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### Scientific Day, 2007

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# ScientificDay

May 17, 2007

Aurora Conference Center

9:45 a.m. – 4:15 p.m.



Aurora Health Care®



# ScientificDay

May 17, 2007

Aurora Conference Center

9:45 a.m. – 4:15 p.m.

## **Welcome and Opening Remarks**

9:45 – 10:00 a.m.

Sycamore

## **Oral Presentation Session**

10:00 – 11:45 a.m.

Sycamore

## **Lunch Break**

11:45 – 12:45 p.m.

Sycamore

## **Oral Presentation Session**

12:45 – 2:00 p.m.

Sycamore

## **General Judged Poster Session and Break**

2:00 – 3:00 p.m.

Posters will be distributed throughout the 3rd floor of the Conference Center

## **Oral Presentation Session**

3:00 – 3:45 p.m.

Sycamore

## **Rieselbach Scientific Day Distinguished Paper Session**

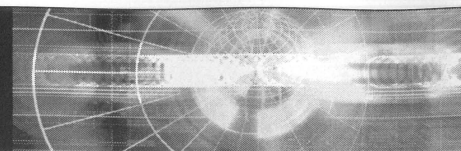
3:45 – 4:00 p.m.

Sycamore

**Awards immediately following**

# Oral Presentation Session I

10:00 – 11:45 a.m.



## Primary Drug-Eluting Stent-Supported Angioplasty For Treatment of Below-Knee Severe Claudication And Critical Limb Ischemia: One-Year Clinical Outcomes.

Pienkos P., MD, Allaqaband S., MD, Bajwa T., MD, and Shalev Y., MD, Department of Cardiology, Aurora Sinai Medical Center, Gupta A., MD, Department of Cardiology, Aurora St. Luke's Medical Center

**Background/Significance:** Angioplasty and stenting for below-knee peripheral arterial occlusive disease, compared with surgical revascularization, has not been accepted widely. If clinical success rates similar to surgical outcomes could be demonstrated, percutaneous modalities using drug-eluting stents could offer a superior therapeutic option for patients with critical limb ischemia or life-limiting claudication.

**Purpose:** To ascertain the safety and efficacy of below-knee drug-eluting stent-supported angioplasty versus standard below-knee bare-metal stent-supported angioplasty or percutaneous transluminal angioplasty alone (PTA).

**Methods:** 83 patients who had undergone treatment for severe claudication and/or limb-threatening ischemia were prospectively followed over one year. Patients received aspirin and clopidogrel. Patients had one of three therapeutic modalities for below-knee disease: standard percutaneous transluminal angioplasty (PTA, 45 patients), bare-metal stent-supported angioplasty (32 patients), or drug-eluting stent supported angioplasty (6 patients). At one year, clinical success was defined as freedom from recurrence of symptoms, stable Doppler ultrasound findings, freedom from target-vessel revascularization, or freedom from surgical amputation.

**Results:** Mean age of patients was 74 years old (range 29-91). At one year, 59% of PTA patients and 57% of bare-metal stent-supported angioplasty patients achieved clinical success, as defined above. In contrast, in the drug-eluting stent-supported angioplasty group, 83% achieved clinical success at one-year follow-up.

**Conclusion:** Drug-eluting stent-supported angioplasty for treatment of lower extremity claudication and limb-threatening ischemia appears to offer improved clinical outcomes at one year, compared with standard bare-metal stent-supported angioplasty or PTA alone. Further investigation is warranted to confirm these findings, as use of drug-eluting stents for severe below-knee disease may offer improved long-term clinical outcomes.



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## Detection of Fetal Growth Restriction Among Preterm Severe Preeclampsia: Experience At Two Tertiary Centers

Gupta L.M., MD and Gaston L., MD, Department of Obstetrics & Gynecology, Aurora Sinai Medical Center,  
Chauhan S.P., MD. Department of Obstetrics & Gynecology, West Allis Memorial Hospital

**Background/Significance:** Severe preeclampsia (SPE) an uncommon complication of pregnancy, can be detrimental to fetal growth. A newborn weighing less than or equal to the tenth percentile for gestational age has fetal growth restriction (FGR) and since they are at increased risk for neonatal morbidity and mortality, an accurate detection of these fetuses is desirable. Some studies suggest that sonographic suspicion of FGR is a sufficient indication for delivery, even if SPE occurs preterm (24 to 34 weeks).

**Purpose:** The purpose of this retrospective study is to determine the accuracy of detecting FGR with preterm SPE at the two tertiary centers in Milwaukee.

**Methods:** From ICD codes, we identified all severe pre-eclamptics that delivered prior to 34 weeks of estimated gestational age at the tertiary centers between Jan 2000 to Oct 2006. Intrauterine growth restriction (IUGR) was defined as sonographic estimate of fetal weight within three weeks of delivery of less than or equal to the tenth percentile for that gestational age. Various analytical test used as well CI and Odds ratio were calculated.

**Results:** Since the accuracy of detecting FGR was similar at the two centers, the data was combined. Overall, among the 38 preterm SPE, IUGR was suspected in 24%, and FGR was present in 39%. The sensitivity of identifying FGR was present in 39%, specificity 87%, positive predictive value, 67% and negative predictive value 69%.

**Conclusion:** Among preterm SPE, FGR occurs in about one-third of the cases and our ability to identify them is poor, for we miss the diagnosis in majority of the cases. Preterm delivery because of suspected IUGR alone should be avoided because the likelihood of actual FGR is quite wide and clinically unacceptable.

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## Health Outcomes And Health Determinants: Differences Among Disparate Socioeconomic Levels In Milwaukee

Vila P., BS, Aurora UW Medical Group Family Medicine, Population Health Institute

Swain G., MD, MPH, City of Milwaukee Health Department, Center for Urban Population Health

Baumgardner D.J., MD, and Cisler R., PhD, Aurora UW Medical Group Family Medicine, Center for Urban Population Health

Halsmer S., BS, Aurora UW Medical Group Family Medicine

**Background/Significance:** In 2006, the City of Milwaukee ranked worse than any Wisconsin county for overall health outcomes and second worse for overall health determinants.

**Purpose:** The purpose of this analysis is to further examine disparities in health outcomes and determinants, both within Milwaukee and relative to the rest of the state.

**Methods:** Milwaukee city ZIP codes were stratified into 3 groups (lower, middle, and upper) by socioeconomic status (SES). Data on population-based health determinants (15 measures) and health outcomes (2 measures) were compared across these ZIP code groups, and to each county in the rest of the state. Risk ratios were determined for each item.

**Results:** Large differences in SES, health outcome, and health determinant indicators were observed, both within the city and relative to other Wisconsin counties. In Milwaukee, the lower SES group had risks that ranged from 1.5 to 5.4 times as high in most health measures (12/17 items) as compared to the upper SES group. The upper SES group ranked worse in binge drinking and physical inactivity.

**Conclusion:** Large health disparities within the City of Milwaukee are associated with geographic regions defined by socioeconomic status. As the state's largest urban center, Milwaukee's relatively poor health has considerable impact on the overall health of the State. To improve population health in Wisconsin, substantial efforts and resources are needed to address these disparities, and their related upstream factors.

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## Funding Source and Conflict of Interest Disclosures by Authors and Editors in Gastroenterology Specialty Journals

*Bhargava N., DO, Qureshi J., MD and Vakil N., MD, Department of Gastroenterology, Aurora Sinai Medical Center*

**Background/Significance:** Declarations of conflicts of interest have received considerable scrutiny in recent years.

**Purpose:** To determine if the leading gastroenterology journals had a formal conflict of interest disclosure policy and the extent to which this policy was followed by reporting of funding sources and potential conflicts of interests of the authors and editors of published studies.

**Methods:** We examined original articles and editorials in 12 leading journals (determined by impact factor) devoted to gastroenterology and hepatology. We examined the editorial policy of the journal (if available) on the website of the journal or in print versions of the journal and contacted the journal for further information on editorial policies.

**Results:** 1114 original articles and 154 editorials were evaluated from 12 journals. The source of funding for a study was disclosed in 19-99% of the articles examined with only one journal reporting the funding source (or absence of funding) in over 90% of articles studied. A potential conflict of interest was present in 0-13% of original articles and 0-33% with editorials. Only 2 of 12 (17%) journals publicly disclosed the conflicts of interest of the editors to the reader and only 3 (25%) had a formal method for handling editors conflict of interest.

**Conclusion:** Editors of gastroenterology and hepatology journals have been slow to implement guidelines for the disclosure of their own conflicts of interest. Disclosure of funding sources and conflicts of interest of authors is variable despite the presence of conflict of interest policies at most journals.

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## Do All Abnormal Intraoperative Cholangiograms Warrant ERCP?

*Raj M., MD, Department of Internal Medicine, Aurora Sinai Medical Center, Guda N., MD, GI Associates, Aurora St. Luke's Medical Center, Partington S., PhD, Center for Urban Population Health, Aurora Sinai Medical Center, Catalano M., MD, GI Associates, Aurora St. Luke's Medical Center, Geenen J., MD, GI Associates, Aurora St. Luke's Medical Center*

**Background/Significance:** Laparoscopic cholecystectomy (LC) is often done in those with symptomatic cholelithiasis. In those with clinical suspicion for stones in the common bile duct (CBD), an intra-operative cholangiogram (IOC) is done and if any abnormality is detected, endoscopic retrograde cholangiopancreatography (ERCP) is performed. False +ve rates for IOC are variable leading to unnecessary ERCPs and complications.

**Purpose:** To identify 1) sensitivity (sens) and specificity (spec) of IOC compared to ERCP (gold standard); 2) Clinical features associated with abnormalities of IOC that could improve the test characteristics.

**Methods:** The database of a tertiary care hospital in Milwaukee was queried by ICD 9 codes for LC and then cross-referenced by those with ICD 9 codes for IOC and ERCP. Data for subjects (sub) with all 3 codes over the last 10 years was analyzed. Data abstraction included: indications for cholecystectomy, IOC, imaging studies, liver function (LFT), and ERCP details including immediate complications.

**Results:** Sixty-four underwent LC with IOC and ERCP between Jan 1996 and Dec 2005. 42.2% were males. Median age: 57 years. Half of sub had multiple indications for LC. Indications included cholecystitis in 68.8%, biliary dyskinesia in 1.6%, biliary pancreatitis in 37.5% and symptomatic cholelithiasis in 68.8%. IOC and ERCP were concordant for presence and absence of choledocholithiasis in 70.3%. The sens and spec of IOC compared to ERCP was 75% and 68.8%. When computation was limited to sub with LFT abnormalities of any degree. The sens and spec of IOC for detection of stones were not significantly different. Additionally, the operating characteristics did not differ among indications for LC. In the 9.4% sub found to have stricture of CBD on IOC, no stones were detected with ERCP. Post ERCP pancreatitis was seen in 6% (all mild).

**Conclusion:** The predictability of stones on IOC is sub-optimal. Abnormal LFTs and indications for LC do not increase the predictive value of IOC. Role of other imaging studies like MRCP needs to be evaluated to avoid unnecessary ERCPs.



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## Comparison of Intraoperative Time Between the Post-Partum Tubal Ligation Using Filshie Clip and Pomeroy Procedure

Al-Niaimi A., MD and Siddiqui D., MD, Department of Obstetrics & Gynecology, Aurora Sinai Medical Center

Hung A., BS, Chauhan S., MD; and Partington S., PhD, Department of Obstetrics & Gynecology, West Allis Memorial Hospital; and the Center for Urban Population Health

**Background/Significance:** Both Filshie clip and the Pomeroy procedure are being used as a method of sterilization in the post partum period, the efficacy of each one has been studied before, but a head to head comparison in terms of intra-operative time and its contributing factors have not been studied.

**Purpose:** Our main goal is to conduct a retrospective analysis to compare the intra-operative time (defined as skin incision time to the completion of skin closure) between the two procedures, and to study the factors contributing to this difference if they exist.

**Methods:** After having the IRB approval, a retrospective analysis was conducted to study the charts of all the post partum sterilization procedures done at Aurora Sinai Medical Center, between the years 2004 to 2006. The data was collected for each procedure in term of the patient's age, race, parity, body mass index, primary surgeons and their experience, the assisting residents and their level of training, as well as the total time of the procedure as recorded in the anesthesia records.

**Results:** A total of 257 patients have been identified, 207 patients had the Pomeroy procedure and 50 patients had the procedure by using Filshie Clips. There is no statistical time difference between the Filshie clip vs. Pomeroy procedures (31.5 vs. 30.4 minutes  $P=0.610$ ), however, both procedures were statistically significantly longer when the patient's Body Mass Index is more than 30 (32.9 vs. 26.1 minutes  $P<0.01$ ), when the primary surgeon's experience is less than 15 procedures (40.3 vs. 25.3 minutes  $P=0.01$ ), and when the assisting surgeon is a junior level resident (34.3 vs. 24.5 minutes  $P<0.01$ ).

**Conclusion:** There is no difference in the intra-operative time between both Filshie clips or Pomeroy procedure as a method of sterilization in the postpartum period, however both procedures took longer time when the patient is obese and when the surgeon or the assistant have done less than 15 procedures.

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## Effect of Attenuation Correction on Transient Ischemic Dilatation

Djelmami-Hani M., MD, Department of Cardiology, Aurora Sinai Medical Center

Port S., MD, Department of Cardiology, Aurora St. Luke's Medical Center

**Background/Significance:** Transient Ischemic Dilatation (TID) of the left ventricle in SPECT myocardial perfusion imaging (SPECT-MPI) has important diagnostic and prognostic value in patients with known or suspected coronary artery disease (CAD). The effect of attenuation correction (AC) on the TID ratio is unknown.

**Purpose:** Determine the effect of AC on TID.

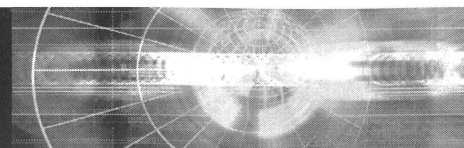
**Methods:** We prospectively collected clinical and SPECT data on a 100 consecutive patients referred to our lab for SPECT-MPI. Imaging was performed using the same dual head gamma camera (Cardio60- ADAC/Phillips, California) and processing software with attenuation correction capability (Pegasys Ultra 1998- ADAC/Phillips, California). Technetium sestamibi was used in all patients.

**Results:** A total of 61 male (61%) and 39 female (39%) patients were included with a mean age was  $62 \pm 11$ . The prevalence of hypertension, diabetes and documented coronary artery disease, coronary artery bypass graft surgery or myocardial infarction was 27%, 17%, 54%, 19% and 12% respectively. The mean body-mass index (BMI) was  $30 \pm 6$ . Pharmacological stress test was performed with adenosine in 22 patients, walking adenosine in 12 patients and dobutamine in 6 patients. The other 60 patients underwent treadmill exercise test using Bruce protocol. A two-day protocol was used in 68 patients while a same day rest-stress protocol was used in 32 patients. At peak stress, the exercise group had a peak heart rate of  $150 \text{ bpm} \pm 16$  and a blood pressure of  $170 \text{ mmHg} \pm 23$  systolic and  $71 \text{ mmHg} \pm 11$  diastolic. The mean left ventricular ejection fraction was  $62\% \pm 12$ . The mean TID was  $1.03 \pm 0.15$  before AC (TID-NC) and  $1.02 \pm 0.14$  after AC (TID-AC) ( $p=0.72$ ). The mean change in TID after AC was 0.007 (95% CI=  $[-0.03 - 0.05]$ ).

**Conclusion:** Attenuation correction does not affect the appearance and evaluation of left ventricular TID during SPECT-MPI regardless of BMI, exercise vs. adenosine or dobutamine or one-day vs. 2-day protocol.

## Oral Presentation Session II

12:45 – 2:00 p.m.



### Geographic Analysis of ADHD in Children: Milwaukee County

Weimer J., Baumgardner D.J., MD, and Schreiber A., MA, Department of Family Medicine/Center for Urban Population Health

**Background/Significance:** Attention deficit hyperactivity disorder (ADHD) is a prevalent neuro-developmental disorder of childhood. Previous studies have shown that male gender, low income, and family dysfunction increase incidence of ADHD, without apparent relationship to geographic region, socioeconomic status, or environmental factors. Formal community geographic systems analysis has not been done.

**Purpose:** A pilot study to determine if there is a non-random geographic distribution of ADHD in Milwaukee County.

**Methods:** Street addresses and demographic data of all children aged 5-17 receiving continuity care at three Family Medicine Clinics in Milwaukee, WI who did (N=80) or did not (N=1144) have ADHD were geocoded with Map Marker Plus and were mapped using ARC-GIS. CrimeStat III was used for spatial modeling, including mapping of ratio of case/control densities. Univariate analysis was done by Chi-Square test or Mann-Whitney U test, and multivariate analysis by binary logistic regression.

**Results:** In univariate analysis all non-white ethnicities were less frequently diagnosed with ADHD (all p values  $\leq 0.02$ ). ADHD cases were 75% male (p=0.0001). In multivariate analysis, zip code of residence and gender were significant factors (p=0.000), but not race/ethnicity. ADHD cases were over represented in south and western suburban school districts, compared to Milwaukee, and particularly in a zip code adjacent to the major airport.

**Conclusion:** Further studies are needed to determine if geographic distribution of ADHD patients can be partially explained by differential efficiency of referral for diagnosis by school districts and/or environmental factors such as noise corridors.

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### Effect of Cardiac Resynchronization Therapy on Atrial Fibrillation Burden in Patients with Heart Failure

Pubbi D., MD, and Bhatia A, MD Department of Cardiology, Aurora St. Luke's Medical Center

**Background/Significance:** Cardiac Resynchronization therapy (CRT) has been shown to improve symptoms and survival in select group of patients with Heart Failure. However it's effect on overall Atrial Fibrillation (AF) burden in such patients is unknown. Biventricular Implantable Cardioverter-defibrillator has diagnostic data storage capabilities that allow for AF monitoring over time.

**Purpose:** We studied the effect of CRT on overall AF burden following BiVD implantation in patients with Heart Failure and history of Paroxysmal (PAF) or persistent AF.

**Methods:** The study population consisted of 157 consecutive patients (98 males, mean age  $64 \pm 12$  years) with cardiomyopathy (Ischemic 98, Nonischemic 59) who underwent BiV implantation at our institution. BiVD interrogation and stored data analysis was performed every 3 months after implantation. AF burden was retrieved at each follow up visit by device interrogation. Patients were divided into 3 groups (Group A=Patients with no history of AF, Group B patients with PAF, n=33 and group C with persistent AF, n=45) A Paired t-test was performed in patients with PAF( Group B) to assess if there was a difference in the numbers of episodes over time following BiVD implantation.

**Results:** At the 12 months follow up, only one patient in Group A (1/79) developed PAF and 31%(14/45) in group C were in Normal Sinus Rhythm (NSR). In Group B, there was significant reduction of number of PAF episodes ( $7.7 \pm 3.2$ /year pre implant vs  $2.2 \pm 1.0$  post implant  $P < 0.002$ ). On univariate analysis Ejection Fraction and use of Class III antiarrhythmic drug were not predictive of AF recurrence or burden over time.

**Conclusion:** CRT is associated reduction in AF recurrences and over all AF burden in patients with Heart Failure. This observation may represent another beneficial effect of CRT in patients with Heart Failure.



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## Creating Lines of Ablation with Toxins for The Potential Use in the Treatment of Arrhythmia

*Sheikh I., MD, Department of Cardiology, Aurora Sinai Medical Center; Tector M., Department of Cardiology, Aurora St. Luke's Medical Center; Tweten R. and Hare J., Department of Research, Aurora Sinai Medical Center; Krum D., MS, Cardiology & Electrophysiology Research, Aurora Sinai Medical Center; Akhtar M., MD and Sra J., MD, Department of Cardiology, Aurora Sinai Medical Center*

**Background/Significance:** Cellular toxins inhibit electrical activity in cardiac tissue by binding to the cell membrane and forming large pores that rapidly destroy the ion gradient across the plasma membrane, which then prevents action potential propagation. Cell death ensues and scar tissue is formed.

**Purpose:** If these toxins could be used to form transmural contiguous lesions in the myocardium, they may serve as a tool to create lines of ablation in the treatment of arrhythmias.

**Methods:** In four dogs, 1 pacing and 2 recording electrodes were placed on the right atrium after thoracotomy. An injection of Perfringolysin O (PFO) toxin was made immediately surrounding one of the recording electrodes. Electrical activity was monitored continuously during the toxin injection until a marked change occurred in either signal amplitude or conduction time between the electrodes. Recordings while pacing were also completed. Measurements were recorded before (pre), 5 minutes after injection (IP) and at 4 week follow up. Statistical analysis was performed with ANOVA. Myocardium was sent for histological evaluation.

**Results:** During normal sinus rhythm, the reduction in signal amplitude immediately following injection and at 4 weeks was statistically significant ( $p=0.003$ ). During pacing, signal amplitude was reduced immediately following injection and at 4 weeks ( $p=0.07$ ). Toxin therapy did not cause a statistically significant change in conduction time. Microscopic evaluation showed transmural scar tissue at the site of toxin injection.

**Conclusion:** Toxin injection showed a statistically significant reduction in signal amplitude, which remained at 4 weeks. Transmural scar tissue was produced at the site of toxin injection. Conduction time was likely not affected secondary to failure to produce contiguous lesions surrounding the recording electrode. Increased sample size and efforts aimed at improving toxin delivery are needed and warrant future study.

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## The Prevalence, Incidence and Cost of Diagnosing Patients with Barrett's Esophagus in a Community Practice

*Breitinger A., MD, Department of Gastroenterology, Aurora Sinai Medical Center; Ratnaker N., MD, Guda N., MD, GI Associates, Aurora St. Luke's Medical Center; Shughoury B., MD, Vakil N., MD, Department of Gastroenterology, Aurora Sinai Medical Center*

**Background/Significance:** Studies on the cost of diagnosing dysplasia or cancer in Barrett's esophagus are sparse and biased towards tertiary centers. The available data may be skewed towards more severe patients.

**Purpose:** The aim of this study was to determine the yield of a surveillance program for Barrett's esophagus in community practice and to estimate the cost of diagnosing dysplasia or cancer.

**Methods:** The computerized databases of all operative procedures performed at two large community-based teaching hospitals in Milwaukee, WI were analyzed (1000 beds combined). Patients with a diagnosis of Barrett's esophagus were identified using ICD codes. Both the endoscopic report and pathology were reviewed to confirm the endoscopic picture and the presence of intestinal metaplasia. The prevalence of dysplasia at the first endoscopy and the incidence of endoscopy over follow-up were determined. Assuming a cost for endoscopy plus biopsy to be \$500 (based on Wisconsin Medicare costs), costs were calculated for every diagnosis of cancer and dysplasia.

**Results:** A total of 1269 endoscopies were performed over the 10 year study period in patients with biopsy confirmed Barrett's esophagus (i.e. with specialized intestinal metaplasia). There were 667 patients undergoing their first endoscopy at which a diagnosis of Barrett's esophagus was made. 21 had low grade dysplasia, 5 had high grade dysplasia and 2 had esophageal adenocarcinoma. The second endoscopy had 14 new low grade dysplasias and 1 new adenocarcinoma. No high grade dysplasias or cancers were found at surveillance endoscopy #3-8. The total estimated cost of these procedures in patients with Barrett's esophagus was \$634,500 and the cost to diagnose one case of high grade dysplasia was \$126,900 and one adenocarcinoma was \$211,500.

**Conclusion:** Adenocarcinoma and high grade dysplasia are usually diagnosed at the index endoscopy or at the first surveillance endoscopy. The yield of continued endoscopic surveillance is low beyond the second surveillance endoscopy.

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## Electrocardiogram-Gated Computed Tomography-Fluoroscopy Image Integration-Guided Catheter Ablation of Atrial Fibrillation

*Mortada, M.E., MD, Department of Electrophysiology, Aurora Sinai Medical Center; Krum D., MS, Department of Electrophysiology, Aurora Sinai Medical Center; Singh R.P., MD, Department of Electrophysiology, Aurora Sinai Medical Center; Jammula P., MD, Department of Electrophysiology, Aurora Sinai Medical Center; Sra J., MD, Department of Electrophysiology, Aurora Sinai Medical Center*

**Background/Significance:** Delivery of radiofrequency lesions in the left atrium and pulmonary veins to terminate atrial fibrillation (AF) is challenging due to the complexity of the left atrial (LA) anatomy affecting duration of procedure, completion of ablation points, total fluoro exposure.

**Purpose:** To improve the accuracy of image-guided therapy, we report ECG-gated CT-fluoroscopy registration-guided AF ablation.

**Methods:** Seventy-five patients with symptomatic AF refractory to medical therapy (49 paroxysmal, 26 persistent, age  $56 \pm 9$  yrs) were randomized to undergo catheter-based AF ablation without CT-fluoroscopy guidance (Group 1), with CT-fluoroscopy guidance but without ECG gating (Group 2), and with ECG-gated CT-fluoroscopy guidance (Group 3). All underwent pre-procedural contrast-enhanced CT and segmentation of the LA to create pre-procedure planned lesion lines. CT image was constantly registered, in the second and third groups, and displayed with the fluoroscopy images obtained during the procedure in real time. Images were adjusted depending on coronary sinus catheter and superior vena cava location. For Group 3, fluoroscopy images were obtained during the exact cardiac cycle timing of the CT images, 75% of the R-R interval.

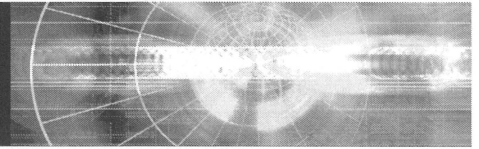
**Results:** CT-Fluoroscopy integration helped guide navigation of ablation catheters to sites of planned ablation. ECG-guided 3D-2D registration imaging reduced the error of registration, and decreasing fluoroscopy time (Group 1:  $78 \pm 16$  minutes, Group 2:  $59 \pm 11$  minutes, and Group 3:  $48 \pm 18$  minutes, with  $p < 0.05$ ). At a mean follow-up of 6 months, 16 (64%) in Group 1, 21 (84%) in Group 2, and 21 (84%) in Group 3 had no recurrence of AF.

**Conclusion:** ECG-gated 3D-2D CT-fluoroscopic registration of the LA significantly reduces radiation exposure. CT-fluoro registration guided AF ablation appears to improve outcomes over ablations done without 3D-2D CT-fluoro registration guidance.



## Poster Session

2:00 – 3:00 p.m.



### Case Report: Aberrant Right Coronary Artery with Intra-Atrial Course as Depicted by CT Angiography and Three Dimensional Rendering of the Coronary Arteries

*Khalil J., MD, Joshi J., MD, Levin J., MD and Case G., MD, Department Diagnostic Radiology, Aurora St. Luke's Medical Center  
Gupta A., MD, Department of Cardiology, Aurora Sinai Medical Center*

**Background/Significance:** Congenital abnormalities of the coronary arteries are uncommon, but an important cause of chest pain, and in some cases, hemodynamically significant abnormalities. Detection of an intra-atrial course of coronary arteries can be very difficult, if not impossible, by conventional coronary angiography. Intracavitary positions of coronary arteries can pose technical difficulties during coronary interventions and surgical revascularization. CT angiography of the coronary arteries is an excellent method to define congenital anomalies of the heart. It is likely the preferred method to diagnose the rare presentation of an intra-atrial course of the coronary arteries.

**Purpose:** To document the usefulness of CT Coronary Angiography.

**Conclusion:** The right coronary artery follows a clearly defined intracavitary course descending through the right atrium, occurring immediately distal to the takeoff of the acute marginal artery. Myocardial bridging and tunneling have been previously described in the literature. However, only limited discussion of intracavitary courses of the coronary arteries exists. Congenital abnormalities of the coronary arteries are uncommon, but an important cause of chest pain, and in some cases, hemodynamically significant abnormalities. Detection of an intra-atrial course of coronary arteries can be very difficult, if not impossible, by conventional coronary angiography. This anomaly can pose technical difficulties during coronary interventions and surgical revascularization. Certainly, the importance of aberrant intracavitary coronary arteries becomes more relevant with the increasing prevalence of central venous catheter devices as well as defibrillator lead placement. In our opinion, CT angiography is likely the preferred method to diagnose the rare presentation of an intra-atrial course of the coronary arteries.

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### Cerebral Artery Air Embolism Following Percutaneous Lung Biopsy: A Case Report

*Dale K., MD, and Patel S., MD, Department of Diagnostic Radiology, Aurora St. Luke's Medical Center*

**Background/Significance:** Systemic arterial air embolism is a rare, potentially fatal, complication of percutaneous lung biopsy. The authors present a case of a patient with a solitary pulmonary nodule who underwent percutaneous biopsy and developed hemiparalysis. A CT scan demonstrated air within the right middle cerebral artery distribution. The patient was immediately treated with hyperbaric oxygen therapy and his symptoms resolved. A follow-up MRI demonstrated no permanent sequelae of this ischemic insult.

**Purpose:** Percutaneous lung biopsy is becoming a relatively common procedure. Though rare, a systemic air embolism can be fatal. The authors discuss an example of a patient successfully treated with hyperbaric oxygen. This case report educates health professionals about potential life-saving measures.

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## Congenitally Corrected Transposition of the Great Arteries; Anatomic Characterization with 64-Slice Computed Tomography Angiography and Three-Dimensional Imaging

Nelson R., MD, Khalil J., MD, Levin J., MD and Shah H., MD, Department of Radiology, Aurora St. Luke's Medical Center

**Background/Significance:** Magnetic resonance imaging and echocardiography are the primary imaging modalities in the evaluation of congenital heart disease, however, both have intrinsic limitations. Advances in computer processing and 3D computer graphics allows 3D CTA of intracardiac and extracardiac structures. This technique provides continuous data that can be reconstructed to produce a 3D representation. With this technique, maximum information can be obtained rapidly and continuously with a relatively small amount of contrast material and radiation exposure. Accurate evaluation of 3D anatomic relations of cardiac and vascular morphologic characteristics offers considerable advantages in the management of patients with complex congenital heart disease.

**Purpose:** To image the Great Arteries with 64-Slice Computed Tomography Angiography and Three-Dimensional Imaging.

**Conclusion:** Accurate evaluation of 3D anatomic relations of cardiac and vascular morphologic characteristics offers considerable advantages in the management of patients with complex congenital heart disease.

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## Neurofibromatosis Type I: A Case of Malignant Change

Brenner T, MD, Department of Internal Medicine, Aurora Sinai Medical Center and Berry B, MD, Department of Internal Medicine, Aurora St. Luke's Medical Center

**Background/Significance:** Acute dyspnea of five days duration. A chest x-ray revealed a dense opacification of the right hemithorax with mild mediastinal shift to the left. An eventual thoracoscopy revealed multiple nodules blanketing the pleural space. A biopsy and histology confirmed the diagnosis as malignant peripheral nerve sheath tumor. (images provided).

**Purpose:** History of neurofibromatosis type I. In the past, malignant peripheral nerve sheath tumors (MPNSTs) were thought to also be rare in this patient population. However, over the last several years, several reports have been published claiming that the incidence is much higher for NF1 patients than previously thought.

MPNSTs are aggressive soft tissue sarcomas that form in the outer layers of peripheral nerves which may arise de novo or from benign plexiform neurofibromas. MPNSTs are rare, with an incidence in the general population of 0.001%. However, about half of MPNSTs, are found in individuals with a history of neurofibromatosis type 1 (NF1), with an overall risk of malignancy estimated at between 5 and 15 percent of affected individuals. MPNSTs often strike in late adolescence or early adulthood.

**Objective:** To heighten awareness of the increased risk of MPNSTs in patients with NF1, educate on what findings may increase clinical suspicion and to have a low threshold for imaging and biopsy. Recommendations from an international consensus on MPNSTs will also be presented.

**Conclusion:** Patients with a history of NF1 are at increased risk of MPNSTs, often striking in early adulthood. Wide margin resection is thus far the only cure. Thus, increased suspicion for this malignant change, early imaging and biopsy are key in potential survival.

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## Absence of IVC as Cause for LE DVT

Museitif R, MD and Shalev Y, MD, Department of Cardiology, Aurora Sinai Medical Center

**Background/Significance:** An anomaly that has been reported in association with deep venous thrombosis, we report a case of extensive DVT associated with congenital absence of the inferior vena cava and enlarged azygous and hemiazygous venous system in a previously healthy 44 y.o. male

**Purpose:** Congenital absence or atresia of the IVC is a rare developmental abnormality and is estimated to occur in 0.5% of the general population (1). It may occur in constellation with other congenital anomalies involving the heart, spleen and bowel. Patients with multiple abnormalities are usually diagnosed early, those without are usually asymptomatic and are diagnosed incidentally. These patients also have sufficient collateralization via the azygous vein or via portal continuation. It is believed that the absence of IVC may lead to venous stasis and thus is a risk factor for DVT. This diagnosis should be considered in cases of extensive idiopathic DVT as it may mandate a longer course of anticoagulation. We report a 44-year-old male with extensive left lower extremity DVT involving the popliteal vein though the common femoral vein.

**Methods:** This is a case presentation. we will explain his entire work up and show his disease.

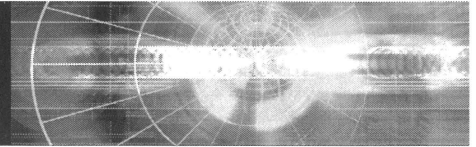
**Results:** In Summary, an extensive DVT was diagnosis in a previously healthy 44y.o. male who was found to have congenital absence of his entire IVC between the right iliac vein and the hepatic vein. As no other cause was identified, it is likely that this anomaly may have contributed to his DVT.

**Conclusion:** The majority of patients with DVT will have an identifiable risk factor (2). Risk factors are divided into acquired or hereditary. It has been reported that anomalies of the IVC may contribute to venous stasis and subsequent clot formation. Congenital absence or atresia of the IVC is estimated to occur in 0.5% of the general population (1). (1). Knowledge of vascular malformations may effect duration of anticoagulation.



## Poster Session – Work in Progress

2:00 – 3:00 p.m.



### Assessment And Revision of a Pharmacy Practice Residency Program to Comply with The American Society of Health-System Pharmacists (ASHP) 2007 Accreditation Standards

*Canty K., PharmD and Dagam, J., PharmD, BCPS, Department of Pharmaceutical Services, Aurora St. Luke's Medical Center*

**Background/Significance:** Within a given residency program there is considerable consistency, however, this often does not carry across practice settings; ASHP, therefore, provides standard criteria that every program must meet in order to receive and uphold accreditation. The most recent change in the ASHP accreditation standards went into effect in January, 2007. The objective for this project is to systematically analyze and modify Aurora Health Care's existing ASHP-accredited Pharmacy Practice Residency Program so that it is fully compliant with the 2007 ASHP standards for accreditation.

**Purpose:** This project will systematically analyze and modify Aurora Health Care's existing ASHP-accredited Pharmacy Practice Residency Program so that it is fully compliant with the 2007 ASHP standards for accreditation.

**Methods:** A gap analysis will be performed to determine the compliance and identify changes that need to be made to Aurora Health Care's Pharmacy Practice Residency program in order to ensure full compliance with all aspects of the revised 2007 ASHP standards for accreditation. The preceptor group will be educated on the new accreditation standards and the identified changes to the Pharmacy Practice Residency Program. An action plan will be developed to address the needed changes to the program. These changes will then be communicated to the preceptor group for their input into the proposed action plan. The identified changes, listed in the finalized action plan, will then be implemented. Feedback will then be solicited from the preceptor group on the implemented action plan. Any further changes will be identified, revised and implemented. Finally, the gap analysis will be revised to describe all of the actions implemented addressing how each gap has been eliminated.

**Results:** A gap analysis was performed, preceptor education sessions were held, and areas of needed changes were identified and addressed.

**Conclusion:** Aurora will have a PGY1 Residency Program that is fully compliant with the ASHP 2007 standards for accreditation.

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## Standardizing Oncology Pre-printed Order Sets (PPOs) and Attaining System-wide Acceptance of Their Use Within A Health Care System

*Canadeo A., PharmD, Aurora Sinai Medical Center and Yoder S., PharmD, BCOP, Department of Pharmacy, Aurora St. Luke's Medical Center*

**Background/Significance:** The Institute for Safe Medication Practices (ISMP) and ASHP recommend pre-printed order sets (PPOs) for chemotherapy ordering to reduce medication errors. Current oncology PPOs at Aurora Health Care have variations in their cisplatin hydration and MESNA dosing protocols, which can confuse medical staff and are not conducive to future CPOE. Aurora also does not have consistent use of PPOs at all facilities. Oncology handwritten orders are prone to omissions, illegibility, and errors, and should be limited.

**Purpose:** To standardize Aurora oncology PPOs with consistent cisplatin hydration and MESNA dosing, and to educate offsite locations on the benefits of PPOs to facilitate their use system-wide.

**Methods:** A literature review was completed and well-regarded oncology institutions contacted to collect information about usage of PPOs for error reduction, cisplatin hydration guidelines, and MESNA dosing with ifosfamide. A small chart review was performed on 15 patients given cisplatin to identify hydration schedules used and their effects on kidney function and electrolytes. This information was utilized to develop standard protocols, which were presented at oncology system-wide meetings for approval. Once approved, all PPOs were updated and made available on-line. Educational presentations were given to system-wide nursing supervisors, describing the benefits of PPOs and how to access them on-line. Verbal communication and surveys will be utilized to assess the system-wide usage rate of PPOs at baseline and at project completion.

**Results:** Cisplatin hydration schedules and MESNA dosing has been standardized. PPO usage rate will be assessed and compared to baseline (in progress).

**Conclusion:** Standard guidelines for cisplatin hydration and MESNA dosing were developed, approved by all oncology disciplines, and will be made available on-line for system-wide use. Offsite oncology clinics were educated about safety advantages with PPOs and made progress towards implementing their use into daily practice.

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## Pharmacy Interventions to Reduce the Use of Select Medications in Elderly Patients

*Patten A., PharmD, Claxton K., PharmD, Speakbraker L., PharmD, BCPS, Department of Pharmacy, Aurora St. Luke's Medical Center*

**Background/Significance:** Elderly patients are exceptionally vulnerable to suffering adverse drug reactions (ADRs). Advancing age creates unique pharmacokinetic and pharmacodynamic profiles by reducing protein binding, reducing biotransformation, diminishing renal elimination, and impairing target organ and homeostatic responses. Certain medications are more prone to causing ADRs in the elderly, and are labeled 'inappropriate,' or the risk involved in their use outweighs the potential for benefit. Nationally, the frequency of inappropriate prescribing remains astoundingly high.

**Purpose:** Within Aurora Health Care, this project will serve to improve patient care and standardize acute care between Acute Care for the Elderly (ACE) and General Medicine units. The primary objective of this project is to reduce the targeted medications for elderly patients admitted to an inpatient general medical unit at Aurora St. Luke's Medical Center (ASLMC).

**Methods:** This study proposal was submitted to a pharmacy project council and the Institutional Review Board (IRB) and discussed with geriatric specialists prior to commencement. Three of the most problematic Beer's list medications employed at ASLMC were identified [diazepam, meperidine, and haloperidol] via a literature review, the ADR reporting system, and a baseline medication utilization evaluation (MUE). The targeted medications were flagged in the pharmacy order entry system at ASLMC, and a standardized note-on-chart was created. Education and pocket-reference-cards were provided to pharmacy and nursing. Post-intervention prescribing indicators will be measured at ACE units at Aurora Sinai Medical Center (ASMC) and General Medicine units at ASLMC.

**Results:** The baseline MUE suggested that there is opportunity to reduce the use of targeted medications on General Medicine units at ASLMC. Post-interventional data collection is in progress, and will be presented at Aurora Scientific Day.

**Conclusion:** Final results and conclusions of this study will be presented at Aurora Scientific Day.

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## Analysis of Induction Protocols in Heart Transplantation

*Majerowski AM, PharmD, and Cook M, PharmD, BCPS, Department of Pharmacy, Aurora St. Luke's Medical Center*

**Background/Significance:** The use of induction therapy in cardiac transplantation reduces early rejection and allows for delayed introduction of calcineurin inhibitors. Although effective, cytolytic agents may be associated with an increased risk of malignancy and a reduction in long-term survival in some patient subgroups. In addition, cytolytic agents are expensive and newer agents, mainly Interleukin-2 (IL-2) receptor antagonists, daclizumab and basiliximab are also used for induction.

**Purpose:** The main objective of this project is to analyze current induction protocols for heart transplantation at St. Luke's Medical Center, and to determine if changes need to be made based on data from this and other centers, as well as from current literature. Analysis will specifically focus on survival, incidence of infection, rejection and malignancy in heart transplants over the past 5-10 years at this center.

**Methods:** An initial literature review will be completed to help determine endpoints and guide study design. Internal and external transplant databases will then be queried to gather pertinent information. This data will include recipient and donor demographics, administration and total dose of induction, survival rate, rejection rate, infection rate, development of lymphoma, and renal function. Results will be compiled, organized, and reviewed with all interested parties. If supported by findings, modification to the existing protocol will be drafted and progress will be monitored.

**Results:** Initial results show no significant difference in terms of mortality, renal function, or malignancy using thymoglobulin for induction compared to no induction or induction with daclizumab. Rejection data still pending.

**Conclusion:** Thymoglobulin does not seem to show benefit in terms of survival, renal function, or malignancy in patients undergoing heart transplantation at Aurora St Luke's Medical Center. Rejection data will be available at time of presentation.

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## Analgesic Streamlining

*Kruse K., PharmD and Brierton D., PharmD, Department of Pharmacy, Aurora St. Luke's Medical Center*

**Background/Significance:** Pain management is an area most hospitals should evaluate and improve.

**Purpose:** The objective of this project is to improve the use of oral analgesics in the four Milwaukee-area hospitals in Aurora Health Care.

**Methods:** The World Health Organization (WHO) pain ladder was used to classify formulary analgesics into steps of the WHO pain ladder. Pre-project data was collected in the orthopedic surgery and medical-surgical patient populations. Collected data included the number of oral analgesics prescribed on an as needed basis, step of the pain ladder each medication was on and the indication for usage if available. The data was used to identify potential order sets to target. Registered nurses from the orthopedic floor of Aurora St. Luke's Medical Center were consulted regarding the use of as needed oral analgesics on the unit. Data collected, nursing input, and project goals were used to make changes in the post-operative total joint order set. The project was also introduced to the system-wide interdisciplinary pain management committee. A policy will be established to update physician order sets to include indications for use and to eliminate duplications of analgesics in the same step of the classification ladder. Pharmacists will enact the policy during the routine order set review process.

**Results:** Pre-project analysis identified the orthopedic surgery patient population as having a larger average number of as needed analgesics in comparison to the medical-surgical patient population (4.5 analgesics versus 2.5 analgesics). Both patient populations had low rates of specific degree of pain indications. The orthopedic surgery population had indications for degree of pain in 5% (17/335) of orders versus 14% (27/198) of orders in the medical-surgical population. Post-project implementation results will be presented at Aurora Scientific Day.

**Conclusion:** Conclusion to be presented at the Aurora Scientific Day.



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## Evaluation of Feasibility of Pharmacy Technician Obtained Medication Histories in Identified High Risk/Complex Patients

*Biese W.M., PharmD and Lodl C., RPh, Department of Pharmacy, Aurora St. Luke's Medical Center*

**Background/Significance:** The ASHP 2015 Initiative encourages pharmacy involvement in medication reconciliation and obtaining medication histories and JCAHO requires it as a National Patient Safety Goal. Aurora Health Care is exploring the most efficient way for pharmacy to manage the acquisition of medication histories for 75% of hospital inpatients with complex and high-risk medication regimens.

**Purpose:** The objectives of this project are to develop criteria for selection of complex patients that would most benefit from pharmacy obtained medication histories, to assess the time requirements by technicians and pharmacists to obtain medication histories, to establish the benefits of pharmacy obtained medication histories for pharmacists, nurses, and physicians, and to develop practice guidelines for technician/pharmacist performed medication histories.

**Methods:** A literature review was performed to create selection criteria identifying high risk, complex patients requiring pharmacy obtained medication histories. Teams of pharmacy technicians and pharmacists were trained how to obtain medication histories. Using the developed selection criteria, pharmacy technicians obtained medication histories on the study unit for those patients identified as complex and high risk. The floor pharmacist reviewed each medication history to ensure accuracy. On the comparator unit, nurses obtained the medication histories, as is the normal procedure. On the study unit, the time taken for the technician to obtain each history was recorded. On both the study and control units, the amount of time taken by the pharmacist to review and clarify the medication histories, and the number of clarifications were recorded.

**Results:** Pharmacy technicians obtained medication histories from 17 patients. Results will be analyzed and assessed for the benefit and feasibility of having a technician/pharmacist team obtain medication histories on selected patients.

**Conclusion:** Conclusions and results will be presented at Aurora Scientific Day.

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## Chest Tube Site Care for Cardiac Surgery Patients in the Intensive Care Unit

*Luetzgen M.L., CONS, Retch L., RN, and Volt L., RN, Aurora St. Luke's Medical Center*

**Background/Significance:** There is a need across the spectrum of nursing practice to standardize chest tube site care to decrease infection, length of stay and cost. No evidence-based research for chest tube site care was found.

**Purpose:** The purpose was to review current practice in chest tube site care and review current literature. A standardized approach based on best evidence is essential for best practice.

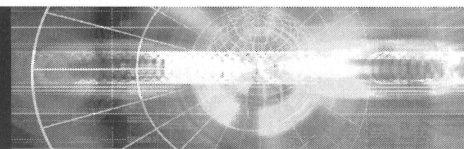
**Methods:** The nurses for a 30-bed cardiac surgical critical care unit participated in this quality improvement project. A workgroup did a Medline literature review, developed a chest tube site care procedure, surveyed current unit practices and studied chest tube sites of 48 randomly selected patients before and after chest tube site care procedure implementation.

**Results:** No standard unit practice for chest tube site care was found; in fact, an antibiotic dressing was being used on some patients with out rationale. A review of the literature yielded no evidence-based research. A standardized procedure was developed based on best evidence. A prospective study was done with anonymous aggregate data obtained. A convenience sample of 48 patients was observed before and after chest tube site care procedure implementation, and all were found to be with out infection. The chest tube site care procedure was approved by the unit nursing coordinating council, infection control department and incorporated into practice.

**Conclusion:** A standardized approach to chest tube site care will reduce infection, length of stay, decrease cost, be "patient-centered" in alignment with Magnet organizational goals and strategic plan. Chest tube site care can be standardized for all patients with chest tubes. Further quality improvement and research studies need to be done to determine a chest tube site care procedure that incorporates evidence-based research.

## Poster Session – Judged Posters

2:00 – 3:00 p.m.



### Blastomycosis in Indoor Cats: Suburban Chicago, IL

*Baumgardner D.J., MD, Aurora UW Medical Group, Family Medicine/Center for Urban Population Health; Blondin N., DVM, Bartlett Animal Hospital; Moore G.E., Professor, Vet Pathobio, Purdue University; Glickman L.T., Professor, Vet Pathobio, Purdue University*

**Background/Significance:** *Blastomyces dermatitidis* is the etiologic agent of Blastomycosis, a potentially life-threatening systemic mycosis of humans and animals. It is acquired from a yet incompletely defined environmental niche. There is controversy regarding the potential for contact with the fungus in or near one's home, particularly in urban areas.

**Purpose:** To investigate an outbreak of Blastomycosis among five urban, indoor cats.

**Methods:** Design: Owner interviews, site visits, environmental cultures for *B. dermatitidis*, GIS analysis, analysis of local weather data. Setting: Suburban Chicago, IL. Participants: Five cats diagnosed at three veterinary clinics March 3-July 13, 2005.

**Results:** There were no environmental exposures common to the five cats that lived a median of 300 m from nearest body of water, in homes on a loam soil. Closest and farthest case home sites were 3.4 and 26.1 km respectively. All cats were confined indoors except one cat that averaged 15 minutes/week in his backyard and was exposed to excavation. *B. dermatitidis* was not isolated from any of 60 environmental samples (soil, debris, potting soil, cat litter). The annualized incidence rate March through July 2005 among 6,761 cats in these practices was 178/100,000, compared to none in the previous four years, and 0.14/100,000 cat visits from a nationwide animal hospital registry. Precipitation January through June 2005 was 9.30 versus period mean of 14.05 +/- 1.69 inches the previous four years ( $p = 0.01$ ).

**Conclusion:** Circumstantial evidence suggests acquisition of *B. dermatitidis* from the home site in five cats. Relative drought may have contributed to an apparent outbreak of Blastomycosis in this urban locale.

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### Early Invasive Versus Late Invasive Treatment in Patients with Non ST Elevation Myocardial Infarction (NSTEMI) And Renal Insufficiency Not On Dialysis

*Pubbi D., MD and Gupta A., MD, Department of Cardiology, Aurora Sinai Medical Center*

**Background/Significance:** Patients with coronary artery disease (CAD) and renal insufficiency (RI) have higher rates of morbidity and mortality than patients with CAD and no RI. However, whether early invasive treatment in NSTEMI, defined as Troponin I elevation of more than 0.2 mg/dl with or without EKG changes without ST elevation, carries a different prognosis in patients with RI is not known.

**Purpose:** To compare morbidity and mortality in two arms in this subgroup of patients.

**Methods:** We analyzed data in 685 consecutive patients who were admitted with NSTEMI over a period of two years, 71 of whom had RI defined as a creatinine  $\geq 1.5$ ) and not on dialysis and underwent cardiac catheterization. We reviewed time to catheterization (intervention) as <12 hours (hrs), 12 to 24 hrs, 24-48 hrs and co-morbid illnesses and outcome in patients with and without RI. Primary outcomes included mortality, congestive heart failure (CHF) and myocardial infarction (MI). Secondary outcomes included RBC transfusion rates and the use of IIb/IIIa inhibitors.

**Results:** As expected, there was a significantly higher ( $p < 0.01$ ) incidence of hypertension, peripheral vascular disease, prior history of MI, coronary bypass surgery and CHF in the 71 patients with NSTEMI and RI than the 614 patients who do not have a history of RI. There was a higher rate of intervention in patients without RI than in those with RI (90.5% vs 76.1%;  $p < 0.001$ ). The incidence of mortality (14.1% vs. 2.8%;  $p < 0.001$ ), cardiogenic shock (14.1 % vs. 1.6 %;  $p < 0.001$ ), CHF (9.9% vs. 3.3%;  $p < 0.02$ ), RBC transfusion (26.8% vs. 14.2%;  $p < 0.005$ ) were all higher in patients with RI than without RI.

**Conclusion:** NSTEMI patients with RI have a higher mortality and morbidity in the form of CHF, cardiogenic shock, need for RBC transfusion.

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## Neonatal Circumcision Model and Resident Competency Evaluation

Brill J, MD, MPH and Wallace B, MD, Department of Family Medicine, Aurora St. Luke's Medical Center

**Background/Significance:** Circumcision is one of the most common procedures performed by family physicians and is a recommended procedure for training in family medicine residency programs. Circumcision is performed on the majority of male infants born in the United States. No commercially available models or simulators exist. One previous study discussed using a model based on a neonatal pacifier; however, the vast majority of all training appears to be learned 'on the job' using live newborn patients.

**Purpose:** To demonstrate an easily replicable genitalia model for training in neonatal circumcision. To evaluate a tool for documenting resident competency in performing neonatal circumcision.

**Methods:** Recycled modeling clay as a base with a cocktail wiener attached via a small wooden dowel and covered by a surgical glove finger, a small vinyl glove finger.

A 15-item competency checklist was used to review the steps involved in circumcision. Each learner was then individually assessed in competency of performing each of the steps of the procedure by one of two trained faculty members.

**Results:** Fifteen residents and 1 student completed the competency checklist using the cocktail wiener model; 12 were assessed as fully competent in all items. A post/pre-post format assessment found significant improvement in perceived knowledge and comfort in performing the dorsal penile nerve block and in using the Gomco clamp. The model was felt to reasonably model the neonatal genital for circumcision.

**Conclusion:** Going through a short competency assessment significantly improved learners' comfort with performing circumcision, and can be used to demonstrate resident proficiency in the ACGME core competency area of patient care. This inexpensive, easily-replicated model was felt to reasonably simulate neonatal genitalia. Addition of a small sponge to allow injection of lidocaine would improve the model.

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## Pulmonary Embolism: Using Evidence-Based Medicine for an Effective Work-up

Popp D., MD, Transitional Year Program, Aurora St. Luke's Medical Center

**Background/Significance:** PE is and has been a hot debate. It is a diagnosis that no one wants to miss. Currently, a PE work-up at St. Luke's seems to follow implicit clinical judgment with no set explicit clinical criteria. This is neither time nor cost efficient. Recently, a group of researchers developed a dichotomized PE algorithm using only clinical probability, D-Dimer, and Spiral CT. This simplified workup, which used the modified Wells clinical probability, was more effective in diagnosing PE than the previous complex algorithms indicated by lower rates of PE at follow-up.

**Purpose:** To review suspected pulmonary embolism at Aurora St. Luke's Medical Center. Secondly, to evaluate the appropriateness of this diagnostic management according to published evidence-based medicine.

**Methods:** We performed a retrospective, chart review on 50 consecutive patients admitted through the Emergency Department to either the FMTS or IMTS team at St. Luke's from July through August 2006 with chief complaint of pleuritic chest pain, SOB, dyspnea and/or PE final diagnosis and had at least one of the following completed: Spiral CT, V/Q, or DD. After reviewing the charts, we evaluated how effective PE was ruled in or ruled out.

**Results:** Only 20 patients (40%) had a sound diagnostic PE work-up while 30 patients (60%) had a questionable PE work-up.

**Conclusion:** Implicit clinical judgment is the tool used to work-up a PE at Aurora St. Luke's Medical Center. Few use evidence-based medicine to their advantage, thus, clinicians haphazardly order image modalities and do so too often. Furthermore, the D-Dimer, with its high negative predictive value and sensitivity, is not being used as it was intended, to rule out a PE. We need to educate others about recent advances in PE research so we can improve upon our diagnostic work-up together.



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## Quality Improvement For Varicella Vaccine in Women of Child Bearing Age

Gupta L.D., MD and Amuzu, B., MD, Department of Obstetrics & Gynecology, Aurora Sinai Medical Center

**Background/Significance:** Varicella Zoster Virus (VZV) is the cause of both Varicella and Herpes Zoster. While usually a benign disease in children, it can cause severe pneumonia with a 2% mortality rate in pregnant women and congenital defects. Although a recommendation of routine screening and immunization of non-pregnant females of childbearing age, this has not yet become a routine part of our clinic's practice at Aurora Sinai Medical Center- Women's Health Clinic.

**Purpose:** Quality Improvement Project to improve screening for Varicella Immunization at Obstetrics Intake and Routine Annuals.

**Methods:** 1. Quality improvement Project: Base line data collected on patients being questioned about their varicella status.  
2. Action plan developed and implemented: Patients coming in for annuals were handed questionnaire regarding their immunity, to update their records. As well it was added on ACOG forms to question patient on Varicella.  
3. Follow-up data at 3 months interval.

**Results:** At baseline 9% of OB patients and 0% of Gyn patients were asked about history of varicella. This in contrast to how we do on traditionally 'tough' questions such as substance abuse (97%) and domestic violence (59%). At follow-up 3 months later we noted a marked improvement for obstetric patients (>69%) but very little change for annual exam patients – 9%.

**Conclusion:** Dramatic Improvement was noted with Obstetrics patients, where question was added to existing form. For Gyn/annual exam, patients were much less successful.

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## Outcome Study for Late Stage Laryngeal Carcinoma

Jagetia R., MD, Department of Radiation Oncology, Aurora St. Luke's Medical Center

Nordstrom M.R., MD and Taylor R.F., MD, Departments of Otolaryngology and Oncology, Aurora St. Luke's Medical Center,

Robinson L.A., Clinical Information Services, Aurora St. Luke's Medical Center

Anderson J., Department of Quality Management, Aurora St. Luke's Medical Center

**Background/Significance:** To assess treatment outcome data in terms of overall survival for advanced stage (TNM Stage III — IVB) laryngeal cancer.

**Purpose:** To measure outcome by treatment arms; historical, which consists of surgery with postoperative radiation, versus currently preferred approach of chemoradiation.

**Methods:** Compared data collected within Metro and South Regions of Aurora Health Care from 1994-2004 to that of the National Cancer Database, which consists of data submitted from Comprehensive Community Cancer Programs and Teaching/Research hospitals 1993-1998.

**Results:** AHC results were comparable to the NCDB data. Five year observed survival rates for combined stage from NCDB show 45.3% for Surgery/RT vs 40.2% for Chemoradiation, whereas AHC show 30% vs. 25 % respectively. NCDB data for Stage 4 showed a slight advantage for Surgery/RT at 38.6% versus 31.7% for RT, and Stage III for AHC was 35% Surgery/RT vs 25% for Chemoradiation.

**Conclusion:** Surgery with postoperative radiation shows a slight overall advantage in survival both locally and nationally over chemoradiation. However, the results are not statistically significant and are comparable to chemoradiation with surgical salvage. Aurora Metro/South region treatment results for advanced cancer of the larynx are comparable to national results.



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## Weight Loss: Perceptions and Self-Motivators in Family Medicine Patients

Dunek T.M., DO and Williams L., DO, Department of Family Medicine, Aurora St. Luke's Medical Center

Evertsen J., Simpson S. and Baumgardner D.J., MD, AUWMG Family Medicine/Center for Urban Population Health

**Background/Significance:** Obesity is epidemic in the US. Patients' perception of current weight and reasons for weight loss are important factors to consider when evaluating patients unsuccessful attempts to lose weight. Patients may be more willing to lose weight to approve their appearance rather than for medical reasons, however physicians often rely on medical risk factors when motivating patients.

**Purpose:** A cross-sectional study of our patients' perceptions of their weight and motivators to weight loss compared to their actual body mass index (BMI), demographic features and co-morbidities.

**Methods:** Patients presenting for non-acute illnesses at the two AUWMG Family Medicine Residency clinics were surveyed. Clinic staff recorded sex/age/BMI. Race, co-morbidities, perception of current weight, reasons and motivations for trying to lose weight were assessed by patient self-report. A five-point Likert scale was used to assess rationale and barriers to losing weight. Means were constructed, and ordinal logistic regression was used for univariate and multivariate analysis of Likert scale responses.

**Results:** To date 50 subjects have been surveyed (64% female; 20% black, 20% Hispanic; 44% with HTN, 38% DM, 42% high cholesterol). The mean BMI is 37.9 (range 23-59). Only 10% were satisfied with their weight, 86% had history of past/present weight loss attempts. By Likert scale means, to avoid/treat a health problem (4.6/5) and to improve lifestyle (4.3/5) were most important reasons for weight loss attempts, embarrassment the least important (1.9/5). Stress (3.0/5) and expense of healthy foods (2.7/5) were listed as most important barriers (strong agreement was not found for any of 9 potential barriers). Final data with multivariate analysis will be presented at conference.

**Conclusion:** Chronic disease treatment/prevention and lifestyle improvement are important motivators for weight loss in a patient population representing significant prevalence of obesity/comorbidity. This information may guide ambulatory weight loss counseling.

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## Stent Fracture, an Incidental Finding or a Significant Marker of Clinical in-Stent Restenosis?

Maddikunta R., MD, Shaikh F., MD, Solis J., MD, Allaqaband S., MD and Bajwa T., MD, Department of Cardiology, Aurora Sinai Medical Center

**Background/Significance:** Although in-stent restenosis (ISR) is uncommon in drug-eluting stent (DES) era, it does create a management dilemma. Recently stent fracture (SF) has been suggested as a potential mechanism of ISR in DES.

**Purpose:** The goal of our study was to understand the significance of SF in ISR of DES.

**Methods:** All patients with angiographically proven ISR of DES during a 12-month period at our institution were identified. Data regarding stent type, deployment method and demographics were collected. Two interventional cardiologists reviewed angiograms independently.

**Results:** 3920 percutaneous coronary interventions were performed during the period. In-stent restenosis of DES accounted for 188 cases. SF was identified in 35 (18.5%) cases. Clinical presentation was chest pain in 74.2%, non ST elevation myocardial infarction in 20% and ST elevation myocardial infarction in 2.7% of the case.

STENTED VESSEL		TYPE OF STENT		DEPLOYMENT METHOD	
RCA, n (%)	20 (57.1%)	Sirolimus-eluting stent, n (%)	29 (82.8%)	overlapping stents, n (%)	28 (82.8%)
LAD, n (%)	12 (34.2%)	Paclitaxel-eluting stent, n (%)	6 (17.1%)	average deployment pressure	14.9 mmHg
LCx, n (%)	2 (5.7%)			post dilation performed, n (%)	12 (34.2%)
vein graft	1 (2.7%)			stent at angulated segment	
average stent diameter	2.8 mm			of vessel, n (%)	32 (91.4%)
average stented segment length	39.2 mm				

**Conclusion:** SF proved to be a significant cause of clinical ISR. Although the exact mechanism is unknown, length of stented segment, stent type, overlapping stents, vessel angulation and motion appear to be significant factors. Further studies are needed to better define the mechanism of this clinically significant entity.

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# One Year Patency Rate of the Viabahn Stent-Graft for Chronic Total Occlusion or Long High-Grade

Djelmami-Hani M., MD, Kazemi S., MD, Allaqaband S., MD and Bajwa T., MD, Department of Cardiology, Aurora Sinai Medical Center

**Background/Significance:** Previous studies of percutaneous revascularization of superficial femoral arteries with self-expanding or balloon-expanding stainless steel stents have been disappointing with high restenosis rate. Our previous study showed excellent results using VIABAHN stent-graft for percutaneous angioplasty of high-grade lesions of superficial femoral artery with primary patency rate of 100% at 6 months.

**Purpose:** We evaluated the immediate success, complications, and one-year follow-up of VIABAHN self-expanding stent-graft (W. L. Gore, Flagstaff, AZ) in patients with superficial femoral artery occlusive disease.

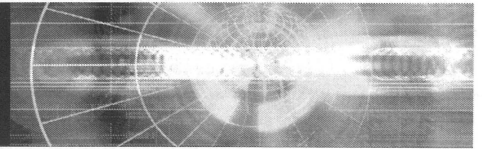
**Methods:** This prospective study involved fifty-two patients who underwent percutaneous revascularization of superficial femoral arteries with VIABAHN stent grafts from August 2004 to March 2006 at our institution. Patients were followed clinically and with duplex scan at 1, 3, 6 and 12 months post procedure. Patients with in-stent restenosis underwent angiogram for confirmation and further therapy if needed.

**Results:** Baseline clinical characteristics of the patients are shown in the table. The initial technical success was 100%. There was no in-hospital mortality or morbidity. All the patients were discharged home on ASA and plavix. The primary patency rate was 100% at 6 months and 90% at one year. There was no stent-graft thrombosis.

**Conclusion:** Percutaneous revascularization of superficial femoral arteries with VIABAHN stent graft is safe, feasible with excellent one-year results.

# Oral Presentation Session

3:00 – 4:15 p.m.



## Outcomes in Permanent Prostate Brachytherapy as Monotherapy in Community-Based Practice

*Offerman S., MD, Transitional Year Resident, Aurora St. Luke's Medical Center*

*Jagetia R., MD and Pincus M., MD, Department Radiation Oncology, Aurora St. Luke's Medical Center*

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**Background/Significance:** Patients with localized prostate cancer have treatment options. Permanent prostate brachytherapy (PPB) implants offer convenience of single outpatient treatment and minimal morbidity, 12-15 yr biochemical progression-free survival (bPFS) rates up to 89%. Best outcomes for patients treated with PPB alone occur with careful pretreatment risk group stratification.

**Purpose:** To determine the rate of biochemical failure (BF) in our patients treated with PPB, and analyze failure with regard to risk group, isotope, and dosimetry.

**Methods:** PSA values for patients treated with PPB at SLMC were compiled from medical records and analyzed for BF, determined according to the American Society for Therapeutic Radiology and Oncology definition. Univariate and multivariate statistical analysis were then performed to evaluate correlation between BF and risk group (stage/Gleason score/PSA); isotope; and dosimetry, represented by the dose to 90% of the target volume (D90), and 3 similar measurements.

**Results:** The overall rate of BF (N=438) was 10.3%. The rates of BF for low, intermediate, and high risk patients were 8.0%/12.4%/33.3% (mean follow-up of 87 mos, range 12-149). Mean length of bPFS was 33 mos. In univariate analysis, BF was significantly correlated with pretreatment risk group stratification ( $p=0.004$ , ChiSq), but isotope and D90 were not significant. However, PSA at diagnosis approached significance ( $p=0.057$ , Mann-Whitney), and categorical PSA (units of 10) was a significant predictor of BF ( $p=0.011$ , ChiSq). Among those with BF, only risk group was significantly correlated ( $p=0.027$ ) with time to failure in a regression model including risk group, PSA and D90. There was little correlation between BF and length of follow up (Adj Rsq=4.1%).

**Conclusion:** BF rates approach those of the larger academic centers. Pretreatment risk group stratification is an important predictor of whether a patient will fail monotherapy with PPB. Based on our present length of follow up, PPB appears to be a durable treatment strategy.

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## A Prospective Randomized Trial Comparing Normal Saline And Sodium Bicarbonate With or Without N-Acetylcysteine For Prevention of Contrast Induced Nephropathy

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**Background/Significance:** Contrast induced nephropathy (CIN) is a recognized complication which is associated with significant adverse clinical events. Antioxidant N-acetylcysteine (NAC) used in many clinical trials has produced variable results. Recently intravenous (IV) hydration with sodium bicarbonate (NaHCO<sub>3</sub>) for CIN prophylaxis has been adopted as standard treatment for patients at high risk undergoing catheterization procedures.

**Purpose:** The goal of our study was to compare the use of IV normal saline (NS) and NaHCO<sub>3</sub> with or without NAC for prevention of CIN.

**Methods:** We prospectively enrolled 320 patients with baseline renal insufficiency scheduled to undergo catheterization procedures. Patients were randomly assigned to receive either NS (Arm A), or NS plus NAC (Arm B), or IV fluid containing 154 mEq/L of NaHCO<sub>3</sub> (Arm C), or IV fluid containing NaHCO<sub>3</sub> plus NAC (Arm D). IV fluids were administered at the rate of 3ml/kg/hr 1 hour pre-procedure and at 1 ml/kg/hr for 6 hours post procedure. NAC 1200 mg oral dose was given 2-12 hours pre-procedure and 6-12 hours post-procedure. CIN was defined as an increase of more than 0.5 mg/dL or 25% from baseline creatinine.

**Results:** Incidence of CIN was 10.3 %. Clinical and procedural characteristics are shown in the attached abstract.

**Conclusion:** NAC did not reduce incidence of CIN. Patients in NaHCO<sub>3</sub> arm had no statistically significant reduction in CIN, although a trend was found in favor of NaHCO<sub>3</sub>. Increased contrast volume, anemia and diuretic use was associated with significant increase in incidence of CIN.

## Nutritional Requirements of Blastomyces Dermatitidis Yeast Forms in Liquid Media

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**Background/Significance:** Blastomyces dermatitidis is the etiologic fungus of blastomycosis, a potentially fatal systemic mycosis. It exists as mold (nonpathogenic) at room temperature, and as yeast (pathogenic) at body temperature. Previous studies have shown genetic and nutritional variation with dimorphic fungi including Wisconsin strains of B. dermatitidis. There is no standard minimal liquid media for growth of B. dermatitidis at 37 degC. Identification of such would be useful for future research involving its ecological niche and pathogenesis.

**Purpose:** To identify a minimal nutritional liquid media for growth of our two Eagle River, Wisconsin strains of B. dermatitidis in yeast form at 37 degC.

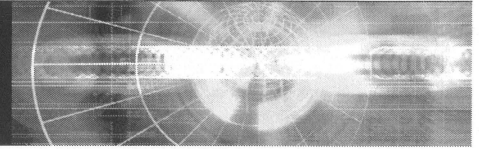
**Methods:** B. dermatitidis strains ERC-2 (canine isolate) and ER-3 (environmental isolate) were maintained on Sabouraud dextrose agar at room temperature. 1cu mm of inoculate was placed in 15ml liquid media containing KH<sub>2</sub>PO<sub>4</sub>, MgSO<sub>4</sub>, NaCl, CaCl, and 2% dextrose in 500ml flask at 37 degC. Allantoin 0.5% was used as organic nitrogen source; NH<sub>4</sub>H<sub>2</sub>PO<sub>4</sub> or NaNO<sub>3</sub> as inorganic nitrogen source. When no growth occurred, vitamins, amino acids (both essential/non-essential) and growth factors were sequentially added. Success was based on growth after three successive 1:1500 dilutions.

**Results:** Strain ER-3 grew on allantoin/dextrose and on NH<sub>4</sub>H<sub>2</sub>PO<sub>4</sub>/dextrose liquid media without supplement. ERC-2 appears to grow on NH<sub>4</sub>H<sub>2</sub>PO<sub>4</sub>/dextrose plus vitamins, but requires yeast extract on allantoin/dextrose.

**Conclusion:** B. dermatitidis ER-3 (environmental isolate) has very minimal nutritional requirements and is apparently capable of synthesizing all other essential macromolecules. The more complex, yet incompletely defined nutrient requirements of ERC-2 (canine isolate) illustrates the nutritional diversity of B. dermatitidis strains from the same locale, and may have future implications regarding ecology and virulence.



# Rieselbach Distinguished Paper



**Richard E. Rieselbach, MD**  
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of Wisconsin Medical School  
Milwaukee Clinical Campus  
1974-1991*

Born in Milwaukee, educated at the University of Wisconsin – Madison and Harvard Medical School, trained in Internal Medicine at the University of Illinois and nephrology at Washington University in St. Louis. Dr. Rieselbach has been a faculty member of the University of Wisconsin Medical School since 1965.

Dr. Rieselbach provided the inspiration and administrative leadership which created the Milwaukee Clinical Campus at Mount Sinai Hospital in 1974. He shepherded its growth from the initial 46 faculty (full-time and clinical) and 18 residents/fellows, to 90 full-time faculty, 158 clinical faculty, and 108 residents/fellows in six departments by 1991.

His high standards for clinical and academic excellence fostered the recruitment of leaders and the development of innovative programs in primary care, geriatrics, interventional cardiology and electro-physiology, and high risk obstetrics which came to characterize the campus. He maintained a strong commitment to care of the medically indigent, fostering an expectation of community service in faculty and students. He projected a national vision in progressive reform of medical education and health care delivery.

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## Shoulder Dystocia With and Without Brachial Plexus Injury: *Experience from Three Centers*

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**Background/Significance:** To compare the maneuvers used to relieve shoulder dystocia (SD) at three centers, and to discern risk factors for brachial plexus injury (BPI) following (SD).

**Purpose:**

- Determine the prevalence of shoulder dystocia at the three centers.
- Compare the maneuvers used to relieve shoulder dystocia.
- Discern risk factors associated with brachial plexus injury (BPI) with dystocia.

**Methods:** Retrospectively SD managed at three tertiary centers was identified and charts reviewed. Unconditional logistic regression was used to identify risk factors for BPI while controlling for confounders and accounting for effect modification.

**Results:** SD was encountered in 2% of vaginal deliveries (624/29,591) and BPI followed impacted shoulders in 6% (38/624). The rate of SD between the three institutes varied significantly (1.5%, 2% and 0.8% of vaginal births;  $p < 0.0001$ ). The use of McRoberts to relieve SD differed significantly by center (98%, 80%, 90%;  $p < 0.0001$ ) as did of suprapubic pressure (83%, 66%, 54%;  $p < 0.0001$ ). The rate of BPI per case of SD (10%, 3% and 5%) was significantly different at the three centers ( $p = 0.009$ ). Multivariate predictive model indicates that suprapubic pressure (OR 3.66; 95% 1.16, 11.53) was a significant factor for SD and BPI.

### Conclusion:

- The likelihood of shoulder dystocia varied significantly among the three centers, especially among newborns  $< 4,000$  g.
- The frequency with which McRoberts and suprapubic pressure were used varied significantly.
- Neither fundal pressure nor Zavanelli maneuver were used with over 600 cases of shoulder dystocia.
- Brachial plexus injury occurred with significantly different rate at the three centers.
- Use of suprapubic pressure was an independent risk factor for brachial plexus injury.



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