

# Appendices



MALNUTRITION QUALITY  
IMPROVEMENT INITIATIVE

These materials were developed by the Malnutrition Quality Improvement Initiative (MQii), a project of the Academy of Nutrition and Dietetics, Avalere Health, and other stakeholders who provided guidance and expertise through a collaborative partnership. Support provided by Abbott.

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## Appendix 1: Primer: The Importance of Addressing Malnutrition Care

### Burden of Malnutrition in Hospitalized Adults

Malnutrition is a leading cause of morbidity and mortality, especially among older adults. Evidence suggests that 20% to 50% of all patients are at risk for or are malnourished at the time of hospital admission.<sup>3</sup> Up to 31% of these malnourished patients and 38% of well-nourished patients experience nutritional decline during their hospital stay.<sup>83</sup> Many patients continue to lose weight after discharge,<sup>84</sup> and patients with weight loss are at increased risk for readmission.<sup>85</sup>

Malnutrition is the inadequate intake of nutrients, particularly protein, over time and may contribute to chronic illness and acute disease or illness and infection. People can be underweight or overweight and malnourished when they lack sufficient nutrients needed to promote healing, rehabilitation, and reduce the risk of medical complications. Malnutrition and weight loss can also contribute to sarcopenia, the age-associated loss of skeletal muscle mass and function, which can impact recovery, mobility and independence.

Hospitalized patients are vulnerable to nutritional decline for many reasons, including dietary restrictions because of tests, treatments, and medical conditions, as well as poor appetite and gastrointestinal problems. Malnourished surgical patients are two to three times more likely to experience post-operative complications and increased mortality than their more well-nourished counterparts.<sup>86</sup> One study noted that one-fifth of hospitalized patients aged 65+ had an average nutrient intake of less than 50% of their calculated maintenance energy requirements. Nutritional status is also considered an important factor in the recently identified “post-hospital syndrome,” which can result from the stress of hospitalization.<sup>87</sup>

## **Prevalence of Malnutrition in People With Chronic Disease**

Increasing the risk of malnutrition is the presence of chronic conditions which may impair the person's ability to ingest or absorb nutrients, causing increased energy needs or requiring dietary restrictions. This includes high-impact and costly conditions such as cardiovascular disease, stroke, diabetes, cancer, chronic obstructive pulmonary disease (COPD), renal disease, depression, and dementia.<sup>1,2</sup> For example, studies have estimated the prevalence of malnutrition in cancer patients to be 30% to 87%<sup>88</sup> (depending on the type of cancer), and between 19% and to 60% in COPD patients, depending on the population studied and the assessment used.

## **The Cost of Malnutrition**

Patients who are malnourished while in the hospital have a greater risk of complications, falls, pressure ulcers, infections, readmissions, and length of stay, which is associated with up to a 300% increase in costs.<sup>6</sup> Studies have also shown hospitalized older adults at risk for malnutrition are more likely to be discharged to another facility or require ongoing health services after leaving the hospital than patients not at risk for malnutrition.<sup>34</sup> A recent analysis estimated the morbidity, mortality, and direct medical costs associated with disease-related malnutrition in the U.S. to be \$157 billion, with \$51.3 billion attributed to those age 65 years and older.<sup>89</sup>

## **Gaps in Malnutrition Care Quality**

Malnutrition is an independent predictor of negative patient outcomes including mortality, length of hospital stay, readmissions, and hospitalization cost.<sup>90,91,92</sup> Despite the evidence that demonstrates the benefits of nutrition for healing, recovery, and chronic disease management, significant variation and gaps remain in care processes that can negatively impact time to screening, assessment, diagnosis, intervention, monitoring, and care coordination for malnourished and at-risk adults. Given the prevalence and costs of disease-related malnutrition, it is important to promptly implement clinical strategies to address malnutrition and to coordinate care for malnourished and at-risk patients. Because malnutrition care is an area that has largely remained unaddressed, it presents an opportunity for improved quality care.

## **How Malnutrition Intervention Can Help Improve Health Outcomes and Lower Costs**

Addressing malnutrition directly aligns with the Triple Aim and HHS National Quality Strategy priorities related to patient safety, care coordination, patient- and family-centered care, population health, and affordability. Clinical consensus recommendations underscore that early identification and systematic

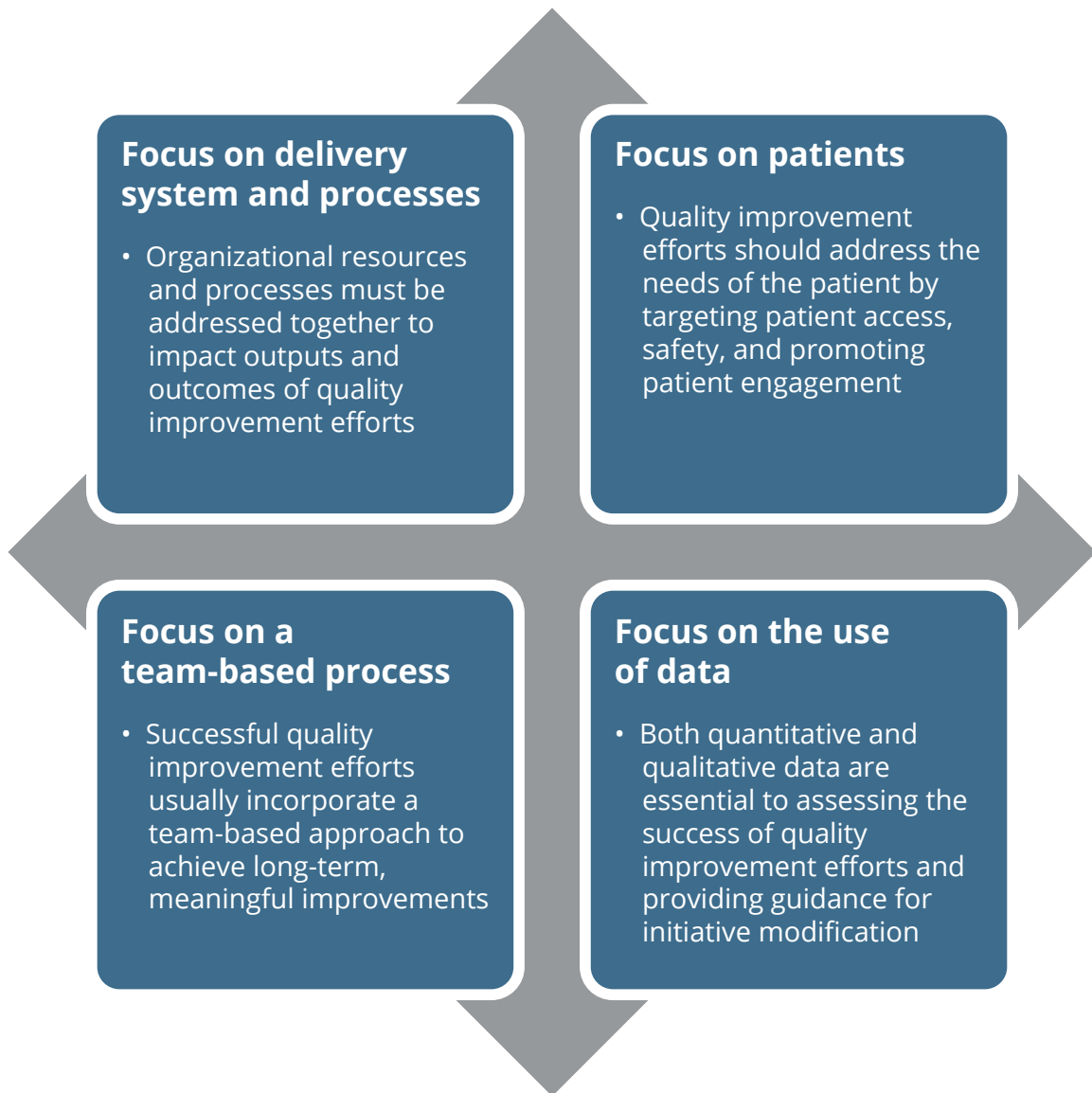
nutrition care coupled with interdisciplinary team-based care are critical in remediating malnutrition in both the hospital and in the post-acute care setting.<sup>13</sup> Patient and family engagement in their nutrition care plan during hospitalization and upon discharge is important to facilitate recovery. Studies have demonstrated that implementation of a comprehensive nutrition pathway from inpatient admission to post-discharge improved identification of high-risk patients and decreased time to nutrition consult, length of hospital stay, and 30-day readmission rate.<sup>94,95</sup>

## Appendix 2: MQii Principles and Models of Quality Improvement

Healthcare quality and quality improvement are terms that describe discrete, yet interrelated concepts. The Institute of Medicine (IOM) defines healthcare quality as “a direct correlation between the level of improved health services and the desired health outcomes of individuals and populations.”<sup>96</sup> Whereas the definition of quality improvement places a focus on measuring change, consisting of “systematic and continuous actions that lead to measurable improvement in healthcare services and the health status of a targeted patient group.”<sup>12</sup> Quality improvement often seeks to raise the standards of care in alignment with IOM aims for improvement in outcomes for individuals and populations.<sup>12</sup>

To build a healthcare system that provides efficient, effective, and consistent care, it is important that healthcare organizations apply the principles of quality improvement in all aspects of clinical care. Following the passage of the Affordable Care Act in 2010, stakeholders in the industry are striving to improve the value of care delivery and prevent costly negative patient outcomes through quality improvement initiatives that promote care efficiency, patient-centered care, provider coordination, and clinical best practices.<sup>12</sup>

The Health Resources and Services Administration (HRSA) notes that the quality improvement model includes four key principles to support successful initiatives:<sup>12</sup>

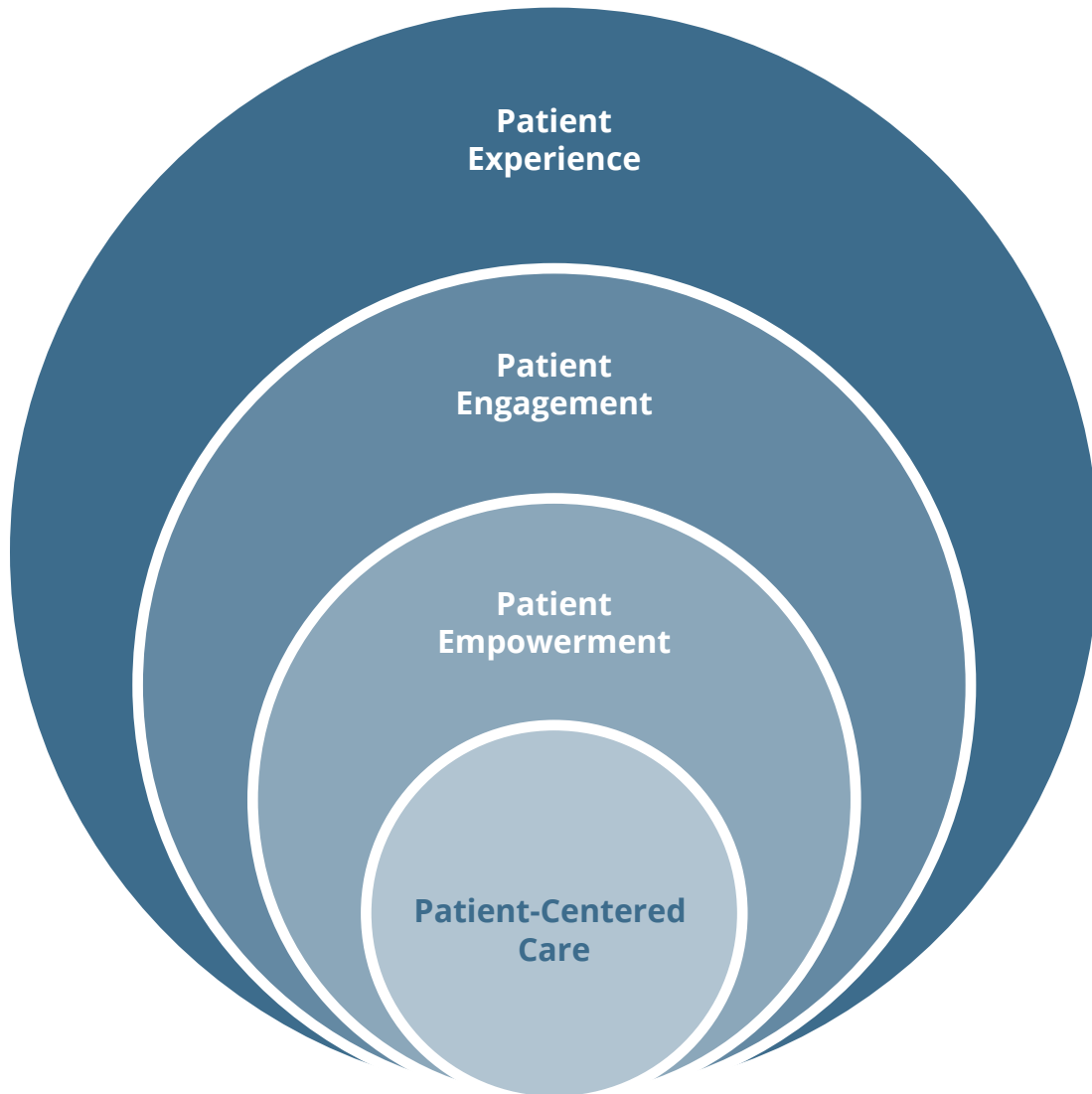


**Figure 1: Key Principles to Support Successful Quality Improvement Initiatives**

A well-defined quality improvement program consists of “systematic activities that are organized and implemented by an organization to monitor, assess, and improve its healthcare.”<sup>12</sup> The goal of quality improvement programs is to seek continuous improvement in the care delivered to the patients the organization serves.<sup>12</sup>

Intrinsic to the successful implementation of a quality improvement initiative is the focus on the patient. Increasingly, evidence demonstrates the positive impact patient engagement has on improving patient outcomes and reducing the cost of care. The National Quality Forum (NQF) defines patient- and family-centered care as “an approach to the planning and delivery of care across settings and time that is centered on collaborative partnerships among individuals, their defined family, and providers of care. It supports health and well-being by being consistent with, respectful of, and responsive to an individual’s priorities, goals, needs, and values.”<sup>97</sup>

The concept of patient-centered care is one that is evolving as the role of the patient becomes increasingly defined. In today's healthcare environment, stakeholders are looking beyond assessing the quality of the patient experience and promoting activities that involve patients in their care as informed consumers. Patient-centered care may include patient engagement, activation for self-care, and shared decision making around the determination of the appropriate course of treatment and disease management.



**Figure 2: Aspects of Patient-Centered Care**

In support of developing patient-centered quality and clinical safety improvements, the Nursing Alliance for Quality Care released a list of nine core principles designed to support nurses and healthcare providers in 2013 (see Figure 3).<sup>98</sup> Hospitals and health systems that have been successful in promoting patient-centered care adopt principles that are very similar to those released by the Nursing Alliance for Quality Care or develop their own.<sup>99</sup> Following these principles may help incorporate aspects of patient-centered care into your practices as you implement this quality improvement initiative.



**There must be an active partnership among patients, their families, and their healthcare providers**

**The patient is the source of health information and has right to make own care decisions**

**Care is based on shared responsibilities and relationships among patient, family, and clinicians**

**Care must respect boundaries of privacy, competent decision making, and ethical behavior**

**Families and friends of the patient are considered an essential part of the Care Team**

**Patient rights include mutuality: information sharing, consensus forming, and shared decision making**

**Clinicians should advocate for patients unable to fully participate in own care**

**Acknowledge and appreciate cultural, racial, and ethnically diverse backgrounds**

**Healthcare literacy and linguistically - appropriate interactions are essential**

Additionally, online tools and health literacy resources can provide education to improve patient understanding of treatment options, thereby increasing a patient's ability to engage in the shared decision-making process. The Institute for Healthcare Improvement (IHI) has developed a white paper reviewing best practices for providing positive patient and family experiences during hospital stays. This white paper identifies primary and secondary drivers for hospitals that are associated with exceptional patient and family experiences of inpatient care and provides case studies from high-performing hospitals to demonstrate application of theory. Primary drivers include:<sup>100</sup>

- **Leadership:** Governance and executive leadership demonstrate that hospital culture is focused on patient-and family-centered care
- **Provider Engagement:** Staff and providers are fully engaged
- **Respectful Partnership:** All care interactions are based on a respectful partnership that anticipates patient and family needs
- **Reliable Care:** Hospital provides high-quality, reliable care 24/7
- **Evidence-Based Care:** Care team consistently applies collaborative, evidence-based care

Examples of online tools to support patient education and engagement include the Agency for Healthcare Research and Quality (AHRQ) strategies for implementing a patient-centered medical home delivery model.<sup>101</sup> Additionally, decision-support resources for malnutrition care are also available for clinicians, such as recommendations from the Choosing Wisely® Campaign for specific patient conditions (e.g., dementia).<sup>102</sup> Links to these resources are provided in the [Additional Resources section](#) of this MQii Toolkit found on p. 74-76.

## Quality Improvement Models

There are several quality improvement models and frameworks an organization can consider to promote success. One of the most widely used models is the Plan-Do-Study-Act (PDSA) Cycle, a systematic series of steps for gaining valuable learning and knowledge for the continual improvement of a product, service, or process. It has been visually depicted using a four-step approach as indicated in Figure 4.



Figure 4: PDSA Cycles<sup>103</sup>

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**Plan:** Identify an opportunity to improve and plan a change or test of how something works within one component of the clinical workflow, including establishing metrics/indicators to assess progress toward the goal

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**Do:** Carry out the plan for improvement for the specific component of the clinical workflow. The test period may be as short as one day and be implemented on a small number of patients

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**Study:** Examine the results

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**Act:** Based on the results of the testing period, incorporate changes and establish quality improvement plans

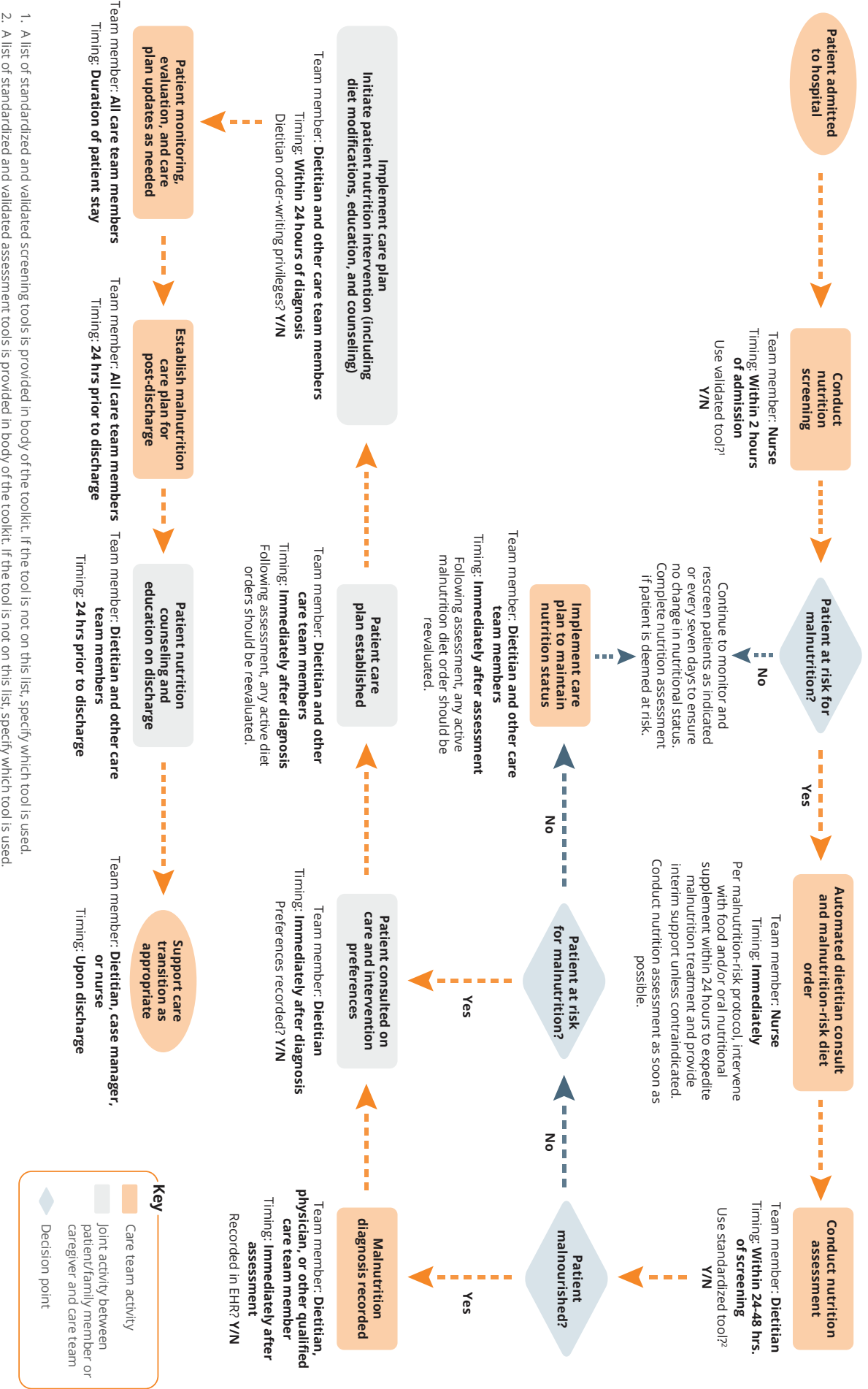
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Through small, rapid cycles of change and improvement, the team gains the ability to evaluate the impact of improvement tactics at regular intervals. It is important to note that a team may undergo multiple cycles through the PDSA cycle for one quality improvement concept. Cycling through the same topic more than once allows the team to test whether the change had an impact and refine the process as needed.

Other quality improvement models that your organization may currently be using or may wish to consider when implementing the MQii include the LEAN Approach and Six Sigma. Both of these models place PDSA within a specific context to provide direction to the quality improvement process and make effective use of resources. Organizations implementing the LEAN process look at healthcare quality improvement in the context of the patient, and whether particular care processes provide value. If processes do not provide value to the patient, they are targeted for improvement. Additionally, all members of the team are expected to help identify poor quality and operational and resource waste.<sup>104</sup>

Organizations initiating quality improvement using the Six Sigma model modify PDSA using the acronym DMAIC: Define, Measure, Analyze, Improve, and Control. The final step, Control, emphasizes the focus of Six Sigma on maintaining high levels of quality care and low levels of clinical practice variability and defects, and encourages users to implement a plan to continuously measure and assess the success of the quality improvement process. In the context of Six Sigma, the process of quality improvement revolves around identifying sources of variation, including defects, in clinical practice processes and strives to reduce this variation.

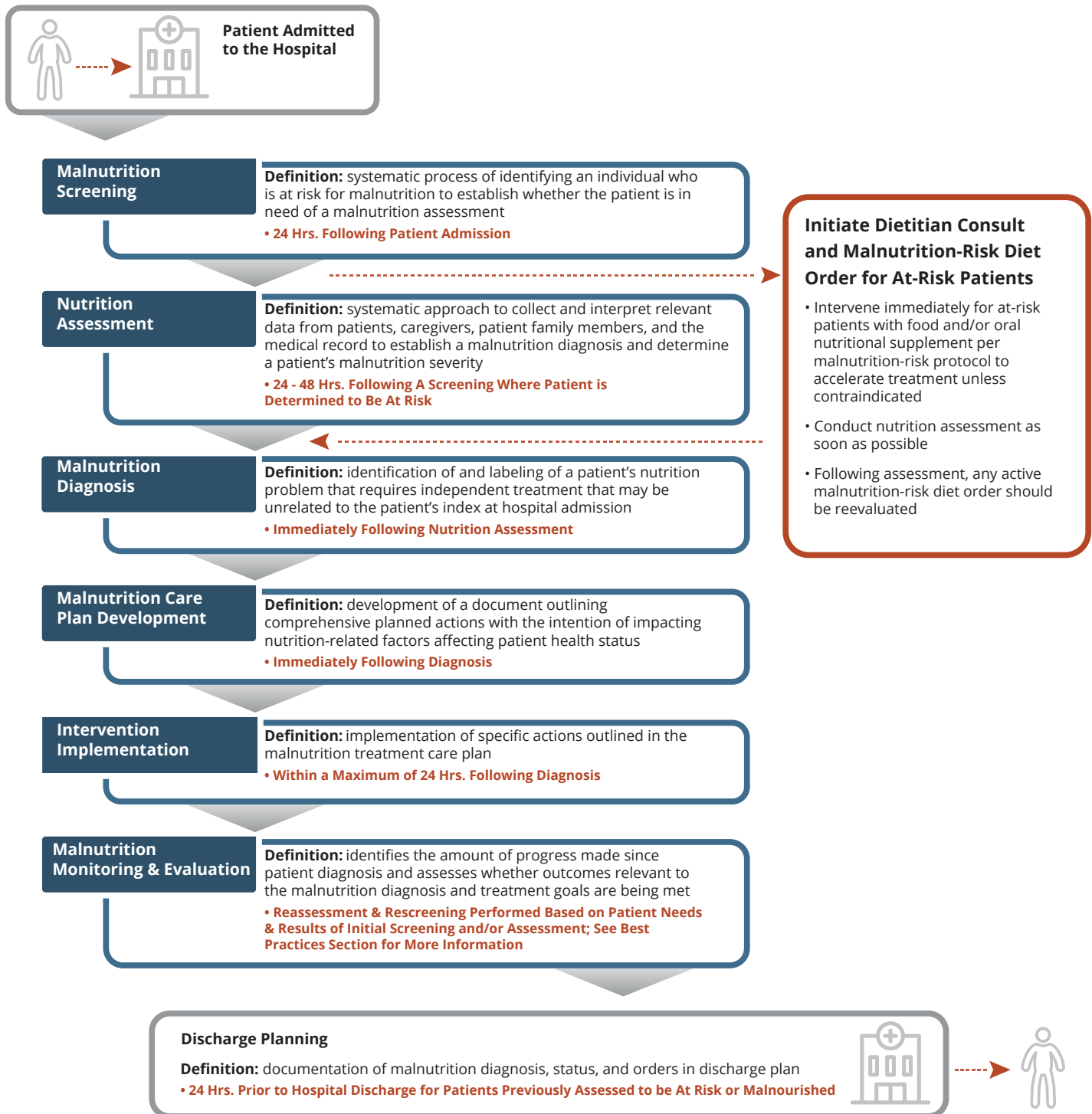
# Appendix 3: Mqii Sample Flowchart for Recommended Malnutrition Care



1. A list of standardized and validated screening tools is provided in body of the toolkit. If the tool is not on this list, specify which tool is used.
2. A list of standardized and validated assessment tools is provided in body of the toolkit. If the tool is not on this list, specify which tool is used.



# Appendix 4: MQii Recommended Malnutrition Clinical Workflow





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## Appendix 5: MQii Guiding Principles

The design and implementation of the MQii are based on several guiding principles. The guiding principles provide a snapshot of the overall intention of the MQii, and should be used as a reference as sites employ different approaches to support the uptake of the clinical workflow and other components of the toolkit.



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