

**A
Model
Psychopharmacology Curriculum
For
Psychiatric Residents**

By

**An Ad Hoc Committee
of the
American College of
Neuropsychopharmacology**

**Ira D. Glick, M.D., Co-Chair
David S. Janowsky, M.D., Co-Chair
Carl Salzman, M.D.
Richard I. Shader, M.D.**

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I. Objective

This curriculum is designed to provide a basis for planning and teaching basic and clinical psychopharmacology in a psychiatric residency.

It originates, in part, from the assumption that the teaching of psychopharmacology is underrepresented in most residency curricula in the United States in time allotted and/or in effectiveness of teaching. In addition, there is a need to assure adequate, science-based knowledge and skill among psychiatric residents and that resources for designing such educational programs are not uniformly distributed among residency programs. This impression originates from requests by the American Psychiatric Association (APA) and the American Association of Directors of Residency Training (AADRT), from data developed by the NIMH and from teachers of psychopharmacology, who have asked for a structured curriculum and teaching aids. To meet these needs, we have formulated this teaching package.

II. Overview

This teaching package is based on the notion that there is psychopharmacologic "theory and practice" to be taught, but also underlying principles to be learned. It is assumed that psychiatric residents learn in different ways, at different speeds, and in very different settings. Furthermore, repetition of appropriate concepts and data at various steps in the residency education staircase is necessary for the integration and consolidation of this information base, and that case-based learning is essential. The involvement of senior supervisors, who can be models for the integration of psychopharmacology into the total treatment planning for care is equally important.

We believe that the terminal objectives of a clinical psychopharmacology program should be to impart the ability to:

- integrate psychodynamic-psychosocial and psychobiologic-psychopharmacologic aspects of a given patient's care
- use psychotropic drugs safely
- know when and when *not* to use psychotropic drugs
- understand the limitations of psychotropic usage and their dangers and pitfalls
- possess reasonable theoretical models to understand the biology underlying the use of psychotropic drugs

We have not included *enabling objectives* (i.e., what should be learned in each year), because they are too dependent on local residency program conditions such as whether residents start psychiatry on inpatient, outpatient, or emergency room settings, sequencing of other curricula, etc.

We have also not included material on the legal, regulatory and ethical aspects of psychopharmacological prescribing practices. For example, programs should include material on the rights of physicians in emergency clinical situations (suicide, assaultive) and the rights of the patients to refuse treatment.

III. What And How To Teach

Obviously, each program will need to develop its own style for teaching a psychopharmacology curriculum, based on its resources, expertise, and available clinical arenas. The following are suggestions for developing an optimal teaching curriculum and program. We have *not* delineated "priorities vs the ideal" in the MC. Therefore, although each program will have to decide that question, we would emphasize that traditionally didactic lectures and the Journal Club conference have been the "ineducable minimum" as opposed to the fullest program possible in the best of all worlds.

The question of which learning groups should be interdisciplinary must be considered, since many beginning residents are "ashamed" to reveal their rudimentary knowledge in psychopharmacology in front of, for example, ward nurses and other personnel. A survey of the content and formats of what we consider the "better" programs which include psychopharmacology teaching is included in Appendix A.

A. Didactic Program

1. A Psychopharmacology Lecture Series (to cover the basic and the sophisticated use of psychotropic drugs)

a. Development, Advantages/Disadvantages and Integration with Other Formats

We view the didactic curriculum as being taught at three different levels — a 'crash course' (taught in the PG I year or in the summer of the PG II year), a basic course, and an advanced course with components taught sequentially during the four years of training. In addition, formal didactic teaching of psychopharmacology may be provided within the larger context of the teaching of neurobiology and biological psychiatry.

We strongly believe that programs should include a series of introductory psychopharmacology lectures — i.e., the 'crash course' — for the beginning resident as part of the core curriculum. Careful attention must be paid to these lectures since they may form the basis for the developing psychiatrist's future clinical practice.

Although up-to-date scientific knowledge may be imparted to trainees during a series of lectures, it is important to emphasize that for resident training, didactics may not be as directly useful as the small group and individual supervision and case-conference methods of teaching. Nevertheless, formal didactic teaching often stimulates interest in psychopharmacology, and broadens intellectual and clinical perspectives in the treatment of psychiatric patients. It may be useful to allow a question and answer format during and/or after a specific didactic lecture to help consolidate learning.

A didactic lecture series is obviously a useful way of conveying information. Issues of lack of "absorption" and "retention" of lecture material suggest that, whenever possible, lectures be accompanied by relevant, clinically-oriented (or otherwise appropriate) journal article and textbook reading assignments. Time should be allotted in each lecture for resident and lecturer dialogue, either after each sub-topic or at the end of the lecture. In a one hour lecture, at least 15 minutes should be devoted to dialogue.

Because of ever-increasing demands on both trainee and faculty time, one program has begun to develop a videotape library of lectures in basic and clinical psychopharmacology. These tapes are available for residents who, because of clinical duties, must miss the scheduled times; other uses are possible. However, the passive experiences of listening and/or watching audio and video tapes is not optimal for learning. Interaction with experts and the opportunity to ask questions about exceptions to the rule are essential.

In the next two sections, we present a list of issues and comments (A.1.b) and topics (A.1.c) which may be helpful in developing a didactic lecture series. Suggested introductory themes are delineated. Both the "issues" and the "topics" also are appropriate for consideration in the more mentorship and supervisory forms of teaching psychopharmacology, such as in psychopharmacology case conferences or psychopharmacology rounds.

In addition to the utilization of the above mentioned outlines as guides to the content of didactic lectures, such outlines may be helpful in preparing a series of slides for utilization in didactic lectures. A sample slide set accompanies this material. Slide sets to accompany most lecture topics are available for a nominal charge from the ACNP by writing to:

ACNP
Box 1823-Station B
Vanderbilt University
Nashville, TN 37235

We have included a series of model lecture outlines, which were readily available to us (appendix B) and which may be useful in organizing a lecture series for residents. The lecture outlines included are intended to be representative and are not 'model' outlines in the sense of being considered without flaw. It is hoped that they will offer useful guidelines for the preparation of similar outlines in psychopharmacology programs. Contributors are Leo Hollister, M.D.; Sidney Zisook, M.D.; Lewis Judd, M.D.; J. Hampton Atkinson, M.D.; David Braff, M.D.; Marc Schuckit, M.D.; Gary Tollefson, M.D.; Sheldon Preskorn, M.D.; Carl Salzman, M.D.; James Kocsis, M.D.; Rachel Gittelman, Ph.D.; Richard Shader, M.D.; Charles Rich, M.D., David Janowsky, M.D., and Max Fink, M.D.

b. General Issues and Concepts

The following are a series of suggested general, issues and concepts which are worth covering in specific clinical psychopharmacology lectures about a given drug or class of drugs. The level of the course (i.e., "basic" or "advanced") should determine which of the following to include.

- Proposed mechanisms of action of drug
- Basic pharmacologic issues (pharmacokinetic issues, physiologic effects, etc.)
- Diagnostic issues (overlap between efficacies, delineation of syndromes, etc.)
- Efficacy of drugs in related or complementary classes versus each other and versus placebo
- Age-related issues (child, geriatric, etc.)
- Drug dosages; timing of dosages
- Specific indications (specific use of drugs; differential efficacies between drugs)
- Use of drugs in non-psychiatric settings
- Uses across diagnoses (specificity issues)
- General principles of drug use (models of administration, timing of dosages, use of blood levels, predictors of effect, etc.)
- Drug-drug interactions (psychotropic-psychotropic; medical-psychotropic; recreational-psychotropic)
- Drug-combination therapies
- Side effects (CNS, metabolic, cardiovascular, dermatologic, peripheral autonomic, EKG effects)
- The medical and laboratory workup needed to use a given drug
- Drug withdrawal effects
- Overdose signs, effects and treatment
- Addition-habituating-dependency potential
- Contraindications
- Uses of blood levels
- Issues of acute, continuation and maintenance phase psychopharmacology
- Strategies for the treatment resistant patient

c. Specific Topics

The following are a series of lecture topics which we feel are of importance in constructing a didactic psychopharmacology series. We recognize that the list is long and the topics may not seem to be of parallel importance, but we will leave the job of tailoring the topics to local program coordinators.

Topics 1-9 are most appropriate for the first year resident who needs to rapidly master the use of psychotropic agents. Such lectures may occur within the context of a 'crash course' offered in a resident's first year of psychiatry training. A crash course might cover issues of diagnosis (i.e., DSM III) and treatment with antipsychotics and antidepressants — emphasizing indications, contraindications, dose regimens including route of administration and side effects. It may be useful to repeat such lectures in greater depth in the second half of the PG II year, after the beginning resident has had a greater amount of integrated clinical experience. In general, these topics are presented in order of how they could be presented over the course of the residency.

- 1) *General Principles*
 - Dose response relationships
 - Blood levels
 - Evaluation of effects
 - Placebo effects
 - Pharmacokinetics
- 2) *Biologic Hypotheses (Genetic, Biochemical, Electrolyte, Circadian) Relating to the Etiology of the Following Diagnoses:*
 - Affective disorders
 - Schizophrenic disorders
 - Anxiety, phobic, and panic disorders
 - Attention deficit disorder
 - Childhood psychoses
 - Dementias
 - Other
- 3) *Antipsychotic Drugs*
 - Neuroleptic
 - Unconventional Antipsychotics
 - Antiparkinsonian agents used with Antipsychotics
- 4) *Antidepressants*
 - Tricyclic antidepressants
 - Monoamine oxidase inhibitors
 - Newer antidepressants
 - Psychostimulants
 - Lithium
 - Unconventional antidepressants
- 5) *Antimanic Agents and Mood Normalizers*
 - Lithium
 - Carbamazepine
 - Sodium Valproate
 - Antipsychotic drugs
 - Others
- 6) *Antianxiety Agents*
 - Sedative and hypnotic drugs
 - Benzodiazepines
 - Others (i.e., buspirone, tricyclics, MAOIs, hydroxyzine)
- 7) *Child Psychopharmacology*
 - General management considerations
 - Indications by diagnosis
 - Indications by presenting symptoms

- 8) *Liaison Consultation Psychopharmacology*
 - Use of psychotropic drugs in the medically ill
 - Medical drug-induced psychopathology
 - Drug-drug interactions
 - Drug side effects in the medically ill patient
- 9) *Geriatric Psychopharmacology*
 - Use of psychotropic drugs in the medically ill
 - Medical drug-induced psychopathology
 - Drug-drug interactions
 - Drug side effects in the medically ill patient
 - Differential pharmacology
- 10) *Treatment of Resistant Depression and Mania*
- 11) *Treatment of Resistant Schizophrenia*
- 12) *Treatment of Resistant Anxiety, Panic Disorder and Agoraphobia*
- 13) *Exotic Uses of Psychotropic Drugs*
- 14) *Drug Treatment of Sleep Disorders*
- 15) *Precursor Loading Therapies in Schizophrenia and Depression*
 - Choline
 - L-DOPA
 - Phenylalanine
 - Tryptophan
 - 5-Hydroxytryptophan
- 16) *Substance Abuse and Recreational Use of Drugs*
 - Opiates
 - Sedative hypnotics
 - Stimulants
 - Marijuana
- 17) *Alcohol*
 - Disease-concept
 - Alcohol misuse
 - Habituation
 - Tolerantion
 - Dependence
 - Withdrawal
 - Treatment
 - Etiology
- 18) *Drug Treatment of Personality Disorders*
 - Antisocial disorder
 - Obsessive-compulsive disorder
 - Depressive personality disorder
 - Borderline personality disorder

- Schizoid personality disorder
 - Other (i.e., the violent personality disorder)
- 19) *The Interface of Psychopharmacology with other modalities such as Psychotherapy, ECT, etc.*
 - 20) *Psychotropic Drug-Drug Interactions*
 - 21) *The "Socio-Psychology" of Psychopharmacology*
 - 22) *When to Stop, Withhold, or Not Start Drugs (issues of why to use drugs, why to change doses, why to continue medications)*
 - 23) *The Sociology of Medicine Giving (influence of social status, age and site of treatment on drug treatment)*
 - 24) *The Education of Patients (in drug effects, drug compliance, and drug side effects)*
 - 25) *Working with Patient Resistance to, or Overuse of, Drugs*
 - 26) *Roles, Settings and Sociology of Psychotropic Drug Use and Abuse*
 - 27) *ECT*
 - 28) *Research Approaches in Psychopharmacology (instruments, design, etc.)*

2. Development of a Literature Review Seminar (Journal Club) and an Outside Guest Lecturer Series

We also recommend a literature review seminar and guest lecturer series for all three years of residency training. It is recommended that the literature review seminar and the lecture series be integrated, so that the literature which is read is directly related to the lecture to be presented.

In the literature seminar or journal club, emphasis should be placed on specific teaching directed toward the critical reading of psychopharmacologic literature. Such a seminar should occur approximately once or twice monthly.

An important aspect of any journal club is the development of the critical ability to critique scientific articles. (See also the good investigative psychiatry curriculum in Section VII.) In one program, 'good' and 'bad' articles on psychopharmacology subjects are presented in a monthly journal club meeting. Residents critique the "good" and "bad" articles and then, in turn, are critiqued on their critique by a senior psychopharmacologist. In another program, the journal club and guest lecturer series are co-linked, so that residents are asked to read the papers of the invited lecturers, and after the lecturers, are encouraged to critique the papers, as well as offer questions and comments on the lecturer itself. In fact, residents are encouraged to ask 'controversial' questions and question assumptions underlying the presentation. Obviously, such a format should involve an orientation of the lecturer to look upon the exercise as a training attempt rather than as a hostile attack. Finally, a program should not forget to look within its own ranks for 'visiting lecture' psychopharmacologists and psychobiologists.

Some psychiatric educators believe that these components are probably not "core" elements of a psychopharmacologic curriculum. Furthermore, in many programs a free-standing psychopharmacology journal club will have difficulty in obtaining a positive reception either administratively or by residents. A guest lecture series usually requires extramural funding.

3. Development of a Formal Case Conference

This type of teaching, which should be offered in all three years of psychiatric residency training, is the hallmark of basic psychopharmacology teaching and is patterned on the traditional case conference. Patients are selected because of difficulties in their treatment, particularly teaching interests in their clinical presentations, or they illustrate a particular aspect of psychopharmacology. The patient is presented formally to the psychopharmacologist with an emphasis on past

psychopharmacologic or biologic treatment. The patient is interviewed and the case is discussed from at five points of view:

- a) Diagnosis and differential diagnosis
- b) Review of prior psychopharmacologic treatment
- c) Current reasoning for use of medications
- d) Selection of drug and dose and/or ECT
- e) Integration of the case from psychotherapeutic and psychopharmacologic perspectives

Within this case conference, basic psychopharmacology principles can be discussed as related to actual patient care, and specific psychopharmacology principles can be developed. Side effects of long-term treatment can also be discussed if there are follow-up discussions of patients who are presented; these follow-up conferences are often useful after a three-month hiatus.

4. Continuous Clinical Psychopharmacology Case Conference Focusing on the Integration of Psychotherapy and Psychopharmacology

Another didactic technique is the use of a continuous clinical psychopharmacology case conference. In this setting, which would occur approximately twice monthly, a given case which illustrates the need for psychopharmacologic interventions and for psychotherapy would be followed longitudinally. Alternatively, cases could be seen for only a few sessions. In this conference, videotapes or live interviews can be utilized to focus on the psychotherapy-psychopharmacology interface. For example, such a seminar might focus on psychotherapeutic methods for enhancing drug compliance, techniques for getting informed consent, techniques for exploring the impact of drugs on a patient, techniques for using the experience of drug taking in psychodynamic psychotherapy, and issues of how much of a therapeutic session should be focused on drug taking versus intrapsychic, interpersonal and family issues. Other topics could include: how to elicit material which will assist in the selection of particular medications in atypical cases; how to explain the reasons for pharmacotherapy to the patient; how to maximize the placebo response; psychotherapeutic techniques during the initial period of pharmacotherapy; and psychotherapeutic approaches during maintenance pharmacotherapy.

B. Development of Individual Or Small Group Supervision

1. Use of Small-Group, Clinical, Mentorship Teaching by Psychopharmacology Experts Using Selected Case Material

This form of teaching is modeled after individual or small group psychotherapy supervision. Since the practice of psychopharmacology is learned by treating patients, dedicated and inspired supervision may be more educational than all other forms of teaching.

A focus of discussion should be on the clearcut effect and role of setting on the trainee. For example, a resident whose first exposure to psychiatry is on a busy inpatient unit may naturally develop a 'give drugs first' attitude. Similarly, an antidrug attitude may be inherent in the outpatient setting. Undercutting the tendency to treat patients entirely by diagnosis, socioeconomic status, and location of treatment should be a focus of supervision.

In psychopharmacology supervision with beginning psychiatric trainees, the focus most commonly is on inpatient treatment. Residents should meet with psychopharmacologists (meaning a Senior Psychopharmacologist or a Clinical Psychiatrist with some special expertise in psychopharmacology) at least weekly and review individual patient treatment problems, especially illustrating the use of drug classes from a drug treatment point of view. Supervision should be either on an individual (one on one) or a very small group (maximum 3-4 trainees) basis once a week to allow for maximum informality. It is envisioned as the time during which the beginning trainee can ask very simple questions without fear or embarrassment. It is also a time that the trainee(s) and supervisor can *see patients together*, review treatment records, discuss philosophical decisions to use or not use drugs, and read psychopharmacology literature together if so desired.

In one program, three first-year residents on an acute inpatient unit met with a clinical psychopharmacologist to review cases on a weekly basis for six months. Cases were presented when the residents were having specific problems, and were reviewed as to the case itself and to the

broader issues involved in the class of drugs in question. An attempt was made to integrate psychopharmacologic issues into the ongoing treatment of the patient and his or her environment.

Advanced supervision should include the use of psychotropic drugs in outpatient settings (especially if the program has a psychopharmacology clinic), general hospitals, community programs, schools, nursing homes, etc. Advanced supervision includes discussion of mechanisms of drug actions, pharmacokinetics, and research data as well as basic treatment. Supervision using this mode should be to some extent category based, for example, pharmacokinetics of antipsychotics rather than a mere review of trainee caseloads each week.

ECT can also be taught as part of psychopharmacology curriculum. The most effective form of teaching is during the actual administration of ECT. This bedside teaching and supervision, like medical and surgical clerkship and house officer teaching, emphasizes learning through practice and observation. Some programs have videos of ECT available (Dunner, D., University of Washington, Seattle, Washington).

2. Supervision by Senior Residents (i.e., PGY IIIs and IV's) of Junior Residents in situ in Such Settings as Drug Clinics, Inpatient Units and Emergency Rooms

A considerable amount of psychopharmacology teaching can occur in the context of direct clinical care, with junior residents learning from more senior residents or 'front line' faculty, as in medical and surgical rotations. We suggest that when possible, a senior resident be selected as a chief resident in psychopharmacology, who will then specifically supervise the teaching of psychopharmacology within the context of patient care. In centers with many trainees, the chief resident, supervised by the senior psychopharmacology faculty, may conduct psychopharmacology consultation rounds with first and second year residents on their assigned units, specifically reviewing all cases, as in the medical/surgical residency model.

C. Development of Psychopharmacology Units

It may be helpful to develop specific psychopharmacology treatment units as subcomponents of outpatient psychiatry rotations and/or liaison-consultation units. Such units allow a focusing of expertise and of thinking about psychopharmacologic treatments. However, a drawback to the 'drug clinic' concept is that it may fragment resident thinking into a non-integrative view of the patient. Nevertheless, such units are useful in effectively focusing psychopharmacologic teaching using the supervisory methods described above.

D. Utilization of Reading Lists

Introduction to the relevant psychopharmacologic literature is important in the training of residents in psychopharmacology. We have included in appendix C a list of references which may be helpful in organizing a psychopharmacology curriculum. These resources may be of help in organizing a didactic series, as well as many serve as reference material for psychiatric residents. We believe these articles, and the derivatives obtained from their bibliographies, should only be given selectively (because of time considerations) to residents, although a program of comprehensive reading of them is an alternate option.

With respect to the literature list, we have elected to not discriminate the value of articles. We feel such annotations might generate undue controversy. Generally, a reading list may be derived from the following recommended journals, as well as from looking up specific drugs in *Index Medicus* and similar reference resources. Furthermore, *Psychopharmacology Bulletin* offers periodic lists of articles under specific pharmacologic topics, categorized in the *Index Medicus* format.

A list of both classic articles and seminal new references can be compiled by the Coordinator of each local program on an ongoing basis.

E. Use of Psychopharmacology-Psychobiology Journals and Newsletters

Journals ("C" means mostly clinical emphasis, "B" means mostly basic)

- *Journal of Clinical Psychopharmacology* C
This relatively new journal has a strong clinical focus, publishing articles, reviews, letters and case reports dealing almost exclusively with the clinical use of psychotropic drugs.

- *American Journal of Psychiatry* C
This journal publishes a number of psychopharmacologic articles. Especially timely and relevant are the brief reports and the clinical and research reports.
- *ACTA Psychiatrica Scandinavica* C
Frequently publishes clinically oriented psychopharmacologic reports.
- *Archives of General Psychiatry* C & B
This journal often has psychopharmacologically oriented reports. Generally, it is relatively research oriented and less practically oriented.
- *Journal of Clinical Psychiatry* C
An improving general psychiatry clinical journal which publishes a variety of reviews and articles on the use of drugs, as well as on other issues in general psychiatry.
- *British Journal of Psychiatry* C
This journal occasionally has good drug oriented articles.
- *Biologic Psychiatry* B
A basic science psychiatry journal with occasional articles on the use of drugs. More often than not, articles are about drug mechanisms and modes of action.
- *Psychopharmacology* B
A basic science psychopharmacology journal with infrequent, clinically oriented articles.
- *Psychopharmacology Bulletin* C & B
A journal which frequently publishes brief abstracts and proceedings of meetings such as the ACNP. A good way to get a rapid overview of the 'news' of important psychopharmacology meetings.

Newsletters

- *The International Drug Therapy Newsletter*
- *Biologic Therapies in Psychiatry*

F. Representative Basic Psychopharmacology Books

- Barchas J.D., et al., *Psychopharmacology: from theory to practice*. New York: Oxford University Press, 1977.
- Bassuk E., Schoonover S.C., Gelenberg A.J., *The practitioner's guide to psychoactive drugs*. 2nd ed. New York: Plenum Medical Book Co., 1983.
- Fink, M. *Convulsive therapy: theory and practice*. New York: Raven Press, 1979.
- Hollister, L.E., *Clinical pharmacology of psychotherapeutic drugs*. 2nd ed. New York: Churchill Livingstone, 1983.
- Klein, D.F., Gittelman R., Quitkin F., Rifkin A., *Diagnosis and drug treatment of psychiatric disorders: adults and children*. 2nd ed. Baltimore: William & Wilkins, 1980.
- Salzman C., *Clinical geriatric psychopharmacology*. New York: McGraw Hill, 1984.
- Werry J.S., *Pediatric psychopharmacology: the use of behavior modifying drugs in children*. New York: Brunner/Mazel 1978.

G. Development of A Psychiatric Neurobiology Lecture Series

In some programs, it may be useful to provide a series of lectures and didactic seminars on the most up-to-date-thinking on the current neurobiology underlying psychiatry and psychopharmacology. This specific course can occur concurrently with a clinical psychobiology seminar and lecture series, or as part of this series. An integrative approach might be, for example, to precede (or follow) a lecture on antipsychotic drugs by a lecture on the neurobiology of schizophrenia.

We are not certain if a specific and separate intensive course in the Neurobiology of Psychiatric disorders should be taught. One model would be to offer a crash course to acquaint the beginning resident with drugs, and then in the fall to begin a neurobiology didactic series. Such a model allows

the young resident to attempt to develop a logical theoretical basis for the use of drugs. Obviously, such a strategy may backfire, for inherent in any well-taught course in neurobiology are the limitations of our current knowledge as this relates to the underpinning of actual psychiatric illness, and limitations of our knowledge of the reason why drugs are efficacious. An alternate possibility involves offering the PG III or PG IV resident a neurobiology course in the later phases of training. Representative topics of such a series could include:

- *Basic neurobiologic principles (i.e., synaptic mechanisms, available neurotransmitters, anatomy of neurobiologic function, etc.)*
- *Major neurotransmitters and neuromodulators in psychiatry*
- *Receptor mechanisms*
- *Neurobiologic hypotheses of affective disorders*
 - adrenergic hypothesis
 - cholinergic hypothesis
 - serotonin hypothesis
 - endorphin hypothesis
 - electrolyte hypothesis
 - circadian hypothesis
 - other hypotheses
- *Neurobiologic hypothesis of schizophrenia*
 - endorphin hypothesis
 - dopamine hypothesis
 - norepinephrine hypothesis
 - transmethylation hypothesis
 - GABA hypothesis
 - other hypotheses
- *Anxiety disorders*
 - Gabaminergic hypothesis
 - Noradrenergic hypothesis
- *Neurobiologic hypothesis of other psychiatric disorders*
- *Other newly noted neurotransmitters, neuromodulators and other chemical hypotheses*

It is suggested that the above series consider supporting evidence from at least the following perspectives:

- Animal neurochemical data and models
- Animal pharmacologic data
- Human neurochemical data
- Human clinical pharmacologic data

Several relevant lecture outlines are included in appendix B.

IV. How To Evaluate

Both to understand whether a given clinical psychopharmacology program is achieving its teaching goals, (see section II) and to point out areas of weakness in individual trainees, several standardized techniques are available to evaluate trainee competence before and after curriculum exposure.

An optimal evaluation of a clinical psychopharmacology program should consist of a pre- and post-educational formal examination, a pre- and post-education review of the trainees' charting pat-

terns, and ongoing written evaluation by psychopharmacology supervisors. Another possibility is that resident knowledge and skills could be evaluated during a "mock boards" type of clinical examination at least three times during the residency.

A. Formal Examination

We strongly believe a pre- and post-test exam is needed. A good example is: Nelson J.C.: *Psychiatry: Pre Test Self-Assessment and Review*, 2nd ed., New York: McGraw Hill, 1982. Questions could also be taken from the psychopharmacology component of the PRITE exam or The American Psychiatric Association PKSAP Exam (Psychopharmacology component; selected questions from other sections).

Of course, we (or any group of experts) would not agree with all the answers. Rather the questions are used as an evaluation instrument and as a springboard for learning.

B. Charting Patterns

A trainee should be taught how to keep systematic, concise psychopharmacology records during training, so that this skill can be taken into practice. A global rating form to evaluate this function can be developed on a pre- and post- basis.

The educational basis for this evaluative exercise is that psychiatrists often seem loathe to maintain written records. Presumably the feeling is that the confidential relationship with the patient will be jeopardized. While the thoughts, behavior, fantasies and other psychological phenomena of patients might pertain to confidences that might be embarrassing to patients if generally revealed, information about the drugs they are taking, when they are being taken, how much as been ordered over what periods of time, and, some would argue, when there has been departure from the usual conservative practices of PDR, should be well documented. Such information does not violate confidences and provides a continuing rationale for the "medical" aspects of care. In our present litigious era, the psychiatrist who does not maintain such records puts himself at great risk for a legal action, and at a great disadvantage in defending against any that may develop.

C. Supervisor's Evaluation

We feel the best method to evaluate a trainee's ability to apply to clinical practice what is learned in didactic and other formal sessions is an evaluation by a psychopharmacology supervisor. Evaluation should be done at least yearly or every six months, presumably by a new psychopharmacology supervisor each year. The scale could be the one supplied in Appendix D from the Tufts New England Medical Center.

D. Trainee Evaluation of the Program

Needless to say, trainee evaluation and feedback is both mandatory and necessary for a viable program.

V. How To Integrate Psychopharmacology Into An Ongoing Residency Curriculum ("The Politics")

To make this curriculum work, both national and local steps must be taken. Some may ask why we included the national-level steps in a model curriculum. This is done so that local directors of psychopharmacological training can be aware of both the issues and recommendations which have been, or will be made to various groups involved with psychiatric education, and which underlie this curricula (see appendix E).

A. National Level

- We have recommended that the National Institute of Mental Health reinstitute its Career Teachers Programs specifically focusing on psychopharmacology.
- We have recommended that the Psychiatry Education Branch of the NIMH should, in their next announcement for training grants, ask for documentation of training

in psychopharmacology, including number of teachers, curriculum hours and evaluation instruments, as well as evidence that at least one such psychopharmacology teacher is on the Curriculum Committee of the Residency.

B. Local Level

- For each program, one individual should be identified as "Coordinator" or "Director" of Psychopharmacology Training." This individual should have a broad orientation and a strong commitment to clinical psychopharmacology, and be an integral part of the particular department's residency education committee.
- For programs without a faculty member with special expertise in psychopharmacology, a psychopharmacology expert should be identified in the region to consult with the local person in charge of organizing the psychopharmacology curriculum.
- Each residency program should (ideally) have a Psychopharmacology Subcommittee which meets regularly, at least monthly, and has liaison with the Curriculum Committee. Here, "critical mass" is important.
- We recommend that the person identified as Director or Coordinator of Psychopharmacology Training make a very strong attempt to obtain the support of the Chairman and the Director of Residency Training.
- Each program should have available relevant readings on reserve in the library concerning the interface of psychopharmacology and psychotherapy.
- Programs of moderate to large size should have a "Chief Resident" in psychopharmacology (although some believe that having such "specialists" at the Chief Resident level is counter-productive).
- A monthly faculty seminar, serving as an update in psychopharmacology, is strongly recommended.
- An alternate technique for integrating a psychopharmacology program into an existing residency program is to build psychopharmacology into the existing residency structure. In such a setting, the individual designated in charge of psychopharmacology teaching would be a regular member of the residency education committee. However, we feel that in most programs it is important for psychopharmacology to be represented as a specific content area, with some system of advocacy, due to its tendency to be 'swallowed up' and diluted in the usual curriculum committees, especially those with an anti-drug bias.

In any case, before instituting any changes, we would suggest taking the model curriculum to a joint faculty-resident committee and encouraging the faculty and students to study the curriculum first, and then adapt it to the local ecology.

- A major goal of the development of a clinical psychopharmacology program should be to develop faculty and residents who have an integrated approach to the drug and psychosocial treatment of the patient. Too often, such approaches are represented by different individuals with divergent biases, so that the resident cannot speak comprehensively to a single supervisor about his or her patients. Obviously, such divergent foci and biases are difficult to overcome.
- As to child psychopharmacology, it is important that general psychiatry residencies provide training via didactic lectures and individual supervision for residents rotating through child psychiatry. Emphasis of such lectures should be on the drug treatment of childhood disorders as well as on liaison psychopharmacology. A specific series of psychopharmacology lectures when a resident is rotating through a child program, as well as psychopharmacology supervision may be indicated using the above described techniques. Similar programs may be useful for child psychiatric fellows.

VI. Clinical Psychopharmacology: Relationship Of Research To Teaching

The relationship of clinical psychopharmacology teaching and psychobiologic-psychopharmacologic research is important to define. Obviously, research underlies the major clinical psychopharmacologic practices utilized. However, it is important to note that psychopharmacologic research and the teaching of clinical psychopharmacology are not synonymous. A program may have excellent basic or clinical psychopharmacologic researchers who are either poor teachers, or are disinterested in teaching clinical psychopharmacology. Furthermore, one does not necessarily need to be a front line researcher in psychopharmacology to effectively teach the art of psychopharmacology. In many ways we feel that psychiatrists interested in understanding clinical psychopharmacology and in teaching it *in a practical sense*, as well as from a theoretical perspective, are the key to developing a viable psychopharmacology program.

VII. A Proposed Investigative Psychiatry Curriculum

Although not formally a part of a psychopharmacology curriculum, we have included an outline for a model investigative psychiatry or psychopharmacology investigative curriculum. In some ways this curriculum can be thought of as enhancing, and as a parallel endeavor to a model psychopharmacology curriculum. It was developed by Drs. Daniel Stern, Ira Glick and colleagues of the Payne Whitney Clinic. Of course, the teaching of research on a "how to" basis does not replace the "hands-on" experience carried out under the supervision of psychopharmacology research mentor.

An Investigative Psychiatry Curriculum

The investigative Psychiatry Curriculum can be divided into three main types of learning experiences:

A) *General academic exercises relevant to the Investigative Psychiatry Curriculum*

These include Grand Rounds, Journal Club, and special "research in progress" rounds (see below).

B) *Core Courses*

Core Course I: Research methods and principles:

This course can be an hour-long, 16-week seminar taught in the spring of the PGY II year. It can be open to fellows and psychology interns, as well as PGY II residents. The format consists of eight seminars covering the process of arriving at the question to be asked; the need for, value of, and types of hypotheses; research design (i.e., common basic designs and their variants); the nature and types of variables; methods of observation and data collection; analysis of data, basic statistical procedures used in clinical behavioral sciences; and appropriate use of the computer as a tool. These eight seminars can alternate with eight presentations by invited members of the faculty, to present to the trainees one of their own papers already published in a refereed journal. Prior to the presentation, the trainees can have a week to study the paper. The trainees and instructors will then utilize the time by asking the author questions about the many decisions made about any and all aspects of that research (the central question, methods, reliability, etc.). We expect that this kind of dialogue about an actual piece of investigation with the person who conceived and conducted it will serve several purposes. Used in alternation with the seminars, it will enliven and bring greater meaning to the lectures and vice versa. It will acquaint the residents at an early stage with the ongoing research interest of their own faculty. Finally, it will combine a teaching exercise in learning the basics of principles and methods of research with a good introduction to research evaluation.

A list of topics for the eight seminars and for the eight paper presentations follows.

Topics of the Seminars

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|---------|---|
| week 1: | Arriving at a question to be investigated. |
| week 3: | Hypotheses: the need for them and the various types. |
| week 5: | Research design: types of general design and their variants; advantages and disadvantages of different designs. |

- week 7: The nature of independent and dependent variables, with particular reference to demographic issues in subject selection.
- week 9: Methods of observation and data collection in psychiatric investigation.
- weeks 11-13: Analysis of data; basic statistic procedures used in psychiatric research, their rationale and appropriate use.
- week 15: The computer as an analytical tool: appropriate and inappropriate uses.

Core Course II: Conceptualizing, operationalizing and conducting an actual investigative project:

This 12-week seminar in the beginning of the PGY III year can focus on the translation of a idea or question into an operational research design. This seminar can be conducted in a format in which the residents do in fact have to complete a scholarly paper by the time of graduation at the end of the PGY IV year. For the purposes of this program, this training requirement is used as a springboard to create a learning experience in the translation of clinical questions into workable research designs. Each student should struggle with the process of going from idea to finished research design and method which remain as true as possible to the original question. At each meeting a different resident can present his proposal. The instructors, along with a statistician and the group, should attempt to accomplish three aims at each presentation: to help the resident get his/her proposal into shape as a realistic and viable proposal, given the fact that they have only limited time over the following year and a half to complete the project; to continue the education of principles and methods in investigative psychiatry begun in the PGY III year course; and to further the trainees acquaintance with statistical and computer knowledge in a situation where these 'tools' are of immediate importance to them.

Core Course III: Developing research strategies for addressing real clinical or administrative problems:

In the early to middle part of the PGY IV year (i.e., second trimester), by which time the residents will have had significant inpatient, outpatient, emergency room, and liaison psychiatry experience, they can participate in a 12-week course designed as a practice exercise in identifying real clinical problems, questions or issues on the clinical services to which they are or have been assigned, and developing investigative strategies for addressing these problems. The identification of the problems and the development of strategies will be a group process. While these research strategies are teaching exercises, some may spawn actual projects. We suggest targeting identified priority populations in formulating the clinical problems to be addressed.

Core Course IV: Evaluation of the resident research projects

A 10-week seminar at the end of PGY IV year can be devoted to another approach to research evaluation. In this case, the seminar will be a follow-up to the seminar mentioned above (core course II), i.e., each resident will present the completed results of his research endeavor (now a year and a half later) to the same group with the same instructors. The critical evaluation of each will constitute the learning material.

Note, that the above four courses have the continuity of the same group, meeting with the same instructors, considering related subject matter from different vantage points over a three year span.

C) Other academic courses as they relate to Investigative Psychiatry

As described above, in each of the major academic courses a small number (approximately 10%) of seminars will be disembedded from the ongoing course and refocused on the central issues of the evaluation and the utilization of investigative psychiatry as it relates to the specific course material.