Prifysgol Cymru
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Programme:- MSC Public Health And Social Care in practice

Module Name :- Practice Based Research

Module Code :- LCHS7001

Assignment Title:- Mini Research Proposal Presentation

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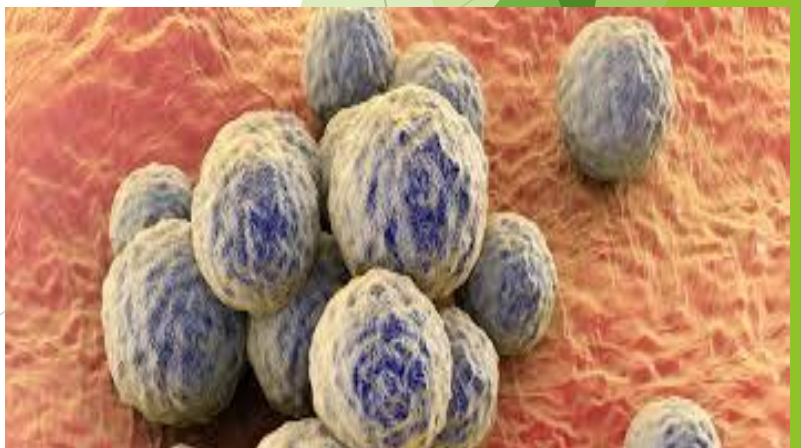
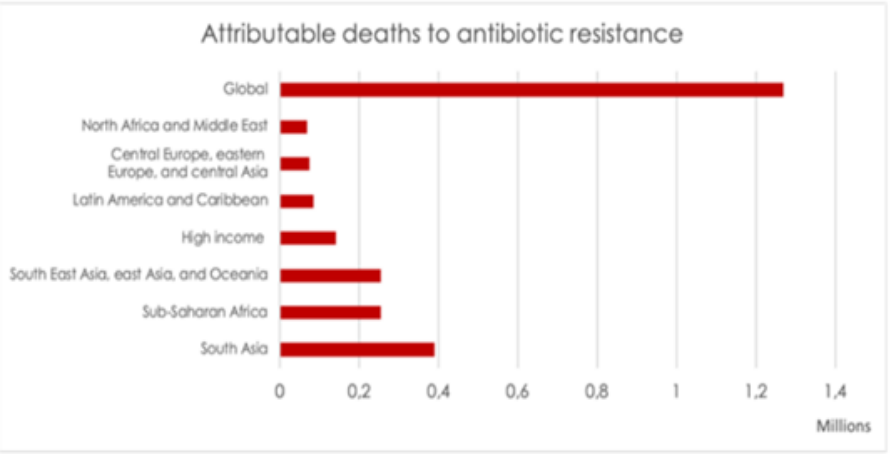
Antimicrobial Resistance in Healthcare

Review of *Staphylococcus aureus*





Overview

- **Antimicrobial resistance causes nearly 6 million deaths in 2021 (Pulingam, *et al.*, 2022).**

- **Hospital and community acquired *Staphylococcus aureus* infections pose a substantial burden in terms of morbidity, mortality and healthcare costs (Murray, *et al.*, 2022).**

- **Understanding the concept of resistance development and transfer will immensely help in curtailing the global rise in antimicrobial resistance in bacteria followed by the introduction of treatment against this pathogens (Laxminarayan,2022).**

Introduction

- WHO has declared AMR as one of the top 10 global public health threats, and AMR is listed on the UK Government's National (Mestrovic, *et al.,* 2022.).
- While resistance is a natural phenomenon and not just a health issue, from a human healthcare perspective it is accelerated by inappropriate use of antimicrobial drugs, a lack of new antimicrobial drugs being developed and many more (Founou, *et al*., 2021).
- After this plan came into effect, many more hospitals of the UK have start implementing this action plan measures. (World Health Organization (2023)
- the government of UK has developed the 5 years plan to tackle the AMR issue, with the intention to contain and control by 2040 (*NHS choices (2023)*. .
- The action plan covers the various medicines development and research. For example, the use of antimicrobials and development of new antimicrobials. Therefore, the following study will consider the treatment strategy for AMR in S. aureus.
- According to the study of Haaber, (2017), the mortality of this pathogen remains almost 20% to 40% despite the facilities of effective antimicrobials. This pathogen is now leading overall cause of mortality rate from nosocomial infections
- GOV.UK, (2023)

Rationale of Study

- In the UK, there were 5 millions deaths in 2019 associated with the bacterial AMR and 1.28 million of those were directly attributed to the deaths from S. aureus (Roope, et al., 2019).
- According to Naylor, et al., (2018) UK hospitals conducts antimicrobials evaluation programs, pilot projects, diagnosis, acute deterioration, and prevention controls.
- However, the literature gaps in this study entails the lack of previous research to highlight the integration of new antimicrobials like oxazolidinone linezolid to fights against this pathogen (Monaco, et al., 2017).
- The evaluation of such issue will helps to quantify the effectiveness of new preventive measures carried out in the NAP. (National Action Plan).

Aim Of The Study

- The Aim of the study is to review and critical evaluate the current research developments of healthcare settings to fight against AMR.

Research Question

- What are the historical evolution of resistant strains in S. aureus and molecular mechanisms of resistance ?

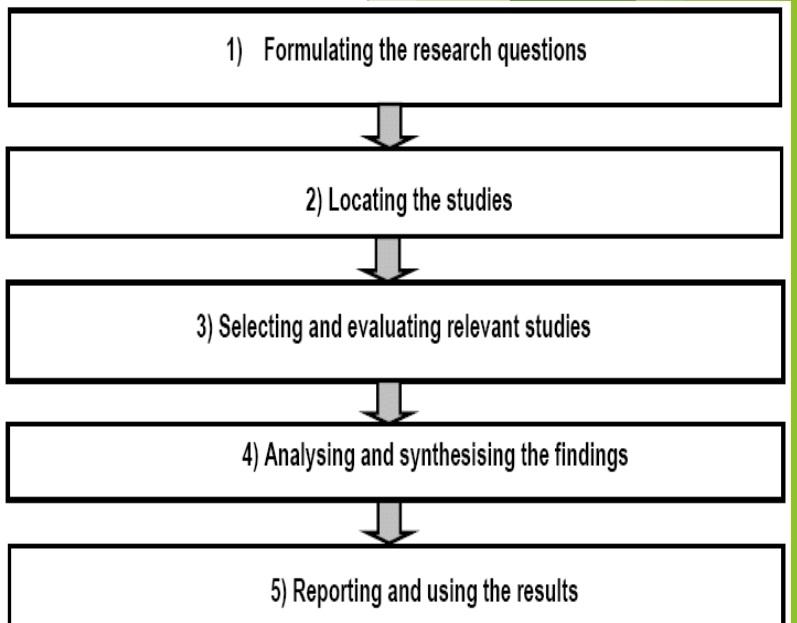
Objectives of the Study

- To compare the effective management practices and policies of UK health entities which contain and control AMR taking account into the global initiatives for same
- To review the historical development of resistance development.
- To measure the effectiveness of AMR 5 year National Action Plan (NAP), to contain and control AMR by 2040.

Research Methodology/Designs

Research methodology applied for this will be systematic review.

- Collect data from hospitals , clinics & compare them specifically from laboratories data.
- Exploratory research methodology with primary and secondary data source will be approach for conducting and collecting sources.
- The Research Designs will be Qualitative in nature.



Data analysis Technique

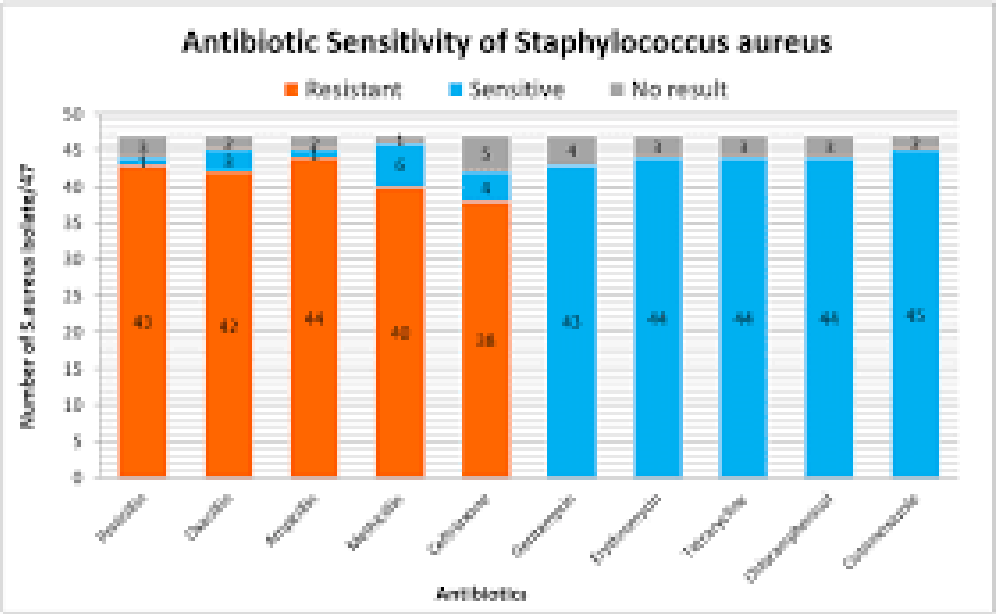
- Thematic Content analysis will be used as a data analysis technique.
- This method will interpret the context of collected data in form of texts through systematic classification process of themes and coding or patterns.
- discussed three approaches to qualitative content analysis, based on the degree of involvement of inductive reasoning (Vaismoradi and Snelgrove, 2019).
- The research will use secondary approach, summarizing and synthesizing data from previous studies , which combines qualitative and quantitative results from multiple studies and narrative qualitative findings.

Implications of Study

- Research implications suggest how the findings may be important for policy Developement, Resistance trends,infection control,,behavioural changes , practice, Economic impact, theory, and subsequent research.
- The research findings of this study will help the organizations like NHS to measure the effectiveness of recent development such as NAP in S. aureus to tackle AMR (Miklasińska, *et al*., 2018).
- It will help both future researchers to obtain any research gaps relevant to the topic and conduct study through our theoretical perspectives.
- Also this will help the professionals from healthcare settings to improvise the current policy and practices against AMR (Ayukekbong, *et al.,* 2017)

ABR:-Data collection Methods

- The following method for ABR (ie : Antibiotic Resistance) data collection will be Systematic review which will be survey of Pre-existing Scholarly Sources on topic ,which will approach an overview of current Knowledge ,awareness, prevalence , to identify relevant themes ,debates and gaps in previous year research(Fink, 2019).



Gantt Chart

Milestones	Time /wee															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Research proposal approval	■															
Submit research proposal		■														
Recruitment			■	■												
Data collection					■	■	■									
Data analysis							■	■								
Verification of data analysis									■	■						
Comparison											■	■				
Report writing												■	■	■		
Writing of dissertation chapters														■	■	
Writing discussion section															■	■
Recommendations																■

References

- administrator 328 posts (2023) *Innovation in diagnostics for tackling AMR – report from UEMO*, *uemo*. Available at: https://www.uemo.eu/innovation-in-diagnostics-for-tackling-amr-report-from-uemo/ (Accessed: 01 November 2023).
- *Antimicrobial resistance (AMR): Applying all our health* (2023) *GOV.UK*. Available at: https://www.gov.uk/government/publications/antimicrobial-resistance-amr-applying-all-our-health/antimicrobial-resistance-amr-applying-all-our-health (Accessed: 01 November 2023).
- Ashiru-Oredope, D. (2021) *What is antimicrobial resistance and why do we need to take action against it?*, *UK Health Security Agency*. Available at: https://ukhsa.blog.gov.uk/2021/11/17/what-is-antimicrobial-resistance-and-why-do-we-need-to-take-action-against-it/ (Accessed: 01 November 2023).
- Ayukekbong, J.A., Ntemgwa, M. and Atabe, A.N., 2017. The threat of antimicrobial resistance in developing countries: causes and control strategies. *Antimicrobial Resistance & Infection Control*, *6*(1), pp.1-8.
- Busetto, L., Wick, W. and Gumbinger, C., 2020. How to use and assess qualitative research methods. *Neurological Research and practice*, *2*, pp.1-10.

References

- Founou, R.C., Blocker, A.J., Noubom, M., Tsayem, C., Choukem, S.P., Dongen, M.V. and Founou, L.L., 2021. The COVID-19 pandemic: A threat to antimicrobial resistance containment. *Future Science OA*, *7*(8), p.FSO736.
- Haaber, J., Penadés, J.R. and Ingmer, H., 2017. Transfer of antibiotic resistance in Staphylococcus aureus. *Trends in microbiology*, *25*(11), pp.893-905.
- Hazlegreaves, S. and here, P. enter your name (2019) *Funding health research: The Canadian Institutes of Health Research*, *Open Access Government*. Available at: https://www.openaccessgovernment.org/funding-health-research/75817/ (Accessed: 01 November 2023).
- Kuckartz, U., 2019. Qualitative content analysis: From Kracauer's beginnings to today's challenges. In *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research* (Vol. 20, No. 3, p. 20). DEU.

References

- Dhingra, S., Rahman, N.A.A., Peile, E., Rahman, M., Sartelli, M., Hassali, M.A., Islam, T., Islam, S. and Haque, M., 2020. Microbial resistance movements: an overview of global public health threats posed by antimicrobial resistance, and how best to counter. *Frontiers in Public Health*, *8*, p.535668.
- Fink, A., 2019. *Conducting research literature reviews: From the internet to paper*. Sage publications.
- *Causes of antibiotic resistance* (2023) *World Health Organization*. Available at: https://www.who.int/europe/multi-media/item/causes-of-antibiotic-resistance (Accessed: 01 November 2023).
- Casula, M., Rangarajan, N. and Shields, P., 2021. The potential of working hypotheses for deductive exploratory research. *Quality & Quantity*, *55*(5), pp.1703-1725.

References

- *Lancet report: Antibiotic resistance leading cause of death*. Available at: https://www.twn.my/title2/health.info/2022/hi220113.htm (Accessed: 01 November 2023).
- Laxminarayan, R., 2022. The overlooked pandemic of antimicrobial resistance. *The Lancet*, *399*(10325), pp.606-607.
- Mestrovic, T., Aguilar, G.R., Swetschinski, L.R., Ikuta, K.S., Gray, A.P., Weaver, N.D., Han, C., Wool, E.E., Hayoon, A.G., Hay, S.I. and Dolecek, C., 2022. The burden of bacterial antimicrobial resistance in the WHO European region in 2019: A cross-country systematic analysis. *The Lancet Public Health*, *7*(11), pp.e897-e913.
- Miklasińska-Majdanik, M., Kępa, M., Wojtyczka, R.D., Idzik, D. and Wąsik, T.J., 2018. Phenolic compounds diminish antibiotic resistance of Staphylococcus aureus clinical strains. *International journal of environmental research and public health*, *15*(10), p.2321.
- Monaco, M., Pimentel de Araujo, F., Cruciani, M., Coccia, E.M. and Pantosti, A., 2017. Worldwide epidemiology and antibiotic resistance of Staphylococcus aureus. *Staphylococcus aureus: microbiology, pathology, immunology, therapy and prophylaxis*, pp.21-56.

References

- Naylor, N.R., Atun, R., Zhu, N., Kulasabanathan, K., Silva, S., Chatterjee, A., Knight, G.M. and Robotham, J.V., 2018. Estimating the burden of antimicrobial resistance: a systematic literature review. *Antimicrobial Resistance & Infection Control*, *7*, pp.1-17.
- Murray, C.J., Ikuta, K.S., Sharara, F., Swetschinski, L., Aguilar, G.R., Gray, A., Han, C., Bisignano, C., Rao, P., Wool, E. and Johnson, S.C., 2022. Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis. *The Lancet*, *399*(10325), pp.629-655.
- Prevention and control of a Staphylococcus aureus infection (2023) bioMérieux Website. Available at: https://www.biomerieux.com/corp/en/resource-hub/knowledge/scientific-library/pharma-microorganisms-library/prevention-and-control-of-a-staphylococcus-aureus-infection-scientific-library.html (Accessed: 01 November 2023).
- Pulingam, T., Parumasivam, T., Gazzali, A.M., Sulaiman, A.M., Chee, J.Y., Lakshmanan, M., Chin, C.F. and Sudesh, K., 2022. Antimicrobial resistance: Prevalence, economic burden, mechanisms of resistance and strategies to overcome. European Journal of Pharmaceutical Sciences, 170, p.106103.

References

- Rassel, G., Leland, S., Mohr, Z. and O'Sullivan, E., 2020. Research methods for public administrators. Routledge.
- Roope, L.S., Smith, R.D., Pouwels, K.B., Buchanan, J., Abel, L., Eibich, P., Butler, C.C., Tan, P.S., Walker, A.S., Robotham, J.V. and Wordsworth, S., 2019. The challenge of
- antimicrobial resistance: what economics can contribute. Science, 364(6435), p.eaau4679.
- Ruggiano, N. and Perry, T.E., 2019. Conducting secondary analysis of qualitative data: Should we, can we, and how?. Qualitative Social Work, 18(1), pp.81-97.
- Soratto, J., Pires, D.E.P.D. and Friese, S., 2020. Thematic content analysis using ATLAS. ti software: Potentialities for researchs in health. Revista brasileira de enfermagem, 7
- The Great Alliance in Combating Antimicrobial Resistance (2018) Global Alliance for Infections in Surgery. Available at:
- https://infectionsinsurgery.org/the-great-alliance-in-combating-antimicrobial-resistance/ (Accessed: 01 November 2023).
- Vaismoradi, M. and Snelgrove, S., 2019. Theme in qualitative content analysis and thematic analysis.