

◦ **WEBINAR SERIES:**
AGING IN INDIVIDUALS WITH
INTELLECTUAL AND
DEVELOPMENTAL
DISABILITIES

CMS Medicare-Medicaid Coordination Office (MMCO)

Established by Section 2602 of the Affordable Care Act

- Purpose: Improve quality, reduce costs, and improve the beneficiary experience.
 - Ensure Medicare-Medicaid enrollees have full **access** to the services to which they are entitled.
 - Improve the **coordination** between the federal government and states.
 - Develop **innovative** care coordination and integration models.
 - Eliminate financial **misalignments** that lead to poor quality and cost shifting.
- Demonstration, technical assistance and evaluation activities include:
 - Program Alignment Initiative
 - Access to Medicare data for Medicare-Medicaid enrollees
 - State Demonstrations to Integrate Care for Dual Eligible Individuals: Financial Alignment Initiative
 - Initiative to Reduce Avoidable Hospitalizations in Skilled Nursing Facilities



Session 4

Medication: A Double-Edged Sword for Older ID/DD Adults

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Outline for Session 4

1. Why Increased ADRs
2. ACSC and ADRs and Health Care Costs
3. Age Related Changes in Metabolism of Medications
4. Concerns of ADR Increase in Older ID/DD Adult Population
5. Examples of Medication and ADRs
6. Staff Outcomes
7. Strategies to Reducing ADRs

Purpose of Session 4

- To increase awareness and observational skills of formal and informal caregivers with respect to how medications may increase ACSC by mimicking, masking, exacerbating or causing dementia or diseases in the older ID/DD adults

Increased Adverse Drug Reactions (ADRs) in an Aging Population Increases the Risk of ACSC

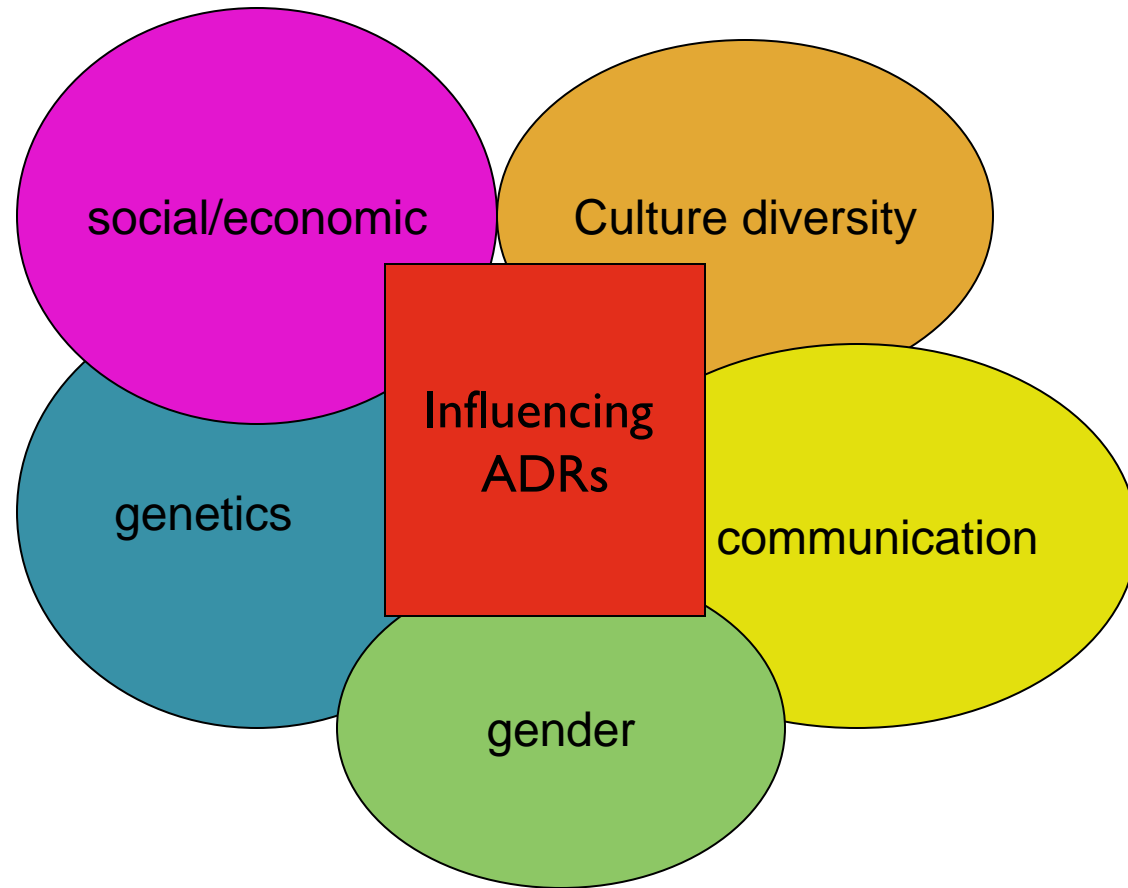


SECTION 1

Three Causes of Increased Risk of ADRs

First Cause:

The age related biological changes overlapping with culture and gender, influences the decline in the ability to metabolize medication(s), increasing levels in the blood for a longer period of time resulting in ADRs that mask or mimic the symptoms of diseases or disorder



Interaction of five influences which affect aging and healthcare disparities in the general and ID/DD populations

Overlap of Age-Related Changes with Culture & Gender (examples)

- Caucasians experience twice the side effects of Hispanics from the antidepressants Prozac and Paxil
- African-Americans administered some anti-psychotic drugs seem more likely than whites to suffer tardive dyskinesia (repetitive, involuntary movements)
- Asians administered half the dose of an anti-psychotic drug responded better than Caucasians who received the regular dose.

Overlap of Age-Related Changes with Culture & Gender (examples)

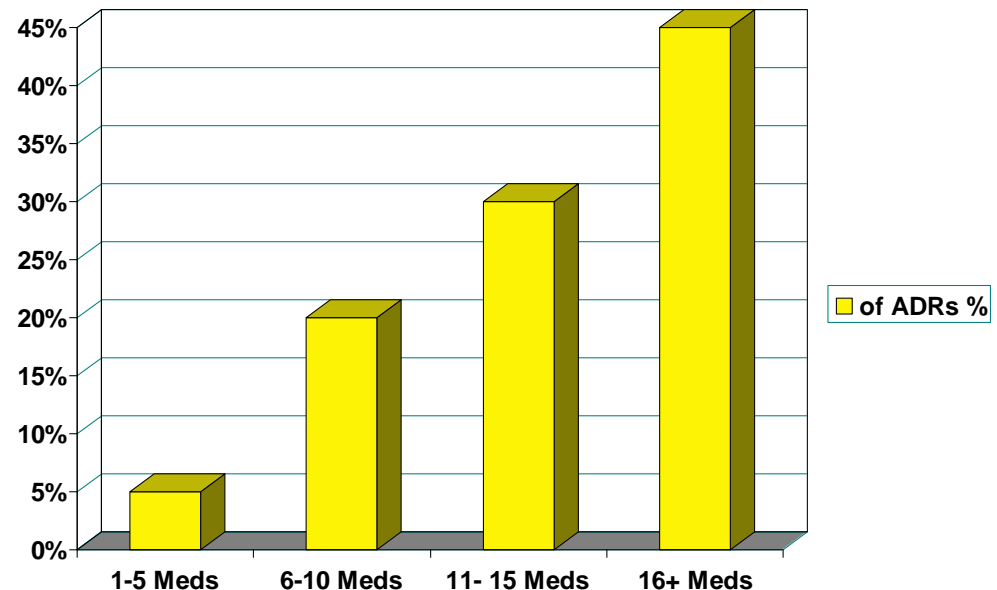
- As many as 40% of African-Americans have gene variant that makes them non-responsive to beta blocker medication for hypertension
- Females more vulnerable to ADRs due to size differences and changes in metabolism
 - increasing absorption of antidepressants, benzodiazepines
 - decreasing absorption of phenytoin and barbiturates
- Optimum dosages of many cardiovascular or psychotropic drugs are lower for Dominicans and Puerto Ricans and higher in Mexican Americans, compared with other racial/ethnic groups

Causes of Increased Risk of ADRs (cont'd)

Second Cause:

Increasing the number of medications increases the risk of drug to drug interactions
(community average of 7 -10 medications but higher in the older ID/DD adult)

Number of Medications
vs.
Increases in
ADRs



Causes of Increased Risk of ADRs (cont'd)

Third Cause:

A high use of non-prescription medications in the older ID/DD adult population (Interaction of older adult's non-prescription medications with prescription medications)

	Per 1000 patients		
	With ID (n = 701)	Control (n = 2936)	P-value ^a
During contact with GPs			
Psycholeptics	444	192	<0.001
Antibacterials	256	239	0.013
Anticonvulsants	194	11	<0.001
Anti-inflammatory and antirheumatic products	182	204	0.640
Sex hormones and modulators of the genital system	181	204	0.696
Corticosteroids, dermatological preparations	174	110	<0.001
Anti-asthmatics	174	169	0.078
Antifungals for dermatological	149	86	<0.001
Use laxatives	143	46	<0.001
Ophthalmologicals	143	72	<0.001
Repeat prescriptions			
	With ID (n = 440)	Control (n = 1374)	
Psycholeptics	1929	391	<0.001
Anticonvulsants	1127	41	<0.001
Psychoanaleptics	504	158	<0.001
Anti-asthmatics	461	365	<0.001
Sex hormones and modulators of the genital system	361	394	0.416
Analgesics	318	191	<0.001
Antacids, drugs for treatment of peptic ulcer	282	211	0.016
Laxatives	257	1	<0.001
Thyroid therapy	234	51	<0.001
Diuretics	216	124	<0.001

Number of non- prescription and prescription medications per 1000 patients with and without intellectual disabilities

Reference: Stratemans, Van Schrojenstein Lantman-de Valk, Schellevis and Jan Dinant. 2007. Health problems of people with intellectual disabilities: the impact for general practice. British Journal of General Practice 57: 64–66.

ACSC and ADRs and Health Care Costs



SECTION 2

ACSC Costs Due to ADRs

- Adverse Drug Reactions are responsible for 20% of hospital admissions in older adults and close to 60% are due to falls attributed to ADRs to medications
- 30% over 65 and 50% over 80 will fall resulting in 1.5 million annual broken bones (including hips)
 - 40% of those are admitted to nursing homes,
 - 25% die within 6 months of the break

ACSC Costs Due to ADRs

- The annual cost of drug related morbidity and mortality was recently estimated at \$176.6 billion with \$47 billion related to hospital admissions.
- To place this in perspective, the annual cost for diabetes care is estimated at about 45 billion dollars



QUESTIONS?

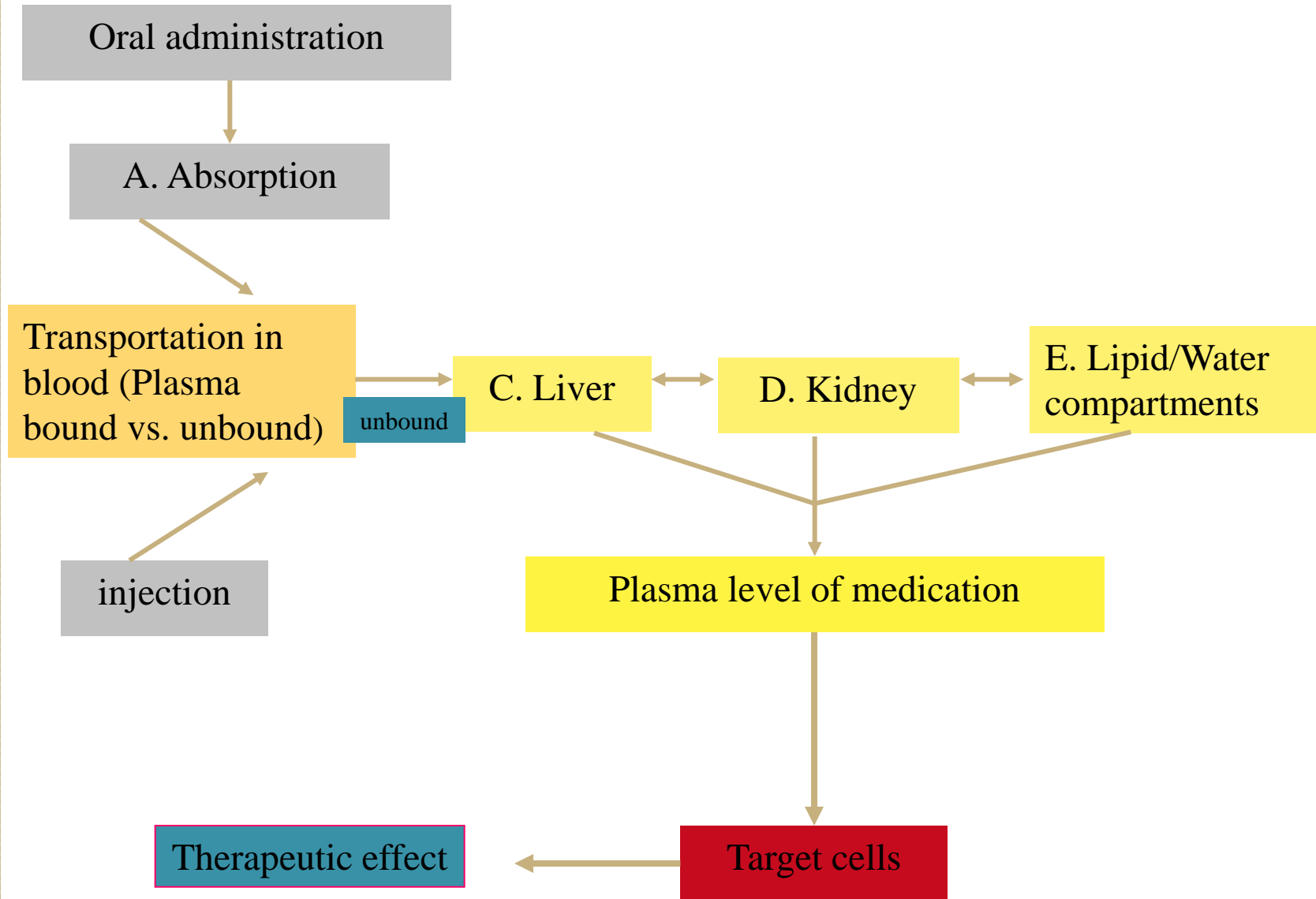


Age-Related Changes in Medication Metabolism



SECTION 3

The pathway in the metabolism of medications, as illustrated below, determines the proper therapeutic concentration of medication at the “target” cell, all affected by age-related changes



Age-Related Changes in Medication Metabolism that may increase ADRs

A. Changes in the Absorption of Medications in the Intestines

- DS adults are high risk for acid reflux and for constipation (slowing of intestines) → both increases absorption of medications and possible ADRs

B. Blood Proteins

- Poor dietary proteins results in more medications in the blood for the older I/DD adults taking high numbers of medications

C. Reduced Ability of Liver to Break-Down Medications

- increases risk with ID adults with high numbers of meds and in Hispanic subgroups (remember the diversity in the ID/DD populations)

Age-Related Changes in Medication Metabolism that may increase ADRs (cont'd)

D. Body Fat Compartments

- Medications may be stored in body fat of obese older DS adults → increasing risk for drug to drug interactions and ADR when they lose weight, resulting in the stored medication re-enter blood

E. Body Water Compartments

- Older adults are at risk for dehydration, increasing medication concentration and vulnerability to mimicking, masking or exacerbating health care problems.

Concerns of ADR Increase in Older ID/DD Adult
Population



SECTION 4

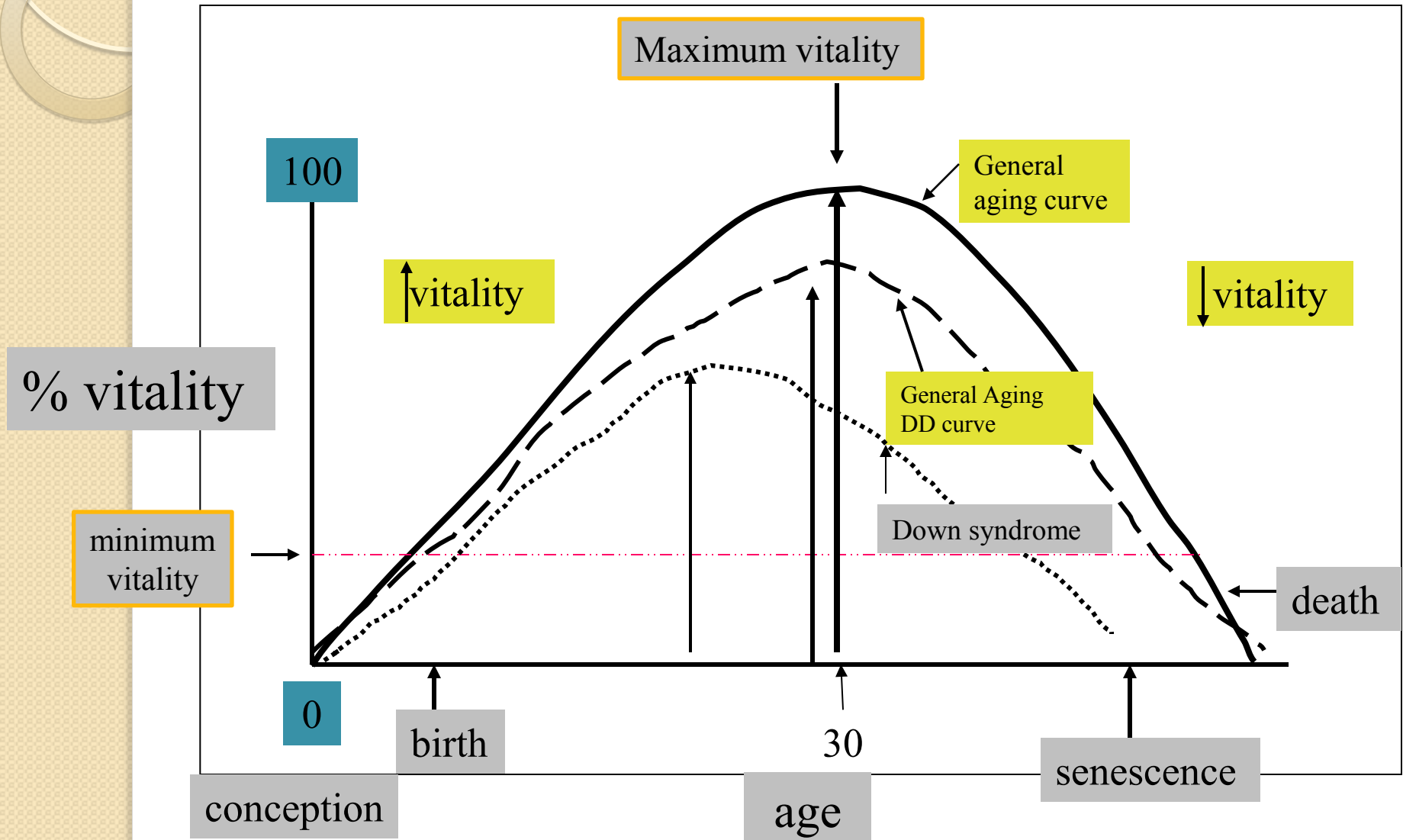
Why a Concern?

- Intellectually disabled population is growing older with similar aging concerns as the general population
- Critical area of concern for both populations is the increase in medication use and the negative affects on functioning
 - there is more awareness of this concern in the general population than in the ID aging population

Concerns of ADR Increase in Older ID/DD Population (cont' d)

- Reduced life expectancy of individuals with Down syndrome and Cerebral palsy has led to the supposition that:
 - They may age prematurely and display signs of aging as early as 30-40 years of age
 - They may suffer earlier from health problems usually found in the 70 year old general population.

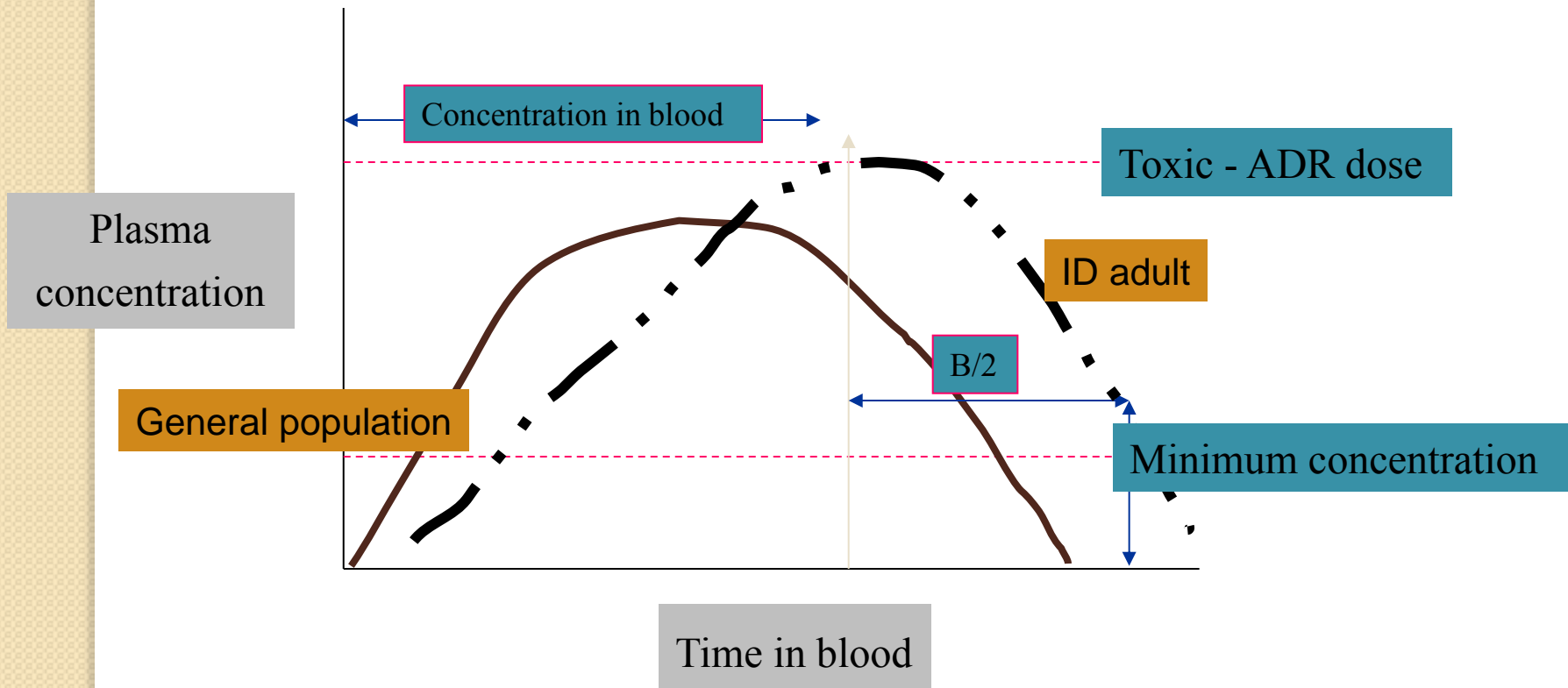
Early age-related changes in DS adults may affect medication metabolism



Question:

- Do the early age related changes in the older DS adult with an concomitant increase in chronic health conditions, place them at the same or greater risk for ADRs as the general population but at an earlier age?

Assumption – Early Age-Related Changes in DS Adults Affect The Ability to Metabolize Medications Earlier than the General Population , Increasing The Risk for ADRs



Drug Dose Curve for the General and ID/DD population and the older DS population

Multi-Medication Use

(increased risk for ADRs)

- Medicines are not used to treat Down syndrome disabilities, but to treat chronic co-morbidity diseases associated with Down syndrome
- A total of 24 categories of medications were identified for treating the chronic conditions in DS adults.

Categories of Chronic Co-Morbidity Diseases

- Increased at-risk co-morbidities in DS resulting in multiple medication use:
 - Congenital heart disease
 - Leukemia and other cancers
 - Immune system problems
 - Thyroid problems
 - Bone, muscle, nerve, or joint problems
 - Hearing and eye problems
 - Digestive problems
 - Seizure disorders
 - Alzheimer's disease
 - Acute dementia

Change in the % of medication use in younger and older adults with DS

	<50 years old	>50 years old	Total
Anti-anxiety	16	16	16
Anticoagulant	16	38	26
Antidepressant	25	14	20
Antihypertensive	4	19	11
Antipsychotic	9	19	14
Antispasmodic	1	5	3
Cholesterol lowering	9	11	10
Fosamax	21	23	22
GERD related	18	22	20
Hormones	13	14	14
Hypothyroidism	35	38	36
Respiratory	26	28	27
Vitamin A	1	0	1
Vitamin B12	3	8	5
Vitamin C	4	6	5

Gerard Kerins, Kimberly Petrovic, Mary Beth Bruder and Cynthia Gruman. Oct 2008. Medical conditions and Medication use in adults with Down syndrome: A descriptive Analysis. Down Syndrome Research and Practice: 12 (2).

Increased Risks of ADRs in DS Adult Population due to Increase Medications

- mimic or mask diseases
- acute dementia overlaying AD
- reduced functioning level and reduced independence
- exacerbates existing disabilities associated with DS
- **Very little research on DS adults and ADRs**

ADR Symptoms Mimicking Dementia

- Disorientation to person, place or time
- Disturbed concentration
- Depression, sadness, irritability
- Delusion/hallucinations (auditory/visual)
- Increased or decreased sleep
- Loss of interest
- Memory loss (short and long term)
- Personality change



QUESTIONS?



Examples of Medications and ADRs



SECTION 5

Examples of Medications and ADRs

- Dilantin – phenytoin associated ADRs mimicking, masking, or exacerbating dementia or other diseases/disorders:
 - dizziness, headache, atrial fibrillation, hypotension, reduced heart rate – **mimics CVD**
 - blurred vision – **mimics or masks vision problems in DS adults**
 - nausea, vomiting, constipation, weight loss – **mimicking GI problems**
 - aplastic anemia, leucopenia – **masks leukemia associated with DS adults**
 - confusion, aggression, slurred speech, insomnia, depression – **mimics or masks Alzheimer' s**

Examples of Medications and ADRs

- Important Note

Some research has shown the following medications used to reduce symptoms of Alzheimer's disease in the general population may not be as effective in the DS adult:

1. Reduce inflammation

- Namenda (memantine) Glutamate inhibitor

2. Increase acetylcholine

- Aricept, Exelon

Namenda (memantine)

- Therapeutic Use
 - Reduces symptoms of inflammation
 - Mid to late stages - works better if given with cholinergic mimics
 - Does not work for all individuals, efficacy may vary with individuals
 - Reduced effectiveness over time
- ADRs
 - Common: dizziness, confusion, somnolence (sleepy) - mimics AD
 - Not common: hypertension, vomiting, constipation, back pain, rash, fatigue, pain - mimics GI problems, reduced stamina
 - May affect cimetidine levels - mimics or mask GI problems

Aricept (donepezil)/Exelon (rivastigmine)

- Therapeutic Use
 - Reduces symptoms by increasing acetylcholine concentration in the brain compensating neuron loss
 - Early to mid stages - works better if given with memantine
 - Does not work for all individuals, efficacy may vary with individuals and reduced effectiveness over time
- ADRs
 - dizziness, headache atrial fibrillation, reduced heart rate - **mimicking CVD**
 - Nausea, vomiting, diarrhea, ulcers, asthma, GI bleeding, abdominal stress, flatulence - **mimicking GI problems**
 - seizures - **mimicking, masking or exacerbating existing seizures in DS and CP**
 - insomnia, fatigue, agitation, lethargic, nightmares, incontinence - **mimics AD**



CAUTION - **AGING INTO MEDICATION**

Older individuals with IDD who are on medications for extended periods of time may begin to experience ADRs from those medications due to age related changes in metabolism.

Staff Outcomes



SECTION 6

Staff Outcomes – Reducing ADRs in DS Adults

1. To have increased observations skills (see assessment handout in Session 3 and ADRs listed in this session) to recognize changes in older ID/DD adults that may be due to ADRs
2. To be aware that ADRs may mimic, mask, exacerbate or cause dementia and other diseases
3. To have an understanding of what age related changes may contribute to reduced medication metabolism
4. To recognize the importance of being an advocate, calling attention to the health care practitioners regarding changes that may be attributed to ADRs

Strategies to Reducing ACSC from ADRs



SECTION 7

Strategies to Reducing ACSC from ADRs

1. Develop a process to record any observed changes after medication(s) regime is changed
2. Develop a training program to increase observation and reporting skills including elements of the following slide
3. Develop a reporting protocol of changes to be provided to the health care practitioner (see handout)



QUESTIONS?



References

These two websites list medications that are high risk for ADRs in older adults:

- Beer's list

http://www.americangeriatrics.org/files/documents/beers/2012BeersCriteria_JAGS.pdf

- Anticholinergic cognitive burden scale (ACBS)

<http://www.indydiscoverynetwork.org/AnticholinergicCognitiveBurdenScale.html>