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From the Desk of Chairman

Our COVID data project is over, but the need for timely data is not. On May 5, 2023, the United Nations World Health Organisation declared "with great hope", an end to COVID-19 as a public health emergency. However, we don't want to be caught off guard again. The need of the hour is to continue the collaboration among data scientists, epidemiologists, experts in law & policy and more. This is important not only for the next pandemic and there will be one, but also help the community understand the threats posed by other infectious diseases. Panic is not how we should respond



to our next health crisis.

On this note we bring you the 5th edition of HIC Newsletter. The highlight of this issue is the workshop on **Best Practices & Best Outcomes**, wis-a-vis IV Access and 'Bundle Care' protocol. So, while anticipating the 'nth' wave of the COVID-19 pandemic & wondering about the booster doses, please continue to encourage us with your contributions.

Hope you enjoy the content !

With warm regards!

Prof. Gaurav Agarwal

Chairman, SHICCOM & Chief Medical Superintendent
SGPGIMS

Spotlight : Key observations

APEX TRAUMA CENTRE

Antibiogram of common bacterial pathogens recovered in all samples (July – December, 2022)

Contributed by : HIC Cell, SHICCOM & Apex Trauma Centre

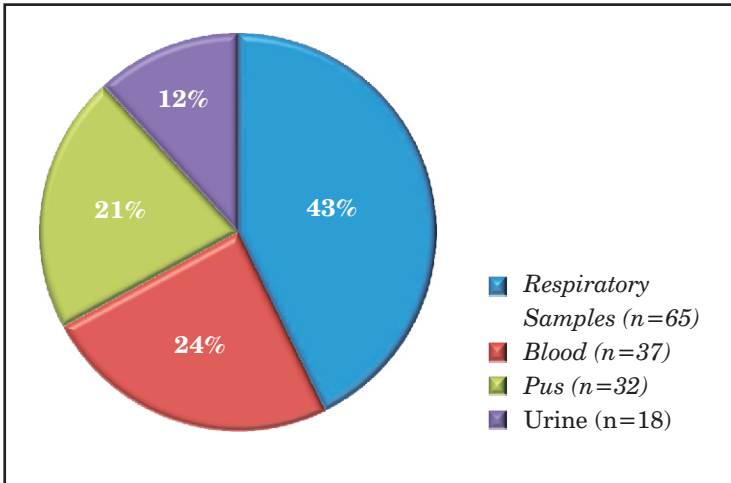


Fig. 1. Distribution of total positive cultures among different clinical specimens (n=152)

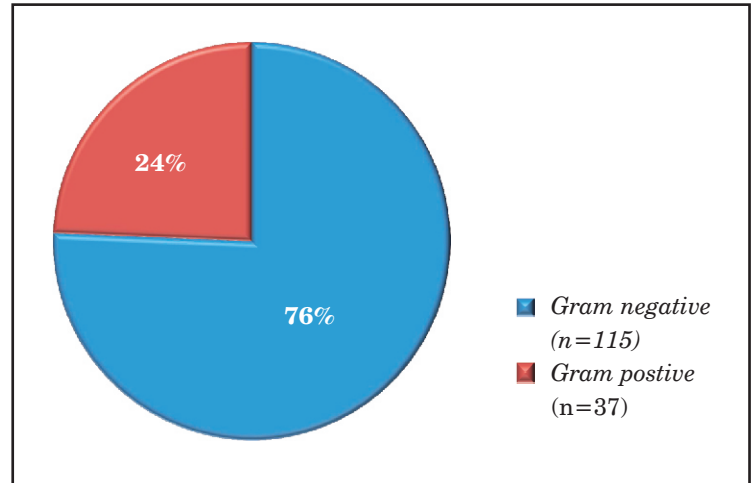


Fig. 2 Distribution of total isolates (n=152)

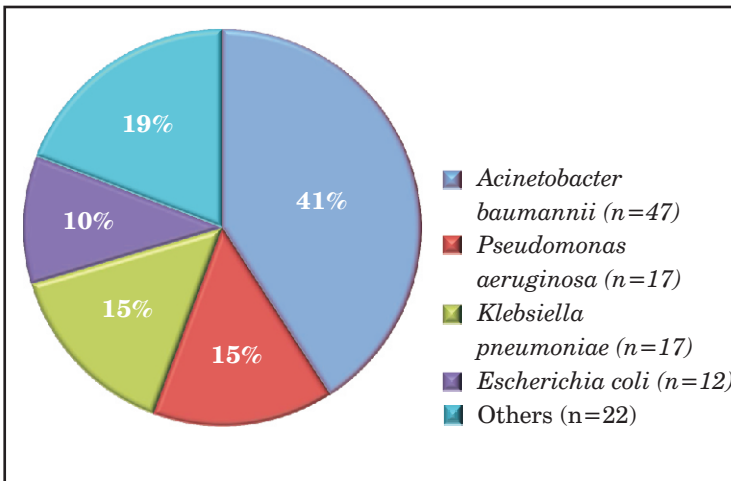


Fig. 3 Distribution of Gram-negative isolates from all positive cultures (n=115)

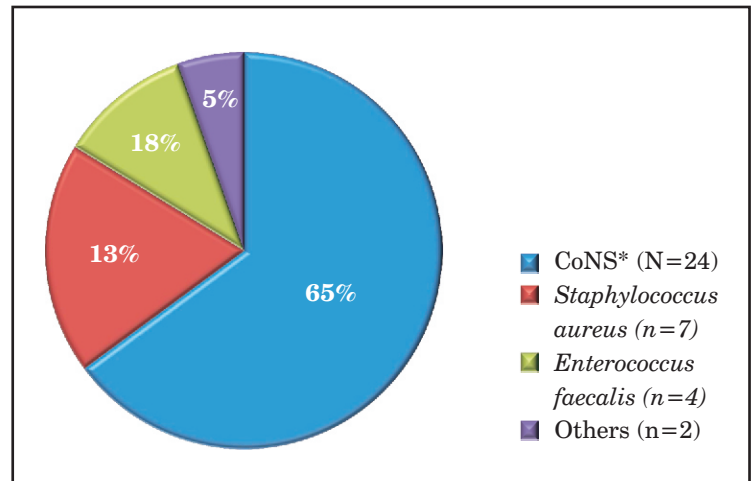


Fig. 4 Distribution of Gram-positive isolates from all positive cultures (n= 37)

*Coagulase negative Staphylococci

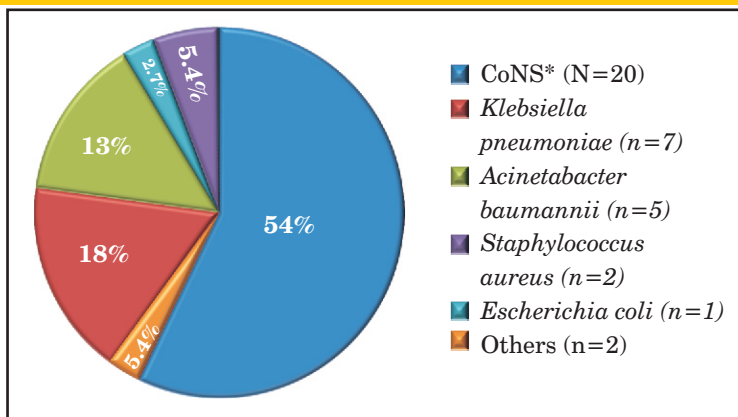


Fig. 5 Distribution of bacterial isolates from positive blood cultures(n=37)

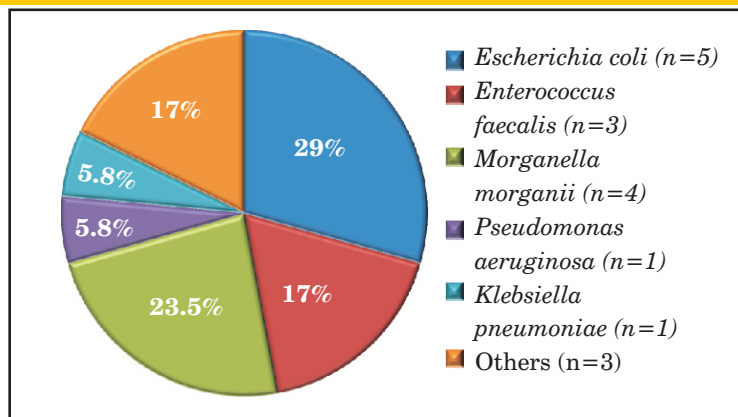


Fig. 6 Distribution of bacterial isolates from positive urine cultures(n=17)

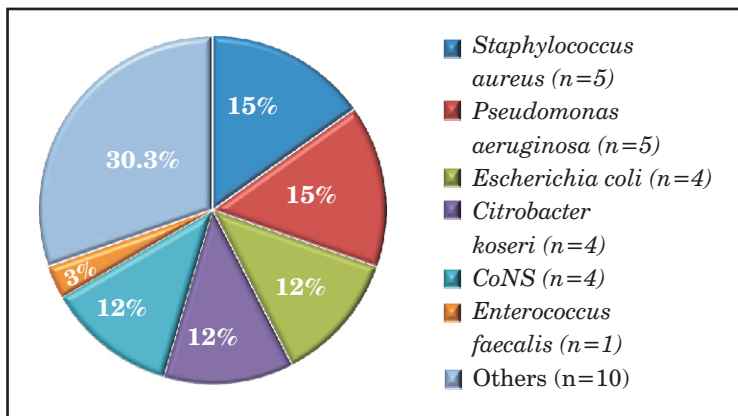


Fig. 7 Distribution of bacterial isolates from positive pus cultures(n=33)

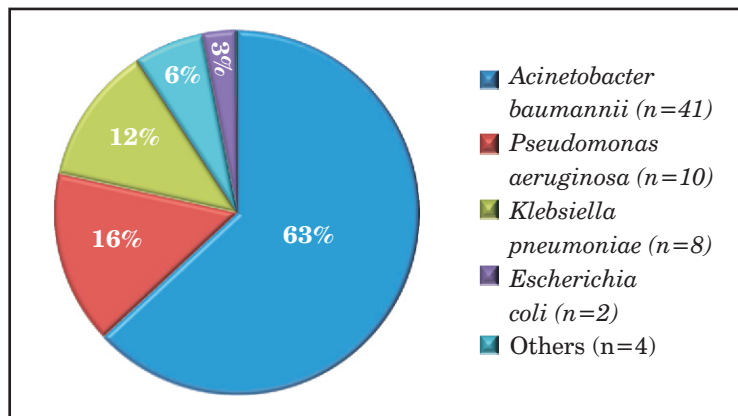


Fig. 8 Distribution of bacterial isolates from positive respiratory cultures(n=65)

Percentage sensitivity

Table 1. Antibigram (% susceptible) Gram positive isolates (n = 35)

	Number of isolates	Cefoxitin	Ampicillin	Ampicillin-sulbactam	Erythromycin	Clindamycin	Levofloxacin	Norfloxacin	Gentamicin	Doxycycline	Minocycline	Vancomycin	Teicoplanin	Linezolid	Nitrofurantoin
CoNS*	24	4	0	13	13	21	0	21	-	84	-	100	100	-	-
<i>S. aureus</i>	7	29	0	29	29	43	0	0	-	100	-	100	100	-	-
<i>E. faecalis</i>	4	-	50	50	-	-	0	0	50	75	-	100	100	100	100

Table 2. Antibigram (% susceptible) Gram negative isolates (n = 93)

	Number of isolates	Ceftazidime	Ceftriaxone	Ciprofloxacin	Norfloxacin	Levofloxacin	Amikacin	Gentamicin	Piperacillin-tazobactam	Cefoperazone-sulbactam	Imipenem	Meropenem	Ertapenem	Doxycycline	Cotrimoxazole	Colistin	Nitrofurantoin	Fosfomycin	Tigecycline	Aztreonam	Minocycline
<i>A. baumannii</i>	47	0	0	0	0	-	0	-	-	0	0	0	0	-	-	98	-	-	-	-	92
<i>K. pneumoniae</i>	17	0	0	0	-	-	6	-	-	0	37	11	6	-	-	100	-	-	-	-	-
<i>P. aeruginosa</i>	17	30	-	-	-	50	47	-	26	40	47	47	-	-	100	-	-	-	-	40	-
<i>E. Coli</i>	12	0	0	0	20	-	25	50	60	83	80	77	40	-	50	100	80	100	-	-	100

A 'dash (-)' implies that sensitivity to an antibiotic has not been tested for that organism

Note: 1. % susceptible has been represented in the antibiogram. 2. Results are for drugs routinely tested. 3. All isolates are diagnostic, not for surveillance. 4. An antibiogram should include species with at least 30 isolates tested. 5. Only first isolate from any sample has been included.

Spotlight: Key interventions

Contributed by: Dr. Richa Mishra, Dr. R. Harsvardhan, Dr. Gaurav Agarwal, Dr. Sanjeev, Dr. Anitta Jose, Dr. Pragma Sonkar, Dr. Vinay Pathak, Dhikhil C.D

An outbreak investigation of *Burkholderia cepacia* complex (BCC) bacteremia in a hematology leukemia ward due to contaminated ECG gel

The contamination of medical products by *Burkholderia cepacia* complex (BCC) has been described as a cause of nosocomial outbreaks. We report a nosocomial outbreak of BCC that occurred in the haematology leukaemia ward at our centre between October 2022 to December 2022.

Methods:

- An outbreak investigation was initiated when 05 cases of BCC were recovered from positive blood cultures of admitted patients
- We defined 'reservoirs of infection' and started active surveillance including environmental sampling to trace the source of infection
- Pre-moistened sterile surface swabs were collected from high-touch areas such as bed rails, door knobs, work stations, hot and cold water tap, sink areas, etc. Aliquots were also collected from nebulizer solutions, disinfectant bottles, multi use vials, IV fluid administration set, ultrasound gel, ultrasound probes and transducer
- The samples were inoculated on appropriate culture media and incubated at 37°C for 2 days. Brain-heart infusion broth was incubated at 37°C for 5 days and checked daily for turbidity

Results:

- Initial investigations revealed a cluster of 13 patients growing BCC in their blood cultures (Fig 1)
- The source of infection was traced to a contaminated USG gel that was being used in the ward. Once growth was detected in the USG gel, additional samples were taken from unopened products in the ICU and storage units

Intervention:

- Immediate recall of the contaminated source was done and use of the product was stopped
- A thorough cleaning and decontamination of the ward was initiated and infection prevention strategies to prevent HAIs were reminded to the staff
- We also recommended the isolation of all colonized patients

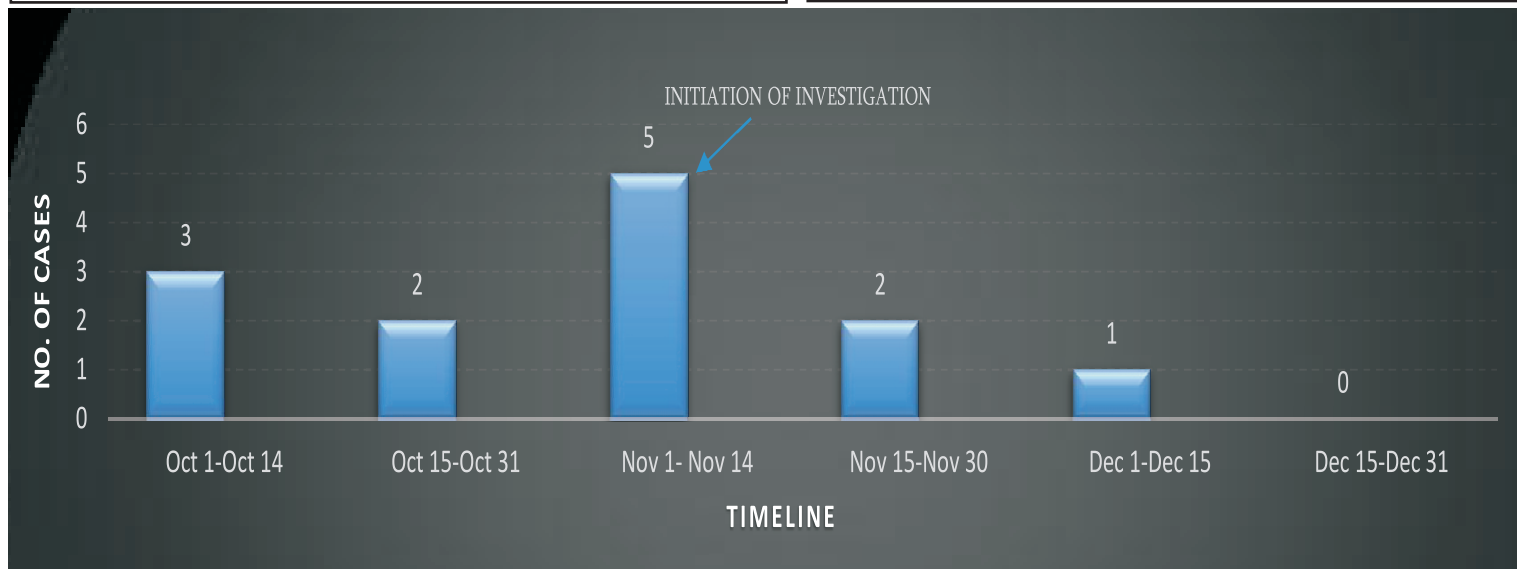


Fig. 1 Timeline of 13 patients who were admitted to the hematology leukemia ward and had *Burkholderia cepacia* detected in blood cultures during inpatient treatment

Conclusions: This outbreak emphasizes the potential consequences of BCC in immunosuppressed patients. Poor hand hygiene practices must have contributed to the transmission of infection. We employed a classic, stepwise process in conducting an outbreak investigation at our centre. It is important to identify the source of infection in any out break by in depth investigation. Poor hand hygiene practices must have contributed to the transmission of infection.

References:

1. *Burkholderia cepacia* complex infections: More complex than the bacterium's name suggest. J Infect. 2021 Sep;77(3):166-170. doi: 10.1016/j.jinf.2018.07.006
2. National Healthcare Safety Network protocol for surveillance of bloodstream infections. Centers for Disease Control and Prevention website. https://www.cdc.gov/nhsn/pdfs/pscmanual/4psc_clabscurrent.pdf. Published 2022.

Interesting case: Disseminated tuberculosis

The first case of culture-positive *Mycobacterium tuberculosis* complex from bone marrow in an immunocompetent, non-HIV, young adult male

Contributed by: Dr. Richa Mishra, Dr.Sabba Mussadiq, Dr. Bishal Gupta, Dr. Parijat Das, Dr.Mohd. Abbas Kazmi, Dr.Able Lawrence

A 32-year-old male presented to the Immunology OPD with complaints of fever for 2.5 months. It was associated with weight loss of 9 kg over 3 months. There was no history of cough, hemoptysis, headache, abdominal pain, loose motions, or vomiting. The patient was non-diabetic and non-hypertensive and did not have any significant medical family history. He had been given dexamethasone injections and multiple antibiotics outside and had also received 4 units of PRBC in the last few months. On physical examination, multiple small cervical lymph nodes were noted on the left side at level III. With this background, he was admitted for diagnostic evaluation of pyrexia of unknown origin (PUO). A complete blood count revealed normocytic hypochromic anemia with a low total leucocyte count of $1900/\mu\text{L}$. The erythrocyte sedimentation rate (ESR) was 32/h (normal, male <15mm/h and female <20mm/hr). An X-ray chest (Fig 1) revealed right hilar lymphadenopathy.

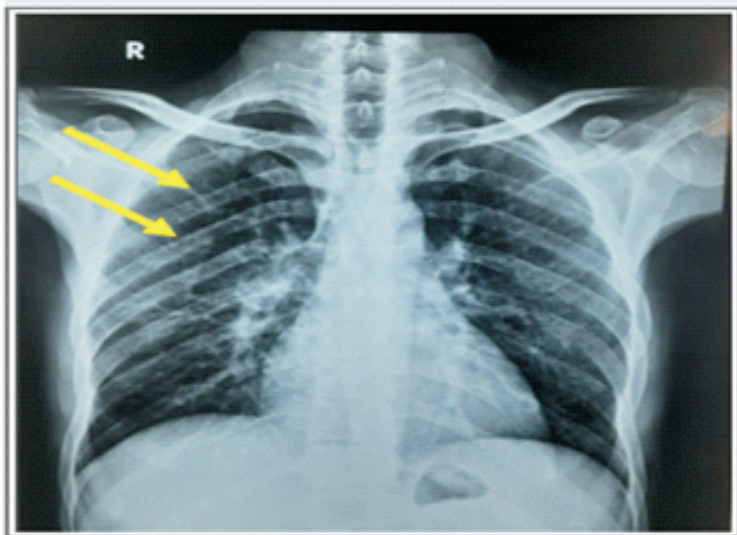


Fig. 1 X-ray chest showed right hilar lymphadenopathy (yellow arrows)

A bone marrow biopsy and aspiration were performed and sent for histopathological and microbiological culture evaluation. Microbiological diagnostic evaluation including microscopy for mycobacterial and fungal pathogens did not yield any positive results. Histopathological examination of the bone marrow biopsy did not reveal blast cells/lymphoma infiltration/granuloma or hemoparasites. Since all investigations were inconclusive, an HRCT-chest and CECT abdomen were performed.

Reports of the CT scan showed multiple tiny hypodense lesions in splenic parenchyma and extensive mediastinal as well as abdominal lymphadenopathy (Fig 2).

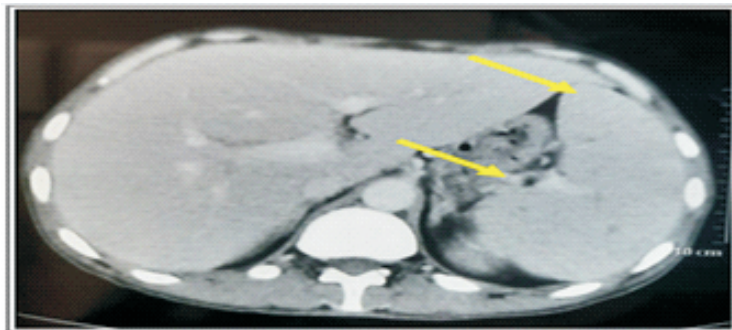


Fig. 2 CECT abdomen showing multiple tiny hypodense lesions in splenic parenchyma likely granuloma

Culture for *Mycobacterium tuberculosis* from bone marrow aspirate sample was positive at 5 weeks of incubation. Identification and drug susceptibility testing performed by Line probe assay (LPA), (GenoTypeMTBDRplus VER 2.0), on the positive culture, detected *Mycobacterium tuberculosis* complex that was sensitive to both rifampicin and isoniazid (Fig.3)

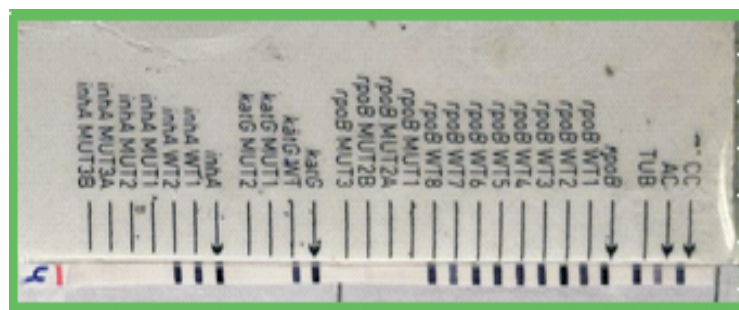


Fig. 3 First line LPA showing MTBC detected, sensitive to both rifampicin and isoniazid, presence of wild type (WT) bands & absence of any mutation band (MUT)

Disseminated tuberculosis is a life-threatening condition and diagnosis is difficult because of its non-specific clinical picture and the paucity of tools available for confirming the laboratory diagnosis. It can also be an important cause of pyrexia of unknown origin (PUO). We have reported the first case of culture-positive *Mycobacterium tuberculosis* complex from bone marrow in an immunocompetent, non-HIV, young adult male from North India. A high index of clinical suspicion is imperative in a high TB burden endemic country like India.

References:

1. World Health Organization. Global tuberculosis report 2022. World Health Organization; 2022.
2. Avasthi R, Mohanty D, Chaudhary SC, Mishra K. Disseminated tuberculosis: Interesting hematological observations. J Assoc Physicians India. 2010;58:243-4.

Rise in group A streptococcal infections in England

Source:- Lancet Respir Med. 2023 Feb;11(2):e16. doi: 10.1016/S2213-2600(22)00507

Group A *Streptococcus* bacteria can cause skin and respiratory infections, as well as scarlet fever and invasive group A streptococcal (iGAS) infections. Outbreaks of Group A streptococcal infections and scarlet fever in England usually follow a seasonal pattern, with most scarlet fever cases typically occurring from the beginning of February–April each year. However, data released by the UK Health Security Agency (UKHSA) on Dec 15, 2022, show that there has been an out-of-season increase in both scarlet fever and GAS infections. Between Sept 12, and Dec 11, 2022, there were 7750 notifications of scarlet fever in England.

The current increase in cases might reflect an increased susceptibility to infections as a result of lockdowns during the COVID-19 pandemic—a so-called immunity debt. A decreased exposure to Group A streptococcus during the pandemic has slowed the natural accrual of immunity levels in children, leaving a higher proportion susceptible to these infections. The current rise in cases of scarlet fever and iGAS is of concern, particularly as it has led to increased numbers of child deaths, and further increases might be seen in 2023. The current high numbers of iGAS infections this season might also be partly related to the co-circulation of winter viruses, such as Respiratory Syncytial Virus and Influenza, as being infected with one disease might increase vulnerability to being infected by a second disease; additionally, viruses can damage the respiratory tract so that bacteria like GAS have a better chance of causing an infection.

Clinicians should maintain a high index of suspicion in relevant patients and prompt treatment of scarlet fever with antibiotics is recommended.

References :

1. Brouwer, S., Rivera-Hernandez, T., Curren et, al. Pathogenesis, epidemiology and control of Group A *Streptococcus* infection. *Nat Rev Microbiol*, 462-488 (2023)

The Medical Devices (Amendment) Rules, 2020

The Medical Devices Rules have been and came into effect on 1st April, 2020.

Contributed by : Dr. R. Harsvardhan, Dr. Vinay Pathak

Medical Device Classes

Medical Device (Amendment) Rules, 2020 have done risk-based classification of Medical Devices into:

Class A	Low Risk
Class B	Low Moderate Risk
Class C	Moderate High Risk
Class D	High Risk

Changes In Amended Rules Related To Medical Device Classes

A new chapter IIIA with the title Registration of Certain Medical Devices with Sl. No. 7 in the Eight Schedule has been added by the amendment. Changes made by the Medical Device (Amendment) Rules, 2020 are explained as follows:

Requirement Of Registration : Manufacturers or importers of all classes of medical devices require mandatory registration of their medical devices with the DCGI, Drugs Controller General of India. If a manufacturer or importer fails to obtain such registration, then it will not be able to sell its medical devices in the Indian market. Registration is completed upon obtaining the Registration Number. Every manufacturer and importer must display the registration number on its label. Once a manufacturer or importer registers its medical devices, it has to conform to the Quality Management System (QMS) strictly. If DCGI finds any non-fulfilment of QMS, it has all its right to suspend or cancel the registration.

Penalty : The Central Licensing Authority (CLA) verifies documents and investigates the quality or safety of medical device classes related to their failure or complaint. In case the registered manufacturer or importer fails to comply with any provision of Medical Device (Amendment) Rules, 2020. CLA first gives an opportunity to show cause, why an order for cancellation of its registration should not be passed, in writing stating the reason thereof, cancels or suspends (for such period as it thinks fit) the registration, either wholly or in respect of any medical device to which the failure relates.

Effect Of Amendment

- The Amendment Rules 2020 are introduced to ensure that every medical device, either manufactured in our country or imported here, has quality assurance before its distribution or sale in the market.
- The timeline for registration or licensing of the medical devices and risk-based medical device classes provides a pause for pharmaceutical companies. It provides a broader scope to test and modify such medical devices that fall under the ambit of the new definition.

Editors' choice: Citations to ponder

1. Allegranzi B, Bagheri N S, Combescure C, et al. Routine sterile glove and instrument change at the time of abdominal wound closure to prevent surgical site infection (ChEETAh) *Lancet*. 2022 19;400(10365):1767-1776.

ChEETAh was a multicentre, cluster-randomized in seven low-income and middle-income countries. Any hospitals (clusters) doing abdominal surgery in participating countries were eligible. Clusters were randomly assigned to current practice (42) versus intervention (39; routine change of gloves and instruments before wound closure for the whole scrub team). This trial showed a robust benefit to routinely changing gloves and instruments before abdominal wound closure.

2. Hocquart M, Lagier JC, Cassir N et al. Early fecal microbiota transplantation improves survival in severe *Clostridium difficile* infections. *Clin Infect Dis*. 2018; 66: 645-650

Microbiota restoration with faecal microbiota transplantation is an effective treatment option for patients with multiple recurring episodes of *C. difficile*. Between June 21, 2021, and April 1, 2022, the authors consecutively screened 86 patients, of whom 42 were randomly assigned to faecal microbiota transplantation (n=21) or placebo (n=21). In patients with first or second *C. difficile* infection, first-line faecal microbiota transplantation is highly effective and superior to the standard of care vancomycin alone in achieving sustained resolution from *C. difficile*.

3. Kaye KS, Marchaim D, Thamlikitkul MD et al. Colistin Monotherapy versus combination therapy for carbapenem-resistant organisms, *NEJM* 2023, *Evid* 2023;2(1)

The OVERCOME (Colistin Monotherapy versus Combination Therapy) trial was an international, randomized, double-blind, placebo-controlled trial. *A. baumannii* was the predominant trial pathogen (78%) and pneumonia the most common index infection (70%). Most patients were in the intensive care unit at the time of enrollment (69%). Combination therapy with colistin and meropenem was not superior to colistin monotherapy for the treatment of pneumonia or BSI caused by these pathogens.

Visual Challenge: What is your Diagnosis?

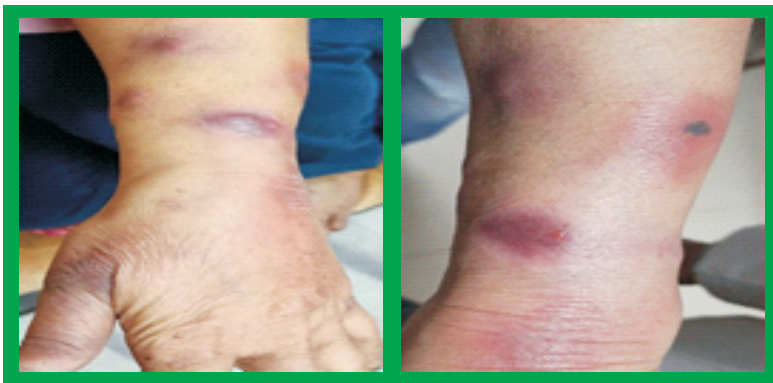


Fig 1—Multiple nodular lesions on the extensor surface of the left forearm

Contributed by : Dr. Bishal Gupta, Dr. Richa Mishra

A 44-year-old female, school teacher, presented to the Nephrology OPD at SGPGI with chief complaints of multiple, painless, mildly itchy nodules on the left forearm. She had a history of live-related ABO incompatible renal transplantation in the year 2013. She was maintained on mycophenolate mofetil, steroids, and tacrolimus as a post kidney transplant regime. She did not have any pets and did not give any history of injury. On examination, there were 4 reddish nodules on the extensor surface of the forearm of which the largest was 2×2 cm. Pus material was aspirated from the large lesion & sent for appropriate investigations.

Infectious disease update

Use of a Modified Preexposure Prophylaxis Vaccination schedule to prevent human Rabies: Recommendations of the Advisory Committee on Immunization Practices (ACIP)— United States, 2022

Source: Morbidity and mortality weekly report. 71. 619-627.10.15585/mmwr.mm7118a2.

Rabies is an acute, progressive encephalomyelitis zoonotic infection that is nearly always fatal. Preexposure prophylaxis (PrEP) is recommended for persons at high exposure risk, a series of human rabies vaccine doses administered before an exposure occurs, in addition to PEP after an exposure. During 2019–2021, the Advisory Committee on Immunization Practices (ACIP) made multiple updates to the rabies PrEP recommendations, including the following:

- A 2-dose (days 0 and 7) intramuscular rabies vaccination series replaced the 3-dose schedule
- A one-time titer or booster dose was advised for persons with risk for only recognized rabies exposures
- Risk categories were redefined, and
- The minimum acceptable rabies antibody titer was changed to 0.5 IU/mL.

This recommendation simplifies the rabies PEP schedule (i.e., eliminates the need for rabies immunoglobulin and decreases the number of vaccine doses required for PEP).

World AIDS Day: 1st Dec, 2022

An awareness program was conducted by the SGPGIMS Hospital Infection Control Committee (SHICCOM), for staff nurses on World AIDS Day Dec 1, 2022, under the theme “Equalize”.

A healthcare worker (HCW) has a 0.1%–0.4% chance of contracting HIV through an infected needle. An NSI Cell under the aegis of SHICCOM has been created for swift redressal of sharp injuries & to reduce the transmission of hepatitis viruses and HIV to HCWs. On this occasion, **Dr. R.K Dhiman**, Director, **Dr. Gaurav Agarwal**, Chairman SHICCOM & CMS, **Dr. V. K. Paliwal**, MS, **Dr. R. Harsvardhan**, Member Secretary, SHICCOM & HoD, Hospital Administration, stressed on

the timely management of NSI. **Dr. Amit Goel**, Addl. Prof., Deptt. of Gastroenterology gave a talk on the 'Prevention & Management of Needle Stick Injury'. The program was carried forward by **Dr. Richa Mishra**, Addl. Prof., Deptt. of Microbiology who deliberated on 'Post-exposure Prophylaxis (PEP)'. **Dr. O. P. Sanjeev**, Associate Professor, Emergency Medicine gave his expert advice on the 'Management of NSI in Emergency Medicine'.



Workshop on Best Practices & Best Outcomes

Best practices are health practices, based on high-quality evidence in order to obtain improved patient and health outcomes. The main challenge is to get the evidence implemented and then rolled out into everyday practice and clinical decision-making. The SGPGIMS Hospital Infection Control Committee (SHICCOM) along with the Department of Hospital Administration organized a Workshop on Best Practices & Best Outcomes (BPBO) vis-à-vis IV Access & Care Bundle in collaboration with Hospital Infection Society- India, Lucknow Chapter at H. G. Khurana Auditorium, SGPGIMS. More than 475 nursing staff from various patient care areas of the hospital were given hands-on training on workstations with mannequins & dummy arms over a span of 4 days. The event was successfully coordinated by **Dr. Anita Jose Ellenkil**, **Dr. Vinay Pathak** & **Dr. Amarjeet Mitra**.

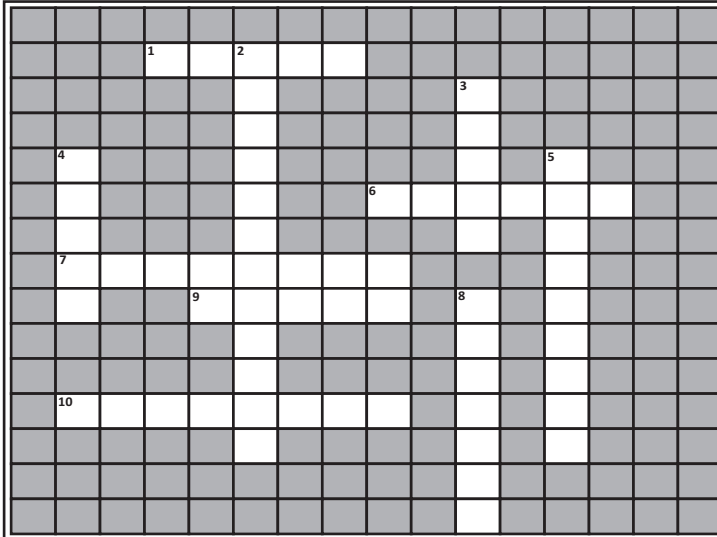
Prof. Afzal Azim, Dept. of CCM, and **Dr. Richa Mishra**, Dept. of Microbiology enlightened the delegates on the Central Line Care Bundle and Blood Culture collection techniques respectively.

The biannual newsletter of SHICCOM was also released followed by the distribution of certificates & prizes to the winners of the 'Poster & Rangoli' competition organized on World Hand Hygiene Day, 2022.





Brain teaser



ACROSS:

- [1] Sharps containing BMW must be collected in a _____ puncture-proof container
- [6] When removing PPE, _____ should be removed first
- [7] An N95 respirator is used to protect against _____ infections such as influenzae & TB
- [9] Mode of transmission of Hepatitis E virus is contaminated _____
- [10] _____ solution used to disinfect nonporous surface areas & non critical items in health care settings

DOWN:

- [2] Bio medical waste in yellow bag is disposed by _____
- [3] The body fluid with highest concentration of HIV virus is _____
- [4] HCWs must treat all body secretions as contaminated fluid except _____
- [5] In a chain of infection, the _____ is the environment where the agent reproduces
- [8] _____ infection is the persistent infection in which symptoms come and go

Answer to Crossword

DOWN-

2. Incineration, 3. Blood, 4. Sweat, 5. Reservoir, 8. Chronic

ACROSS-

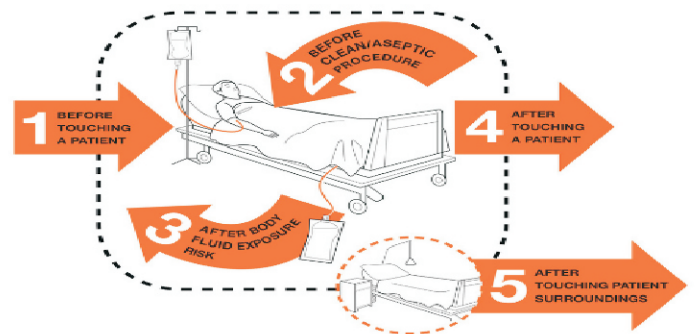
1. White, 6. Gloves, 7. Airborne, 9. Water, 10. Phenolic

Answer to visual challenge:

Ziehl-Neelsen stain was positive for Acid-fast bacilli & cytopathology smears showed granulomas. suggestive of Atypical Mycobacteria as Xpert MTB/RIF assay was negative for MTBC.

Your 5 Moments for Hand Hygiene

- 1 BEFORE TOUCHING A PATIENT
- 2 BEFORE CLEAN / ASEPTIC PROCEDURE
- 3 AFTER BODY FLUID EXPOSURE RISK
- 4 AFTER TOUCHING A PATIENT
- 5 AFTER TOUCHING PATIENT SURROUNDINGS



Editorial team :

Prof. Aditya Kapoor, Head, Cardiology
Prof. Gaurav Agarwal, Chief Medical Superintendent
Prof. Afzal Azim, Prof. Department of CCM
Dr. R. Harsvardhan, Head, Hospital Administration
Dr. Richa Mishra, Additional Prof., Microbiology
Dr. Amit Goel, Additional Prof., Gastroenterology

Editorial Assistance :

Dr. Vinay Kumar Pathak, Resident-HA
 Dr. Anushi Verma, Resident-HA
 Dr. Shalvi Verma, Resident-HA

Office Address :

Hospital Infection Control Cell
 Department of Hospital Administration
 4th Floor, New Library Complex, SGPGIMS, Lucknow
 Contact No: 0522- 2495365/2494062

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