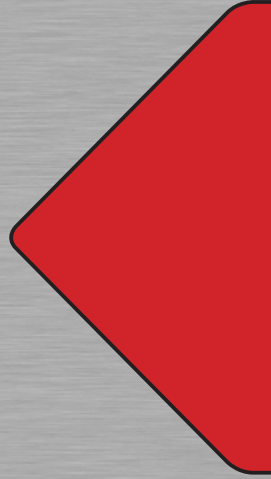


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# Journal Update

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A photograph of several ants on a piece of wood and moss. One ant is on the wood, while others are on the moss. The background is a blue sky with a geometric pattern.

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# Table of Contents

Letter from the Editors	4
Foreword	5
Clinical Pearls	6
Impact of smoking on early clinical outcomes in patients undergoing coronary artery bypass grafting surgery	8
Gestational Age and Neonatal Brain Microstructure in Term Born Infants: A Birth Cohort Study	9
Trial of Everolimus-Eluting Stents or Bypass Surgery for Coronary Disease	10
Obesity, Perceived Weight Discrimination, and Psychological Well-Being in Older Adults in England	11
Association between Antibiotic Prescribing in Pregnancy and Cerebral Palsy or Epilepsy in Children Born at Term: A Cohort Study Using The Health Improvement Network	12
The effects of prenatal exposure to alcohol and environmental tobacco smoke on risk for ADHD: A large population-based study	13
Selective serotonin reuptake inhibitors and venlafaxine in early pregnancy and risk of birth defects: population based cohort study and sibling design	14
Statins and Congenital Malformations: Cohort Study	15
Minimally invasive laminectomy for lumbar spinal stenosis in patients with and without preoperative spondylolisthesis: clinical outcome and reoperation rates.	16
Infections, antibiotic treatment and mortality in patients admitted to ICUs in countries considered to have high levels of antibiotic resistance compared to those with low levels.	17
Overweight/Obesity and respiratory allergic disease in children: international study of asthma and allergies in childhood (ISAAC phase 2)	18



# Letter from the Editors

**W**elcome to the second issue of Journal Update! Following the first issue we received a good response from students and we implemented a few changes in design to create a more sleek and appealing design. Another change in the magazine heralded the first appearance of our “Clinical Pearls”, which is essentially a relatively brief teaching session about important subjects to foundation year doctors and medical students alike.

This issue is mostly based on contributions from medical students and we would like to thank these students for their contributions and help us in our mission to spread new and relevant medical knowledge. If you wish to contribute to the next issue of Journal update please contact us on our email found below, one can also find a link to a set of guidelines to help you write a

contribution.

Everyone is free to submit articles as long as it is relatively new and clinically relevant information, we are also accepting contributions for clinical pearls and a potential new segment in Journal Update related to local studies, so if you want your audit/study/case presentation to get some exposure contact us! We are also looking for a few dedicated medical to help us prepare future issues of this publications, get in touch with us!

Last but not least we would like to thank Professor Kevin Cassar for his support and encouragement and his interest in our small but exciting endeavour.

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[goo.gl/IA1mxa](http://goo.gl/IA1mxa)

## The Editors



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# Foreword

The human body is infinitely complex. Despite the huge progress and ever increasing knowledge in the basic sciences, as well as in medicine and its practice, there will always remain areas which we do not fully understand. The challenges of being a good doctor today are huge. The duties of a doctor include not only ensuring adequate knowledge, skills and performance but also contributing to patients' safety and improvement in quality of care, effective communication, teaching, training and most importantly acting with honesty and integrity at all times.

Training to become a professional who can fulfil all of the above is no mean feat. The level of performance, behaviour and commitment expected of medical students is necessarily higher than that expected of other university students.

The key competences of a doctor can be broken down into two areas: the doctor as a safe and effective practitioner; and the doctor as a professional and a scholar. Being a scholar requires a sound basis in scientific method. Lifelong learning and reflective practice require the skills of appraisal of the literature. A good doctor is able to sift through the evidence available, determine which of the evidence produced is sound and decide which areas of clinical practice need to be updated. The application of scientific method applies not only to the field of medicine itself but also to other aspects of life. The scientist bases his decisions on the best evidence available. The scientific mind asks basic questions in order to distinguish between fact and fiction. Where not enough evidence is available or where the evidence produced is suspect or unconfirmed by other sources the scientist will reserve judgement until further evidence is available. This approach is crucial in providing high quality patient care particularly in areas where significant doubt exists and where there is

not one right choice but multiple possible options which need to be discussed with the patient. Keeping an open mind, basing judgements on evidence while recognising the complexity and variability of the human body ensures that the possibility of progress and development is open.

It is for the reasons outlined above that efforts to improve medical students' exposure to the literature and early involvement in research should be commended. The earlier professionals familiarise themselves with scientific method through reading of the medical literature and appraisal of scientific papers the greater the likelihood that the skills required for lifelong learning are developed.

Journal Update gives students at the Medical school of the University of Malta the opportunity not only to embark on this lifelong journey of learning but also to contribute in disseminating knowledge. Contributors will benefit from the exercise of appraising the literature which will serve them in good stead throughout their career. Hopefully this early experience will attract some to contribute to the expansion of medical knowledge in their own careers through participating in research projects either as clinicians or possibly as academics. For others this will serve as an early exercise in the appreciation of the role of literature appraisal and lifelong learning in their future clinical practice.



**Prof. K. Cassar**



# Clinical Pearls

The concept behind this section is to present relevant teaching points encountered during clinical rotations. These articles will focus on tips and tricks in order to prevent common pitfalls that the newly graduated doctor may encounter during every day clinical practice.

Below is a chest-radiograph which belonged to a 46 year old male. This gentleman worked as an office clerk and was admitted to the infectious disease unit with pyrexia of unknown origin. He also complained of fatigue, generalised pains and headaches. No previous episodes. Systemic examination was unremarkable.



Don't be alarmed if you haven't spotted the lesion as it is actually quite hard to see, the diagnosis in this case was right lower lobe pneumonia. In a hypothetical exam format (albeit a cruel case) a good way to present this radiograph would be:

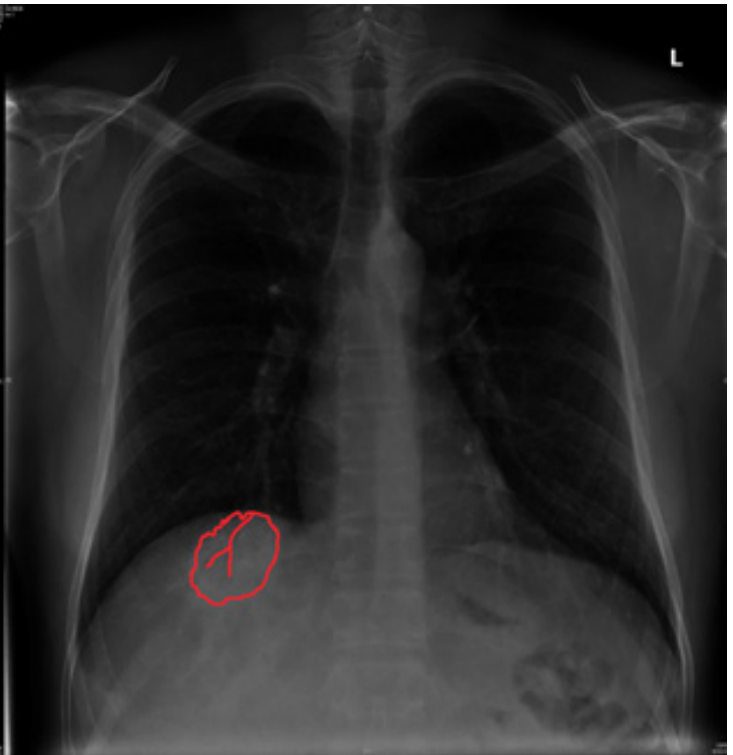
- This is the PA view chest radiograph of Mr. XX taken on XX and is of adequate radiological quality with appropriate inspiratory effort.
- The trachea is centered and the peripheral lung fields are clear with normal vascular markings, costodiaphragmatic angles are visible and the hila are normal.
- There are no visible rib or vertebral fractures. Heart is of normal shape and size. Normal soft tissues and no air under the diaphragm.
- On final inspection of review areas, both apices are normal and no retrocardiac shadow.
- There is a visible patchy opacification behind the liver with air bronchograms which contrasts the right inferior main bronchus which is indicative of a right lower lobe pneumonia. I would recommend ordering a lateral-view chest radiograph.

**Clinical Pearl 1.** A way to not miss any pathologies in the lateral view is to follow the vertebral column from top to bottom. Normally going down from T1 to T12 the vertebral bodies become more radiolucent (darker) since there are less tissues, in this case there is marked opacification over the lower thoracic vertebrae which is pathological.

**Clinical Pearl 2:** The key word in this case is "Review Area." Every radiological examination has its particular review areas and it concerns certain anatomical areas that deserve extra-attention not to miss any important lesions.

The particular areas that merit review differ among different individuals as it depends





both on training and their experience. The common areas in chest radiographs include:

1. Look at both apices looking particularly for pancoast tumours.
2. Within the heart shadow for any opacification which may vary from pulmonary to mediastinal pathology.
3. Both diaphragmatic shadows as a section of lower lobes extends posterior to the diaphragm as is evident in the lateral view.

When interpreting basic radiological investigation the aim should be to be as “sensitive” as possible. Following a systematic approach will thus help to not miss any lesion which is ultimately beneficial to the patient’s outcome. In this case, the initial consolidation was missed and thus the patient had undergone unnecessary invasive investigations and treatment.

**Clinical Pearl 3:** If you have given extra attention to the retrohepatic area in the above case but still missed it, a tip is that the bronchial tree can be outlined clearly by the radiolucent lines (highlighted in red in the image below).

This is called an air bronchogram which indicates that there is air-space filling pathology with radioopaque material which may be fluid (pus, serum, blood) or solid tissue. Normally the outline of the bronchial tree is not visible in the peripheral lung fields, or in the retrocardiac or retrohepatic areas therefore if spotted think of the relevant causes.

**Gianluca Gonzi M.D.**

# Impact of smoking on early clinical outcomes in patients undergoing coronary artery bypass grafting surgery

## Aim of Paper

To evaluate the initial postoperative clinical outcomes of patients undergoing isolated coronary artery bypass grafting (CABG) surgery when smoking is ceased over a 1 month period prior, versus persistent smoking.

## Summary

- This is a retrospective study of consecutive CABG surgeries performed on Chinese patients between January 2007 & December 2013.
- The sample size is 3730 chosen from Tongji University.
- The study demonstrates a much higher risk of postoperative pulmonary complications in persistent smokers as opposed to non-smokers (7.8% vs. 4.5%,  $p = 0.0002$ ).
- Smoking cessation over 1 month prior to the procedure resulted in a reduction in early major morbidities following CABG surgery, with the risk of postoperative pulmonary complications showing a statistical similarity to that in non-smokers (5.5% vs. 4.5%,  $p = 0.3183$ ).

## Details

- Patients were grouped as smoking or non-smoking individuals as per preoperative records. The smoking group being further subdivided into persistent smokers and those who ceased smoking over 1 month before surgery.
- Cardiopulmonary bypass (on-pump

CABG) was implemented depending on preoperative characteristics and the condition of target vessels.

- SYNTAX score was used to determine severity of coronary artery lesions and complete revascularization was required in vessel with a luminal diameter  $\geq 1$  mm.
- Interventions adhered to guidelines.

## Relevance to undergraduates

Cardiothoracic Surgery, Factors effecting surgical mortality and postoperative morbidity following CABG surgery

## Where to find it

Journal of Cardiothoracic Surgery  
February 2015  
DOI 10.1186/s13019-015-0216-y

## Claude Borg MD2





# Gestational Age and Neonatal Brain Microstructure in Term Born Infants: A Birth Cohort Study

## Aim of paper

To study fetal brain maturation by scanning neonates of 37 to 41 weeks at birth with diffusion tensor imaging (DTI)

Summary:

- 93 neonates were chosen from two maternity hospitals in Singapore as part of the Growing Up in Singapore Towards Healthy Outcomes (GUSTO) study.
- Cross-sectional examination showed that brain maturation is decreased in younger neonates compared with older neonates.

## Details

- Subjects  $\geq 37$  weeks at birth, birth weight  $> 2.5\text{kg}$  and APGAR  $\geq 9$  were included, whilst those born to mothers with hypertension, hypoglycemia, gestational diabetes and/or consumed alcohol were excluded.
- A fast spin-echo T2-weighted MRI and single-shot echo-planar DTI were performed 5 to 17 days after birth whilst the neonate was asleep.
- Fractional anisotropy (FA) was used as a measure of white matter microstructure. The association of FA with neonatal age at birth was explored by Voxel-based analysis.
- Correcting for age of subject at scan, an older neonate at birth associates with larger FA indices in two particular clusters; the corpus callosum as the 1st cluster ( $p < 0.001$ ) and the anterior corona radiata, anterior limb of internal capsule, external capsule as the 2nd ( $p < 0.001$ ).
- The functional significance of these variations on development/outcome was

not investigated.

## Relevance to undergraduates

Neuroimaging, central nervous system, gestation.

## Where to find it

Public Library of Science

December 2014

DOI: 10.1371/journal.pone.0115229

## Charmaine Zahra MD4



# Trial of Everolimus-Eluting Stents or Bypass Surgery for Coronary Disease

## Aim of Paper

To compare coronary artery bypass grafting (CABG) with percutaneous coronary intervention (PCI) using second-generation drug eluting stents (rather than first generation stents as with previous trials) in terms of death, myocardial infarction, or target vessel revascularisation at 2 years.

## Summary

- Death, myocardial infarction or stroke did not differ significantly between patients undergoing CABG and those undergoing PCI with second generation drug eluting stents.
- Spontaneous myocardial infarction and new-lesion revascularisation occurred more with second generation drug eluting stents PCI as opposed to CABG throughout the duration of follow-up.
- Patients suffering from diabetes and advanced coronary artery disease have been reported to have better outcomes with CABG compared to PCI.

## Details

- This study was a prospective, open-label randomised trial conducted on 880 patients at 27 sites in South Korea, China, Malaysia and Thailand.
- Involved patients over 18 years of age, with angiographically confirmed multivessel coronary artery disease, with stenoses of more than 70% of vessel diameter in major epicardial vessels in the territories of at least two coronary arteries, and considered

suitable candidates for either PCI or CABG. Patients with clinically significant left main coronary artery disease were excluded.

- Trial was terminated prematurely following recommendation by the data and safety monitoring board since enrolment rate was slower than expected.

## Relevance to undergraduates

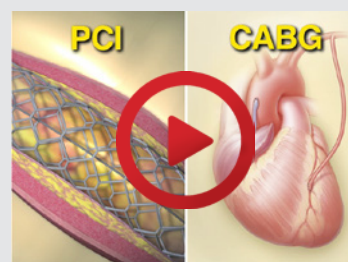
Cardiology, Cardiac Surgery

## Where to find it

The New England Journal of Medicine  
March, 2015

DOI: 10.1056/NEJMoa1415447

## Darren Micallef MD4



# Obesity, Perceived Weight Discrimination, and Psychological Well-Being in Older Adults in England

## Aim of Paper

To examine whether the adverse effect on the psychological well-being of obese individuals can be attributed to weight discrimination.

## Summary

- This is a retrospective Cohort study with a sample size of 5056 older adults, above the age of 50 years. The participants were part of the English Longitudinal Study of Ageing (ELSA), recruited initially from an annual cross-sectional survey of households.
- The conclusion reached through this study is that the association between psychological well-being in older English adults and obesity can be at least partially attributable to the person's perceived weight discrimination.

## Details

- Height and weight were measured with a stadiometer and electronic scaled respectively, by nurses. The nurses also kept a record of any confounding variables that reduced reliability, such as the patient refusing to remove shoes or unwilling to straighten posture. Such cases were excluded from the study.
- Participants were asked about five specific discriminatory experiences and their frequency, followed by their perceived reasons for discrimination including age, gender, race, physical disability and weight.
- For psychological well-being, three measures were included in the analyses, one being a broad measure of well-being (quality

of life), one of negative affect (depressive symptoms) and one of positive affect (life satisfaction).

- STATA version 13.1 was used for all analyses. Confounding variables which were adjusted for were age, sex and wealth due to their known associations with psychological well-being and obesity. Since 98% of participants were white, ethnicity was not adjusted for.
- A major limitation was that perceived discrimination was measured at a different data collection wave to weight, and participants may have varied in weight in between. Moreover, perception of weight discrimination is a very subjective matter and also subject to recall bias by the participants.

## Relevance to undergraduates

Endocrine, Psychiatry

## Where to find it

Obesity Journal  
March, 2015  
DOI: 10.1002/oby.21052

## Maria Andria Barbara MD 3





# Association between Antibiotic Prescribing in Pregnancy and Cerebral Palsy or Epilepsy in Children Born at Term: A Cohort Study Using The Health Improvement Network

## Aim of paper

- ORACLE Childhood Study II (OCS II):
  - association between antibiotic administration in pregnancy and the development of cerebral palsy/epilepsy in children born spontaneously preterm
- This study:
  - looks into whether or not this association holds true for babies born at term.

## Summary

- Adjusted analysis demonstrated no overall association between antibiotic use in pregnancy and the development of cerebral palsy/epilepsy in babies born at term.
- However, in the case of mothers prescribed three or more antibiotic courses during pregnancy, their children were found to have a 40% increased risk of cerebral palsy/epilepsy when compared to their non-medicated counterparts.
- This result might be indirect, in that it might be related to the fact that such mothers were succumbing to recurrent infections during pregnancy, which were increasing such risks in their offspring, rather than being directly linked to antibiotic prescription.
- Furthermore, this study has shown macrolide prescription to increase the risk of developing such neurological consequences when compared to penicillin prescription.

## Details

- The study compared the implication of antibiotic class, number of courses and timing (in pregnancy), with results being adjusted for maternal risk factors.
- To obtain results that are comparable to OCS II, children were followed up till seven years of age (or until the child left primary-care practise/died/the end of the study was reached).
- Data was obtained via The Health Improvement Network in the United Kingdom. A retrospective cohort of mothers (15-50 years of age) linked to their live-born offspring, and who had been registered at their primary care practise before pregnancy, was analysed.

## Clinical Relevance

Obstetrics, Paediatrics

## Where to find it

PLOS ONE

March 2015

DOI: 10.1371/journal.pone.0122034

**Michelle – Marie Boffa MD4**



# The effects of prenatal exposure to alcohol and environmental tobacco smoke on risk for ADHD: A large population-based study

## Aim of paper

To study the effects, prenatal exposure to alcohol and tobacco smoking, can have on the incidence of ADHD in children.

## Summary

- The sample size included 19,940 parents of elementary students from 53 schools in Cheonan, Korea, who answered a survey and completed the ADHD DuPaul Rating Scale.
- The prevalence rate of ADHD was significantly higher in all the following groups:
  - maternal alcohol consumption during pregnancy;
  - mothers smoking during the time of the study;
  - maternal smoking during pregnancy;
  - paternal smoking during pregnancy;
  - prenatal exposure to environmental tobacco smoking, alcohol or both simultaneously.

## Details

- The prevalence of ADHD is 2.2-17.8%, varying across different countries and studies. In this particular study, it was 8.9% in elementary school children.
- Paternal smoking was chosen as the source of the exposure of environmental tobacco smoke to the mother.
- The ADHD DuPaul Rating scale used was the Korean version, involving 18 questions, 9 regarding attention and 9 regarding hyperactivity, with a 4-point

scale. Children were classified as suffering from ADHD if the total hyperactivity and inattentive scores were  $\geq 19$ .

- The relation between the incidence of ADHD and demographic variables (including gender, mother's age at childbirth, delivery complications, and family history of ADHD) were analysed by  $\chi^2$  tests.
- The study is based on parents' answers, which may lead to bias and inaccuracy in the results. There were not any professional assessments or diagnoses. Moreover, the quantities of alcohol and cigarettes consumed are not known.

## Relevance to undergraduates

Paediatric psychiatry, Obstetrics

## Where to find it

Psychiatry Research  
January 2015  
doi:10.1016/j.psychres.2014.11.009

## Ylenia Abdilla MD 3



# Selective serotonin reuptake inhibitors and venlafaxine in early pregnancy and risk of birth defects: population based cohort study and sibling design

## Aim of Paper

To evaluate the effect of selective serotonin reuptake inhibitors (SSRIs) or venlafaxine in early pregnancy on the rate of birth defects, particularly cardiovascular birth defects.

## Summary

- This is a population based cohort study and a sibling controlled analysis carried out within five Nordic countries between 1996 and 2010.
- In the covariate controlled analysis, there was a 13% increased prevalence of major birth defects and 15% increased prevalence of cardiac defects associated with exposure to SSRIs. No such increased prevalence was noted in the sibling controlled analysis, suggesting that SSRI exposure is unlikely substantially teratogenic. The increased prevalence in the covariate controlled analysis could be explained by familial or lifestyle related factors not accounted for.

## Details

- The full cohort consisted of 2,303,647 singleton live births. The sibling cohort consisted of 2288 singleton live births.
- 36,772 infants (1.6%) were exposed to SSRIs or venlafaxine during the first trimester.
- The sibling cohort included sibling pairs who were discordant for exposure to SSRIs, venlafaxine, or birth defects.
- Confounding factors accounted for included maternal age at delivery, birth

order, smoking during pregnancy, maternal diabetes, drug use during pregnancy.

- SSRIs included in the analysis included fluoxetine, citalopram, paroxetine, sertraline, fluvoxamine and escitalopram. In addition, venlafaxine was included.
- Infants were considered to have been exposed in utero if the mother was prescribed an SSRI from 30 days before onset of last menstrual period (LMP) until the end of the first trimester (97 days after LMP)
- Birth defects were recorded according to the international classification of diseases, 10th revision (ICD-10) in Denmark, Iceland, Norway and Sweden. ICD-9-CM was used in Finland.

## Relevance to undergraduates

Psychiatry, Safety of SSRIs and Venlafaxine in Pregnancy

## Where to find it

BMJ

April 2015

doi: <http://dx.doi.org/10.1136/bmj.h1798>

## Sarah Micallef MD4





# Statins and Congenital Malformations: Cohort Study

## Aim of Paper

To evaluate the teratogenic potential of statins.

## Summary

- This is a Cohort Study based on 886,996 completed pregnancies linked to liveborn infants drawn from the Medicaid Analytic eXtract data from 2000 to 2007. This data contains information of Medicaid beneficiaries and covers approximately 40% of all births in the United States.
- After controlling for confounders, this study did not find any significant teratogenic effect from maternal use of statins in the first trimester.

## Details

- Out of 886,996 mothers, 1152 were on a statin during the first trimester.
- Congenital Malformations were identified based on the presence of international classification of diseases, ninth revision (ICD-9) diagnostic codes on two or more separate days in the infant inpatient or outpatient records during the first three months of life.
- Pregnancies were excluded from the sample if the mother was known to use teratogenic drugs or if the infant was diagnosed with chromosomal abnormalities.
- Propensity score based methods were used to control for potential confounders due to their potency of being risk factors for malformations.

- The effect of lipophilic statins was assessed separately due to their increased ability to cross the placenta.
- This study does not investigate the long term effects of in utero exposure of statins.
- Replication of results is required as well to consider the use of statins safe in pregnancy.

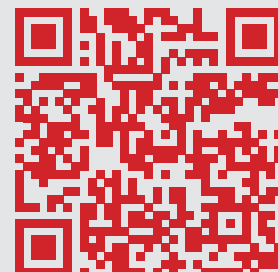
## Relevance to undergraduates

Obstetrics, Drug Contraindications in Pregnancy

## Where to find it

BMJ  
March 2015  
DOI: <http://dx.doi.org/10.1136/bmj.h1035>

## Zachary Michael Micallef MD4



# Minimally invasive laminectomy for lumbar spinal stenosis in patients with and without preoperative spondylolisthesis: clinical outcome and reoperation rates.

## Aim of paper

To compare outcomes, from clinical and radiological aspects, of surgical decompression via minimally invasive laminectomy (MIL) utilising tubular retractors as opposed to traditional open laminectomy (OL), in patients with and without preoperative spondylolisthesis.

## Summary

- This was a retrospective case series evaluating outcome in 110 patients.
- The outcome showed that MIL is effective and the need to reoperate for instability were lower as compared to OL.
- However the lower reoperation rates are not significantly different as also the functional outcome.
- MIL might be an alternative procedure but is not necessarily indicated for all patients with lumbar spinal stenosis and spondylolisthesis.

## Details

- 52.5% out of the 110 patients had preoperative spondylolisthesis at the level of spinal stenosis.
- The mean follow-up was after 28.8 months.
- The Oswestry Disability Index (ODI), Visual Analog scale (VAS) and Macnab's criteria were used in this study.
- There was a 16% improvement on the ODI, 2.75 on the VAS of the back and 3 on the VAS of the leg.

## Relevance to undergraduates

Orthopedic surgical techniques, spine

## Where to find it

Journal of Neurosurgery.  
January, 2015  
doi: 10.3171/2014.8.SPINE14687.

## Samuel Zahra MD4



# Infections, antibiotic treatment and mortality in patients admitted to ICUs in countries considered to have high levels of antibiotic resistance compared to those with low levels.

## Aim of Paper

To compare patient outcomes (including infection traits and antibiotic treatments) in countries with high antibiotic resistance rates (HighABR) versus patient outcomes in countries with low antibiotic resistance rates (LowABR).

## Summary

- Two groups of countries (HighABR VS LowABR) were selected based on MRSA rates as reported in EARSS (European Antimicrobial Resistance Surveillance System).
- The high resistance group had  $\geq 25\%$  MRSA rates and the low resistance group had  $< 5\%$  MRSA rates. Infection was defined by criteria from the International Sepsis Forum, and patients were followed up until discharge or until 60 days from admission had passed.
- Results showed that compared to the LowABR group, in the HighABR group patients were sicker (higher median SAPS II score), had longer hospital stays and had a higher prevalence of infection.
- Physicians from HighABR group ICUs tended to treat with broad spectrum antibiotics more frequently.
- Crude mortality rates were higher in the HighABR group, nevertheless, after multivariable analysis there was no significant difference in mortality between infected/non-infected patients in ICUs in the HighABR and LowABR groups.

## Details

- Data from EPIC II (European point-

prevalence study on infections in intensive care) (2007) was used. This data was obtained from 13,796 adult patients from 1265 ICUs in 75 countries and showed that 51% of patients had one or more infections.

- SAPS II (Simplified Acute Physiology Score) is a classification system used by Intensive Care Unit physicians to grade disease severity. It uses physiological measurements from the first 24 hours of a patient's admission.
- Various confounding factors were accounted for during statistical analysis, including but not limited to: type of admission, comorbidities, age, sex, mechanical ventilation, type of microorganism.

## Relevance to undergraduates

Malta is considered a country with HighABR.

## Where to find it

BMC Infectious Diseases  
September 2014  
doi:10.1186/1471-2334-14-513

## Alex Clayman, MD3





# Overweight/Obesity and respiratory allergic disease in children: international study of asthma and allergies in childhood (ISAAC phase 2)

## Aim of Paper

- To determine whether obese/overweight children have a higher risk of asthma and allergic symptoms in different geographical areas.

### Summary

- Cross-sectional studies of stratified random samples of 8–12-year-old children (n=10 652) (16 centres in affluent and 8 centres in non-affluent countries) used the standardized methodology of ISAAC Phase Two.

- There was a stronger association in affluent centres than in non-affluent centres. This difference between affluent and non-affluent countries was statistically significant for overweight children but not for obese children. In the non-affluent countries there was no association between overweight children and asthma. Within affluent European centres, there was an indication of a stronger association with obesity among centres from North-Central Europe as opposed to Southern Europe, but much less so for overweight.

- Wheezing with exercise was significantly associated with overweight and obesity.

- Those reporting a dry cough at night and those woken up by chest tightness were more obese.

- Bronchial hyper responsiveness to skin-prick testing and total serum IgE levels were not conclusively associated with overweight and obese children but FEV1/FVC ratio was lower in these children.

- Rhinitis was not associated with obese and overweight children but flexural eczema was.

- Lifestyle and standards of living are suggested to contribute to these disparities, and may also reflect partly different structures of residual confounding as indicated by former ISAAC II publications

on breast-feeding , diet , infections, and dampness.

- The association of overweight and obesity with asthma symptoms did not differ between girls and boys.

## Details

- Cut off points for obesity 30kg/m<sup>2</sup> and 25kg/m<sup>2</sup> for overweight children.

- FEV1/ FVC measurements were adjusted for age gender and height.

- Respiratory and allergic symptoms were ascertained by parental questionnaires.

- Tests for allergic disease were performed. Height and weight were measured, and overweight and obesity were defined according to international definitions.

- In three countries, Ghana, Brazil and India, the questionnaires were posed to parents by trained interviewers, because illiteracy was common.

## Relevance to undergraduates:

Asthma, overweight/obese children

## Where to find it

PLOS One

December 2014

doi: 10.1371/journal.pone.0113996

## Kristie Tonna MD4



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