Management Options: Drug Therapy Requiring Intensive Monitoring for Toxicity

The Table of Risk lists drug therapy requiring intensive monitoring for toxicity as a high risk management option.

For drugs with a well-defined clinical response and a high therapeutic index (i.e., low toxicity), intensive therapeutic drug monitoring is not necessary. For acute or short-term drug therapy there is no advantage to monitoring drug levels. For treatment of chronic disorders, such as antihypertensive therapy, if the desired response can be readily assessed by a noninvasive technique, such as blood pressure monitoring, serial drug level monitoring is not medically necessary.

Administration of cytotoxic chemotherapy is always considered high risk under management options when monitoring of blood cell counts is used as a surrogate for toxicity.

Drugs that have a narrow therapeutic window and a low therapeutic index may exhibit toxicity at concentrations close to the upper limit of the therapeutic range and may require intensive clinical monitoring. The table below lists examples of drugs that may need to have drug levels monitored for toxicity. This is not an all exclusive list. On medical review, to consider therapy with one of these drugs as a high risk management option, we would expect to see documentation in the medical record of drug levels obtained at appropriate intervals.

<table>
<thead>
<tr>
<th>Drug Category</th>
<th>Drugs in that Category</th>
<th>Treatment Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac drugs</td>
<td><strong>Digoxin</strong>, digitoxin, quinidine, procaainamide, amiodarone</td>
<td><strong>Congestive heart failure</strong>, angina, arrhythmias</td>
</tr>
<tr>
<td>Antibiotics</td>
<td>Aminoglycosides (gentamicin, tobramycin, amikacin) <strong>Vancomycin</strong>, Chloramphenicol</td>
<td>Infections with bacteria that are resistant to less toxic antibiotics</td>
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<tr>
<td>Antiepileptics</td>
<td>Phenobarbital, <strong>phenytoin</strong>, valproic acid, carbamazepine, ethosuximide, sometimes gabapentin, lamotrigine</td>
<td>Epilepsy, prevention of seizures, sometimes to stabilize moods</td>
</tr>
<tr>
<td>Bronchodilators</td>
<td>Theophylline, caffeine</td>
<td><strong>Asthma</strong>, Chronic obstructive pulmonary disorder (COPD), neonatal apnea</td>
</tr>
<tr>
<td>Immunosuppressants</td>
<td><strong>Cyclosporine</strong>, tacrolimus, sirolimus, mycophenolate mofetil, azathioprine</td>
<td>Prevent rejection of transplanted organs, autoimmune disorders</td>
</tr>
<tr>
<td>Anti-cancer drugs</td>
<td>All cytotoxic agents</td>
<td>Multiple malignancies</td>
</tr>
<tr>
<td>Psychiatric drugs</td>
<td><strong>Lithium</strong>, valproic acid, some antidepressants (imipramine, amitriptyline, nortriptyline, doxepin, desipramine)</td>
<td>Bipolar disorder (manic depression), depression</td>
</tr>
<tr>
<td>Protease inhibitors</td>
<td>Indinavir, ritonavir, lopinavir, saquinavir, atazanavir, nelfinavir</td>
<td>HIV/AIDS</td>
</tr>
</tbody>
</table>

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