JUMPSTART

FOUNDRY

# OPPORTUNITIES IN FOOD AS MEDICINE:

## AN ALTERNATIVE APPROACH TO LOWERING HEALTHCARE COSTS AND IMPROVING PATIENT WELL-BEING

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# INTRODUCTION

Cardiometabolic disease (heart disease, diabetes, stroke, high blood pressure) costs the US healthcare system 45B dollars every year. 1,2 The US health system has traditionally approached cardiometabolic disease via pharmaceutical treatment and surgery. 3 While pharmaceutical and surgical treatments continue to advance, these treatment options are becoming less efficient at lowering death rates due to cardiometabolic disease. 4 This may be due to the fact that pharmaceutical and surgical approaches fail to address a key root-cause and driver of poor cardiometabolic health: proper diet.

Alternative approaches that use dietary modification to correct poor diet are needed to reduce the cost, frequency, and impact of cardiometabolic diseases. Food As Medicine, or FAM, is a dietary modification approach that prevents and treats cardiometabolic disease by removing the barriers to a healthy, well-balanced diet. 5 FAM enables dietary modification by addressing the following challenges that make consumption of a proper diet difficult: Food Insecurity, Insufficient Access to Nutrition Education, and Consistent Behavior Change.

This analysis is organized as follows: Section 1 provides an explanation of the three challenges of dietary modification addressed by FAM. Section 2 reviews FAM initiatives and startups that are applying new business models and technology to alleviate the three main challenges. Section 3 assigns the FAM market to the Jumpstart Innovation Curve, a proven mechanism to assess market maturity. Section 4 provides a prediction on future market developments and a recommendation for investors considering FAM opportunities. Finally, Section 5 provides a list of related topics for future investigation.

# SECTION 1:

# CHALLENGES OF DIETARY MODIFICATION

In this section, we analyze the challenges associated with dietary modification, including limited access to nutritious food, insufficient dietary educational resources, and behavior modification.

## CHALLENGE 1: FOOD INSECURITY

Food insecurity is a social and economic condition in which access to nutritious food is limited or uncertain. [6] In the United States, 40M people are food insecure. [7] The food insecure are stuck in a cycle of increased rates of cardiometabolic disease and higher healthcare costs due to lack of accessibility of foods that are necessary for a proper diet. [8,9] Seligman and Schillinger (2010) created The Cycle of Food Insecurity and Chronic Disease to describe the cascading effect of food insecurity on cardiometabolic disease and healthcare costs, as shown below in Figure 1.[10]

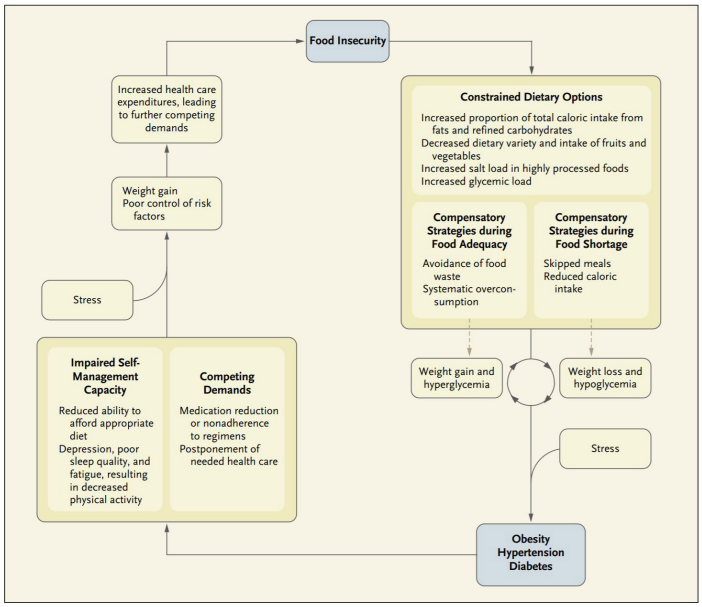



Figure 1: The cyclical relationship between food insecurity and cardiometabolic disease progression
( Seligman, H. K., & Schillinger 2010)

Breaking the cycle of food insecurity would yield lower rates of cardiometabolic disease and reduce healthcare costs.

## CHALLENGE 2: INSUFFICIENT ACCESS TO NUTRITION EDUCATION

Most Americans are confused about what to eat to improve their health. A recent Food Information Council Report Indicates that 80% of consumers find conflicting information about food and nutrition. The majority of those consumers, 59%, say the conflicting information makes them doubt their food decisions. [11] With conflicting information about what to eat, consumers need a resource, such as a care provider, to cut through the conflicting information and provide clear dietary instructions to a consumer. Unfortunately, proper dietary information is currently hard to access from care providers for a few reasons.

First, doctors are not properly educated to teach patients about proper diet. On average, less than 20 hours of medical school is spent teaching future physicians about nutrition. Additionally, only 14% of residents report feeling properly trained to offer nutritional guidance to their patients. [12]

Second, doctors are not properly incentivized to teach patients about proper diet. In today's current healthcare reimbursement system dominated by fee-for-service, physicians are not properly incentivized to spend the time with patients to offer nutritional guidance.

Third, other care providers such as Registered Dietitians (RDs), who are trained to formulate dietary plans for consumers, are difficult to access. Access to RDs is difficult for two main reasons. First, In the case for many consumers, such as those on Medicare, in order for consultations with RDs to be reimbursed, they need a physician referral. This means patients need doctors to be aware of the need for a referral. [13] Second, if the patient does get a physician referral, there is then a care coordination obstacle in order to schedule and attend a separate consultation with an RD as they are often not located in primary care offices. Only 2% of RDs are employed at physician offices and only another 7% are employed in an outpatient care center. [14] These two care coordination gaps combined present a large problem exemplified by the fact that of the 15M Medicare members who could benefit from consultations with an RD, only 100K took advantage in 2017. [15]

## CHALLENGE 3: CONSISTENT BEHAVIOR CHANGE IS DIFFICULT

Many individuals continue to struggle with consuming a proper diet despite overcoming the challenges of food insecurity and insufficient nutrition education. Even when consumers intend to eat better, they often fail to change their dietary behavior because of psychological and environmental barriers On the psychological side, there are two main barriers to consistent dietary behavior change.

First, many consumers fail to make consistent dietary changes because they eat mindlessly and consume out of habit. In a study by Gardner et al., (2011), it was found that roughly 20% of variation in nutrition related behavior is due to a person's habits. [16] Second, many consumers feel they lack the self-efficacy to make the appropriate dietary changes. Those who lack feelings of self-efficacy feel they do not having the cooking skills or the time to cook and therefore feel less empowered to change their diet. [17]

On the environmental side, there are two main barriers to consistent dietary behavior change: a person's social environment and their physical environment. People are more likely to continue eating poorly if they do not have support from their social group and people are more likely to eat a poor diet if their physical environment is composed of poor nutritional options. [18, 19]

# SECTION 2:

# SOLUTION APPROACH: USING FOOD AS MEDICINE TO DRIVE DIETARY MODIFICATION

In this section, we analyze the solutions working to alleviate the three main challenges of proper dietary modification. To address Challenge 1: Food insecurity, meal delivery and resource awareness solutions are being utilized. Challenge 2: Insufficient Nutritional education is being solved through integrated care and telehealth solutions. Challenge 3: Consistent Behavior change is being addressed through Meal Cataloguing, Self-Efficacy, Social Support, and Meal Delivery solutions

## SOLUTIONS TO CHALLENGE 1: MEAL DELIVERY AND RESOURCE AWARENESS SOLUTIONS DRIVE FOOD SECURITY

To combat food insecurity and ultimately lower long term healthcare costs, payers and providers are investing in Meal Delivery and Resource Awareness solutions to supply nutritious food to patients. These solutions both target the root of the Cycle of Food Insecurity and Chronic disease (Figure 1) by offloading the cost of nutritious food from the consumer and onto either a provider, payer, or community resource.

### MEAL DELIVERY SOLUTIONS

- Meal Delivery solutions drive food security by alleviating the cost burden and delivering free nutritious meals directly to a consumer. Below are initiatives in which payers have begun delivering meals to their members in order to alleviate food insecurity.
- Health Partners Plans (HPP), an MCO based in Philadelphia, PA that serves over 280,000 members in Southeastern Pennsylvania, became the first payer to start meal delivery for their members to address food insecurity. CEO of HPP Bill George partnered with the Metropolitan Area Neighborhood Nutrition Alliance (MANNA), a non-profit meal delivery organization, in 2015 to provide meal delivery services to select members of HPP. What originally started off as a pilot with 200 diabetic patients has grown to include over 2,000 patients. When an analysis was conducted to evaluate program effectiveness, over 26% of participants receiving meal delivery services had lowered their HbA1c levels after six months of program participation. Additionally, there was a nearly 28% drop in inpatient admissions after six months of program participation. [20]
- California launched the "Medi-Cal Medically Tailored Meals (MTM) Pilot Program" in June 2017 with $6 million dollars of funding. The program officially started working with Medi-Cal patients in early 2018. Medi-Cal works with nonprofits to deliver meals to 1,000 patients who suffer from congestive heart failure that are classified as high utilizers of healthcare services. The program includes three meals per day for twelve weeks and four Medical Nutrition Therapy sessions, all at no cost to the consumer. Richard Ayoub, chair of California Food is Medicine Coalition, said that a year into the project, participants in the program had reduced readmission rates and improved health outcomes. [21]

### RESOURCE AWARENESS SOLUTIONS

Resource Awareness solutions drive food security by connecting consumers to food banks within their community, allowing them to access free or reduced cost nutritious food. The below solutions are being used by providers and payers to connect consumers to the proper food resources.

- Feeding America and startup Solera partnered to refer food insecure members of contracted payers to Feeding America's national network of food pantries. **Solera Health** has created an integrated platform that allows for payers or providers to easily connecttheir patients to community resources and digital therapeutics. Solera will be used by payers to provide members information on Feeding America's food banks and also work with members to provide nutrition education and check for SNAP eligibility. [22]
- Northwell Health partnered with Chicago based startup **NowPow** in June 2019. NowPow has created a technology platform that enables patients in under-served communities to connect with nearby health and social services. Northwell Health will offer the NowPow services to 1,200 Medicaid patients. By using diagnostic codes within the EHR, NowPow can determine a patient's nutritional needs and alert the patient of the nearest community resource to address that need. [23]
- In May 2019, Kaiser Permanente (KP) launched "Thrive Local", a network of social health services. Thrive Local will work with startup UniteUs in order to connect food insecure patients with its network of food banks. **UniteUS** integrates the social determinants of health into care delivery. KP's EHR will link directly to their Thrive Network, with UniteUs powering the ability for KP to track service utilization, referrals, and outcomes from those who use the Thrive Network services. [24] Additionally, KP announced in late October 2019 a "Food for Life" program in partnership with California's supplemental nutrition assistance program (SNAP), Calfresh. Through the program, Kaiser will work to get more members enrolled in SNAP. [25]
- While some early moving providers are connecting patients to community resources through technology, Geisinger became the community resource themselves when they launched The Fresh Food Farmacy in 2016. To start, Geisinger began screening diabetic patients for food insecurity. Geisinger then began providing select diabetic food insecure patients with free healthy food options. The food cost Geisinger $2,400 per patient over the course of 18 months. For participants in the pilot program, HbA1c levels dropped on average over 2 percentage points over the course of 18 months, and costs dropped 80%, from $240,000 per member to $48,000 per member per year. [26]

## SOLUTION TO CHALLENGE 2: INTEGRATED CARE AND TELEHEALTH SERVICES DRIVE ACCESS TO NUTRITION EDUCATION

To combat insufficient nutrition education and lower healthcare costs, providers are leveraging new business models of Integrated Care and telehealth technology. Both Integrated Care and telehealth technology close care coordination gaps that make accessing nutritional education difficult for patients.

### INTEGRATED CARE SOLUTIONS

Integrated Care solutions drive nutrition education by closing the care gap between physician referral and RD visits by moving the a nutritionally informed care provider into the primary care setting. The below primary care clinics are a few examples of clinics that have started to integrate nutrition into primary care.

- Kroger's Little Clinics have made dietitians available at a few of their Little Clinic locations across the country. In addition to traditional primary care, The Little Clinic provides one on one nutritional therapy for patients and also has registered dietitians shop with consumers in order to implement guidance from the nutrition education sessions.
- One Medical has opened multiple primary care clinics in which they claim all of the medical professionals at One Medical clinics understand the importance of healthy eating and can help patients make proper dietary modifications.
- Parsley Health provides primary care with a whole-body approach. Parsley Health puts together a personalized health plan for each patient that includes nutrition and sleep guidance.

### TELEHEALTH SOLUTIONS

Telehealth solutions drive nutrition education by closing the care coordination gap between referral and RD consultation by allowing the patient to access RD services remotely. The below solutions all work to close the RD consultation gap.

- Teledietitian: Created a telehealth solution that allows users to receive medical nutrition therapy and custom meal plans developed by RDs.
- Nutrimedy: Created a telehealth platform that allows users to connect with nutrition professionals, keep a meal log, and interact with their assigned nutritional professional in between scheduled sessions.
- Healthie: A practice management and telehealth platform for nutrition professionals to manage their practice and interact with patients.
- Fruitstreet: Developed a telemedicine platform to administer chronic disease prevention
- programs to consumers.

## SOLUTIONS TO CHALLENGE 3: MEAL CATALOGUING, SELF-EFFICACY, SOCIAL SUPPORT, AND MEAL DELIVERY SOLUTIONS DRIVE DIETARY BEHAVIOR CHANGE

To address the difficulty of consistently changing dietary behavior, new ventures are working on Meal Cataloguing, Self-Efficacy, Social Support, and Meal Delivery solutions that make consistent behavior change easier for consumers. These solutions target the psychological, social, and physical barriers that prevent consumers from making long-lasting dietary changes.

## MEAL CATALOGING SOLUTIONS

Meal Cataloguing solutions target the psychological barrier of mindless eating and poor habits by making it easier for people to take note of what they eat on a regular basis and become mindful of their dietary habits. The below solutions are working on Meal Cataloguing solutions for consumers.

- Smartplate: Created a physical "smartplate" in combination with an application that uses photo recognition to identify, weigh, and analyze what a user is consuming.
- Nutristyle: Allows users to create and update a food log through voice while also allowing users to create customizable shopping lists and recipes
- Edamam: Offers a platform that enables consumers to analyze the nutritional content of the meals they are eating

### SELF-EFFICACY SOLUTIONS

Self-Efficacy solutions target the psychological barrier of feelings of inadequate self-efficacy by teaching people the cooking skills necessary to eat better. The below ventures and initiatives are working on increasing Self-efficacy of consumers.

- Kaiser Permanente offers cooking classes in their "Thrive Kitchen" once a month for $30 per member in order to teach members how to cook.
- Sidechef: Created a solution that offers cooking guidance by combining photos, videos and voice commands that enable a user to easily follow along and walk through the process of creating nutritious meals.
- Menud: Allows users to access and customize meal plans, quickly create a custom shopping list from, that enables users to then pick up or have the groceries from their curated meal plan delivered to their residence, and provides easy to follow recipes for users to follow.
- Platejoy: Created a platform that allows users to create custom shopping lists based off simple recipes.
- Suggestic: Enables users to find what to eat at a restaurant, plan grocery lists, and suggests recipes that fit within a user's goals.

## SOCIAL SUPPORT SOLUTIONS

Social Support solutions target the environmental barrier of poor social support by making it easier for consumers to create a more positive social environment by connecting consumers to virtual nutrition coaches. The below solutions are increasing access to Social Support and alleviating the social environmental barrier.

- Virta: Created a virtual diabetes reversal clinic that pairs users with health coaches to deliver on-demand care and manage cardiometabolic disease.
- Rise: Pairs users with registered dietician and allows users to send their RDs pictures of their meals in order for the RD to pinpoint any dietary concerns and to keep the user accountable.
- Noom: Created a platform to provide users with personal health coaching that formulates nutrition and exercise plans.
- Omada: A digital care platform in which users have access to a personal health coach. Their platform is designed to allow people to change the habits that put them at risk for cardiometabolic disease.
- Pack Health: Provides a coaching platform for users with chronic health conditions. Recently, Pack Health partnered with eMeals that allows for users to access weekly meal plans.

### MEAL DELIVERY SOLUTIONS

Meal Delivery solutions target the barrier of the physical environment that can make it hard for people to eat a proper diet. These solutions allow users to have the proper foods delivered to their residence, thereby making it easier for consumers to surround themselves with nutritious food.

- HelloFresh: Enables consumers to create meal plans and have them shipped directly to their door.
- Sun Basket: Allows consumers to create customized meal plans, such as diabetes-friendly plans, that are delivered to a consumer's residence.
- Eatlove: Created an online food delivery platform that provides consumers with personalized meal suggestions which enable dietitians to prevent allergies and provide nutrition to their patients.
- Sakara: An organic meal delivery platform that delivers fat free meals to consumer's home.

# SECTION 3:

# MATURITY OF THE FAM MARKET

At Jumpstart, we use the Jumpstart Innovation Curve, as shown below in Figure 2, to assess a market's maturity. A market's maturity is determined through the supply of business model or technology innovation being built or utilized to alleviate a market's challenges combined with the market's readiness and willingness to adopt the innovation. The Jumpstart Innovation curve is broken into five stages. Below is an explanation of the criteria determining each of the stages on the Jumpstart Innovation Curve.

- **Ideation:** Solutions utilizing the innovation are being created and are in the proof-of-concept stage. Very early adopters are testing the innovation but expectations of market impact are still moderate.
- **Hype:** Due to media coverage or an overreaction to early data from the first market entrants, mostly undifferentiated solutions begin to flood the market. The market invests time and capital into testing the innovation while it's impact is still largely unproven. Most early testing produces disappointing results due to testing the innovation in unfit use cases with inflated expectations.
- **Chasm:** The results from most of the early innovation utilization does not meet market expectations and many ventures fail. The supply of innovation begins to surpass the demand from early adopters once the disappointing outcomes of early experiments is seen.
- **Niche:** A few solutions begin to utilize early market feedback to begin meeting market expectations with early adopters. Now that practitioners understand feasible use cases and outcomes driven by the innovation, the innovation can be applied in niche markets where the solution is truly appropriate.
- **Broad:** Later stage market adopters begin to trust the solutions in the market due to the results with early market adopters. Broad market adoption and product market fit begins to occur. Technical capabilities and functionality has grown stronger and can now deliver on the promise seen in the hype stage leading to niche use cases expanding into broader use cases.

## JUMPSTART INNOVATION CURVE: FAM CURRENTLY SITS IN THE "IDEATION" STAGE

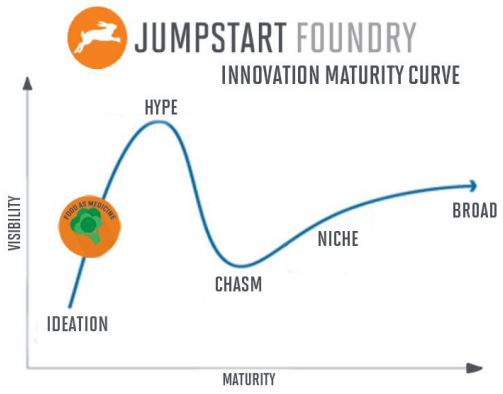



Figure 2: FAM sits in the "Ideation" stage of the Jumpstart Innovation Curve, a proven mechanism to assess market maturity

Jumpstart currently has the FAM space plotted on the "Ideation" section of the Jumpstart Innovation Curve (Figure 2). Below is a breakdown of where each challenge area (Food Insecurity, Insufficient Access to Nutrition Education, Consistent Behavior Change) would be plotted on the Jumpstart Innovation Curve.

- **Food Insecurity - Position on Jumpstart Innovation Curve: Ideation**
  - A few of the forward thinking payers such as HPP have started initiatives to widen meal delivery, but it is still very early in the movement of payers eating the upfront cost for the service. Payers such as Anthem, Bright Health, and Blue Cross Blue Shield are expanding meal delivery services, but it is mostly offered as a benefit post-surgery or acute episode to reduce hospital readmission risk and/or as a marketing tool. As more data on the initial meal delivery for food insecurity pilot programs come through, more payers will roll out meal delivery benefits as a way to address the root of cardiometabolic disease. Additionally, technology has begun making a significant difference in connecting consumers to social resources through companies such as Solera, NowPow, and UniteUS, but the availability of these resources across the country is still low.
- **Insufficient Access to Nutrition Education - Position on Jumpstart Innovation Curve: Ideation**
  - While there are a few integrated care clinics that offer nutritional guidance, proper nutrition advice is still inaccessible to a large number of people as RDs are often times not a part of primary care practices. Additionally, telehealth solutions such as Teledietitian are still out of pocket for most people, limiting the access to these services. In order to increase access to sources of nutritional education, policy change that makes it easier for those covered by Medicare or Medicaid to receive nutritional care is needed in addition to technology innovation.
- **Consistent Behavior Change - Position on Jumpstart Innovation Curve: Hype**
  - Currently, nearly all of the solutions that help with Behavior Change are out of pocket. There are numerous Meal Cataloguing, Self Efficacy, and Meal delivery solutions, and nearly all are paid for out of pocket by consumers. Promising market adoption to address the social support challenge is being made though, exemplified by Omada's recent partnership with Cigna.

# SECTION 4:

# PREDICTION OF MARKET DEVELOPMENTS AND RECOMMENDATION OF FAM OPPORTUNITIES

Below, each FAM challenge (Food Insecurity, Insufficient Nutrition Education, and Consistent Behavior Change) is first given an investment opportunity rating of either: high, medium, or low. Second, is a prediction of future market developments that will occur to address each challenge. Third, is a recommendation of an investment opportunity within each challenge. Fourth, the rationale behind the prediction of the future market developments and the recommendation of the investment opportunity within each FAM challenge is explained.

## FOOD INSECURITY

**Investment Opportunity:** High
Prediction: Medicare Advantage plans will partner with grocers to provide meal delivery at scale.
**Recommendation:** Focus on solutions that tie grocery, transportation, and payers together.
**Rationale:** There are four main market forces converging that leads to the prediction that grocers and M/A payers will partner for meal delivery. First, The Centers for Medicare and Medicaid Services (CMS) wrote in a release in April 2019 that Medicare Advantage plans can expand supplemental benefits to include meal delivery in more circumstances than before in 2020. [27] Second, Competition for M/A members is heating up due to the favorable rates paid out by the government for these members. The government currently pays plans between $10,000 and $14,000 a year for each Medicare Advantage member covered. [28] Third, the government has historically helped the 4.5M people who are food insecure with a chronic condition through the "Older Americans Act", but their funding has dropped significantly over the last twenty years, leaving many food insecure seniors without enough support. [29] Fourth, as outlined above in the Food Insecurity Challenge, many of the first Meal Delivery initiatives are being conducted by payers in partnership with nonprofits. While nonprofits are great for small initiatives, they lack the ability to scale to address large groups of members. [30] With non-profits being limited in capacity and geography, entities that tie payers, grocery retailers and transportation fleets together will be needed in order to fulfill demand. Solutions such as **Uber Health** should take advantage of this market opportunity.

## INSUFFICIENT ACCESS TO NUTRITION EDUCATION

**Investment Opportunity:** Medium
**Prediction :** Providers and Payers will invest in solutions that put payers, physicians and RDs on same platform
**Recommendation:** Focus on solutions that allow for seamless coordination between health plans, physicians, and RDs.
**Rationale:** There are plenty of RD available in the US, roughly 100K. 14 Yet as mentioned above in Challenge 2: Insufficient Nutrition Education, less than 10% of RDs work in primary care or outpatient facilities. When a primary care physician refers patients to a specialist, only about ⅓ of those visits are actually completed. 31 To close the care coordination loop, technology is needed. An ideal model for replication exists in behavioral health collaborative care through **Quartet Health**. Quartet is working to make sure that patients who need behavioral healthcare services are connected to the appropriate care through their primary care provider. Through the platform, patients are able to be connected to either a therapist or psychiatrist in person or through a telehealth visit. A similar model should be applied to nutrition that would enable primary care to become the front door for proper nutrition education.

## CONSISTENT BEHAVIOR CHANGE

**Investment Opportunity** Medium

**Prediction:** Payers will continue to build out member portals to improve dietary self-efficacy of members

**Recommendation:** Integrated solutions that teach payer members how to cook and incentivizes members to purchase healthier food options.

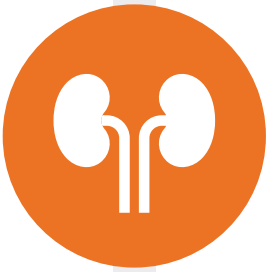
**Rationale:** Currently, Payers are building out portals that enable them to take more control over their members in order to reduce cost. Many have been investing in solutions that allow them to direct members to the appropriate care provider, exemplified by the partnership between **K Health** and Anthem. 32 Given the evidence behind diet's link to higher healthcare costs, payers will look to gain more control over and change member's food purchases. 10 Studies indicate that financial incentives for dietary behavior change work. 33, 34 In order to drive healthy grocery purchases, payers will begin integrating with grocers to reward or provide discounts to members for healthy shopping habits, similar to how **Sempre Health** operates with pharmacy prescriptions. Additionally, payers will build out their portals to include tools for those that lack cooking and other self-efficacy skills. While payers may have to build their own version of Sempre Health, expect the number of acquisitions of self-efficacy tools that allow for seamless grocery shopping and cooking lessons, such as **Menud**, to increase.

# SECTION 5:

# LIST OF RELATED TOPICS FOR FUTURE INVESTIGATION

## ALTERNATIVE PROTEIN SOURCES

(INSECT, PLANT, FUNGI, LAB GROWN MEAT)



## KIDNEY CARE

## MICROBIOME

## DIETS

(FASTING, PLANT BASED, KETO)

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