

SCISO CHRONICLES

9TH EDITION

September– November
TRIENNIAL EDITION



TRIANNUAL NEWSLETTER



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Mentor's note

Lt Gen PP Rao
Director and Commandant
AFMC, Pune

As the Commandant of this esteemed college, I am thrilled to present the 9th issue of this newsletter. This moment stands as a tribute to the dedication and determination of our cadets within the Scientific Society (SciSo), whose remarkable talent and innovation continue to enrich our college community.

I sincerely hope this collection of work will ignite curiosity and inspire our cadets to delve deeper into their intellectual pursuits and to share their achievements with a wider audience.

With this newsletter, I see an inspiring source of motivation and empowerment for our cadets. Each article, research project, and artistic creation featured here reflects the exceptional talent and dedication of our students. I encourage them to continue pushing boundaries, challenging norms, and leaving lasting marks in their chosen fields. May this publication serve as a tribute to their passion and determination, motivating them to dream big, aim high, and build a legacy for future generations.



Mentor's note



Maj Gen Atul Seth , VSM
Dean and Deputy Commandant
AFMC, Pune

As Dean and an alumnus of this distinguished institution, I am immensely proud to witness the passion and intellectual rigor our cadets bring to the Scientific Society. Their commitment to scientific inquiry and research exemplifies the excellence that emerges when disciplined curiosity meets unwavering determination.

This special edition of our newsletter celebrates their significant accomplishments, highlighting both their exceptional talent and their steadfast dedication to the pursuit of knowledge. It is particularly gratifying to see our young cadets immerse themselves in high-level research, contributing fresh perspectives to the scientific community.

I am confident that these emerging scholars will continue their journey of discovery, making meaningful and lasting contributions to their respective fields. Their drive for exploration and pursuit of academic excellence are the very qualities that will define their future success and lead them toward impactful achievements.

To our cadets: I extend my deepest appreciation for your courage in embracing the unknown. Your work serves as a testament to the spirit of this college and an inspiration to your peers.

I also wish to acknowledge the editorial team behind this publication. Your professionalism, attention to detail, and collaborative spirit have been instrumental in bringing this newsletter to fruition. Through your efforts, we are able to showcase the remarkable contributions of our Scientific Society to a broader audience.

May this newsletter serve as a source of pride and inspiration for our entire college community. I hope it sparks curiosity in every reader and motivates us all to continue pushing the boundaries of science. Together, let us foster a culture that champions intellectual growth and empowers our students to shape a brighter, more innovative future

EDITOR'S NOTE



On behalf of the SciSo team, it is a distinct privilege to present the 9th edition of SciSo Chronicles. This publication stands as a testament to our unwavering commitment to scientific excellence and serves as a vibrant record of the diverse activities and milestones achieved by our society. As the Officer-in-Charge, I am immensely proud to lead such a cohort of brilliant, driven individuals whose collective dedication has brought this edition to life.

The primary mission of SciSo Chronicles is to provide a premier platform for our cadets—bridging the gap between classroom theory and real-world application. Within these pages, you will find a curated overview of research opportunities, prestigious academic forums, and rigorous field activities. By maintaining this regular discourse, we aim to cultivate a resilient sense of community, ignite scientific curiosity, and foster the intellectual maturity essential for the leaders of tomorrow.

Furthermore, this newsletter serves as an official archive of the remarkable undergraduate research emerging from our institution. It is a point of immense pride to note that our cadets are not merely participating in the global scientific dialogue; they are leading it. Competing on both national and international stages, our undergraduates have consistently demonstrated their caliber—often surpassing the work of seasoned postgraduates to secure top honors.

We invite you to explore this issue, celebrate the achievements of your peers, and join us in our mission to push the boundaries of discovery.



22ND ANNUAL MEETING AND EXPOSITION OF THE INTERNATIONAL MYELOMA SOCIETY, TORONTO, CANADA

Safety, Efficacy and Health After Teclistamab (SEMAT Study) in Patients with Relapsed and Refractory Multiple Myeloma: A Multicentric Real World Indian Experience

22nd Annual MEETING & EXPOSITION
September 17-20, 2023 - Toronto, Canada

International Myeloma Society

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INTRODUCTION

Teclistamab is a bispecific antibody targeting B-cell maturation antigen (BCMA), with radiolabelled effector in relapsed and refractory multiple myeloma (RRMM).

Approved in October 2020. In real-world experience in Indian patients remains largely unexplored.

Given the distinct differences from Western populations, both in socio-economic aspects, genetic polymorphisms, and endogenous humoral/innate immunity, gathering real-world evidence is the need of the hour.

RESULTS

- Of 47 enrolled patients, 95.10% were male and 43.93% female, with 70.7% diagnosed with RRMM and 23.20% with secondary plasma cell leukaemia.
- The mean age was 65.4 years.
- High risk disease, as per IMiG and R-ISS criteria, was predominant.
- Comprehensive analysis showed that while most patients had administered the most common binding antibody those with positive components were given 2nd or 3rd line and 68.17% 1st line.
- First response by end-of-treatment was reported in 83.20%, and 46.36% had received subsequent week cell transplant.
- Response was achieved by a mean duration of 7.9 months, with an average of 7.9 weekly doses.
- Post-treatment toxicities were seen in 10.20% of patients.
- In supportive care, oral therapy was common (74.67%), with unmet doses being reported in 46.66%.
- Log probability was seen to go to 70.73% before and 87.38% during treatment, reported at 90.41 and 60.02% respectively.
- The best outcome was performed by 74.71%, with PFC13 and Slogano group 37.29% of those vaccinated. Vaccines received by 78.76% of patients, predominantly gamma-globulin (58.37%).
- Response adverse events were reported in 73% of patients, leading to dose modification in 21.05% and treatment discontinuation in 1.50%.
- First treatment response occurred in 5.85% and subsequent in 12.80%.
- At last cut-off, 35% had achieved a complete response, while 23.02% had died.

CONCLUSIONS

- This study reports the safety, efficacy, and health outcomes of teclistamab in Indian patients with RRMM.
- The study also aims to evaluate the safety, efficacy, and health outcomes of teclistamab in RRMM patients.

ACKNOWLEDGEMENT

I gratefully acknowledge the support of the Departments of Health, Government Medical College, Pune, for making this work possible.

REFERENCES

1. Suresh Kumar VC, Mahapatra P, Datta S, et al. Safety, Efficacy and Health After Teclistamab (SEMAT Study) in Patients with Relapsed and Refractory Multiple Myeloma: A Multicentric Real World Indian Experience. *Indian J Hematol Blood Transfus*. 2023;19(1):1-10.

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M/CDT RESHMA GOEL (H3)

HEALTH-RELATED QUALITY OF LIFE IN INDIAN PATIENTS WITH MULTIPLE MYELOMA: A PAN-INDIAN DIGITAL SURVEY-BASED ASSESSMENT

22nd Annual MEETING & EXPOSITION
September 17-20, 2023 - Toronto, Canada

International Myeloma Society

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INTRODUCTION

Multiple myeloma significantly affects patients' health-related quality of life (HRQL). This study aimed to assess the HRQL of Indian patients with multiple myeloma.

The study included 100 patients with multiple myeloma, who were assessed using the EuroQol-5L and the Indian Health-Related Quality of Life (IHRQL) questionnaire.

The results showed that the HRQL of Indian patients with multiple myeloma is significantly lower than that of the general Indian population.

RESULTS

- 87 patients filled the EQ-5L with 320 responses concerning EQ-5L HRQL. 320 patients completed both the questionnaires.
- The median age of 70 patients was 67 years, with 50% being female and 50% being male.
- Out of 320 responses, 100 were from patients with multiple myeloma, 100 were from the general Indian population, and 120 were from the general Indian population.
- Out of 100 responses, 50 were from patients with multiple myeloma, 50 were from the general Indian population, and 50 were from the general Indian population.
- Out of 100 responses, 50 were from patients with multiple myeloma, 50 were from the general Indian population, and 50 were from the general Indian population.

CONCLUSIONS

This study highlights the impact of multiple myeloma on the HRQL of Indian patients. The results show that the HRQL of Indian patients with multiple myeloma is significantly lower than that of the general Indian population.

ACKNOWLEDGEMENT

We gratefully acknowledge the support of the patients and the staff of the study.

REFERENCES

1. Singh S, Sharma S, Bhardwaj S, et al. Health-Related Quality of Life in Indian Patients with Multiple Myeloma: A Pan-Indian Digital Survey-Based Assessment. *Indian J Hematol Blood Transfus*. 2023;19(1):1-10.

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M/CDT CHAITHANYA VINU (I3)

PA-27: STUDY ON LOSS OF SEX CHROMOSOMES IN PERIPHERAL BLOOD CELLS OF PATIENTS WITH MULTIPLE MYELOMA : A CROSS SECTIONAL ANALYSIS IN INDIAN MEETING & EXPOSITION

22nd Annual MEETING & EXPOSITION
September 17-20, 2023 - Toronto, Canada

International Myeloma Society

Authors: VINU C¹, VANAMANDRA U¹, MELIKERU S¹, VERGHESE R¹, CHAKRABARTY B¹, VS PRAKASH¹
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INTRODUCTION

Loss of sex chromosomes has been documented in peripheral blood cells of patients with multiple myeloma, which is an adverse finding in patients with hematological malignancies.

Epidemiologic data suggest that the presence of sex chromosome loss is associated in approximately 2% of patients with multiple myeloma.

This study aims to evaluate the prevalence of sex chromosome loss in peripheral blood cells of patients with multiple myeloma, and to correlate it with the clinical and laboratory features of the disease.

RESULTS

Study description:

Patients: 100 (100%)

Male: 40 (40%)

Female: 60 (60%)

Age: 65.22 (SD: 10.5)

Outcome:

1. Mean loss of X chromosome (p=0.001) = 14.8%

2. Mean loss of Y chromosome (p=0.001) = 14.8%

CONCLUSIONS

No correlation with age of onset, presence of hypercalcemia, renal dysfunction, anemia, and bone pain was found in patients.

REFERENCES

1. Vinu C, Vanamandra U, Melikeru S, et al. Study on Loss of Sex Chromosomes in Peripheral Blood Cells of Patients with Multiple Myeloma: A Cross Sectional Analysis in Indian. *Indian J Hematol Blood Transfus*. 2023;19(1):1-10.

ACKNOWLEDGEMENT

I gratefully acknowledge the support of the Departments of Hematology, Government Medical College, Pune, for making this work possible.

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22ND ANNUAL MEETING AND EXPOSITION OF THE INTERNATIONAL MYELOMA SOCIETY, TORONTO, CANADA



Certificate of Poster Presentation

22nd International Myeloma Society Annual Meeting 2025

Abstract Name: (PA-431) Global Research Trends and Inequities in Clinical Trials in Multiple Myeloma: A Focus On South and Southeast Asia

Presented to

Celine Raphael

Philippe Moreau, MD
IMS President



Certificate of Poster Presentation

22nd International Myeloma Society Annual Meeting 2025

Abstract Name: (PA-421) Treatment Accessibility, Availability, and Healthcare Costs for Multiple Myeloma in South Asian Countries

Presented to

Roopika Peela

Philippe Moreau, MD
IMS President



Certificate of Poster Presentation

22nd International Myeloma Society Annual Meeting 2025

Abstract Name: (PA-154) Health-Related Quality of Life in Indian Patients with Multiple Myeloma: A Pan-India Digital Survey-Based Assessment

Presented to

Sagaldip Singh

Philippe Moreau, MD
IMS President



Certificate of Poster Presentation

22nd International Myeloma Society Annual Meeting 2025

Abstract Name: (PA-271) Study on Loss of Sex Chromosomes in Peripheral Blood Cells of Patients with Multiple Myeloma: A Cross-sectional Analysis in Indian Setup

Presented to

Chaithanya Vinu

Philippe Moreau, MD
IMS President



Certificate of Poster Presentation

22nd International Myeloma Society Annual Meeting 2025

Abstract Name: (PA-031) Safety, Efficacy and Health After Teclistamab (SEMAT Study) in Patients with Relapsed and Refractory Multiple Myeloma: A Multicentric Real World Indian Experience

Presented to

Reshma Goel

Philippe Moreau, MD
IMS President

ENVIMEDCON-INHS ASVINI

ENVIMEDCON 2025 was organised by INHS Asvini from 27th September 2025 – 28th September 2025 . The cadets of Students Scientific Society participated in the undergraduate symposium and secured the 2nd position and a cash prize of Rs 5000 competing with the top medical colleges of the country . M/Cdt Sambhav Singh (J3) was awarded the best speaker and a cash prize of Rs 2000 .



ENVIMEDCON- THE TEAM SPEAKS

M/Cdt Chaithanya Vinu (I3)

Envimedcon 2025 at INHS Asvini was an enriching experience that went beyond academics. From planning the symposium to brainstorming innovative solutions, every step was a lesson in collaboration and perseverance. Working with the team highlighted the value of supporting each other, especially in challenging situations, and how collective effort transforms difficulties into success. The enthusiasm and guidance of our seniors embodied the true AFMC spirit, motivating us to aim higher. The conference not only deepened our knowledge but also strengthened our sense of teamwork, resilience, and belonging to a tradition of excellence.



M/Cdt Khushboo (I3)

Participating in EnviMedcon 2025 at INHS Asvini, a symposium on Environmental Medicine, was one of the most moments of my life. Our team of nine represented the AFMC spirit with pride, presenting on the topic of Biomedical Waste. We prepared 3 questionnaires for households, the medical fraternity, and housekeeping staff, gaining valuable insights. Alongside, we proposed innovative ideas like IoT-enabled dustbins, collection vans, color-coded symbols, and awareness campaigns. Though the journey had its share of ups and downs, our unity and motivation never faltered. Practicing, learning, and growing together was unforgettable, and securing 2nd place was a moment of immense joy and pride.



ENVIMEDCON- THE TEAM SPEAKS

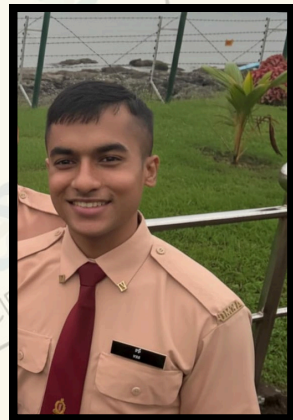
M/Cdt Parnavi Prasad (I3)

Our experience at Envimedcon 2025, held at INHS Asvini in Mumbai, was much more than just attending an academic conference. It became a journey of learning, growth, and teamwork. The process began well before the event. From planning for the symposium, dividing responsibilities, and pooling in ideas. Every brainstorming session challenged us to think creatively and practically, reminding us that innovation often comes from collective effort rather than individual brilliance.

Working closely with our peers made us realize how much strength lies in mutual support. Whenever one of us felt stuck or overwhelmed, the others stepped in and together we were able to overcome hurdles that seemed daunting at first. This spirit of collaboration turned obstacles into stepping stones, reinforcing the idea that perseverance and teamwork go hand in hand.

M/Cdt Dev (I3)

Taking part in the UG Symposium at ENVIMEDCON 2025, INHS Asvini was a truly enriching experience. For the first time, I had the opportunity to present as a speaker, in addition to supporting my team through research and audiovisuals. Collaborating with the team and exploring the 3D printer gave me valuable hands-on learning, showing how innovation and technology can solve real challenges. I am deeply grateful to our mentor and my peers for their constant guidance, support, and encouragement.



ENVIMEDCON- THE TEAM SPEAKS

M/Cdt Aadarsh Singh (I3)

I'm truly grateful for the opportunity to present our symposium at ENVIMEDICON 2025, INHS Asvini. Being part of this event has been an incredible learning experience, giving us the chance to explore and share ideas on innovation and sustainability. I especially enjoyed working with Arduino, experimenting with sensors like the ultrasonic sensor for waste level detection and the gas sensor for monitoring emissions. These hands-on experiences showed me how simple technology can address real-world challenges. A heartfelt thanks to our mentor and my peers for their constant support and encouragement throughout this journey



M/Cdt Kanav Bhardwaj (I3)

We presented our research work at Envimedcon 2025 CME at INHS Asvini, Mumbai. Our study involved door to door surveys and innovations about Biomedical waste management. It was a good experience as we got to know about many things during the process. Keeping behind my introvert nature, I pushed myself forward to collect as much data as possible, so as to make the study fruitful. With the mentorship of Col. Y Uday, we were guided to think out of the box. The event was also very well organised and we got to learn a lot from other teams as well . ell organised and we got to learn a lot from other teams as well .



ENVIMEDCON- THE TEAM SPEAKS

M/Cdt Sambhav Singh (J3)

From endless brainstorming sessions in the 3D printing lab to standing proudly on stage at ENVIMEDCON 2025, INHS Asvini, it was nothing short of a rollercoaster. Our team's topic, Biomedical Waste: Echoes of Neglect, took us from door-to-door surveys in almost 110 JCO quarters to late-night debates over IoT dustbins and smart therapy kits. We learnt that waste may be "discarded," but ideas should never be. Winning first runners-up and best speaker was rewarding, but the real prize was the journey—filled with Bombay rains, Asvini warmth, and the realization that innovation, like waste, must always be properly managed.



M/Cdt Rishika Zaware (J3)

This overall journey was an unforgettable experience. It was my very first time stepping into such a big platform, and I am truly grateful for the opportunity. What made it even more special was being part of an incredible team that constantly encouraged and motivated me to overcome my fears.

From preparing together to presenting our ideas on stage, the support and positivity of my teammates gave me the confidence I didn't know I had. This not only enhanced my knowledge but also helped me grow personally, teaching me the importance of teamwork, resilience, and self-belief. I feel truly thankful to have had this experience, and I look forward to many more such opportunities in the future.



ENVIMEDCON- THE TEAM SPEAKS

M/Cdt Aaditya Rane (J3)

EnviMedCon 2025 was truly a remarkable experience. I gained hands-on exposure to working with various sensors and creating impactful audiovisuals, while also learning about the innovative technologies used by other colleges. The event taught me how to manage last-minute stress and maintain composure even in the toughest situations. This journey would not have been possible without the constant support and guidance of our OIC, Col Y. Uday, who stood by us throughout. Above all, I am grateful to my teammates, whose dedication, collaboration, and spirit made this achievement possible. Together, we turned challenges into a memorable victory.



ENVIMEDCON- BEHIND THE SCENES



GERICON-2025: POSTER PRESENTATION

M/Cdt Rajvardhan Acharya (J3) - 1st Position

It was an honour to be selected for presenting at GERICON-2025, at AFMC, Pune. It was my first time presenting at any event of this magnitude, and I am grateful for the opportunity. I would like to thank my guide, Lt Col Pritam Purohit for entrusting me with this project, and helping me with every step of the study, making the poster, laying out the data and instructing me on how to present our research.

10 abstracts were selected from all the submissions by the academic committee, for E-Poster presentation. The research presented was extremely illuminating, and has deepened my understanding and interest in the subject manifold. The presenters were inspiring in their research material, and poise on the dais. I was pleasantly surprised on being announced the winner, and am extremely happy and proud of this achievement.

I shall carry this experience with me for my lifetime, and shall use my various learnings to guide me in my future endeavours.



Abstract Title: A QUESTIONNAIRE-BASED OBSERVATIONAL STUDY OF SEXUAL HEALTH IN ELDERLY MALE PATIENTS IN A TERTIARY CARE HOSPITAL.
Authors: Dr Pritam Purohit, Dr Dhiren Sethi, Dr Sunit Kumar, Rajvardhan Acharya
Institute: Armed Forces Medical College, Pune

<p>INTRODUCTION</p> <ul style="list-style-type: none"> ▪ Questionnaire based observational study in tertiary care hospital. ▪ Geriatric population is presumed to have no sexual issues and it is a neglected dimension in Geriatric healthcare. ▪ The study planned to explore sexual health issues with a validated questionnaire <p>MATERIALS AND METHODS</p> <ul style="list-style-type: none"> ▪ MSHQ was given to be self filled in print form or forwarded on phone as google form, with consent Form attached to the questionnaire. ▪ The replies were anonymised. ▪ Responses consolidated in an excel sheet and data interpretation was done using appropriate statistical methods. ▪ A total of 716 patients were selected out of which 413 agreed to participate in the study. 	<p>AIMS AND OBJECTIVES</p> <p>Assessment of sexual activity in geriatric patients, its correlation with comorbidities, and the prevalence of performance enhancing drug use.</p> <p>RESULTS/OBSERVATIONS</p> <ol style="list-style-type: none"> 1. While sexual activity does decline with age, it persists into later years, with mean (SD) scores of 3.00 (0.96), 2.57 (0.83), and 2.49 (0.83) across the three age groups. 2. Analyses indicates sexual activity is lowest overall in diabetes and hypertension (mean <2.5), with moderate to strong correlation to comorbidity overall (r = 0.30 to -0.72). 3. 33-39% used sexual health interventions (mean 36.7%, SD 2.6%); alternative medications accounted for 17-21% (mean 19.0%, SD 1.6%) across all age groups. 	<div style="text-align: center;"> <p>Sex Activity by Age</p> </div> <div style="text-align: center; margin-top: 10px;"> <p>Sexual Activity by Top 10 Comorbidities</p> </div>	<div style="text-align: center;"> <p>Perf Enh Drug Use by Age Group</p> </div> <p>DISCUSSION/ CONCLUSION</p> <ol style="list-style-type: none"> 1. Need for open communication and comprehensive assessment of sexual health in elderly males. 2. Common indication of alternative medication usage, point of intervention. <p>REFERENCES</p> <ol style="list-style-type: none"> 1. SEXUALITY IN THE ELDERLY: Fran E. Kaiser, MD 2. Kinsey, A. C., Pomeroy, W. B. and Martin, C. E. Sexual behavior in the human male. Philadelphia: W. B. Saunders, 1948, pp. 804
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GERICON-2025: GERIQUIZ

M/Cdt Dev Singh (J3) and M/Cdt Prisha Joshi (J3): Winners

M/Cdt Dev Singh

Winning the geriatrics quiz was an exciting and rewarding experience. The competition was incredibly close, with every team showcasing strong knowledge and quick thinking. What made the victory even more meaningful was that the quiz was filled with new and fascinating facts that expanded my understanding of geriatric care. Each round pushed us to think deeper and stay sharp. It was truly inspiring to compete alongside such talented teams, all passionate about learning and improving care for older adults. This win has motivated me to keep exploring the field and continue growing. Overall, it was a memorable and enriching achievement.



M/Cdt Prisha Joshi

Participating in and winning the GERICON quiz was a highly engaging and enriching experience. Preparing for the quiz helped me learn many new and meaningful concepts that I might not have encountered otherwise. The event was exciting, competitive, and very well-organized. Overall, it was a fruitful learning experience that strengthened my curiosity and motivated me to study medicine more deeply.



GORAKHPUR MEETS AFMC: SCISO EDITION

Six students from AIIMS Gorakhpur recently conducted an academic visit to the Armed Forces Medical College (AFMC), Pune, to foster institutional collaboration. The delegation toured the Student Scientific Society's two labs: Anveshan, Aakarjan and Anusandhaan-the hall of fame.

During the visit, AFMC cadets demonstrated ongoing research and innovative prototypes, specifically highlighting the transition of 3D designs into functional models. Discussions focused on the practical applications of these technologies in prosthetics, behavioral therapy, and sleep health. This interactive exchange not only addressed technical queries but also solidified a shared commitment to research and innovation between these two premier medical institutions completed a two-week summer internship programme under MUHS at the MUHS Regional Centre, Pune, where I was introduced to various genetic diagnostic techniques such as karyotyping and DNA extraction. The most rewarding aspect of the internship was analysing the results of tests carried out for cancer diagnosis. This experience deepened my understanding of chromosomes, their structure, and the detailed procedures involved in various diagnostic tests.



GORAKHPUR MEETS AFMC: SCISO EDITION




2ND NATIONAL LEVEL E-POSTER PRESENTATION: AIIMS MANGALAGIRI

M/Cdt Chaithanya Vinu : 2nd Runner-Up


During our Biochemistry electives, I was introduced to the concept of Newborn Screening Awareness Month, which sparked a deep interest in understanding the challenges and possibilities within this field. Motivated by this exposure, I conceptualised a prototype for a newborn screening tool that is low-cost, easy to use, effective, and tailored to detect the most prevalent aminoacidurias in rural India. Under the invaluable guidance of Col. Kanchan Kulhari and Lt. Col. Deepika Agarwal, I refined the idea and developed it into a poster presentation.

I had the privilege of presenting this work at the e poster competition held at AIIMS Mangalagiri, where students from medical colleges across the country participated. Receiving the news that I had secured the position of second runner-up was both exciting and deeply encouraging. The experience has been immensely enriching, and I am inspired to take this initiative further.



SMART DIAPER SCREENING : SCREEN NOW, THRIVE TOMORROW – A PARADIGM SHIFT IN AMINOACIDURIA DETECTION

M/Cdt Chaithanya Vinu, 3rd MBBS Part I, Armed Forces Medical College
Mentors:
1. Lt Col Deepika Agarwal, Asst Prof, Dept of Biochemistry, Armed Forces Medical College
2. Col Kanchan Kulhari, Prof, Dept of Biochemistry, Armed Forces Medical College



INTRODUCTION

EM screening is a vital tool for early detection of inherited metabolic disorders in apparently healthy neonates. A study from South India involving 112,269 newborns identified tyrosinemia, maple syrup urine disease, phenylketonuria, and generalized aminoaciduria as the most prevalent disorders, with overall prevalence of 1 in 1,480¹. Although DBS remains the gold standard for Newborn Screening², in light of Indian setup where 50% of the population lives in rural areas and accessibility to hospitals is a major issue, replacement of a home based screening becomes essential for early detection. Current screening modalities of immunoanalysis, tandem mass spectrometry, enzyme assay and molecular testing are effective yet costly and limited to tertiary setup constraining adoption in public or rural programs. In light of these we propose a low cost, non invasive, home oriented screening smart diaper which enables direct detection of aminoaciduria.

The model enables direct detection of urinary phenylketonates with FeCl₃ reagent (sensitivity: 80%, specificity: 90-95)³. Further reagent microcapsules for Benedict's and ninhydrin could also be incorporated.

PROBLEM STATEMENT

Most rural healthcare centers in India lack neonatal screening infrastructure due to high costs, logistical barriers, and the requirement for specialized personnel — leading to delayed or missed diagnosis of inborn errors of metabolism (IEMs).

2. There is a need for a low-cost, point-of-care, non-invasive, and user-friendly neonatal screening method that can be effectively used by frontline healthcare workers such as ASHA or nursing staff.

MATERIALS & METHODS

1. BASE MATERIAL

Biodegradable cotton or bamboo fiber diaper
Cost : Rs 30 - 60

2. CHEMICAL REAGENT

Micro-compartments w reagents (FeCl₃ for Benedict's reagent galactosemia)
Cost : Rs 2- 50

3. SAFETY BARRIER LAYER

This perforated polymer film prevents skin contact while allowing urine diffusion
Cost : Rs 2-5

5. STORAGE & PACKAGING
Cost : Rs 3-10

4. VISUAL GUIDE

Cost : Rs1-33

6. ASSEMBLY & LAB
Cost : Rs 5-15 per di.

WORKING PRINCIPLE

Neonatal urine release

↓

Urine absorbed by hydrophilic pad

↓

Urine reaches separated reagent microcapsules

Each pad contains:

- 1) special chemical indicator
- 2) buffer system


↓

Localized chemical reaction

↓

Visible and stable colour patterns

Sample : urine wetting the pad (read color at 5 min)



INTERPRETATION

GREEN PAD OBSERVATION

- 1. Normal
- 2. Normal
- 3. Normal
- 4. Normal
- 5. Normal
- 6. Normal
- 7. Normal
- 8. Normal
- 9. Normal
- 10. Normal
- 11. Normal
- 12. Normal
- 13. Normal
- 14. Normal
- 15. Normal
- 16. Normal
- 17. Normal
- 18. Normal
- 19. Normal
- 20. Normal

YELLOW PAD OBSERVATION

- 1. Normal
- 2. Normal
- 3. Normal
- 4. Normal
- 5. Normal
- 6. Normal
- 7. Normal
- 8. Normal
- 9. Normal
- 10. Normal
- 11. Normal
- 12. Normal
- 13. Normal
- 14. Normal
- 15. Normal
- 16. Normal
- 17. Normal
- 18. Normal
- 19. Normal
- 20. Normal

RED PAD OBSERVATION

- 1. Normal
- 2. Normal
- 3. Normal
- 4. Normal
- 5. Normal
- 6. Normal
- 7. Normal
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CONCLUSION & REFERENCES

1. The screening of aminoacidurias could be carried at home with simpler, handheld, colour changing diaper enabling rapid detection and early treatment without hospital visit.

2. This unique innovation is easily distributable enables simultaneous sampling making large community use.

3. Industrial cost estimation and pilot studies are essential next steps; promising results a way for industry collaboration and large-scale production.

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GENESIS 2025 PRE AND PARA-CLINICAL QUIZ: AIIMS BHOPAL

M/Cdt Avanthika Nair (K3) and M/Cdt Tanush Jindal (K3)

Genesis 2025 was organised by AIIMS, Bhopal from 31st October to 2nd November 2025. The cadets of Students Scientific Society participated in the undergraduate Brainwaves Lite pre-clinical quiz and secured the 4th position in the finals.

M/Cdt Avanthika B Nair (K3)

I got the chance to attend the AIIMS Bhopal Genesis Brainwaves Lite Quiz Competition – my first ever quiz experience. The main quiz took place on 1st November, and honestly, just being there already felt huge because Tanush Jindal and I were selected for the finals after the prelims on 7th October. Out of almost 100 teams, only 6 got through ... and we were one of them. That itself was a big moment.

Even though we didn't end up on the podium, the whole experience meant a lot. I learned more than expected – not just about medicine and pre-clinical topics, but about how to think under pressure, work as a team, and trust myself a little more. It helped me grow both as a student and as a person. And honestly, for my first quiz, I couldn't have asked for a better experience.

M/Cdt Tanush Jindal (K3)

The AIIMS Bhopal Genesis Brainwaves Quiz Competition was my first quiz, and honestly, something I had always quietly dreamed of doing. The main event was on 1st November, and qualifying for the finals itself felt unbelievable. Out of almost 100 teams, only 6 made it through the prelims held on 7th October.

The finals had six intense rounds – graphics, spotting the error, multiple correct questions, and the unpredictable Gamble Round. We stayed in the top three right until the Gamble Round, which shifted our rank and placed us 4th.



SCISO WEEKLY MEET: DEAN INSPIRES YOUNG MINDS

The November edition of Sciso Meet was a unique as it was an idea exchange session between Students' Scientific Society and AIIMS Gorakhpur .

The brainstorming session was graced by the Dean and Deputy Commandant Maj Gen Atul Seth, VSM , Z batcher who is alumnus of the institute

Students discussed and brainstormed on pressing issues in the medical field, ranging from diagnostic error due to communication barriers, to ideas on point of care medical devices.





TRI ANNUAL ISSUE

SCI-SO

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SEPTEMBER-DECEMBER 2025

9Th ISSUE