

# CHALLENGES IMPLEMENTING ANTIMICROBIAL STEWARDSHIP IN ASIA

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## Gaps in antimicrobial stewardship programmes in Asia: a survey of 10 countries

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# WHY AMS FOR AMR

- AMR- A SERIOUS THREAT TO GLOBAL PUBLIC HEALTH, PARTICULARLY URGENT ISSUE IN ASIA
- AMS- A COORDINATED SET OF INTERVENTIONS DESIGNED TO IMPROVE THE APPROPRIATE USE OF ANTIMICROBIAL AGENTS
  - EFFECTIVE HOSPITAL AMS IS ESSENTIAL TO REDUCE/ RETARD AMR, CAN OFFSET REDUCE COST, IMPROVE PATIENT OUTCOMES
  - COMPRISES A CORE SET OF COMPONENTS TO ENSURE OPTIMAL ANTIBIOTIC PRESCRIBING
  - INCLUDES HOSP ADMIN SUPPORT, TRAINED AMS TEAM, PLANNED INTERVENTIONS, STRUCTURED REPORTING SYSTEM, ADEQUATE HOSP INFRASTRUCTURE

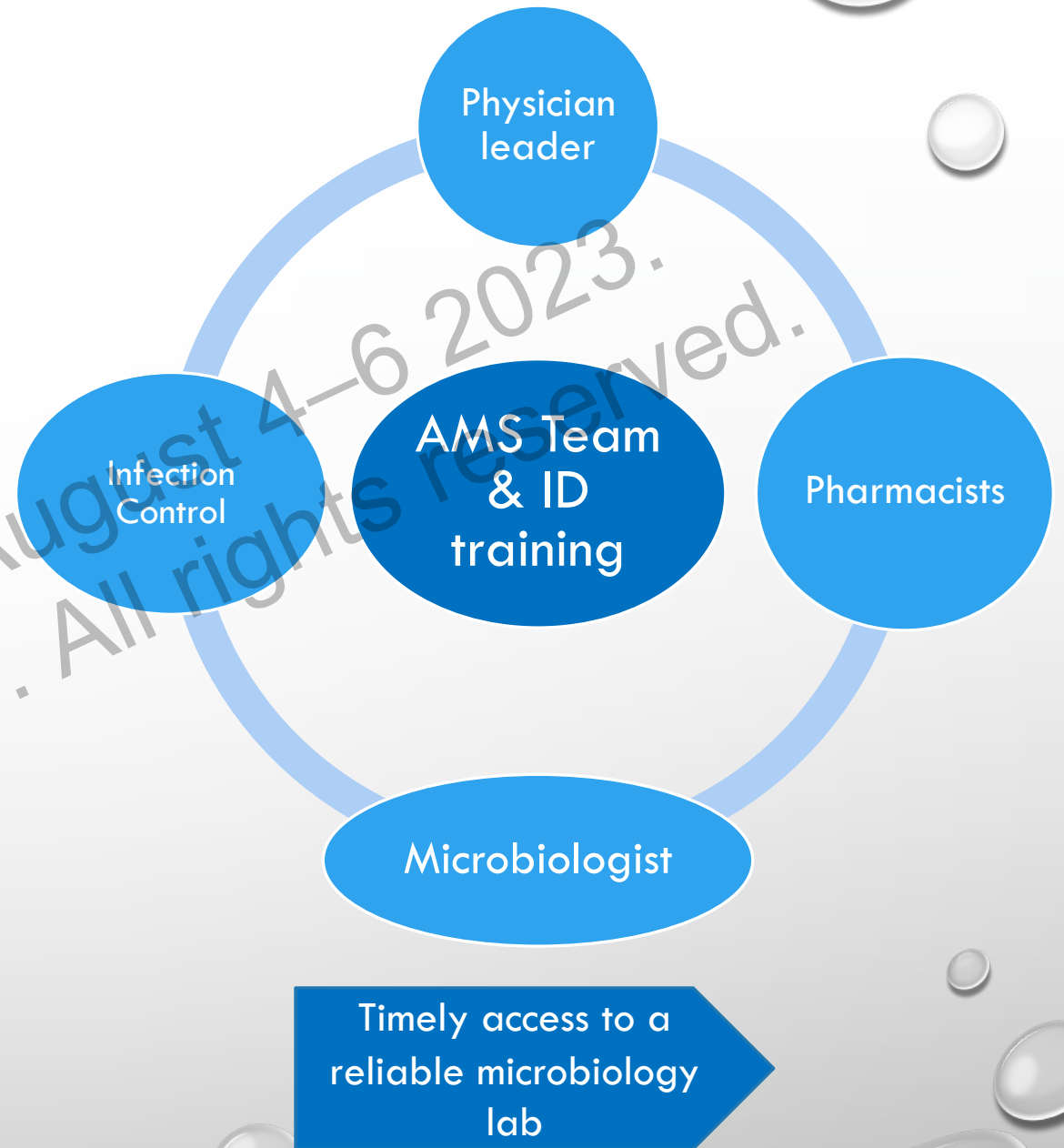
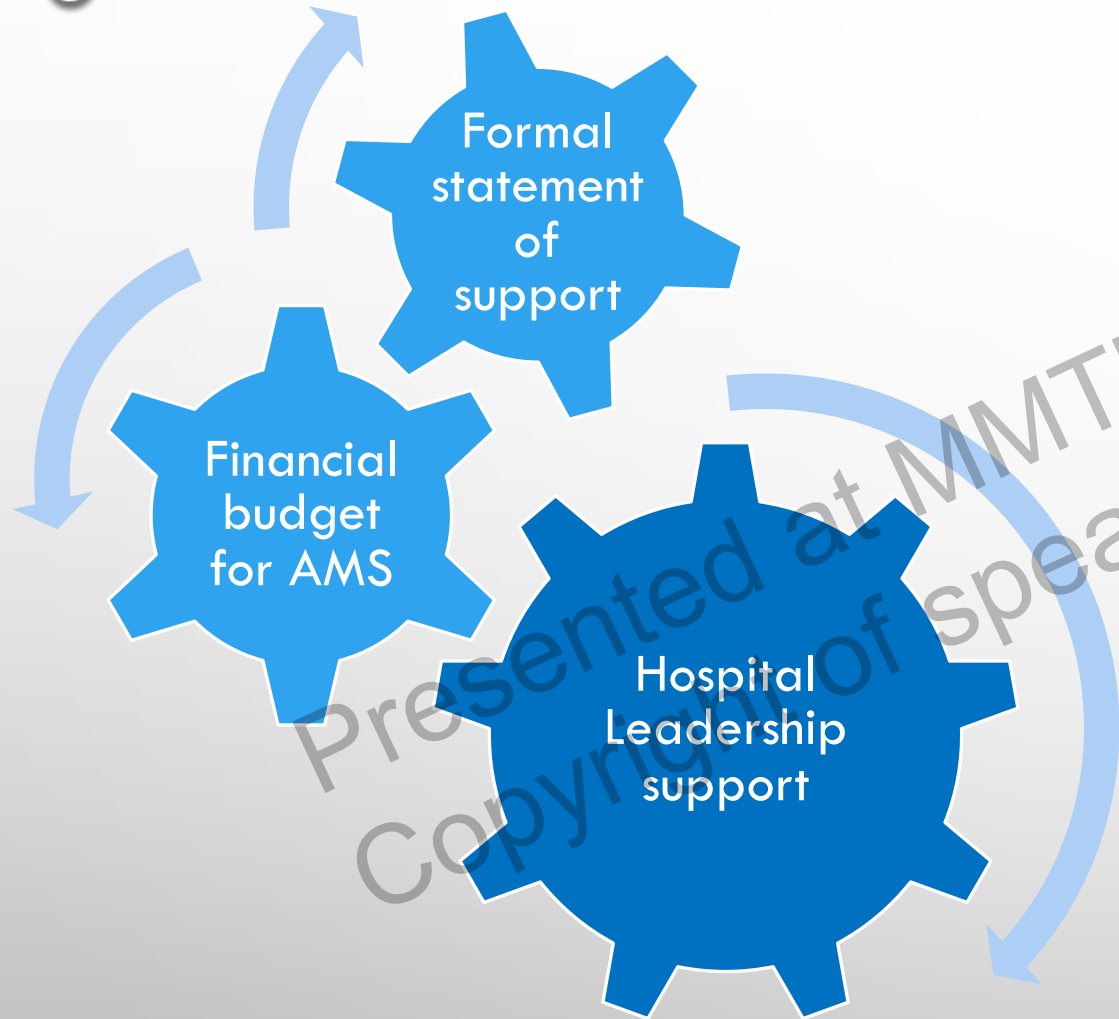
# AMS IMPLEMENTATION

- HAS BEEN INCONSISTENT ACROSS COUNTRIES/ REGIONS
- PROGRAMMES OFTEN LACK CORE COMPONENTS, PARTICULARLY IN LOW- AND MIDDLE-INCOME COUNTRIES
- ASSESSMENT OF CORE AMS PROGRAMME COMPONENTS CAN PROVIDE A USEFUL GAP ANALYSIS TO HELP INFORM THE OPTIMIZATION OF AMS PROGRAMMES VIA SURVEY
- A SURVEY OF CORE AMS PRACTICES IN SECONDARY AND TERTIARY ACUTE-CARE HOSPITALS WITHIN THE ASIAN REGION TO IDENTIFY GAPS ESSENTIAL FOR EFFECTIVE AMS, SO THAT TARGETED IMPROVEMENT STRATEGIES CAN BE EFFECTED

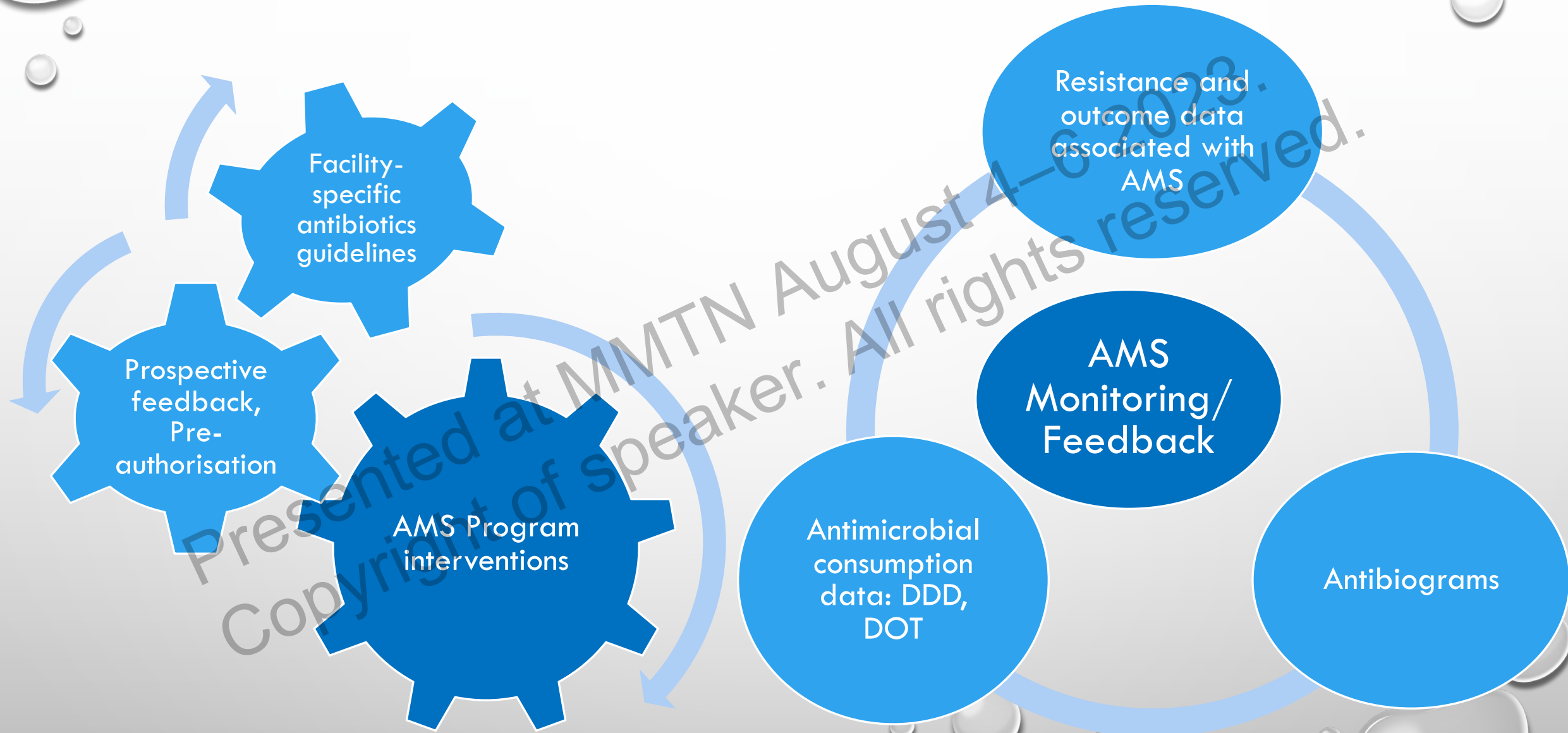
# METHODS

- QUESTIONNAIRE WAS DEVELOPED BY THE STUDY STEERING COMMITTEE (EXPERT INFECTIOUS DISEASE CLINICIANS AND RESEARCHERS FROM ASIA)
- BRIEFLY, QUESTIONNAIRE INCLUDE INFORMATION ON THE FOLLOWING CATEGORIES
  - HOSPITAL LOCATION
  - HOSPITAL CATEGORY & SETTING
  - HOSPITAL LEADERSHIP SUPPORT FOR AMS AND SAFETY CULTURE
  - AMS TEAM AND INFECTIOUS DISEASES TRAINING
  - AMS PROGRAMME INTERVENTIONS
  - AMS MONITORING & REPORTING
  - HOSPITAL INFRASTRUCTURE
  - EDUCATION
  - CHALLENGES FACED IN AMS IMPLEMENTATION

# CORE COMPONENTS



# CORE COMPONENTS



# ANALYSIS

- DESCRIPTIVE STATISTICS WERE REPORTED.
- POSITIVE RESPONSE RATES (PRRS) WERE CALCULATED BASED ON THE TOTAL NUMBER OF 'YES' OR 'NO' RESPONSES TO QUESTIONS.
- BLANK ANSWER FIELDS OR 'NOT APPLICABLE' RESPONSES WERE EXCLUDED.
- MEAN PRRS FOR CORE AMS ELEMENTS WERE CALCULATED FOR THE 10 RESPONDING COUNTRIES.
- OVERALL AND INDIVIDUAL COUNTRY PRRS WERE ALSO CALCULATED FOR ALL CORE AND SUPPLEMENTARY AMS COMPONENTS.
- PROPORTIONS OF HOSPITALS FACING CHALLENGES WERE CALCULATED BASED ON THE TOTAL NUMBER OF RESPONSES. BLANK ANSWER FIELDS WERE EXCLUDED.



## RESULTS- RESPONDERS

Country	Number of hospitals that received a survey	Number of responding hospitals	Response rate (%)
Cambodia	2	2	100.0
India	200	95	47.5
Indonesia	73	42	57.5
Japan	16	16	100.0
Malaysia	67	66	98.5
Pakistan	45	31	68.9
Philippines	12	4	33.3
Taiwan	102	57	55.9
Thailand	40	32	80.0
Vietnam	4	4	100.0
Overall	561	349	62.2

# RESULTS- HOSPITAL TYPES

- OVERALL, 206 (59.0%) OF THE RESPONDING HOSPITALS PROVIDED TERTIARY-LEVEL CARE
- 157 (45.0%) - PRIVATE HOSPITALS.
- INDONESIA WITH HIGHEST PROPORTION OF PRIVATE HOSPITAL RESPONDENTS (41/42, 97.6%), FOLLOWED BY INDIA (56/95, 58.9%).
- MALAYSIAN RESPONDENTS WERE PREDOMINANTLY FROM PUBLIC HOSPITALS (62/66, 93.9%), AND VIETNAMESE RESPONDENTS WERE EXCLUSIVELY FROM PUBLIC HOSPITALS (4/4).
- 200 HOSPITALS (57.3%) WITH  $\geq 1$  ID SPECIALIST
- ID SPECIALISTS WERE AVAILABLE IN 35.8% TO 41.9% OF HOSPITALS IN INDIA, MALAYSIA AND PAKISTAN.
- MOST HOSPITALS HAD MICROBIOLOGY LABORATORIES (90.8%) AND INFECTION CONTROL PROCESSES (93.7%) IN PLACE.

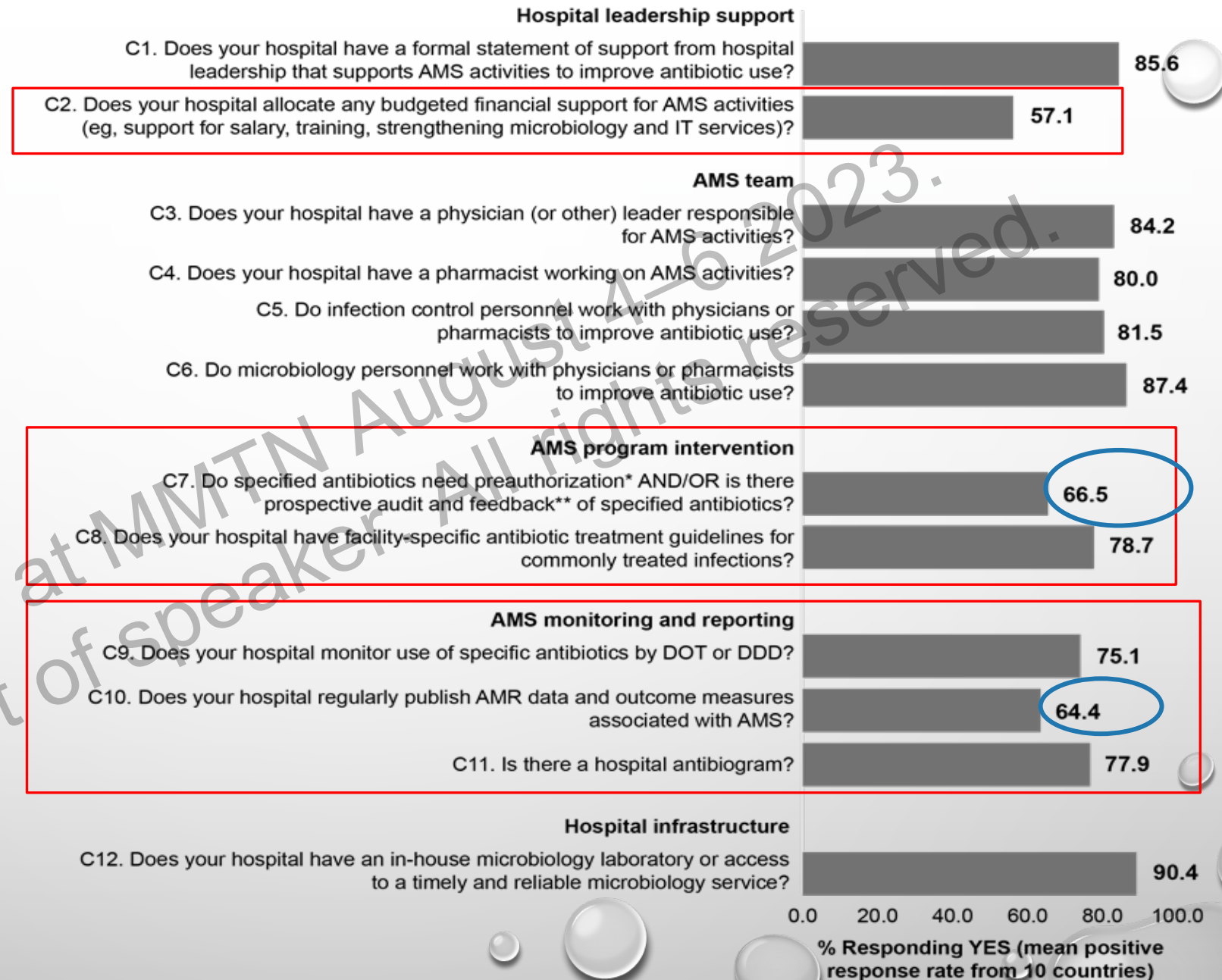
# RESULTS- GAPS IN AMS CORE COMPONENTS

Core AMS programme component, n (%) <sup>a</sup>	Cambodia (N=2)	India (N=95)	Indonesia (N=42)	Japan (N=16)	Malaysia (N=66)	Pakistan (N=31)	Philippines (N=4)	Taiwan (N=57)	Thailand (N=32)	Vietnam (N=4)	Overall (N=349)
Fulfilled all components	0	6/95 (6.3)	6/42 (14.3)	N/A <sup>b</sup>	9/66 (13.6)	3/31 (9.7)	2/4 (50.0)	17/57 (29.8)	4/32 (12.5)	0	47/349 (13.5)
Hospital leaders' support											
Formal statement of support	2/2 (100)	65/93 (69.9)	38/42 (90.5)	14/16 (87.5)	62/66 (93.9)	27/31 (87.1)	4/4 (100.0)	52/56 (92.9)	19/32 (59.4)	3/4 (75.0)	286/346 (82.7)
Budgeted financial support	1/2 (50.0)	48/92 (52.2)	26/42 (61.9)	6/16 (37.5)	30/66 (45.5)	15/31 (48.4)	3/4 (75.0)	38/55 (69.1)	10/32 (31.3)	4/4 (100.0)	181/344 (52.6)
AMS team											
Physician leader	2/2 (100.0)	53/95 (55.8)	36/42 (85.7)	16/16 (100.0)	64/66 (97.0)	19/31 (61.3)	4/4 (100.0)	49/57 (86.0)	26/32 (81.3)	3/4 (75.0)	272/349 (77.9)
Pharmacist	2/2 (100.0)	40/95 (42.1)	38/42 (90.5)	16/16 (100.0)	66/66 (100.0)	19/31 (61.3)	4/4 (100.0)	49/56 (87.5)	22/32 (68.8)	2/4 (50.0)	258/348 (74.1)
IC staff	1/2 (50.0)	72/92 (78.3)	33/40 (82.5)	13/16 (81.3)	63/66 (95.5)	23/29 (79.3)	3/3 (100.0)	47/57 (82.5)	29/32 (90.6)	3/4 (75.0)	287/341 (84.2)
Microbiology staff	2/2 (100.0)	86/93 (92.5)	29/39 (74.4)	13/16 (81.3)	64/66 (97.0)	24/31 (77.4)	3/3 (100.0)	42/57 (73.7)	25/32 (78.1)	4/4 (100.0)	292/343 (85.1)

# RESULTS GAPS IN AMS CORE COMPONENTS

Core AMS programme component, n (%) <sup>a</sup>	Cambodia (N=2)	India (N=95)	Indonesia (N=42)	Japan (N=16)	Malaysia (N=66)	Pakistan (N=31)	Philippines (N=4)	Taiwan (N=57)	Thailand (N=32)	Vietnam (N=4)	Overall (N=349)
<b>AMS Interventions</b>											
<b>Pre-authorization and/or PAF</b>	0	49/93 (52.7)	18/39 (46.2)	14/16 (87.5)	63/66 (95.5)	22/31 (71.0)	3/3 (100.0)	49/54 (90.7)	23/32 (71.9)	2/4 (50.0)	243 (71.5)
<b>Facility-specific treatment guidelines</b>	2/2 (100.0)	69/93 (74.2)	25/39 (64.1)	12/16 (75.0)	38/66 (57.6)	24/31 (77.4)	3/3 (100.0)	46/54 (85.2)	17/32 (53.1)	4/4 (100.0)	240 (70.6)
<b>AMS monitoring &amp; report</b>											
<b>Monitor specific antibiotic</b>	2/2 (100.0)	37/88 (42.0)	33/38 (86.8)	13/16 (81.3)	65/66 (98.5)	19/31 (61.3)	2/3 (66.7)	52/53 (98.1)	20/30 (66.7)	2/4 (50.0)	245/331 (74.0)
<b>Publish AMR data &amp; AMS outcomes</b>	1/2 (50.0)	42/88 (47.7)	22/38 (57.9)	15/16 (93.8)	41/66 (62.1)	11/31 (35.3)	3/3 (100.0)	46/53 (86.8)	18/30 (60.0)	2/4 (50.0)	201/331 (60.7)
<b>Hospital antibiogram</b>	2/2 (100.0)	69/88 (78.4)	24/38 (63.2)	14/16 (87.5)	49/66 (74.2)	15/31 (48.4)	3/3 (100.0)	51/54 (94.4)	25/30 (83.3)	2/4 (50.0)	254/332 (76.5)
<b>Hospital infrastructure</b>											
<b>Timely/reliable microbiology service</b>	2/2 (100.0)	83/87 (95.4)	27/38 (71.1)	NA <sup>b</sup>	57/66 (86.4)	28/31 (90.3)	3/3 (100.0)	49/54 (90.7)	24/30 (80.0)	4/4 (100.0)	277/315 (87.9)

**RESULTS**  
**CORE AMS COMPONENTS**  
**AND CORRESPONDING**  
**MEAN POSITIVE RESPONSE**  
**RATE FROM THE 10**  
**SURVEYED COUNTRIES**



# RESULTS- GAPS IN AMS PROGRAMME SUPPLEMENTARY COMPONENTS

- 68.0% OF AMS LEADERS & 54.3% OF PHARMACISTS IN AMS TEAM HAVE SPECIALIZED ID TRAINING.
- GUIDELINES FOR DE-ESCALATION OF BROAD-SPECTRUM ANTIBIOTICS & IV-TO-ORAL CONVERSION OF ANTIBIOTICS WERE AVAILABLE IN 49.4% AND 54.7% OF HOSPITALS, RESPECTIVELY.
- AMONG HOSPITALS WITH ANTIBIOGRAMS, 92.1% HAD THEM REGULARLY UPDATED.
- RAPID DIAGNOSTIC TESTING AND SELECTIVE SUSCEPTIBILITY REPORTING WERE USED IN 72.2% & 85.7% OF HOSPITALS WITH ACCESS TO RELIABLE MICROBIOLOGY SERVICES, RESPECTIVELY.

# RESULTS- GAPS IN AMS PROGRAMME SUPPLEMENTARY COMPONENTS

- MANY HOSPITALS DID **NOT HAVE IT SYSTEMS** TO SUPPORT THE AMS PROGRAMME:
  - 48.8% HAD THE IT CAPABILITY TO GATHER AND **ANALYSE AMS DATA**,
  - 64.7% USED **ELECTRONIC HEALTH RECORDS**, AND
  - 56.0% USED **COMPUTERIZED PHYSICIAN ORDER ENTRY**.
- **EDUCATIONAL ACTIVITIES** TO IMPROVE ANTIBIOTIC PRESCRIBING ARE DONE FOR CLINICIANS AND OTHER RELEVANT STAFF IN **77.0%** OF HOSPITALS TOTAL .
  - SUCH EDUCATIONAL ACTIVITIES WERE PROVIDED IN  $\geq 86.4\%$  OF HOSPITALS FROM JAPAN, MALAYSIA & TAIWAN
  - OVERALL, ONLY 45.7% OF HOSPITALS THAT PROVIDED SUCH EDUCATIONAL ACTIVITIES MADE THEM MANDATORY AND CERTIFIED, MOST COMMONLY IN JAPAN (76.9%) AND TAIWAN (84.6%).

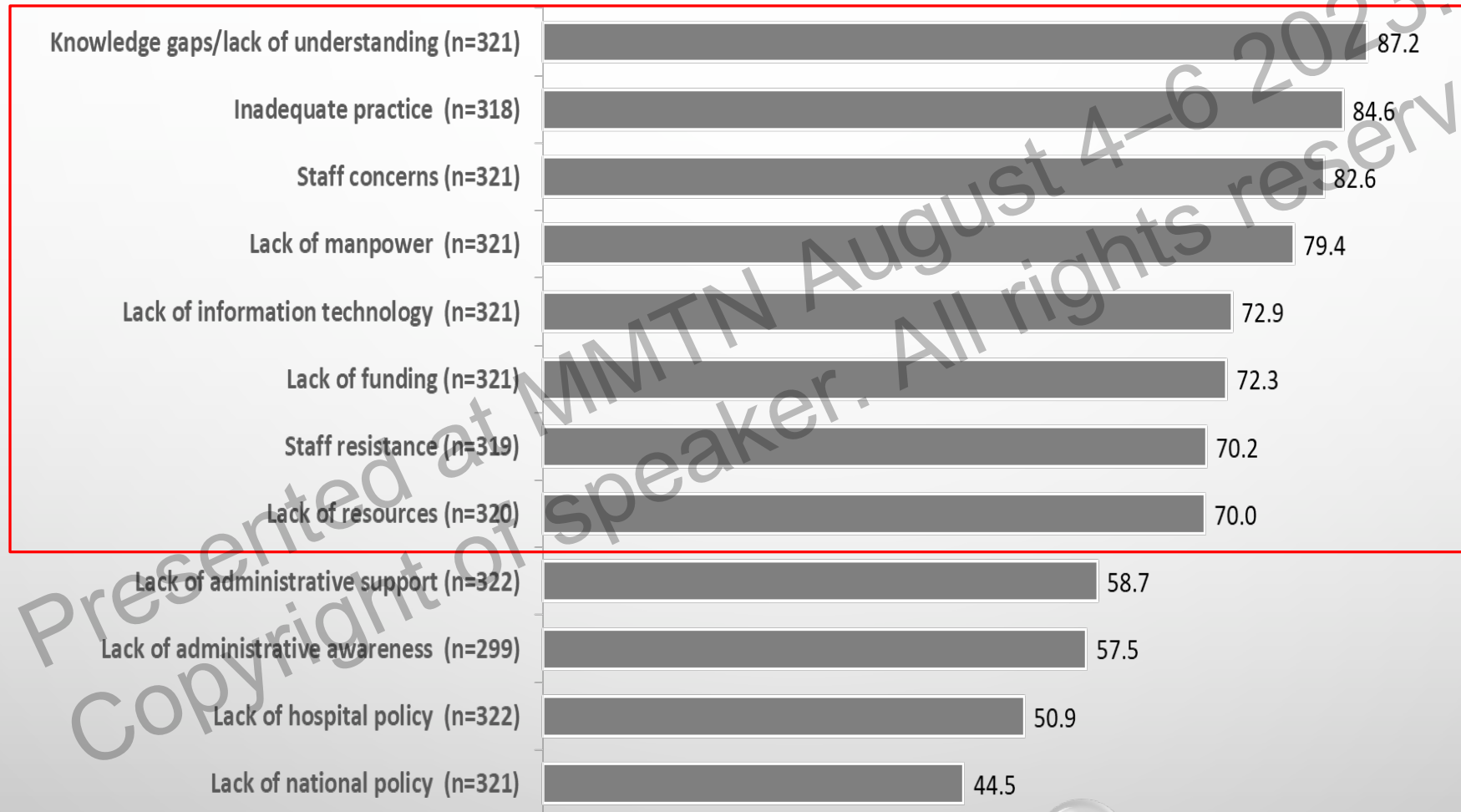
# CHALLENGES FACED WHEN IMPLEMENTING HOSPITAL AMS PROGRAMMES

- AN ADDITIONAL SET OF QUESTIONS ON CHALLENGES FACED WHEN IMPLEMENTING AMS PROGRAMMES FOR INCLUSION IN THE SURVEY.
- POSSIBLE RESPONSES WERE 'VERY MUCH A CHALLENGE', 'SOMETIMES A CHALLENGE', 'NOT AN ISSUE' OR 'NOT SURE'.

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# RESULTS- CHALLENGES FACED WHEN IMPLEMENTING HOSPITAL AMS PROGRAMMES



Proportion of hospitals reporting sometimes or very much challenging (excluding hospitals with no response)

# LIMITATIONS

- VERY SMALL NUMBER OF RESPONDENTS FROM CERTAIN COUNTRIES: CAMBODIA (N=2), THE PHILIPPINES (N=4), AND VIETNAM (N=4).
- LIMITED SURVEY DISTRIBUTION NETWORKS DURING COVID-19
- PARTICULARLY IN COUNTRIES WITH RESPONSE RATES <60% (INDIA, INDONESIA, PHILIPPINES, TAIWAN)
- NO PILOT TESTING WAS PERFORMED TO VALIDATE THE SURVEY QUESTIONS
- POTENTIAL OVER-REPRESENTATION OF RELATIVELY WELL-RESOURCED TERTIARY HOSPITALS, MEDICAL SCHOOL-AFFILIATED, WHICH MAY HAVE BEEN AMS CENTRES OF EXCELLENCE WITHIN THEIR COUNTRIES
- ABSENCE OF QUESTIONS AND DATA REGARDING THE OUTCOMES OF INTERVENTIONS, SUCH AS RATES OF MULTIDRUG-RESISTANT BACTERIAL INFECTION, AND ANTIMICROBIAL CONSUMPTION AND EXPENDITURE.

# SUMMARY OF FINDINGS

- ONLY 13.5% OF 349 SECONDARY & TERTIARY-CARE HOSPITALS SURVEYED ACROSS 10 ASIAN COUNTRIES FULFILLED ALL 12 AMS PROGRAMME CORE COMPONENTS.
- HIGH PROPORTION OF HOSPITALS HAD FORMAL HOSPITAL LEADERSHIP STATEMENTS TO SUPPORT AMS → THIS WAS NOT REFLECTED IN THE LEVEL OF FINANCIAL SUPPORT FOR AMS ACTIVITIES
- LOW MEAN PRR OF 66.5% FOR SOME FORM OF PROSPECTIVE AUDIT AND/OR FORMULARY RESTRICTION TO CURB PRESCRIBING BEHAVIOUR THAT PROMOTES AMR
- PUBLICATION OF AMR DATA AND AMS OUTCOME MEASURES - NEXT **WIDEST GAP** IN OUR SURVEY

# CONCLUSION

1. THE SURVEY SHOWED GAPS IN CORE COMPONENTS OF HOSPITAL AMS PROGRAMMES IN A RANGE OF ASIAN COUNTRIES RELATE TO

- LACK OF FUNDING,
- FAILURE TO IMPLEMENT NECESSARY AMS INTERVENTIONS (PROSPECTIVE AUDIT AND/OR FORMULARY RESTRICTION), AND
- FAILURE TO MONITOR AND REPORT AMS OUTCOMES.

2. COUNTRY- AND HOSPITAL-SPECIFIC SOLUTIONS TO FUNDING AND RESOURCING SHORTFALLS ARE URGENTLY NEEDED TO IMPROVE AMS PROGRAMMES IN ASIAN COUNTRIES

3. FUTURE STUDIES FOCUSING ON OUTCOME DATA ARE NEEDED TO DETERMINE WHICH AMS PROGRAMME CORE ELEMENTS CONTRIBUTE TO THE SUCCESS OF AMS PROGRAMMES IN ASIAN HOSPITALS.

FROM AMS-WORKING GROUP.....

