomography After Long-term, Intense Risk Factor Modification," *JAMA* 274 (September 20, 1995): 894-901.

[10] Dean Ornish, "Avoiding Revascularization with Lifestyle Changes: The Multicenter Lifestyle Demonstration Project", *American Journal of Cardiology* 82 (1998):72T-76T.

[11] "Dean Ornish Program for Reversing Heart Disease Cost Effectiveness Summary," Highmark, accessed November 29, 2016, https://www.ornish.com/wp-content/uploads/Highmark-cost-analysis.pdf

[12] "Decision Memo for Intensive Cardiac Rehabilitation (ICR) Program - Dr. Ornish's Program for Reversing Heart Disease (CAG-00419N)," August 12, 2010, Centers for Medicare & Medicaid Services, accessed November 29, 2016, http://www.cms.gov/.

[13] Amy Lynn Sorrel, "Medicare's new approach to familiar diseases," *American Medical News*, (May 14, 2012), accessed November 29, 2016, http://www.amednews.com/article/20120514/government/305149956/4/.

[14] Caldwell B. Esselstyn Jr. et al., "A way to reverse CAD?" *The Journal of Family Practice* 63 (July 2014).

McDougall uses it as the primary means of treatment and has had numerous patients with diabetes, obesity, rheumatoid arthritis, cancer, and other conditions reverse or significantly improve their condition.[15] Of the approximately 1,600 patients participating in his program from 2002-2011, cholesterol was reduced by 29%, blood pressure by 18%, and triglycerides by 48% in only seven days. About 86% of those taking blood pressure medications and 90% of those taking diabetes medications were able to reduce or stop them in this short time frame.[16] Additionally, a one year trial among insurance company employees showed a 44% reduction in claim costs after receiving instruction about WFPBN from McDougall.[17] An Ornish study followed two groups of men with early stage prostate cancer and after two years found that only 5% of those who consumed WFPBN required radiation or surgery compared to 27% of those who did not change their dietary habits.[18] A very large observational study showed those who followed a dietary pattern similar to, but not exactly like WFPBN, face a 75% reduced risk of high blood pressure than those who follow a more typical American diet.[19] This is notable as high blood pressure is the most common reason patients see their doctor with over 36 million annual visits.[20]

Rationale for Considering the Food as Medicine Approach

There are no other documented and scientifically proven drugs, medical procedures or dietary methods that have been shown to address the wide range of health conditions for essentially no incremental cost (everyone has to eat) in such a rapid and effective manner without negative side effects or complications as the approach presented here. Even coronary artery bypass surgery, which has been performed for over 50 years and "has become the most completely studied operation in the history of surgery" and "has been shown to be highly effective for the relief of severe angina" has a complication rate of more than 20%, including a 5% risk of stroke and 2% risk of death.[21]

The first scientific evidence suggesting a link between smoking and lung cancer was published in 1912 and it took over 7,000 additional studies before the U.S. government confirmed this connection in 1964.[22] Based on this historical precedent, an official government endorsement of

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[15] Success Stories," Dr. McDougall's Health & Medical Center, accessed November 29, 2016, https://www.drmcdougall.com/health/education/health-science/stars/.

[16] John McDougall et al., "Effects of 7 days on an ad libitum low-fat vegan diet: the McDougall Program cohort," *Nutrition Journal* 13 (2014).

[17] "Healthy Employee Immersion Program," Dr. McDougall's Health and Medical Center, accessed November 29, 2016, https://www.drmcdougall.com/health/programs/healthy-employee-program/

[18] Dean Ornish et al., "Intensive Lifestyle Changes May Affect the Progression of Prostate Cancer," *The Journal of Urology* 174 (September 2005).
Joanne Frattaroli et al., "Clinical Events in Prostate Cancer Lifestyle Trial: Results from Two Years of Follow-Up," *Urology* 72 (December 2008).

[19] Lap Tai Le and Joan Sabate, "Beyond Meatless, the Health Effects of Vegan Diets: Findings from the Adventist Cohorts," *Nutrients* 6 (2014).

[20] "Ambulatory Health Care Data, 2009-2010 Combined Year Tables--Table 1. Annual number and percent distribution of ambulatory care visits by setting type according to diagnosis group," Centers for Disease Control and Prevention, accessed November 29, 2016, http://www.cdc.gov/nchs/ahcd/web_tables.htm

[21] Anna Louise Hawkes, et al., "Outcomes of coronary artery bypass graft surgery," *Vascular Health and Risk Management* 2 (December 2006).

[22] "History of the Surgeon General's Reports on Smoking and Health," Centers for Disease Control and Prevention, accessed November 29, 2016, http://www.cdc.gov/tobacco/data_statistics/sgr/history/

the food as medicine approach is not likely imminent, so it is up to the insurance industry to view the clear evidence that is available now and take appropriate action. There will always be those who say more study or evidence is needed, but in this case the goal is not to prove with clinical certainty which specific foods cause certain diseases, but rather to determine the best way to reduce health care costs and save individuals, insurance companies and governments from financial ruin. For example, in auto and homeowners insurance as there is strong correlation between credit scores and loss experience, the scores are widely used in rate classification even though no one suggests that adverse loss experience is caused by poor credit scores. In this same way, while there can be legitimate ongoing debate about which foods or other factors may cause disease, it is difficult to objectively examine the overwhelming and long standing evidence of a strong correlation between WFPBN and improved health and decreased costs and conclude anything other than this approach should be made available to all patients, but especially those with or at risk for a chronic health condition, as soon as possible.

Solution Part 1 – Educating Policyholders

The first part of this proposal is for insurance companies to provide educational material about the food as medicine concept directly to their insureds. Much in the same way prescription drugs are advertised today as "ask your doctor if drug XYZ is right for you" insureds would be prompted to ask their physician for guidance in using WFPBN to reduce or eliminate prescriptions and reverse disease. One of the main barriers to adopting this approach is simply the current widespread belief that once someone has a chronic health condition there is very little that can be done to actually reverse it and the best outcome possible is one where the condition does not get any worse. As evidence, even highly respected and well intentioned organizations dedicated to helping those afflicted with these conditions share this belief. The following example can be found on the website of the American Heart Association:

> *Follow your healthcare professional's recommendations carefully, even if it means taking medication every day for the rest of your life. High blood pressure is a lifelong disease, and by partnering with your healthcare team, you can successfully reach your treatment goals and enjoy the benefits of better health.*[23]

The fact that high blood pressure does not have to be a lifelong disease and taking daily medication for the rest of one's life is almost always unnecessary with the proper nutrition is not even provided as an option.[24] Therefore, an educational effort clearly stating that WFPBN is an approach that provides a safe, effective, low-cost alternative to eliminate symptoms and potentially reverse chronic health conditions is a vitally important part of this proposed solution.

Solution Part 2 – Providing Financial Incentives for Physicians

The second part of this proposal is for insurers to provide incentives to physicians to assist in

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Robert N. Proctor, "The history of the discovery of the cigarette lung cancer link: evidentiary traditions, corporate denial, global toll," *Tobacco Control* 21:87e91 (2012).

[23] "Prevention & Treatment of High Blood Pressure," American Heart Association, accessed November 29,2016,http://www.heart.org/HEARTORG/Conditions/HighBloodPressure/PreventionTreatmentofHighBloodPressure/Prevention-Treatment-of-High-Blood-Pressure_UCM_002054_Article.jsp#.WCoIp2cm7cs

[24] James Craner, "Hypertension: A Silent Dietary Disease," in *Rethink Food: 100+ Doctors Can't be Wrong*, eds. Amy-Lee Goodman and Shushana Castle (Houston: Two Skirts Productions, LLC, 2014), 119

educating their patients about the food as medicine concept. Physicians would receive a per capita fee from the insurer for each patient that is "prescribed" a WFPBN treatment approach. In addition, to encourage continued patient support, physicians would be provided ongoing compensation based on the future health outcomes of those that choose this treatment. These financial incentives for physicians would not replace their existing fee-for-service or value-based payment contracts, but would be above and beyond those amounts. The WFPBN "prescription" would be "filled" by the patient attending an educational seminar. One possible and proven successful seminar model was developed by Dr. Esselstyn, mentioned previously. He uses a one-day five hour seminar providing patients a scientific overview, practical instruction, real-life success stories, recipes, and an actual meal all for a minimal capital investment.[25] Other methods such as webinars, videos, and guidebooks could be used also. These seminars or other educational materials would be the financial responsibility of the insurer, rather than the physician or patient, but could likely be developed more quickly and cost effectively by independent third-parties serving all insurers. To motivate highly effective seminars, insurers would also compensate seminar providers using payments contingent on future patient health outcomes.

Illustration and Impact of Solution on Individual Market

Exhibit A - Food as Medicine Implementation Sequence of Events

1. Insurer provides its policyholders information about the food as medicine concept.
2. Policyholders discuss the concept and treatment options for their specific condition with their physician.
3. Physician prescribes, as appropriate, Whole-Food Plant Based Nutrition (WFPBN) treatment approach.
4. Patient attends an educational seminar paid for by the insurer. Physician receives a fee for patient attendance.
5. Future claim savings for patients adopting WFPBN are shared with physicians and seminar providers.

While extensive modeling of the food as medicine approach is not in scope for this paper, it is helpful to review a simple, high-level model (see Exhibit B below) to better quantify and understand the directional impact of this proposal. The model assumes an insurance company with 100 policyholders and a 90% combined ratio. It uses an annual premium of $3,600, which is nearly the same as the average HealthCare.gov 2017 premium for the second-lowest cost silver plan for a 27-year old.[26] The first scenario assumes a 10% adoption rate of WFPBN resulting in claim reductions of 50% for each of these ten insureds. Total claim payments for the company decrease by $16,200 producing an 86% loss ratio. Physicians and seminar providers each are paid a flat fee for their initial educational efforts and also receive a 10% share of all claim savings for these insureds. After these payments the company realizes a net savings of $10,080. This model only reflects one year of business, but the shared savings payments to

[25] Caldwell B. Esselstyn Jr. et al., "A way to reverse CAD?" *The Journal of Family Practice* 63 (July 2014).
[26] The average annual premium before the advance premium tax credit is $3,624. For a 27-year old with income of $25,000 the premium after the tax credit is $1,704. *Health Plan Choice and Premiums in the 2017 Health Insurance Marketplace*, *ASPE Research Brief,* U.S. Department of Health & Human Services, Office of the Assistant Secretary for Planning and Evaluation, (October 24, 2016), accessed November 29, 2016, https://aspe.hhs.gov/pdf-report/health-plan-choice-and-premiums-2017-health-insurance-marketplace

physicians and seminar providers will continue and could be modeled for future years assuming various levels of claim savings.

Exhibit B – High-Level Illustrative Model		
	Baseline assumptions:	
(A)	Total company premium:	360,000
(B)	Total company claims:	324,000
(C)	Other expenses:	0
(D)=((B)+(C))/(A)	Combined Ratio (Loss Ratio + Expense Ratio):	90%
(E)	Insured Members:	100
(F)=(A)/(E)	Average Premium Per Member:	3,600
(G)=(B)/(E)	Average Claim Cost for all insureds:	3,240
(H)	Average Claim Cost for the 5 "high-cost" insureds:	32,400
(I)	Average Claim Cost for the 95 "low-cost" insureds:	1,705
(J)	% Claim savings (relative to current level) by adopting WFPBN:	50%
(K)	Compensation to physician for prescribing WFPBN:	200
(L)	Compensation to seminar provider for "filling" the prescription:	250
(M)	% Claim savings shared with physician and seminar providers:	10%
	Scenario #1: 10% of all insureds adopt WFPBN	
(N)=10%x(B)x(J)	Total reduction in claims:	16,200
(O)=10%x((K)+(L))x(E)	Initial compensation paid to physicians and seminar providers:	4,500
(P)=(M)x(N)	Claim savings shared with physicians and seminar providers:	1,620
(Q)=(N)-(O)-(P)	Net company savings:	10,080
(R)=(B)-(N)+(O)+(P)	Total company claims + expenses:	313,920
(S)=(R)/0.9	Total company premium to maintain 90% combined ratio:	348,800
(T)=(S)/(E)	Average premium per member:	3,488
(U)=1-(T)/(F)	Premium reduction %	3.1%
	Scenario #2: 20% of "high-cost" and 0% of "low-cost" insureds adopt WFPBN	
(V)=20%x5x(J)x(H)	Total reduction in claims:	16,200
(W)=20%x5x((K)+(L))	Initial compensation paid to physicians and seminar providers:	450
(X)=(M)x(V)	Claim savings shared with physicians and seminar providers:	1,620
(Y)=(V)-(W)-(X)	Net company savings:	14,130
(Z)=(B)-(V)+(W)+(X)	Total company claims + expenses:	309,870
(AA)=(Z)/0.9	Total company premium to maintain 90% combined ratio:	344,300
(AB)=(AA)/(E)	Average premium per member:	3,443
(AC)=1-(AB)/(F)	Premium reduction %	4.4%

The second scenario is similar to the first, but assumes a 20% adoption rate among "high-cost" insureds only. Even though there are fewer adoptees than in the first scenario, the overall claim savings are the same since a "high-cost" insured was involved. The total net savings of $14,130 are higher since there were fewer upfront expenses with only one "prescription" written. If the company wanted to maintain its 90% combined ratio, assuming all else equal, premiums could be reduced by 4.4%. Both of these scenarios show that even with a relatively small adoption rate and especially when the focus begins with "high-cost" insureds, this approach has the ability to make an impact and provide significant downward pressure on premium rates.

Addressing Objections

Some might suggest the solution proposed by this paper does not address the desired goals of the Actuarial Challenge as it does not recommend significant changes to the ACA or call for new legislative mandates. There also could be those that would argue reducing overall health care costs is not essential to creating a stable individual insurance market or that this is an issue better left to the medical profession rather than actuaries or the insurance industry. Finally, there could be criticism that this approach is unrealistic as not everyone will choose to adopt this nutritional approach since it differs too much from traditional U.S. dietary habits or that those who do begin this treatment will not persist long term. All of these concerns will be directly addressed next.

First, the primary reason this solution is able to meet the goals of this Actuarial Challenge is that it challenges traditional thinking. Often, when a new law or regulation creates problems or instability, as in the present case of the ACA, the temptation is to search for a legislative solution. While the ACA is far from perfect, it merely highlighted the fact that the individual health insurance market had serious flaws for many years before passage of the ACA. The landscape has simply shifted from a situation where millions were unable to access coverage due to pre-existing conditions to one where millions are unable to access coverage due to cost.[27] While it is theoretically possible future legislative changes could again make it more difficult for new enrollees with pre-existing conditions to qualify for insurance, it is recognized, even by those favoring ACA repeal, that it is no longer acceptable to deny coverage to those individuals. Since these high-cost members currently in the individual market will remain covered and persist, improving health and reducing costs, which are difficult if not impossible to legislate, must be the primary focus of any solution to bring both stability and new entrants to the market.

There can be no doubt the medical profession is of prime importance in achieving these goals as evidenced by the work of Drs. Ornish, Esselstyn, McDougall and others who have provided the basic research demonstrating the effectiveness of WFPBN. However, the relatively small group of physicians and other health professionals who currently use food as medical treatment can only reach a limited number of patients. One of the main reasons the concept has not spread among physicians is that the present insurance framework does not sufficiently compensate or provide direct financial incentive for physicians to prescribe WFPBN compared to traditional treatments which are much more lucrative for the physician.

If the individual health insurance market is to survive, the insurance industry itself, by virtue of

[27] "Key Facts about the Uninsured Population," Kaiser Family Foundation, (September 29, 2016), accessed November 29, 2016, http://kff.org/uninsured/fact-sheet/key-facts-about-the-uninsured-population/

its traditional role as payer of health claims, has the ability to develop and implement the necessary financial incentives to motivate physicians to present this approach to all their patients. One might suggest that with the trend toward value-based provider payment models, such as Accountable Care Organizations (ACOs), these incentives already exist. However, the stated purpose of the incentives in many of these value-based arrangements is "to help slow the growth of health care costs" by improving the management or control of chronic conditions.[28] Even if the rate of increase in health spending could be reduced to the level of overall economic growth, it would neither decrease current premium levels, nor stabilize the individual market. Insurers are presently paying physicians, hospitals, and drug manufacturers significant amounts for a variety of treatments that, in many cases of chronic disease, have been shown to be less medically and cost effective than using WFPBN. Since 85% of health care spending is due to chronic conditions, many of which are attributable to poor nutrition, even the most optimized provider payment models are unlikely to reduce health care costs unless the incentives are focused on using WFPBN to reverse and prevent these conditions.[29]

The actuarial profession is uniquely qualified to guide the insurance industry in this effort. Actuaries have consistently developed long-term, stable financial security systems based on objective data that continue to be successful because risk is controlled and minimized. The present market conditions can be characterized as having risk that is uncontrolled causing financial, and possibly even physical, harm to millions of Americans. Actuaries are required by the Code of Professional Conduct to "act...in a manner to fulfill the profession's responsibility to the public" and places that responsibility ahead of any they may have to an employer or industry.[30] In this light, based on the evidence showing treatment using WFPBN results in optimal health outcomes at minimal cost, actuaries have an obligation to report this finding to the public regardless of its perceived popularity. A recent *New York Times* article repeated an unfortunate view of actuaries as "anonymous technicians stereotyped as dull and boring…as they crunch the numbers for their Affordable Care Act business."[31] Actuaries must move beyond this image and realize that continuing to "crunch the numbers" in a system where reimbursement is based on the cost of services inconsistent with the value received is not sustainable. Even more than an obligation, actuaries should view this as a once-in-a-lifetime opportunity to make a lasting impact on society by designing a system that is based on and rewards providers for the most important value patients receive—their health.

While true not everyone will choose to adopt this approach, it should be emphasized that having 100% of the population immediately make a change to WFPBN is not the solution that is being proposed. Rather, this proposal recommends the insurance industry provide incentives so that physicians will simply make patients aware of both the benefits and risks of all possible treatment options. While these monetary incentives are important, the insurance industry must also be prepared to address concerns physicians may have about communicating this concept to their patients. The current belief of many in the medical and scientific community is that because some patients are not receptive to this approach (which is to be expected) it is not

[28] Robert Tagalicod, "Accountable Care Organizations: The Future of Coordinated Care," Centers for Medicare & Medicaid Services, accessed November 29, 2016, https://www.cms.gov/eHealth/ListServ_AccoutableCareOrgs.html.
[29] "Chronic Disease Overview," Centers for Disease Control and Prevention, accessed November 29, 2016, http://www.cdc.gov/chronicdisease/overview/index.htm.
[30] Code of Professional Conduct, Precept 1, American Academy of Actuaries.
[31] Robert Pear, "Why Do Health Costs Keep Rising? These People Know," *New York Times*, June 9, 2016, accessed November 29, 2016, http://www.nytimes.com/2016/06/10/us/health-insurance-affordable-care-act.html?_r=0.

discussed with any patients. As nutrition science researcher and biochemist T. Colin Campbell observed we:

> *should not be ignoring ideas just because we perceive that the public does not want to hear them. Consumers have the ultimate choice of whether to integrate our findings into their lifestyles, but we owe it to them to give them the best information possible with which to make that decision and not decide for them.*[32]

The evidence shows once patients are made aware of and actually try WFPBN themselves, they experience positive and rapid results and have no desire to revert to their prior nutritional habits with studies cited earlier showing adherence rates approaching 90%. In fact, many patients express surprise why their prior health care provider had not informed them of this treatment option.[33] As a practical matter only a small percentage of the population needs to adopt WFPBN to effectively reduce health care costs.[34] Once adoption reaches 10%-15%, most physicians will have had a number of patients who successfully reversed their chronic condition. Seeing these results firsthand will, possibly even more so than financial incentives, cause physicians to believe in and strongly recommend WFPBN to all their patients. Further, many of these early adoptees will provide personal testimony to friends and family of how they improved their health. Like any successful innovation, a virtuous circle is created leading to greater and greater adoption rates over time.

Impact on Consumers

With reduced costs brought on by increasing adoption of WFPBN, lower premium levels in the individual health insurance market are realistic. This benefits existing insureds, but potentially has an even bigger impact on the uninsured who will be better able to afford coverage. In addition, this approach has the opportunity to change the view of insurance from a service used only when sick to one that helps to reverse disease and maintain health for a lifetime, providing additional motivation for the uninsured to purchase coverage. While the impact of this proposal on cost sharing levels is neutral relative to the ACA, if consumers are healthier they will incur fewer out of pocket expenses.

Consumer access to health care providers should be improved under this proposal. One of the current cost control strategies in the individual market is to have narrow networks, which limit provider access.[35] As the food as medicine approach is inherently low-cost and has a built-in mechanism to reward physicians based on their effectiveness using WFPBN, there will be less need for narrow networks. Additionally, timely access to specialists will be improved. Many chronic conditions, which were originally caused by non-optimal nutrition, develop into more severe cases requiring specialist care. With an overall healthier population, specialists will have more time to focus on the truly rare or difficult cases that are beyond the scope of the primary care physician.

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[32] T. Colin Campbell and Thomas M. Campbell, *The China Study: The Most Comprehensive Study of Nutrition Ever Conducted and the Startling Implications for Diet, Weight Loss and Long-term Health*, (Dallas: BenBella Books, Inc., 2004), 287.

[33] Caldwell B. Esselstyn, Jr., *Prevent and Reverse Heart Disease: The Revolutionary, Scientifically Proven, Nutrition-Based Cure*, (New York: Avery, 2007), 57-66.

[34] See Exhibit B, High-Level Illustrative Model on page 9 of this paper.

[35] David Blumenthal, "Reflecting on Health Reform—Narrow Networks: Boon or Bane?" The Commonwealth Fund, (February 24, 2014), accessed November 29, 2016, http://www.commonwealthfund.org/publications/blog/2014/feb/narrows-networks-boon-or-bane

This proposal will naturally have spillover to the group insured, self-insured, Medicare, and Medicaid markets as many of the same insurers in the individual market also serve these markets either as a risk taker or provider of administrative services. Once the success of this approach is demonstrated in the individual market, insurers and other health plan issuers (including governments) could expand it to these other markets, likewise reducing costs and premiums. The impact on consumers in the government markets has the potential to be even greater than in the individual market with nearly half of Medicare participants having four or more chronic conditions and over 60% of the Medicaid population having at least one chronic condition.[36] Taxpayers would also benefit as these public programs would be less likely to require increased funding levels in future years. Ultimately, the impact on the most number of people would be in the employer group market, which provides coverage for nearly half of the total population.[37] Both insured and self-insured employers pay a large share of the health insurance premium for their employees so these cost savings can be directed to more productive projects, reduced prices of company products, or increased profits.

While the ability to reduce premiums and decrease the uninsured population is the focus of this proposal, it does have another, even more powerful impact on consumers. In the present environment consumers feel they have little control over their own health, often leaving the responsibility to physicians to find the right mix of prescriptions to address their health concerns. In contrast, consumers will be given access to the knowledge that their health is largely influenced and can be rapidly improved by their own actions. Clearly not all will accept this view and find it more convenient to use pills and procedures instead of beans and broccoli, but when food as medicine is explained in a clear and direct manner from a trusted health care provider, many consumers will gladly accept this responsibility and regain control over their health.

Impact on Providers

In contrast to making a brief appearance in the exam room and writing a prescription, under this proposal physicians will be compensated directly and fairly to take the necessary time to educate patients about the underlying cause of their condition and how to address it. The incentive compensation provides the physician with the potential for a lucrative opportunity to share in future claim savings as a result of successful WFPBN treatment. With this additional time and attention physicians will better understand the nuances of each patient. By definition, the quality of care is better in an approach where the underlying cause of a problem is addressed over one in which only symptoms are treated.

Today, especially in the primary care field, there is a shortage in the supply of physicians.[38] As the food as medicine approach becomes more widespread and the positive impact on patient health is realized this shortage should diminish as (1) fewer primary care, and potentially other, providers will be needed as demand for medical services will decrease and (2) more providers will want to enter a field that is valued and rewarded (both professionally and financially) for its

[36] Jacobs et al., 2016.
Juliette Cubanski et al., "A Primer on Medicare: Key Facts About the Medicare Program and the People it Covers," Kaiser Family Foundation, (March 2015), 5.
[37] "Health Insurance Coverage of the Total Population, Timeframe: 2015," Kaiser Family Foundation, accessed November 29, 2016, http://kff.org/other/state-indicator/total-population/?currentTimeframe=0
[38] Pauline W.Chen, "Where Have All the Primary Care Doctors gone?" *New York Times*, December 20, 2012, accessed November 29, 2016, http://well.blogs.nytimes.com/2012/12/20/where-have-all-the-primary-care-doctors-gone/?_r=0

ability to permanently improve patient lives.

Impact on Insurers and Other Health Plan Issuers

With the implementation of this proposal insurers will have provided themselves a powerful additional tool to deal with morbidity risk and promote persistency, in contrast to the primary tool used today (rate increases) which can cause increased lapsation. By addressing the issue directly at the source, health care costs become more predictable, insurer pricing accuracy improves, reduced premium levels increase demand for coverage, and the need for narrow networks and limited plan choices is reduced. With all these developments, insurers who either exited the market or never participated in the first place will be more willing to offer coverage leading to a thriving, competitive, and stable market with a range of plan offerings.

There is no new regulatory burden on insurers or other health plan issuers, but this proposal does require insurers (on a voluntary basis) to take a leadership role and use their experience to change the existing payment structure to develop financially sound incentives that reward providers for improving and maintaining patient health. These incentives can be flexible to fit various circumstances, but must be based on the value providers create in terms of long-term patient health, instead of reimbursement based on a single encounter. For example, if a patient with diabetes incurs claim costs of $10,000 annually reverses the condition and lowers their ongoing annual claims to $1,000, under this proposal the responsible physician shares in a portion of the claim savings for all future years.

Government Responsibilities

Under this proposal, there are no additional financial responsibilities, regulatory roles, or mandates, beyond what is already in place with the ACA. Most importantly, the feasibility to implement this solution is high as it does not require any type of formal legislation, requiring an acrimonious political battle, subject to reversal by a future Congress or President with differing views. Finally, with lower health insurance premiums all taxpayers benefit from the fact the subsidies provided in the individual market would be reduced. Alternatively, if desired, subsidy levels could be maintained, resulting in even lower effective premiums for eligible consumers.

Conclusion and Summary

The instability and lack of universal access in the individual health insurance market is a significant problem that literally affects all Americans in some way. The food as medicine solution directly addresses the underlying cause and positively impacts existing policyholders, the uninsured, insurers, providers, governments, taxpayers, and all other stakeholders. This solution can be effectively implemented relatively rapidly without a large capital investment, legislative changes, sophisticated technology, lengthy clinical trials, or negative side effects. It requires insurers to provide educational material to their insureds and physicians to provide as a treatment option and support patients who are willing to make these nutritional changes that can prevent and reverse all of the common chronic health conditions. This problem cannot wait or depend on legislative or other solutions that fail to address the underlying cause. The insurance industry has the necessary skills, the existing provider payment infrastructure, and the responsibility to act on the clear evidence showing this is the optimal way to improve health and reduce costs. By taking bold action and accepting this Actuarial Challenge the insurance industry can make this solution a reality.