

Alternative Routes of Administration of Psychotropic Medications

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Abstract

In the treatment of psychiatric patients, clinicians may encounter patients who are unable or unwilling to take psychotropic medications orally and alternative treatments including psychological intervention are either impractical or contraindicated. This considerably limits the effectiveness of treatment and results in higher rates of relapse, rehospitalization, suicide, early mortality and disability in patients of mental illness. This is a serious concern for professionals, caregivers and policy makers. The pharmacological, psychological, psychosocial models and interventions have been there since last few decades to improve the treatment adherence in patients of severe mental illness. These have not made major changes in treatment adherence and outcome of severe mental illness. Hence new alternative routes can be developed which could soon revolutionize the treatment in psychiatry.

Keywords: Alternative routes; Psychotropic medications; Treatment adherence

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Description

Although oral and injectable routes of drug delivery are relatively well tolerated and result in therapeutic management, they are not practical or feasible in certain patient populations. In certain cases, such as patients who are a danger to themselves or others because of delirium, psychosis, suicidal or homicidal intent, or combative behavior, it is imperative that consistent treatment be given with psychotropic medication. Successful treatment in some cases may be complicated by poor medication adherence in patients who are unable to swallow, are refusing medications, or are unable to take medications orally (e.g., NPO). Elderly patients with dementia may present with any combination of these factors. Further complications can include memory problems, confusion, aversion to the taste of a medicine, apathy, oppositional behavior, suspiciousness secondary to paranoia. Furthermore, intravenous or intramuscular administration of medications is not available for all medications and may not be the optimal choice in certain situations. Consequently, the development and use of alternative routes of administration for therapeutic drug delivery of psychotropic agents is highly desirable. This article will discuss pharmacokinetic and physicochemical properties required for following alternative routes of administration in addition to recent developments which has happened in the field of alternative routes of administration for psychotropic medications.

Drug administration *via* the nasal cavity results in rapid drug absorption and therapeutic effects. Intranasal administration avoids first-pass metabolism however drug absorption *via* this route can be limited by low lipophilicity, large molecular size, enzymatic degradation within the nasal cavity and rapid mucociliary clearance from the nasal passages.

Buccally administered drugs are absorbed through the lining of the cheek after which it gives rise to local or systemic effects. Due to reduced first-pass metabolism the bioavailability of some medications may be increased when administered *via* the oral cavity. Medications with a wide therapeutic range and long half-life are best suited for buccal administration, and termination or a decrease in pharmacological effect can be accomplished through removal of the medication from this area.

Conclusion

Currently, there are only limited options for antidepressant or antipsychotic treatment *via* routes other than oral or injectable delivery. Availability of nontraditional, alternate routes of administration of psychotropic drugs could greatly enhance the patient care for those suffering from mental illness. Studies examining the delivery of these medications through inhaled, intranasal, buccal, sublingual, transdermal, and rectal routes have

shown promising results and suggest potential for future drug development. The recent approval of Asenapine transdermal patch by FDA is a significant development in this field and we can hope for more such development in the near future. The development of alternative formulations of psychotropic medications would allow clinicians to treat those suffering from

psychiatric diseases who cannot take oral or injectable forms of medications. Additionally, if such alternatives were available, it would improve compliance and the discontinuation of necessary drug therapy, which often results in relapse of psychiatric disorders, could be largely avoided.