

## Secondary speech therapy prophylaxis aimed at children with low birth weight – a part of research

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In the paper, the results of the study of secondary speech therapy prophylaxis aimed at children with low birth weight (preterm babies and babies born at term but with intrauterine growth retardation). The study group consisted of 187 children with a birth weight below 2500 g. Low birth weight is one of the risk factors for various developmental disorders, including disorders of the development of language communication. That is why early identification of the first symptoms of language acquisition (speech development) disorders is so important. The aim of the undertaken research was to analyse the activities in the field of secondary speech therapy prophylaxis, covering this risk group.

**KEY WORDS:** secondary speech therapy prophylaxis, screening tests, low birth weight, preterm birth, intrauterine foetal growth retardation

### Theoretical introduction to research issues

Prophylactic activities are an important part of the work of speech therapists. They consist in preventing the occurrence of speech disorders, early diagnosis of problems in the field of lan-

guage communication, as well as minimising the negative effects of already diagnosed disorders, which is the basis for effective help. Speech therapy follows a principle adopted from medicine, according to which it is better to prevent than to cure. Speech therapy prophylaxis is "(...) the entirety of organisational forms, content, methods, rules and measures that create a coherent structure used to prevent – firstly – communication impairment<sup>1</sup> of a human being biologically and/or environmentally determined, and secondly – the effects of communication impairment on human functioning".<sup>2</sup> In the source literature, there are various classifications of speech therapy prophylaxis. The most common classification includes first-line, second-line and third-line prophylaxis.<sup>3</sup> First-line (primary, stage 1, 1st degree) prophylaxis consists in disseminating knowledge about speech, conditions for its proper development, as well as speech and voice disorders, and the possibility of specialist diagnostic and therapeutic help among the general population. Second-line (secondary, stage 2, 2nd degree) prophylaxis is "(...) early identification of symptoms of disorders enabling the earliest possible therapeutic intervention".<sup>4</sup> Third-line (tertiary, stage 3, 3rd degree) prophylaxis covers people who have already experienced speech

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<sup>1</sup> The term of "communication impairment" (CI) appears in the works of Grażyna Gunia and Viktor Lechta, (*Wprowadzenie do logopedii*, ed. G. Gunia, V. Lechta, Oficyna Wydawnicza Impuls, Cracow 2011), as well as of Ewa Małgorzata Skorek (*Wielowymiarowość przestrzeni profilaktyki logopedycznej*, ed. E.M. Skorek, University of Zielona Góra, Zielona Góra 2017). The term is synonymous with "speech disorders" or "language communication disorders".

<sup>2</sup> E.M. Skorek, *Profilaktyka logopedyczna – poziomy i strategie*, [in:] *Wielowymiarowość przestrzeni profilaktyki logopedycznej*, ed. E.M. Skorek, Uniwersytet Zielonogórski, University of Zielona Góra 2017, p. 51.

<sup>3</sup> Confer: E.M. Skorek, *Profilaktyka logopedyczna-poziomy i strategie*, [in:] *Wielowymiarowość przestrzeni profilaktyki logopedycznej*, ed. Skorek E.M., Uniwersytet Zielonogórski, Zielona Góra 2017, pp. 51–92; K. Węsierska, *Profilaktyka logopedyczna w ujęciu systemowym*, [in:] *Profilaktyka logopedyczna w praktyce edukacyjnej*, ed. Węsierska K., vol. 1, Wydawnictwo Uniwersytetu Śląskiego, Katowice 2012, pp. 25–47; V. Lechta, *Podstawy teoretyczne logopedii*, [in:] *Wprowadzenie do logopedii*, ed. G. Gunia, V. Lechta, Oficyna Wydawnicza "Impuls", Cracow 2011, pp. 15–32.

<sup>4</sup> K. Węsierska, op. cit., p. 38.

disorders, and its aim is to reduce the negative consequences of abnormalities in language and voice communication.

Secondary prophylaxis concerns people who are more likely to develop speech or voice disorders. Screening test is the most effective form in the area of the activities of secondary prophylaxis. Most often, secondary prevention is associated with treatment aimed at children, but in accordance with the paradigm of modern speech therapy (the subject of its interest is a human being throughout their lives), it should also be addressed to adults, e.g. teachers who, due to overload of the voice organ, are exposed to greater risk of dysphonia than the general population. Its recipients should also include elderly people with an increased risk of Alzheimer's disease, and speech therapy screening tests would allow for a diagnosis of the first symptoms of language communication disorders (e.g. lexical and semantic difficulties) accompanying Alzheimer's dementia.<sup>5</sup>

Children with low birth weight are the risk group for speech development disorders. Children at risk of speech development disorders include groups of children with an increased probability of abnormalities in the development of language communication, related to the presence of unfavourable factors in the prenatal period, during childbirth, neonatal period and infancy.<sup>6</sup>

The risk factors for speech development disorders include, among others, low birth weight. Other risk factors are: CNS injury (e.g. periventricular leukomalacia), intracranial bleeding that may lead to CNS injury, hyperbilirubinemia, respiratory distress syndrome, bronchopulmonary dysplasia, abnormal muscle tone, 5-minute Apgar score below 6 points, abnormal orofacial reflexes, visual and hearing impairment.<sup>7</sup> Risk factors for developmental disorders (which may also manifest as abnormalities in the development of

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<sup>5</sup> The likelihood of developing Alzheimer's disease increases with age.

<sup>6</sup> E. Gacka, *Czynniki ryzyka wystąpienia nieprawidłowości w kształtowaniu się mowy u dzieci urodzonych przed terminem (wcześniaków) w świetle założeń profilaktyki logopedycznej*, [in:] *Współczesne tendencje w diagnostyce i terapii logopedycznej*, ed. Pluta-Wojciechowska D., Sambor B., Harmonia Universalis, Gdańsk 2017, pp. 191-202.

<sup>7</sup> E. Gacka, *op. cit.*

language communication) additionally include: chromosome aberrations, hereditary enzymopathies, maternal illnesses during pregnancy (diabetes, thyroid diseases, infectious diseases), toxemia of pregnancy, inflammatory processes and CNS diseases present in a child.<sup>8</sup> Research results confirm that low birth weight increases the probability of various developmental abnormalities, e.g. cerebral palsy (CP), intellectual disability, epilepsy, psychomotor agitation, hearing disorders, and speech disorders.<sup>9</sup> Therefore, the speech development of children with low birth weight should be monitored.

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<sup>8</sup> Confer: R. Michałowicz, J. Ślenzak J., *Choroby układu nerwowego dzieci i młodzieży*. PWN. Warsaw 1985; W. Fedorowska, B. Wardowska, *Wywiad biologiczno-środowiskowy do wykrywania wczesnych uwarunkowań rozwoju mowy*. Gdańsk 1992.

<sup>9</sup> A. Stewart, V. Kirkbride, *Very preterm infants at fourteen years: relationship with neonatal ultrasound brain scans and neurodevelopmental status at one year*. "Acta Paediatrica" 1996, 416, pp. 44–47; A. Gosch, M. Brambring, H. Gennat, A. Rohlmann, *Longitudinal study of neuropsychological outcome in blind extremely-low-birth weight children*. "Developmental Medicine and Child Neurology" 1997, no. 39, pp. 297–304; M. Cherkes-Julkowski, *Learning disability, attention deficit disorder and language impairment as outcomes of prematurity: a longitudinal descriptive study*. "Journal of Learning Disabilities" 1998, no. 31, pp. 294–306; A.T. Bhutta, M.A. Cleves, P.H. Casey, M.M. Craddock, K.J. Anand, *Cognitive and behavioral outcomes of school-aged children who were born preterm: a meta-analysis*. "The Journal of the American Medical Association" 2002, no. 288, pp. 728–737; V. Tommiska, K. Heinonen, P. Kero, M.L. Pokela, O. Tammela, A.L. Järvenpää., T. Salokorpi, M. Virtanen, V. Fellman, *A national two year follow up study of extremely low birthweight infants born in 1996–1997*. "Archives of Disease in Childhood – Fetal and Neonatal Edition" 2003, no. 88, pp. 29–35; G. Kmita, *Rozwój psychiczny dzieci urodzonych przedwcześnie*, [in:] *Noworodek przedwcześnie urodzony – pierwsze lata życia*, ed. Kornacka M.W. Wydawnictwo Lekarskie PZWL, Warsaw 2003, pp. 55–67; K.M. Linnet, K. Wisborg, E. Agerbo, N.J. Secher, P.H. Thomsen, T.B. Henriksen, *Gestational age, birth weight and the risk of hyperkinetic disorder*. "Archives of Disease in Childhood" 2006, nr 91, pp. 655–660; L.A. Ribeiro, H.D. Zachrisson, S. Schjolberg, H. Aase, N. Rohrer-Baumgartner, P. Magnus, *Attention problems and language development in preterm low-birth-weight children: cross-lagged relations from 18 to 36 months*. "BMC Pediatrics" 2011, no. 11, pp. 59–78; A. Simić Klarić, Z. Kolundžić, S. Galić, V. Mejaški Bošnjak, *Language development in preschool children born after asymmetrical intrauterine growth retardation*. "European Journal of Paediatric Neurology" 2012, no. 16(2), pp. 132–137; P.A. May, A. Baete, J. Russo, et al., *Prevalence and Characteristics of Fetal Alcohol Spectrum Disorders* "Pediatrics" 2014, Nov. 134(5), pp. 855–866; M.K. Kornacka, R. Bokinić, *Noworodek z matką urodzeniową*

Low birth weight is defined as less than 2500 grams.<sup>10</sup> Based on birth weight, neonates can be divided into children who are:

- AGA (*appropriate for gestational age*), whose body weight and length are within average values for a given gestational age<sup>11</sup>,
- SGA (*small for gestational age*), whose body weight and length are too small in relation to the average expected values for a given gestational age (they can be identified with hypotrophic neonates);
- LGA (*large for gestational age*), whose body weight and length exceed the expected values for a given gestational age.<sup>12</sup>

Children with low birth weight include preterm babies and hypotrophic (too small for gestational age) babies born at term.<sup>13</sup> The latter include children with intrauterine growth retardation (IUGR) and constitutionally small ones (low birth weight does not result from a pathological process, but is genetically determined). It must be emphasized that “IUGR only occurs when the intrauterine disease process reduces the rate of foetal growth”.<sup>14</sup> They are diagnosed when two measurements of the foetus in the womb of the mother show too slow growth rate and/or when the birth weight and length of the child are below the 10th percentile.<sup>15</sup>

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*masę ciała*, [in:] *Neonatologia*, ed. J. Szczapa, Wydawnictwo Lekarskie PZWL, Warsaw 2015, pp. 79–102.

<sup>10</sup> M.K. Kornacka, R. Bokinić, op. cit.

<sup>11</sup> Growth charts are used to determine normal intrauterine development (foetal weight and length). In Poland, charts developed by WHO are used. A baby with a low birth weight is a baby weighing less than the 10th percentile. (Confer: J. Świetliński, *Opieka nad zdrowym noworodkiem*, [in:] *Neonatologia i opieka nad noworodkiem*, ed. J. Świetliński, vol. 1, Wydawnictwo Lekarskie PZWL, Warsaw 2016, pp. 85–136).

<sup>12</sup> J. Świetliński, op. cit.

<sup>13</sup> J. Gadzinowski, M. Kęsiak, *Definicja, terminologia, zasady organizacji opieki nad noworodkiem*, [in:] *Neonatologia*, ed. J. Szczapa, Wydawnictwo Lekarskie PZWL, Warsaw 2015, pp. 1–22.

<sup>14</sup> J. Gadzinowski, M. Kęsiak, op. cit., p. 8.

<sup>15</sup> P. Chatelain, *Children born with intra-uterine growth retardation (iugr) or small for gestational age (sga): long term growth and metabolic consequences*. “Endocrine Regulations” 2000, no. 33, pp. 33–36.

A preterm baby is every child born before 37 hbd (weeks of pregnancy), regardless of the birth weight. The common feature of preterm babies is therefore the time of delivery (delivery takes place before 37 weeks of pregnancy) and low birth weight, most often below 2500 g, although there are also neonates with a body weight over 2500 g (most often these are babies born close to the correctly defined due date).<sup>16</sup>

### **Methodological foundations of own research**

The aim of the conducted research was to analyse and evaluate the activities in the field of secondary speech therapy prophylaxis covering children with low birth weight.<sup>17</sup> The study was supposed to answer the question: if, and if so, what activities in the field of secondary speech therapy prophylaxis are undertaken in relation to children with low birth weight?

The study group consisted of 187 children with a birth weight below 2500 g, including 156 preterm babies and 31 children with IUGR (intrauterine growth retardation). The study group included children born at term with the diagnosis of IUGR in the specialist documentation. Among these children, 11 cases were diagnosed with foetal alcohol syndrome (FAS), i.e. neurobehavioural disorders occurring in children of mothers consuming alcohol during pregnancy, e.g. damage to the brain and nervous system, craniofacial anomalies, visual and auditory dysfunctions, movement, gait and motor coordination disorders, muscle tone disorders, behaviour, social adjustment and communication disturbances.<sup>18</sup> The FAS criteria (Q 86.0) (ICD-10, 1996) include:

- growth inhibition in the womb or later (low birth weight),
- facial dysmorphic features,

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<sup>16</sup> J. Gadzinowski, M. Kęsiak, op. cit.

<sup>17</sup> The presented research is part of a larger, ongoing research project on the development of language communication in children with low birth weight.

<sup>18</sup> All 11 children are brought up in adoptive or foster families.

- abnormal development of the CNS,
- if the above criteria are met, it is not necessary to confirm that the mother consumed alcohol during pregnancy.<sup>19</sup>

Full-blown FAS accounts for only a fraction of all developmental abnormalities associated with foetal ethanol exposure.<sup>20</sup> The source literature also includes the term FASD (*foetal alcohol spectrum disorder*) – a spectrum of foetal alcohol damage/a spectrum of foetal alcohol disorders, which includes, in addition to foetal alcohol syndrome (FAS), alcohol-related neurodevelopmental disorder (ARND) and partial FAS (partial foetal, alcohol syndrome).<sup>21</sup>

The study group included: 109 children with low birth weight (*LBW*) (2499–1500 g) 40 children with very low birth weight (*VLBW*) (1499–1000 g) 25 children with extremely low birth weight (*ELBW*) (999–750 g) 13 children with incredibly low birth weight (*ILBW*), below 750 g. The smallest birth weight of a child in the study group was 620 g, and the highest one 2490 g.

The research was based on the analysis of specialist documentation (hospital discharge summary record, child medical record book, results of specialist consultations) and an interview with the parents of children. The interview included questions about the course of pregnancy and delivery, the scope and forms of interdisciplinary care for a neonate, possible problems related to the development of primary functions of speech<sup>22</sup>, forms and scope of the obtained speech therapy treatment (time of its delivery), way to inform par-

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<sup>19</sup> P.A. May et al., op. cit.

<sup>20</sup> In the analysed documents of children whose mothers consumed alcohol during pregnancy a diagnosis of FAS was indicated, and this is the term used by the author of the article.

<sup>21</sup> T. Jadczyk-Szumilo, *Rozwój mowy dzieci z FASD*, [in:] *Wczesna interwencja logopedyczna*, ed. K. Kaczorowska-Bray, S. Milewski, Harmonia Uniwersytetu Pedagogicznego, Gdańsk 2016, pp. 180–210.

<sup>22</sup> Primary activities (primary to speech) are orofacial reflexes, breathing, eating and drinking, as well as other non-verbal activities within the mouth and face, e.g. orofacial auto-games (Confer: D. Pluta-Wojciechowska, *Mowa dzieci z rozszczepem wargi i podniebienia*. Wydawnictwo Naukowe Uniwersytetu Pedagogicznego w Krakowie, Cracow 2011).

ents about the need for speech therapy assessment of the child, possible forms of monitoring the development of children's language communication, the availability of secondary speech therapy prophylaxis.

## **Presentation and analysis of the results of the study**

Screening tests are the basic form of secondary prophylaxis, which should cover all children at risk, including children with low birth weight. The research procedure showed that only 6 children underwent speech therapy assessment in neonatal departments, which constitutes 3.2% of the participants. As many as 96.8% (n = 181) were not subjected to the initial speech therapy diagnosis during their hospital stay.

Secondary prophylaxis consists in monitoring the development of speech in order to notice the first symptoms of abnormalities in the development of language communication (it should be remembered that symptoms may appear already in the neonatal or infancy period, e.g. abnormalities in primary activities). In the discharge recommendations (included in hospital discharge summary records), information about the need for speech therapy consultation was found in the case of 9 children (5% of the participants). In addition, according to the interviews, the parents were not orally informed about the need to provide their child with speech therapy treatment. This is of particular concern because, apart from low birth weight, in 71% of the participants (n = 132), physicians identified (as early as in the neonatal unit) other risk factors for speech development disorders – low Apgar score, difficulty in eating (of varying severity), decreased or increased muscle tone, hyperbilirubinemia, bronchopulmonary dysplasia, CNS injury, intracranial bleeding, genetic disorders, visual and hearing impairment. Information about this type of abnormalities was included in the medical records, and they were also indicated by the parents of children with low birth weight. Therefore, it seems that the medical staff



does not have sufficient knowledge about the early determinants of speech development and the need to monitor the development of language communication in children at risk. To a great extent, it is up to the physicians (neonatologists and paediatricians) whether and when children with low birth weight will be referred to a speech therapist.

For comparison, in all analysed documents (n = 187) there was a provision about the need to consult such specialists as: neurologist, ENT specialist and/or audiologist, ophthalmologist. In addition, 157 records indicated the need for care by a cardiologist, orthopaedist and rehabilitator. The recommendations also included the need to visit: a neurosurgeon (in 35 cases), a nephrologist (in 24 cases), a gastroenterologist (in 15 cases), and a psychologist (in 8 cases). Of course, this does not mean that the above-mentioned children had neurological, cardiological or ophthalmological problems, but neonatologists ordered a specialist control, because of the increased risk of developmental disorders in the patients they treated. The presented data correlate with the results of the study conducted at the Medical University of Warsaw concerning the quality of care for preterm babies with extremely low birth weight (less than 1000 g), which shows that e.g. 74% of children discharged from the neonatal unit remain under the care of a neurologist, while only 9% undergo speech therapy.<sup>23</sup>

Almost all parents (96%), n = 179, declared that they did not have knowledge about the need to provide their children with speech therapy treatment at the initial stage of life (in infancy and toddler period). They did not obtain it neither from doctors nor nurses from neonatal units. Since in the discharge recommendations there was no note about the need for speech therapy treatment, they decided that it was not advisable. The method of monitoring the development of speech in children, after leaving the hospital, was

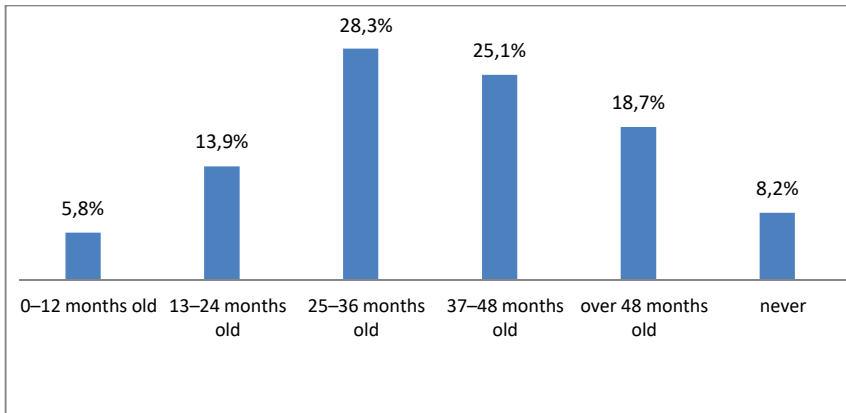
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<sup>23</sup> A. Górska, M.K. Borszewska-Karnacka, *Ocena jakości opieki nad noworodkiem urodzonym z masą ciała < 1000 g po wypisie z oddziału neonatologicznego*. "Family Medicine & Primary Care Review" 2009, vol. 11, no. 4, pp. 861-868.

also assessed as insufficient/unsatisfactory. Often (in the later period of the child’s life) they sought “on their own account”<sup>24</sup> the help of a speech therapist, using the experience of other parents.

As for the age of children at which the first speech therapy assessment (first speech therapy consultation) took place, in 11 cases (5.8%) it was up to 12 months of age, in 26 cases (13.9%) between 13–24 months of age, in 53 cases (28.3%) between 25–36 months of age, in 47 cases (25.1%) between 37–48 months of age, in 35 cases (18.7%) over 48 months of age. In 15 cases (8.2%), the parents stated that the children were not subjected to speech therapy assessment or that it was difficult for them to answer the question, because they might have taken place in kindergarten and they had not been informed about their results. The above-mentioned data is presented in Figure 1.

90 children, which constitutes 48% of the participants, were covered by the speech therapy diagnosis up to the age of 3, which can



**Fig. 1.** Division of children into groups according to the age at which the first speech therapy assessment took place

Source: own work

<sup>24</sup> Term used by the interviewed parents.

be considered to be within the framework of early intervention. Provided the fact that 79% of children (n = 148) were diagnosed with various types of speech development disorders (e.g. SD<sup>25</sup> associated with: psychomotor retardation/ intellectual disability, hearing loss, dysarthria, aphasia-type speech disorder, specific language impairment - SLI, autism, as well as spontaneous speech delay - SSD, and dyslalias of peripheral origin) this situation should be alarming.<sup>26</sup> Since the risk factors for speech development disorders had been identified as early as in neonatal units, actions should be taken immediately after the diagnosis/registration of alarming symptoms - this is one of the main principles of early speech therapy intervention.

The age at which children were subjected to a speech therapy assessment largely depended on the type of facility they were referred to after the discharge (who and where looked after their general health and psychomotor development). Children who are under the care of various types of foundations, associations and ECDS (early childhood development support) centres were provided with the help of a speech therapist in the easiest and fastest way.<sup>27</sup> Out of 90 children diagnosed by a speech therapist up to the age of 3, as many as 69% (n = 62) were helped in the above-mentioned facilities. It was much more difficult for parents who used the services of a paediatrician as part of Primary Health Care or a neonatal hospital out-patient clinic (neonatal pathology clinic). Eleven children (12%) were referred to a speech therapist by a paediatrician at the request of their parents, concerned about the insufficient speech development of their children.<sup>28</sup> In the case of seven children (8%), a referral

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<sup>25</sup> Speech delay.

<sup>26</sup> The analysis of the language skills of all tested children and those undergoing a speech therapy diagnosis will be discussed in a separate study.

<sup>27</sup> Most often, parents of children with low birth weight presented to this type of facilities on the basis of information obtained from other parents (reading internet forums) and looking for facilities providing multi-specialist services.

<sup>28</sup> The parents were worried that their 2 or 2,5-year-old child did not say any words.

to a speech therapist was issued by a physician from a neonatal/neonatal pathology clinic, while in three children it was the initiative of a physician, and in the case of the remaining four children of their parents (information about the need for a speech therapy consultation was provided by the rehabilitator).

In the case of children who were consulted by a speech therapist after the age of 3 years ( $n = 82$ ), the need for diagnosis and speech therapy was noticed by the parents (in 39 cases), followed by psychologists and rehabilitation specialists (in 15 cases) kindergarten teachers (in 12 cases), medical specialists – most often neurologists (in 11 cases), paediatricians (in 5 cases). In total, parents of 104 children (who had undergone speech therapy assessment before the age of 3 years or after the age of 3 years) sought help on their own initiative, which constitutes 56% of the respondents.

## Conclusions from the study

The results of the conducted study indicate that the activities in the field of secondary speech prophylaxis aimed at children with low birth weight should be considered highly unsatisfactory. Only 3% of the infants from the risk group underwent screening tests in neonatal units. The method of monitoring the speech development of children with low birth weight, also after discharge from the hospital, may raise many concerns. In the discharge recommendations for 95% of children there is no information about the need for a speech therapy consultation. Parents did not obtain information from neonatologists about the reasonableness and possibilities of providing a child with speech therapy treatment. The method of informing about the need to control the speech development of children with low birth weight by Primary Health Care paediatricians is unsatisfactory. Therefore, the opinion that “(...) there is a need for better organisation and care for children born prematurely<sup>29</sup> dis-

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<sup>29</sup> These words apply to all low birth weight babies – preterm babies as well as babies with IUGR.

charged from neonatal intensive care units, as well as for assistance, especially in the area of access to information for parents<sup>30</sup> is still valid.

Post-discharge care for a child with a low birth weight (in infancy) is of a primarily medical nature – children remain under the supervision of numerous specialist physicians, but a speech therapy consultation up to 12 months of age is rare. It covered only 6% of the participants, and other risk factors for speech disorders (apart from low birth weight) were noted in 71% of children as early as during their stay in the neonatal unit.

The study confirms that children with low birth weight are at risk of developing speech disorders. Various types of language communication disorders occurred in 79% of the participants, therefore it is necessary to monitor the speech development of children with birth weight below 2,500 g. There is a discrepancy between the postulates concerning early speech therapy intervention (in line with the principles of secondary prophylaxis) and the practice of everyday life. Almost 44% of the study children were not consulted by a speech therapist until they were 3 years old.

It is difficult to talk about systemic solutions in monitoring the speech development of children with low birth weight, since in 56%, the initiators of consultations by a speech therapist were the parents of the study children. Neonatologists and pediatricians who look after all newborn children have an important role to play. The idea of early monitoring of speech development in children from risk groups is not common among medical staff. Therefore, activities in the field of primary (1st degree) prophylaxis, promoting among doctors the basics of knowledge about the early determinants of speech development, should also be developed. In this context, it is necessary to emphasise the significance of real, and not only the declared cooperation between specialists taking care of children at risk, the importance of teamwork and an appropriate

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<sup>30</sup> M.K. Borszewska-Kornacka, *Kompendium wiedzy o wcześniaku*. "Standardy Medyczne/Pediatria" 2013, vol. 10, p. 607.

flow of information between team members, which would obviously translate into real help for patients.

Therefore, it seems justified to introduce speech therapy assessment in the shape of a child health check-up. The introduction of general and free speech therapy assessment for children with low birth weight at the time of neonatal unit discharge, and then at the age of 1, 2, and 3 would be the implementation of the principles of secondary speech therapy.

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