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＜ Review ＞

Advances in Nutrition Care and Management in Japan's medical and long-term care insurance and disability welfare services

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Abstract

Nutrition forms the foundation of individual health and well-being and is a critical component of sustainable development and economic growth. At the Tokyo Nutrition for Growth Summit 2021, the Tokyo Compact on Global Nutrition for Growth was issued to promote policies to achieve the World Health Assembly's Global Nutrition Goal 2025, the United Nations Decade of Action for Nutrition (2016–2025), and the Sustainable Development Goals, with the goal of "eradicating all forms of malnutrition." In line with this declaration, the Government of Japan has committed to advancing inclusive nutrition policies domestically.

Against the social backdrop of an aging population, efforts to address the protein-energy malnutrition of older adults and promote enjoyment of eating have accelerated. As part of these initiatives, Nutrition Care and Management (NCM) based on multidisciplinary collaboration among medical institutions, long-term care facilities, and facilities for individuals with disabilities has been introduced and promoted.

This paper summarizes the philosophy of NCM and the development of its institutional design within the medical insurance, long-term care insurance, and disability welfare service systems. We also discuss the outcomes of research on the nutritional status of older adults and patients and the health and economic effects of nutritional care as background for the introduction of NCM.

A significant milestone was the 2000 revision of the Dietitians Act, which expanded registered dietitians' responsibilities and highlighted nutrition management services for patients, enhancing insurance services of NCM.

Furthermore, in the aging society, strengthening medical and long-term care coordination within community-based comprehensive care systems and developing skilled professionals for NCM are important issues. Japan's initiatives in these areas offer valuable insights for designing and implementing nutrition policies in other aging societies globally.

keywords: Nutrition Care and Management (NCM), registered dietitian, long-term care insurance system, nutrition policy

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I. Introduction

Nutrition is fundamental to human being. Good nutrition is universally essential for healthy, productive lives, and it should be made accessible to everyone through appropriate measures. Nutrition is also the foundation for individual health, sustainable development, and economic growth. Overnutrition and undernutrition are issues in both developed and developing countries [1].

To build momentum for the improvement of nutrition, the Nutrition for Growth (N4G) initiative was launched during the London 2012 Olympic and Paralympic Games, using the global sports event to spotlight these challenges on a global scale. The Japanese government has also launched the N4G initiative. In addition, as the host of the Tokyo Olympic and Paralympic Games, the Japanese government hosted

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the Tokyo Nutrition for Growth Summit 2021 in December 2021.

At the Tokyo Nutrition for Growth Summit 2021, leaders from governments, international organizations, businesses, and civil society groups gathered to discuss global nutrition issues, culminating in Tokyo Compact on Global Nutrition for Growth [2]. This compact synthesized extensive discussions on improving nutrition worldwide and outlined actions in the following five thematic areas to eradicate all forms of malnutrition, in alignment with the United Nations Decade of Action on Nutrition (2016–2025) and SDGs:

1) Health: Integration of nutrition into Universal Health Coverage (UHC);
2) Food: Promoting healthy diets and building sustainable food systems;
3) Resilience: Addressing malnutrition effectively in fragile and conflict-affected contexts;
4) Accountability: Promoting data-based accountability; and
5) Finance: Mobilizing new investment in nutrition finance.

The Government of Japan reaffirmed its commitment to advancing nutrition policies at Tokyo Nutrition for Growth Summit 2021. Emphasizing the integration of nutrition into UHC, the government pledged to promote inclusive nutrition policies targeting all people, including pregnant women, infants, older adults, individuals with diseases and disability, and disaster victims [3].

Japan has been addressing nutrition issues since the late 1800s [4]. This leads to the establishment of the National Institute of Nutrition in 1920 and private schools for training dietitians in 1924, laying the foundation for Japan's nutrition policies. These efforts, guided by the accumulation of scientific evidence and fostering of nutrition professionals, have included population nutritional status surveys, managing food services such as school lunches, and providing nutritional guidance for health promotion and disease prevention [4].

Japan has the world's longest life expectancy—81.09 years for men and 87.14 years for women in 2023— [5]. With the aging of the population, Nutrition Care and Management (NCM) has been introduced and promoted in the medical insurance, long-term care insurance, and disability welfare service systems to improve the protein-energy malnutrition (PEM) of older adults and enhance support for the enjoyment of eating. In this paper, we aim to describe Japan's nutrition policies in the context of its aging population, focusing on NCM within the medical insurance, long-term care insurance, and disability welfare service systems. These efforts may provide valuable insights for other countries that are striving to enhance nutrition policies for aging populations.

II. Background of NCM introduction

1. Research on the nutritional status of older adults

Sugiyama et al. conducted a survey (1995–1997) on PEM in older adults receiving long-term care [6]. They found medium-risk PEM, defined as a serum albumin level of ≤3.5 g/dL, in approximately 40% of hospitalized older adults and 30% of those requiring long-term care at home. In addition, a review of studies on the health economic evaluation of nutritional care, based primarily on articles from US hospitals, reported that PEM in hospitalized patients leads to longer hospital stays and higher medical costs [7]. Concurrently, research on nutrition management methods in hospitals and residential care facilities contributed to developing the concept and structure of NCM, which is defined as a system for providing optimal nutritional care for each individual as part of healthcare services, and for efficiently performing functions and methodological procedures in the execution of these services [6]. This system comprises nutritional screening, nutritional assessment, nutritional care planning, implementation and checking, monitoring, evaluation, and continuous quality improvement (CQI) activities based on evaluations. NCM is characterized by the Plan-Do-Check-Act (PDCA) cycle and CQI as the fundamental principle of management. CQI based on evaluation of the quality of NCM, is a progressive incremental improvement of NCM (Fig. 1) [6].

These studies on the actual nutritional status of older adults, the health economic evaluation of nutritional care, and the establishment of specific nutrition management methods formed the foundation for introducing NCM into the medical insurance, long-term care insurance, and disability welfare service systems.

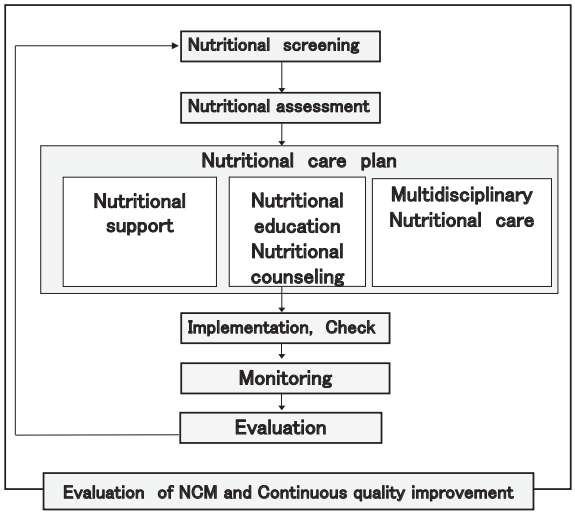

Fig. 1 NCM

2. Reform of registered dietitian education

Japan starting the training of dietitians began in 1924, implemented a system for training dietitians to certificate for the nutrition profession under national law in 1947 [4].

In 1962, the training of registered dietitians, which is a higher qualification, was introduced [4]. Over time, a rise in lifestyle-related diseases such as cancer, stroke, heart disease, and diabetes mellitus became a significant public health issue in Japan, highlighting the need for lifestyle improvements, particularly regarding dietary habits, to prevent the onset and progression of these diseases. In the field of nutritional guidance, there was an urgent need to disseminate evaluation and assessment methods to comprehensively and continuously assess an individual's physical condition and nutritional status. Consequently, establishing a management system for nutritional guidance became essential for individuals with injuries or illnesses. Accordingly, these professionals require advanced knowledge and skills to provide tailored nutritional care within medical contexts [8].

In 2000, the Dietitians Act was amended to clarify the role of registered dietitians as specialists in managing complex and difficult nutritional issues for injured and sick individuals, older adults, and others [8]. This revision led to a significant shift in registered dietitian training, moving from a focus on "food" services in group meal facilities to emphasizing "human care" services based on individual nutritional assessment and evaluation. Currently, registered dietitians operate in diverse settings, including hospitals, long-term care facilities, child welfare centers, facilities for individuals with disabilities, and public health centers [4]. Licenses for registered dietitians are granted by the Minister of Health, Labour and Welfare to individuals who graduate from a 4-year college or equivalent training institution and pass the national examination. Approximately 9,000 individuals earn this qualification annually.

The Japan Dietetic Association (JDA), a professional organization of registered dietitians and dietitians, and other academic organizations have trained registered dietitians in specialized fields [9]. Following the introduction of the NCM, Japanese Society on Nutrition Care and Management (JNCM) has conducted NCM leader training for registered dietitians since 2002. Since 2006, JNCM has been training and certifying clinical dietitians through 100 hours of classroom training and 900 hours of clinical training [10]. From 2019 to 2022, JDA and JNCM developed a practical NCM training program as part of a professional human resource development initiative by the Ministry of Health, Labour and Welfare. This program currently forms a component of the lifelong education for registered dietitians inJDA.

3. Review of the hospital food service system

In the Japanese medical system, meal provision is considered to be part of medical care, and appropriate meals according to the patient's condition play a major role in promoting the treatment and healing of illnesses and the recovery of physical strength [11]. Hospital meals were introduced under the Medical Care Act of 1948. In 1950, a "complete meal system" was introduced in which hospitalized patients did not need to bring food from the outside of institution including their home, but could receive adequate nutrition care from hospital meal alone. In 1958, the system was changed to the "standardized meal system," whereby patients who met certain standards were reimbursed for their meals as part of social insurance reimbursement, thus improving the quality of hospital meals. In 1961, the universal health insurance system was introduced. All people are covered by public health insurance. Medical reimbursement was evaluated for therapeutic diets. In 1973, the "Energy Requirement for Patients on a General Diet in Hospital Meals (15 years and older)" was presented, so that meals could be provided in an appropriate amount for each patient. In 1994, the "Standard Meal System" was abolished, and a portion of the meal cost was covered by the "Inpatient Hospital Meals" system, which included a fixed copayment. The nutrition and dietary guidance fees for hospitalized and home patients, and nutrition and dietary guidance for small group were evaluated as medical fees in 1994 and 1996, respectively. This shows that there had been a focus in medical care on an improvement of food service quality and nutritional dietary guidance for patients [4,7].

III. Philosophy and basic structure of Nutrition Care and Management

NCM goes beyond simply focusing on weight or lab results. It involves providing individualized nutrition care in daily living that emphasizes dignity for the patient, family, and others, addresses their needs related to "eating," and aims to enhance the "enjoyment of eating" [12].

Figure 1 illustrates the basic structure of NCM [12]. Nutrition screening identifies individual nutrition risks at the initiation of service, and connects those who are at risk to nutrition assessment. Nutrition assessment evaluates and determines the extent of the problem as well as its underlying causes. Nutrition care planning is the process of discussing and deciding on a feasible plan to solve the issues identified by the nutrition assessment of a subject and putting this plan into writing. This includes 1) nutritional support (supplementation methods, energy and protein levels, application of convalescent food, and matters related to provision of food, meals and enteral formula), 2) nutritional

education and nutritional counseling, and 3) multidisciplinary nutritional care.

Implementation and checking are the process of checking for problems in the implementation of a nutritional care plan, and changing the plan after a conference with multidisciplinary and explanations to the user and family. Monitoring serves as a crucial reassessment tool, determining whether the nutritional care plan needs to be modified or continues. Evaluation comprehensively assesses the achievement of long-term goals. Service evaluation and CQI involve ongoing efforts to improve quality by starting from the current situation, evaluating data to determine whether population health has improved after the provision of services, and ensuring that the quality of care is maintained and enhanced.

IV. Development of Nutrition Care Management in each system

Compensation in Japanese medical, long-term care, and disability services is set as compensation for individual, specific medical procedures and care. The application of reimbursement means that the public medical insurance reimburses the cost of the act in question. Reimbursement is based on the premise that the safety and effectiveness of the procedure have been scientifically proven [13].

1. Long-term care insurance system

When the long-term care insurance system was implemented in 2000, the basic meal service fee was initially set to cover the cost of providing meals. However, in 2005, the Long-Term Care Insurance Law was revised, shifting to a self-paid meal system based on the income of those who receive the institutional care[14]. This revision prompted a reevaluation of the quality of meals and the role of registered dietitians. To address the PEM of older adults in facilities, NCM was officially introduced, to provide personalized services aimed at improving and maintaining the nutritional status of older adults. With this revision, the duties registered dietitians have largely shifted to focuse on individualized nutritional care.

(1) Long-term care insurance facilities

When NCM was introduced in October 2005, a new fee structure for cases involved a full-time registered dietitian who appropriately assesses the nutritional status of residents. This includes nutrition care and management performed by a multidisciplinary team based on the residents' nutritional needs. Additionally, fees were established to promote oral intake, including efforts to transition to oral intake and maintain it. In both cases, a registered dietitian is required to collaborate with multidisciplinary to create a care plan, implement the plan, and conduct an evaluation [15].

In 2015, the requirements for the maintenance of oral intake addition were revised [16]. It has become mandatory for multidisciplinary dietary observation (meal rounds) and conferences to be conducted by two or more professionals (dentists, dental hygienists, speech therapists, and registered dietitians etc.) as part of the nutrition care plan. This change has decreased the transfer to hospital from institutions, due to efforts to maintain oral intake through meal rounds and conferences for institutional older adult users [17]. Addressing factors related to undernutrition through observation and conferences led by multidisciplinary professionals is crucial [17].

In 2021, to strengthen NCM in long-term care facilities, the additional nutrition management fee was become applicable for facility-based services. At the same time, the assignment of an additional dietitian was included in the personnel standards. This means that NCM that is tailored to the individuals' conditions and careful nutritional care for all residents are now considered basic services [18].

Furthermore, to enhance the coordination of rehabilitation/functional training, oral health, and nutrition care, it was clarified that rehabilitation specialists, registered dietitians, and dental hygienists can participate in preparing plans and meetings as necessary.

In addition, a scientific care information system (Long-Term Care Information System For Evidence: LIFE) has also been introduced. This system aims to evaluate the quality of care and promote scientific care initiatives to improve overall Quality of Life (QOL) of each user. The system collects data from all users and analyzes it on a facility-by-facility and user-by-user basis to drive improvement through the PDCA cycle.

An enhanced focus on the integration of rehabilitation/functional training, oral health, and nutrition care is expected to result in more effective assistance for preserving independence and preventing the progression of illnesses and disability. As a result, the 2024 fee revision examined the prerequisites for further promoting the integrated efforts of rehabilitation/functional training, oral health, and nutrition care, and revised the implementation plan accordingly[19].

In an aging society, a seamless link between medical and long-term care insurance is important to ensure that users who have left the acute phase of their illness can transit smoothly into the convalescent and chronic phases. Therefore, the establishment of nutritional information connectivity between the medical and long-term care sectors has been assessed, including an evaluation of the sharing of NCM information by registered dietitians at long-term care facilities with other long-term care facilities or medical in-

stitutions, to which residents who require therapeutic diets or have PEM are transferred.

(2) Daycare services

In 2006, an additional fee for nutritional improvement was established for daycare services. The additional fee was to be granted when a registered dietitian, in collaboration with multidisciplinary professionals, prepares a nutrition care plan for a user who is undernutrition or at risk of becoming undernutrition, implements appropriate nutrition care based on this plan, and carries out a series of processes, such as periodic evaluation and plan review [15].

Furthermore, in 2021, the requirement to check oral health was added, and an additional fee for oral and nutritional screening was established [18].

In group homes for people with dementia, an evaluation of the nutrition improvement system was also introduced, wherein a registered dietitian provides consultation to care staffs regarding daily nutritional care.

In daycare services, as in institutional care, the requirements for further promotion of integrated efforts for rehabilitation/functional training, oral health, and nutrition care were reviewed, and the format of the care plan was revised.

(3) Home-visit medical care management

Due to an increase in the number of older adults recuperating at home, the provision of NCM by visiting registered dietitians has been reimbursed since the establishment of the long-term care insurance system.

In 2024, the individualized nutrition care at the end of life was also enhanced [19].

(4) Long-term care prevention and daily life support services

Under the long-term care insurance system, municipalities have been implementing projects related to long-term care prevention since 2006 [15]. These projects aim to improve the physical and mental functions of older adults, such as exercise and nutritional status, as well as their QOL. This includes improving their physical and mental functions, adjusting their environment, enhancing their daily activities, participation in home and society, and efforts for self-fulfillment and purpose in life. To promote the prevention of older adults from requiring long-term care and to alleviate and prevent a worsening of their condition, a balanced approach is essential. This approach includes not only functional recovery training for older adults but also addressing the environment surrounding them. It is necessary to adjust the living environment and create a community where older adults can enhance their overall life functions, and live active and fulfilling lives. Initiatives supporting older adults' independence are crucial for realizing communities where they can continue to live meaningfully, even after requiring long-term care. As part of the care prevention approach, nutrition improvement programs are provided to support daily eating habits [20]. By preventing and addressing PEM, older adults can enjoy their meals, lead independent lives, and maintain a high QOL indefinitely. Some municipalities also offer meal delivery services to contribute to an improvement of nutritional status for older adults. To ensure the quality of these services, the Ministry of Health, Labour and Welfare has issued the "Guidelines for Nutritional Management of Meal Delivery Services to Promote Health Support for the Older Adults in the Community".

2. Medical insurance system

NCM in medical reimbursement began with the introduction of an additional fee in April 2006, which was 6 months after the NCM was introduced in long-term care insurance [21]. Until then, reimbursement for nutritional care covered only nutritional diet guidance for inpatients, outpatients, and home patient visits. In 2012, NCM became part of the basic inpatient fee, allowing its provision to all patients [22].

In 2020, nutritional care in recovery-phase rehabilitation wards was evaluated, and each ward was required to have at least one full-time registered dietitian to provide integrated rehabilitation and nutritional care. To promote early discharge and return to home for hospitalized patients, a new fee for early nutrition intervention was introduced , such as enteral nutrition in specified intensive care units (ICUs) [23-24]. In the 2022 revision, the additional fee for early nutritional intervention was extended to emergency care, high care units, stroke care units, and pediatric ICUs, in addition to specified ICUs [25].

Furthermore, an additional fee for perioperative nutritional care was introduced because such management helps prevent complications, reduce hospital stays, and improve postoperative prognosis [25]. In 2024, a new fee for inpatient nutrition care was established for advanced treatment hospitals that assign a full-time registered dietitian to their wards. The revision also includes nutrition information sharing between medical and long-term care providers. This program facilitates the sharing of NCM information of hospitalization and discharge. It includes collaboration with registered dietitians at the place of discharge for patients receiving inpatient nutritional care fees and those discharged to other medical institutions, long-term care facilities, or disability support facilities [26].

3. Remuneration for welfare services for persons with disabilities

In the field of welfare for persons with disabilities, the Act on Providing Comprehensive Support for Daily Life and Life in Society of Persons with Disabilities was enacted in

2006 to make it easier for persons with disabilities to access necessary welfare services and promote independent living in the community [27]. When the law was enacted, an additional fee for the meal provision system was implemented as compensation for welfare services for persons with disabilities. However, individual nutritional care was not implemented as an additional fee. Therefore, the actual nutritional status of residents in facilities for persons with disabilities was not being assessed. The aging population of users and those with severe disabilities, deteriorating nutritional status often leads to health problems such as bedsores, infections, and lifestyle-related diseases. Recognizing the importance of maintaining health and reducing dependence on medical care among persons of facilities that conduct NCM, a system of NCM led by registered dietitians was introduced in the April 2009 compensation revision. The effectiveness of NCM, which had already been implemented in the field of long-term care insurance, was evaluated. As a result, it was introduced in the field of welfare for persons with disabilities. In 2021, as with long-term care insurance facilities, requirements for the maintenance of oral intake were expanded to include meal rounds and conferences conducted by multidisciplinary professions. These efforts were reviewed and recognized as integral to the provision of welfare services for persons with disabilities.

Individuals with disabilities comprise approximately 9.2% of the overall population. This includes individuals with physical, intellectual, and mental disabilities, and their numbers are increasing [27]. Of these individuals, more than 80% live at home and / or attend daycare centers, and this percentage is also rising [27]. According to the certification survey on disability support, many users require assistance with meals, and health and nutritional care in their daily lives [28]. The issues related to meals for these individuals include eating too quickly, swallowing food whole, being selective about food, and spilling food. The survey also revealed that individuals with disabilities who receive support from a registered dietitian tend to have a lower occurrence of institutionalization or severe disability classification. Based on these findings, a recent revision in April 2024 introduced additional fees for nutrition screening and improvement, not only for institutionalized persons but also for daycare services [29]. The fee of nutrition care involves a collaboration between a registered dietitian and other professionals, to prepare a nutrition care plan for persons who are under- or overnourished. This plan takes into account their nutritional status, eating and swallowing abilities, and eating patterns. The implemented nutrition care and the users' nutritional status are recorded and evaluated regularly.

Given the increasing number of people with disabilities living and commuting in the community, it is important to provide support for eating at home and on the go. Creating an environment where people with disabilities can enjoy meals is necessary, including consultations with their families and care staffs.

4. Medical and long-term care coordination

To ensure that older adults requiring both medical and long-term care can continue living in their familiar communities, comprehensive and continuous home-visit care must be provided through collaboration among medical and long-term care organizations. The 8th National Medical Plan highlights the importance of nutritional management for home care users, stating that, "to enhance NCM tailored to the condition of home-visit care users, it is essential to establish a system for home-visit nutritional dietary guidance." This system includes hospitals providing home support and nutrition care stations with assigned registered dietitians, with clear definitions of their functions and roles [30]. In Japan's aging society, there is a need to strengthen both the quantity and quality of human resources dedicated to nutritional and care for older adults and patients at home. This issue is being addressed by ongoing research funded by the Ministry of Health, Labor and Welfare's Science Research Fund.

In addition, as part of building a comprehensive community care system, nutritional care information sharing is introduced into the medical and long-term care reimbursement systems to foster cooperation between these services. To advance this initiative, a system enabling regular collaboration among registered dietitians within the community must be established.

V. Conclusion

From the perspective of promoting nutrition policy that ensures equal access for all, efforts to provide NCM have been incorporated into long-term care insurance, medical care, disability welfare services, and long-term care prevention. The medical education curriculum has been revised and physicians are being educated regarding NCM also [31]. In addition, academic medical societies have recently conduct research related to clinical nutrition. To enhance the quality of these initiatives and develop a skilled workforce, it is essential to promote research that generates evidence-based recommendations and to invest in the professional development of registered dietitians. In addition, registered dietitians are expected to contribute to the development of comprehensive systems that address nutrition-related issues in the community, leveraging all available social resources and collaborating with diverse stakeholders. Japan's experience in building sustainable

societies amidst an aging population can serve as a valuable reference for other countries that are facing similar challenges.

Conflicts of Interest

The author declares that there are no conflicts of interest.

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＜総説＞

栄養ケア・マネジメントの進展
―医療，介護，障害福祉サービス制度における展開

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抄録

栄養は個人の健康と福祉の基盤であると同時に，持続可能な開発および経済成長を支える重要な要素である．東京栄養サミット 2021 において，「あらゆる形態の栄養不良の撲滅」を目指し，世界保健総会の「世界栄養目標 2025」，国連「栄養のための行動の 10 年（2016 − 2025）」，および持続可能な開発目標（SDGs）の達成に向けた政策を推進することが東京栄養宣言として発表された．これに基づき，日本政府は，日本国内の政策として，”誰一人取り残さない栄養政策”を推進することを表明した．

高齢化が進む社会的背景を踏まえ，高齢者の低栄養状態の改善と，口から食べる楽しみを支援するための取り組みが加速している．その一環として，医療，介護及び障害者福祉サービスにおける多職種連携による栄養ケア・マネジメント（NCM）が導入され，推進されている．

本稿では，NCMの理念および，医療保険，介護保険，障害福祉サービス制度における制度設計の変遷を整理した．NCMの制度の導入を支えた背景として，高齢者や患者の栄養状態の把握，栄養ケアの医療経済的効果に関する調査研究の成果についても言及する．また，2000 年の栄養士法改正により，管理栄養士の業務が拡大し，傷病者を対象とした栄養管理業務が重視されるようになったことも，NCM導入の大きな要因となっている．2005 年 10 月以降，介護，医療，障害福祉サービス制度の改正に伴い，栄養管理の重要性から，その報酬評価が充実してきた．

さらに，高齢化が進む社会において，地域包括ケアシステムの構築にあたって医療・介護連携の強化，およびNCMを担う専門人材の育成は重要な課題である．

これらの日本の取り組みは，今後高齢化が進む諸外国における栄養政策の策定や実施にも貢献できるものと考える．

キーワード：栄養ケア・マネジメント，管理栄養士，介護保険，医療保険，栄養政策