



# Final report

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## Independent Ageing Milestone 8 – Final Report

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**Abstract**

Aged Care Residents suffer from a high level of malnutrition, with the majority (+60%) being malnourished. The aim of this project was for FDI to support the aged care industries with red meat ready-made meals with high levels of protein and fibre.

During the course of this project, it was found that the costs of the meals are prohibitive for the aged care industry currently, there is no desire on a cost benefit basis to implement a more nutritious product.

Our research did not identify champions within the aged care facilities or systems that would drive nutrition outcomes.

A bigger opportunity was identified within targeted nutrition. Since the feedback on the performance of the soups was great, it was decided to pivot and research into a market which is willing to pay more for a higher quality product with identifiable nutrition. The soups have a great high protein base and they fit neatly into some of the largest Australian food trends

Cost Benefit Analysis of the products show a clear benefit to the red meat industry through the use of beef, lamb, collagen and other fifth quarter ingredients.

## Executive summary

### Background

Residents in aged care suffer from a high level of malnutrition, with possibly the majority (+60%) of them being malnourished<sup>1</sup>. This project aimed to offer red meat, high protein, fortified, easy to use and quick meal solutions to the Aged Care residents. The success of this initiative leads directly to measurable and increased red meat sales for the industry.

### Objectives

The objectives of the project were:

- Create two novel red meat readymade meals (RMRMM) and two vitamised puree meals utilising beef and lamb meat to managed protein energy deficits in aged care
- To determine if the RMRMM's can be incorporated into the daily systems in residential aged care foodservices
- Validate the commercial opportunity for the RMRMM's in aged and determine the acceptance among stakeholders
- Report on the health benefits and social impact created by utilising the RMRMM's in everyday meal plans.

The first three objectives were achieved.

### Methodology

The project was broken down into three segments

- Formulation of the meals, considering performance, nutrition and cost
- Consumer trials of the products conducted by Dr Karen Abbey
- Determining the viability of the products within the sector

### Results/key findings

Whilst the feedback on the RMRMM's themselves were good – they tasted good, were convenient to use and the nutrition was great – it became clear that the decision makers prioritised budget restrictions over nutrition. However, a bigger opportunity was identified within targeted nutrition.

### Benefits to industry

If these products are instead launched as convenience products within the targeted nutrition market, it will lead to an increase in sales for the red meat industry.

### Future research and recommendations

It is recommended that future research focuses on the products as a convenience meal for targeted nutrition rather than aged care due to an inhibitive cost.

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<sup>1</sup> Feasibility of Home based dietetic intervention to improve the nutritional status of older adult's post hospital discharge 2016

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## 1. Background

*“The right to adequate food is a human right and is essential for the physical, mental, social and emotional wellbeing of older Australians.”*

*Royal Commission report into Aged Care Quality and Safety*

Food is critical in the Aged Care system and is a common cause of complaint in Aged Care settings. There is overwhelming evidence that the majority (60+ %) of aged care residents are malnourished suffering subsequent weight loss and health issues. Not only that, weight loss and malnutrition often precede, even accelerate entry into residential aged care<sup>2</sup>.

**Through this project, the Red Meat industry demonstrates crucial leadership in supporting the wellbeing of both our aged care sector as well as the ageing population living independently within our communities.**

The last national food and nutrition policy was released in 1992. To date, there has been inadequate investment in nutritious food, screening and assessment processes for malnutrition.

There are three macronutrients in food: protein, fats and carbohydrates. Macronutrients provide calories, or energy. The body requires large amounts of macronutrients to sustain life, hence the term “macro,” according to the University of Illinois McKinley Health Center.

Protein is a macronutrient that is essential to building muscle mass. It is commonly found in animal products, though is also present in other sources, such as nuts and legumes.

Chemically, protein is composed of amino acids, which are organic compounds made of carbon, hydrogen, nitrogen, oxygen or sulfur. Amino acids are the building blocks of proteins, and proteins are the building blocks of muscle mass, according to the National Institutes of Health (NIH).

**Animal protein contains all nine essential amino acids needed for the growth and maintenance of the human body. Red meat is one of the most complete dietary sources of protein, its amino acid profile being almost identical to that of our own muscles<sup>3</sup>.**

Plant derived proteins are deficient in several amino acids and are not recommended as a primary source of dietary protein. Conversely, whole protein obtained from animal based foods contain all essential amino acids and are readily available<sup>4</sup>.

A survey in Australia found that people in the age group of 51 and above on average consumed 145 grams of meat, poultry and fish per day, which is 20 per cent lower than the average of 177 grams consumed per day by people in the age group of 19 to 50 years, implying that the aged population presents business opportunities unique to this population segment<sup>5</sup>.

Further, a strong desirability was communicated for meat savoury flavours as they evoked feelings of nostalgia<sup>6</sup>.

<sup>2</sup> Feasibility of Home based dietetic intervention to improve the nutritional status of older adult’s post hospital discharge 2016

<sup>3</sup> Healthline.com Beef nutrition 101, April 2019

<sup>4</sup> V.RMH.0114 Beyond meat to quality ingredient component review

<sup>5</sup> Sui Z, Raubenheimer D. and Rangan A (2017), Consumption patterns of meat, poultry, and fish after disaggregation of mixed dishes: secondary analysis of the Australian National Nutrition and Physical Activity Survey

<sup>6</sup> V.RMH.0114 Beyond meat to quality ingredient component review

Protein is an essential element of the desired outcomes and Freeze Dry Industries can provide the formulations and technology to harness concentrated red meat products that deliver high nutrient outcomes.

Freeze Dry Industries will do so by offering freeze dried red meat ready made meals (RMRMM) with high levels of protein and fibre to support the RDI's for the elderly<sup>7</sup>.

**These meals will offer long shelf life (24 months), require no refrigeration, be lightweight and easy to store, simple to use and offer the ability to easily fortify.**

The project design will use proof of concept to determine the acceptability of these RMRMM to support the Aged Care industry. Red meat is an excellent source of protein (an 85-gram steak contains 29 grams of protein)<sup>8</sup> and is an essential nutrient for the elderly<sup>9</sup>.

The target market for freeze dried RMRMMs, is the residential and community based aged care sector. Additional funds for Home Care Packages have been announced by the federal government and it is expected that this will contribute to considerable growth in the aged care sector overall. This presents an opportunity to support meal services by providing meal solutions, including growth in the not-for-profit sector such as Meals on Wheels (MoW). With an aging population and an increase in life expectancy, the need for a greater focus on this sector is needed.

In 2017, 15% of Australians (3.8 million) were aged 65 and over; this proportion is projected to grow steadily over the coming decades.

With the global population getting older, RMRMMs can be a key resource in supplementing nutritional outcomes among the international sector.

Further, according to research by FIAL, there are 10 clear trends that will transform the Australian Food & Agribusiness industry over the coming decade<sup>10</sup>. One is the clearly Ageing population. The share of people aged over 65 out of the global population is expected to increase from 9 per cent

in 2019 to more than 12 per cent in 2030<sup>11</sup> presenting opportunities such as fortified foods.

From these emerging trends, FIAL have identified 19 opportunities for Australia's food & agribusiness sector. In particular, traditional proteins including meat. They estimate this could equate to a total value add of \$31 billion by 2030. See below chart.

<sup>7</sup> 7 Key Elements for the Senior Nutrition

<sup>8</sup> The US Department of Agricultural Nutrient Data Laboratory

<sup>9</sup> Protein Consumption and the Elderly 2016

<sup>10</sup> Capturing the prize: The A \$200 billion opportunity in 2030 for the Australian food and agribusiness sector

<sup>11</sup> Protein market, Size of the protein analysis for Australia - FIAL 2019

### Australia’s food and agribusiness opportunity could be worth over A\$200 billion by 2030 in value added

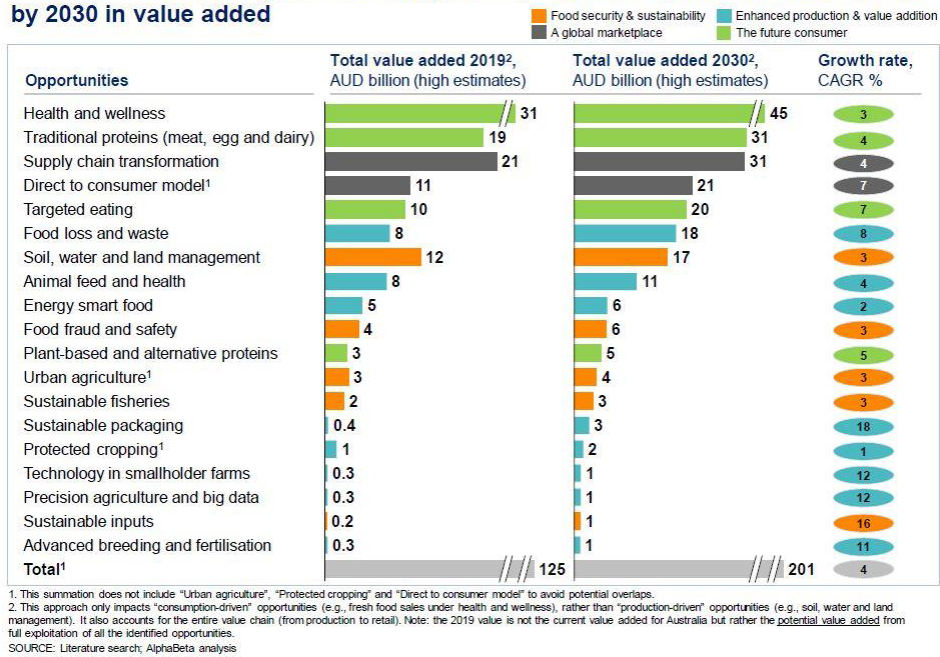


Figure 1 Australia’s Food and Agribusiness Opportunity (Capturing the prize, 2020)

This project aims to offer red meat, high protein, fortified, easy to use and quick meal solutions. In turn, success of this initiative leads directly to measurable and increased red meat sales.

Freeze dried Industries intent is to innovate and commercialise this opportunity and develop an approved supplier program with Australian red meat owners to drive growth into this sector. Freeze Dried industries has the available freeze drying capacities to achieve this.

## 2. Objectives

According to KPMG “Golden opportunities from the graying population”, by 2050 almost a quarter of all humanity will be over 65. Further, The Royal Commission into Aged Care Quality and Safety (Conducted by the Dietitians Association of Australia) states “Inadequate government and organisational support is contributing to an unacceptably high prevalence of malnutrition amongst older Australians, and food is common cause of complaint in aged care settings”.

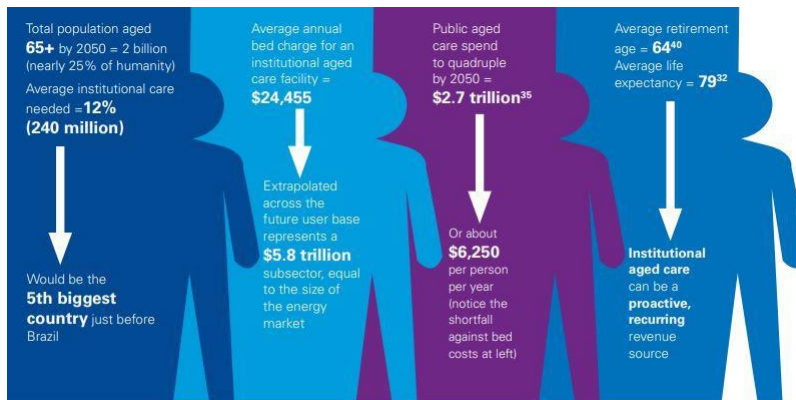


Figure 2 Opportunities of an Ageing Population (KPMG Golden Opportunities of a Graying Population)

## 2.1 Red Meat as a Solution

Dr Karen Abbey has worked extensively in the age care sector for 25 years. Both as a consultant and menu auditor. As a consultant Dr Abbey has worked with chefs on texture modification, trained across foodservices and undertaken foodservice reviews for design and service upgrades. Dr Abbey has extensive experience in menu design and manipulation to achieve increased choice and quality in menu planning. The culmination of 25 years of experience in menu auditing and collecting data has led to extensive knowledge on how Aged Care and MoW are planning menus. Dr Abbey has completed a PhD in residential aged care foodservices and undertaken a national review of how menus are planned and what meals are being served.

Dr Abbey would be one of the few foodservice dietitians in this country that has experience across the entire foodservice sector especially in residential aged care and Meals on Wheels. Currently Dr Abbey is an invited foodservice expert board member of Queensland Meals on Wheels and in her company capacity as Director of Nutrition & Catering Consultancy has access to aged care homes and Meals on Wheels services across Australia.

Through PhD and postdoctoral work Dr Abbey continues to work with students in marketing and food product development with large companies in Australia. Current research also includes food fortification and developing costing and food classification tools.

Red meat used in aged care sector meal planning can be problematic due to how it is purchased and cooked. Beef and lamb are used across the menus in both aged care homes and Meals on Wheels services. Beef is at least 4 times more used on the menu than lamb and this is due to the cost of the product. If lamb could be introduced in a form which was more cost efficient that would greatly support its increased inclusion as it is a popular meat. This was demonstrated by a menu study which showed that roast lamb was the most popular meal on the menu.

Beef is also represented on the menu in meals with mince and sausage<sup>12</sup> both are cheaper forms of beef, however, you do not see this for lamb. Lamb is predominately either a roast, cutlet, or an Irish stew. Lamb price point varies, if this could be controlled this would support the increase inclusion of lamb onto the menu.

Red meat when not cooked correctly can be tough and unable to be eaten by residents who often have poorly fitted dentures and missing teeth. Red meat is an essential source of iron and protein; however, it does need to be cooked so that it can become soft, easy to chew and swallow. Therefore, you do not see chops used in aged care and softer meats like chicken, turkey, fish and vegetarian options have started to increase. That is why the suggestion of more lamb type meals could be integrated onto the menu, produced more economically and could support additional red meat usage on the menu.

In the area of texture modification of meals, when beef and lamb are pureed there is nutrition dilution of protein and energy through the adding of sauces, water, and gravy. That is why it is important to add protein back using collagen or use better preparation techniques to ensure that protein and energy is not reduced.

One aspect that has started to be seen in aged care menu planning is the introduction of the vegetarian choice at lunch time. It is unclear at this stage as to why this is occurring. A recent example of a menu audit undertaken by Dr Abbey 12 highlighted that these types of meals provide a

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<sup>12</sup> Dr KA Confidential Aged Care 3.10.20



less bioavailable protein and iron. But the number of vegetarians in the aged care home did not warrant this type of meal.

Dr Abbey recently audited a Meals on Wheels menu. That menu used to have two hot meal choices. This has now changed to one per day due to cost constraints. Therefore, to maintain the community expectations of increased choice, new and novel solutions to meal production, delivery and variety need to be investigated. There is real value in a meal technology that 1) supported the use of red meat and lamb as a superior protein source, and 2) that could be safely and commercially viably delivered to support choice.

Given this, The Aged Care system is seeking solutions to its delivered food experience to enhance its resident's quality of life. This MLA Project seeks to enhance the existing food service models within the sector.

Focussing on red meats and byproducts such as collagen; this project will investigate the opportunity to deliver a tasty, nutrient rich, easy to eat range of freeze dried meals that are also simple to prepare and economical for the independently living aged residents along with aged care facility kitchen operators and businesses.

The Research Program Objectives are to:

1. Develop 2 x novel red meat ready made meals (RMRMM) and 2 x vitamised puree meals – 1 Beef, 1 Lamb, using the 'food first' approach to manage protein energy deficits in aged care.
2. To evaluate the meals and processes in terms of energy, workflow, time, cost and acceptability.
3. To determine if these freeze dried red meat RMRMM can be incorporated into the daily systems in residential aged care foodservices
4. To evaluate recipient values in terms of satisfaction, fortified nutrition, reversing malnutrition and BMI. Complete AB testing on existing meals vs RMRMMs and quantify dietary and nutritional benefits
5. To evaluate CBA to business owners, operators and stakeholders. Design the formulas for the RMRMM's that meet the taste, texture and nutritional needs of residents.
6. Create four RMRMMs- 2 x beef, 2 x lamb (including texture modified versions) that are trialled, tested and launched into the commercial market.
7. Validate the value to the Australian red meat industry by modelling the size and scope of the products created (and value captured back to Australian red meat industry) and future development.
8. Report on the benefits of the RMRMMs to the Meals on Wheels Service.
9. Report on the impact of social wellbeing created from having simple to use and nutritious RMRMMs.
10. Develop a commercialisation strategy that considers cost, wholesale and retail pricing vs. residential Aged Care food service budgets.

### **3. Methodology**

This project sought to understand the application of freeze drying technologies to support the increase of red meat usage, choice, flexible delivery and sustainability in aged care foodservices.

Freeze drying technology was utilised to create red meat ready made meals to support choice and meal delivery for general and texture modified meals.

Via the creation and supply of a high-quality protein source, the aim was to increase the use of red meat on Aged Care menus.

### **1. Red Meat Ready Made Meals Formulation**

Firstly, Freeze Dry Industries had to formulate 4 ready made meals heroing red meat as the key ingredient. FDI created one lamb and vegetable meal and one beef and vegetable meal. These were both then texture modified to meet the needs of those with different needs.

### **2. Dr Karen Abbey of Nutrition Catering Consultancy was engaged to run consumer trials and operator research within the Aged Care facilities.**

Dr Karen Abbey evaluated 2 vitamised/puree meals – 1 x Beef, 1 x Lamb - and RMRMM processes in terms of energy, workflow, time, cost, and acceptability within the Aged Care system.

The objective was to determine if these freeze-dried red meat RMRMM can be incorporated into the daily systems in residential aged care foodservices & Meals on Wheels.

Dr Abbey then performed Consumer testing to evaluate recipient values in terms of satisfaction and fortified nutrition. This was then followed up by AB testing on existing meals vs RMRMMs and quantifying dietary and nutritional benefits

### **3. Dr Abbey simultaneously spoke to the decision makers to gauge the appetite within the industry to support the introduction of the ready-made meals within their Aged Care facility, or within their branch of Meals on Wheels.**

This was the most disappointing of the stages of the Research Project. It became painfully obvious that the decision makers were not going to place nutrition needs above budget limitations. Whilst there was indeed support for the meals and the benefits they offered (time-saving, long shelf life, ambient storage, high protein), ultimately the decision makers would not support their introduction given the indicative cost.

## **4. Results**

### **4.1 Aged Care RMRMMs**

Residents in aged care suffer from a high level of malnutrition, with possibly the majority (+60%) of them being malnourished. The aim of this project was for Freeze Dry Industries to support the aged care industries with red meat ready-made meals and soups with high levels of protein and fibre. During this part of the project, it was found that the costs of the meals and soups are prohibitive for the aged care industry currently, there is no desire to pay more for a more nutritious product. There is no champion in the industry promoting a product like this. This is expected to change though as the issue of malnutrition among the elderly continues to be highlighted. As such it was decided to pivot the product.

## 4.2 Targeted Nutrition

However, a bigger opportunity was identified within targeted nutrition. Since the feedback on the performance of the soups was great, it was decided to pivot and research into a market which is willing to pay more for a higher quality product with identifiable nutrition.

The soups have a great high protein base (20 grams per serve) and they fit neatly into some of the largest Australian food trends. They are easy and convenient to use, they are made only from natural ingredient without any additives or preservatives, they are novel and innovative and the fortification with organic collagen is a unique selling point which makes them stand out in the competitor market.

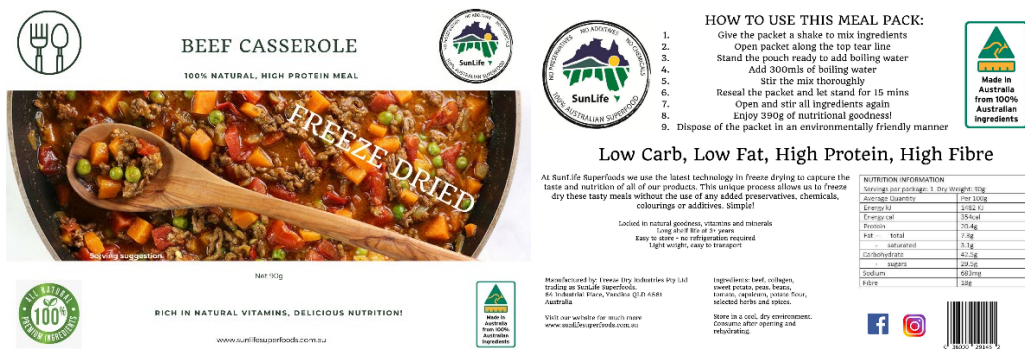


Image 1 & 2: Suggested Ready Made Meal Packs - Beef Casserole Front & Back Labels



Image 3 & 4: Suggested Ready Made Meal Packs – Roast Lamb Front & Back Labels

## 4.3 Aged Care Sector Update November 2023

The aged care sector continues to evolve with further changes to the aged care standards. This has shifted the focus onto the menu and how protein and calcium are distributed. Choice plays an essential role in the residents' dining room experience. It is expected that homes can provide and deliver meal choices to enhance the dining room experience.

Some standard changes (new standard 6) are central to nutritional care.

- Menus are built in partnership with residents
- The specific nutritional needs of older people include focusing on protein and calcium-rich foods.

- Therefore, menus need to have good sources of protein and calcium daily. It is essential to spread the amount of protein across the menu at every meal and snack.

Other changes to menu planning observed

- Aspects such as vegetarian meals are on the rise, these types of meals need to be planned carefully to make sure they are high in protein.
- Protein requirements of the elderly are higher than younger adults; therefore, particular care needs to be taken to build enough protein onto the menu.
- Red meat remains the most efficient source of protein and iron.

Red meat continues to be used in aged care home, though does have some challenges such as

1. If not cooked correctly meat can be tough and not easy to chew and swallow
2. Often expensive with shifting market price (stabilise the price) or use less expensive cuts of meat.
3. How it is prepared in the kitchen can be time-consuming to achieve softness
4. Using meat like mince and sausages remains popular and cooking techniques such as braising, stewing and casseroles.
5. Menus still do not utilise a lot of red meat soups and the options of a ready-made soup product which can be shelf stable would help with choice and offer soups at both lunch and evening meal.

There are many challenges aged care will face as the industry moves onto the new standards in July 2024. Home will be looking for solutions to workforce and skills shortages. Therefore, equipment technology can support workforce shortages by hot holding food and using ready-made meal components. This could support freeing up chefs/cooks over the weekend and reducing labour costs. Workforce issues also include rates of staff turnover and often these impacts maintaining skills in foodservices to prepare the menu. Therefore, meal solutions that require minimal skill levels will support the workforce. Concepts that save time include freeze-dry meal components especially red meat, that require minimal skills to produce a meal.

There is a focus on the new standards for texture-modified meals. This includes providing choices and using moulded foods to improve presentation. Therefore, aged care homes are looking for solutions by purchasing ready-made moulded texture foods or ready-made meal components such as puree meats and vegetables. This would suit the freeze-dry food red meat concept as it could be reconstituted and provide a smooth, minced or cut-up texture-modified solution. The smooth texture for both lamb and beef could also be used in moulds saving preparation and cooking time.

Aged care will continue to have challenges and the food service industry is well placed to provide solutions through technology and food manufacturing.

\*Dr Karen Abbey Nutrition and Catering Global Hub

## 5. Conclusion

Whilst this Research Project has ultimately failed to deliver on the RMRMM outcomes, many lessons have been learned from the Research. It is important that these lessons be carried forward into subsequent projects that may be more fruitful in the future. Protein in Aged Care resident meals remains a disturbing problem for the sector. It is obvious that these struggles will continue until Governments intervene and legislate for improved nutrition with penalties for those stakeholders who do not meet expectations and minimum standards.

## **6. Future research and recommendations**

As the aged care industry continues to evolve and change and new regulations come into place, it might be worth revisiting the RMRMM's as a nutritional solution for issues of malnutrition in the elderly population. However, currently it is not a viable option due to a lack of champions within the aged care market prepared to support the meals on a cost benefit basis.

The RMRMM's are an exciting product as a healthy convenience meal where consumers are willing to pay a premium for high quality nutrition. In particular if they are fortified with certified organic collagen, as this is a completely novel and innovative new product. It is recommended that any future research target this market segment instead.

## **7. Appendix**

### **7.1 Appendix A – Cost Benefit Analysis for Aged Care RMRMM's**

### **7.2 Appendix B – Cost Benefit Analysis for Targeted Nutrition RMRMM's**