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Logopedic diagnosis in the context of Polish standards of diagnosis and therapy of a child with FASD

Introduction

Prenatal alcohol exposure is the primary cause of damage to the structures of the central and peripheral nervous system, as well as abnormal child development, diagnosed as Fetal Alcohol Spectrum Disorder (FASD). This condition is characterized by considerable heterogeneity of symptoms resulting from structural damage and impaired brain physiology. The effects of exposure may involve four domains of impairment associated with the child's contact with a behavioral neuroteratogen during prenatal development, namely: facial anomalies, malformations of the internal organs and musculoskeletal system, pre- and postnatal growth deficiencies, and delays in psychomotor development. Among these four assessed domains, the evaluation of the structure and function of the central nervous system, including communication, constitutes an essential component of the diagnostic process in FASD. At the same time, it should be emphasized that the consequences of prenatal exposure to alcohol – the most aggressive neurobehavioral teratogen – may manifest at various stages of life and, simultaneously, persist throughout the individual's lifespan. "FASD is not in itself a clinical diagnosis; however,

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it enables the diagnosis of patients exposed to alcohol intoxication in utero" (Palicka & Śmigiel, 2021, p. 441).

Fetal alcohol spectrum disorders

Ann Streissguth and Kieran O'Malley (2000) introduced the term FASD (Fetal Alcohol Spectrum Disorders) in 2000. The term is understood as a set of physical, psychological, behavioral, and social competence deficits – varying in severity and prevalence, depending, among other factors, on the timing of prenatal alcohol exposure, the degree of CNS damage, and the extent of involvement of other organs and internal systems – that may occur in children of women who consumed alcohol during pregnancy (Tomanik, 2023).

Given that all characteristics observed in individuals prenatally exposed to alcohol represent a spectrum of effects – which, however, do not follow a continuum ranging from mild to severe neurodevelopmental alterations – the recommendations for diagnosing Fetal Alcohol Spectrum Disorders (FASD), developed in 2020 by a Polish interdisciplinary team of specialists, propose distinguishing two primary diagnostic categories within FASD:

- **FAS – Fetal Alcohol Syndrome** (classified under ICD-10 code Q86.0), and
- **ND-PAE – Neurodevelopmental Disorders Associated with Prenatal Alcohol Exposure** (classified under ICD-10 code G96.8).

Additionally, a non-diagnostic category has been distinguished – **FASD risk** – referring to children with prenatal alcohol exposure who are currently undergoing diagnostic evaluation or who present clear dysmorphic features despite undocumented alcohol exposure. Another situation in both of these cases may involve children who are too young for an appropriate neuropsychological diagnosis. In such instances, repeated assessment or continued diagnostic observation is required [Rozpoznawanie..., 2020].

With respect to the distinguished diagnostic categories – FAS and ND-PAE – four diagnostic criteria have been identified, which are presented in the table below.

Table 1. Diagnostic criteria for FAS and ND-PAE

Diagnostic criteria	FAS	ND-PAE
Prenatal alcohol exposure	Yes or unknown	Yes
Prenatal and/or postnatal deficiency in body length/weight	Yes	–
Key facial dysmorphia	Short palpebral fissures Narrow upper lip Smooth philtrum	–

Neurodevelopmental disorders	3 cognitive deficits (or 2 cognitive deficits and neurological symptoms present) **OR** 3 abnormalities in the emotional-social domain, adaptive disorders, or psychopathological symptoms **OR** Significant impact of the above abnormalities on daily living activities and social functioning	

Note. Source: based on *Rozpoznawanie...* (2020, p. 11); and *Rozpoznawanie...* (2025, p. 12).

Diagnostic procedure scheme

> Fetal Alcohol Syndrome is an incurable condition; however, treatment is possible. A key factor for the development of a child with FAS (or ND-PAE – author's note) is early intervention – from birth to the third year of life. Both behavioral therapies and psychoactive medications are currently being tested. Despite the incurability of FAS, supportive therapeutic interventions and treatment of co-occurring mental disorders may increase independence and improve the quality of life of patients. (Mormul et al., 2023, p. 245; Bandoli et al., 2024; Clark et al., 2024; Vanderpeet et al., 2025)

The estimated data indicate that in Europe, FASD is the most common non-genetic neurodevelopmental disorder, affecting about 2% of all live births (with a global estimate of 7.7 per 1,000) (Okulicz-Kozaryn, 2015; Palicka, 2021). Epidemiological studies conducted in Poland point to the following findings:

- alcohol consumption reported by Polish women during pregnancy ranges from 15% to 39%, depending on the study,
- a significant prevalence of FASD among Polish schoolchildren aged 7–9 years (Okulicz-Kozaryn, 2015; Palicka, 2021), and
- the prevalence of FASD in Poland is estimated at 3–5%, which, compared to other neurodevelopmental disorders, is as follows: Down syndrome 0.1%, autism spectrum disorders (ASD) 1.6% (including autism – 0.4%, Asperger syndrome – 1.2%), epilepsy 0.8%, cerebral palsy 0.2% (Palicka & Śmigiel, 2021).

The most effective solution for a broad, socially accessible diagnostic process seems to be screening for the spectrum of disorders related to prenatal alcohol exposure, conducted in institutions with wide social accessibility, i.e., educational, healthcare, and social care facilities.

According to the diagnostic model for FASD outlined in the recommendations prepared by the interdisciplinary team of Polish experts (2020), screening should include all children:

- whose mothers consumed alcohol during pregnancy,
- with neurodevelopmental disorders of unknown etiology,
- with growth restriction (body length/height and/or body weight < 3rd percentile and/or birth weight < 10th percentile and/or microcephaly),
- with facial dysmorphic features characteristic of FAS (2020, p. 12).

The next proposed steps in the diagnostic process are:

- specialist assessments, including a logopedic examination (differential and functional diagnosis), and
- the formulation of conclusions and recommendations, and their communication to the patient and/or family.

The diagnosis of FASD is a multistage process that requires the involvement of an interdisciplinary team of specialists. Ideally, the team should include:

- a physician specializing in neurology/psychiatry/pediatrics,
- a physician specializing in radiology/neuroimaging,
- a physician specializing in clinical genetics,
- a physician specializing in metabolic pediatrics,
- a psychologist/neuropsychologist,
- a speech therapist/logopedist,
- a physiotherapist,
- a dietician,
- a dentist/orthodontist,
- a sensory integration therapist,
- a teacher/special education teacher.

At a minimum, the team must include a physician specialist and a psychologist.

Complementary diagnosis within the FASD spectrum

To refine the diagnosis and create a legal basis for organizing therapeutic support within the healthcare and education systems for children and adolescents affected by the spectrum of disorders, the basic diagnoses are supplemented with additional ones. On their basis, children and adolescents may be granted various forms of assistance available under educational law (e.g., early support opinion, special education). The most common diagnoses in this group of patients are presented in the following table.

Table 2. Co-occurring diagnoses with FASD according to ICD-10

Code	Diagnosis
F80	Specific developmental disorders of speech and language

F81	Specific developmental disorders of scholastic skills
F82	Specific developmental disorder of motor function
F83	Mixed specific developmental disorders
F94.8	Other childhood disorders of social functioning
F88	Other disorders of psychological (mental) development
R27	Other lack of coordination
R62.0	Delayed milestones
R62.8	Other lack of expected normal physiological development (short stature, underweight)
E34.3	Short stature, not elsewhere classified

Note. Source: based on *Rozpoznawanie...* (2020, p. 9).

FASD, fetal growth restriction (FGR), and prematurity

According to the Polish diagnostic recommendations for FASD (2020), the diagnosis of Fetal Alcohol Syndrome (FAS) – in addition to the characteristic facial dysmorphic pattern, neurodevelopmental disorders, and confirmed prenatal alcohol exposure – requires evidence of prenatal and/or postnatal growth deficiency, i.e., body length/height and/or weight below the 3rd percentile and/or birth weight below the 10th percentile.

As the authors of the Polish recommendations emphasize, the impact of alcohol on growth, both prenatally and postnatally, is well documented. These data, combined with clinical features of FASD related to growth and physical development (fetal growth restriction initiated in the prenatal period, i.e., FGR; prematurity; prenatal and postnatal microcephaly; increased neonatal mortality) (Bartel, 2020; Bendix et al., 2020; Guerby & Bujold, 2020), highlight the need to address issues of early child development.

> Alcohol consumption during pregnancy carries serious consequences for the course of pregnancy and may cause premature delivery. Premature infants from such pregnancies are at particularly high risk of perinatal death, and sepsis develops 15 times more frequently in them than in other children. (Mormul et al., 2023, p. 247)

The risk of prematurity requires that medical standards be implemented in the care of this group of children. For this group, therefore, the implementation of standards of care for premature infants is of particular importance, including neonatal logopedic care, due to the observed weaker motor and visuomotor coordination, difficulties with concentration and verbal expression, poorer school achievements, and lower intellectual levels, both verbal and non-verbal (Wendorff, 2003; Akison et al., 2024).

Neurological and intellectual developmental deficits, alongside somatic deficiencies, are observed in children with alcohol-related disorders. This obliges diagnosticians to consider FASD also in the context of prematurity. Therefore, a therapist working with a child with FASD should possess knowledge of the following:

- diagnosing prematurity,
- care procedures for premature infants,
- consequences of neonatal and intensive care unit stays,
- developmental consequences experienced by preterm and growth-restricted infants,
- diseases, complications, and pathologies related to the functional and anatomical immaturity of organs.

Among the neonatal diseases and complications significantly influencing the prognosis for health and life in preterm infants are brain damage, respiratory disorders, circulatory problems, gastrointestinal complications, and sensory organ abnormalities (Szymankiewicz, 2006). From a logopedic perspective, an important issue related to the birth of a premature infant or a child with developmental abnormalities is the development of speech on a pathological basis.

> Communication development (...) takes place in atypical circumstances. Atypical, because the child's prolonged hospital stay, the necessity of numerous medical procedures, including surgeries, and the parents' fear for the child's life do not create the right atmosphere conducive to development. They negatively affect the formation of the child–parent relationship and the first attempts at communication. Caregivers, focusing on the child's disorders and abnormalities, concentrate on therapy and rehabilitation. Viewing the child through the prism of their fears and the child's problems, they often limit spontaneous verbal contacts and play, being afraid for the child's health. (Kaczorowska-Bray & Zielińska-Burek, 2012, p. 91)

Moreover, children – including those prenatally exposed to alcohol – may lack the functions necessary for proper speech development, such as sucking or swallowing reflexes, which can also be modified by oral-facial deformities, both typical and atypical for FAS. In turn, a poorly developed hearing organ or one damaged by mechanical ventilation lasting more than five days, as well as brain pathway and structural damage, result in difficulties in understanding and producing language. Hence, special attention should be paid to issues of early logopedic care for children after prenatal alcohol exposure.

The **Standards of ambulatory care for premature infants** (2018, 2022), in the chapters on physiotherapy and speech therapy, include the following areas of action:

- Observation of spontaneous motor activity.
- Observation of the level and quality of feeding functions, effectiveness and quality of feeding, and respiratory/exercise tolerance during feeding.
- Observation of relational skills and adaptive mechanisms.
- Observation of limitations and difficulties in basic activities: breathing, feeding, movement.

Observation of other limitations, dysfunctions, congenital/functional anomalies. Control visits, conducted by specialists (physiotherapist, speech therapist/logopedist, psychologist, pedagogue, lactation consultant), are planned in different scopes and time frames, as shown in the table below.

Table 3. Speech therapy care dedicated to premature infants in the first 18 months of life

Age	Scope of care and therapy
1.5–2 months	Assessment of the child's feeding quality, selection of feeding accessories. Support for parents, problem-solving.
3 months	Assessment of feeding quality, possible selection of feeding accessories. Possible neurodevelopmental stimulation/therapy. Assessment of finger extension skills in the prone position. Support for parents, problem-solving.
6–7 months	Assessment of feeding functions, techniques, and quality of feeding; assessment of basic communication skills and speech development. Assessment of motor development (sitting, manipulation). Support for parents, problem-solving.
10–12 months	Assessment of feeding functions, feeding techniques, and quality; assessment of communication skills and speech development. Assessment of gross motor development. Support for parents, problem-solving.
16–18 months	Further assessment of communication and speech development, as well as gross motor skills and manual dexterity. Support for parents, problem-solving.

Note. Source: based on Zawitkowski et al. (2018, pp. 41–66, 2022, p. 61).

Paulina Stobnicka-Stolarska (2020), the author of a compilation of feeding-related problems observed in children up to the age of two with confirmed prenatal alcohol exposure, indicates that such issues may constitute a signal for referral to a speech therapist/neurospeech therapist. These include, for example, reluctance to explore new tastes, consistencies, and textures; difficulties in selecting an appropriate bottle teat; problems with biting and chewing solid foods; difficulties in independently using a spoon and holding a cup. She suggests that diagnostic and therapeutic attention should be directed toward children up to two years of age, or even longer. This view corresponds with the recommendations of the national consultant

for neonatology on integrated multidisciplinary care for premature infants up to the age of three (Helwig, 2018).

Therefore, given the numerous dysfunctions and organ deformities observed in children with FASD, it seems justified to implement, within the model of diagnostic and subsequently therapeutic logopedic care, the full scope of myofunctional diagnosis for children with prenatal alcohol exposure. The aim of this diagnosis is to determine:

- the position of the lips (tightness and symmetry of the closure of the upper and lower lips),
- the resting position of the tongue,
- the swallowing pattern presented by the child,
- the course of chewing and fluid intake,
- possible parafunctions within the masticatory system,
- the level of orofacial muscle activity,
- the respiratory pathway (Rosińska, 2021).

> By no later than the completion of 12 months of age, a consultation with a specialist with pedagogical training is recommended (...). The consultation aims to assess and/or work with parents to develop forms of activity and organization of the child's time and space that would be directed toward compensating for potential deficits in spatial organization, planning and structuring play, behavioral modulation and communication, as well as basic learning mechanisms. Introducing such support for parents increases the chances of the child's effective entry into the stage of knowledge acquisition and establishing relationships with peers in the preschool period and later (Zawitkowski et al., 2022, p. 62).

Model of logopedic diagnosis

The linguistic aspect of developmental problems in children with FASD has been emphasized for many years by Teresa Jadczak-Szumiło, Katarzyna Kałamajska-Liszcz, and Krzysztof Liszcz (2018). According to them, children with FASD face significant problems in using language in more complex social contexts:

> They lack key communication skills that enable them to join a peer group and maintain relationships. (...) they do not understand utterances because the context is ambiguous or variable: different in the verbal layer, and different, for example, in the melody of speech. (Jadczak-Szumiło et al., 2018, p. 41)

In response to the problems of this group of patients, T. Jadczak-Szumiło (2009) was the first to propose the organization of therapeutic work in the following areas:

- executive functions,
- memory processes,
- generalization of information,
- thinking processes,
- auditory processing,
- multisensory cognition,
- emotions,
- language and communication skills,
- social skills training.

Difficulties in acquiring the language system among children with fetal alcohol spectrum disorders are the consequence of multisystem damage associated with the spectrum, with particular emphasis on damage to the central and peripheral nervous systems. Their specificity has been studied for years by both psychologists and speech therapists. The most commonly listed deficits include:

- delayed speech development,
- articulation disorders,
- limited vocabulary (both expressive and receptive),
- pseudo-eloquence,
- lack of understanding of metaphors and idiomatic expressions,
- difficulty in comprehending and constructing complex sentence structures,
- schematic language utterances,
- difficulty in modifying statements in different social contexts,
- difficulty in understanding speech in adverse conditions,
- lack of auditory control of speech,
- difficulties in acquiring reading and writing skills,
- difficulties in using prosody, both emotional and linguistic (Pawłowska-Jaroń, 2024, p. 205; Palicka, 2021; Jadczak-Szumiło, 2009; Krakowiak, 2015, 2021).

Moreover, research conducted among children with various FASD subtypes by Iwona Palicka (2021) showed that the vast majority of participants in language tests did not achieve results consistent with developmental norms at specific stages of development. This clearly indicates the need for diagnosis and, subsequently, individualized speech therapy.

The logopedic diagnosis of a child with FASD requires an interdisciplinary approach, taking into account both the results of specialist medical examinations (audiological, neurological) and the determination of the level of cognitive functions underlying language development. In this sense, the starting point for programming the standard of logopedic actions – diagnosis and therapy – should be the guidelines contained in the *Standards of logopedic practice* (Krakowiak, 2015), which postulate:

- developing language skills through articulation, lexical, inflectional, word-formation, and syntactic exercises,
- enriching the expressive and receptive vocabulary,
- developing narrative skills in dialogue and monologue forms,
- developing communicative competence – exercises for acquiring social, situational, and pragmatic rules,
- stimulating the psychomotor, emotional-motivational, and social spheres.

Within this framework, diagnosis should include not only primary skill assessment (if it has not been conducted earlier in the child's development) and myofunctional diagnosis (with evaluation of the structure and function of the articulatory organs as a core element) but also the diagnosis of psychophysical functions underlying language acquisition, lateralization, and linguistic, communicative, and cultural competence. The detailed scope of the diagnostic model is presented below.

I. Examination of psychophysical functions underlying language acquisition

1. **Examination of motor skills**
   - Gross motor skills – regarded as preparing the child for manual skills exercises and oral praxis exercises
   - Manual skills examination, with order preserved from left to right
   - Oral praxis examination
2. **Examination of lateralization**
   - Hand dominance
   - Eye dominance
   - Leg dominance
   - Ear dominance
3. **Examination of visual analysis and synthesis**
   - On thematic material
   - On non-thematic material
4. **Examination of auditory perception**
   - Identification and differentiation of sounds
   - Listening to and memorizing speech sounds, with attention to the memorization of sequences of vowels, open and closed syllables, words, and sentences
   - Differentiation of phonological oppositions
5. **Examination of thought operations**
   - Sequencing
   - Classification using non-thematic material
   - Classification using thematic material
   - Cause-and-effect reasoning
6. **Examination of memory**

- Simultaneous memory
- Sequential memory

II. Examination of linguistic competence

a. **Examination of comprehension at the levels of**:
   - single words,
   - simple word combinations, and
   - simple, expanded, and complex sentences

b. **Examination of speaking**:
   - *Phonetic aspect* – articulation assessment
   - *Lexical aspect* – approximate assessment of expressive vocabulary
   - *Grammatical aspect* – nominal and verbal inflection
   - *Syntactic aspect*
   - *Suprasegmental aspect*

III. Examination of communicative competence

Knowledge of the rules of language use in a given social group, acquired through the process of socialization:

- *Social* – matching the form of the utterance to the interlocutor's status
- *Situational* – matching the form of the utterance to the situation
- *Pragmatic* – achieving the intended communicative effect

IV. Examination of cultural competence

- Knowledge of social and cultural phenomena, co-created through language

The proposed diagnostic model of language development and the cognitive functions underlying it may be implemented using standardized diagnostic tools indicated in Annex 5 of the recommendations prepared by the interdisciplinary team of Polish experts (2020).

Conclusion

Supporting children with FASD requires multidisciplinary collaboration, which makes it possible to address all their developmental problems in the entirety of diagnostic and therapeutic interventions. One cannot forget the need to stimulate also the emotional-motivational and social spheres. This will primarily be the task of the psychologist and pedagogue, but language requires the special attention of the speech therapist. It is the speech therapist who should name abstract experiences and, in doing so, help the child become familiar with them. What is named becomes closer to the child. Without such broadly understood support, children with FASD will not only be unable to cope with the challenges of modern life but, above all, they will not be able to experience the joy of belonging to a peer group or of solving problems

> together. (Orłowska-Popek & Pawłowska-Jaroń, 2021, p. 682; Pawłowska-Jaroń & Orłowska-Popek, 2021)
>
> It is extremely important to remember that no safe dose of alcohol for the fetus has been established. There is a high probability that any defect or abnormality (...) constitutes a consequence of prenatal alcohol exposure. FAS lowers the quality of life of millions of people worldwide and is associated with numerous physiological, psychiatric, and neurological consequences. These can significantly disrupt behavior as well as physical and emotional development, while at the same time impairing the ability to engage in social interactions. (Mormul & Dyląg, 2023, p. 246)

Worldwide, FASD is recognized as a common alcohol-related developmental disability that is largely preventable. Research findings emphasize the need to establish a universal model of preventive and informational activities regarding the potential harm caused by prenatal alcohol exposure, as well as the need to create a standardized, routine screening protocol (Lange & Probst, 2017).

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Abstract

Starting from basic data on the spectrum of disorders following prenatal alcohol exposure (FASD), the author presents diagnostic criteria and categories, then presents the models of diagnosis proposed in medical standards and areas for increased

monitoring in the course of development, and finally moves to the proposals for the diagnosis of language, speech, and verbal communication contained in the speech therapy standards and the recommendations of the interdisciplinary team of experts dealing with the diagnosis and therapy of children and adolescents with prenatal alcohol spectrum disorders.

Keywords: FASD, FAS, ND-PAE, language system, cognitive functions, myofunctional diagnosis