

Problem statement [A]: To develop ready-to-eat meals to address limited mobility of elderly living at home/community setting

Desired outcomes:

To provide convenient meals with adequate nutrition and appropriate texture for elders (aged 65 years or above) with limited mobility at home/community setting.

Background of problem:

With limited mobility, it can be hard for the elderly to travel or be independent in purchasing or preparing food. As a result, elders who live alone may reduce food consumption and rely only on ready-to-eat food products stored at home, leading to malnourishment and poor health over time.

An estimated 30% or more of elderly consumers will require access to ready-to-eat/easy-to-prepare meals. Access to such meals can improve the elderly's nutritional status, reduce risk of dietary deficiencies and hence lower risk of associated chronic diseases.

While ready-to-eat meals with local flavours are increasingly available for purchase by retail consumers, there is a lack of such products designed for elderly consumers. Increasing the variety of such elderly-friendly ready-to-eat meals would improve nutritional intake and health outcomes for elders staying at home. These meals should include elderly-friendly features such as:

- Smaller quantity but more frequent meal occasions, as elderly consumers have smaller capacity to consume large quantities of food in one sitting
- Adequate nutrition with carbohydrate, protein, vitamins and minerals
- Acceptable texture for elderly consumption; for elderly with swallowing difficulties

Products can be developed for breakfast, lunch and dinner settings. Meals should ideally be priced less than \$5 per serving. An estimated 7,000 meals could be required per month.

[Optional] Hospitals and nursing homes typically have central kitchens for meal preparations. However, external catering may occasionally be required due to maintenance or staff shortage. Companies can design elderly-friendly meals that can be used by elder-care institutions in such situations. The meals should cost about \$3 per serving.

Product requirements

Must have (Core):

- Carbohydrate and adequate protein sources with vitamins & minerals to ensure product partially meet the elderly's Recommended Daily Intake (RDI)
 - Each meal to meet 25% of RDI for Singapore adults aged 60 and over, based on 1500-1800kcal per day
 - Cater for physiological changes: delayed gastric emptying of older adults → require small frequent meals to meet daily calorie and protein needs
 - Nutritionally balanced → calorie content of meal contributed from:
 - Carbohydrate: 50-60%
 - Fat: 20-30%
 - Protein: 15%

- Acceptable texture for elderly consumption:
 - Food particle size served should be smaller than usual and bite size, e.g. cut-up solid food (1-2cm), soft solid food (0.1-0.5cm) or blended.
 - Moisture content of the food between 70-80%; density of the food between +/-0.9 to 1.2 g/ml and flowability +/->1 cm/30 sec
 - May vary depending on type of food
- Asian flavours acceptable to local elderly. Can be enhanced with herbs and spices:
 - Spices: Chilli, curry, five spice powder
 - Ginger, onions, garlic
 - Miso, sambal, etc

Nice to have (Flex):

- Pleasant and pleasing to the eyes
- Easy storage with reasonable shelf life, i.e. ideally > 1 month
- Packaging that is safe and convenient for elders with limited mobility to handle, e.g.:
 - *Preparation stage*: convenient to prepare; preparation process is safe for elders to handle
 - *Serving stage*: easy to open packaging for eating; safe for elders to touch after heating

Must not have:

- Short shelf life, i.e. < 5 days
- Foreign in taste

Market potential for proposed solution/product

- Products can be used for elderly consumers at home (i.e. sold at retail or pharmacies), as well as in institutional settings (i.e. use in hospitals, nursing homes).
- An estimated 30% or more of elderly consumers will require such meals. Estimated 7,000 meals per month could be required by lead entity if successfully developed.
- Meals should ideally be priced less than \$5 per serving (retail setting); about \$3 per serving (nursing home setting).