

# Comprehensive Preoperative Assessment and Global Optimization



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## KEYWORDS

- Preoperative assessment • Preoperative optimization • Telemedicine • Telehealth
- Medical comorbidity • Prehabilitation • Value-based health care

## KEY POINTS

- The scope of preoperative management must be expanded to deliver greater value-based health care and to contribute to sustained and meaningful perioperative population health management.
- Preoperative risk factor assessment and stratification are essential for undertaking preoperative medical optimization via targeted, preemptive therapeutic interventions.
- Increasing use of telemedicine and telehealth, including mobile technologies and connectivity, are key to making health care more accessible, more cost effective, and of greater value.
- There are many comorbid conditions that represent perioperative risk factors that should be fully assessed and optimized before an elective and time-sensitive surgical procedure.
- Prehabilitation with a holistic approach that, in addition to physical exercise, includes nutritional and psychosocial support seems to be more effective at promoting postoperative functional recovery.

## INTRODUCTION

In the United States and other Western nations, there is an ongoing evolution away from volume-based and toward value-based health care payment models.<sup>1–3</sup> Delivering value-based health care requires effectively managing not only the long-term

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but also the short-term health of patient populations, especially high-risk patients and during disproportionately costly acute care episodes.<sup>4-6</sup> Managing the short-term health of the surgical population begins in the preoperative phase of care.<sup>7,8</sup>

According to the 2012 American Society of Anesthesiologists (ASA) Practice Advisory for Preanesthesia Evaluation, an anesthesiologist is responsible for medically assessing and optimizing a surgical patient.<sup>9</sup> Per the ASA advisory this involves “(1) discovery or identification of a disease or disorder that may affect perioperative anesthetic care; (2) verification or assessment of an already known disease, disorder, medical or alternative therapy that may affect perioperative anesthetic care; and (3) formulation of specific plans and alternatives for perioperative anesthetic care.”<sup>9</sup>

However, to successfully deliver greater value-based care and to effectively contribute to sustained and meaningful perioperative population health management, the scope of existing preoperative management and its associated services and provider skills must be expanded.<sup>7,8,10</sup> This article focuses on the opportunities and mechanisms for delivering value-based, comprehensive preoperative assessment and global optimization of the surgical patient.

## PREOPERATIVE RISK FACTOR ASSESSMENT AND STRATIFICATION

Preoperative risk factor assessment and stratification<sup>11</sup> is essential for undertaking preoperative medical optimization via targeted, preemptive therapeutic interventions. There are several global risk stratification tools available for major noncardiac surgery (eg, the Portsmouth-Physiology and Operative Severity Score for the enUmeration of Mortality and the Surgical Risk Scale).<sup>11</sup> However, despite its inherent subjectivity and only moderate interrater reliability in clinical practice,<sup>12</sup> the ASA physical status (PS) score continues to be conventionally used for overall preoperative risk assessment and stratification.

There are also numerous condition-specific risk screening and stratification tools applicable for patients undergoing noncardiac surgery (**Table 1**). Clinicians must prioritize which of these condition-specific tools to apply to avoid excessive patient respondent burden. Ideally, a condition-specific risk screening and stratification tool can be administered by telephone interview or self-completed via an online patient portal.

Stonemetz and Thomsen<sup>13</sup> at the Johns Hopkins Health System have innovated and successively revised their Preoperative Roadmap, which contains a Patient Evaluation Screening Form. Based on institutional clinician survey data and a consensus decision-making approach, Vetter and colleagues<sup>14</sup> at the University of Alabama at Birmingham generated a similar but more extensive Preoperative Patient Clearance and Consultation Screening Questionnaire.

In their prescient 2009 article on integrated preoperative assessment and consultation, Silverman and Rosenbaum<sup>15</sup> recommended the use of an integrated clinical risk profile matrix. Their 2-dimensional matrix included a uniform grading of existing patient morbidities versus the anticipated surgical disturbance (ie, surgical insult or surgical trespass).<sup>15</sup> Of note, the 2012 ASA Practice Advisory for Preanesthesia Evaluation also recommended stratifying patients on the level of surgical invasiveness (high, medium, or low) and the severity of disease (high or low).<sup>9</sup>

Vetter and colleagues<sup>16</sup> at the Dell Medical School and the Seton Healthcare Family have created an analogous Preoperative Patient Categorization and Management Matrix (**Fig. 1**), which incorporates (a) the number and significance of positive “red flags” on a locally revised version of the original University of Alabama at Birmingham Preoperative Patient Clearance and Consultation Screening Questionnaire<sup>14</sup> (**Fig. 2**) and

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