

Intellectual Disability Notes

Topics	Page Numbers
1. Introduction & Core Concept of Intellectual Disability - Definition (General Learning Disability & Mental Retardation) - Dual Impairment Domain: Intellectual Functioning (IQ) & Adaptive Behavior - Three Core Adaptive Skill Areas (Conceptual, Social, Practical)	Page 2
2. Developmental Symptoms & Behavioral Issues - Milestone Delays (Motor, Speech, Reasoning, Memory, Logic) - Childish Behavior, Lack of Curiosity & Dependency - Comprehensive Behavioral Profile (Aggression, Self-Injury, Impulse Control) - Physical Phenotypic Markers (Stature, Facial Features)	Page 3
3. Severity Levels: Mild & Moderate Intellectual Disability - Mild ID (IQ 50–69): Academic Difficulties, Self-Care & Support Needs - Moderate ID (IQ 35–49): Language Delays, Basic Skills & Supported Living - Social Adjustment & Independence Comparison	Page 4
4. Severity Levels: Severe & Profound Intellectual Disability - Severe ID (IQ 20–34): Motor Impairments & Severe CNS Abnormalities - Profound ID (IQ < 20): Nonverbal Communication, Incontinence & Total Care - Clinical Comparison Matrix Across All 4 Severity Levels	Page 5
5. Classification Schemes: AAMR / AAIDD & Clinical Ranges - Normal Population IQ Distribution (90–110 Range) - AAMR Classification Ranges (Borderline to Profound MR) - Paradigm Shift from Deficit Labels to Support Intensities	Page 6
6. Genetic & Chromosomal Causes of Intellectual Disability - Fragile X Syndrome (X-Chromosome Mutation, ADHD/Autistic Behaviors) - Down Syndrome (Trisomy 21, Physical Features, Health Risks) - Prader-Willi Syndrome (Chromosome 15, Hypothalamic Hunger, Phenotype)	Page 7
7. Environmental, Teratogenic & Perinatal Causes - Fetal Alcohol Spectrum Disorder (FASD) (Placental Transfer & Prevention) - Pregnancy Hazards & Birth Trauma (Anoxia, Prematurity) - Toxic Exposures (Lead, Mercury) & Childhood Infections (Meningitis)	Page 8
8. Multi-Level Prevention Framework - Genetic Counseling & Prenatal Diagnostics - Social & Nutrition Programs (Malnutrition & Poverty Interventions) - Environmental Toxin Mitigation & Maternal Health Education - Infectious Disease Immunization (Rubella Vaccine, Toxoplasmosis Protocols)	Page 9
9. Disability Percentage Calculation (VSMS) & Interventions - Vineland Social Maturity Scale (VSMS) 5-Tier Disability Percentage Matrix - Lifelong Multi-Disciplinary Management & Early Intervention (IDEA 1990) - Special Education, Vocational Training, Job Coaching & AAIDD Supports	Page 10

1. Introduction to Intellectual Disability

Historical & Diagnostic Nomenclature: Intellectual disability was historically referred to as **Mental Retardation (MR)** and is also termed in educational contexts as **general learning disability**. It represents a neuro-developmental condition present from early life.

- Core Clinical Definition:** Intellectual disability is a condition characterized by **significant limitations** in both:
- 1. **Intellectual Functioning:** Also known as intelligence quotient (IQ), referring to mental capacity for reasoning, learning, problem solving, abstract thinking, and making sound judgments.
 - 2. **Adaptive Behavior:** The collection of conceptual, social, and practical skills that people learn and perform in their daily lives.

2. The Three Dimensions of Adaptive Functioning

Adaptive behavior evaluates how well an individual copes with everyday life tasks across three distinct domains:

Adaptive Domain	Specific Functional Skills & Daily Competencies
1. Conceptual Skills	Language development, reading comprehension, written expression, mathematics/ calculation, reasoning, knowledge acquisition, and working memory.
2. Social Skills	Empathy, interpersonal communication skills, social judgment, the ability to understand and follow social rules, and the ability to make and maintain friendships.
3. Practical Skills	Independence in personal care (dressing, bathing, feeding), occupational/job responsibilities, managing money and currency, recreation, and organizing school and workplace routines.



2. Developmental Symptoms & Behavioral Issues

1. General Developmental Symptoms

Symptoms of ID vary based on the child's level of disability and developmental stage:

- **Milestone Delays:** Failure to meet intellectual milestones; sitting, crawling, or walking significantly later than peers.
- **Speech & Communication:** Problems learning to talk or trouble speaking clearly.
- **Cognitive Deficits:** Memory difficulties, inability to think logically, and inability to understand the consequences of actions.
- **Behavioral Immaturity:** Childish behavior inconsistent with chronological age, marked lack of curiosity, and learning difficulties.
- **Independence Barrier:** Inability to lead a fully independent life due to challenges communicating, self-care, or social interaction (typically with **IQ below 70**).

2. Associated Behavioral & Emotional Issues

Emotional & Self-Regulation Issues	Social & Interactional Issues
• Lack of impulse control • Low tolerance for frustration • Low self-esteem & passivity • Tendency toward self-injury • Depression during adolescent & teen years • Psychotic disorders in severe cases	• Aggression & stubbornness • Excessive dependency on caregivers • Withdrawal from social activities • Attention-seeking behavior • Difficulty paying and sustaining attention

3. Physical Characteristics

Some individuals with intellectual disability may exhibit specific physical phenotypic markers, including **short stature**, motor incoordination, or **facial abnormalities** (commonly associated with specific underlying genetic etiologies).

3. Severity Levels: Mild & Moderate ID

Intellectual disability is clinically divided into **four** **distinct** **levels** based on the individual's IQ score, adaptive functioning, and degree of social adjustment.

1. Mild Intellectual Disability (IQ Range: 50 – 69)

Mild ID constitutes the largest proportion of individuals with intellectual disability. They are often termed "**educable**" in educational classifications.

Key Characteristics of Mild ID:

- **Language Development:** Takes longer to learn to talk, but communicates well in everyday conversation once speech is established.
- **Self-Care & Independence:** Capable of achieving full independence in personal self-care and hygiene as they grow older.
- **Academic Profile:** Experiences difficulties with formal reading, writing, and arithmetic; benefits significantly from specialized education plans (IEPs).
- **Social Adjustment:** May show social immaturity; encounters increased difficulty with complex adult responsibilities such as marriage, legal contracts, or parenting.

2. Moderate Intellectual Disability (IQ Range: 35 – 49)

Moderate ID individuals are often termed "**trainable**". They can acquire communication and basic survival skills with structured support.

Key Characteristics of Moderate ID:

- **Communication:** Slow in understanding and using spoken language; may experience noticeable communication difficulties.
- **Functional Academics:** Capable of learning basic functional reading, writing, and simple counting skills.
- **Community Living:** Generally unable to live completely alone; requires supported living arrangements or group homes.
- **Mobility & Socialization:** Can often travel independently to familiar community locations (school, workshop) and participate in various social activities.

4. Severity Levels: Severe & Profound ID

1. Severe Intellectual Disability (IQ Range: 20 – 34)

Individuals with severe ID experience substantial neuro-developmental damage and require continuous, systematic assistance throughout life:

- **Motor & Physical Impairments:** Noticeable motor impairments and poor physical coordination.
- **Neurological Etiology:** Severe damage to, or abnormal development of, the central nervous system (CNS).
- **Communication & Daily Care:** Limited expressive vocabulary; communicates through basic gestures or single words; needs substantial assistance with daily self-care tasks.

2. Profound Intellectual Disability (IQ: Less than 20)

Profound ID represents the most severe manifestation, requiring **total life-care and constant supervision**:

- **Comprehension & Compliance:** Inability to understand, process, or comply with verbal requests or instructions.
- **Motor & Mobility:** Severe physical limitations; possible total immobility.
- **Physiological Care:** Incontinence of bowel and bladder; total inability to care for own basic biological needs.
- **Communication:** Very basic nonverbal communication (crying, vocal sounds, body movements).

Comparative Summary of the 4 Severity Levels

Level	IQ Range	Communication	Independence Level
Mild	50 – 69	Good conversational speech	Independent in self-care; needs guidance in complex tasks
Moderate	35 – 49	Basic functional language	Semi-independent; can travel familiar routes; cannot live alone
Severe	20 – 34	Limited words / gestures	Requires continuous daily support and assistance
Profound	< 20	Basic nonverbal sounds	Total dependence; constant help and supervision required

5. Classification Schemes & IQ Ranges

1. Intelligence Quotient (IQ) Baseline

In standard psychometric measurement, average population intelligence quotient is indexed at **IQ = 100**, with the normal statistical range spanning between **90 to 110**.

2. AAMR Classification Scheme (Mental Retardation)

The American Association on Mental Retardation (AAMR) historically established the standard clinical IQ cut-offs for classifying mental retardation:

Classification Category	IQ Range	Educational / Clinical Classification
Borderline	IQ 70 – 80	Slow Learner / Borderline Intellectual Functioning
Mild MR	IQ 55 – 70	Educable Mentally Retarded (EMR)
Moderate MR	IQ 40 – 55	Trainable Mentally Retarded (TMR)
Severe MR	IQ 25 – 40	Severe / Dependent Retardation
Profound MR	IQ below 25	Life-Support / Total Custodial Care

Evolution to Support-Based Paradigm (AAIDD):

Modern diagnostic systems (AAIDD / DSM-5) emphasize that an individual should not be defined solely by an IQ number. Instead, evaluation must determine the **intensity of supports** (Intermittent, Limited, Extensive, or Pervasive) required across personal, academic, and community environments.



6. Genetic Causes of Intellectual Disability

1. Fragile X Syndrome

Overview: The most common known cause of an **inherited intellectual disability worldwide**. It is a genetic disorder caused by a mutation (change in DNA structure) in the X chromosome.

Clinical Manifestations: Causes a wide range of physical, developmental, behavioural, and emotional difficulties:

- Developmental delay, intellectual disability, and significant communication difficulties.
- High prevalence of anxiety and Attention Deficit Hyperactivity Disorder (ADHD).
- **Autism-like Behaviours:** Hand flapping, sensory processing difficulties, poor eye contact, and social interaction deficits.

2. Down Syndrome (Trisomy 21)

Overview: Down syndrome is not a disease or illness; it is a genetic chromosomal disorder occurring when someone is born with a full or partial **extra copy of chromosome 21**. It is the **most common genetic cause of learning disabilities** in children.

- **Physical Features:** Slight upward slant of the eyes, rounded facial profile, and short stature.
- **Medical Complications:** Significantly higher incidence of congenital heart defects and respiratory conditions.

3. Prader-Willi Syndrome (PWS)

Genetics & Prevalence: Rare genetic disorder affecting 1 in 10,000 to 20,000 live births, caused by an abnormality in genes on **Chromosome 15**.

- **Insatiable Hunger (Hyperphagia):** Beginning around age 2, the brain's *hypothalamus* fails to register fullness, causing a constant, urge to eat.
- **Phenotype:** Hypotonia (poor muscle tone), short stature, almond-shaped eyes, narrow head, thin upper lip, light skin/hair, and turned-down mouth.
- **Cognitive Profile:** Intellectual disability with marked difficulties in language, problem-solving, and mathematics.

7. Environmental & Other Causes

1. Fetal Alcohol Spectrum Disorder (FASD)

Etiology: A group of conditions caused when an unborn fetus is exposed to maternal alcohol intake during pregnancy. Alcohol crosses the placental barrier directly from the mother's bloodstream into the fetal circulation, exposing the baby to identical alcohol concentrations.

- **Clinical Presentation:** Distinctive facial dysmorphism, joint deformities, slow physical growth, damage to vital organs (heart, kidneys), learning difficulties, poor memory, impaired judgment, behavioral problems, and deficient social skills.
- **Diagnostic Overlap:** Frequently misdiagnosed as Autism or ADHD due to overlapping symptom profiles.
- **WHO Guideline:** Expectant mothers or those planning conception must **completely abstain from alcohol**.

2. Pregnancy, Perinatal & Environmental Hazards

Etiological Stage	Specific Causative Factors & Pathologies
Prenatal Hazards	Maternal viral/bacterial infections, exposure to prescription/illicit drugs, chemical toxins, and intrauterine trauma.
Perinatal / Birth Trauma	Severe oxygen deprivation (birth anoxia/asphyxia), prolonged labor, birth injuries, and extreme premature delivery.
Toxic Chemical Exposures	Environmental or ingested heavy metal poisonings, specifically Lead and Mercury toxicity.
Postnatal Illnesses	Severe childhood infectious diseases such as Meningitis , Measles , and Whooping Cough (Pertussis).
Nutritional & Other Factors	Severe chronic malnutrition, traumatic brain injury (TBI), and idiopathic (unknown) causes.

8. Prevention of Intellectual Disability

Many forms of intellectual disability can be prevented through systematic, evidence-based public health, medical, and socio-environmental interventions across four core pillars:

1. Four Pillars of Prevention

1. Genetic Prevention:

- Comprehensive genetic counseling for high-risk prospective parents and families with pedigree history of genetic disorders.
- Prenatal screening and advanced diagnostic testing during early pregnancy to inform parental planning and medical decisions.

2. Social & Nutritional Prevention:

- Public maternal-child nutrition programs to eliminate developmental disabilities resulting from severe malnutrition and micronutrient deficiencies.
- Early social intervention programs in environments involving poverty, child neglect, and domestic abuse.

3. Toxic Substance Control:

- Strict environmental mitigation and regulation preventing public exposure to neurotoxins like lead, mercury, and industrial chemicals.
- Public health awareness educating women on the risks of alcohol, smoking, and illicit drugs during pregnancy.

4. Infectious Disease Control & Immunization:

- Universal maternal and infant vaccination programs (e.g., preventing Congenital Rubella Syndrome via MMR vaccine).
- Educating pregnant women to avoid contact with cat feces and contaminated soil to prevent **Toxoplasmosis**.

9. Disability Calculation & Treatment

1. Disability Percentage Calculation via VSMS

In clinical certification and welfare assessment, intellectual disability percentage is calculated based on the **Vineland Social Maturity Scale (VSMS)** score:

VSMS Score Range	Disability Classification	Official Disability Percentage
VSMS Score: 0 – 20	Profound Disability	100% Disability
VSMS Score: 21 – 35	Severe Disability	90% Disability
VSMS Score: 36 – 54	Moderate Disability	75% Disability
VSMS Score: 55 – 69	Mild Disability	50% Disability
VSMS Score: 70 – 84	Borderline Disability	25% Disability

2. Comprehensive Lifelong Interventions & Support Systems

Intellectual disability is a **lifelong condition**; however, early and ongoing intervention enables individuals to thrive:

- **IDEA (1990) Mandate:** Federal law guarantees free, appropriate public education (FAPE) and early intervention for infants/toddlers with disabilities.
- **Multimodal Services:** Special education, family respite care, transition planning, vocational training, day programs, supported housing, and case management.
- **Job Coaching & Community Inclusion:** Vocational coaching enables individuals to hold productive employment and achieve full community inclusion.
- **AAIDD Paradigm:** The primary objective of assessment is to identify and deploy customized supports to empower thriving throughout the lifespan.