APPENDIX A

MEDICATION-RELATED IMPAIRMENT[1]

I. INTRODUCTION

Medication-induced impairment can place a patrol officer and others at substantial risk of harm. Consequently, all candidates who report the use of medications on either a chronic or intermittent basis must be carefully evaluated.

Much has been written regarding the potential for various medications to adversely affect work performance (see series of articles in JOM 32(4):310-369,1990). Fortunately, many classes of these medications such as the phenothiazines, benzodiazepines, and the tricyclics are rarely used by patrol officer candidates. More commonly, a candidate will report seasonal use of over-the-counter antihistamines to control allergies, or intermittent use of mixtures containing barbiturates (such as Fiorinal) for headaches.

In this section, two examples -- OTC antihistamines and butalbital -- will be used to illustrate a generic approach to the evaluation of candidates who use medication.

II. GENERAL CONSIDERATIONS

The consideration of a candidate who uses medication can follow a stepwise approach:

1) **What are the potential side-effects which are relevant to patrol officer duties?**

   There are numerous sources of information that can be used to answer this question. The best textbooks include The Pharmacological Basis of Therapeutics by Goodman & Gilman, and the AHFS Drug Information (yearly update) by the American Society of Hospital Pharmacists, Inc.

   OTC Antihistamines: The primary side-effect is sedation. Dizziness, lassitude, diminished coordination, vertigo, blurred vision, and muscular weakness may also occur.

   Butalbital: Adverse side-effects include drowsiness, lethargy, vertigo, CNS depression, and mental depression.

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2) **Does the candidate in question experience these side-effects to a significant degree?**

There are several ways to address this question:

a. Ask the candidate directly. This approach has the highest specificity, but the lowest sensitivity. The latter can be limited not only by the candidate's honesty, but also by a genuine lack of self-awareness that the individual may experience significant impairment. This phenomenon is commonly observed in drug impairment research (Vollmer, et al., 1983).

OTC Antihistamines: Ridel, et al. (1987) found that subjects were unaware of their own impairment (equivalent to a blood alcohol concentration of 0.05%) while driving an instrumented automobile. Seidel, et al. (1987) found that sedation and slower reaction times caused by hydroxyzine may occur without the subjects' awareness.

Butalbital: Users may be entirely unaware of impairment associated with the residual or "hangover" effect.

b. Assume that most candidates will be impaired. This approach has the highest sensitivity, but the lowest specificity. Whether a particular candidate will experience impairment depends on numerous factors, such the nature of the drug, the dose, drug interactions, metabolism and excretion by the individual, and whether the medication is taken chronically vs. intermittently. These considerations make it difficult, legally, to categorically restrict candidates. However, this approach could probably be used to justify a temporary deferral until the candidate obtains a non-impairing therapeutic alternative (see #3).

OTC Antihistamines: Across studies, 10-20% of individuals have been found to experience sedation (Mygind & Weeke, 1983). Frequently, the side effect is dose-related (Simons & Simons, 1988). Tolerance develops with steady dosing; however, if the interval between/doses is sufficient for blood levels to drop, sensitivity will reappear with the next dose.

Butalbital: Rather than a side-effect, CNS depression is an intended main effect, presumably affecting the majority of persons taking the medication. Tolerance to chronic dosing is expected.

c. Have the candidate undergo functional testing while under the influence of the medication. For example, neurobehavioral testing can assess the impact of a particular drug in a particular candidate, while various pen & paper and computerized test batteries can assess attention, visual-spatial and visual-motor abilities, and memory. These tests are performed routinely in specialized neuropsychological testing laboratories at most major university medical centers. The candidate's results can be compared to age-adjusted norms.

Although this approach is attractive, the cost of testing can be quite high (>$1000). In addition, test sensitivity may be limited by numerous factors. For example, test batteries may not be properly selected to detect the specific effects of a particular drug (e.g., a laboratory's emphasis may be on the assessment of permanent neurological or organic deficits, as opposed to changes that result from acute and/or chronic dosing with drugs). In addition, at various times a given drug dose may produce different blood levels and different behavioral effects in the same individual. Therefore, the inability to demonstrate neuropsychological effects on a given day does not guarantee that effects will not occur at other times.

OTC Antihistamines: Examining for the effects of antihistamines, which impair primarily by sedating, requires tests which will permit mild-to-moderate drowsiness. The drug's effects cannot be measured with very demanding or stimulating tests which offset the drowsiness.

Butalbital: Examining for the effects of a CNS depressant, such as butalbital, requires complex tasks which overload the central processing capacity and permit measurement of slowing.

3) **Is there an effective alternative drug which would not impair performance?**

Recommending that candidates see their treating physician to obtain an alternative drug with fewer side-effects is often the most reliable and least expensive method of reducing medication-related impairment. Fortunately, there are non-impairing alternatives for a variety of medications (e.g., Buspar instead of Valium, Prozac instead of Elavil).

OTC Antihistamines: The second generation H1-blockers, such as terfenadine and astemizole, have not been associated with neurobehavioral impairment. However, these are not available on an OTC basis.

Butalbital: Alternative analgesics, such as NSAIDS, can be used.

Assurance that the candidate will continue to use the alternative drug after hire can be a concern. However, this could be addressed by means of a pre-placement contract with the candidate. Alternatively, for hiring agencies with a random drug testing program in place, a recommendation could be made to include certain therapeutic drugs in the screening panel.

Following this stepwise approach should provide the evaluating physician with enough information to make a determination as to whether a given candidate warrants a restriction or deferral due to potential medication-related impairment.

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