MANIPAL UNIVERSITY

Deemed-to-be-University under Section 3 of the UGC Act 1956

McGill | GLOBAL HEALTH PROGRAMS

Contagion

.....The Annual MAC ID News Letter

Issue 1 -August, 2017

Publication by

Manipal McGill Centre for Infectious Diseases (MAC ID)

Prasanna School of Public Health
Manipal University, Manipal

Email ID: **macid.mu@manipal.edu**
Website: **http://macid.manipal.edu/**
Telephone: **+91 820 29 33505**

Content

Section 1

Epistola….The letters

Editor's note

Dr. Shrikala Baliga

Dr. Sneha D Mallya

Dear Readers,

It is indeed a great honor to be the Newsletter Editors of the first issue of Contagion, the Annual Newsletter of Manipal McGill Center for Infectious Diseases (MAC ID).

This maiden issue takes you through the first year journey of MAC ID from its inception at the inaugural symposium on August 13th, 2016. As you browse through the achievements and activities of the past year, you will notice the steady but sure steps taken by MAC ID. Both McGill Faculty and MAC ID members have contributed generously to this Newsletter and we thank them for their wonderful and inspiring articles.

Peep into the exciting world of microbes and diseases.....we have an interesting quiz and crossword to take you on an adventure of the world of Infectious diseases.

Good beginnings are a harbinger of good endings; but the MAC ID journey is a journey without an end. We would like to see the MAC ID as a true amalgamation of microbiologists, physicians, epidemiologists, researchers and just about anyone interested in Infectious diseases. *Hic Manebimus Optime*-We are here to stay-most excellently!!!

We thank our coordinators Dr Kavitha Saravu and Dr Madhukar Pai for putting in efforts to bring MAC ID to its present state. Also a special mention for the efforts of the core committee for its proactive suggestions, contributions and brainstorming during the numerous meetings in the past year.

Come, Browse, Peruse, Ponder, Read, and Examine.....*Contagion*.....

Joint Coordinators Message

Dr Kavitha Saravu
Joint Coordinator
MAC ID, Manipal University

Dr Madhukar Pai
Joint Coordinator
MAC ID, McGill University

It gives us immense pleasure to bring out this newsletter as the Manipal McGill Center for Infectious Diseases (MAC ID) completes its first successful year. MAC ID has opened channels of research and academic collaboration between faculty and students of Manipal University and McGill University. We have 105 members from Manipal University who are engaged in MAC ID. The past year has witnessed faculty and student exchanges; there have been joint projects and publications as a result. We have conducted events and symposia on a variety of infectious diseases.

Why is MAC ID focused on infectious diseases? To begin with, India has an enormous burden of infectious diseases, even as the country deals with rapid increase in diabetes, obesity and heart disease. Three infectious diseases namely acute diarrheal diseases, lower respiratory tract infections and tuberculosis figure in the top ten causes of deaths in India. Antimicrobial resistance scenario has reached epidemic proportions. New emerging diseases like Zika virus, Crimean Congo hemorrhagic fever pose a threat in India just like elsewhere. Ministry of Health, Government of India has called for elimination of TB in India by 2025, malaria by 2030. ICMR has set up a program on Antibiotic Stewardship, Prevention of Infection & Control to combat AMR. India has also launched an India TB Research Consortium to advance TB research in the country.

In this context, it is imperative that we develop capacity to prevent, treat, control and if possible eliminate infectious diseases. It requires competent diagnosticians, clinicians, epidemiologists and researchers to join hands and work towards the common cause. It calls for research to guide public policy. MAC ID aims to achieve excellence in infectious diseases research and training. We are happy to have made a good start, but the journey has just begun. We are taking concrete, firm steps, ably steered by our core committee, and our university leadership.

Through this newsletter we have attempted to give a snapshot of our activities in the first year. Our sincere thanks to Dr Shrikala Baliga and Dr Sneha Deepak Mallya for editing this newsletter.

Section 2

Opus....
The work so far....

1. Events Organized by MAC ID

A) Manipal McGill Center for Infectious Diseases- Inaugural Symposium

With the execution of a Memorandum of Understanding (MOU) on 13th August 2016, the Manipal McGill Center for Infectious Diseases (MAC ID) was launched at Manipal University, aiming to foster research and training collaborations in the field of infectious and tropical diseases between Manipal University, India and McGill University, Montreal, Canada. Dr H Vinod Bhat, Vice Chancellor of Manipal University was the Chief Guest and Dr Poornima Baliga B, Dean of Kasturba Medical College (KMC), Manipal was the Guest of Honour. Dr Kavitha Saravu, Professor of Medicine at KMC Manipal and the Joint Coordinator of MAC ID, welcomed the gathering and Dr. Sneha Deepak Mallya, Associate Professor of Community Medicine, KMC Manipal and core committee member of MAC ID hosted the event. The launch event was marked by an inaugural symposium addressing infectious diseases topics such as diagnosis of acute fevers by Dr G Arun Kumar, Professor and Head Manipal Center for Virus Research, Molecular Diagnostics for Infectious Diseases by Dr K Satyamoorthy, Director, School of Life Science, Manipal, and a panel discussion on Antimicrobial Resistance. Dr Madhukar Pai, Director of McGill Global Health Programs, Associate Director of McGill International TB Centre and the Joint Coordinator of MAC ID, gave an excellent presentation on Tips on Grant writing. This symposium brought together over 150 faculty members, students and research scholars on a platform encouraging active interactions with experts in epidemiology and infectious diseases. Dr Shrikala Baliga, Core Committee Member of MAC ID and Professor of Microbiology, KMC Mangalore proposed the vote of thanks.

B) Tropical Medicine- Update 2016

The Tropical Medicine Update was conducted by the Departments of Microbiology & Medicine in collaboration with Manipal McGill Center for Infectious Diseases at Kasturba Medical College, Mangalore on 30th of November 2016. It was a day long CME inaugurated by the Pro Vice Chancellor, Mangalore Campus, Dr Surendra Shetty and Dean, KMC Mangalore, Dr M V Prabhu along with other dignitaries. Over 174 faculty and students from different medical colleges in Mangalore and KMC Manipal attended the program. The key note speaker - Dr Michael Libman, Director of the McGill International TB Centre, spoke on salient aspects of Leishmaniasis and new diagnostic modalities in parasitology. Additionally, Dr Anurag Bhargava, Professor of Medicine Yenepoya Medical College, Mangalore, covered important aspects of outbreaks of Scrub typhus and its prominent features. Dr Kavitha Saravu, Professor in Medicine, KMC, Manipal spoke on the diagnosis and treatment of Malaria in adults. The guest lectures were followed by three complex case studies conducted by the final year postgraduates of the Department of Medicine, KMC Mangalore.

C) World AIDS Day 2016

On the eve of World AIDS Day -2016 on December 1st, an awareness program was jointly organized by the Department of Community Medicine, Kasturba Medical College, Manipal, Manipal McGill Centre for Infectious Diseases (MAC ID) and Rotary Club, Kaup at PKS High School, Kalathoor and Vidyavardhaka High School, Pangala. Dr Sneha Deepak Mallya, MAC ID Core Committee Member was the coordinator of this event. The event was hosted in two regions, Kapu and Pangala with 90 and 65 students participating in the programs respectively. Ms Asha, Medico social worker from the Department of Community Medicine delivered the educational session on HIV/AIDS transmission and prevention. An educational poster illustrating HV/AIDS transmission and prevention was given to school authorities for permanent display. Furthermore, an educational film on HIV/AIDS was screened for the students to facilitate understanding of the complexities of the disease.

World AIDS Day Celebration at KMC Manipal and KMC Mangalore:

On 1st December 2016, awareness posters were displayed in Kasturba Hospital, Manipal and educational materials were displayed in the HIV clinic for both patients and health care professionals. Dr John Ramapuram, MAC ID Core Committee Member organized the continued medical education symposium on HIV at KMC Mangalore.

D) Symposium on Drug-resistant Tuberculosis: Challenges & Opportunities

A half day symposium , held on 21st December 2016 by Manipal McGill Center for Infectious Diseases (MAC ID) in collaboration with TMA Pai Endowment Chairs, McGill International TB Centre, and McGill Global Health Programs, hosted 145 faculty members, students and research scholars. CME speakers, Dr. Madhukar Pai (Director, McGill Global Health Programs McGill University, Canada), Dr. Anurag Bhargava (Professor of Medicine, Yenepoya Medical College, Mangalore), and Dr. DJ Christopher (Professor and Head of the Department of Pulmonary Medicine, CMC Vellore), highlighted various infectious disease topics related to tuberculosis. The CME commenced with talks on diagnosis of drug resistant tuberculosis (DR-TB), nutritional interventions for tuberculosis (TB), and advances in treatment of DR-TB followed by a panel discussion on protecting healthcare workers in the era of extensively drug resistant TB (XDR-TB). The vote of thanks was proposed by Dr. Kiran Chawla, Core Committee Member, MAC ID, Professor and Head of Microbiology, KMC Manipal.

2. Seed Grants Awarded

Awardees Name & Department	Title of the project
Dr Kavitha Saravu Dept of Medicine	Comparative Therapeutic Efficacy Study of Two Regimens of Primaquine for Radical Cure of Plasmodium Vivax Malaria among Adults in Udupi
Dr. Chiranjay Mukhopadhyay Dept of Microbiology	Molecular Detection and characterization of carbapenemase resistance Gram Negative Bacteria (CR-GNB) among patients with sepsis
Dr T S Murali Dept of Biotechnology	Microbial synergy and altered virulence in polymicrobial biofilms
Dr Shalini Shenoy Mulki Dept of Microbiology	Clinicomicrobiological profile of Gram Negative Bacterial infections in Adult ICU's of a tertiary care centre
Dr Sneha Deepak Mallya Dept of Community Medicine	A study to estimate the prevalence of metabolic syndrome, cardiovascular risk factors and its determinants among ART naïve and treated adult patients infected with HIV
Dr K. Vidyalakshmi Dept of Microbiology	Association of Virulence Genes with Clinical Presentations and Outcomes in Melioidosis
Dr Kiran Chawla Dept of Microbiology	Detection of Mycobacterium tuberculosis specific host miRNA marker for diagnosis of extra Pulmonary tuberculosis
Dr Raghu Chandrashekar H Dept of Pharmaceutical Biotechnology	Inhibition of Herpes Simplex Viral Replication by Silencing the Expression of a Tegument Protein VP 1/2 for the Treatment of HSV infection

3. McGill Summer Course - Participating Faculty Experience

Dr. Chaitanya Tellapragada
Assistant Professor,
Department of Virus Research, Manipal University, Manipal.

To begin with, I am thankful to the selection committee of Manipal McGill Center for Infectious Diseases (MAC ID) for selecting my candidature to attend the McGill summer course during June 2017. I chose to attend the sessions on "Global health diagnostics" and "Introduction to genomic epidemiology of infectious diseases". Details regarding the course content and the resource persons provided in the course flyer were extremely helpful for deciding the courses to attend. From the day of my registration, I received constant support and guidance from Ms. Stephanie and the other program coordinators regarding my travel, accommodation and visa. I was accommodated at the La Citadel Hotel which was proximal to the course venue and the "down town". With a famous food joint (Tim Hortons) serving coffee and quick bites round the clock at every street corner, it didn't take much time for me to realize that "Montreal Never Sleeps". With pleasant weather on most of the days, a walk from the hotel to the course venue crossing the McGill University buildings was perfect enough to begin my day. By the end of each day, I had the awesome company of Dr. Suchitra Shenoy and Dr. Basavaprabhu while exploring the streets of Montreal. One of the most memorable evenings in Montreal was at a South Indian restaurant having a "six feet dosa" with fellow participants from India and Dr. Madhukar Pai. During the first week, I attended the sessions on global health diagnostics. The course was designed in a unique manner to facilitate in-depth discussions on the currently employed diagnostic approaches, their strengths and limitations. Followed by five days of intense academic sessions, visiting Quebec City (3 hours journey from Montreal, by road) for a day trip was extremely rejuvenating. Second week of the summer course (Introduction to genomic epidemiology of infectious diseases) was entirely a different experience, reminding me the days of my student life at college. With practical sessions on genomic data analysis and journal clubs sandwiched between the lectures, it was totally an academic feast. During the two weeks of summer course, every coffee/lunch break gives us an opportunity to interact with researchers, industrial experts and policy makers working at different levels in the field of infectious diseases. Put together, I thoroughly enjoyed the whole experience of attending the two week course at McGill Summer Institute of Infectious Diseases and Global Health. Last but not the least, obtaining a Canadian visa was a major bottleneck for me during the whole process. Considering the long processing period for a decision on Canadian visa applications, I advise the future participants to apply atleast two months prior to the date of commencement of the course.

Dr Suchitra Shenoy,
Associate Professor
Department of Microbiology, KMC Mangalore

A mind opening experience at McGill University, Montreal

From seeing the offer of sponsorship to attend McGill summer course to the application for the same was a very doubtful decision for me. Encouraged by my colleague and family I applied for it and was very excited about the whole affair when I got through the selection. The initial fliers of the course were very informative about what to expect from the course. The registration was very smooth and the guidance from McGill University was commendable. Ms Stephanie and Ms Kristin from McGill were so helpful and were ever ready to clear all my doubts regarding travel, visa, ticket bookings, accommodation and also to a great extent about the food too. Being a vegetarian I was little worried how I would manage two weeks in a comparably cold foreign country. Believe me there are so many Indian restaurants that one will never miss home regarding food.

Reaching Montreal on June 11th 2017 I checked into the accommodation provided to the delegates. It was very comfortable and also felt very secure. It was walking distance from the course venue. This was really nice as it gave an opportunity to walk in the morning to the Centre and experience the ever changing weather from sunlight to the drizzling rain. All excited following the map sent to the delegates my colleagues from Manipal University (Dr Basavaprabhu and Dr Chaitanya) and myself reached the venue on June 12th.

The courses - Global Health diagnostics of first week and Advanced TB diagnostics of second week per se was something totally different kind of its own. A week before the course I was informed that I would be a panelist and the topic was so practical. I was to be a part of a discussion on: Are resource-limited countries ready for molecular testing? After a brief self-introduction by delegates and the resource persons the deliberations started. Each and every delegate who had registered was part of the discussion in the form of resource person or audience. I congratulate the organizers for this new approach of conducting the course. The participants were academicians, physicians, researchers & developers, funding bodies, representatives from various government health sectors and also tuberculosis patient advocates. I got to interact with lot of people during the tea and lunch breaks.

Weekend in between the two weeks was a trip to Quebec City which is a beautiful place to visit. Montreal is also a nice place to explore for sightseeing from the Olympics stadium to the Notre-Dame Basilica. Two weeks went by like a dream. Not to forget I have to thank Dr Madhukar Pai for treating all the Indian participants to six foot masala dosas on one of the evenings at Montreal. Every one of us enjoyed the ride by metro to the hotel and back. We were all chatting and enjoying like small kids.

Friends, I am thankful to MAC ID for giving me this opportunity to be part of a wonderful experience. An experience which I will cherish for days to come.

Dr Basavaprabhu Achappa
Associate Professor
Department of Medicine, KMC Mangalore

I at the outset, would like to thank Manipal McGill Centre for Infectious Diseases for giving me this opportunity to attend the summer course at McGill. This was my first visit to Canada and was really looking forward to visiting McGill and Montreal since January this year when my application was approved for the summer course.

The communications right from the beginning regarding Registration, VISA Application, Travel Itinerary and accommodation was excellent and I must say Ms. Stephanie and Ms. Caroline were very helpful with all the processes and clearing all the queries that I had.

The accommodation at La Citadelle in Rue Sherbrooke was excellent and also was very close to the venue of our summer course as well as to the city's downtown where we had lots of Indian restaurants, so food was not a problem.

The venue 'Centre Mont Royal' was very close to our hotel and had good facilities.

Our Programme directors Dr. Madhukar Pai, Dr. Nitika Pant Pai and Dr. Cedric Yansouni were awesome and made every participant comfortable and involved all of us in discussions. The whole course was conducted in an informal setting and Dr. Pai regularly insisting that the attire should be strictly casual!!! And he himself used to be dressed in casuals.

The participants were from various diverse fields which included Clinicians, Microbiologists, Public health professionals, product developers, project/National programme directors, students, patient educators, statisticians and TB Survivors who were the nucleus of the programme.

The first week on Global Health Diagnostics was an eye opener for me with respect to the burden of tropical diseases and opportunities that exist in terms of research in these areas and also their application in resource limited settings like ours. It also helped me understand the various diagnostic modalities that are available for emerging infections and tropical diseases and their successful application and incorporation by various governments especially in African countries.

My interactions with participants from various countries during the coffee and lunch breaks helped me understand the problem burden in their countries and also the implementation of various programmes to contain and treat these diseases. We were also included as panelists for the sessions which helped share our view point and also made us feel part of the programme.

The weekend break was a good time to unwind and I made most of the opportunity by squeezing in a 2 day trip to Toronto and Niagara Falls which was truly memorable.

The second week was on advanced TB Diagnostics moderated by the course director Dr. Madhukar Pai. It was indeed very touching to listen to the MDR TB survivors from India and learn that on an average there is a delay of 6 months to a year in diagnosing drug resistant TB in India.

The sessions on Xpert MTB/RIF, Universal DST, panel discussion on universal access to diagnosis and care, Line probe assay for TB were the highlights of the programme. Last but not the least Dr. Pai's hospitality and his treat of 6 Foot Dosa was memorable.

I sincerely thank you and Dr. Pai again for this opportunity which has truly motivated and encouraged me to improve the quality of research undertaken by me in my institute.

4. Student Travel Awards

Yasha Mukim - Department of Microbiology, KMC Manipal

Title: Improved diagnostic yield of Spontaneous Bacterial Peritonitis (SPB) using Automated BacT/Alert system: Better tests for Better care

Oral Presentation at 57th Annual Conference of AMI & International Symposium on Microbes and Biosphere: What's New and what's Next held at Guwahati, Assam on November 24-27, 2016

Sushrutha S Hakkimane - Department of Biotechnology, MIT Manipal

Title: Preliminary evaluation of Rifampicin nanoparticles against mycobacterium tuberculosis in liquid culture

Poster Presentation at 71st National conference of Tuberculosis and chest diseases, held at Chandigarh from December 16-18, 2016

Singdha Reddy K - Department of Microbiology, KMC Manipal

Title: MRSA Infection and Carrier Status Profile in a Tertiary care Hospital from Southern India

Poster Presentation at MICROCON 2016 held PGIMER, Chandigarh from 23rd-27th November, 2016

Ramireddy Mahathi - Department of Community Medicine, KMC Manipal

Title: "Knowledge, attitude and practices regarding mosquito borne diseases among adults in Udupi taluk: A cross sectional study"

Poster Presentation at Annual National Conference of Indian Public Health Association (IPHA) & First State Conference of IPHA Rajasthan Branch - IPHACON 2017 held from 24th - 26th February 2017 at Jodhpur

Shivani Shenoy K - Department of Pathology, KMC Manipal

Title: A clinico-hematological study of Influenza virus infection in a tertiary care center: A cross sectional study

Poster Presentation at CONNAISSANCE, the first JIPMER International Under-Graduate Medical Conference held from 21st to 23rd of April, 2017, at JIPMER, Puducherry.

Section 3

Novus….
Whats New in ID

1. Articles by McGill Faculty & MU Faculty

1) Title: Bridging The Gap Between Tuberculosis Innovation And Access

Authors: Dr. Madhukar Pai[1], Jennifer Furin, MD., PhD[2]

[1]Professor & Director of Global Health, McGill University, [2]Infectious diseases specialist and medical anthropologist currently a lecturer at Harvard Medical School

Never bring a knife to a gunfight. And yet, the global tuberculosis (TB) community has been doing precisely that for decades -- fighting a protracted battle with antiquated, inefficient tools, including an insensitive diagnostic (i.e. sputum microscopy), a low-efficacy vaccine (i.e. BCG), and drug regimens that have hardly changed for decades.

A critically ill patient, with possible drug-resistant TB being examined by his physician. Unfortunately, this patient did not have access to novel diagnostic testing or treatment and died of his disease. (Photo: Dr Jennifer Furin, with permission from the physician and the patient)

Fighting a battle with outdated tools has cost us dearly. Last year, the WHO declared that the TB epidemic was worse than previously thought, with an estimated 10.4 million new TB cases in 2015. And, despite being a curable infection, 1.8 million people died from TB in 2015, making TB a bigger killer than HIV and malaria combined.

At long last, new diagnostics and drugs have emerged. For diagnosis, we have innovative rapid technologies, including the Xpert MTB/RIF (GeneXpert) test that can rapidly detect TB as well as drug-resistance. For treatment, two new drugs, delamanid and bedaquiline, are now approved for drug-resistant TB), in situations in which there is resistance or intolerance to the other second-line agents or a high risk of treatment failure.

So, we, the TB community, asked for new tools, and new tools have been successfully introduced and policy endorsed. But we are now learning the hard way that availability does not necessarily result in widespread access. In an analysis published in eLife, we summarized the uptake of new tools such as GeneXpert, bedaquiline and delamanid, and identify the main barriers to scale-up and patient access.

Let us begin with access to good diagnosis. Although it is widely acknowledged that rapid, accurate diagnosis is critical for timely initiation of TB treatment, many people with TB struggle to access an adequate initial diagnosis. How else can we explain the fact that an estimated 41per cent of the 10.4 million new cases globally are either undiagnosed or not reported? Even if diagnosed with TB, most patients in high burden settings never receive drug-susceptibility testing to know which drugs they need to be cured. A shocking 75 per cent of the 480,000 cases of drug-resistant TB are either not detected or not reported.

Cumulatively, since the launch of GeneXpert for TB in 2010, over 6500 GeneXpert machines and 23 million test cartridges had been procured in the public sector in 130 of the 145 countries eligible for concessional pricing, as of 31 December 2016. While this trend is promising, on average less than 4 million cartridges were procured per year.

This represents a small fraction of all TB tests conducted in high burden countries, with over 77 million of the older and far less accurate sputum smear tests performed annually in 22 of the highest TB burden countries, and much less than the estimated 10.4 million new patients each year.

With the notable exception of South Africa, which has rolled-out GeneXpert MTB/RIF nationally and accounts for 50 per cent of global GeneXpert cartridge sales volumes, other low and middle income countries are still reliant on insensitive smears. India is an excellent case in point -- despite having the world's largest TB burden, the country is still heavily reliant on smears.

What about new drugs like bedaquiline and delamanid? Although there was initial excitement about the availability of these new drugs after more than a forty-year drought, global scale-up has not kept pace with the dire need for these drugs, and most patients with drug-resistant disease still endure prolonged, toxic therapies with poor outcomes.

As of March 1, 2017 there were 8,195 persons who have ever taken bedaquiline and 496 who have ever taken delamanid under program conditions. How does that compare to the need? The most conservative estimate would be that these medications are needed in approximately 42,000 patients per year, or one-third of the number of persons initiated on MDR-TB treatment annually. Even this generous yardstick of success reveals that more than 75 per cent of patients who need them do not have adequate access to new, potentially life-saving drugs.

But reporting that three out of four patients with drug-resistant TB cannot access the newer medicines they need is setting the bar low. When the number of estimated drug-resistant TB cases -- almost 600,000 per year -- is used, a more startling gap is revealed. This more ambitious benchmark puts the estimated need at 200,000 persons annually, meaning 191,000 people are denied access to these life-saving medications. Again, South Africa is one of the only countries striving to close this access gap: they account for more than 60 per cent of the global bedaquiline use. Other high burden countries are either not using the new drugs or are doing so only in small pilot projects.

So, why are we struggling to provide new tools to our TB patients? There are many barriers to adoption and scale-up of new tools: lack of adequate funding to national TB programs, regulatory hurdles, high cost of tools, restrictive policies, bureaucratic apathy, implementation failures, and, in the case of new drugs, a desire to protect the drug (as opposed to protecting patients) coupled with excessive concern about potential side effects -- a concern that is misplaced given the both the high death rate in people with poorly treated drug-resistant TB and the high rate of serious adverse events (e.g. deafness, psychosis) that occur using the older medications.

What can we do about this disappointingly slow pace of new tool uptake? Some positive examples and potential solutions are emerging. Bold ambitions followed-up with concrete execution can surmount many of the barriers to optimal use of novel diagnostic and treatment strategies. South Africa has been a pathfinder in scaling-up both GeneXpert and bedaquiline, due in large part to a forward-thinking Department of Health that is backed by an ambitious Health Minister and supported by academic and NGO partners. Other countries -- including Georgia, Swaziland, Belarus, France and Kazakhstan -- too have had success introducing bedaquiline, especially when they prioritized patient needs, were flexible with their innovations, and partnered with other supporting groups.

Furthermore, the early success of tools like GeneXpert and bedaquiline have demonstrated the impact of industry engagement in R&D, pushed countries to develop systems for conducting field trials for policy changes, and revitalized front-line health workers and civil society. It is also wonderful to see countries develop more ambitious plans for TB elimination (with a big focus on new tools), with India and South Africa being prominent, recent examples. Achieving elimination, however, requires changing actual policies, practices, and mindsets. Current experience with the new diagnostics and drugs shows we have a long way to go.

The clock is ticking and urgent action is needed if we are committed to ending TB in a mere 13 years. This means embracing innovation, increasing financial investments in TB, addressing implementation gaps, and making sure that new technologies are available in the service of those who are trying to survive. More importantly, the global TB community needs to learn from the HIV/AIDS experience, and not settle for less.

Source: http://www.huffingtonpost.ca/dr-madhukar-pai/tuberculosis-innovation-access_b_16342778.html

2) Title: HIV Self-Testing Can Help End The AIDS Epidemic

Author: Nitika Pant Pai
Associate Professor of Medicine at McGill University, Montreal, and a researcher at the Research Institute of McGill University Health Centre.

December 1st is World AIDS Day. Although much progress has been made in tackling HIV, in 2015, there were over 36 million people living with HIV, and over 2 million people become newly infected with HIV each year.

Saliva-based HIV self test.
Photo by Nitika Pant Pai

But the ambition to end HIV is strong. Two years ago, the UNAIDS announced its 90-90-90 Initiative. By 2020, 90 per cent of all people living with HIV will know their HIV status. By 2020, 90 per cent of all people with diagnosed HIV infection will receive sustained antiretroviral therapy (ART), and 90 per cent of all people receiving ART will have viral suppression. A recent analysis of HIV care cascades from 69 countries showed that no country analysed met the 90-90-90 targets. Diagnosis was the greatest break point globally, but the most frequent key break point for individual countries was providing ART to those diagnosed with HIV.

A diagnosis of HIV today is not a death sentence. There are good diagnostic tools, and effective antiretroviral treatments. Despite these tools, about 40 per cent of individuals living with HIV do not know that they are infected. This has to change. Stigma, long waiting time in clinics, perceived discrimination and marginalization prevent people from coming forward to test in health facilities. In this context, HIV self-testing offers an innovative solution.

What is HIV self-testing? According to WHO, HIV self-testing is a process in which a person collects his or her own specimen (oral fluid or blood) and then performs an HIV test and interprets the result, often in a private setting, either alone or with someone he or she trusts. Results are usually ready within 20 minutes or less, and there are several home tests available on the market (e.g. OraQuick In-home HIV test by OraSure). It is important to note that individuals with positive results on the self-test need to seek confirmatory tests at health centers. A home test alone is not sufficient to confirm HIV.

Research shows that HIV self-testing is feasible, accurate, acceptable to people, and successful in increasing the uptake of testing. Self-testing more than doubles uptake of HIV testing among men who have sex with men and male partners of pregnant or post-partum women. It increases uptake of couples HIV testing among male partners of pregnant or post-partumwomen. Self-testing does not increase HIV risk behaviours or the number of bacterial sexually transmitted infections. There is no evidence of increase in reported social harm, adverse events or behaviours.

This week, the World Health Organization released its guidelines and recommendations in support of self-testing. I had the privilege to contribute to this guideline. WHO now recommends that HIV self-testing should be offered as an additional approach to HIV testing services. With this WHO policy, I hope that health ministries in countries deeply impacted by the epidemic will work to accommodate self-testing within their health systems, and make sure HIV home tests are easily accessible.

However, testing alone is not sufficient to end the HIV epidemic. Linkage to adequate anti-retroviral treatment is an important next step. Many countries impacted by HIV struggle with rapid initiation of ART and retention of patients in care. Innovative technologies and strategies can help overcome such gaps in service delivery.

For example, we have developed an integrated innovative strategy called HIVSmart!, an award winning app-based HIV self-testing strategy with proven proof of concept evidence. This innovation is supported by Grand Challenges Canada (an agency funded by the Canadian government), Department of Science & Technology, South Africa, South African Medical Research Council, and the Research Institute of the McGill University Health Centre.

With innovation, strong partnerships, and continued funding, we can end the AIDS epidemic for good!

The HIVSmart! Mobile app works with saliva-based HIV self-tests and is available in many languages. The smartphone and app strategy engages, interprets and links self-testers to counselling and clinical care. The app is used in conjunction with an approved HIV self-test kit, offering a de-stigmatized, private and confidential testing option for individuals who suspect they are infected with HIV. It is currently being evaluated in South Africa, with an international team of scientists from McGill University and the University of Cape Town.

Without diagnosis, medicine is blind. To end the HIV epidemic, we need people with HIV to be diagnosed. This requires a patient-oriented testing strategy, one that is convenient, private, patient-centric, adaptable, and amenable to integration within existing programs of care. Such a strategy will have far greater success than trying to fit patients into the current testing programs that have failed to engage and diagnose people with HIV. As Dr Margaret Chan, the Director General of WHO put it, "HIV self-testing should open the door for many more people to know their HIV status and find out how to get treatment and access prevention services."

I am excited about the new WHO policy on HIV self-testing, and would like to see the policy implemented on the ground, especially in countries devastated by the AIDS epidemic. I am thrilled that Canada is showing great leadership in the fight against HIV, TB and Malaria, and I am very enthusiastic about the potential of using mobile phones, apps, and innovative strategies to exploit the true potential of HIV self-testing. With innovation, strong partnerships, and continued funding, we can end the AIDS epidemic for good!

Source: http://www.huffingtonpost.ca/nitika-pant-pai-/hiv-self-testing_b_13333368.html

3) Title: Wiping out latent TB infection: how are we going to get there? A review of Alsdurf et al.'s "The Cascade of Care In Diagnosis and Treatment of Latent Tuberculosis Infection: a systematic review and meta-Analysis"

Authors: **Achuthan Aruljothy** MDCM[1], **Faiz Ahmad Khan*** MDCM, FRCP-C, MPH[1,2,3]

[1]Department of Medicine, McGill University Health Centre; Montreal, Canada [2]McGill International TB Centre, Montreal, Canada; [3]Respiratory Epidemiology & Clinical Research Unit, Research Institute of the McGill University Health Centre, Montreal, Canada

*Corresponding author: **faiz.ahmadkhan@mcgill.ca**

Tuberculosis (TB) is the world's leading cause of death from infection. Prevention of active TB through treatment of individuals with latent TB infection (LTBI) is a key component of the World Health Organization's End TB strategy that aims to reduce, by 2035, TB deaths and TB incidence by 95% and 90%, respectively.[1] Modelling analyses have shown that accelerating declines in TB incidence will require "[neutralizing] the reservoir of latent infection" from which future active TB cases emerge.[2] LTBI treatment is very relevant in high TB incidence countries like India, where it should be offered to individuals at elevated risk of developing active TB, including people living with HIV, children under 5, and household contacts of persons with active disease. However, around the world, uptake and completion of LTBI therapy is generally quite poor.[3] In a clever and innovative study published in The Lancet Infectious Diseases, Alsdurf et al. applied the "cascade of care" framework to better understand where patients are lost along the various steps involved in LTBI diagnosis and management. [4] The "cascade of care" concept has been successfully used in HIV management as a way to identify gaps in care spanning from testing, diagnosis, linkage to medical care, and treatment support.[5]

The LTBI cascade of care described by Alsdurf et al. consists of the following: being tested, receiving the test result, and for those testing positive: referral for medical evaluation, completion of the evaluation, recommendation of treatment, acceptance and initiation of treatment, and completion of therapy.[4] Alsdurf et al. estimated the proportion of patients with LTBI completing each stage of the cascade of care by performing a systematic review and meta-analysis of cohort studies published between 1946 and 2015. They included 58 studies of 70 cohorts both high-income countries (59 [n=741,540]) and low-middle income countries (11 [n=7032]).

They found that 71.9% (95%CI: 71.8-72.0) of individuals with LTBI that should have been screened were never tested. Only 43.7% (95%CI: 42.5-44.9) completed medical evaluation, and 35.0% (95%CI: 33.8-36.4) were recommended for treatment. Ultimately, only 18.8% (16.3-19.7) completed treatment. Rifamycin-based regimens had higher initiation and acceptance for LTBI treatment as compared to isoniazid therapy (83% vs 62% of people with positive tests).

Alsdurf and colleagues have provided a framework that will help researchers, clinicians, and policymakers figure out how to make LTBI management more effective. Their analysis makes it clear that important losses occur in the initial testing and referral components of LTBI management. As high TB incidence countries like India begin to implement LTBI programs, ensuring resources are devoted to developing strong referral and retention strategies will help make these programs more effective, and in turn will help these countries accelerate declines in TB incidence.

References

1. Uplekar, Mukund, et al. "WHO's new End TB Strategy." The Lancet 385.9979 (2015): 1799-1801.
2. Dye, Christopher, et al. "Prospects for tuberculosis elimination." Annual review of public health 34 (2013): 271-286.
3. Fiske, Christina T., et al. "Risk factors for treatment default in close contacts with latent tuberculous infection." The International Journal of Tuberculosis and Lung Disease 18.4 (2014): 421-427.
4. Alsdurf, Hannah, et al. "The cascade of care in diagnosis and treatment of latent tuberculosis infection: a systematic review and meta-analysis." The Lancet Infectious Diseases 16.11 (2016): 1269-1278.
5. Wilton, James, and Logan Broeckaert. "The HIV treatment cascade-patching the leaks to improve HIV prevention." CATIE (2013).

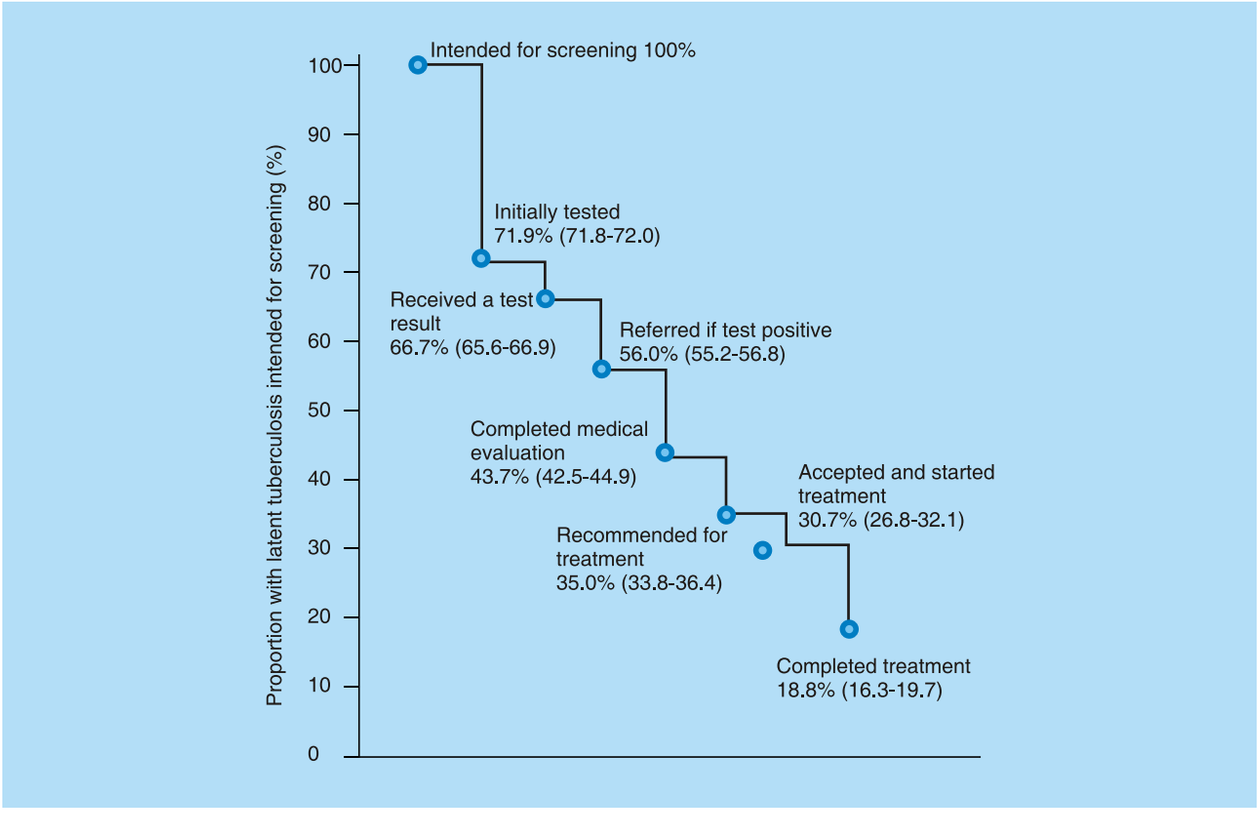


Figure 1: Losses and drop-outs at each stage of the cascade of care in latent tuberculosis.

Numbers in parentheses are 95% CIs. The value for each level is calculated as the product of the value from the preceding step, multiplied by the pool estimate for that step (from fixed-effects analysis). [4]

4) Title: Learning from Sri Lanka's Malaria Elimination strategy

Authors: Animesh Jain[1], U. S. Adiga[2], Arushika Yedla[2], K. V. Kaustabh[2], Aiswarya Nair[2], H. B. Anand[2], Varsha B.[2], S. Sai Sravya[2]

[1]Professor & Head, Community Medicine, [2]Undergraduate MBBS Student, Kasturba Medical College, Mangalore Manipal University, Manipal

Globally, malaria results in high rates of morbidity and mortality. Currently about 36% of the world's population is under the risk of contracting this disease. Annually about 2.5 million cases occur in Southeast Asia alone. It is a disease that can be eradicated completely when proper measures are taken as seen in our neighbouring country Sri Lanka. There are already certain programmes put in place in order to control and possibly eradicate malaria in India. International agencies such as WHO, UNICEF, UNFPA, World Bank along with foreign agencies like SIDA, DANIDA, NORAD, USAID have been instrumental in lending technical and material assistance to these programmes. However, the major challenges hindering the success of these programmes include drug resistant parasites, poor treatment seeking behavior, presence of counterfeit drugs and low coverage of indoor residual spraying with insecticides. The unique strategies that have been implemented by Sri Lanka in successful eradication of malaria have been highlighted in this article.

The various elements focused upon were (i) Epidemiological and Entomological surveillance, (ii) Use of DOTS for control of malaria, and (iii) Prevention of reintroduction. These steps if implemented in India could further aid in treatment and prevention of malaria. Extensive epidemiological and entomological surveillance was a core part of elimination strategy in Sri Lanka. In addition to active and passive case detection, Sri Lanka also applied other forms of case detection like activated passive case detection to identify remaining parasite reservoirs, including use of mobile clinics. Also, the program in Sri Lanka partnered with local NGOs to reach at risk population. Sri Lanka had introduced a web based reporting system for real time surveillance, with mandatory reporting of cases within 24 hr, toll free line to report cases from private sector.

In any particular area, preventing re-establishment of any infectious disease is an important aspect of its eradication. This statement holds true in the case of malaria. Re-establishment of transmission can be defined as the occurrence of three or more indigenous cases of malaria of the same parasite species per year in the same foci for three consecutive years. The risk of reintroduction is high in areas where Anopheles mosquitoes are present along with favourable conditions for the spread of malaria, especially when visited by carriers such as tourists or visitors. Sri Lanka made a successful attempt in preventing reintroduction by the process of screening the travelers visiting the country from high risk or endemic areas. This was combined with treatment and follow-up of travelers and risk groups. Sri Lanka also kept the data of outbreaks updated with respect to the patterns and status of malaria in the neighboring countries. This helped in the formation of appropriate and effective drug policies.

Reference:

Larson E., Gosling R., Abeyasinghe R. Eliminating malaria: Following Sri Lanka's lead. BMJ 2016;355:i5517

5) Long term use of combination antiretroviral therapy: unequivocal survival benefits versus metabolic risks

Author: Dr Vasudeva Acharya
Additional Professor, Department of Medicine, KMC Manipal

Combination antiretroviral therapy (cART) is the mainstay of treatment for patients living with HIV/AIDS. The aim of cART is to suppress the viral replication and thereby improving the function of immune system evidenced by reduction in circulating viral load and improvements in CD+ cell count. Survival benefits and improvements in quality of life from long term cART have been unequivocally proven.

However we need to know that antiretroviral medications are to be taken for unlimited period of time according to present day's science and obviously we expect some side effects over period of time. Even though the newer drugs have better safety margin when compared to older drugs, they do have some issues when consumed for long time. There is no strong evidence to prove that the reconstituted immunity by cART is better or at least equal to native immunity although patients achieve good CD+ cell count.

There are reports of multiple metabolic abnormalities including dyslipidemia, lipodystrophy, and dysregulations in glucose metabolism and accelerated atherosclerosis in patients consuming antiretroviral medications. This increased prevalence has been reported across the continents by different authors. A study from Italy reports the prevalence of hypertension as 42.3% among the patients receiving cART. The presence of obesity and lipodystrophy is also reported to be high in patients on cART. We observed a statistically significant higher prevalence of glucose intolerance (particularly impaired fasting glucose) among our patients receiving cART. The higher prevalence of different components of metabolic syndrome has been reported by different researchers.

Another issue among the patients receiving tenofovirdisoproxil (TDF) is its renal and bone toxicity when consumed for long time, although it occurs in very small number of subjects. Tenofoviralafenamide (TAF) is an alternative to TDF, which has less toxicity, however is not available in many countries. The unconjugated hyperbilirubinemia is commonly observed in patients receiving protease inhibitors and it should not be matter of concern.

A slightly higher prevalence of metabolic abnormalities in patients receiving cART should not preclude them from continuing therapy, as optimal viral suppression is the primary goal of HIV/AIDS management. However it would be a prudent practice to regularly screen (and if necessary intervene) them for metabolic abnormalities as these factors contribute to the cardiovascular morbidity and mortality.

6) Prophylactic platelet transfusion in dengue fever: is it really necessary?

Author: Dr Chandrashekar UK
Associate Professor, Department of Medicine, KMC, Manipal

Dengue fever is a major public health problem in India caused by flavivirus. It can present with a wide spectrum of clinical manifestations ranging from a simple febrile illness to severe features of plasma leakage leading to shock. Thrombocytopenia is a common cause of concern in dengue infection to both patients and attending clinicians. The release of pro-inflammatory cytokines in patients with dengue infection has cascading effects on endothelial cells lining blood vessels. The sticky activated endothelium causes platelets to adhere to it, thus decreasing the number of platelets in the circulation and possibly is a major mechanism of thrombocytopenia in dengue infection. Bleeding due to dengue fever may result from a combination of factors such as thrombocytopenia, coagulation defects and vasculopathy. It appears dangerous to transfuse platelets to a patient with dengue, in whom the activated sticky endothelium traps platelets in the microcirculation and can lead to organ system failure. Although patients with lower platelet counts are more likely to receive platelet transfusion, they are less likely to show an appropriate response. Platelet transfusion has not been shown to be effective in preventing or controlling haemorrhage but may be warranted in patients with severe thrombocytopenia (<10,000/mm3) and active bleeding. Prophylactic platelet transfusions in stable patients with dengue fever may delay normalization of platelet counts and may actually increase the duration of hospitalization. Therefore, platelet transfusion should not be routinely done in patients with

severe thrombocytopenia in the absence of active bleeding in dengue infection. National Vector Borne Disease Control Programme (NVBDCP) does not recommend prophylactic platelets even at <20,000/mm^3. NVBDCP recommends prophylactic platelet transfusion only if the platelet count is <10,000/mm^3 in absence of bleeding manifestations. In case of systemic massive bleeding in dengue fever, platelet transfusion may be needed in addition to red cell transfusion.

2. CASE REPORTS

1) Title: A case of Tetanus in a Toddler

Authors: Suchetha Rao[1], Kamalakshi Bhat[2], Jayashree K1, Nutan Kamath[3]

[1]Associate Professor, [2]Professor and Head, [3]Professor and Unit Head, Department of Pediatrics, KMC, Mangaluru

Introduction

National immunization programs have successfully decimated the number of tetanus infections during the previous four decades. However, the widespread distribution of C. tetani spores in our environment in combination with the lack of herd immunity still leads to incidental tetanus infections in unimmunised individuals. We report here a case of tetanus following circumcision in a toddler who was not immunised.

Case report

2 year 6 months old boy presented to emergency department with complaints of stiffness of limbs and neck with difficulty in opening mouth for three days. Child had not received any immunisation except BCG vaccine. He underwent circumcision 2 weeks back in a local hospital. On examination his heart rate was 136 bpm, respiratory rate: 40/min, and blood pressure - 118/76 mmHg (> 95th centile for age, sex and height-hypertension). Child was conscious, he had risus sardonicus, trismus and opisthotonic posturing. Episodic spasm of the muscle triggered by auditory stimulus was noted. Clinical diagnosis of tetanus was entertained. He was treated in pediatric ICU with IV crystalline penicillin and IV diazepam. As child had repeated episodes of laryngospasm with desaturation, he was intubated and mechanically ventilated. Vecuronium (muscle relaxant) and diazepam infusion was started subsequently. Hypertension was controlled with Nefidipine. Child underwent tracheostomy and required ventilator support for 35 days. Persisting opisthotonus and generalised spasms necessitated increasing diazepam dose. Optimal control was obtained with diazepam dose of 180mg/day. Nutritional support was maintained through nasogastric tube feeding. The patient's condition improved gradually. Tracheostomy closure was done on day 37 of hospitalisation. Child was discharged after 45 days of hospitalisation after vaccination against tetanus. At the next outpatient follow up child had normal neurological examination.

Discussion

Tetanus is rare in countries with national immunisation program. When it does occur the associated autonomic dysfunction is a challenge for management. Hypotension, arrhythmia and cardiac arrest are important predictors of fatality. The most contributing factor to reduce mortality from generalized tetanus is treatment in pediatric intensive care units (ICU) with aggressive sedation protocols with advanced ventilatory support. Analgesics, sedatives, anticonvulsants and muscle relaxants are initially used. Benzodiazepine derivatives are the mainstay for sedation in the ICU during the course of generalized tetanus. This boy required high doses of diazepam to control the generalised spasms. This case also reveals that there is still more to be done regarding the implementation of a vaccination program to achieve maximum coverage in the target population.

2) Title: An unusual case of Nephrotic syndrome

Authors: Basavaprabhu A[1], Himamshu A[2], Garry V P[2]

[1] Associate Professor in Department of Medicine, Kasturba Medical College, Mangaluru

[2] Post graduate in Department of Medicine, Kasturba Medical College, Mangaluru

Introduction: Amyloidoses comprises of a group of disorder where soluble protein aggregates are deposited in extracellular tissue leading to organ dysfunction. AA variant of amyloidosis occurs in a setting of long standing inflammation, commonly due to rheumatoid arthritis, inflammatory bowel disease, Familial Mediterranean Fever bronchiectasis, chronic osteomyelitis.[1] Here we have 19 year old male who presented with signs of nephrotic syndrome which turned out to be AA variant of amyloidosis due to post tubercular bronchiectasis.

Case report: A 19 year old male presented with swelling of face and lips after taking amoxycillin-clavulunate for URTI. He had fever, productive cough 3 days prior to presentation. He had similar complaints during episodes of RTI in past 6 months which was attributed to antibiotic hypersensitivity. There was no history of breathlessness, orthopnea, paroxysmal nocturnal dyspnoea, oliguria or hematuria. On examination there was bilateral pitting edema with periorbital edema. On auscultation there were bilateral crepitations. On investigating he had raised ESR (51), low albumin (1.3) modest elevation in WBC count(11,600). Creatinine (0.3), urea (12) were normal. TSH, liver enzymes were within normal limits. 24hour urine protein was 3723.2mg. ASO titer, C3 levels were normal. Chest X ray was normal and ultrasound showed mild splenomegaly. Negative ANA, cANCA, pANCA, HCV, HbsAg, HIV lead to renal biopsy to look for etiology. Renal biopsy was planned but deferred since patient had purulent expectoration with elevated counts. He was discharged after being treated with IV antibiotics. He was re-admitted after a week and renal biopsy was done. While biopsy report was awaited serum electrophoresis was done which was normal. Since he had persistent coarse crepitations, high resolution CT of chest was done, which revealed right middle and left lingular bronchiectasis. On detailed probation patient revealed history of sputum positive tuberculosis which he had concealed earlier because of fear of denial of medicare. He had completed treatment for the same. This history explained the findings on HRCT. Meanwhile biopsy report was available and showed extensive amyloidosis. Immunofluorescence studies was negative for IgG, IgA, IgM, C3, C1q.Congo red positive stain with apple green birefringence was noted. The subtyping of filament was found to be AA type. A final diagnosis of nephrotic syndrome secondary to amyloidosis due to post tubercular bronchiectasis was made.

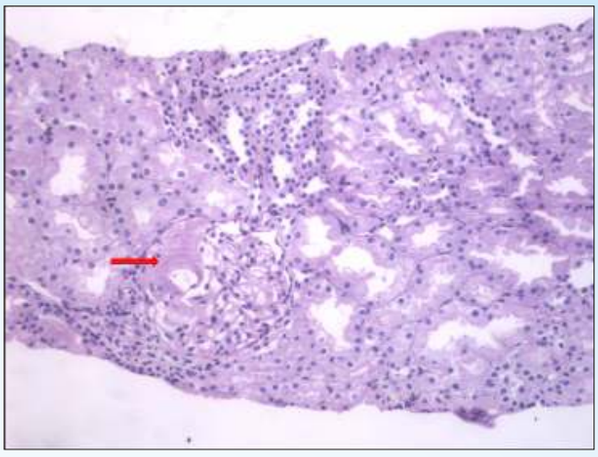
Discussion: It is important to suspect amyloidosis in patients who present with nephrotic sydrome post tuberculosis. Low index of suspicion along with the obstacle of renal biopsy usually leads to non diagnosis of this condition. Early renal biopsy helped us in the diagnosis in this case. A study done by Ramakanth Dixit et al revealed that the mean time between diagnosis of tuberculosis and first evidence of amyloidosis is 27.1 months.[2] This patient presented to us approximately 2 years after diagnosis of tuberculosis. We ruled out common causes of secondary amyloidosis which are rheumatoid arthritis, juvenile idiopathic arthritis, inflammatory bowel disease. Presence of bronchiectasis with negative ANA, pANCA, cANCA, RA factor lead us to think in terms of post tubercular bronchiectasis renal amyloidosis. Prior to biopsy other differentials for nephrotic syndrome were considered including IgA nephropathy, membranous nephropathy, adult onset minimal change disease, FSGS, MPGN. But negative immunoflourescence along with apple green birefringence on congo red staining confirmed the diagnosis of amyloidosis. Being a rare entity diagnosis of this condition requires high index of suspicion and facility to do renal biopsy. Since controlling inflammation is of utmost importance in cases of amyloidosis in order to prevent progression, early diagnosis has a crucial role, which was achieved in this case.

Conclusion: Nephrotic syndrome post tuberculosis can remain undiagnosed. High index of suspicion and early renal biopsy is key in management of such cases.

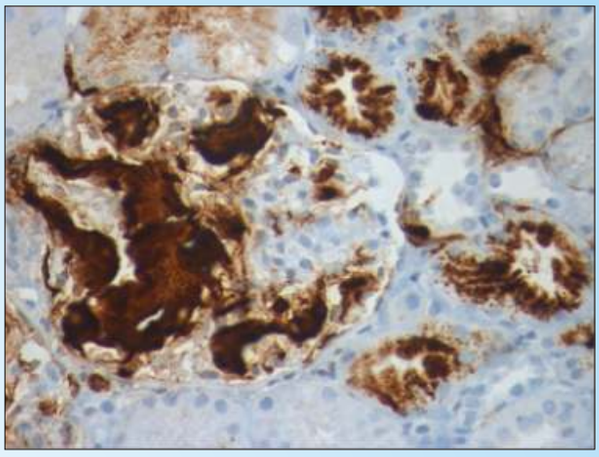
References:

1. Laura M. Dember, J Am Soc Nephrol17: 34583471, 2006. doi: 10.1681/ASN.2006050460

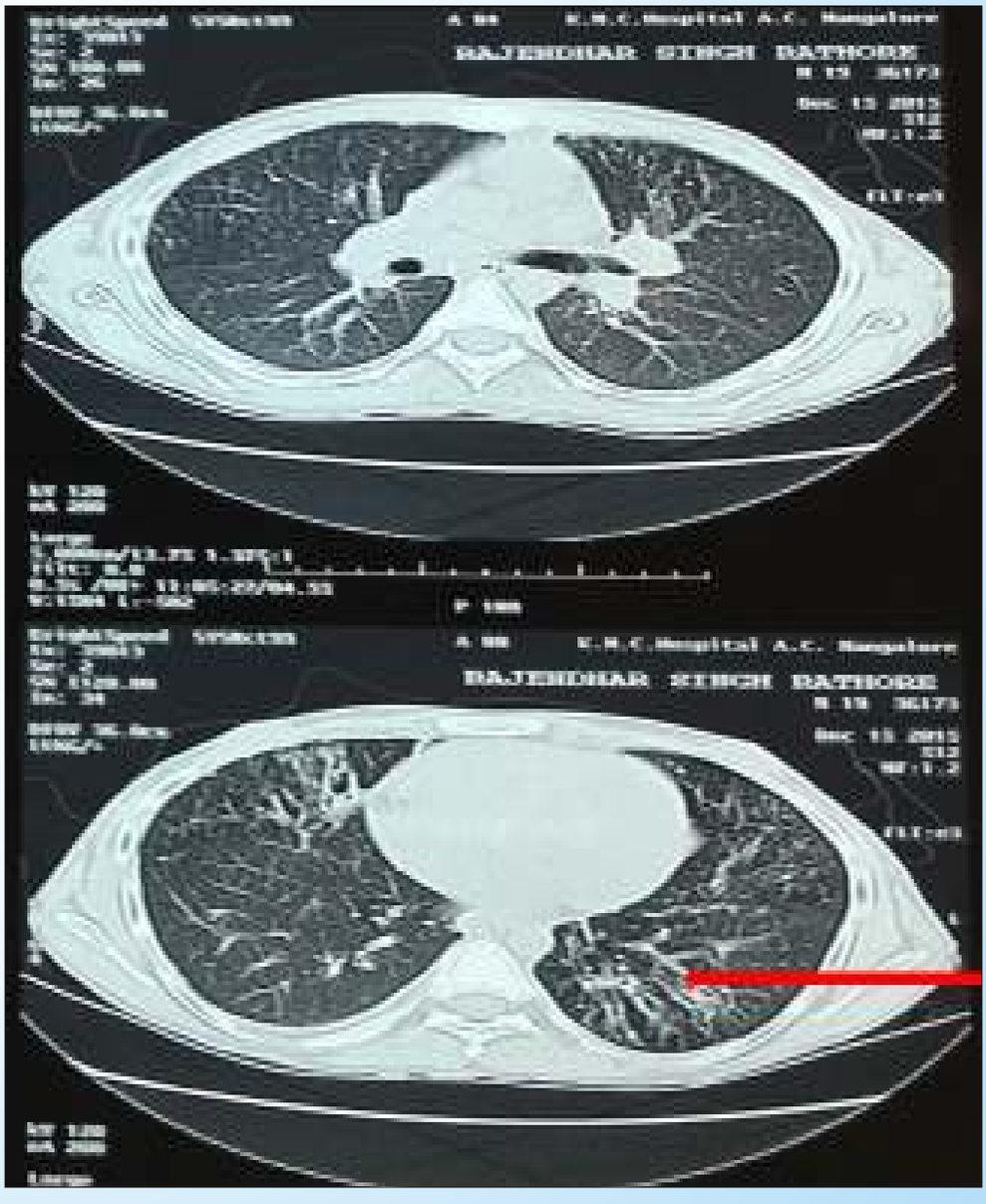
2. Dixit R et al., Clinical profile of patients having pulmonary tuberculosis and renal amyloidosis, Lung India 26;2: 41-45, 2009



Renal biopsy - H/E staining



Immunohistochemistry - Amyloid A



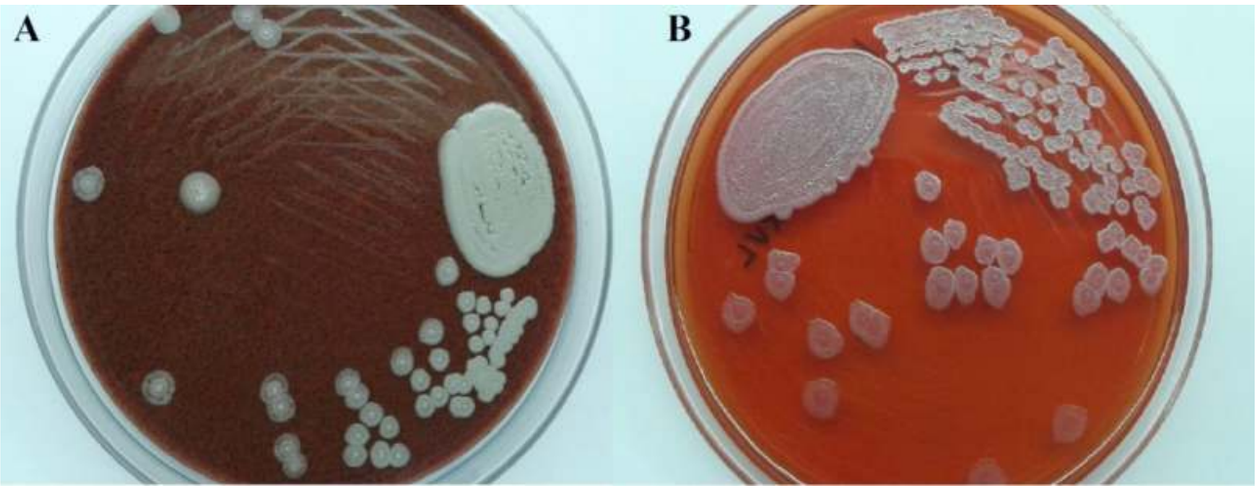
Bilateral bronchiectasis

3) Title: Melioidosis presenting as intracranial abscess

Author: Deepak Madi
Associate Professor, Department of Medicine, Kasturba Medical College, Mangalore

Melioidosis is an emerging infection in India. Melioidosis is caused by Burkholderiapseudomallei. Diabetes, chronic kidney disease and alcohol consumption are the usual risk factors. It has varying clinical manifestations, pneumonia being the most common presentation. Central nervous system (CNS) melioidosis is rare. A 54-year-old gentleman presented with fever and headache of five days duration. A 3× 2 cm swelling was present over the right frontal region. Investigations revealed fasting blood sugar of 251mg/dl and glycosylated hemoglobin of 11.9%.On the fourth day of admission he had a seizure. MRI brain showed an extra-calvarial soft tissue collection in the right frontal region. A subdural collection in the frontal region with meningeal enhancement was also seen. Incision and drainage of extra-calvarial collection was done and pus was sent for culture. Our patient was started on parenteral meropenem. Pus culture grew B pseudomallei [Figure 1]. Blood culture did not reveal any organism. Meropenem was continued for four weeks. He was discharged on oral trimethoprim/sulfamethoxazole and doxycycline and he made a complete recovery. Melioidosis mimics tuberculosis especially in our country. Melioidosis should be a differential diagnosis of intracranial abscess in India.

Figure 1: Colonies of B pseudomallei on chocolate (a) and MacConkey's agar plate(b).



3. QUIZ

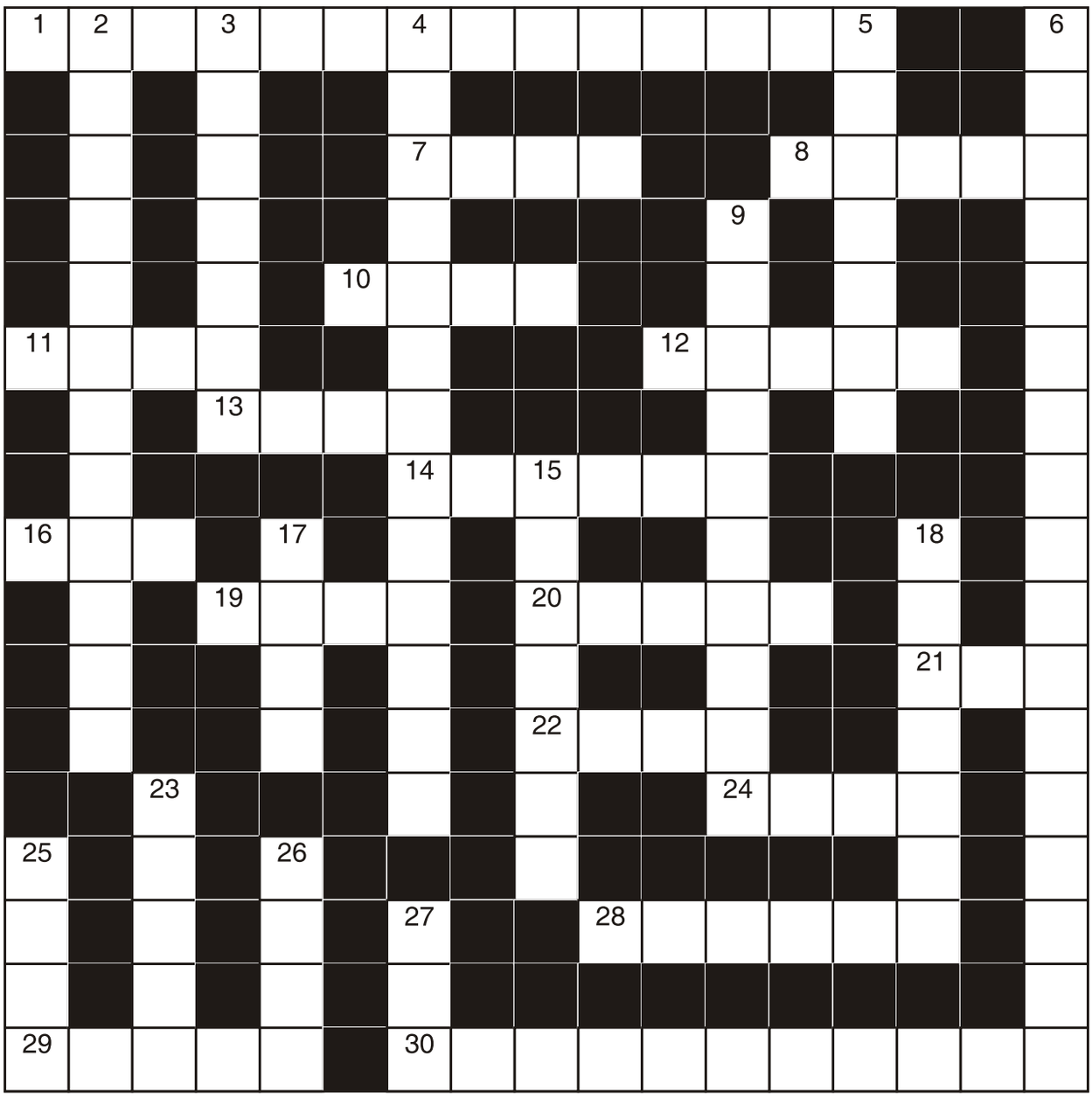
Easy As Can Be: A Quiz on All Things Here and There, From Anything Remotely Connected to the Interesting World of Medicine.

1. He was a young registrar in Internal medicine in Royal Perth Hospital, Australia where he met his professor who was a pathologist working with gastritis. This Australian registrar drank a culture of the organism he was working on, developed gastritis thus fulfilling Koch's postulates and was awarded the Nobel Prize in Medicine along with his Professor in 2005 for his discovery of this organism and its association with gastritis. Name the duo and the organism.
2. We need to be grateful to this Austrian Obstetrician who discovered the simplest way to restrict transmission of hospital infections. Unfortunately, skepticism and criticism for his path breaking discovery saw him committing suicide. Name this person and the simplest way to prevent transmission of Health Care Associated Infection.
3. This professor and dean of faculty of sciences in Lille, France, was requested by the father of one of his students to solve the problem of poor yield of alcohol from Beet sugar. His experiments led him to discover that it was living things that cause fermentation. He was the first person to vaccinate Joseph Mister on 6th July 1885. His Vaccine also saved the lives of numerous Russians. Name this scientist and the vaccine.
4. India's most famous physician who was also the chief minister of a state and awarded the Bharat Ratna. An annual award in India is constituted in his name for work in the area of medicine, politics, science, philosophy, literature and arts. Name this legendary physician, distinguished politician and Philanthropist.
5. A scientist with a PhD in molecular Biology, a failed writer who also dabbled in restaurants, before finding his "Eurekha moment like a flash of lightening" on a long drive with his girlfriend- at mile marker 46.7 on highway 128. In his Nobel Prize lecture, he remarked that the success didn't make up for his girlfriend breaking up with him shortly before. Name the scientist and what was his invention.
6. I am neither a bacteria nor a virus. I can produce strange incurable CNS diseases and the mysteries about me are still unravelling. It's very difficult to destroy me and my discovery gave my discoverer the Nobel Prize. Name me and the Nobel Prize winner for my discovery.
7. The 1st Indian Woman doctor in India who had a foreign degree but who unfortunately could not serve her people due to her untimely death from tuberculosis at the age of 22. In a Cemetry in Newyork, a headstone summarises her life- First Brahmin Woman to leave India for an Education. Name this female doctor.
8. Ringa Ringa Roses, Pocket full of Poses, Hush-a Busha, All fall down- A very popular Nursery rhyme. Unfortunately this Nursery Rhyme is associated with a disease responsible for pandemics and high mortality. Name the disease and the causative organism.
9. He was born in India to an army general the same year as that of the sepoy mutiny. He had varied interests in poetry, literature, mathematics and music. He wrote several novels like The Child of the Ocean, Spirit of the Storm, and The Revels of Orsera. He won the Nobel Prize for his research in a disease which we are still grappling with especially in Mangalore. "With tears and toiling breath, I find thy cunning seeds, O million-murdering Death." (Fragment of poem written by this physician in August 1897, following his discovery). Name this versatile physician.
10. Broad street pump is a memorial for which famous epidemiologist and what did he do here?
11. The name of this parasite refers to it being called as the little dragon of the city in which it was discovered because of the havoc it caused in this famous city of the Arabian Peninsula. It was discovered by Carolus Linneaus. Name the parasite and disease.
12. She died of cervical cancer but her cell lines have immensely helped in production of vaccines and medical research. Can you name this person?

Answers to the quiz given on page no 34

Compiled by: **Dr Shrikala Baliga**, Core Committee Member, MAC ID, Deputy Director, Quality & Compliance, Mangalore Campus & Professor of Microbiology, KMC, Mangaluru

4. Crossword- To Keep the Grey Matter Ticking….



Clues:

Across:

1 Ac. A parasitic disease that has been eradicated in India (14)

7 Ac. Viral disease which made a splash in the year 2002 in Guangdong Province China-Abbreviation (4)

8 Ac. Childhood infection characterized by harsh barking cough (5)

10 Ac. Virus that became famous during the world Cup in Brazil in 2016 (4)

11 Ac: Tetanospasmin acts on this receptor- Abbreviation (4)

13 Ac. Bacillus cereus food poisoning is associated with this (4)

12 Ac,16Ac. Provisional diagnosis of Cryptococcal meningitis (5,3)

14 Ac,17D. This syndrome is attributed to the infection of the geniculate Ganglion by HHV3(6,4)

16 Ac. See 12 Ac

19 Ac. Enlarged tender lymph node (4)

20 Ac. This case is very important in investigations for Outbreaks (5)

21 Ac. Famous Indian Physician, born on July 1st and Doctors Day is celebrated in his memory (3)

22 Ac. Hordeolum (4)

23 Ac. This syndrome occurs after a viral infection and is usually associated with use of aspirin (4)

28 Ac. John_____ Nobel Prize winner who worked on Polio and Measles virus (6)

29 Ac: A virus that caused an "unprecedented epidemic" in Africa during 2014-2016(5)

30 Ac. Derived from the Greek word which means Distemper of the Asses (11)

Down

2 D. Sporothricosis is often refered to as---------- ---------- disease (4,8)

3 D. These swellings are a sign of infection with Loa Loa (7)

4 D. Infection caused by larval form of Taeniasolium (13)

5 D. Prion Disease (7)

6 D. Pathognomonic structures seen in chromoblastomycosis (6,5,6)

9 D. Another name for Dengue (5,5)

17 D. See 14 Ac

15 D. Infection caused by Maggots (8)

23 D. Name of this virus is derived from the tissue it was first isolated in (5)

27 D. This drug resistant gene made our country very famous (for the wrong reasons). Abbreviation (3)

18 D. See

25 D, 25D, 18D. Malignant Pustule: ---------- ---------- Disease (4,7)

26 D. Common drug resistance in a Gram positive organism. Abbreviation (4)

Answers to the crossword given on page no 34

Compiled by: **Dr. Shrikala Baliga, Dr. Ashwini Hegde, Dr Suchitra Shenoy, Dr Sevitha Bhat**
Department of Microbiology, KMC Mangaluru

Section 4

Pictus.....
MAC ID in Pictures
Photo Gallery

MAC ID Inaugural Symposium

13th August, 2016

Tropical Medicine Update - 2016

30th November, 2016

World AIDS Day

1st December, 2016

Health Education at school

Handing over of educational poster on HIV transmission and prevention

Display of educational material on HIV transmission and prevention at Kasturba Hospital, Manipal

Display of educational material on HIV transmission and prevention at Kasturba Hospital, Manipal

Drug Resistant TB Symposium - Challenges & Opportunities

21st December, 2016

McGill Summer course

12th -23rd June, 2017

Left to Right: Dr Momar Nado, Dr Cedric Yansouni, Dr Madhukar Pai, Dr Suchitra Shenoy, Dr Chaitanya Tellapragada, Dr Basavaprabhu Achappa, Dr Michael Libman

Answers to crossword:

- **Across:**
- 1Ac: Dracunculosis, 7Ac:SARS, 8Ac:Croup, 10Ac:Zika, 11Ac: GABA, 13Ac:Rice, 12Ac,16Ac: India Ink, 14Ac,17D: Ramsay Hunt, 19Ac:Bubo, 20Ac:Index, 21Ac: Roy, 22Ac: Stye, 23Ac: Reye, 28Ac: Enders, 29Ac: Ebola, 30Ac: Meliodiosis

- **Down**
- 2D: Rose Gardners, 3D: Calabar, 4D: Cysticercosis, 5D: Scrapie, 6D: Copper Penny Bodies, 9D: Dandy Fever, 15D: Mysiasis, 23D: Adeno, 27D: NDM, 25D, 18D: Hide Porters, 26D: MRSA

Answers to Quiz:

1. Dr. Robin Warren and Dr. Barry Marshall. *Helicobacter pylorii*
2. Dr. Ignaz Semmelweiss and Handwashing
3. Louis Pasteur and Rabies Vaccine
4. Dr. Bidhan Chandra Roy
5. Dr Kary Mullis and Polymerase Chain Reaction
6. Prion. Stanley Prusiner
7. Dr Anandi Bai Joshi
8. Pneumonic Plague. *Yersenia Pestis*
9. Sir Ronald Ross.
10. John Snow. He broke the handle of the pump to demonstrate that it could stop the spread of cholera
11. *Dracunculus medinensis and* Medina
12. Henrietta Lacks

Sponsorship

We thank our Sponsors who have contributed to
Manipal Infectious Diseases Conference 2017

Cipla Limited - Critical Care Division

Cipla Limited - HIV Division

Emcure Pharmaceutical Ltd

Sanofi India Limited

Pfizer Limited

GlaxoSmithKline

Microbiological Laboratory, Coimbatore

Opportunities for MAC ID members

- Opportunity to apply for seed grants from MAC ID
- Student fellowships: funding for students who work on projects and/or to attend national conferences and workshops
- Mentoring opportunity: to receive highly qualified trainees from McGill, or to send Manipal University trainees to McGill for specific skills/training
- Opportunity to participate in McGill Summer Institute courses
- Collaborate on MAC ID research projects and international grant proposals (e.g. CIHR, Gates, NIH)
- To learn about potential grant opportunities in the area of ID
- Members and their ID research will be showcased on the MAC ID website
- Conducting/ supporting infectious disease conference/training in Manipal/Mangalore campuses
- Conducting MAC ID annual research day