Risk Assessment and Clinical Decision Making

What We Know

› Risk assessment is the process of identifying and analyzing the risks associated with a particular treatment prior to making a decision about the treatment plan to adopt. It is an important component of clinical decision making. Performing a risk-benefit analysis to evaluate the possible treatment plan, clinical intervention, or medical product is a complex process focused on promoting optimal clinical patient outcomes\(^1\)
  - The risk-benefit analysis must be communicated clearly so that the best clinical decision can be made. Patients must be \(^1\)
    - The risk estimation (i.e., the likelihood of a poor outcome) should be communicated to the patient using natural frequencies rather than using complex statistical terms that the patient might not understand. In addition, care must be taken to make sure risk estimation is not communicated as statistical certainty\(^1\)
  - Risk assessment can focus the outcome of greatest interest to the patient, clinician, or researcher\(^1\)
    - Surgical risk assessment is typically based on patient outcomes from the surgery\(^1\)
› Risk scoring systems can be used to provide a statistics-derived number (or score) to represent the risk associated with a procedure\(^1,2\)
  - As risk assessment becomes increasingly based on statistical analyses, complex risk prediction models are replacing risk assessment scales and scores\(^3\)
  - Risk assessment tools/scoring systems have a variety of drawbacks, including\(^2\)
    - inconsistent performance with differing population groups
    - the inability to incorporate data from differing risk assessment tools
    - the inability to add additional risk factors to the risk assessment tool in use
    - difficulty reconciling missing risk factors
    - the inability to ensure that the results will be interpreted correctly in the clinical setting
  - Researchers in Portugal evaluated two methodologies for assessing cardiovascular disease (CVD) risk; these methodologies were developed to reduce the limitations of current CVD risk assessment tools. One methodology involved combining individual CVD risk assessment tools into a common framework, and the other methodology involved tailoring CVD risk assessment tools for use with specific populations (i.e., the patient is placed in a cluster with other similar patients prior to applications of a CVD risk assessment tool). The researchers compared with results of these methodologies with those obtained using validated research tools, and determined that each method was a more effective method for performing a CVD risk assessment. The combination method was also effective in alleviating the drawbacks associated with use of a risk assessment tool\(^7\)
  - A net clinical benefit (NCB) score (i.e., a positive or negative value based on an objective evaluation of two treatment options) can be calculated to sway clinical decision making\(^8\)
  - Multicriteria decision analysis (MCDA) is a decision making methodology in which multiple treatment options can be compared using identical criteria. Relative weights are assigned to each criterion, which allows objective comparison between treatment
options. MCDA optimizes clinical decision making by quantifying risk-benefit analysis (4)

- The use of computerized clinical decision support systems can aid the clinician in conducting a risk-benefit analysis regarding different treatment options and decrease the length of time required by clinicians to perform the analysis (6)

Risk assessment is an important component of clinical decision making in all clinical areas, as well as in drug and medical device development and clinical trials (3)

- An estimation of the risk of a procedure for a patient is performed prior to any surgical procedure. Individualized risk estimation guides clinical decision making for or against a surgical intervention; if the risk of a procedure is determined to be too high, the patient will be guided toward other treatment options (1)

- Risk stratification (i.e., classifying patients into categories of risk for acquiring health problems, and then using each patient's risk status as a preventive or predictive measure to drive individualized patient care) is perceived by primary care physicians to be important in clinical decision making for colorectal cancer screening. However, in a small mixed-method study, researchers found that primary care providers tended to consider few risk factors beyond patient age for average-risk patients (10)

- Researchers evaluated the decision making of persons with HIV infection seeking a cure who chose to participate in an early-phase clinical trial that would require them to stop standard antiretroviral therapy. The study participants conducted individual risk-benefit analyses before and after participating in the clinical trial, and reported receiving direct benefits, aspirational benefits (i.e., benefits that extend beyond themselves), and inclusion benefits (i.e., benefits received due to being part of a group). Participants wanted to benefit society and themselves by advancing science and finding a cure for HIV infection. The benefits that study participants report receiving may not be the same as those the researchers anticipate; the risk-benefit analyses are viewed differently by study participants and researchers (2)

- Patients with atrial fibrillation (AF) are typically administered oral anticoagulants (OACs) to prevent ischemic stroke. When making the clinical decision to prescribe the OAC, the benefit of the OAC must be weighed against the risk of OAC-associated hemorrhage, particularly intracranial hemorrhage. In a review of research studies, researchers concluded that for many studies there was neutral or positive NCB score with regard to OAC administration, indicating that OAC is generally recommended for patients with AF. However, patients sometimes make the choice to avoid OAC use due to a fear of hemorrhage (8)

- Researchers developed and used a MCDA tool to determine the optimal doses of solifenacin and mirabegron to be administered when treating patients with overactive bladder (4)

- The American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) developed an online surgical risk calculator to aid surgeons in conducting a risk-benefit analysis prior to deciding to perform a surgical procedure. The calculator promotes objective risk-benefit analysis and decision making, and allows objective discussions between patients and surgeons. However, researchers evaluating the calculator in a national sample of surgeons concluded that use of the calculator did not reduce the likelihood of the surgeon recommending surgery (2)

- Researchers at the Mayo Clinic conducted a study to compare different clinical decision support systems with regard to the amount of clinician time saved when conducting a risk-benefit analysis about lipid, heart failure, and AF management. The amount of time saved varied according to the decision support system used. The results of the study can be used to improve decision support systems (6)

What We Can Do

- Become knowledgeable about risk assessment and clinical decision making so you can accurately assess your patient's personal characteristics and health education needs; share this information with your colleagues
- Implement appropriate risk assessment tools for clinical decision making
- Collaborate with colleagues and policy makers to
  - discuss risk assessment to assist in clinical decision making for patients with complex health needs
  - provide adequate training to your nursing staff in risk assessment and clinical decision making
  - manage human, medical complexity, and system failure risk factors
- Provide appropriate education to your patients regarding associated risk with therapeutic interventions based on their preference for treatment
- Understand the limitations of risk assessment tools in your facility
Support future research that develops tools to assist healthcare providers in explaining clinical decisions and the effects of treatments to patients.
### Coding Matrix

References are rated using the following codes, listed in order of strength:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>M</td>
<td>Published meta-analysis</td>
</tr>
<tr>
<td>SR</td>
<td>Published systematic or integrative literature review</td>
</tr>
<tr>
<td>RCT</td>
<td>Published research (randomized controlled trial)</td>
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<tr>
<td>R</td>
<td>Published research (not randomized controlled trial)</td>
</tr>
<tr>
<td>C</td>
<td>Case histories, case studies</td>
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<tr>
<td>G</td>
<td>Published guidelines</td>
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<tr>
<td>RV</td>
<td>Published review of the literature</td>
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<tr>
<td>RU</td>
<td>Published research utilization report</td>
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<tr>
<td>GI</td>
<td>Published quality improvement report</td>
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<td>L</td>
<td>Legislation</td>
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<tr>
<td>PGR</td>
<td>Published government report</td>
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<tr>
<td>PFR</td>
<td>Published funded report</td>
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<tr>
<td>PP</td>
<td>Policies, procedures, protocols</td>
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<tr>
<td>X</td>
<td>Practice exemplars, stories, opinions</td>
</tr>
<tr>
<td>GI</td>
<td>General or background information/texts/reports</td>
</tr>
<tr>
<td>U</td>
<td>Unpublished research, reviews, poster presentations or other such materials</td>
</tr>
<tr>
<td>CP</td>
<td>Conference proceedings, abstracts, presentation</td>
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### References