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EFFECT OF COLD ISCHEMIA ON THE FUNCTION AND SURVIVAL OF RENAL ALLOGRAFTS. A.K. Salahudeen, W. May, Medicine and Preventive Medicine, University of Mississippi Medical Center, Jackson, MS.

Use of kidneys from extended criteria donors (ECD) and donors after cardiac death (DCD) has increased due to scarcity of standard criteria donor (SCD) kidneys. DCD kidneys due to preprocurement ischemia and ECD kidneys due to marginal quality are likely to suffer from delayed graft function (DGF) and early graft loss. Any prolonged cold ischemia time (CIT) is likely to add to the injury, although this has not been specifically addressed. We examined the relationship between CIT and the function and survival of these kidneys and compared to SCD kidneys using the 2004 UNOS data set. In 2000, 9,469 (87%) kidneys were SCD, 165 (2%) were DCD, and 1,191(11%) were ECD. The donor age were 31 ± 14 years and 34 ± 17 years for SCD and DCD and higher at 60 ± 6 years for ECD kidneys (mean ± SD). CIT were similar: 18.6 ± 8.3 hours, 19.0 ± 8.4 hours, and 18.7 ± 8.3 hours. The HLA mismatches were not different, but the recipient age was higher for ECD (52 ± 13 years) than for DCD (48 ± 13 years) or SCD kidneys (43 ± 14 years) ($p < .001$ ECD vs the rest). DGF was higher for DCD and ECD kidneys than for SCD kidneys, eg, discharge serum creatinine was higher for DCD (4.7 ± 3.4 mg/dL) and ECD (4.1 ± 3.0 mg/dL) than for SCD kidneys (2.8 ± 2.5 mg/dL) ($p < .001$ for all interactions). Similarly, requirement for dialysis was highest for the DCD kidney recipients (46% for DCD, 37% for ECD, and 26% for SCD). Despite severe early injury in DCD kidneys, 4-year graft loss was similar between DCD and SCD kidneys ({223}25%) but was higher for ECD kidneys (38%; $p < .001$ vs the rest). In the Cox hazard analysis, CIT had significantly higher relative risk (RR) for graft failure over 30 hours for all groups combined and for each of the three groups separately. However, the preexisting injury of DCD or ECD kidneys did not add to the RR of cold ischemia on 4-year graft loss. In aggregate, despite early injury, DCD kidneys have similar graft survival as in SCD kidneys, and irrespective of donor type, CIT over 30 hours reduces renal allograft survival across the donor types. Thus, this analysis supports the wider use of DCD kidneys and the need for avoiding prolonged cold ischemia time of kidneys irrespective of donor types.

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PHYSICIAN HANDWRITING LEGIBILITY IS AS GOOD (OR BAD) AS EVERYONE ELSE'S. K.A Schnieder, C.W. Murray, R.D. Shadduck, D.G. Meyers, University of Kansas School of Medicine. Kansas City, KS.

Purpose: To compare handwriting legibility among professions. **Methods:** A convenience sample, stratified by gender, of 20 right-handed volunteers each from 7 occupations rapidly wrote the sentence "The quick brown fox jumps over the lazy dog" in < 17 seconds. Legibility was scored by two methods. The number of malformed individual letters was visually judged by a single blinded investigator. Four investigators, blinded to subject characteristics, independently rated the global legibility of the writing samples on a 4-point scale: poor, fair, good, excellent. Raters were tested with the kappa statistic. Characteristics and scores were compared using logit regression and post hoc Wilcoxon rank sum test. Scoring methods were compared by Spearman's correlation. The study was powered to detect a difference of 25% across occupations. **Results:** Among 70 males and 70 females, with ages 18 to 64 years and 12 to 28 years of education, only education differed among groups. Legibility scores did not differ significantly by occupation, age, or education, but legibility was significantly and consistently better in women.

	Accountant	*Attorney*	*AutoTech*	*Construction*	*Engineer*	*Physician*	*Scientist*	p
Age	35 ± 12	41 ± 10	29 ± 9	34 ± 7	29 ± 6	36 ± 10	42 ± 7	.31
Education	17 ± 1	19 ± 2	14 ± 2	13 ± 1	17 ± 1	22 ± 2	22 ± 2	< .01
Poorly formed letters	7.0 ± 6.7	11.3 ± 5.0	5.8 ± 3.9	9.4 ± 6.2	8.6 ± 7.9	8.5 ± 5.2	8.8 ± 3.2	.70
Score (1–4)	2.4 ± 0.5	2.0 ± 0.4	2.3 ± 0.6	2.1 ± 0.4	2.3 ± 0.6	2.4 ± 0.5	2.1 ± 0.6	.39
Illegible	15%	40%	30%	30%	35%	25%	40%	.62
Male score (*pairwise $p < .05$)	2.3 ± 0.4	2.0 ± 0.2	2.0 ± 0.6 *	2.0 ± 0.2 *	1.9 ± 0.5 *	2.0 ± 0.4 *	2.0 ± 0.4	< .01
Female score	2.6 ± 0.6	2.1 ± 0.6	2.6 ± 0.4	2.3 ± 0.5	2.7 ± 0.5	2.6 ± 0.3	2.2 ± 0.6	

There was good intra- and interrater agreement (kappa 0.35–0.56 and 0.23, respectively, $p < .001$) and good correlation between scoring methods (rho −0.75, $p < .001$). **Conclusion:** Physician handwriting legibility is not different from other occupations, although illegibility, which has been demonstrated to compromise patient care, is nonetheless prevalent. Legibility is consistently better in women.

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ENDOTHELIAL FUNCTION IN NONALCOHOLIC STEATOHEPATITIS. S.S. Shankar, P. Menon, N.P. Chalasani, H.O. Steinberg, Indiana University School of Medicine, Indianapolis, IN.

Background: Endothelial vascular function, an independent risk factor for cardiovascular disease, is impaired by insulin resistance. Nonalcoholic steatohepatitis (NASH) is associated with insulin resistance. However, the effect of NASH on endothelial function, either direct or via insulin resistance, is unknown. **Hypothesis:** NASH impairs endothelial function either directly or as a consequence of insulin resistance (IR). To test this hypothesis, we assessed endothelial function as well as insulin sensitivity in subjects with biopsy-proven NASH and BMI-matched controls. **Materials and Methods:** We studied four biopsy-proven NASH and four control subjects matched for age, gender, and BMI. We assessed lipid parameters by standard procedures and insulin sensitivity using the euglycemic hyperinsulinemic clamp technique. We determined endothelial vascular function by measuring changes in leg blood flow (LBF) in response to graded intrafemoral arterial infusion of the endothelium dependent vasodilator methacholine (MCh). Results are expressed as mean ± SEM in NASH vs controls and compared using an unpaired *t*-test. **Results:** Total cholesterol was 224 ± 36 vs 177 ± 42 mg/dL NASH and controls, respectively ($p = .05$). LDL cholesterol was 151 ± 30 and 103 ± 29 mg/dL NASH and controls, respectively ($p = .05$). Triglyceride and HDL cholesterol levels did not differ between groups. Glucose disposal rates (insulin sensitivity) were 3.9 ± 1.3 and 6.2 ± 1.9 mg/kg/min NASH and controls, respectively (p = ns). Maximal increments in LBF in response to intra-arterial Mch, expressed as a percentage of baseline, were 34 ± 17 vs 193 ± 58% in NASH and controls, respectively ($p = .05$). **Conclusions:** NASH is associated with endothelial dysfunction over and above that associated with the obesity of NASH. Whether the endothelial dysfunction is attributable to the elevated LDL cholesterol levels, the differences in insulin sensitivity, or the intrinsic process of NASH itself requires further work and investigation.

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FOUR WEEKS OF INDINAVIR DOES NOT ALTER ADIPOGENIC TRANSCRIPTION FACTORS IN HEALTHY HIV-NEGATIVE SUBJECTS. S.S. Shankar, L.N. Bell, H.O. Steinberg, R.V. Considine, Indiana University School of Medicine, Indianapolis, IN.

Introduction and Purpose: HIV-infected patients on antiretroviral therapy have been reported to develop a lipodystrophy syndrome. Both HIV-1 protease inhibitors, as well as nucleoside analogue reverse transcriptase inhibitors, have been implicated. However, it is unclear if this is a direct drug effect or a result of an interaction between the drug and the underlying HIV infection. In order to dissect out the direct role of drug alone in this process, we studied the in vivo effect of a single protease inhibitor, indinavir, on the key adipogenic transcription factors C/EBPα, SREBP1c, and PPARγ. **Methods:** We obtained abdominal subcutaneous adipose tissue samples from seven HIV-negative subjects at baseline and after 4 weeks of daily oral indinavir at 800 mg three times a day. Adipocytes were obtained by collagenase digestion, and total RNA was isolated by standard methods. Expression of C/EBPα, SREBP1c, and PPARγ mRNA was quantitated by real time reverse transcription normalized to expression of β-actin using the delta Ct method. **Results:** The subjects had a mean age of 36 ± 3 years, with a mean BMI of 29.5 ± 9 kg/m². There was no change in BMI or waist-to-hip ratio after 4 weeks of indinavir. Indinavir treatment had no effect on expression of C/EBPα (304.0 ± 32.3 vs 359. 2 ± 43.4), SREBP1c (82.0 ± 14.0 vs 104.9 ± 34.0), or PPARγ (350.7 ± 54.0 vs 351.0 ± 48.8 relative units). **Conclusions:** Four weeks of the protease inhibitor indinavir does not alter adipogenic transcription factors in healthy HIV-negative subjects. Our findings indicate that indinavir does not appear to have a direct role in the development of lipodystrophy, suggesting that the lipodystrophy is likely either due to an interaction between drug and disease or attributable to antiretroviral agents other than indinavir.

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FOUR WEEKS OF INDINAVIR DOES NOT AFFECT BONE BREAKDOWN IN HEALTHY HIV-NEGATIVE SUBJECTS. S.S. Shankar, H.O. Steinberg, Indiana University School of Medicine, Indianapolis, IN.

Introduction and Purpose: HIV-1 protease inhibitors have been reported to increase bone breakdown in HIV-infected patients. However, it is unclear if this is a direct effect of the drug on bone or due to an interaction between drug and underlying disease. In order to assess the effect of drug alone on bone turnover, we studied the effect of a single protease inhibitor, indinavir, on markers of bone turnover. **Methods:** We studied eight healthy HIV-negative subjects with normal bone density as determined by dual x-ray absorptiometry. We measured markers of bone turnover in our subjects at baseline and after 4 weeks of daily oral indinavir at 800 mg three times a day. **Results:** We studied six male and two female subjects with a mean age of 37 ± 2 years, with a mean BMI of 29.2 ± 1.0 kg/m². All subjects had normal serum calcium, phosphorus, alkaline phosphatase, and urinary N-telopeptide levels prior to initiation of the study. There was no change in BMI after indinavir. Urinary N-telopeptide levels remained unchanged after 4 weeks of indinavir (29.6 ± 7.3 preindinavir vs 25.6 ± 2.9 nmBCE/mmol creatinine postindinavir). Urinary calcium and phophorus remained unchanged as well. **Conclusions:** Indinavir does not alter markers of bone turnover in healthy HIV-negative subjects. This indicates that the HIV-1 protease inhibitor indinavir does not appear to have a direct effect on bone breakdown.

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FOUR WEEKS OF INDINAVIR DOES NOT ALTER ADIPOGENIC TRANSCRIPTION FACTORS IN HEALTHY HIV-NEGATIVE SUBJECTS. S.S. Shankar, L.N. Bell, H.O. Steinberg, R.V. Considine, Indiana University School of Medicine, Indianapolis, IN.

Introduction and Purpose: HIV-infected patients on antiretroviral therapy have been reported to develop a lipodystrophy syndrome. Both HIV-1 protease inhibitors and nucleoside analogue reverse transcriptase inhibitors have been implicated. However, it is unclear if this is a direct drug effect or a result of an interaction between drug and the underlying HIV infection. In order to dissect out the direct role of drug alone in this process, we studied the in vivo effect of a single protease inhibitor, indinavir, on the key adipogenic transcription factors C/EBPα, SREBP1c, and PPARγ. **Methods:** We obtained abdominal subcutaneous adipose tissue samples from seven HIV-negative subjects at baseline and after 4 weeks of daily oral indinavir at 800 mg three times a day. Adipocytes were obtained by collagenase digestion, and total RNA was isolated by standard methods. Expression of C/EBPα, SREBP1c, and PPARγ mRNA was quantitated by real time reverse transcription normalized to expression of β-actin using the delta Ct method. **Results:** The subjects had a mean age of 36 ± 3 years, with a mean BMI of 29.5 ± 9 kg/m². There was no change in BMI or waist-to-hip ratio after 4 weeks of indinavir. Indinavir treatment had no effect on expression of C/EBPα (304.0 ± 32.3 vs 359.2 ± 43.4), SREBP1c (82.0 ± 14.0 vs 104.9 ± 34.0), or PPARγ (350.7 ± 54.0 vs 351.0 ± 48.8 relative units). **Conclusions:** Four weeks of the protease inhibitor indinavir does not alter adipogenic transcription factors in healthy HIV-negative subjects. Our findings indicate that indinavir does not appear to have a direct role in the development of lipodystrophy, suggesting that the lipodystrophy is likely either due to an interaction between drug and disease or attributable to antiretroviral agents other than indinavir.

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EVALUATION OF A 12-LEAD DIGITAL HOLTER SYSTEM FOR 24-HOUR Q–T INTERVAL ASSESSMENT. J.C. Somberg, Z. Molnar, V. Ranade, I. Cvetanovic, J. Molnar, Rush University, Chicago, IL, and American Institute of Therapeutics, Lake Bluff, IL.

Background: Drug-induced Q–T prolongation may precipitate life-threatening cardiac arrhythmias; therefore, evaluation of the Q–T prolonging effect of new pharmaceutical agents in a "thorough Q–T/Q–Tc study" is being mandated by the FDA. The purpose of this study was to evaluate the feasibility of a 12-lead digital Holter system for a thorough Q–T/Q–Tc study. **Methods:** Five healthy volunteers underwent 24-hour digital Holter monitoring (NorthEast Monitoring, Maynard, MA). The system provides automated Q–T analysis (AQA) and the option of onscreen manual over read (MOR) of automatic Q–T determinations. Each recording underwent a fully AQA followed by an onscreen complete MOR by an expert observer. The MOR was used as the reference standard for the validation of AQA.

Each recording underwent a second analysis at 2 weeks following the first analysis to evaluate reproducibility. The effect of data sampling (5-min segment/hour), the system sensitivity to detect 5 ms increase in Q–T, and the ability to assess circadian variation were also evaluated. **Results:** The fully AQA resulted in identical QT for the first and second analyses, but with obvious errors in Q–T measurements. Compared to the complete onscreen MOR, the 24-hour mean Q–T was longer with AQA (416 ± 41 vs 387 ± 30 ms, $p < .001$, $r = .3$). The reproducibility of automatic analysis with complete MOR was very good (Q–T: 387 ± 30 vs 387 ± 30 ms), coefficient of variation (CV) = 0.2%, $r = .986$, $p < .001$. The 5-minute mean Q–T intervals correlated well with the hourly mean Q–T intervals ($r = .994$, $p < .001$, CV = 1 ms) and both showed a similar circadian variation. The system was sensitive to detect a 5 ms change in Q–T intervals (5 ± 2 ms, CV = 0.6%, $r = .998$, $p < .001$). **Conclusions.** The fully automatic Q–T analysis is not an acceptable method, while the automatic analysis with MOR is a highly sensitive and reproducible method. Data sampling by analyzing 5-minute segments per hour is also sensitive and reproducible. The 12-lead digital Holter technique is suitable for Q–T analysis and may have advantage compared to the serial recordings of large number of standard 12-lead ECGs in the evaluation of drug effects on the Q–T interval.

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HOW PREVALENT IS UNSUSPECTED MITRAL AND AORTIC REGURGITATION?
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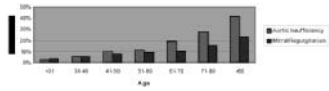
Introduction: Doppler echocardiography plays a critical role in identifying valvular insufficiency that may complicate the use of phen-fen and related drugs. However, the prevalence of unsuspected, preexisting valvular regurgitation in a large, heterogeneous population is poorly defined. **Methods:** 6,861 records were examined from consecutive individuals without known or suspected valve disease referred to the UHC echo laboratory for nonvalvular-related indications from 2001–2003. Mitral (MR) and aortic (AI) regurgitant severity was graded using a clinical composite of published 2-D, spectral, and color flow-Doppler methods. Multiple logistic analysis (*SPSS*, v13) was used to model clinical variables (age, gender, left ventricular ejection fraction [LVEF], body mass index [BMI], history of hypertension [HTN], LV hypertrophy [LVH], history of coronary disease [CAD]) and valvular morphology. **Results:** Prevalence estimates for moderate or greater MR and mild or greater AI as a function of age are shown in the figure. Female gender predicted MR (OR 2.12, 95% CI 1.78–2.53), but AI was gender neutral. Regurgitant severity increased with decreasing EF and BMI, and the presence of LVH, HTN, and CAD were not predictive. Regurgitation prevalence was significantly influenced by both nonspecific and specific valve abnormalities. **Conclusions:** The prevalence of moderate or greater MR and mild or greater AI is substantial, increases exponentially with age, and is predicted by commonly used clinical variables. These prevalence estimates should be considered when assessing the finding of unanticipated MR or AI on echocardiogram.



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NOVEL THERAPIES FOR RESISTANT FOCAL SEGMENTAL GLOMERULOSCLEROSIS: A PHASE I STUDY.
H. Trachtman,[1] A. Way,[1] D. Gipson,[2] A. Morris,[2] M. Mitchell,[2] M. Joy,[2] K. Bozik,[2] T. Greene,[3] J. Gassman,[3] [1]Department of Pediatrics, Division of Nephrology, Schneider Children's Hospital of North Shore-LIJ Health System, New Hyde Park, NY; [2]Department of Pediatrics, Division of Nephrology, University of North Carolina, Chapel Hill, NC; [3]Cleveland Clinic Foundation, Cleveland, OH.
Background: Primary focal segmental glomerulosclerosis (FSGS) accounts for 10–15% of pediatric and adult patients with end-stage renal disease. The prognosis is poor in patients who are unresponsive to corticosteroids. The NIDDK has initiated a multicenter, randomized clinical trial comparing the efficacy of cyclosporine versus the combination of mycophenolate mofetil and oral dexamethasone pulses in this patient cohort. Some prevalent patients will be ineligible because of prior treatment with the study drugs and others will fail to respond to the test medications. Their long-term outcome may be improved by therapeutic strategies that reduce progressive glomerulosclerosis and tubulointerstitial fibrosis. **Objective:** To conduct a phase I study to assess pharmacokinetic (PK) parameters, safety, and tolerance of novel agents that may reduce renal fibrosis in patients who are screen or treatment failures in the FSGS-Clinical Trial. **Patients and Methods:** Patients, age 2–42 years, GFR ≥ 40 mL/min/1.73 m^2, biopsy-confirmed FSGS, and who are screen or treatment failures in the FSGS-clinical Trial are eligible for inclusion. Two novel agents are being tested: (1) rosiglitazone, 3 mg/m^2, daily, PO, and (2) adalimumab, 24 mg/m^2, every other week, SC injection. The treatment phase is 16 weeks with PK evaluation prior to first dose and at end of treatment. DNA, plasma, serum, and urine samples will be obtained for storage in the NIDDK FSGS Biorepository. The study is being performed at sites with an NCRR-funded GCRC. **Results:** The Manual of Operations and Clinical Report Forms have been written and are posted on the FSGS study Web site (<www.fsgstrial.org>). IRB and GCRC approval has been obtained at 4 sites and is pending at 8 sites. One 18-year-old male adolescent has been enrolled. The target sample is 20 patients, 10 assigned to each agent. **Conclusion:** This phase I clinical trial represents an important step in improving the treatment of resistant FSGS. The results of this phase I studies will be incorporated into phase II clinical trials as part of a Phased Innovation Award. This project will establish an infrastructure that will facilitate the evaluation of novel agents that reduce renal fibrosis and improve the prognosis in patients with resistant primary FSGS.

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THE EFFECT OF LEFT VENTRICULAR ASSIST DEVICE THERAPY ON MYOCARDIAL FIBROSIS AND HEMODYNAMIC FUNCTION.
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Purpose: Left ventricular assist device (LVAD) therapy has emerged as a viable means for bridging to transplantation in end-stage heart failure patients. There has been conflicting evidence for the effect of this therapy on myocardial interstitial fibrosis, which may play a role in LVAD-induced myocardial recovery. We seek to elucidate the relationship(s) between changes in fibrosis during LVAD support and the following factors: the type of device implanted (continuous vs pulsatile), the duration and mode of support, and the hemodynamic impact of device operation. **Methods:** Left ventricular pressure, aortic pressure (AoP), aortic flow, and VAD flow waveforms were recorded intraoperatively at the time of LVAD implant and explant. Myocardial tissue samples were obtained from the left ventricle at time of implant and explant. Collagen-stained tissue samples (1 pre- and 1 post-VAD slide for each of three patients) were analyzed for percent fibrosis. All methods were executed as part of an IRB-approved clinical study, with appropriate informed consent of all involved patients. **Results**: At present, three patients have undergone both LVAD implantation and explantation. Those patients receiving a continuous-flow LVAD (CF-LVAD, $n = 2$) demonstrated a reduction in percent fibrosis from time of LVAD implant to time of explant, whereas those receiving a pulsatile-flow LVAD (PF-LVAD, $n = 1$) demonstrated an increase in percent fibrosis. Furthermore, of the two continuous-flow patients, the patient with lower preimplant fibrosis demonstrated a greater reduction in percent fibrosis during the duration of support, evidenced by changes from 4.9 to 2.4% fibrosis and 9.8 to 9.0% fibrosis during LVAD support in these two patients. Hemodynamic recordings indicate a marked reduction in pulsatility of AoP with the CF-LVAD vs the PF-LVAD, which preserves physiological pulsatility. Also, following LVAD support in a CF-LVAD patient, baseline AoP was decreased from pre-VAD status. **Conclusions:** The type of device and level of preimplant fibrosis may play a role in determining the direction and magnitude of change in myocardial fibrosis due to LVAD support. Moreover, clear differences in the hemodynamic impact of these two devices might reflect an underlying mechanism for the different changes in fibrosis seen with these two device types. In future work, more complete hemodynamic data will be used to calculate indices of function that will be correlated with histological findings in order to strengthen our understanding of the relationship between structural and functional changes brought about by LVAD support.

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THE NUMBER OF LYMPHATIC CHANNELS DOES NOT AFFECT METASTASIS TO THE SENTINEL LYMPH NODE IN BREAST CANCER.
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Introduction: The lymphatic channels are the routes by which cancer metastasizes. This study investigates whether a correlation exists between the number of channels and the likelihood of metastasis from the primary breast cancer site to the sentinel lymph node (SLN). Further, it examines the relationship of primary tumor characteristics with respect to these channels and SLN metastasis. **Materials and Methods:** This study was a retrospective review of a large database of 695 patients with primary invasive breast carcinoma undergoing selective sentinel lymphadenectomy at a single institution from November 1997 to June 2005. Only patients with successful preoperative lymphoscintigraphy (with either channels or nodes identified) and pathology-determined SLN status were included. There were 532 patients who fit our study criteria. **Results:** One hundred thirty-seven patients (24.8%) had one or more positive SLNs. A comparison of the percentages of positive SLN versus negative SLN for the different channel groups showed 0 channels, 25/137 (18.2%) with positive SLN vs 62/395 (15.7%) with negative SLN, $p = .4865$; 1 channel, 78/137 (56.9%) with positive SLN vs 244/395 (61.8%) with negative SLN, $p = .3182$; 2 or more channels, 34/137 (24.8%) with positive SLN vs 89/395 (22.5%) with negative SLN, $p = .5845$. No significant statistical relationship was found between number of lymphatic channels and frequency of SLN metastasis. The quadrant, type, and size of the tumor were also found to have no significant statistical relationship with the number of lymphatic channels. Metastasis was significantly associated with tumor size greater than 15 mm, poor tubular formation, and lymphovascular invasion. **Conclusion:** An increased number of lymphatic channels identified by preoperative lymphoscintigraphy does not appear to predict a higher likelihood of metastasis within the sentinel lymph node for all types of breast cancer. Metastasis to the sentinel lymph nodes is governed by the primary characteristics of the tumor rather than the number of lymphatic channels.

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INSULIN IS PRESENT IN HUMAN SALIVA AND NASAL MUCUS.
I. Velicu, R.I. Henkin, Taste and Smell Clinic, Washington, DC.
Measurement of insulin is an important marker for diabetes mellitus and other metabolic processes. Most insulin measurements are made in blood, although insulin has been previously found in saliva. Since we have described several of the proteins in both saliva and nasal mucus we wished to determine if insulin were present in these biological fluids and whether or not their measurements could be used to determine physiological and pathological processes. We measured insulin by colorimetric ELISA in a 96-plate assay in plasma and saliva in the fasted and nonfasted state and in nasal mucus in the nonfasted state in 60 patients with a variety of disease states. In plasma in the fasting state insulin was 17.1 ± 3.8 μIU (mean ± SEM), in saliva, 22.6 ± 1.9; in plasma in the nonfasting state insulin was 29.4 ± 4.4, in saliva 24.7 ± 2.4. In the fasted state, insulin in saliva was 32% higher than in plasma, whereas in the nonfasting state it was 15% higher. In the nonfasting state insulin in nasal mucus was 19.0 ± 2.2 or 35% lower than in plasma and 23% lower than in saliva. In patients with diabetes under biochemical control saliva insulin in fasting state was 62% higher than in plasma and in the nonfasting state it was essentially the same as in plasma. In patients with controlled diabetes in the nonfasted state insulin in nasal mucus was 47% lower than in plasma and 45% lower than in saliva. Relative changes in insulin in plasma, saliva and nasal mucus were also found in thin and obese subjects. These results indicate that insulin is present in both saliva and nasal mucus and physiological changes in this hormone can be measured in these fluids. Use of saliva and nasal mucus to monitor diabetes and other disorders offers noninvasive techniques to obtain data usually found in blood.

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IS METABOLIC SYNDROME AN INDEPENDENT RISK FACTOR FOR CORONARY ARTERY DISEASE?
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Introduction: Metabolic syndrome consists of a constellation of metabolic abnormalities that include glucose intolerance, obesity, elevated blood pressure, and dyslipidemia. There are conflicting results in the medical literature as to whether the components of the metabolic syndrome, taken together or individually, can improve existing formulas such as the Framingham risk score for estimating the 10-year risk for cardiovascular disease. The purpose of this study was to determine if the metabolic syndrome is an independent risk factor for the presence of coronary artery disease (CAD). **Methods:** A total of 174 patients with