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Perspective

The Opportunity for Quality Malnutrition Care to Improve Rural Health Outcomes and Health Equity for Older Americans

Suzanne Fleming [1], Mary Beth Arensberg [2,*], Kirk Kerr [2], Robert Blancato [3]

1. McPherson Hospital, 1000 Hospital Dr., McPherson, KS 67460, USA; E-Mail: suzannef@mcphersonhospital.org
2. Abbott Nutrition Division of Abbott, 3300 Stelzer Rd., Columbus, OH 43219, USA; E-Mails: mary.arensberg@abbott.com; kirk.kerr@abbott.com
3. Defeat Malnutrition Today, 1612 K Street NW, Suite 200, Washington, DC 20006, USA; E-Mail: rblancato@matzblancato.com

* **Correspondence:** Mary Beth Arensberg; E-Mail: mary.arensberg@abbott.com

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Abstract

Older adults have a heightened risk of malnutrition that occurs with age. Many factors can increase their risk for malnutrition, including factors associated with disease, function, social and mental health, and hunger and food insecurity. Risk for malnutrition is also linked to disparities and may disproportionately impact people living in rural areas. This Perspective paper outlines the issue of malnutrition and its impact on health outcomes and health disparities as well as summarizes existing evidence on malnutrition in rural healthcare institutions. Further it describes opportunities for malnutrition quality improvement and a new malnutrition quality measure, the Global Malnutrition Composite Score measure, that has recently been recommended by the National Quality Forum as a health equity measure for rural healthcare. The Perspective also suggests how this measure may help meet new health equity requirements of the Joint Commission and may help address needs identified in non-profit hospital community health needs assessments. The Perspective identifies

resources for malnutrition quality improvement and the Composite measure, and shares key learnings from McPherson Hospital, a rural institution that has worked to improve malnutrition quality care. Finally, the Perspective suggests opportunities for rural healthcare institutions to better connect with community-based nutrition programs/services and recommends where more program development and policy support is still needed.

Keywords
Malnutrition; older adults; rural health care; health disparities; quality improvement; quality measures; community-based nutrition programs

1. Introduction

As identified in the United States (US) Dietary Guidelines for Americans, older adults have a heightened risk of malnutrition that occurs with age [1]. Malnutrition most commonly refers to a lack of adequate protein, calories, and other nutrients, and up to one out of two older Americans is believed to be at risk for malnutrition or is malnourished [2, 3]. Many factors can increase risk for malnutrition in older adults, including those associated with disease, function, social/mental health, and hunger/food insecurity [4]. Such risk factors may be linked to disparities; for example, the recent *National Strategy* from the 2022 White House Conference on Hunger, Nutrition, and Health commented that hunger and diet-related diseases are not distributed equally and disproportionately impact specific populations, including people living in rural areas [5]. In addition, patients from rural areas tend to be hospitalized with malnutrition at a higher rate than those residing in more populated areas [6]. It is estimated more than one in five older Americans live in rural areas. In five states with large rural populations (Arkansas, Maine, Mississippi, Vermont, and West Virginia) more than half of their older adult populations live in rural areas [7]. However, there is little information in the literature specific to older adult malnutrition and rural healthcare.

This Perspective paper outlines the issue of malnutrition and its impact on health outcomes and health disparities. Also summarized is existing evidence on malnutrition in rural healthcare institutions. Further, the Perspective describes opportunities for malnutrition quality improvement and a new malnutrition quality measure, the Global Malnutrition Composite Score measure, that has recently been recommended by the National Quality Forum as a health equity measure for rural healthcare. In addition, the Perspective suggests how this measure may help meet new health equity requirements of The Joint Commission for healthcare accreditation. How the measure may help address needs identified in non-profit hospital community health needs assessments is described as well. The Perspective identifies resources for malnutrition quality improvement and the Composite measure, and shares key learnings from McPherson Hospital, a rural institution that has worked to improve malnutrition quality care. Finally, the Perspective suggests opportunities for rural healthcare institutions to better connect with community-based nutrition programs/services and recommends where more program development and policy support is still needed.

2. Malnutrition and Health Outcomes, Health Disparities, and Rural Health

Malnutrition occurs when individuals do not consume enough of the nutrients they need and is also influenced by other factors including medical conditions, disease burden, and inflammation [8]. A nutrition assessment identifies underlying causes of malnutrition and provides the basis for malnutrition diagnosis and intervention. Both underweight and overweight or obese individuals can be malnourished. For older adults, lack of adequate protein is often a concern because it can then lead to loss of muscle and poorer health outcomes. Malnutrition is associated with a range of adverse health outcomes, including increased morbidity and mortality, decreased function and quality of life, increased risk of falls, increased frequency and length of hospital stays, and higher health care costs [9]. Malnutrition in older adults can also affect social, functional, and quality of life outcomes [10]. Yet, while malnutrition may affect 20-50% of admitted hospital patients [11], it is diagnosed in less than 9% of US hospital stays [12] and has been identified by the US Agency for Healthcare Research and Quality as an underrecognized threat to patient safety [13].

Malnutrition is also linked to health disparities [14]. The US Centers for Medicare and Medicaid Services (CMS) has commented "One factor contributing to the burden of malnutrition is health disparity across racial and ethnic groups" [15]. This was underscored in a recent study that documented disparities in burden of malnutrition (as identified by registered dietitian nutritionists (RDNs)) across different racial and ethnic groups and that the readmission rate for non-Hispanic Black individuals with malnutrition was more than 26% compared with less than 19% among non-Hispanic White individuals [16].

Rural hospitals provide essential care and more than half of all US hospitals are in rural areas [17]. Although the evidence is limited, individuals living in rural areas are at higher risk for malnutrition [18, 19]. This is not surprising, given that there is a higher prevalence of individuals with multiple chronic health conditions living in rural vs more urban areas (34.8% vs. 26.1%) and higher prevalence of disabilities (17.1% vs. 11.7%) [20]. In addition, 10% of rural residents are food insecure [21] and 9 out of 10 of the US counties with the highest food insecurity rates are rural [22]. Native Americans living in rural communities have some of the highest rates of food insecurity of any racial or ethnic group [22]. Further, many rural residents may have fewer choices to buy fresh and affordable food and for some residents, specifically older adults, this problem is compounded by more limited transportation options in rural communities [23]. Also, as previously mentioned, the highest rate of hospitalization for malnutrition generally has been in rural areas [6].

3. Quality Malnutrition Care and the Global Malnutrition Composite Score Measure

Nutrition-focused quality improvement programs (QIPs) can be effective in helping improve hospital malnutrition care processes to better identify and treat malnutrition and thus can benefit both patient and health system outcomes [24, 25]. Nutrition-focused QIPs have been associated with overall cost-savings of over $4.8 million in the hospital setting and typically have included: screening all patients systematically at admission for malnutrition or risk for malnutrition, prompt initiation of oral nutrition supplementation for at-risk patients, and nutrition support and education of patients during the hospital stay and post-discharge [26].

The Malnutrition Quality Improvement Initiative (MQii) has developed a malnutrition-specific QIP framework focused on advancing high-quality, patient-centered care for hospitalized older adults (those aged 65 years and older) [24]. The MQii established a Learning Collaborative which

now has over 300 hospitals nationwide, including rural hospitals [27]. Results from the Learning Collaborative have demonstrated that hospital teams which implemented the MQii improved the timely identification, quality of care, and treatment of older adults who were malnourished or at risk of malnutrition [28]. MQii innovations include the development of an evidence-based, malnutrition quality improvement toolkit that is interdisciplinary and open-access [29].

The MQii has also developed and tested malnutrition electronic clinical quality measures, most recently the Global Malnutrition Composite Score measure. The Composite measure includes four components (Figure 1) which are part of the nutrition care process: malnutrition screening, nutrition assessment, malnutrition diagnosis, and a nutrition care plan [30]. A standardized process for malnutrition care in acute care settings can help set the foundation to address food insecurity as an equity issue [16].

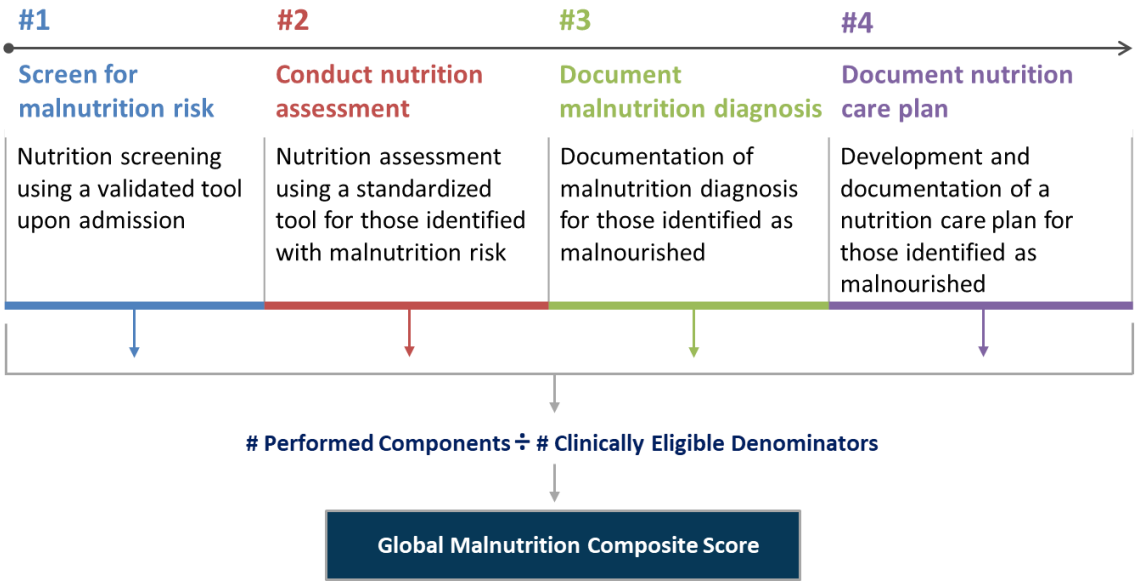

Figure 1 Elements of the Nutrition Care Process are reflected by individual components of the Global Malnutrition Composite Score [31]. Note: Clinically Eligible Denominators and other terms are defined in the Global Malnutrition Composite Score Specification Manual [32]

In 2022, CMS adopted the Global Malnutrition Composite Score in its Inpatient Hospital Quality Reporting Program [15] as a health equity-focused measure to help address healthcare disparities in the hospital and beyond [33]. This is the first ever, nutrition-focused quality measure in a CMS payment program and, as a health equity measure, it can elevate the quality of healthcare for underserved communities, including rural communities. Similarly, the National Quality Forum included the Composite measure in its most recent key rural measures list, as a health equity measure that is scientifically valid and advances rural health priorities [34].

The Composite measure could help rural hospitals meet The Joint Commission's new requirements, effective in 2023, to reduce health care disparities. The Joint Commission is the largest healthcare accreditor in the US. Their new requirements include assessing patients' health-related social needs and providing information about community resources/support services; food insecurity is specifically listed as an example of a health-related social need [35].

Another way that implementing the Composite measure could benefit rural hospitals is in helping support efforts to improve health and wellness in their local communities. To maintain tax-exempt status, US nonprofit hospitals and health systems are mandated by the Internal Revenue Service to report annually on their community benefit activities [36]. At least once every three years nonprofit hospitals are also required to conduct a community health needs assessment and develop strategies to meet the identified needs. Needs may include addressing barriers to care as well as needs related to preventing illness, ensuring adequate nutrition, and tackling social, behavioral, and environmental factors that influence community health and emergency preparedness [37]. To take advantage of these opportunities, rural hospitals will need to integrate malnutrition care directly into their quality improvement programs, and then choose to report on the Composite measure and link it to community-based nutrition programs and services.

4. Leveraging Malnutrition Quality Care to Benefit Rural Health Outcomes and Health Equity

MQii data have documented lower malnutrition measure component performance scores in rural hospitals compared to urban hospitals. In one study, the authors postulated that the "performance differences may be attributed to lower access to providers in rural settings (i.e., fewer RDNs to provide care)" and that "less exposure to RDNs may also limit identification of beneficial services that could meet people's needs related to malnutrition and food insecurity" [16].

Indeed, rural hospitals working to implement malnutrition quality care can face unique challenges compared to healthcare institutions in urban/suburban areas. McPherson Hospital is a rural Kansas hospital (Table 1) that participates in the MQii Learning Collaborative. Their experiences provide insight into how to overcome some of the rural health challenges in implementing malnutrition care quality improvement.

Table 1 Profile of McPherson Hospital and McPherson County in rural Kansas.

McPherson Hospital
• Acute care not-for profit facility • Average monthly inpatient census: 77 inpatients • Most frequent inpatient diagnoses: COVID-19, acute respiratory failure with hypoxia, metabolic encephalopathy, sepsis, acute and chronic respiratory failure, acute pancreatitis
McPherson County [38]
• Size: 900 square miles • Population: 28,537 • Median age: 40.8 years • Race/Ethnicity: 95.2% White • Education: 91.4% high school graduate or higher (of those aged 25+ years) • Median Household Income: $68,684 • Percentage of population living below federal poverty level: 7.6% • Core industries: farming, manufacturing

4.1 Insight 1: Take A Collaborative Approach

It is critical for rural healthcare institutions to hardwire components of malnutrition screening and intervention into daily routines so that the process does not rely on just one person, the RDN. Like many rural hospitals, McPherson Hospital has a single clinical RDN on staff who is responsible for everything from assessing inpatients, addressing quality improvement initiatives, and facilitating malnutrition awareness among other providers to developing patient menus and counseling outpatients. Further because the McPherson Hospital RDN initially only worked part-time, the nutrition screening step was often missed and there was potential for malnourished patients to go unrecognized until the RDN was "back in the office." Identifying and addressing malnutrition thus needed to move toward a multidisciplinary team approach. To help address this McPherson Hospital joined the MQii Learning Collaborative and used the MQii QIP methodology, online toolkit, and quality measures to identify barriers and implement strategies that could improve their malnutrition care processes (Table 2).

Table 2 Barriers and strategies for improving malnutrition quality care at McPherson Hospital in rural Kansas.

Barriers	**Strategies**
Inpatient	
Lack of awareness/understanding among clinicians about malnutrition as a clinical condition, limited understanding that malnutrition can occur in obese patients No standardized malnutrition screening tool used Variety of criteria used by hospitalists/surgeons to diagnose malnutrition	• Educated medical/surgery/ICU nurses on their roles in malnutrition identification and intervention • Educated physicians/surgeons on malnutrition and its impact on health outcomes • Incorporated Malnutrition Screening Tool (MST) into nursing admission workflow • Standardized to the Global Leadership Initiative on Malnutrition (GLIM) criteria for malnutrition diagnosis
Outpatient	
Lack of awareness/understanding among clinicians about the impact of malnutrition on health outcomes and how to intervene	• Educated clinic nurses on the need for early identification of/intervention for malnutrition in primary care settings to help prevent hospitalizations • Created a resource folder to share with patients, folder included a list of local resources for food assistance, how to apply for Supplemental Nutrition Assistance Program (SNAP) benefits, educational handout on maximizing oral intake when struggling with poor appetite or difficulty chewing/swallowing

Transportation challenges (especially for out-of-town patients) that limited patient access to follow-up visits with the RDN in the outpatient clinic	• Scheduled follow-up RDN clinic office visits to coincide with patients' primary care provider visits

4.2 Insight 2: Gaining Administration Buy-In

Implementing malnutrition care process improvement requires dedicated RDN time beyond direct patient care, but it is no less important. To achieve this, McPherson Hospital's RDN went directly to hospital administration with the request to become full-time, and they agreed. One benefit of being at a small hospital is that it can be easier to gain such buy-in because there are fewer layers of administration and process improvements may be easier to demonstrate.

4.3 Insight 3: Education, Education, Education

Malnutrition quality improvement implementation takes regular, consistent education with clinicians until they get to the point where malnutrition care processes become automatic. Without making it an integral, automatic part of patient care, nutrition screening/assessment and proper diagnosis/interventions risk becoming something that used to be done when there was a champion pushing it. At McPherson Hospital, once clinicians understood the role that nutrition plays in improving health outcomes, they were then on board for making process improvements. Malnutrition awareness education changed the process improvement focus from "adding one more thing to do" to becoming something that directly contributed to patients' health and wellness. However, it was also important to continue to reinforce those learnings with ongoing education.

4.4 Insight 4: Tackling Care Transitions

In malnutrition care there is often a disconnect as patients transition from the hospital to the outpatient/community care setting. Shared office visits offer the opportunity for rural patients to see an RDN in the outpatient/primary care setting. Not only does it help remove the barrier of access to care (Table 2), but the multidisciplinary approach reinforces the importance of nutrition to patients. At McPherson Hospital, because often there was so much focus on obesity and its related comorbidities, both providers and patients tended to view 'any weight loss' as desirable. Thus, just like in the inpatient setting, regular and consistent education in primary care was required to raise awareness on the detrimental effects of unintentional weight loss and loss of muscle mass and the relationship to poor health outcomes.

5. Opportunities for Strengthening Community-Based Nutrition Programs and Services

Quality malnutrition care includes helping link patients to community-based nutrition programs and services. Unfortunately, one of the gaps for malnutrition care in rural healthcare is the difficulty many rural patients face in accessing those resources [16]. For residents in McPherson County, even the cost of gas to drive into town for groceries can be prohibitive, along with the time it takes to do so. As has been reported in the literature, stigma is another issue [39]. Individuals in small communities usually know each other and sometimes may feel ashamed to admit they are struggling to afford adequate food. People may be reluctant to go to the food bank because they

know the volunteers there or do not want to sign up for the Supplemental Nutrition Assistance Program (SNAP) and then use the benefits at the local grocery store where they know the cashiers. Further some resources are only available to those living in town. For example, in McPherson County, the local Meals on Wheels program is restricted to individuals residing within the city limits of McPherson.

Rural patients tend to be poorer and more heavily dependent on nutrition assistance than individuals in urban areas [21]. Yet small, rural communities simply do not have access to all the support services of larger cities. In McPherson County there are no homeless shelters or soup kitchens nearby. Food banks typically serve individual counties and require individuals from out of town to drive to the food bank to pick up food. Additional challenges are transportation costs and the fact that small county food banks may have restricted days/hours due to limited food resources and volunteer/staff time. This is reinforced by the literature, as others have explained that for "rural older adults who live in areas with more convenience or 'dollar' stores, limited grocery stores, limited transportation options, and functional impairments, this food desert environment may be both individual and community-based, affecting the ability to procure an adequate diet, which can result in food insecurity or lack of access to enough food to support an active, healthy life" [23].

Rural hospitals, such as the one in McPherson need to be creative in seeking solutions to overcome their unique challenges. One possible approach is to partner with other community organizations that focus on community health and wellness. For example, local county Cooperative Extension Offices (supported by the state's land-grant college/university) may have staff available to help provide public education on healthy eating and nutrition and Cooperative Extension professionals have identified the need to work with hospitals and doctor's offices to support improved health [40]. A recent commentary on Cooperative Extension as a force for healthy rural communities explained they are "working to be even more engaged in efforts that improve the health and wellbeing of rural communities in particular" [41].

There could also be an opportunity for rural healthcare providers to establish stronger partnerships and referral systems with local food banks. Various organizations have developed resources for strengthening healthcare and food bank partnerships [42, 43]. Primary clinics may be well-positioned to screen for food insecurity and malnutritional risk and send at-risk patients to the food bank and/or other resources for assistance. CMS has recognized the importance of such screening and its impact on health equity by including a food insecurity and nutrition risk improvement activity in the 2022 Physician Fee Schedule Final Rule [44]. Separately, the American Academy of Family Physicians has passed a resolution supporting efforts to screen patients for food insecurity [45]. However, such screening is yet to become standard practice, perhaps in part because of concerns about alienating patients, although there is evidence that this is not likely to occur [46]. Federally qualified health centers could be another site where healthcare providers could screen for food insecurity risk as these centers are recognized safety net providers—including in rural areas [47]. A recent study found 71% of these health centers collect social risk data, such as food insecurity, with more widespread collection occurring in those health centers located in the Northeast than in the South [48].

Small towns often have senior centers which provide a hot meal and social interaction. However, as previously mentioned, access to transportation frequently remains a problem in rural communities. Public transportation availability in rural areas is 33% compared to 74% in urban areas [49]. Thus, many older adults in rural areas rely on their personal networks to access food [50]. Local

churches or service organizations (such as Kiwanis or the Lions Club) could help provide transportation to the senior center or the food bank for individuals who are unable to drive themselves. School buses are another potential option for transportation to a senior center or to help provide home-delivered meals, if the buses are used mid-day when children are in school. Other potential resources are described in the Rural Health Information Hub Transportation Toolkit [51]. Even a once-a-month transportation service could substantially help rural older adults in meeting basic needs including food security [52].

There is also a need to increase efforts targeting enrolling income eligible older adults in SNAP because older adults participate at lower rates compared to all eligible groups (42% vs. 82%) [53]. Importantly, older adult participation in SNAP has been associated with lower healthcare expenditures ($1400 per year) [54], reduced hospitalizations [55], and slower memory function decline [56]. States with lower proportions of enrolled older adults tend to be rural states in the South/Southwest and larger majority rural states like California, which has the lowest participation in SNAP among older adults [23].

Online benefit enrollment programs, such as the National Council on Aging's BenefitsCheckUp^{R} may help streamline SNAP enrollment for older adults [57]. Integrating SNAP benefit enrollment into a primary care visit (including telehealth visits) can be beneficial since research has shown older adults in rural and frontier communities may not be aware of benefits available to them and rarely apply for benefits on their own [58]. Physicians can help improve the health of patients with food insecurity by following the SEARCH (screen, educate, adjust, recognize, connect, help) mnemonic [59]. Educating the broader community on the need for and benefits of programs like SNAP may help reduce stigma, particularly when messaging reinforces that by applying for benefits like SNAP, older adults are not taking assistance away from others who they may think need it more [58]. Other programs that can help support improved nutrition for older adults in the community include:

- Commodity Supplemental Food Program which provides food packages to income eligible older adults through local agencies [60]
- Older Americans Act (OAA) congregate and home delivered meals programs (not income specific) and administered through area agencies on aging [61]
- Medicare Advantage programs which may offer coverage of home delivered meals for a specific time period post hospital discharge [62]
- Rural PACE (Program of All-inclusive Care for the Elderly) programs which may include meals in the services they provide; PACE operates in several states [63]

At the federal level, additional funding and support for community-based nutrition programs is essential. The *National Strategy* from the 2022 White House Conference on Hunger, Nutrition, and Health recommended increasing funding for the OAA nutrition programs [5]. This is critical because funding for the OAA's home and community-based nutrition programs has not kept up with inflation or growing need with the increased size of the older adult population [23]. Federal Social Services Block Grants [64] are a potential, but sometimes overlooked, source for partial funding of home-delivered meals, since these grants are directed toward helping achieve self-sufficiency and reducing institutionalization. Block grant service and eligibility requirements typically vary by state.

There is recognition that older adults in rural communities are an at-risk group for poorer health outcomes. By statute, OAA programs target adults aged 60 and over who are in greatest social and economic need, with priority groups specifically including older adults in rural communities [65]. However, further action is required to improve health outcomes and health equity for older

Americans living in rural communities. The US Government Accountability Office (GAO) has identified specific challenges for OAA programs servicing rural communities, including that rural older adults receive home-delivered meals less frequently than urban older adults, in part because reaching older adults in remote, sparsely populated areas can add to the cost and effort of providing services. In addition, a "dwindling working age population can mean fewer caregivers and volunteers to help." The GAO recommended centralizing access to and promoting awareness of promising practices and other useful information pertinent to serving rural older adults [66].

6. Conclusions

Rural areas cover the majority of the US and have higher percentages of older adults. Older adults are at greater risk for malnutrition, which can lead to poorer health outcomes. Yet, to date there seems to be a limited focus on improving malnutrition quality care in rural healthcare institutions. The MQii and the Global Malnutrition Composite Score measure can help provide a framework for developing malnutrition QIPs in rural healthcare. Learnings from McPherson Hospital suggest taking a collaborative approach, gaining administration buy-in, education, and tackling care transitions can be useful in improving malnutrition care processes. Consideration should also be given to strengthening community-based nutrition programs and services, both through partnerships at the local level and through increased federal funding and promotion of promising practices in rural health. Providing such supports is critical for healthy aging and health equity in rural communities.

Author Contributions

Conceptualization, SF and MBA; writing SF, MBA, KK, RB. All authors have read and agreed to the published version of the manuscript.

Competing Interests

MBA and KK are employees and shareholders of Abbott. SF and RB have no conflicts of interest to declare.

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