

The Role of Compounded Medicines in Therapy

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Editor-in-Chief

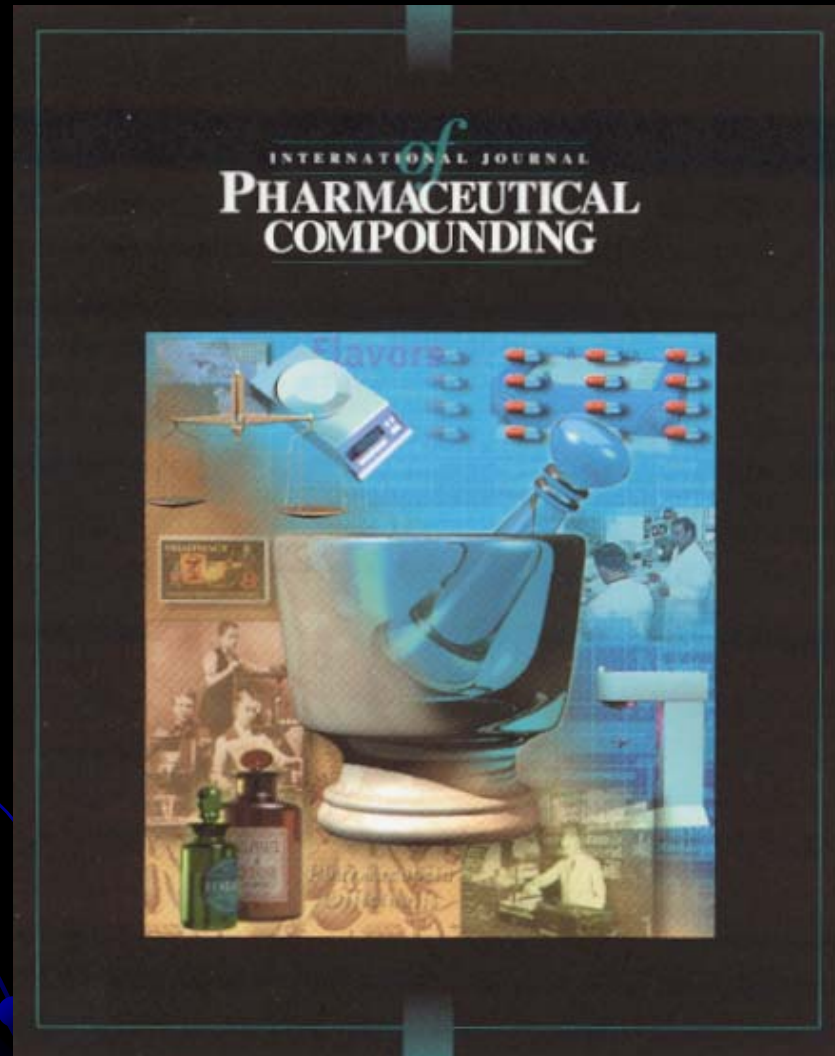
International Journal of Pharmaceutical
Compounding



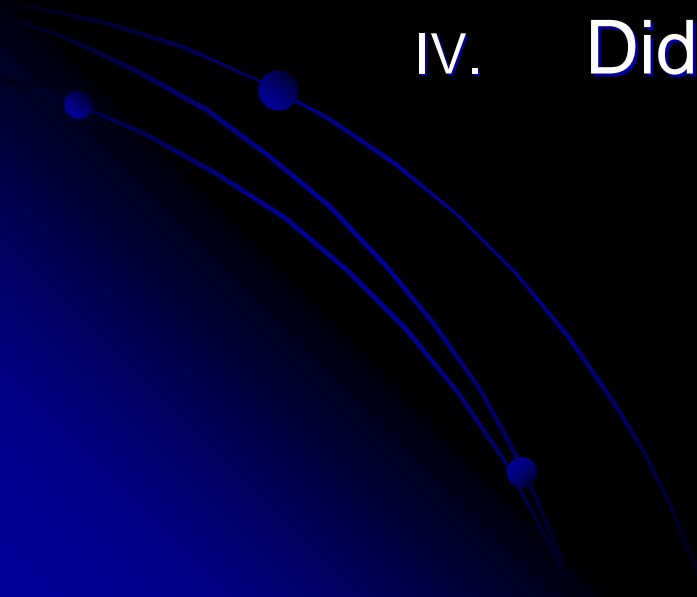
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IJPC First Issue Cover

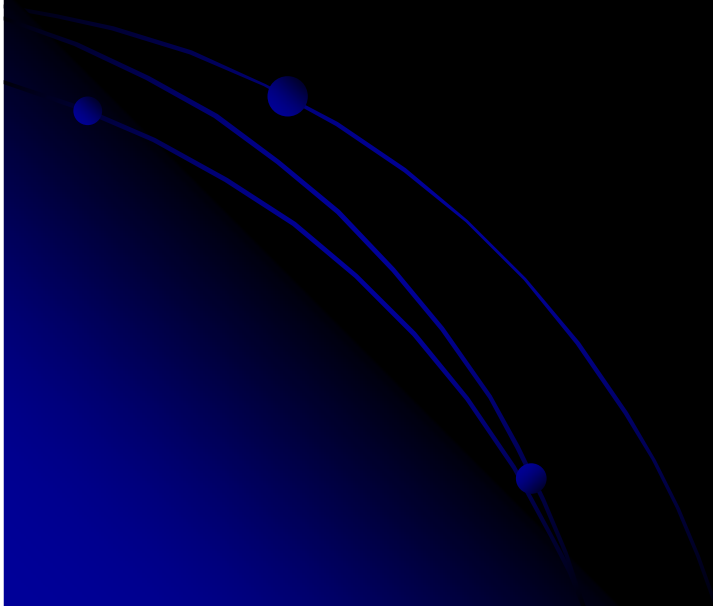


Outline

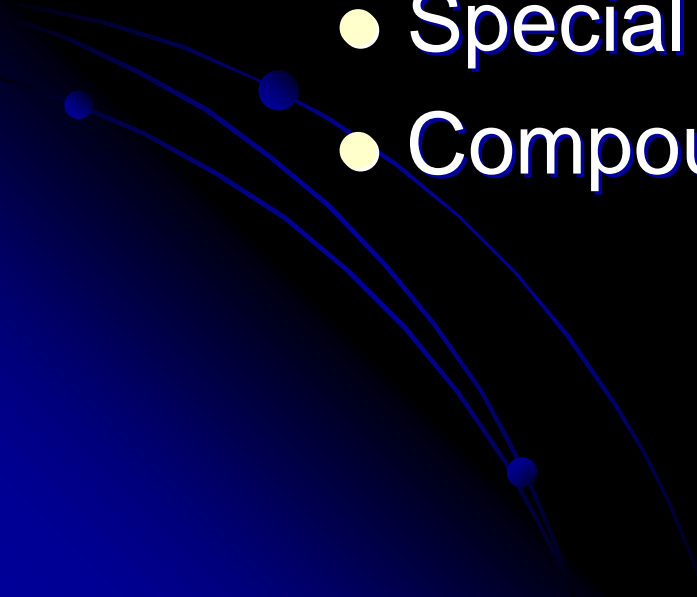
- I. Pharmacy Compounding-
Introduction
 - II. Compounded Dosage Forms
 - III. Future Considerations
 - IV. Did You Know????
- 

Role of the Compounding Pharmacist

- “Individualizing Drug Therapy”



I. Pharmacy Compounding- Introduction

- History of Pharmaceutical Compounding
 - Reasons for Growth
 - Special Patient Populations
 - Compounding Categories
- 

History of Pharmacy Compounding in the U.S.

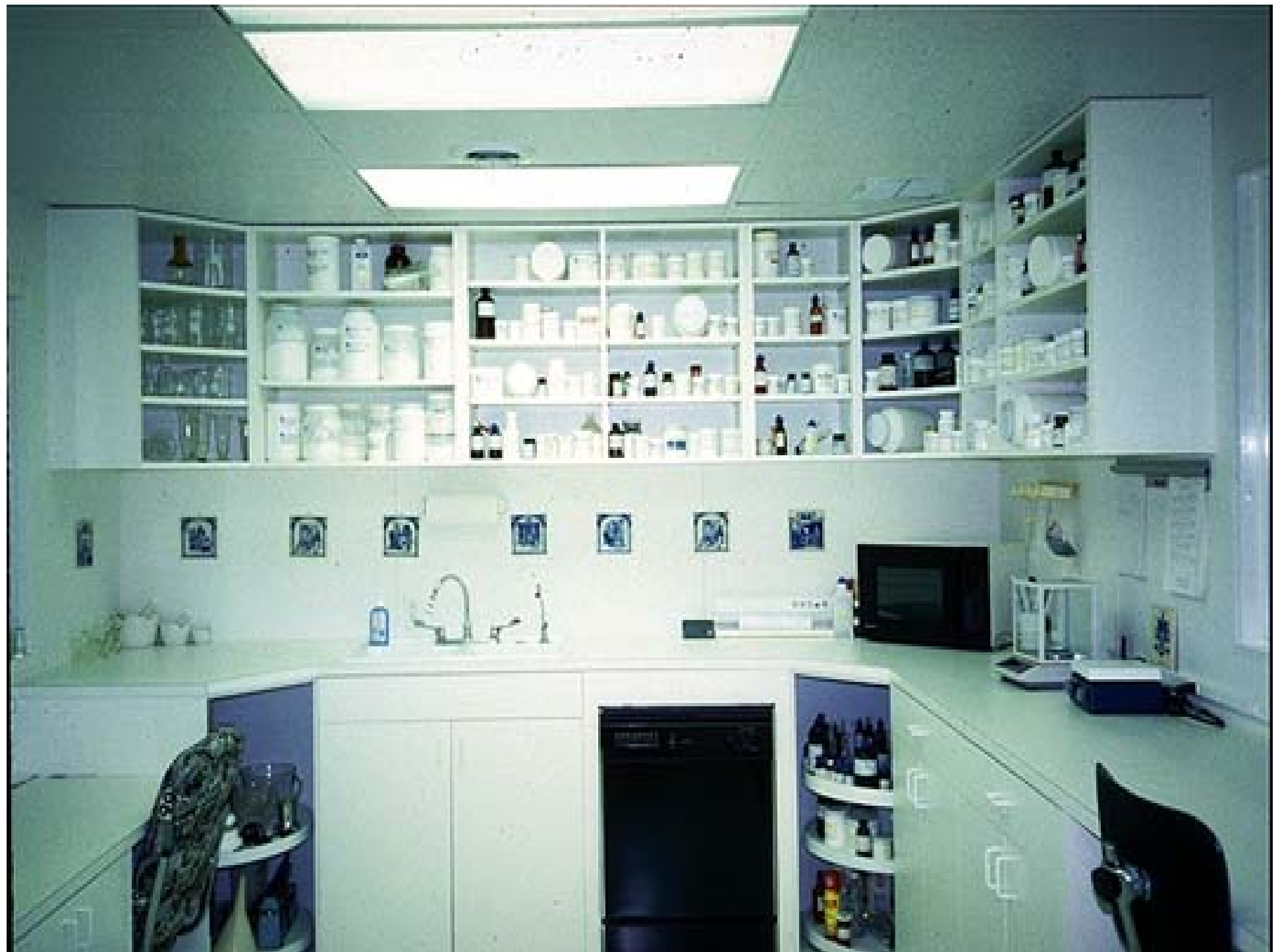
- In the past, *Compounding Was Pharmacy*
- 1900s gave way to commercially prepared pharmaceuticals
- Many strengths/dosage forms available
- Economics changed all that
- Limited strengths/dosage forms
- “One Size Fits All” approach

Reasons for the Growth of Pharmacy Compounding

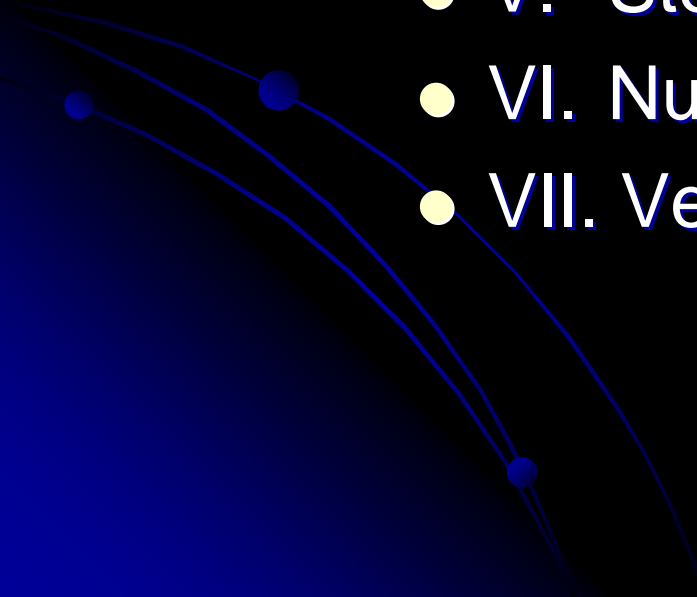
- Limited dosage forms
- Limited strengths
- Home health care
- Hospice
- Nonavailable drug products/combinations
 - Discontinued Drugs
 - Drug Shortages
- Orphan drugs
- Veterinary compounding
- New therapeutic approaches
- Special Patient Populations

SPECIAL PATIENT POPULATIONS

- Pediatrics
- Geriatrics
- Bioidentical Hormone Replacement Therapy
- Pain Management
- Dental Patients
- Environmentally & Cosmetic Sensitive
- Sports Injuries
- Veterinary Compounding
 - Small, Large, Herd, Exotic, Companion



Seven Categories

- I. Nonsterile Simple
 - II. Nonsterile Complex
 - III. Sterile-Low Risk
 - IV. Sterile-Moderate Risk
 - V. Sterile-High Risk
 - VI. Nuclear Pharmacy
 - VII. Veterinary Compounding
- 



II. Compounded Dosage Forms

Meeting patient needs....



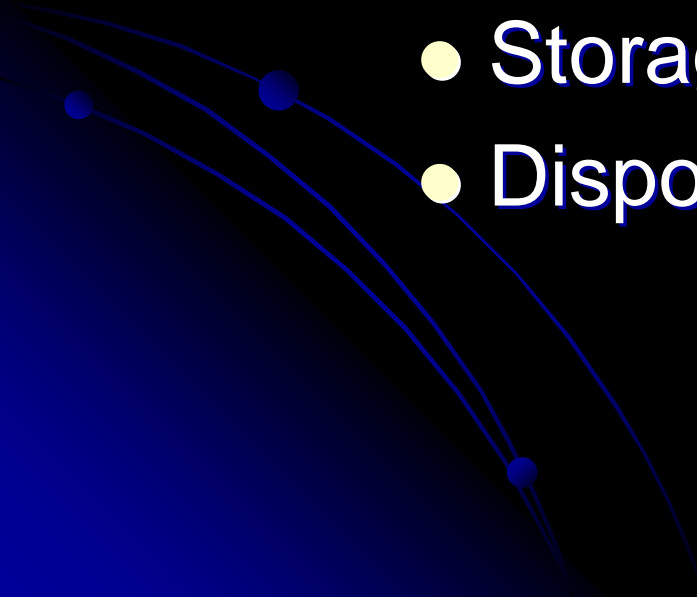
Compounded Preparations

- Capsules, Powders, Lozenges and Tablets
- Emulsions, Solutions and Suspensions
- Suppositories
- Creams, Topical Gels, Ointments and Pastes
- Injections, Ophthalmics, Nasals, Otics
- Others

Newer Compounded Dosage Forms

- Rapid dissolving tablets
- Gummy gels
- Oral pastes
- Lollipops
- Popsicles
- Troches/Lozenges
- Sublingual Drops
- PLO Gels
- Rapid penetrating topical solutions
- Medication sticks
- Ambulatory pump infusion solutions
- Intrathecal injections
- Sponge disks
- Implantable beads
- Iontophoretic solutions
- Phonophoresis preparations
- Oral inhalation solutions

Pharmaceutical Compounding and Patient Education

- Patient or Caregiver Training
 - Patient Monitoring and Adverse Events Reporting
 - Storage of Medications
 - Disposal of Medications
- 

Compounding for HRT Patients

- Compounded

- Capsules-----
- Vaginal Creams, Gels---
- Topical Creams, Gels---
- Injections-----
- Troches/Lozenges
- Suppositories, Vaginal
- Topical solutions
- Sublingual drops
- Nasal sprays

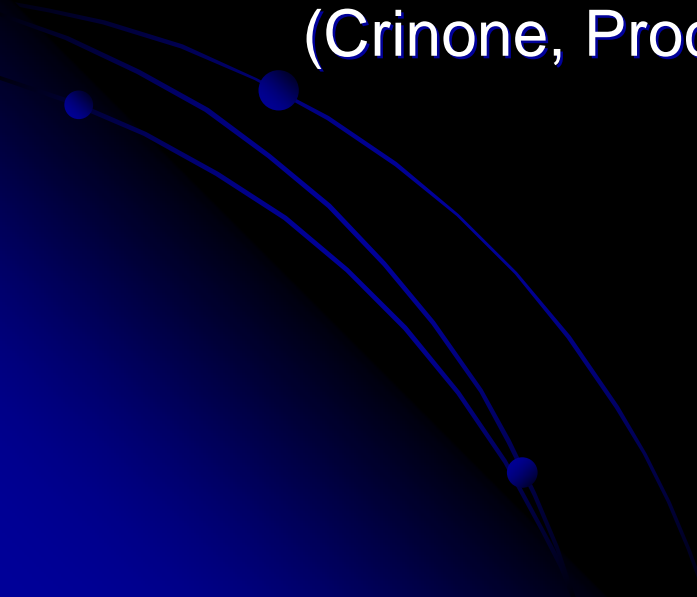
- Manufactured

- Tablets
- Vaginal Creams, Gels
- Topical Creams, Gels
- Injections
- Patches
- Vaginal Ring
- Buccal Tablet


Commercially Available Bioidentical Hormones

- Estradiol
- Estradiol Transdermal System-Menostar, Alora, Climara, Esclim, Vivelle-Dot, Esclim, Climara, Vivelle.
- Estradiol Tablets-Femtrace, Estrace, Gynodiol
- Estradiol Vaginal-Vagifem, Estrace Vaginal, Estring
- Estradiol Topical Gel-Estrogel
- Estrone
- Foygen, Kestrone 5, Menagen, Menformon (A), Par-Supp, Progagon-S, Theelin.
- Estriol
- With estrone and estradiol-Hormonin

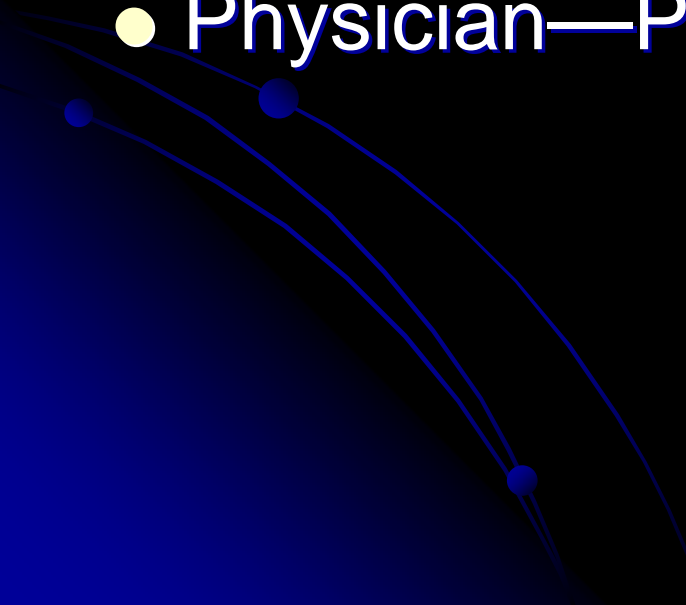
Commercially Available Bioidentical Hormones

- Progesterone
 - Progesterone Capsules-Prometrium
 - Progesterone in Oil injection
 - Progesterone Vaginal Gel
(Crinone, Prochieve)
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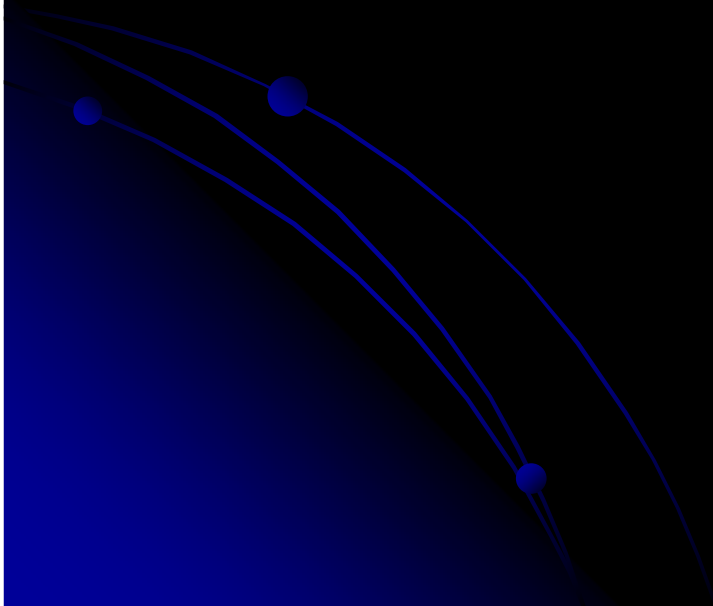
Commercially Available Bioidentical Hormones

- Testosterone
 - Testosterone pellets-Testopel
 - Testosterone Transdermmal System-Androderm
 - Testosterone Gel-Androgel, Testim
 - Testosterone Buccal-Striant
- 

IV. Compounding for HRT Patients

- Estradiol, Estriol, Estrone, Progesterone, Testosterone
 - Patient compliance, sensitivities, clinical response, convenience
 - Physician—Patient—Pharmacist
- 


III. Future Considerations





**Future Trends
in High-technology
Pharmacy
Compounding**

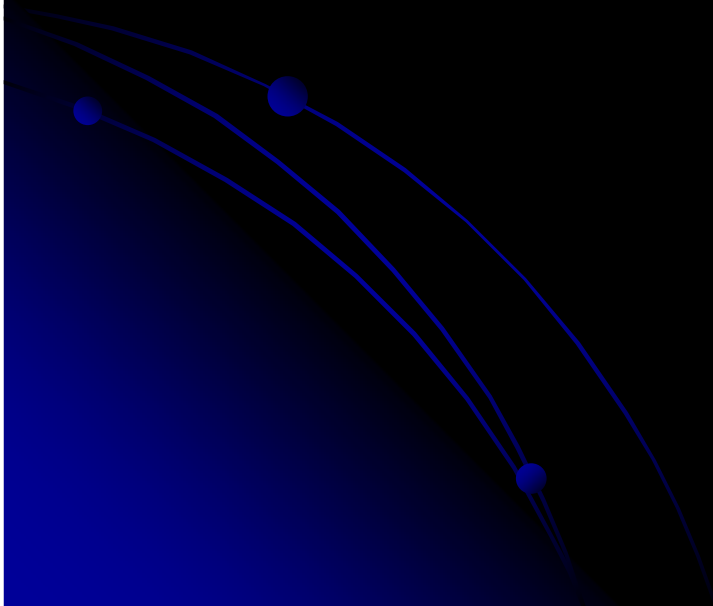
The Future of Pharmacy Compounding

1. Pharmacogenomics
 2. New Compounded Drug
Delivery Systems (DDS)
 3. Nanotechnology
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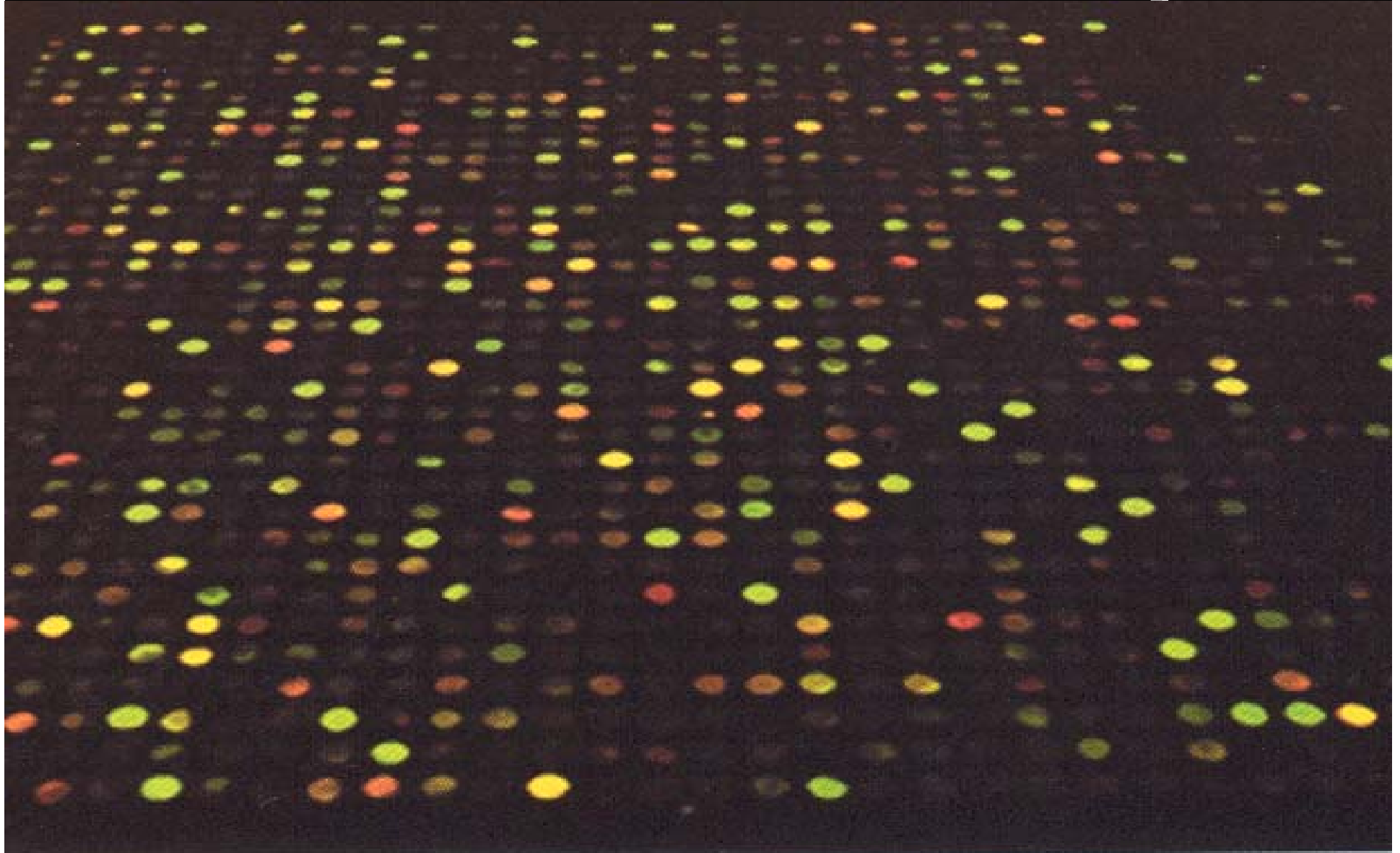
Pharmacogenomics

Pharmaceuticals based on an individuals genome

- “Individualizing drug therapy!”

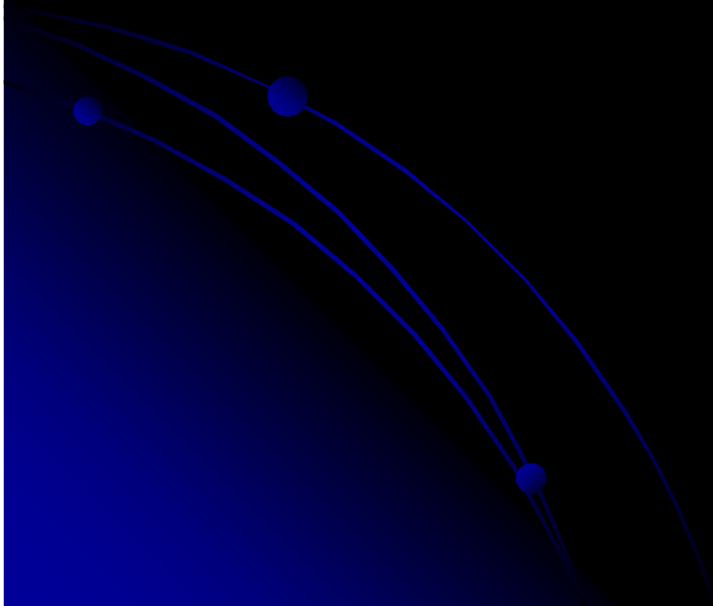


NANOTECHNOLOGY: The Ultimate Alchemy



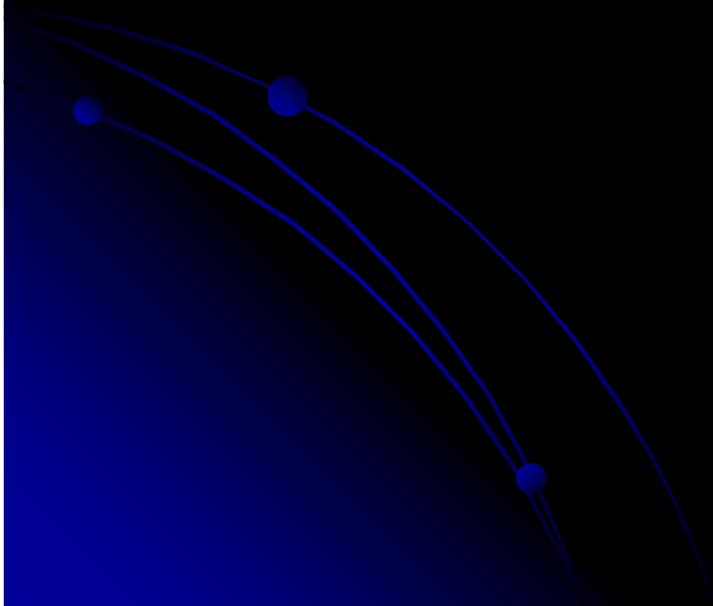
NANOTECHNOLOGY

- The art and science of building molecular structures so they are sufficiently large and complex to function as machines or devices



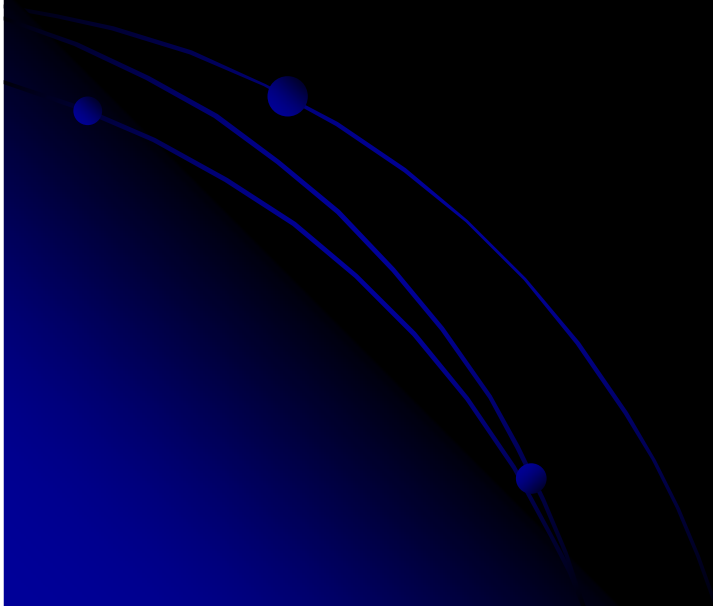
NANOMEDICINE

- Monitoring, repair, construction and control of human biological systems at the molecular level, using engineered nanodevices and nanostructures.



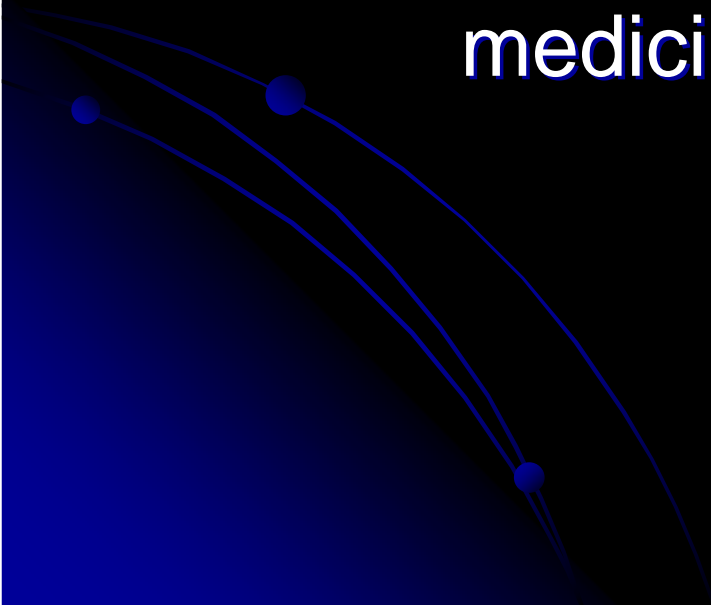
NANOPHARMACY

- Preparation and delivery of ultra-small pharmaceuticals, therapeutic substances and delivery systems.



NANOPHARMACY AND NANOPHARMACEUTICALS


- The uses of biomolecular motors could be used for sensing or placing in living cells as a pharmacy to deliver medicine when required.



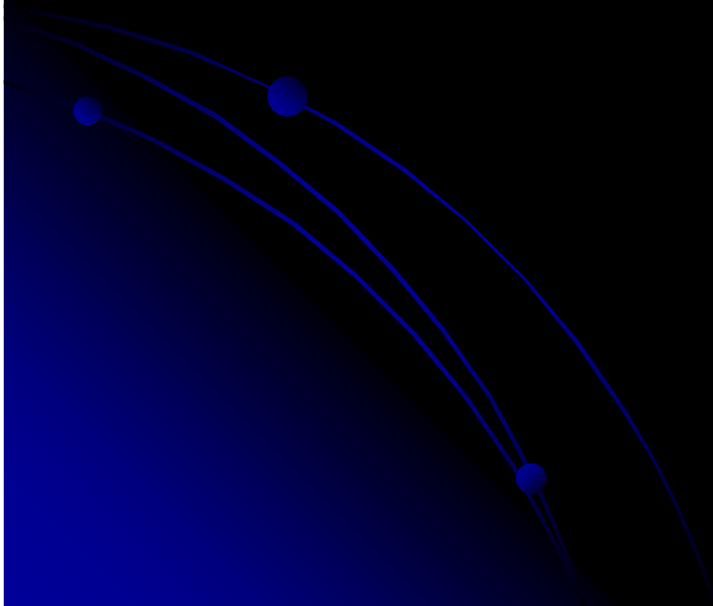
NANOPHARMACY AND NANOPHARMACEUTICALS

- 
- New formulations and routes for drug delivery

PROJECTIONS FOR THE FUTURE

- We must live in today and prepare for tomorrow
 - Compounding pharmacists roles in “individualizing drug therapy” is preparing the foundation for the pharmacogenomic and nanopharmacy of tomorrow.
- 

IV. Did You Know????



DID YOU KNOW THAT WITHOUT PHARMACY COMPOUNDING:

- children would not have available to them syrups, elixirs, suspensions and emulsions for most drugs that would make it easier to take medications
- elderly would not have access to dosage forms to make it easier to take their medications
- Hospitalized patients would receive numerous injectable drugs individually instead of combined in a single intravenous admixture
- cancer drugs would have to be given individually, rather than combined, resulting in much longer administration times and discomfort

DID YOU KNOW THAT WITHOUT PHARMACY COMPOUNDING:

- physicians would not have most nuclear pharmaceuticals available to diagnose or treat illnesses
- adults would be limited to very few strengths of drugs, unless they were willing to halve, third or quarter the tablets to obtain the dose needed
- therapy of many types would not be available to patients, including pain management, bioidentical hormone replacement therapy (BHRT) and others
- patients would need to take drugs orally or by injection instead of by the newer methods of delivery into the body, to include transdermal gels, etc.

DID YOU KNOW THAT WITHOUT PHARMACY COMPOUNDING:

- drugs that are discontinued due to “economic reasons” by a pharmaceutical manufacturer would no longer be available to patients (one dose; one dosage form?)
- drugs that are in short supply would not be available and this would interrupt a patient’s therapy that took so long to stabilize
- orphan drugs would be available to limited patients only
- patients would not have the option of new therapeutic approaches that physicians would like to use
- patients who are allergic to a preservative, dye, flavor, or other ingredient in a commercial product would have no options

DID YOU KNOW THAT WITHOUT PHARMACY COMPOUNDING:

- individuals maintained on “intravenous feeding” would require several different individual components administered separately instead of a single, compounded mixture
- patients would not have available to them the options of gummy bears, popsicles, most of the transdermal gels, oral inhalation solutions, medication sticks, iontophoresis solutions, phonophoresis solutions, etc.
- infants who are born prematurely would not have available to them many lifesaving and life-sustaining drugs
- infants would not have available to them many drugs

Thank You

