

Best practice: Antibiotic Stewardship and Prevention of Infection in Communities (ASPIC) Club, YCM Chapter: A community service-oriented club at Yuvaraja's College, Mysore

Best practice

1. Title of the Practice:

Antibiotic Stewardship and Prevention of Infection in Communities (ASPIC) Club, YCM Chapter: A community service-oriented club at Yuvaraja's College, Mysore

https://sites.google.com/view/deptofmolecularbiologyycm/activities/aspic-clubs_ycm

2. Objectives of the Practice:

- To build this club as a forum for science outreach and public engagement.
- To provide students an opportunity to volunteer, explore and learn in the areas of science communication and public engagement.
- To be a part of a global network of stakeholders working on antibiotic stewardship and infection prevention.

3. The Context:

Sustainability of Anti-biotic resistance mitigation efforts is possible through sensitized student networks. To promote youth engagement in these efforts, Antibiotic Stewardship and Prevention of Infection in Communities (ASPIC) Clubs Network was conceived. The objective is to initiate a public cause and create social consciousness among people on anti-microbial resistance and its impact on human life through varied ways.

The students of the Department of Molecular Biology, Yuvaraja's College took the initiative to start the Antibiotic Stewardship and Prevention of Infection in Communities (ASPIC) Club, Yuvaraja's College Chapter. The club was inaugurated on 5th August 2020 under the guidance of Prof. N.S. Devaki, the

Course Coordinator of the Department of Molecular Biology. Seeded by ReAct, Asia Pacific, the club involves students to work for one of the most pressing public health concerns and mitigate the threat of anti-microbial resistance in communities. The primary idea is that when students involve themselves in working against antibiotic resistance, there can be more vibrant research and better community awareness. The main objective of the club is to have activities at the college and community levels.

The misinformation being spread during COVID19 and noticing about ASPIC Clubs Network on twitter provoked a group of enthusiastic master's students who planned and set the outline for this. From then platform is promoting awareness in various aspects of antibiotic resistance & its impact on global health, pathogens, infections and its control. The idea of ASPIC Clubs Network is to promote a public cause and create social awareness among community on anti-microbial resistance through different modes. More details about the ASPIC Clubs Network, Kerala can be found here: (<https://www.aspic.in/about-aspic>). The club's activities are coordinated by ReAct Asia Pacific is headquartered at the Christian Medical College, Vellore, Tamil Nadu (<https://www.aspic.in/react-asia-pacific>) which is a division of the ReAct Network (<https://www.reactgroup.org/>) stationed at the University of Uppsala, Sweden.

4. The Practice

Since the club was inaugurated during COVID19 pandemic, most of the activities went online. Major objective of the club is to create awareness among general public about antibiotics & antibiotic resistance infections its control & prevention. For this we started by involving students of non-Life Sciences streams to make them aware of ill impact of antibiotic resistance on global health and how we can contribute to reduce its burden. Our future target includes programs to sensitise about antimicrobial resistance and one health concept among school children (since they are the future generation of the society), farmers, medical practioners and general public. Club is getting ready with a street play on Anti-Microbial Resistance (AMR) and Infection control and shortly it is going to be played for public awareness.

Uniqueness: active presence in all social media, creation of awareness materials (social media posts and videos) in regional language – *Kannada* to create wider audience and reach out to public effectively.

5. Evidence of Success

Details can be found here:

https://sites.google.com/view/deptofmolecularbiologyycm/activities/aspic-clubs_ycm

- Inauguration with a webinar by 'Antimicrobial Resistance - A Ticking Time Bomb' by Dr. M N Sumana of JSS Medical College attended by around 120 participants during the pandemic
- Online webinars. 1.Vaidya. Prof. T. R. Shantala Priyadarshini entitled Ayurveda - A Strengthening Key to Lower Sepsis and Antibiotic Resistance and 2. by Dr. Anuradha K., Mysore Medical College, Mysuru on 06th October 2020 on 'Can Individual help in the prevention of Antimicrobial Resistance'?
- Student's online poster competition on AMR (supported by ASPIC Clubs Network's seed grant) and this was conducted in two categories namely UG and PG.
- Antimicrobial Awareness Week: One webinar & Interaction with IISER Tirupati students about their iGEM project related to antibiotic residues in environment
- Video podcasts on – COVID19 related AMR issues and infections
- Video podcast discussing with IISER Kolkata students about their iGEM 2021 project pertaining to diagnosis of bovine bacterial infection
- Translation and voice over to a video from English to Kannada explaining AMR and about safe consumption of antibiotics entitled “Superheroes against Superbugs team”
- Displayed drawings/comics related to AMR and conducted an awareness quiz program entitled ESKAPE in our college during college annual science and culture fest – YUREKA2022.

6. Problems Encountered and Resources Required

The funding in the form of seed grant we receive from network is minimum for some of the wider activities in our future goals like public outreach of local government schools, communities involved/concerned with antibiotic resistance: medical practitioners, pharmacists, farmers and general public. Also, the less awareness about science communication and public engagement among science students and teachers is a major hindrance to involve wide set of volunteers with active participation. This can be overcome by building connections/interaction sessions with professional and passionate science communicators.

7. Notes (Optional)

There is a requirement for establishing this type of club in other educational institutes too. We already have had a global pandemic of COVID 19 from 2020 to date resulting in the death of more than 68.7 lakh people globally. AMR can cause more deaths if this is not abated and hence serious measures to contain this must be made at global level. This can be done “think locally and act globally”. Thus, Yuvaraja’s College (Autonomous) has established Antibiotic Stewardship and Prevention of Infection in Communities (ASPIC) Club, YCM Chapter: A community service-oriented club at Yuvaraja’s College, Mysore.



UNIVERSITY OF MYSORE
Yuvaraja's College (Autonomous)
(A Constituent College with Potential for Excellence)
JLB Road, Mysuru - 570 005
NAAC SSR 4th Cycle (2017-2022)



7.2 A -Best practice 1: ASPIC CLUB, YCM Chapter

The objective of 'Antibiotic Stewardship and Prevention of Infection in Communities' (ASPIC) Club, YCM Chapter: A community service-oriented club at Yuvaraja's College, Mysore is to build this as a forum for science outreach and public engagement; to provide students an opportunity to volunteer, explore and learn in the areas of science communication and public engagement; and to be a part of a global network of stakeholders working on antibiotic stewardship and infection prevention.

Report on the Virtual Inauguration of the Antibiotic Stewardship and Prevention of Infection in Communities (ASPIC) Club – Yuvaraja's College Chapter and the first webinar 'Can I help in the prevention of Antimicrobial Resistance (AMR)?' are given below

UNIVERSITY OF MYSORE
YUVARAJA'S COLLEGE
(A CONSTITUENT AUTONOMOUS COLLEGE OF THE UNIVERSITY OF MYSORE)
Re-Accredited 'A' Grade by NAAC with CGPA of 3.34 & College with Potential for Excellence
JLB Road, Mysuru - 570 005

Department of Molecular Biology

Antibiotic Stewardship and Prevention of Infection in Communities (ASPIC) Club

VIRTUAL INAUGURATION OF ASPIC CLUB – Yuvaraja's College

Dr. B N Yashodha
Principal, Yuvaraja's College,
Mysuru (YCM)

Dr. H C Devaraje Gowda
Administrative Officer, YCM

Dr. Devaki N S
Course Coordinator
Dept. of Molecular Biology
YCM

Click here to join
 <https://meet.google.com/aiv-ggrw-ymt>

Contact: 99645 48457 (Sachin)
88610 47549 (Sanjana)

--- Inaugural Lecture ---
Antimicrobial Resistance - A Ticking Time Bomb
by
Dr. Sumana M N
Professor, Department of Microbiology,
JSS Medical College, JSS Academy of Higher Education and Research,
Mysuru

05 August 2020 (Wednesday)
Time: 11 AM

Dr. Philip Mathew
Public Health Consultant,
ReAct Asia Pacific

Vishal Philip Sam
Consultant,
ReAct Asia Pacific

Lijo Cyril
Junior Consultant in
Social Sciences,
ReAct Asia Pacific

ASPIC_YCM
f i t
ASPIC YCM Chapter, Mysuru



UNIVERSITY OF MYSORE



YUVARAJA'S COLLEGE (Autonomous)

(A CONSTITUENT AUTONOMOUS COLLEGE OF THE UNIVERSITY OF MYSORE)
Re-Accredited 'A' Grade by NAAC with CGPA of 3.34 & College with Potential for
Excellence

JLB Road, Mysuru – 570 005

Department of Molecular

Biology

Antibiotic Stewardship and Prevention of Infection in Communities (ASPIC) –YCM Chapter

08th August 2020

Report on the Virtual Inauguration of the Antibiotic Stewardship and Prevention of Infection in Communities (ASPIC) Club – Yuvaraja's College Chapter

Date: 05th August
2020 at 11 am Virtual
platform: Google
Meet

The idea of Antibiotic Stewardship and Prevention of Infection in Communities (ASPIC) Clubs Network is to promote a public cause and create social awareness among the community on anti-microbial resistance through different modes. It is an honour and privilege for Yuvaraja's College, Mysuru (YCM) to be a part of this network. The ASPIC Club Yuvaraja's College Chapter was inaugurated virtually via Google meet on 5th August 2020. Below is a report about the overall session.

Around 120 people joined the inaugural program virtually. The event took off by the greetings and a short introduction about ASPIC was by the moderator of the event, Syed Shahid Afridi followed by welcome address by Ms. Sanjana Shajan, Guest faculty, Dept. of Molecular Biology, YCM. Later, Dr. B N Yashodha, Principal, YCM addressed the session. The keynote address was delivered by Dr. N S Devaki, Associate Professor & Course-coordinator, Dept. of Molecular Biology, YCM. Following this, Dr. Phillip Mathew, Public Health Consultant, ReAct Asia Pacific gave a brief introduction to ASPIC Clubs Network and its main aim of creating

awareness about AMR among the public through students. He also talked about the strategic priorities of International academic network-ReAct (2019-2022) & also its mandates. After this, the club was declared open by Dr. Phillip Mathew and Dr. B N Yashodha, Principal, YCM. Following the inauguration, Neetha Thilosh briefed about ASPIC – YCM Chapter and also prospective activities of the club.

Later, Subiya Khan introduced our Chief Guest Dr. M N Sumana, Professor, Dept. of Microbiology, JSS Medical College, Mysuru. Dr. M N Sumana delivered a beautiful innovative inaugural lecture on “Antimicrobial Resistance – A ticking time bomb”. Some highlights of her lecture:

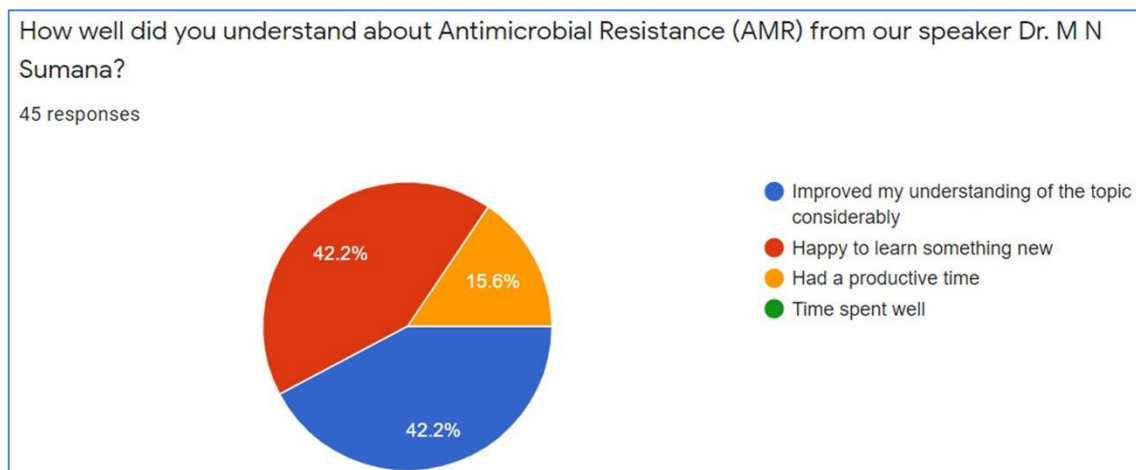
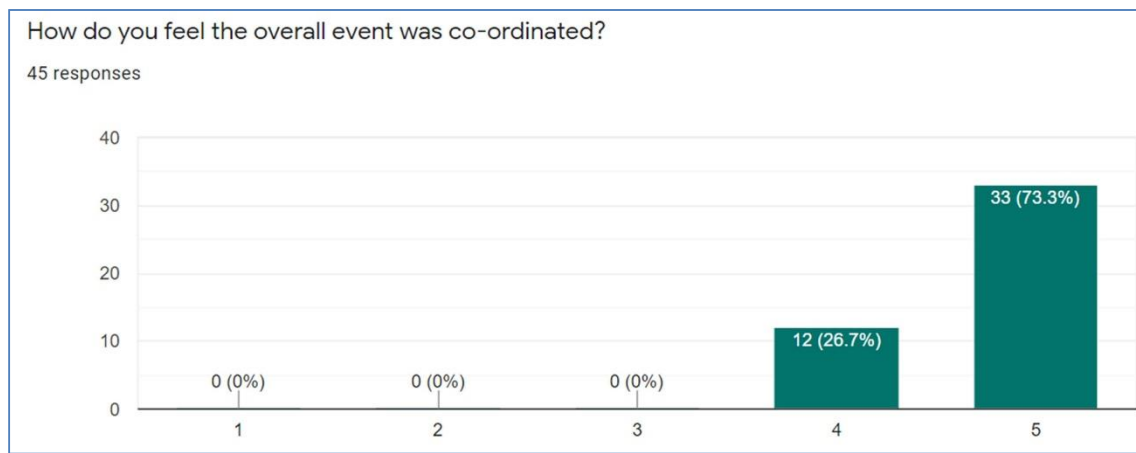
- Global action plan on anti-microbial resistance
- Core value of antibiotics – Save antibiotics; Save lives
- Importance of Antibiotic stewardship, which helps in improving the outcome for the patients in hospital by decreasing the cost of antibiotics, antibiotic resistance and *Clostridioides difficile* infections
 - ✓ Causes & spreading of antibiotic resistance
 - ✓ Importance of hand hygiene was taught by a hand hygiene anthem
- Proper Biomedical waste management has to be followed to reduce new infectious diseases
- Action of different antibiotics inside a cell, which was beautifully described in the form of a cartoon & development of antibiotic resistance
- National guidelines of Antibiotic stewardship
- Antibiotic recycling in the community
- Educating and training the general public about the rational use of antibiotics through innovative games
- Final goal of antibiotic stewardship is to cause the least harm to the patients and save more antibiotics for the present and future

Following this, a short video on ‘How society is responding to the challenge of antibiotic resistance’ by Science Museum (<https://www.youtube.com/watch?v=u2kuIONWaxI>) was played for the audience.

Finally, the program was concluded with vote of thanks by Aditi L H.

After the session, we also tried to obtain **feedback/suggestions** from attendees through Google Forms.

Summarising the suggestions we received, it was reflected that there is a dire need for future talks in areas of AMR. It was also highlighted by our audience that, dividing the audience into different categories and arranging talks accordingly would prove very effective. Importance of conducting small local surveys with respect to antibiotic prescription and usage, presentation of drug resistance case studies was also advised.



Few screenshots of the session

This screenshot shows a Zoom meeting interface. The main window displays a PowerPoint slide titled "VIRTUAL INAUGURATION OF ASPIC CLUB - Yuvaraja's College". The slide content includes:

- University of Mysore logo and name.
- YUVARAJA'S COLLEGE logo and name.
- Department of Molecular Biology.
- Antibiotic Stewardship and Prevention of Infection in Communities (ASPIC) Club.
- Virtual Inauguration of ASPIC Club - Yuvaraja's College.
- Dr. B.N. Yashobha, Professor, Yuvaraja's College, Mysore (ICM).
- Dr. H.C. Desaiya/Gowda, Administrative Officer, YCM.
- Dr. Devaki N S, Course Coordinator, Dept. of Molecular Biology, YCM.
- Dr. Prithvi Hegde, Professor, Department of Microbiology, JSS Medical College, JSS Academy of Higher Education and Research, Mysore.
- Dr. Philip Mathew, Public Health Consultant, British Asia Pacific, Mysore.
- Dr. Suresh H N, Professor, Department of Microbiology, JSS Medical College, JSS Academy of Higher Education and Research, Mysore.
- Dr. C. Sri C, Senior Consultant, Social Sciences, British Asia Pacific.
- Event Date: 05 August 2020 (Wednesday) at 11 AM.
- Join via Google Meet: <https://meet.google.com/abc-sarac-virt>
- Contact: 9968-68457 (Mysore), 88633-47549 (Durgam).
- ASPIC YCM logo and ASPIC YCM Chapter, Mysore.

The meeting controls at the bottom show "Meeting details", "Turn on captions", and "ASPIC YCM Chapter is presenting". The participant list on the right includes: Sumana K and 24 more, Madhu Hani, Preetha Vijaya, Vidya Raju, Devaki N S, Philip Mathew, Syed shahid afridi, Puneetha Jagdish, and ashwini bhargavan.

This screenshot shows the same Zoom meeting from a different perspective. The main window displays the same PowerPoint slide as in the first screenshot. The meeting controls at the bottom show "Meeting details", "Turn on captions", and "ASPIC YCM Chapter is presenting". The participant list on the right includes: Prithvi Hegde and 78 more, Preetha Vijaya, Vidya Raju, Sada Shiva, Syed shahid afridi, Yashobha B.N., Sumana Mahadeva, Raghunaj Chouhan, and Devaki N S.

REC Philip Mathew is presenting

ASPIC Clubs

- "Antibiotic Stewardship and Prevention of Infection in Communities"
- Seeded by **ReAct Asia Pacific**, a part of an international network on Antibiotic Resistance.
- ASPIC Clubs based in universities and colleges
- Aimed at mainstreaming the issue and creating an interest among students
- The interest in Antibiotic Resistance among students can translate into better research and more community awareness
- Primary mandate is to have activities at the college/community level

Meeting details ^

Turn on captions Philip Mathew is presenting

REC ASPIC YCM Chapter is presenting

ASPIC-Yuvaraja's College Chapter, Mysore

Opened on 05th August 2020

By
Dr. B N Yashodha, Principal, YCM
and
Dr. Philip Mathew, Public Health Consultant, ReAct Asia Pacific

At
Yuvaraja's College, University of Mysore,
JLB Road, Mysuru 570 005.

Meeting details ^

Turn on captions ASPIC YCM Chapter is presenting

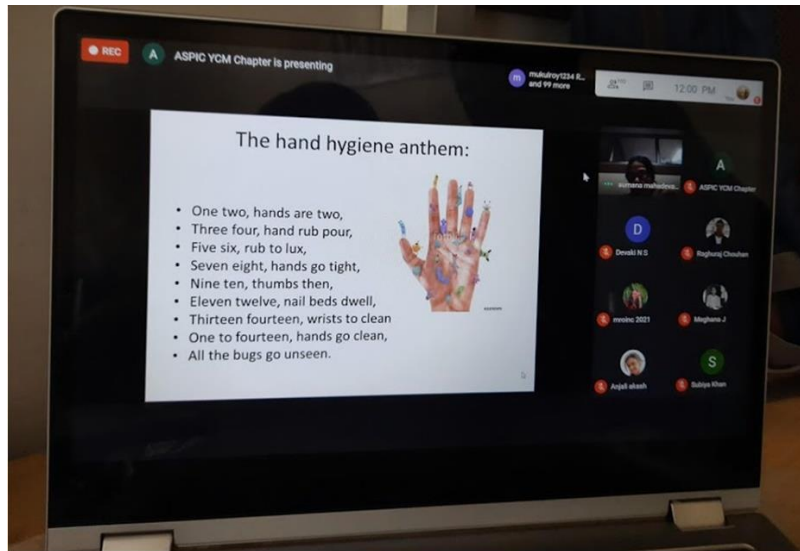
REC ASPIC YCM Chapter is presenting

Antimicrobial resistance- A ticking time bomb

Dr.M.N.Sumana
JSS Hospital- The cleanest Hospital in Mysuru

Meeting details ^

Turn on captions ASPIC YCM Chapter is presenting



12:41 TOI TOI TOI • HD 4G HD 66%

REC

Innovative games- Fermenters & non fermenters

K= Klebsiella
E=E.coli
E=Enterobacter
P=Protea-Morgenell
S=Serratia

SEA

SHORE

B=Burkholderia
E=Elizabethella kingae
A=Acinetobacter
P=Pseudomonas
S=Stenotrophomonas

meet.google.com is sharing your screen. Stop sharing Hide

12:22 • HD 4G HD 71%

REC

BiG at cell wall= Beta lactams & Glycopeptides, PC at D
cyt.membrane= Polymyxin, Colistin, SALIM on COT at ribosome=
Streptogramins, Aminoglycosides, Lincosamides, Macrolides,
Chloramphenicol, Oxazolidinones, Tetracycline, MRQ at nucleic
acid= Metranidazole, Rifampicin, Quinolones, STN in cytoplasm=
Sulfamethoxazole, Trimethoprim, Nitrofurantoin

meet.google.com is sharing your screen. Stop sharing Hide

You



UNIVERSITY OF MYSORE
YUVARAJA'S COLLEGE



(A CONSTITUENT AUTONOMOUS COLLEGE OF THE UNIVERSITY OF MYSORE)

Re-Accredited 'A' Grade by NAAC with CGPA of 3.34 & College with Potential for Excellence

JLB Road, Mysuru – 570
005 Department of
Molecular Biology

**Antibiotic Stewardship and Prevention of Infection in
Communities (ASPIC) –Yuvaraja's College Chapter**

10th October 2020

**Report on the first webinar 'Can I help in the prevention of
Antimicrobial Resistance (AMR)?'**

Date: 6th October

2020 at 3 PM Virtual

platform: Google

meet

Around 70 people joined the program virtually. The event commenced with warm greetings by Amarthya Siddhartha, and a brief introduction on ASPIC club activities and its main objectives on creating awareness about AMR among the public through students was given by Shryli Shreekar. Meghana J, Student Secretary of ASPIC Club introduced our Chief Guest **Dr. Anuradha K**, MBBS, MD, HOD, Department of Microbiology, Mysore Medical College, Mysuru.

Following are the highlights of her lecture:

- Antibiotic mechanisms of action in bacteria.
- AMR transmission (germ to germ, person to person, animal to man).
- Bacterial resistance is naturally developed or acquired and the transfer of drug resistance takes place through transformation, conjugation, and transduction.
- Mechanism of drug resistance - Decreased permeability to antibiotics, structurally modified antibiotic target sites, antibiotic inactivation, and efflux mechanism.
- Timeline of antibiotic discovery and resistance - There is a global concern on how to treat multi drug resistant strains.
- Antiviral and antifungal resistance.
- Drug resistance microbes also known as 'ESKAPE' pathogens.
- Strains that are resistant to vancomycin are called ALERT strains.

- Drug resistance in gram positive and gram negative strains.
- SUPERBUGS- they amplify and spread. The speaker highlighted on ' The change in the human behaviour, might bring change in dealing with antimicrobial resistance.'
- Microorganisms present in environment sometimes become opportunistic and pathogens carry plasmid resistant genes.
- Use of AMD's is risk of emergence of AMR -
 - i. Veterinary targeted pathogens cause animal health issue.
 - ii. Zoonotic food borne pathogens and Animal commensal microbiota cause public health issues.
- Precautionary measures to prevent AMR - To maintain cleanliness (prevention of infection is one step towards prevention of AMR), prevention of bacterial contamination of food, timely vaccination to prevent infection.
- To use innovative and new technologies like whole genome sequencing, metagenomics and bioinformatic approaches to develop next generation tools to strengthen human and animal health.
- Create an awareness about AMR which can bring about behavioural change among people, by – more engagement in public communication, introducing the concept of AMR in school curriculum, quorum sensing.
- The Global impact of AMR on human health was mentioned.
- GLASS (Global Antimicrobial Resistance and Use Surveillance System Report) - way to prevent AMR on an international level. They look at antimicrobial resistance, antimicrobial consumption, HIV drug resistance, drug resistance in tuberculosis, malaria and EGASP (ENCODE Genome Annotation Assessment Project). At the national level in India, there is NCDC (National Communicable Disease Centre)
- The Tripartite workplan on AMR – They collect information on AMU (Antimicrobial Usage) and AMR from humans, animals, plants, food and environment on a regional and global basis, this data collected is later provided to FAO (Food Agricultural Organisation), WHO (World Health Organisation), OIE (World Organisation for Animal Health), here the data is integrated and validated.

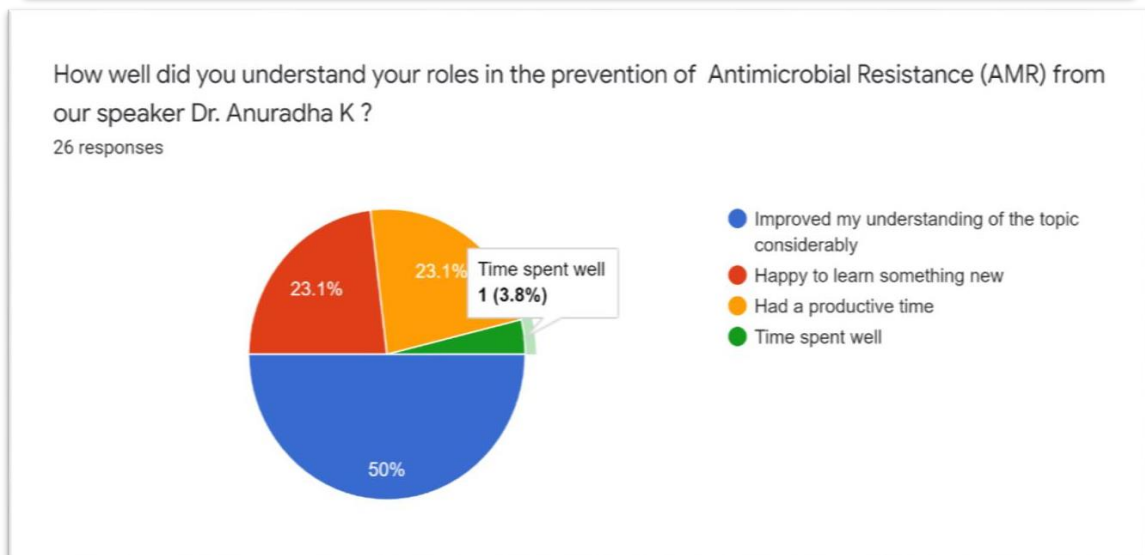
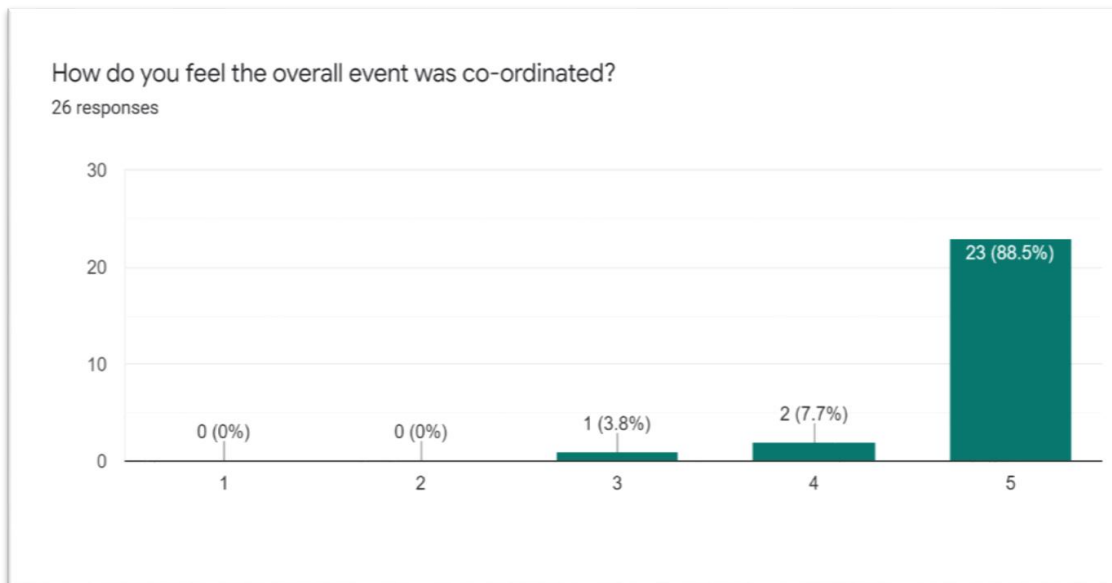
Following this, was the Q&A session supervised by Shryli Shreekar, then Sachin G Swamy, Student President, ASPIC YCM Chapter spoke about the various present and upcoming activities conducted by the club, like Sundays with Superbugs and the need to bring awareness of AMR among healthcare workers and rural people. The announcements of the future activities of the club was made by Shreyas H K such as,

- ASPIC Clubs Network and ReAct Asia Pacific organizes Photography contest to celebrate World Antibiotic Awareness

Week -2020

- Students Poster Competition on Antimicrobial Resistance (AMR)

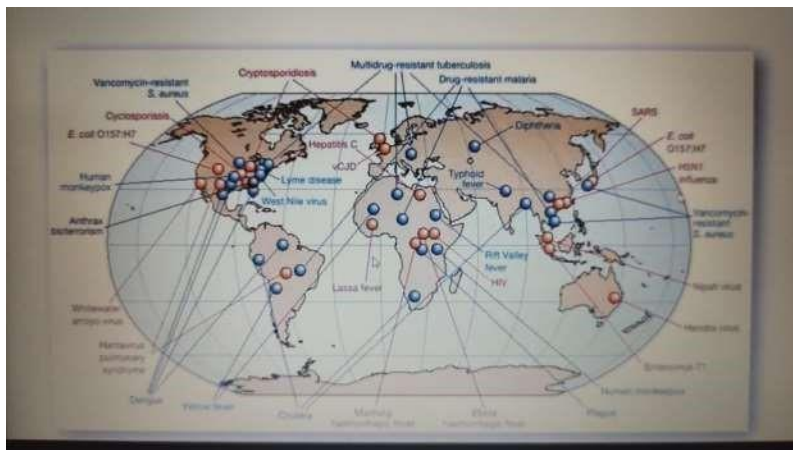
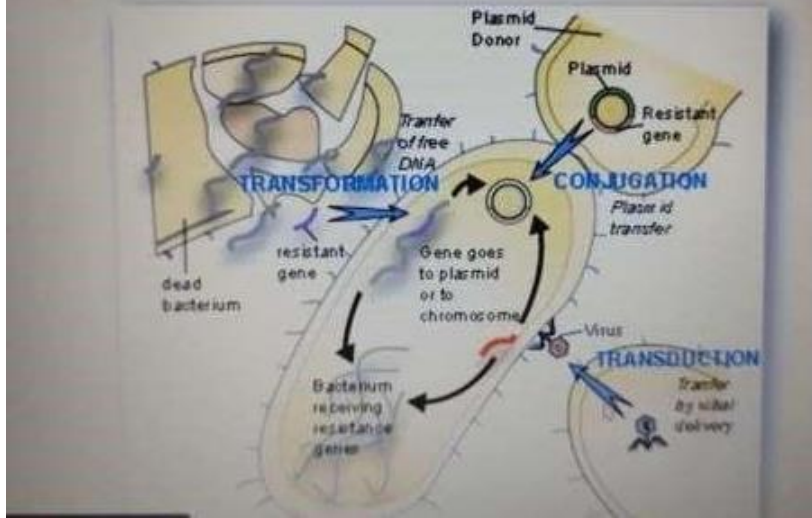
Finally, the program was concluded with vote of thanks by Amarthya Siddhartha. After the session, we also tried to obtain feedback/suggestions from attendees through Google Forms.



Summarizing the suggestions, we received, it was highlighted by our audience that obtaining knowledge about AMR during the pandemic was much informative and beneficial. There is a dire need to highlight the importance and spread the awareness of AMR among rural areas. To try and get in touch with the common people and make them understand the gravity of the situation in a much simpler way was advised.

Some of the Screenshots of the Session

Transfer of drug resistance -horizontal



REC
Action of antibiotic on bacteria
(57)

Antibiotic Mechanisms of Action

1. Inhibition of cell wall synthesis
Examples: penicillin, bacitracin, cephalosporin, vancomycin

2. Disruption of cell membrane function
Example: polymyxin

4. Inhibition of nucleic acid synthesis
Examples: rifampin (transcription), quinolones (DNA replication), metronidazole

3. Inhibition of protein synthesis
Examples: tetracycline, erythromycin, clindamycin, chloramphenicol

5. Action as antimetabolites
Examples: sulfonamide, trimethoprim

Figure 13-2 Microbiology, 4/e
© 2007 John Wiley & Sons

You

Anusha ...

arpitha a...

Asha Raj