AMR Research in Myanmar: Current Situation, Challenges and Ways Forward

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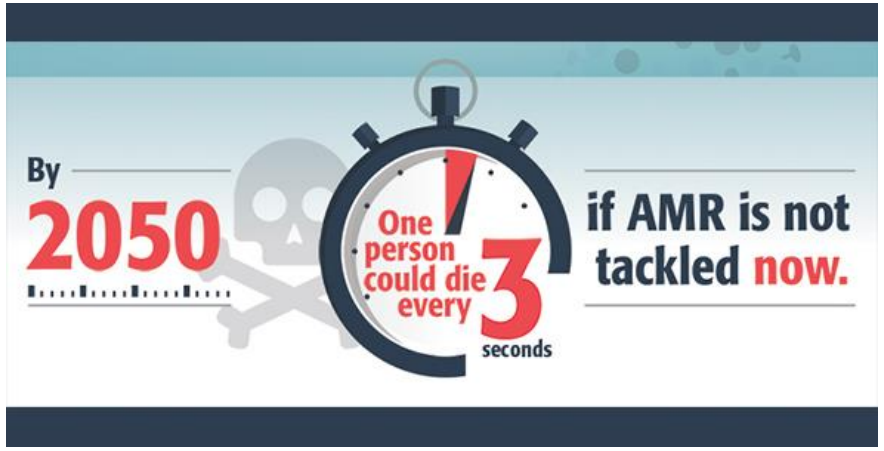
Presentation Outlines

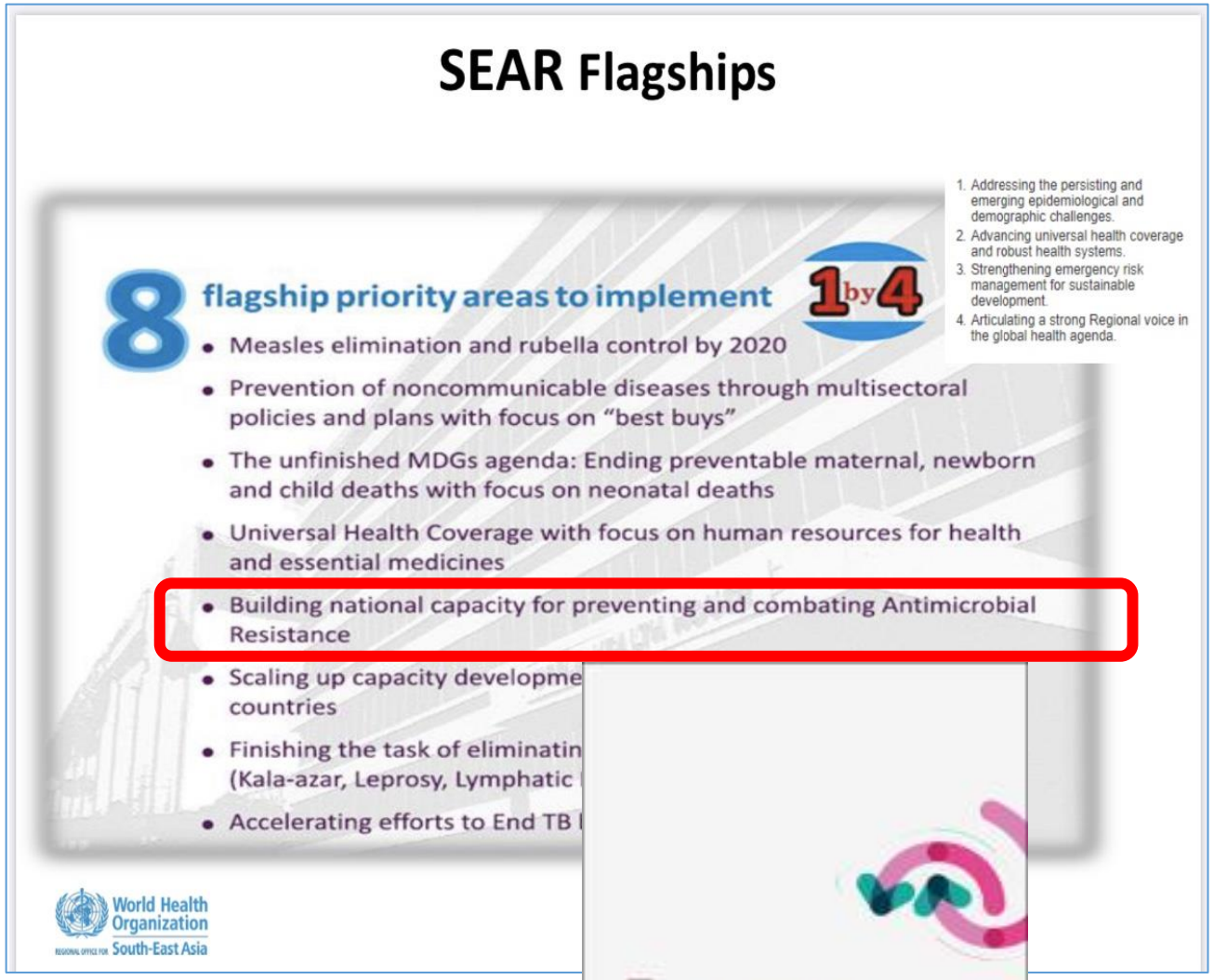
- Current AMR situation
- AMR Research Highlights
- Challenges
- Way Forward

Current situation of AMR in Myanmar

Global Action

- At the 68th World Health Assembly in May 2015, a global action plan on AMR (GAP AMR) - acknowledgement of this emerging crisis





All Member States should develop their own, tailor made National Action Plans on AMR (NAP AMR), duly aligned with the principles and approaches espoused by the GAP AMR by May 2017.

Steps in development and implementation of NAP-status in Myanmar

Status of implementation in Myanmar 2016

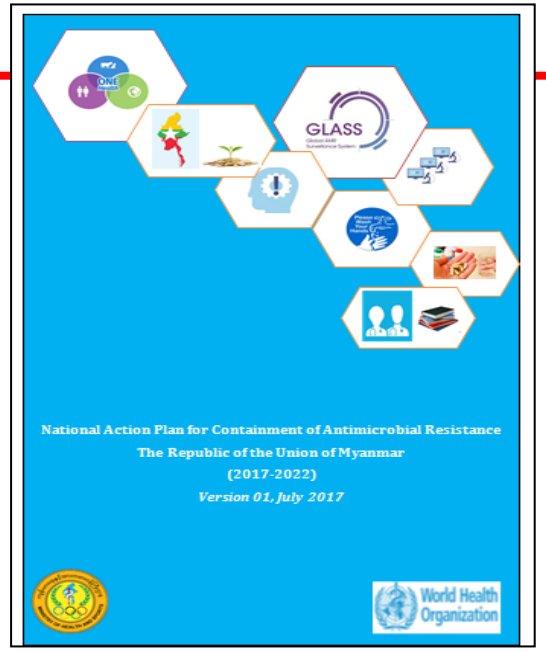
Establish a governance mechanism

Conduct through situation analysis

Planning

Initiate implementation

Conduct periodic review and incorporate lessons learnt

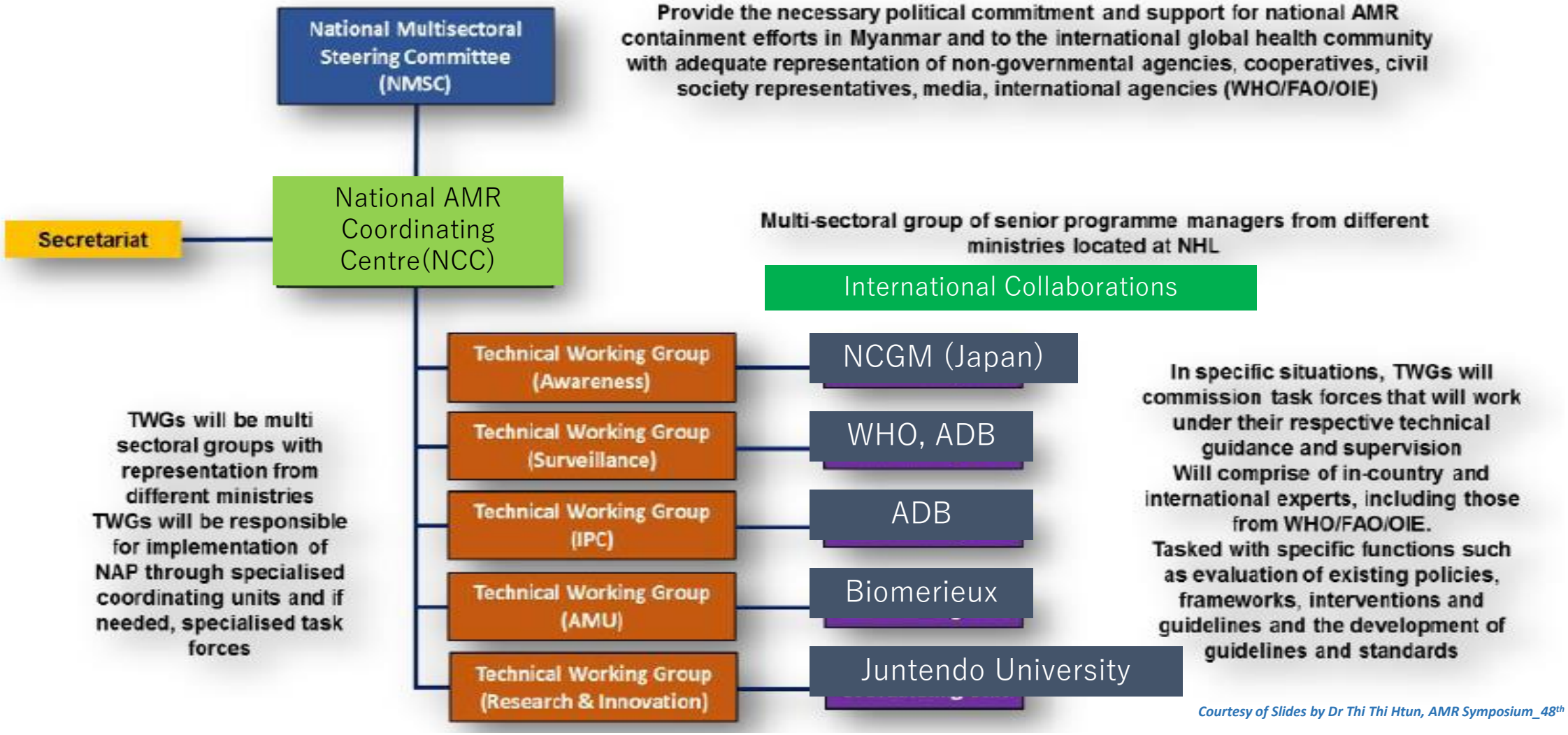


(NAP-AMR): Myanmar (2017-2022), Version 01 - had been launched in line with GAP-AMR in July, 2017

Status of implementation in Myanmar 2018-2019

Courtesy of Slides by Dr Thi Thi Htun, AMR Symposium_48th MHRC 2020

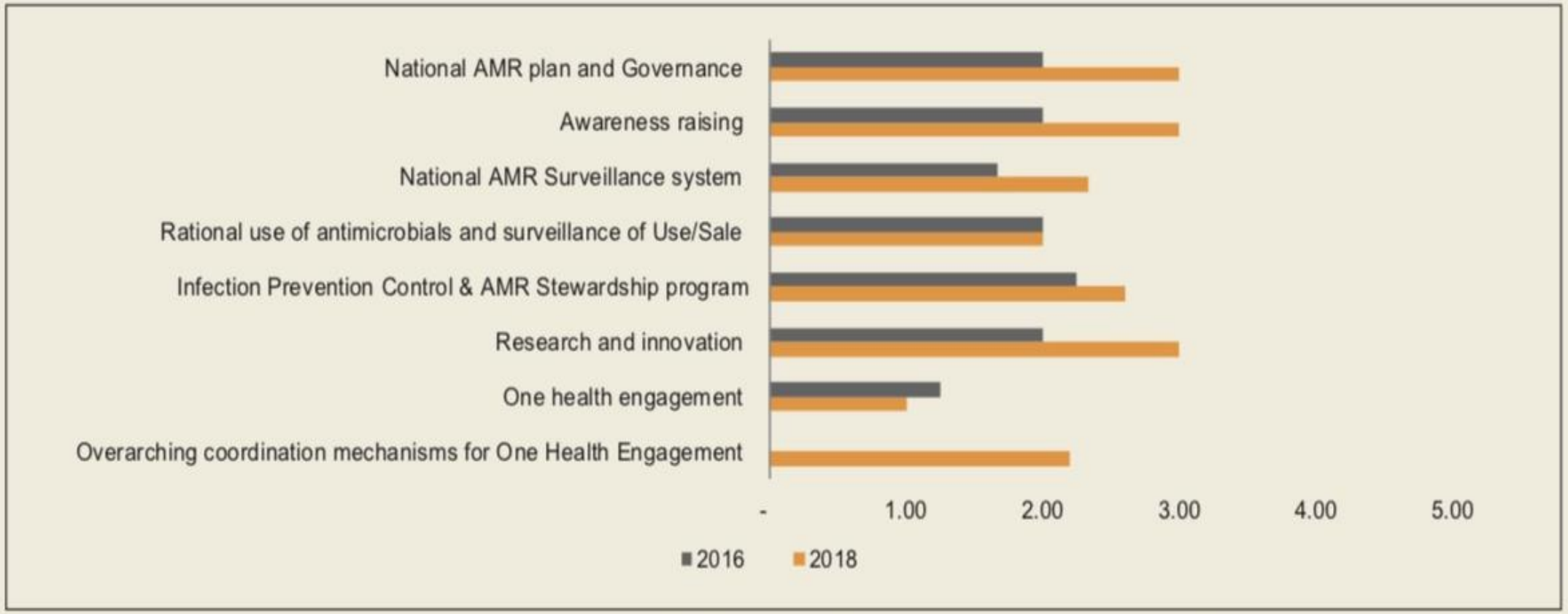
NMSC, NCC and International Implementation Partners



Courtesy of Slides by Dr Thi Thi Htun, AMR Symposium_48th MHRC 2020

Situational analysis of antimicrobial resistance in the South-East Asia Region, 2018 (WHO)

Fig 19: Situational analysis of progress on AMR prevention and containment in Myanmar, 2016–2018



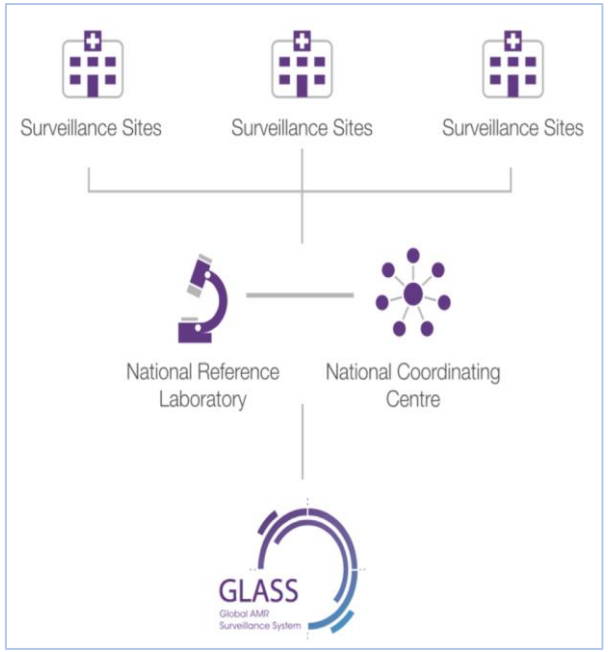
The figure shows an average of phase-grading for all indicators in different focus areas, purely for pictorial representation.

Courtesy of Slides by Dr Thi Thi Htun,_AMR Symposium_48th MHRC 2020

National AMR Surveillance Guideline

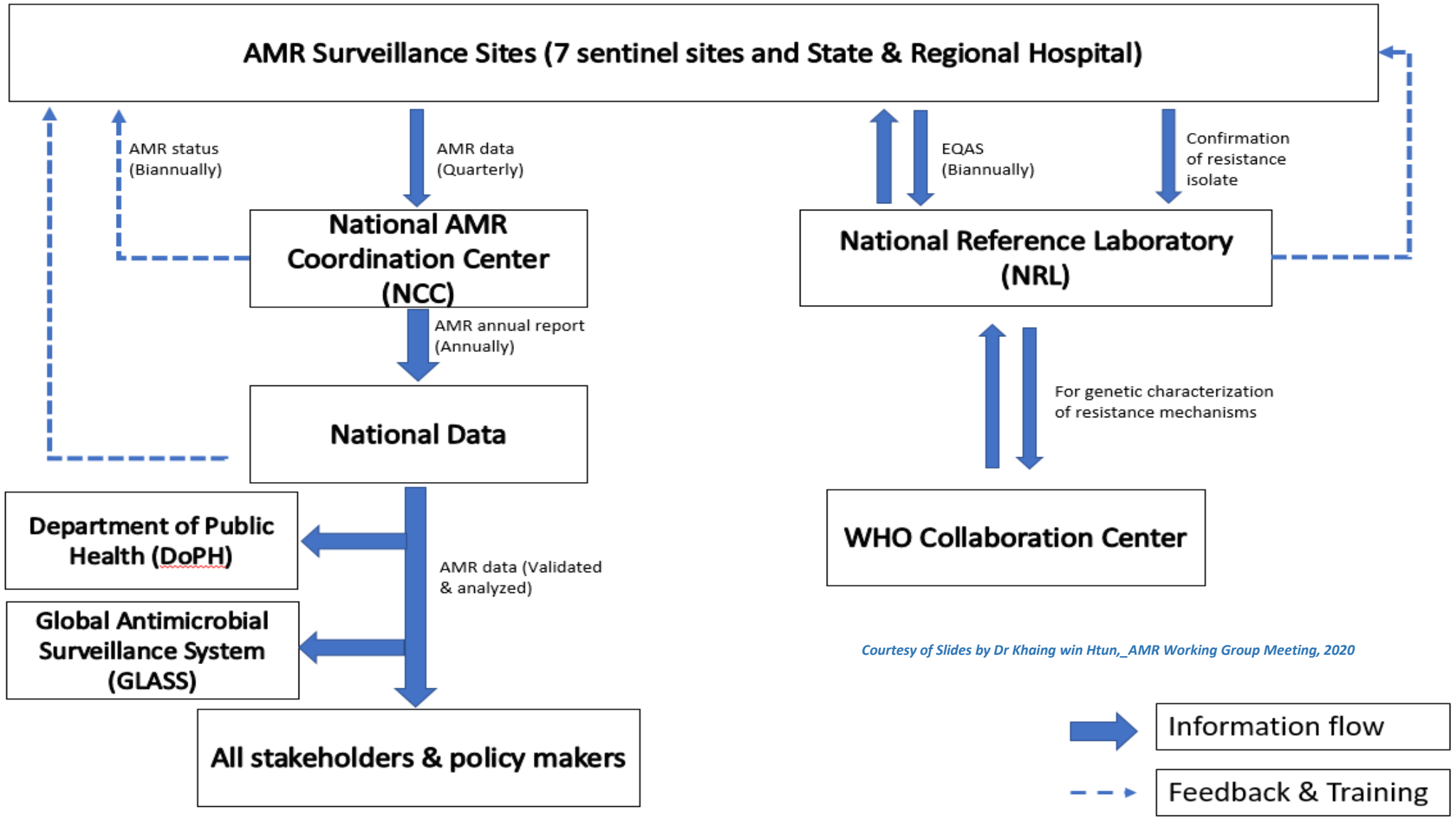
Global Antimicrobial Resistance Surveillance System (GLASS)

- Myanmar - first country to develop National AMR Surveillance Guideline among SEARO countries
- Workshop on National AMR Surveillance Guideline Development - Held on 7-9 October, 2019
- General objective - to support and implement the Myanmar activities to implement the NAP for AMR Containment
- Draft guideline - published



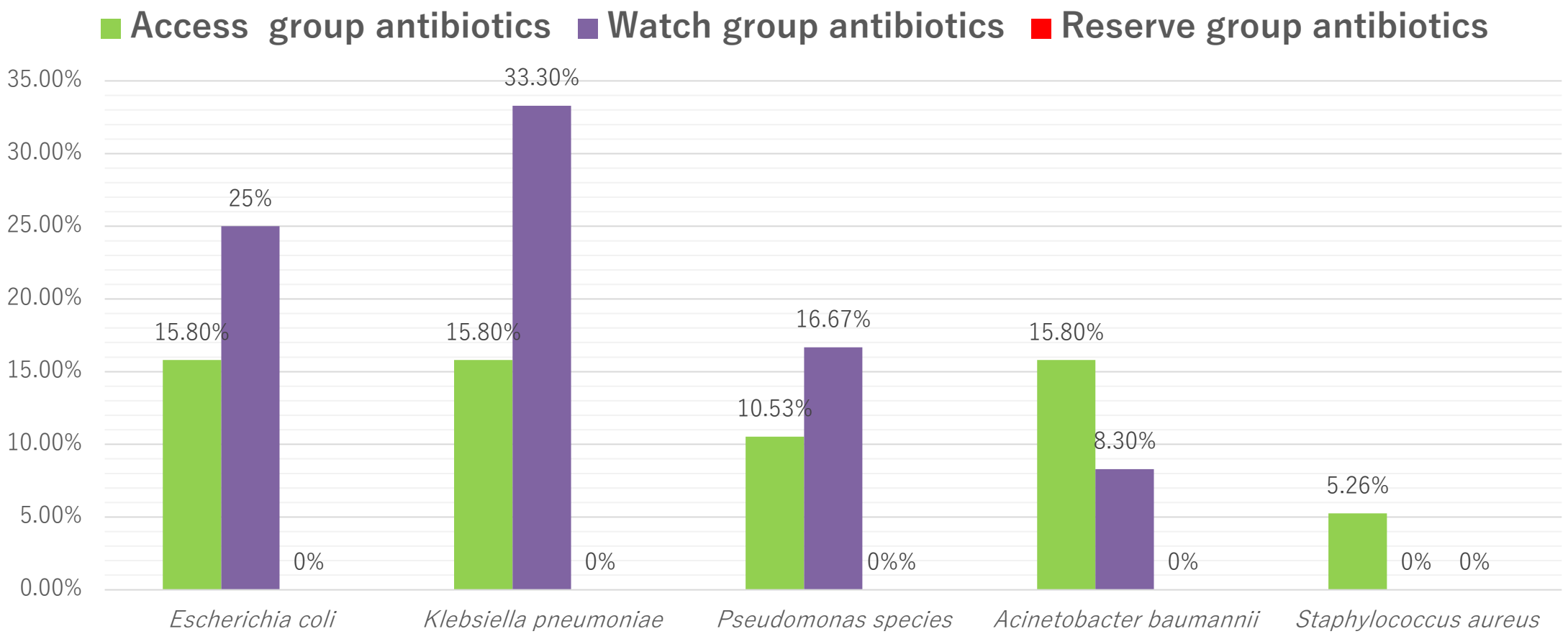
Courtesy of Slides by Dr Thi Thi Htun_AMR Symposium_48th MHRC 2020

Myanmar National AMR Surveillance Guideline (Revised on 31-1-2020)



Courtesy of Slides by Dr Khaing win Htun,_AMR Working Group Meeting, 2020

Current Antibiotic resistance in line with AWaRe group categorization



Courtesy of Slides by Dr Thi Thi Htun_AMR Symposium_48th MHRC 2020

Highlights on AMR Research

AMR Research in Myanmar

Multi-stakeholders Approach

- Department of Medical Research
- Department of Public Health (Disease Control Programme)
- Department of Medical Services (NHL, Hospitals)
- Department of Human Resources for Health (Universities)
- Department of Food and Drug Administration
- Livestock Veterinary and Breeding Dept.
- Agricultural and Aquaculture Sectors
- Local NGOs- MMA, MPHA …….

in collaboration with: International Institutions and Universities

Funding Source: WHO/International Research Grants/MOHS IR Grants/DMR Grants

Stakeholder Consultation meetings on AMR (September 2019/January 2020)

Research Prioritization Workshop on Antimicrobial Resistance in Myanmar: 7-8 November 2019

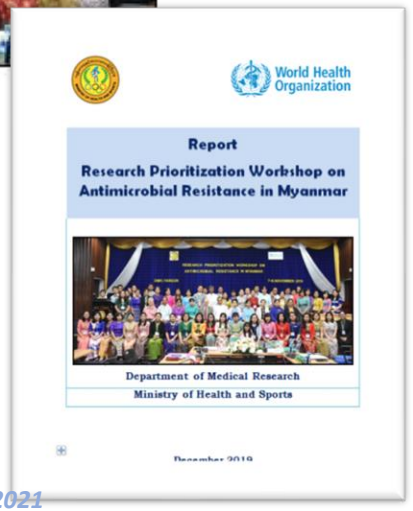

Components of Research Findings on Antimicrobial Resistance in Myanmar (2009-2019)

Version -01

Department of Medical Research
Ministry of Health and Sports

December, 2019

Report on Research Prioritization Workshop (December, 2019)



DRAFTING RESEARCH AGENDA

Sr. No.	Research Area (Priority Group I)	Related Strategic Objectives of National Action Plan for AMR
1	Factors influencing on adherence to antibiotic therapy at private clinics (Doctors' and patients' perspective)	AMR Awareness
2	Can behavior change intervention affect the antibiotic selling practice of pharmacy?	AMR Awareness and Antimicrobial Usage
3	Antimicrobial resistance pattern and associated risk factors among *Neisseria gonorrhoeae* infected patients attending STD clinics	AMR Surveillance
4	Currently circulating serotypes and antibiotic resistant pattern of *Streptococcus pneumoniae* in post PCV vaccination era among under 5 children	AMR Surveillance
5	Effectiveness of targeted surveillance for control of MRSA in tertiary care hospital setting	Infection Prevention & Control
6	Health care associated infections in tertiary level hospitals and it's causes	Infection Prevention & Control
7	Challenges of selected tertiary and secondary hospitals to establish effective IPC program by WHO core components	Infection Prevention & Control
8	Challenges and barriers in the establishment of antibiotic guidelines and antibiotic stewardship program at the public and private hospitals	Antimicrobial Usage
9	Pattern and trend of antimicrobial usage in food producing animals	Antimicrobial Usage
10	Level of antimicrobial residues in food from animal origin (egg, milk, meat, aquaculture, apiculture)	Antimicrobial Usage

*** (10) Priority Group II Research Areas and (14) Priority III Research Areas were also identified (Detail titles not shown)**

AMR Research in Myanmar Health Research Registry

https://www.mhrr-mohs.com

Research Areas

- Awareness raising and Optimizing use of antimicrobial medicines
- Emergence of resistance in priority pathogens/ critical antimicrobials
- Effective sanitation, hygiene and infection prevention measures
- AMR on Public Health Importance Microorganisms eg. drug resistant TB, Malaria and HIV
- Surveillance and disease burden studies
- Antibiotics and antimicrobial resistance genes
- Research on One Health

SORT IT

Improving health systems through research

World Health Organization

TDR For research on diseases of poverty

UNICEF • UNDP • World Bank • WHO

SORT IT

Improving health systems through research

Asia Regional SORT IT training on antimicrobial resistance
Kathmandu, Nepal, 2019-2020

TDR receives £8.2 million boost for antimicrobial resistance operational research training

TDR news item
14 December 2018

TDR's Structured Operational Research and Training Initiative (SORT IT) has won a grant for £8.2 million from the UK National Institute for Health Research (NIHR). The funding is for operational research training related to antimicrobial resistance in 6 low- and middle-income countries.

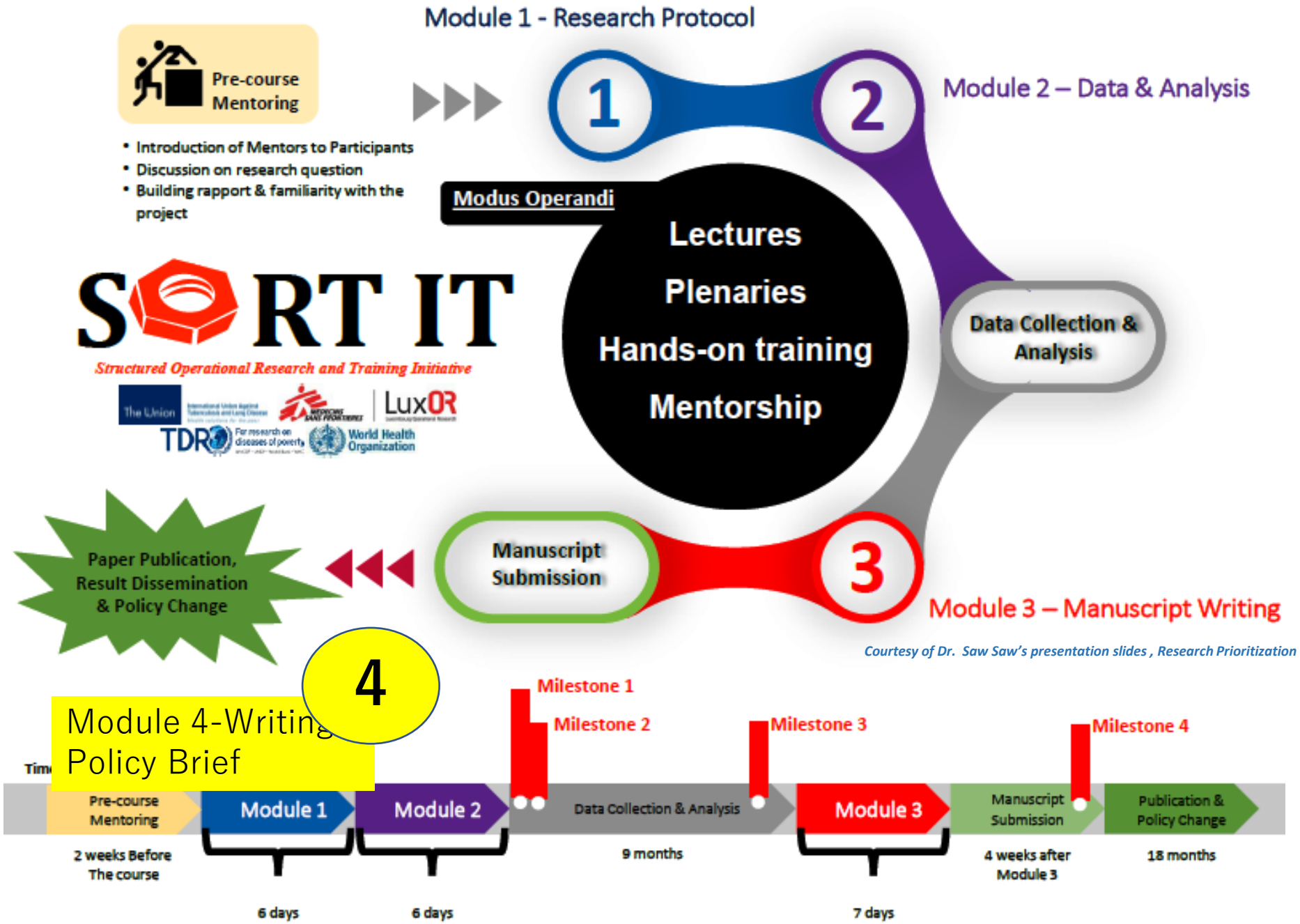
Professor Dame Sally Davies, England's Chief Medical Officer, in making this funding announcement 12 December, said, "Containing and controlling antimicrobial resistance (AMR) as a global health threat will require investment in research at all levels from 'bug to bedside'. This new partnership will fund research that aims to transform AMR policy and practice, and turn the tide against antimicrobial drug resistant infections."

Antimicrobial resistance has the potential to kill as many as 10 million people each year and cost the world economy as much as US$ 100 trillion. AMR allows infections to persist and spread within and across populations. Standard antibiotic treatments then become ineffective, making even routine surgery potentially life-threatening.

AMR SORT IT will empower countries to make better use of the information they collect to make evidence-based decisions and contribute to preventing and controlling the global spread of AMR.

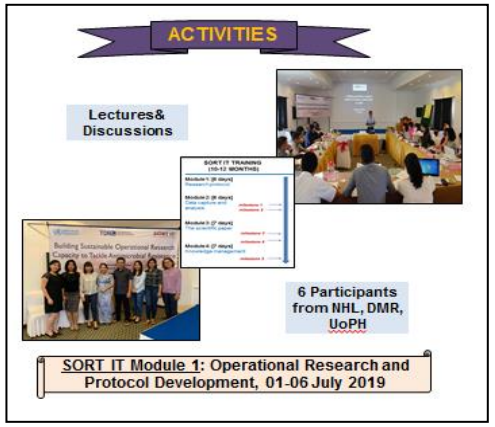
SORT IT course, Myanmar

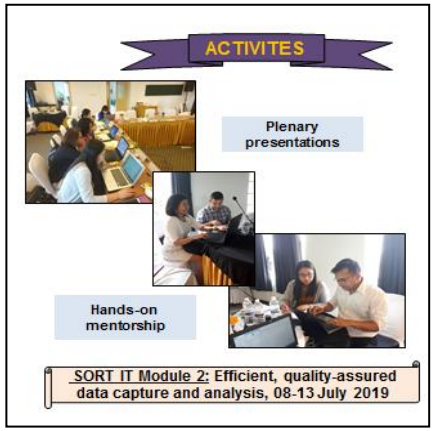
TDR Director John Reeder said, "The UK Government has been a strong, long-term

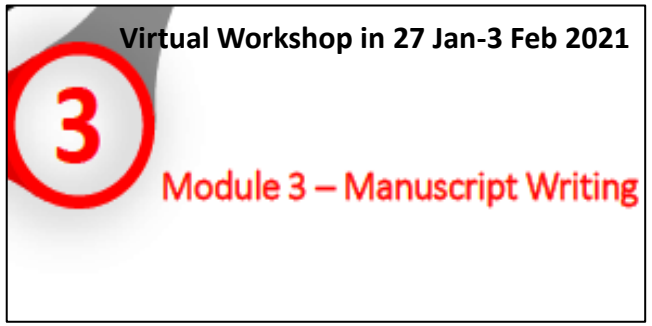


Courtesy of Dr. Saw Saw's presentation slides , Research Prioritization Workshop on AMR, 7-8 Nov 2019

Regional SORT IT AMR







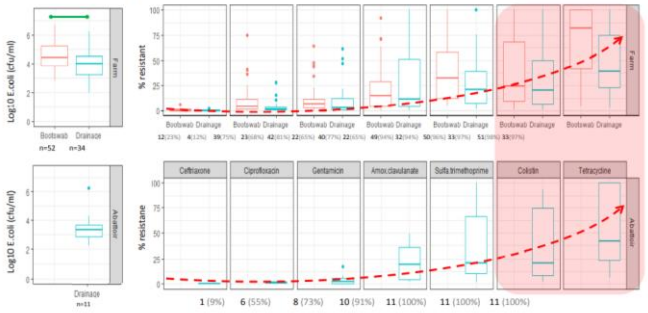
No.	Research Titles
1	Surveillance of antimicrobial resistance in wound infections at Yangon General Hospital, Myanmar in 2018: A mixed-methods study
2	Infection Prevention and Control in four Centrals Hospitals in Yangon, Myanmar: where do we stand?
3	Prevalence and associated factors of methicillin resistant isolated Staphylococcus aureus during 2018-19, in Myanmar
4	Assessing current practice of water testing in hospitals in 2018-2019
5	Neonatal sepsis, antibiotic susceptibility pattern and treatment outcomes among neonates treated in two tertiary care hospitals in Yangon, Myanmar from 2017-2019
6	Country-wide antibiotic consumption in public health hospitals before and after decentralisation of drug procurement in Myanmar

AMR in Animal Health Sector

prevalence of AMR
E coli from farms, slaughterhouses

Total *E.coli* and their AMR
(86 farm samples + 11 abattoir samples)

- **No significant difference** in total *E.coli* counts from samples taken from **farms** and **abattoirs**
- **Farm-boot-swab** samples contained **higher** *E.coli* counts than farm **drainage-sample**
- **Resistance pattern** with 7 different antibiotics seemed to show a **similar trend**



Evidence based research on AMR and surveillance

UNIVERSITY OF CAMBRIDGE · ZELS Zoonoses & Emerging Livestock Systems · oucru · STEPS · US University of Sussex

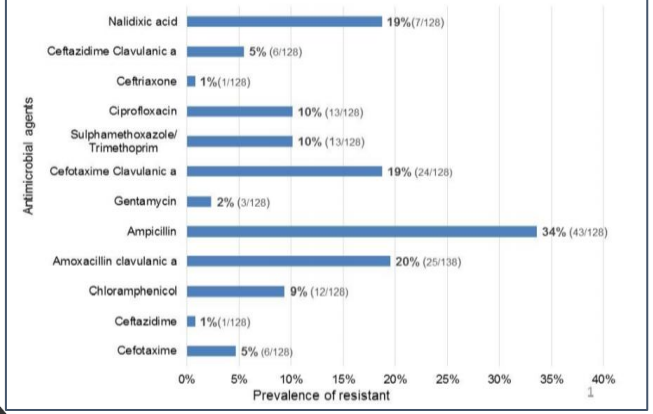
An Integrated management-based approach for surveillance and control of zoonoses in emerging livestock systems (ZELS) 2015-2020

- **FOCUS: AMR zoonoses in Pig Supply chain**
  - *Salmonella*
  - *Streptococcus suis*
  - *E.coli*

Courtesy of Slides by Dr Min Thein Maw, AMR Symposium_48th MHRC 2020

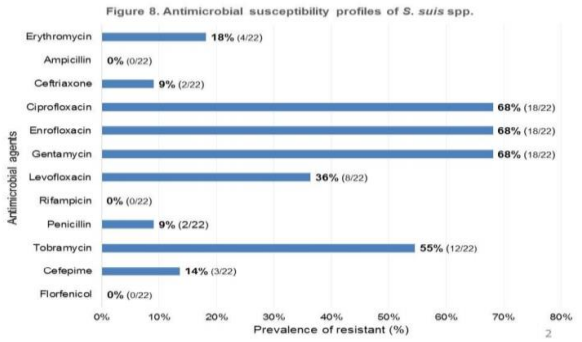
Prevalence of AMR
Salmonella (pig farm)

Figure 7. Antimicrobial susceptibility profiles of *Salmonella* spp.



Prevalence of AMR
Strep susi (pig farm)

Figure 8. Antimicrobial susceptibility profiles of *S. suis* spp.



prevalence of *mcr*- genes (colistin resistance genes)

Distribution of colistin resistance genes in farm and abattoirs environment samples

Gene pattern (n, %)	Farms (n,%)								Abattoirs (n,%)				Total (n=114) (n,%)	Grand total (n=141) (n,%)
	Boot swab (n=54)				Drain (n=41)				Drain (n=19)					
	Winter (n=18)	Summer (n=18)	Rainy (n=18)	Total (n=54)	Winter (n=12)	Summer (n=15)	Rainy (n=14)	Total (n=41)	Winter (n=3)	Summer (n=7)	Rainy (n=9)	Total (n=19)		
mcr-1	16	6	7	29 (53.7)	7	6	5	18 (43.9)	1	3	5	9 (47.4)	56 (49.1)	56 (40)
mcr-1, mcr-3	1	6	8	15 (27.8)	1	3	4	8 (19.5)					23 (20.2)	23 (16)
mcr-1, mcr-8			1	1 (1.9)			1	1 (2.4)					2 (1.8)	2 (1)
mcr-1, mcr-3, mcr-8		2	1	3 (5.6)		2	2	4 (9.8)			1	1 (5.3)	8 (7)	8 (6)
mcr - any				48 (89)				31 (75.6)				10 (52.7)	89 (78.1)	89 (63)

- *High prevalence of colistin resistant environment samples (114/141, 81%)*
- In total: we identified the presence of *mcr* genes in 89/114, (78.1%) in samples

Challenges

Challenges - 1

- Decreasing momentum of AMR activities during COVID 19 pandemic
- Underdeveloped antibiotic stewardship programs
- Limited availability of laboratory facilities for C&S
- Antibiotic use in clinical practice is high, and broad..
- Suboptimal facilities enhance transmission of resistant organisms between patients
- Antibiotics easily available over the counter without prescription
- Weak regulation of production, import and sale of antibiotics

Challenges - 2

- Counterfeit & substandard antibiotics are available & used in areas where regulation & enforcement are weak
- Monitoring of measures for Infection prevention & control insufficient
- Need to educate for awareness of burden & seriousness of AMR among health care workers , public at large and other stakeholders from different sectors
- Need to strengthen of activities on Research and Innovation
- Regional and extra-regional Networking, multi-center AMR research activities and surveillance

Way Forward

WAY FORWARD 1

- To adapt WHO AWaRe classification in National Essential Medicines List and standard treatment guidelines by Dept. of Medical Services & Essential Medicine project
- To strengthen hospital level AMSP following development of National Antimicrobial stewardship policy
- To develop National Antimicrobial consumption and use with monitoring and evaluation system by global point prevalence surveys

WAY FORWARD 2

- Encouraging collaborations of Departments under MOHS, MoALI, MOE, NGOs, INGOs, Private Sectors and International Institutions/Universities for enhancing One Health Approach
- Dissemination of the knowledge and research findings on AMR in the public talks, scientific talks, symposia, conferences
- Seeking of support/grant/collaborations for conducting large scale AMR research studies

Thank You