Case Study: Spina Bifida (Myelomeningocele)

Part 1: Getting to Know Liam

Liam and His Family

Liam is a 4.5-year-old boy who lives in a suburban neighborhood in Seattle with his mother, Erica (34), father, Marcus (36), and younger sister, Zoe (18 months). The family identifies as Asian American, both parents are Japanese, and is actively involved in their local community. Erica works as a nurse at a nearby clinic, and Marcus is a middle school math teacher.

Medical and Developmental History

Liam was diagnosed with Spina Bifida Myelomeningocele shortly after birth. Prenatal ultrasounds had indicated possible neural tube defects, and postnatal imaging confirmed the diagnosis. Within 48 hours of birth, Liam underwent surgery to close the spinal opening and reduce the risk of infection. He also required placement of a ventriculoperitoneal shunt to manage hydrocephalus, a common complication of Spina Bifida.

Throughout infancy and toddlerhood, Liam received early intervention services through Washington State's IDEA Part C program. His medical team monitored his development closely, noting delays in gross motor milestones due to lower limb paralysis. Liam began using a pediatric wheelchair by age two and receives ongoing physical therapy to support his strength, posture, and mobility. He also experiences neurogenic bladder, requiring catheterization and regular monitoring for urinary tract infections.

Despite these medical challenges, Liam's cognitive development has been within typical limits. He demonstrates strong verbal skills, a vivid imagination, and a love for storytelling. His fine motor skills are emerging, supported by occupational therapy to improve hand strength and coordination. Liam enjoys building blocks, playing pretend, and learning about dinosaurs.

At age three, Liam transitioned to preschool services under IDEA Part B. He now attends a local inclusive preschool program, where he receives integrated physical therapy, occupational therapy, and speech-language services. His teachers describe him as enthusiastic, curious, and eager to participate in classroom activities.

Discussion Prompts:

- What strengths and interests can be leveraged to support Liam's learning and engagement in the classroom?
- How might Liam's family routines and background influence his participation in early childhood services?

- What considerations should be made when planning transitions between home, medical appointments, and school?

Part 2: Screening and Assessment

Liam's developmental assessments have been ongoing since infancy. His initial diagnosis of Spina Bifida Myelomeningocele was confirmed through prenatal imaging and postnatal MRI. Following surgery, Liam was enrolled in early intervention services, where providers monitored his motor development, sensory processing, and communication skills.

Liam demonstrated strong receptive language skills and emerging expressive language. He used a combination of speech and gestures to communicate and was beginning to use a picture-based AAC system to support longer utterances. His fine motor skills were delayed due to limited hand strength and coordination, but he showed persistence and creativity in adapting tasks.

Motor assessments revealed that Liam had limited lower limb mobility and required assistance for transfers and toileting. His physical therapist worked with the classroom team to ensure Liam's wheelchair was positioned for optimal access to materials and peers. The occupational therapist introduced adaptive tools for art and writing activities, and the speech-language pathologist supported Liam's use of visual supports and social scripts.

As part of Liam's transition to preschool special education services at age three, his physical therapist (PT) played a central role in evaluating his mobility and determining the most appropriate supports for his participation in the classroom. The PT conducted a series of assessments to understand Liam's gross motor abilities, postural control, and functional mobility.

Using standardized tools such as the Gross Motor Function Measure (GMFM) and the Pediatric Evaluation of Disability Inventory (PEDI), the PT assessed Liam's ability to sit independently, transfer between surfaces, and navigate his environment. The GMFM revealed that Liam had limited voluntary movement in his lower limbs and required significant support for standing and walking. The PEDI highlighted challenges in self-care and mobility tasks, such as toileting and transitioning from floor to chair.

Observations were also conducted in Liam's home and preschool classroom to evaluate how he interacted with his environment and peers. The PT noted that Liam was highly motivated to explore and engage with others but was often restricted by physical barriers. He could propel himself short distances using a walker but fatigued quickly and was unable to keep pace with his peers during outdoor play or transitions between activities.

Based on these findings, the PT recommended a lightweight pediatric wheelchair with customized seating and positioning supports. The wheelchair was selected to promote Liam's independence, safety, and access to classroom materials and social opportunities. The PT collaborated with the school team to ensure the classroom layout accommodated Liam's mobility needs, including clear pathways, adjustable-height tables, and accessible storage.

The PT also provided training to Liam's teachers and paraprofessionals on safe transfer techniques, positioning strategies, and ways to incorporate movement into Liam's daily routine. Regular check-ins were scheduled to monitor Liam's progress and adjust supports as needed.

Discussion Prompts:

- How can assessments be adapted to accommodate Liam's physical needs while still capturing his developmental profile?
- What role does family input play in shaping meaningful goals for children with complex medical conditions?
- How can assistive technology be evaluated and integrated into Liam's learning environment to support independence?

Part 3: Peer Relationships in an Inclusive Preschool Setting

Liam's inclusive preschool classroom was designed to support diverse learners through universal design and individualized supports. His teachers were committed to fostering a sense of belonging and actively worked to promote peer interactions.

Initially, Liam was hesitant to engage with peers during free play. He often observed from a distance and preferred solitary activities like building with blocks or reading picture books. His teachers noticed that some children were unsure how to approach Liam or include him in their play, especially when activities involved movement or physical coordination.

To address this, the team implemented several strategies:

- **Peer Modeling and Social Scripts**: Teachers introduced simple scripts and role-play activities to help children learn how to invite Liam to play, ask questions, and share materials.
- **Cooperative Play Activities**: The classroom incorporated turn-taking games, building projects, and storytelling circles that allowed Liam to participate using his strengths in language and imagination.

- **Circle Time Inclusion**: Liam was given a leadership role during circle time, such as choosing songs or helping with calendar activities, which increased his visibility and peer recognition.
- **Buddy System**: A peer buddy program was introduced, pairing Liam with classmates who could assist with transitions and encourage interaction during play.
- **Teacher Facilitation**: Educators used gentle prompts and proximity to support Liam's engagement, helping him navigate social situations and respond to peers.

Over time, Liam began initiating interactions, laughing with classmates, and participating in group activities. His peers became more comfortable and inclusive, often adapting games to ensure Liam could join. Erica shared that Liam talked about his friends at home and looked forward to school each day.

Discussion Prompts:

- What strategies can educators use to promote peer relationships for children with physical disabilities in inclusive settings?
- How can classroom routines and environments be adapted to support social participation for children with mobility challenges?
- What role do peers play in shaping inclusive classroom culture, and how can educators foster empathy and collaboration?