General

Guideline Title

Risk assessment and prevention of pressure ulcers: a clinical practice guideline from the American College of Physicians.

Bibliographic Source(s)


Guideline Status

This is the current release of the guideline.

This guideline meets NGC’s 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

Definitions for the overall quality of evidence (high, moderate, low, or insufficient evidence to determine net benefits or risks) and the strength of the recommendations (strong, weak) are provided at the end of the "Major Recommendations" field.

Recommendation 1: American College of Physicians (ACP) recommends that clinicians should perform a risk assessment to identify patients who are at risk of developing pressure ulcers. (Grade: weak recommendation, low-quality evidence)

Risk assessment is often part of bundled care and multicomponent interventions for preventing pressure ulcers. Risk factors for pressure ulcers include older age; black race or Hispanic ethnicity; lower body weight; cognitive impairment; physical impairments; and other comorbid conditions that affect soft tissue integrity and healing, such as urinary or fecal incontinence, diabetes, edema, impaired microcirculation, hypoalbuminemia, and malnutrition. Clinicians should make individualized decisions based on risk assessment on whether to use a single or multicomponent intervention to prevent pressure ulcers in patients.

The current evidence does not conclusively show a difference between clinical judgment and risk assessment scales in reducing pressure ulcer incidence. However, tools may be especially useful for clinicians without expert gestalt. Moderate-quality evidence showed that the Braden, Cubbin and Jackson, Norton, and Waterlow scales can predict which patients are more likely to develop a pressure ulcer, and all of these instruments have low sensitivity and specificity. In addition, moderate-quality evidence showed that the diagnostic accuracies of the scales do not differ substantially. No study evaluated the effectiveness of risk assessment tools across care settings or patient subgroups.

Recommendation 2: ACP recommends that clinicians should choose advanced static mattresses or advanced static overlays in patients who are at an increased risk of developing pressure ulcers. (Grade: strong recommendation, moderate-quality evidence)
Moderate-quality evidence showed that the use of advanced static mattresses or overlays was associated with a lower risk for pressure ulcers compared with standard hospital mattresses, and no brand was shown to be superior. Advanced static mattresses and overlays are also less expensive than alternating-air or low-air-loss mattresses and can be used as part of a multicomponent approach to pressure ulcer prevention.

Recommendation 3: ACP recommends against using alternating-air mattresses or alternating-air overlays in patients who are at an increased risk of developing pressure ulcers. (Grade: weak recommendation, moderate-quality evidence)

The current evidence does not show a clear benefit for pressure ulcer prevention using alternating-air beds and overlays compared with static mattresses and overlays, and alternating-air beds and overlays are associated with significantly higher costs. Lower-cost support surfaces should be the preferred approach to care.

Definitions:

Grading of Quality of Evidence

High-Quality Evidence: Evidence is considered high quality when it is obtained from 1 or more well-designed and well-executed randomized, controlled trials (RCTs) that yield consistent and directly applicable results. This also means that further research is very unlikely to change confidence in the estimate of effect.

Moderate-Quality Evidence: Evidence is considered moderate quality when it is obtained from RCTs with important limitations—for example, biased assessment of the treatment effect, large loss to follow-up, lack of blinding, unexplained heterogeneity (even if it is generated from rigorous RCTs), indirect evidence originating from similar (but not identical) populations of interest, and RCTs with a very small number of participants or observed events. In addition, evidence from well-designed controlled trials without randomization, well-designed cohort or case-control analytic studies, and multiple time series with or without intervention are in this category. Moderate-quality evidence also means that further research will probably have an important effect on confidence in the estimate of effect and may change the estimate.

Low-Quality Evidence: Evidence obtained from observational studies would typically be rated as low quality because of the risk for bias. Low-quality evidence means that further research is very likely to have an important effect on confidence in the estimate of effect and will probably change the estimate. However, the quality of evidence may be rated as moderate or even high, depending on circumstances under which evidence is obtained from observational studies. Factors that may contribute to upgrading the quality of evidence include a large magnitude of the observed effect, a dose-response association, or the presence of an observed effect when all plausible confounders would decrease the observed effect.

Insufficient Evidence to Determine Net Benefits or Risks: When the evidence is insufficient to determine for or against routinely providing a service, the recommendation was graded as "insufficient evidence to determine net benefits or risks." Evidence may be conflicting, of poor quality, or lacking, and hence the balance of benefits and harms cannot be determined. Any estimate of effect that is very uncertain as evidence is either unavailable or does not permit a conclusion.

The American College of Physicians' Guideline Grading System*

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*Adopted from the classification developed by the GRADE (Grading of Recommendations Assessment, Development, and Evaluation) workgroup.

Clinical Algorithm(s)

None provided

Scope
Disease/Condition(s)
Pressure ulcers

Guideline Category
Prevention
Risk Assessment

Clinical Specialty
Family Practice
Geriatrics
Internal Medicine
Nursing
Preventive Medicine

Intended Users
Advanced Practice Nurses
Dietitians
Hospitals
Nurses
Physical Therapists
Physician Assistants
Physicians

Guideline Objective(s)
To present the available evidence on the comparative effectiveness of various risk assessment instruments and benefits and harms of strategies to prevent pressure ulcers

Target Population
All adults at risk for pressure ulcers

Interventions and Practices Considered
1. Risk assessment to identify patients who may develop pressure ulcers
2. Advanced static mattresses or advanced static overlays
3. Alternating-air mattresses or alternating-air overlays (not recommended)

Major Outcomes Considered
- Pressure ulcer incidence and severity
- Resource use (including duration of hospital stay or cost)
- Diagnostic accuracy (sensitivity, specificity, and positive and negative likelihood ratios)
- Measures of risk (hazard ratios, odds ratios, and relative risks)
- Discrimination (area under the receiver-operating characteristic curve)
- Harms (dermatologic reactions, discomfort, and infection)

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Note from the National Guideline Clearinghouse (NGC): A systematic evidence review was prepared by the Oregon Evidence-based Practice Center (EPC) (see the "Availability of Companion Documents" field).

The investigators searched MEDLINE (1946 through February 2014), CINAHL (1998 through February 2014), the Cochrane Library, clinical trials registries, and reference lists to identify trials published in English. The outcomes evaluated for this guideline include pressure ulcer incidence and severity; resource use (including duration of hospital stay or cost); diagnostic accuracy sensitivity, specificity, and positive and negative likelihood ratios); measures of risk (hazard ratios, odds ratios, and relative risks); discrimination (area under the receiver-operating characteristic curve); and harms, such as dermatologic reactions, discomfort, and infection.

The investigators also supplemented the Agency for Healthcare Research and Quality (AHRQ) evidence review with another systematic evidence review of multicomponent strategies for preventing pressure ulcers that examined the importance of contextual aspects of programs that aim to reduce facility-acquired pressure ulcers. This review included implementation studies (from 2000 to September 2012) of multicomponent initiatives to prevent pressure ulcers in adults in U.S. acute and long-term care settings. Studies were limited to those that reported pressure ulcer rates at least 6 months after implementation of the intervention.

Further details about the methods and inclusion and exclusion criteria applied in the evidence review are available in the full AHRQ report and the Supplement (see the "Availability of Companion Documents" field).

Number of Source Documents

Sixty-seven studies were included in the systematic review:

- Effectiveness of risk assessment instruments in reducing pressure ulcer incidence: 3
- Effectiveness of preventive interventions: 62 (63 publications)*
- Harms of preventive interventions: 16*

*Some studies are included for >1 key question.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence
Grading of Quality of Evidence

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Methods Used to Analyze the Evidence

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Note from the National Guideline Clearinghouse (NGC): A systematic evidence review was prepared by the Oregon Evidence-based Practice Center (EPC) (see the "Availability of Companion Documents" field).

Data Extraction

One investigator abstracted details about the study design, population, setting, interventions, analysis, follow-up, and results. A second investigator reviewed data for accuracy. Two investigators independently applied predefined criteria (16 to 18) to assess the quality of each study as good, fair, or poor. Discrepancies were resolved through consensus.

For studies of interventions, the investigators abstracted relative risks (RRs) and associated 95% confidence intervals (CIs) or calculated them on the basis of the pressure ulcer incidence in each intervention group.

Data Synthesis and Analysis

The investigators did not conduct meta-analysis because of methodological limitations in the studies and clinical heterogeneity. They assessed the overall strength of each body of evidence as high, moderate, low, or insufficient in accordance with the Agency for Healthcare Research and Quality (AHRQ) Methods Guide for Effectiveness and Comparative Effectiveness Reviews, on the basis of the quality of studies, consistency among studies, precision of estimates, and directness of evidence.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations
Note from the National Guideline Clearinghouse (NGC): A systematic evidence review was prepared by the Oregon Evidence-based Practice Center (EPC) (see the "Availability of Companion Documents" field).

This guideline is based on a systematic evidence review, an update of the literature (see the Supplement), and an evidence report sponsored by the Agency for Healthcare Research and Quality (AHRQ) (see the "Availability of Companion Documents" field) that addressed the following key questions:

1. Is the use of risk assessment tools effective in reducing the incidence or severity of pressure ulcers, and how does effectiveness vary according to setting and patient characteristics?
2. How do various risk assessment tools compare with one another in their ability to predict the incidence of pressure ulcers?
3. In patients at increased risk for pressure ulcers, what is the effectiveness and comparative effectiveness of preventive interventions in reducing the incidence or severity of pressure ulcers, and how does effectiveness vary according to assessed risk level, setting, or patient characteristics?
4. What are the harms of interventions for preventing pressure ulcers? Do harms differ according to the type of intervention, setting, or patient characteristics?

This guideline rates the evidence and recommendations by using the American College of Physicians' (ACP's) guideline grading system (see the "Rating Scheme for the Strength of the Evidence" and "Rating Scheme for the Strength of the Recommendations" fields). Details of the guideline development process can be found in the ACP methods paper (see the "Availability of Companion Documents" field).

Rating Scheme for the Strength of the Recommendations

The American College of Physicians' Guideline Grading System*

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Cost Analysis

The guideline developers reviewed published cost analyses.

Method of Guideline Validation

Internal Peer Review

Description of Method of Guideline Validation

This guideline was approved by the American College of Physicians (ACP) Board of Regents on July 26, 2014.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations
Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Moderate-quality evidence from a review of 26 implementation studies showed that multicomponent interventions can improve skin care and reduce pressure ulcer rates in both acute and long-term care settings. The review found that key components of successful interventions include simplification and standardization of pressure ulcer–specific interventions and documentation, involvement of multidisciplinary teams and leadership (including ostomy, continence, and other nurses and personnel), designated skin champions who educate staff about skin care and ulcer prevention, ongoing staff education (including team meetings and motivational campaigns), and sustained audit and feedback (including weekly prevalence reports, formal and informal feedback, and all-facility meetings). Successful interventions also incorporated evidence-based guidelines into their practices.

Potential Harms

- Although details on specific harms related to individual interventions were sparse, no serious treatment-related harms were reported. See the section "Harms of Interventions to Prevent Pressure Ulcers" in the original guideline document for further information.
- The systematic review found no harms reported for the multicomponent strategies that were used to prevent pressure ulcers.

Qualifying Statements

Qualifying Statements

- Clinical practice guidelines are "guides" only and may not apply to all patients and all clinical situations. Thus, they are not intended to override clinicians' judgment. All American College of Physicians (ACP) clinical practice guidelines are considered automatically withdrawn or invalid 5 years after publication or once an update has been issued.
- The authors of this article are responsible for its contents, including any clinical or treatment recommendations.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Mobile Device Resources

Patient Resources

For information about availability, see the Availability of Companion Documents and Patient Resources fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories
Identifying Information and Availability

**Bibliographic Source(s)**


**Adaptation**

Not applicable: The guideline was not adapted from another source.

**Date Released**

2015 Mar 3

**Guideline Developer(s)**

American College of Physicians - Medical Specialty Society

**Source(s) of Funding**

Financial support for the development of this guideline comes exclusively from the American College of Physicians (ACP) operating budget.

**Guideline Committee**

Clinical Guidelines Committee of the American College of Physicians

**Composition of Group That Authored the Guideline**

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**Financial Disclosures/Conflicts of Interest**
Authors followed the policy regarding conflicts of interest described at [www.annals.org/article.aspx?articleid=745942](http://www.annals.org/article.aspx?articleid=745942). Disclosures can be viewed at [www.acponline.org/authors/icmje/ConflictOfInterestForms.do?msNum=M14-1567](http://www.acponline.org/authors/icmje/ConflictOfInterestForms.do?msNum=M14-1567). A record of conflicts of interest is kept for each Clinical Guidelines Committee meeting and conference call and can be viewed at [www.acponline.org/clinical_information/guidelines/guidelines/conflicts_cgc.htm](http://www.acponline.org/clinical_information/guidelines/guidelines/conflicts_cgc.htm).

**Guideline Status**

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This guideline meets NGC's 2013 (revised) inclusion criteria.

**Guideline Availability**

Available from the [Annals of Internal Medicine Web site](http://www.annals.org/).

Print copies: Available from the American College of Physicians (ACP), 190 N. Independence Mall West, Philadelphia PA 19106-1572.

**Availability of Companion Documents**

The following are available:


Print copies: Available from the American College of Physicians (ACP), 190 N. Independence Mall West, Philadelphia PA 19106-1572.

A collection of Recommendation Summaries for all current American College of Physicians Clinical Guidelines is now available for mobile devices from the [ACP Web site](http://www.acp.org/).

**Patient Resources**

The following is available:


Print copies: Available from the American College of Physicians (ACP), 190 N. Independence Mall West, Philadelphia PA 19106-1572.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.