SELECTED ABSTRACTS FROM PUBMED

1. *Niazi I, Baker J 2nd, Corbisiero R, Love C, Martin D, Sheppard R, Worley SJ, Varma N, Lee K, Tomassoni G; MPP Investigators.* **Safety and Efficacy of Multipoint Pacing in Cardiac Resynchronization Therapy: The MultiPoint Pacing Trial. JACC Clin Electrophysiol. 2017 Dec 26;3(13):1510-1518.**

ABSTRACT

Objectives: The MultiPoint Pacing (MPP) trial assessed the safety and efficacy of pacing 2 left ventricular sites with a quadripolar lead in patients with heart failure indicated for a CRT-D device.

Background: Cardiac resynchronization therapy nonresponse is a complex problem where stimulation of multiple left ventricular sites may be a solution.

Methods: Enrolled patients were indicated for a CRT-D system. Bi-ventricular (Bi-V) pacing was activated at implant. Three months later, clinical response was assessed and the patient was randomized (1:1) to receive Bi-V pacing or MPP. Patients were followed for 6 months post-randomization and clinical response was again assessed.

Results: The CRT-D system was successfully implanted in 455 of 469 attempted implants (97%). A total of 381 patients were randomized to Bi-V or MPP at 3 months. The primary safety endpoint was met with freedom from system-related complications of 93.2%. The primary efficacy endpoint of the noninferiority comparison of nonresponder rates between the 2 arms was met. Patients randomized to MPP arm and programmed to pace from anatomically distant poles (MPP-AS) responded to therapy at significantly higher rates than MultiPoint pacing-other programmed settings (MPP-Other). Within this group, 87% were responders at 9 months, 100% designated as nonresponders at 3 months converted to responders at 9 months, and 54% experienced an incremental response compared to MPP-Other. Also within MPP-AS, 92% of patients with de novo CRT-D implant were classified as responders compared with patients with MPP-Other.

Conclusions: MPP is safe and effective for treating heart failure. The study met the pre-specified hypothesis that response to MPP is noninferior to Bi-V pacing with a quadripolar left ventricular lead. (MultiPoint Pacing IDE Study [MPP IDE]; NCT01786993).

Keywords: bi-ventricular pacing; cardiac resynchronization; heart failure; multipoint pacing; randomized controlled trial.

2. *Rillig A, Schmidt B, Di Biase L, Lin T, Scholz L, Heeger CH, Metzner A, Steven D, Wohlmuth P, Willems S, Trivedi C, Galllinghouse JG, Natale A, Ouyang F, Kuck KH, Tilz RR.* **Manual Versus Robotic Catheter Ablation for the Treatment of Atrial Fibrillation: The Man and Machine Trial. JACC Clin Electrophysiol. 2017 Aug;3(8):875-883.**

ABSTRACT

Objectives: Circumferential pulmonary vein isolation (CPVI) using irrigated radiofrequency is the most frequently used ablation technique for the treatment of atrial fibrillation worldwide.

Background: To date, no large randomized multicenter trials have evaluated the efficacy and safety of CPVI using robotic navigation (RN) systems compared with the current gold standard of manual ablation (MN).

Methods: In this prospective, international multicenter noninferiority trial, 258 patients with paroxysmal or persistent atrial fibrillation were randomized for CPVI using either RN (RN group, n = 131) or manual ablation (MN group, n = 127). In all patients, CPVI was performed using irrigated radiofrequency ablation in combination with a 3-dimensional mapping system. The primary endpoint was the absence of atrial arrhythmia recurrence on or off antiarrhythmic drugs during a 12-month follow-up period. Secondary endpoints were the evaluation of periprocedural complications and procedural data such as procedure time, fluoroscopy time, and incidence of esophageal injury.

Results: Baseline characteristics were comparable between the RN group and MN group. Procedure time was significantly shorter in the MN group (129.3 ± 43.1 min vs. 140.9 ± 36.5 min; p = 0.026). 247 patients completed the 12-month follow-up (RN group, n = 123; MN group, n = 124). Recurrence rate was comparable between the RN and MN groups (n = 29 of 123 [23.6%] vs. 25 of 124 [20.2%]). The incidence of procedure-related major complications did not differ significantly between ablation arms (RN group, n = 8 [6.1%] vs. MN group, n = 6 [4.7%]; p = 0.62). One patient from the RN group developed a fatal atrioesophageal fistula.

Conclusions: This study demonstrated that robotic ablation is noninferior to the current gold standard of manual ablation for CPVI with respect to success and complication rates. Procedure times were significantly longer in the RN group. (Alster Man and Machine: Comparison of Manual and Mechanical Remote Robotic Catheter Ablation for Drug-Refractory Atrial Fibrillation; NCT00982475).

Keywords: atrial fibrillation; catheter ablation; randomized trial; robotic navigation.

3. *Chudowolska-Kiełkowska M, Gieroń-Kozina B, Gawałko M, Kądalska E, Henszel Ł.* **Knowledge and beliefs in a selected group of parents of children aged 2 and less concerning preventive vaccination. Przegl Epidemiol. 2017;71(4):583-593.**

ABSTRACT

Objective: The objective of this research was to get to know the level of knowledge and beliefs concerning preventive vaccination among parents of children up to 2 years of age

Material and Methods: The survey was carried out in 2015 in a group of 120 parents of children aged 2 or less in the capital city of Warsaw and its vicinity. An original survey questionnaire was applied. Descriptive statistics methods were applied

Results: The most numerous researched group were people aged 20-40 (79.2%) with higher education (76.8%). The majority of respondents declared their positive attitude to rationality of vaccination (76.7%). Only 1.7% of respondents declared that they remained unconvinced as to giving their children preventive vaccination. Women were convinced about the usefulness and preventive effectiveness of preventive vaccination. Among all the respondents 11.7% claimed they did not get enough information on preventive vaccination from medical staff. According to 7.5% of the respondents, the information provided by medical personnel is incomprehensible and insufficient. According to 50.8% of the respondents the effectiveness of parents' education in the scope of preventive vaccination administered to children should be improved

Conclusions: The parents of children aged 2 or less point out to lack of sufficient information on preventive vaccination. It is therefore necessary to involve medical personnel more in order to increase the effectiveness of education of small children's parents in the discussed field

Keywords: vaccination; parents beliefs; prevention of infectious diseases; health promotion.

4. *Omrani H, Rai A, Daraei Z, Sadeghi M. Study of Echocardiographic Changes After Kidney Transplantation in End-stage Renal Disease Patients. Med Arch. 2017 Dec;71(6):408-411.*

ABSTRACT

Background: Cardiovascular complications are the leading cause of mortality in end-stage renal disease (ESRD) patients. This study aimed to evaluate the efficacy of kidney transplantation on the cardiovascular status in ESRD patients.

Methods: During 2012 to 2014 and in a cross-sectional study, 181 patients were randomly selected for this study. All patients were followed for periods of 6 and 12 months after kidney transplantation. The patients with ESRD and kidney transplant recipients; the patients with left ventricle ejection fraction<50%, left ventricular hypertrophy, mitral valve regurgitation and tricuspid valve regurgitation were included to study and the patients with kidney transplant rejection, myocardial infarction, high blood pressure with treatment-resistant, high blood pressure and addicted patients were censored.

Results: one hundred and eighty-one patients had the mean age of 38.52 (range, 16-69 years) that 54.7% were men and the mean duration of dialysis was 3.74 years. There were significant differences after 6 and 12 months compared with before and also 6 months compared with 12 months from kidney transplantation for all echocardiographic findings. The echocardiographic findings improved after 12 months compared with 6 months and also these times compared with before kidney transplantation.

Conclusions: The results of this study appeared that kidney transplantation had a positive effect on the cardiovascular status of patients with ESRD and improved the cardiac function of these patients.

Keywords: Cardiovascular disease; Echocardiography; End-stage renal disease; Kidney transplantation.

5. *Paksa A, Rajagopal J. The epigenetic basis of cellular plasticity. Curr Opin Cell Biol. 2017 Dec;49:116-122.*

ABSTRACT

Cellular plasticity is now recognized as a fundamental feature of tissue biology. The steady-state differentiation of stem and progenitor cells into mature cells is, in itself, the index form of cellular plasticity in adult organisms. Following injury, when it is critical to quickly regenerate and restore tissue integrity and function, other types of cellular plasticity may be crucial for organismal survival. In these contexts, alterations in the epigenetic landscape of tissues are likely to occur in order to allow normally restricted cell fate transitions. Epigenetic mechanisms, particularly DNA methylation and histone modifications, have been shown to play an important role in regulating such plasticity. Relevant mechanisms have been well studied in the context of the direct reprograming of somatic cells into induced pluripotent stem cells. Indeed, epigenetic regulation of cell fate is part and parcel of normal embryonic development and is a central regulator of cellular diversity. This is normally thought to involve the establishment of divergent chromatin patterns that culminate in cells with distinct and what were previously thought to be irreversible fates. This brief review aims to put some of these new observations in the larger context of regeneration after injury.

6. *Azizi S, Mousavi P, Yan P, Tahmasebi A, Kwak JT, Xu S, Turkbey B, Choyke P, Pinto P, Wood B, Abolmaesumi P. Transfer learning from RF to B-mode temporal enhanced ultrasound features for prostate cancer detection. Int J Comput Assist Radiol Surg. 2017 Jul;12(7):1111-1121. doi: 10.1007/s11548-017-1573-x. Epub 2017 Mar 27.*

ABSTRACT

Purpose: We present a method for prostate cancer (PCa) detection using temporal enhanced ultrasound (TeUS) data obtained either from radiofrequency (RF) ultrasound signals or B-mode images.

Methods: For the first time, we demonstrate that by applying domain adaptation and transfer learning methods, a tissue classification model trained on TeUS RF data (source domain) can be deployed for classification using TeUS B-mode data alone (target domain), where both data are obtained on the same ultrasound scanner. This is a critical step for clinical translation of tissue classification techniques that primarily rely on accessing RF data, since this imaging modality is not readily available on all commercial scanners in clinics. Proof of concept is provided for in vivo characterization of PCa using TeUS B-mode data, where different nonlinear processing filters in the pipeline of the RF to B-mode conversion result in a distribution shift between the two domains.

Results: Our in vivo study includes data obtained in MRI-guided targeted procedure for prostate biopsy. We achieve comparable area under the curve using TeUS RF and B-mode data for medium to large cancer tumor sizes in biopsy cores (>4 mm).

Conclusion: Our result suggests that the proposed adaptation technique is successful in reducing the divergence between TeUS RF and B-mode data.

Keywords: B-mode; Cancer diagnosis; Deep belief network; Deep learning; Prostate cancer; Radiofrequency signal; Temporal enhanced ultrasound; Transfer learning.

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7. *Yim WW, Kwan SW, Johnson G, Yetisgen M.* **Classification of hepatocellular carcinoma stages from free-text clinical and radiology reports. AMIA Annu Symp Proc. 2017; 2017: 1858–1867.**

ABSTRACT

Cancer stage information is important for clinical research. However, they are not always explicitly noted in electronic medical records. In this paper, we present our work on automatic classification of hepatocellular carcinoma (HCC) stages from free-text clinical and radiology notes. To accomplish this, we defined 11 stage parameters used in the three HCC staging systems, American Joint Committee on Cancer (AJCC), Barcelona Clinic Liver Cancer (BCLC), and Cancer of the Liver Italian Program (CLIP). After aggregating stage parameters to the patient-level, the final stage classifications were achieved using an expert-created decision logic. Each stage parameter relevant for staging was extracted using several classification methods, e.g. sentence classification and automatic information structuring, to identify and normalize text as cancer stage parameter values.

Stage parameter extraction for the test set performed at 0.81 F1. Cancer stage prediction for AJCC, BCLC, and CLIP stage classifications were 0.55, 0.50, and 0.43 F1.

8. *Julia L, Vilankar K, Kang H, Brown DE, Mathers A, Barnes LE.* **Environmental Reservoirs of Nosocomial Infection: Imputation Methods for Linking Clinical and Environmental Microbiological Data to Understand Infection Transmission. AMIA Annu Symp Proc. 2017:1120-1129.**

ABSTRACT

The transmission of hospital-acquired Carbapenem-resistant Enterobacteriaceae (CRE) is a serious and growing concern in hospitals worldwide. Previous research of CRE found that traditional patient-to-patient transmission of the bacteria does not fully account for all cases of transmission. Recent efforts to further understand modes of transmission found identical genomes of CRE in patient sinks as was found in cultures collected from patients, indicating that environmental reservoirs could be playing a larger role in transmission than was first realized. This study evaluated imputation methods for linking multiscale clinical and environmental microbiological data. We then utilized the imputed data set to model the risk of CRE presence in sinks between culture dates. We demonstrated that imputation based on expert knowledge of the unique factors of the physical hospital layout and patterns of occurrence throughout hospital sinks provided the best representation of sink positivity and also identified several significant risk factors for explaining environmental contamination. This work helps to more clearly define the mechanism and risk of transmission from a wastewater source to hospitalized patients in a world with increasingly antibiotic-resistant bacteria which can thrive in wastewater environments and cause infections in vulnerable patients.

9. *Mohan V, Williams OD, Chella S, Unnikrishnan R, Anjana RM, Vidyasagar S, Bhattacharya PK, Chaudhury N, Krishnan A, Garcia S, Lewis CE, Gross M, Pradeepa R.* **Clinical research training and capacity building for prevention and control of non-communicable diseases: A programme in India. Natl Med J India. 2017 Nov-Dec;30(6):340-344.**

ABSTRACT

Background: Non-communicable diseases (NCDs)-a term which includes diabetes, cardiovascular disease, cancers, chronic respiratory diseases, and mental illness-are now the major cause of death in India and pose healthcare and economic challenges. There is an urgent need for enhanced clinical research training and capacity building for NCD prevention and control in India.

Methods: We describe a multi-pronged approach funded in part by the US National Institutes of Health Fogarty

International Center, which was initiated in 2001, to train Indian present and future scientists/doctors in NCD prevention and control. The approaches used were annual national seminars, intensive training courses, in-house workshops, short-term training sessions in the USA and monthly video conferences.

Results: During 2001-2016, a total of 3650 undergraduate, postgraduate and faculty from medical colleges and institutes from almost all states in India and several neighbouring countries participated in seminars and other capacity-building workshops held at the Madras Diabetes Research Foundation, Chennai and at six other medical colleges; 883 delegates participated in the in-house workshops, 463 in the intensive interactive sessions; 244 in workshops on advanced techniques in genomics; and 37 in short-term training sessions held in the USA.

Conclusion: Through this unique capacity-building programme, more than 5000 individuals representing faculty and students from various medical colleges and research institutes across, and beyond, India, underwent training in the prevention and control of NCDs.

10. *Dandona L, Dandona R, Kumar GA, Cowling K, Titus P, Katoch VM, Swaminathan S.* **Mapping of health research funding in India. Natl Med J India. 2017 Nov-Dec;30(6):309-316.**

ABSTRACT

Background: We aimed to estimate the total annual funding available for health research in India. We also examined the trends of funding for health research since 2001 by major national and international agencies.

Methods: We did a retrospective survey of 1150 health research institutions in India to estimate the quantum of funding over 5 years. We explored the Prowess database for industry spending on health research and development and gathered data from key funding agencies. All amounts were converted to 2015 constant US$.

Results: The total health research funding available in India in 2011-12 was US$ 1.42 billion, 0.09% of the gross domestic product (GDP) including only 0.02% from public sources. The average annual increase of funding over the previous 5 years (2007-08 to 2011-12) was 8.8%. 95% of this funding was from Indian sources, including 79% by the Indian pharmaceutical industry. Of the total funding, only 3.2% was available for public health research. From 2006-10 to 2011-15 the funding for health research in India by the three major international agencies cumulatively decreased by 40.8%. The non-industry funding for non-communicable diseases doubled from 2007-08 to 2011-12, but the funding for some of the leading causes of disease burden, including neonatal disorders, cardiovascular disease, chronic respiratory disease, mental health, musculoskeletal disorders and injuries was substantially lower than their contribution to the disease burden.

Conclusion: The total funding available for health research in India is lower than previous estimates, and only a miniscule proportion is available for public health research. The non-industry funding for health research in India, which is predominantly from public resources, is extremely small, and had considerable mismatches with the major causes of disease burden. The magnitude of public funding for health research and its appropriate allocation should be addressed at the highest policy level.