syndromes, 7 (4.9%) as multi-malformed cases (MMC) (Table 1). Incidence of post-surgical VPI was 5.8% influenced by an average older age at operation, not by surgical technique used for palate closure. Outcome in SC was not statistically worse. Over 200 patients were treated in developing countries, but complete data concerning the distribution of defects among this population are not available.

Conclusions: The distribution of gender and laterality of defect agrees with the current literature. A high prevalence of ICP and a relatively low incidence of NIC were observed among the studied population with no detection of musculoskeletal, brain or cardiovascular deformities (the most commonly associated anomalies). Efforts should be made to encourage registries to be set up in developing countries.

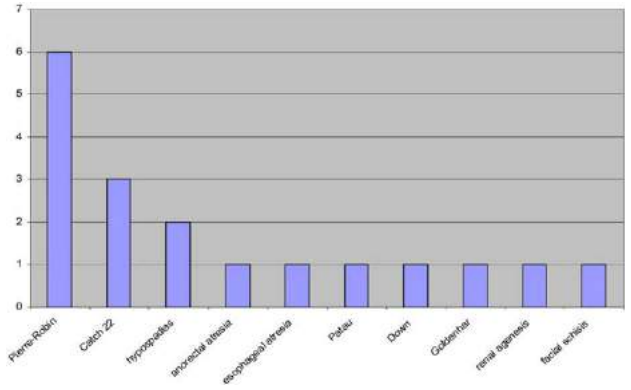

Table 1: Number of cases and type of associated congenital anomalies

Primary prevention of neural tube defects: data from the Portuguese national registry of congenital anomalies (RENAC)
P Braz, A Machado, C Matias Dias

Background: In Portugal folic acid supplementation is recommended to start at least 2-3 months before conception for primary prevention of Neural Tube Defects. The aim of this study was to evaluate, within gestations with at least one congenital anomaly, possible association between maternal socio-demographic factors and the use of folic acid. **Methods**: Using data from the Portuguese national registry of congenital anomalies, for the 2004-2013 period, the association between folic acid use during pregnancy and maternal characteristics was studied using the chi-square test. **Results**: Considering all reported cases with congenital anomaly, the use of folic acid before conception was reported by 12.7% (n = 1233) of the women; 47.8% (n = 4623) started supplementation during the 1st trimester, 7% (n = 680) did not take folic acid and 32.5% (3143) of the records had no information on folic acid use. Women with professions that require higher academic differentiation started the use of supplements before pregnancy ($p < 0.001$); women under 19 years old and with Arab ethnicity ($p < 0.001$) did not take folic acid. Mothers with a previous pregnancy reported less use of folic acid (11.5% versus 14.7%) than mothers without a previous pregnancy ($p < 0.001$). **Conclusions**: The results suggest some degree of association between maternal characteristics and use of folic acid. To increase the consumption of folic acid before pregnancy new measures are need to promote this primary prevention, among couples and health professionals. This study highlights some maternal characteristics and subgroups of mothers for who the measures should be reinforced.

Is there a relation between environmental exposure to teratogenic substances during pregnancy and congenital anomalies in the newborn? A pilot study in Portugal
A Machado, P Braz, J Santos, I Marques, C Matias Dias

Background: Maternal occupation as a proxy of environmental exposure has been consistently associated with specific congenital anomalies (CA) in the foetus and newborn. On the other hand, geographical location of the mother such as place of residence and place of work have not been used as proxy for environmental exposures during pregnancy. We designed a pilot study aiming to investigate the association between maternal place of residence and workplace during pregnancy and CA in Portugal. **Methods**: Cases and controls are identified in the maternity unit. Cases are all live births with at least one CA delivered in the Barreiro hospital located in a heavy industrial area near Lisboa. Controls are the two normal births following each case. Residents outside the study area, stillbirths and women who decline to participate or are incapable of giving consent are excluded. A health professional interviews the mothers using a questionnaire adapted from the registry form of the Portuguese national registry of CA and includes information on places during pregnancy (residence, workplace, leisure), and demographic characterization as place of birth, infant sex, weight, description of CA, age of mother, ethnicity, maternal birth place. Maternal health and obstetric history, education, smoking, alcohol, drugs and medication use is also collected as potential confounders. **Results**: The pilot study started in January 2016 and at the moment two cases and four controls have been recruited without refusals. The study will continue to be implemented and it is proposed to start in other hospital units during 2016.

Elevated congenital anomaly rates and incorporated cesium-137 in the Polissia region of Ukraine
W Wertelecki

Background: Investigations soon after the 1986 Chornobyl (Chernobyl in Russian) accident of exposed populations residing elsewhere in Europe led government and international agencies to conclude that exposures to cesium-137 (Cs-137) were not teratogenic. Our observations of elevated population rates of neural tube defects (NTD), microcephaly and microphthalmia (M/M) in the Rivne Province in Ukraine, which were among the highest in Europe, prompted this follow-up investigation inclusive of whole body counts (WBC) of Cs-137 among ambulatory patients and pregnant women residing in Polissia, the most polluted region in Rivne. **Methods**: Yearly (2000-2012) population rates of NTDs and M/M and WBC patterns of ambulatory patients (2001-2010) and pregnant women (2011-2013) in Polissia and non-Polissia regions of Rivne were analyzed. **Results**: The NTD and M/M population rates in Rivne remain elevated and are statistically significantly higher in Polissia than in non-Polissia. The WBCs among residents in Polissia are statistically significantly higher than among those from non-Polissia. **Conclusions**: NTD and M/M rates are highest in the Polissia region of Rivne and are among the highest in Europe. In Polissia, the WBCs of Cs-137 are above officially set permissible upper limits. The results are based on aggregate data of NTDs and M/Ms and average WBC values. Further investigations of causality of the high rates of NTDs and M/Ms are needed and urgent strengthening policies and implementations to reduce exposures to teratogens, in particular radioactive nuclides and alcohol, and consumption of folic acid supplements are indicated.

Spatial investigation of congenital malformations in Reunion Island (2008-2012)
M André, H Randrianaivo, B Bertaud-Nativel, V Herbreteau

Background: Reunion Island is a French territory located in the south-western Indian Ocean. The Reunion Registry of congenital malformations is in charge of monitoring cases. Overall prevalence (289 cases per 10,000 births) is close to the average reported by mainland French registries (315 cases). However, the prevalence of spina bifida is almost twice (10 cases per 10,000 births) the one reported in mainland France (5 cases). This study aims to describe the spatial distribution of different birth defects and identifying clusters. **Methods**: The analysis specifically tackles three groups being potentially related to environmental exposure. Each case recorded between 2008 and 2012 was geolocated according to its home address: 492 cases of congenital heart defects, 108 cases of cleft lip and palate and 69 cases of spina bifida. Four statistical methods were applied at different administrative scales: Standardized Prevalence Ratio (SPR), Hierarchical Cluster Analysis (HCA), Kulldorff method and Geographic epicenter method. **Results**: The resulting clusters differ depending on the method. Combining the observation at different administrative scales helps to identify the most affected areas for each pathology. **Conclusions**: These initial observations allow considering case-control studies to identify exposure factors in the most affected areas, including environmental, socio-economic and healthcare factors.

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