such as their gender and age, experience with VR, professional background, thoughts on the game and recommendations for improvement. In the survey, it was made clear to participants that any information given would be anonymous and personal questions would be limited to their gender, age and profession.

As well as this, participants were instructed to ensure their VR equipment was set up correctly, to stand in line with their motion sensors, ensure their touch controls were securely fastened and to remain stationary throughout the playtest. It was also stated that if any symptom of VR sickness was felt, such as dizziness, headaches, eye soreness, disorientation, etc, they should immediately remove their VR headset.

In the game, participants could engage with:

- A Playroom, where they could get accustomed with the VR controls.
- A picture puzzle, where they needed to put the LMA procedure steps in order.
- A true or false quiz, that tested their academic knowledge on the procedure.
- An operating room, where they could learn/practice the LMA procedure.

30.8% of participants were female and 69.2% were male. Of these individuals, 53.8% were 20 – 24 years old and 46.2% were 30 – 64 years old. 69.2% of our participants currently work in the medical field.

The primary feedback from participants was that:

- They enjoyed the game
- The steps for the LMA procedure were accurately conveyed
- Voiced and written instructions needed to be clearer
- Movement and controls should have been smoother

Educational VR video games can be made sufficiently accessible to all age demographics. This can be accomplished by simplifying the VR controls and having variable options to facilitate individual auditory and literacy abilities.

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FOREIGN BODY ASPIRATION IN A 13-MONTH OLD BOY – NECESSITY OF RADIOGRAPHIC SCREENING

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Introduction Foreign body aspiration as one of the leading cause of airway compromise in children remains a serious public health issue. It is estimated that about 3,500 children in the U.S. die each year from foreign body suffocation. Such incidents occur in 60 to as many as 90% of cases in patients younger than 3 years, more often in male children due to their playfulness and increased curiosity. Detailed medical history, careful clinical status and radiographic examination of the thoracic organs in two directions is crucial for diagnosis, although X-ray is in many cases completely normal. Rigid bronchoscopy is the first choice for making final diagnosis and foreign body extraction. Most foreign bodies can be found in the right main bronchus (30-60%), left main bronchus (25-50%), trachea (1-13%), larynx 3%, but epidemiological data significantly depend on the authors and institution policy. Foreign body in the respiratory system can cause many

complications such as pneumonia, atelectasis, emphysema and bronchiectasis.

Case Report K.K., 13-month boy with inconspicuous perinatal history was hospitalized for RSV positive bronchiolitis when he was 3 months old, and due to impetigo when he was 7 months old. Until the incident he had no other medical issues. At the age of 13 months, he supposedly 'choked' with a dried piece of orange after which an intense cough was noted; the father stated that he became cyanotic, so he vigorously slapped him on the back. The child was initially brought for an examination to the ER of Children's Hospital Zagreb, from where he was referred to the ER of ENT and Head and Neck Surgery Department for additional opinion and subsequently hospitalized with the aim of further observation. When being brought for a pediatric examination he weighed 12 kg, with no signs of cyanosis and dyspnea, having oxygen saturation of 96%, neat auscultatory finding on the lungs and no asymmetry during percussion. Radiographic imaging revealed shadow measuring 5.5 cm in length in the projection of the lower part of the trachea and intermediate bronchus (shadow of the hairpin). At that time parents discovered that the child was playing with hairpins that were lying on the floor. Foreign body was successfully removed during rigid bronchoscopy. After the procedure, the child was transferred to the Children's Hospital Zagreb for further care and treatment near the Pediatric Intensive Care Unit. In conclusion, he was discharged without short-term and long-term complications.

Conclusion Aim of this case report is to point out the importance of radiographic imaging during the diagnostic work-up of a patient with suspected foreign body aspiration having neat auscultatory and percussion findings. Prompt intervention and interdisciplinary collaboration are crucial for rapid foreign body extraction, in order to reduce the risk of late complications.

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USE OF SOLVENT/DETERGENT – TREATED PLASMA (OCTAPLAS) IN CHILDREN

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Introduction The use of fresh frozen plasma (FFP) has increased significantly in recent years. Clinical practice guidelines recommend plasma transfusion in children and neonates with coagulation disorder and clinically significant bleeding or before invasive procedures with a high risk of bleeding. The use of solvent/detergent (S/D) treatment before freezing significantly reduced the risk of possible side effects. Octaplas is a bio pharmaceutically standardized coagulation active substitute for plasma, and has been used in Europe since 1991. Harmful antibodies and allergic substances have been neutralized and lipid – coated viruses (HIV, HBV and HCV) have been inactivated by S/D. Octaplas contains a well-standardized content of coagulation factors and inhibitors. The structure and function of plasma proteins are not changed, blood cells and leukocyte antibodies, micro vesicles, cell fragments, bioactive lipids are completely removed and the cytokine concentration is lower.

Objective To examine the indications for use of Octaplas in children and its efficiency.

Methods A review of the available literature related to application of Octaplas in children.

Results The use of Octaplas in severe patients reduces the possibility of immune and anaphylactic reactions and transfusion – induced acute lung injury. Also, a smaller volume of Octaplas compared to FFP is required to correct coagulopathy. No additional bleeding with reduction in the number of transfusions in liver transplant patients was observed. An increase in platelets has been demonstrated in patients with thrombotic thrombocytopenic purpura who were refractory to FFP. The survival rate in Pediatric Intensive Care Unit (PICU) was higher in children treated with Octaplas compared to FFP. Recent research has shown that in children who received Octaplas during cardiac surgery ACT values were lower with lower doses of heparin, and platelets, APTV, INR, fibrinogen values were higher compared to children who received FFP. Reduction in postoperative infections and shorter stay in PICU were observed. The latest prospective, multicenter study in the United States examined the safety, tolerability, and efficacy of Octaplas in the treatment of children who required replacement of multiple coagulation factors due to cardiac surgery, transplantation and/or liver dysfunction, with coagulopathy and sepsis – related coagulopathy as well as hypoxic encephalopathy. No thromboembolic events associated with hyper fibrinolysis or treatment have been reported. The overall safety, tolerability and efficiency was defined as excellent. Hemostatic parameters measured with INR, PT, APTV, thromboelastography, or thromboelastometry were within the expected range.

Conclusion The results of previous research support the use of Octaplas in children. Octaplas has an advantage over FFP due to its strong hemostatic effect, less frequent side effects, safety and in critically ill children may be associated with improved survival.

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RETROSPECTIVE STUDY OF THE USAGE OF CENTRAL VENOUS CATHETERS IN TWO-YEAR PERIOD AT THE DEPARTMENT OF PEDIATRICS IN UNIVERSITY HOSPITAL CENTRE ZAGREB, CROATIA

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Aim To analyze methods of central venous catheter (CVC) usage, to establish the state of current practice and perhaps change the approach depending on the analysis of our results.

Methods A retrospective study which included a cohort of patients treated at the Department of Pediatrics UHC Zagreb, to whom in the period from January 1st 2018 till December 31st 2019 the CVC was extracted. A sample was formed based on results of microbiological analysis of the CVC tip. The main source of data was the hospital's information system, which was analyzed using descriptive statistics methods. According to the variety of the underlying disease, patients have been divided into 4 groups: congenital anomalies, cardiovascular, hemato – oncological diseases and others.

Results 11,648 children were hospitalized in our Department during a two-year period, when CVC was extracted in 505 (4.3%) of all hospitalized children. One CVC had 385, two 81, three or more 39 of 505 children. A total of 693 catheters were extracted: 449 Broviac, 195 PICC, 38 umbilical, 7 Port-a-Cath and 2 Hickman catheters. The distribution of

CVC by groups was: heart diseases (287), congenital anomalies (224), hemato – oncological (78), other diseases (104). Based on the available data, we singled out the causes of extraction in 91 respondents (i.e. 122 removed catheters). We list them in order: end of treatment (75/122), dysfunction (9/122), displacement (6/122), mechanical damage (5/122) and catheter sepsis (2/122). A total of 667 catheters were microbiologically analyzed, 172 of them were positive (25.78%). The most common agents were: Coagulase – negative Staphylococcus (51), Staphylococcus epidermidis (44) and Candida yeasts (18). There was no difference in the incidence of positive catheters in groups of respondents with different numbers of catheters (I 24.5%, II 27.5%, III 27.1%). Patients with congenital anomalies had a slightly higher incidence of microbiologically positive catheters (32%), while in cardiovascular, hemato – oncological and other diseases, incidence was almost equal (22%, 25%, 26%).

Conclusion CVC is rarely required in the treatment of our patients, but unavoidable in cardio-surgical, hemato – oncological patients and in many others with complex congenital anomalies. A significant number of catheters had been colonized over the time, but even in the case of an invasive disease, antimicrobial treatment was continued using the same catheter. Its extraction was needed extremely rare. Regardless to the nature of diseases in which the CVC was used, our results suggest the requisite to revise their usage.

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OUR EXPERIENCES IN CONTRAST-ENHANCED VOIDING UROSONOGRAPHY IN THE DIAGNOSTICS OF THE VESICoureTERAL REFLUX IN CHILDREN

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Vesicoureteral reflux (VUR) is one of the most common anomalies of the urinary system in children. It is the most common cause of renal scarring and consequently impaired renal function. Contrast-enhanced voiding urosonography (ceVUS) is becoming a recognized method for the diagnosis of VUR in children in specialized centers. The aim of this study is to examine the indications for ceVUS in children, determine the degrees of VUR and their associated characteristics, and possibly predict which children are at higher risk of VUR.

Patient data was collected from medical records of the Institute for Nephrology, Department of Pediatrics of the Sisters of Mercy University Hospital, from September 2016 till December 2018. The following data were taken into consideration: gender, age, characteristics of UTI (relapse, febrility), distribution of pathogens, values of inflammatory parameters (leukocytes and CRP), findings of the urinary tract ultrasound and correlation of these characteristics with the appearance of VUR. Percentages and mean values were used for descriptive statistics purposes. The χ^2 test was used to determine the differences between the two variables and the Student's t-test was used to determine the differences of arithmetic means.

The average age of children was 1.7 ± 1.1 . Out of 175 children who underwent ceVUS, VUR was detected in 68 (38.9%), equally for both genders (M vs. F = 32.3%:40.2%),