Decision support tables for psychotropic medicines

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INTRODUCTION

Recent epidemiological surveys clearly indicate the increased accident rates for patients using certain classes of psychoactive medicines who drive their motor vehicle. It is very unclear how physicians who prescribe and pharmacist who dispense psychotropic medicines inform their patients about the effects of medication on their driving ability.

But physicians are responsible for informing their patients whether a danger to driving performance exists after using the medicine. Pharmacists are responsible for confirming that patients are informed and understand the necessary information before dispensing. Most Western laws hold the patient primarily responsible for any accident under the influence of prescribed medication. The present system for informing patients by package inserts and labels does not seem to influence behaviour of patients who drive.

Health care providers and patients should make use of knowledge from epidemiological and experimental research. Unfortunately, very little has been done to transmit this knowledge to them in practical guidelines for prescribing, dispensing and applying the medication.

This paper will summarize the knowledge on medicine use and increased risk of causing accidents in combination with recommendations addressed to physicians and pharmacists for minimizing that risk. For different widely prescribed groups of drugs decision support tables will be presented in order to improve prescribing and dispensing practices.

DECISION SUPPORT TABLES

The concept of decision tables was first introduced in clinical practice by Hansten [1]. He developed decision tables to be used in determining whether or not a patient is potentially at risk of developing the adverse consequences of a drug-drug interaction. The decision table is similar to an algorithm or flow chart, but it is more compact and depicts more clearly the relationship between the various conditions which pertain to the possible actions. In other words: guidance is provided in taking the two most critical steps: (1) assessment of risk by defining the relevant conditions and
management of the problem by specifying the consequences. Computerized applications of the decision table technique revealed that physicians are willing to use the computerized programmes for educational purposes, but failed to use them in clinical practice. Furthermore they felt that an overview of all possible consequences was missing in defining the clinical problems [2]. These findings resulted in an adapted version of the decision tables: decision support windows, simply summarizing the risk factors and management options, indicated by medical conditions, which has been used successfully in computerized medication surveillance systems in the Netherlands by community pharmacists [3].

For medicinal drugs and driving safety, a decision table for improving prescribing and dispensing practices was introduced by De Gier in 1987 [4]. This decision table was based on general conditions not specifically dedicated to one medicinal drug or drug class. Questions like 'Is there a suitable alternative to use?' or 'Is administration first use or continued use (increased or decreased dosage):NO' could be answered 'yes' or 'no'. Consequences like 'Use an alternative' if 'yes' was given for suitable alternatives, or 'Forbid the patient to drive during the first week' if no alternatives existed and first time use was indicated, resulted from using the decision table. No drug specific information was added at that time to facilitate the selection of (relatively) 'safe drugs' within a given class, because reliable data were lacking. The practical application of the 'general decision table for drugs and driving' has never been investigated.

Based on experimental studies, e.g. conducted in the Netherlands since 1982, a new approach for discriminating between detrimental effects of different psychotropic medicines has been introduced. By comparing these drugs in different doses using a standardized, actual driving test, large differences on driving performance of various drugs within the same therapeutic class were shown. Data collected in an 'alcohol calibration study' have allowed us to interpret changes in road-tracking performance produced by any drug as equivalent to an influence produced by a particular blood alcohol concentration (BAC). Changes greater than an influence associated with BAC of 0.1% are taken to indicate severe impairment; those in the range 0.05 - 0.1% moderate impairment; and less, little or no impairment. At present physicians should consider alternatives in the light of the results of experimental research, where drugs could be indicated with little or no impairment when taken in normal therapeutic doses for one to several weeks [5]. These alternatives were found among antidepressants, hypnotics, tranquilizers and antihistamines.

By combining the decision support techniques used in pharmaceutical practice with the present knowledge pertaining to reasonable safe prescriptions for patients who drive, a new set of decision support tables could be constructed. Focus should be given to those drugs causing little or no impairment, while general precautions, instructions and warnings for physicians and patients are needed to implement practical use of the constructed tools. The basic outline of the decision support tables is as follows: for each drug class alternative prescriptions of drugs with little or no
impaired are given by drug name and doses in the upper section. The section to follow next is dedicated to risk factors pertaining to safe driving and therapeutic management options to be considered by the prescribing physician or clinical pharmacist. The information given in the last section allows these professionals to adequately inform the patient with instructions for safe use while driving.

**DRUG SPECIFIC DECISION SUPPORT TABLES**

Decision support tables are given for safe prescribing of hypnotics, tranquillizers, antidepressants and antihistamines. Many drugs within these therapeutic classes are known to be moderately or severely impairing and will not be discussed. The main objective of using these decision support tables is to provide guidance to the physician who starts to prescribe drugs belonging to these classes to a patient who drives.

**DISCUSSION**

For every physician who prescribes a drug to a patient who will drive under medication, the prescription should be written on the basis of safety. Since newer drugs are involved as alternatives for older moderately or severely impairing ones, higher cost could be a reason for not selecting the relatively safer alternatives mentioned above. However, a physician can minimize the patient's risk of accident involvement by choosing a drug and dose least likely to cause impairment of driving performance. In addition, patient information should always be given and monitoring patient's driving experience with the drug should always occur in patient consultations. Care with pharmaceuticals is more than treating disorders; it is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life.
Table 1

**Drug class:** Hypnotics

**Drugs with little or no impairment:**

(> 10 h post dosing; taken at night)

- temazepam 10 mg
- lormetazepam 1 mg
- zolpidem 10 mg

**Risk factors:**

1. Combination with other psychoactive drugs
2. Liver and/or renal dysfunction
   (elderly patients: half the daily dose!)

**Prescriber information:**

1. Avoid prescribing for longer than 2-4 weeks

**Patient information:**

- general:
  1. Avoid alcohol while taking this drug
  2. Recognize signs of impaired driving performance:
     - blurred vision
     - difficulty in concentrating or staying awake
     - unusual surprise by ordinary traffic events
     - not being able to remember exactly how you came at destination
     - difficulty in holding steady course within traffic lane

Stop for rest if any occur

- drug specific:
  1. Avoid taking longer than 2-4 weeks and more than one at night

**References:** [5-9]
Table 2

**Drug class:** Tranquillizers

**Drugs with little or no impairment:**
buspirone 10 mg b.d.s.

**Risk factors:**
No specific risk factors known.

**Prescriber information:**
1. Avoid combination with selective serotonine reuptake inhibitors (reduced therapeutic effect)
2. Consider combination with oxazepam 10 mg t.d.s. if therapeutic response seems to be inadequate (in that case forbid driving during the first week).

**Patient information:**
- general:
1. Avoid alcohol while taking this drug
2. Recognize signs of impaired driving performance:
   - blurred vision
   - difficulty in concentrating or staying awake
   - unusual surprise by ordinary traffic events
   - not being able to remember exactly how you came at destination
   - difficulty in holding steady course within traffic lane
Stop for rest if any occur
- drug specific:
No drug specific precautions.

**References:** [5, 6, 10]
Table 3

**Drug class:** Antidepressants

**Drugs with little or no impairment:**
- fluoxetine 20 mg OD
- moclobemide 200 mg b. d. s.
- paroxetine 20 mg OD

**Risk factors:**
No specific risk factors known.

**Prescriber information:**
1. Avoid combined use of *fluoxetine* and nonselective MAOIs, tryptophan, selegiline, astemizole, terfenadine (adverse drug interactions!)
2. Avoid combined use of *moclobemide* and dextromethorphan, (tricyclic) antidepressants, (pseudo)ephedrine (adverse drug interactions!)
3. Avoid combined use of *paroxetine* and nonselective MAOIs, (dex)fenfluramine and selegiline (adverse drug interactions!).

**Patient information:**
- **general:**
  1. Avoid alcohol while taking this drug
  2. Recognize signs of impaired driving performance:
     - blurred vision
     - difficulty in concentrating or staying awake
     - unusual surprise by ordinary traffic events
     - not being able to remember exactly how you came at destination
     - difficulty in holding steady course within traffic lane
  Stop for rest if any occur
- **drug specific:**
No drug specific precautions.

**References:**[5, 6, 11-13]
Table 4

**Drug class:** Antihistamines

**Drugs with little or no impairment:**
- cetirizine 10 mg OD
- ebastine 20 mg OD
- loratidine 10 mg OD
- terfenadine 60 mg b.d.s. or 120 mg OD
- fexofenadine 60 mg b.d.s. or 120 mg OD

**Risk factors:**
- Liver and/or renal dysfunction (cetirizine: lower dose!)

**Prescriber information:**
1. Avoid combined use of terfenadine and enzymehibitors, e.g. erythromycin, ketoconazole, itraconazole, fluvoxamine, fluoxetine (adverse drug interactions!)

**Patient information:**
- general:
  1. Avoid alcohol while taking this drug
  2. Recognize signs of impaired driving performance:
     - blurred vision
     - difficulty in concentrating or staying awake
     - unusual surprise by ordinary traffic events
     - not being able to remember exactly how you came at destination
     - difficulty in holding steady course within traffic lane
  Stop for rest if any occur
- drug specific:
  No drug specific precautions.

**References:** [5, 6, 14, 15]
References


5. O’Hanlon JF. Ten ways for physicians to minimize the risk of patients causing traffic accidents while under the influence of prescribed psychoactive medication. Primary Care Psychiatry 1995;1:77-85.


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