

# Antibiotic stewardship program in pediatrics “High Time for Action”

“Need for urgent action in an unprecedented era of Antimicrobial resistance ”

**Dr.Nawal Mohammad AlKaabi**

Consultant Pediatric Infectious diseases Physician

Chief Medical Officer

**Sheikh Khalifa Medical City ABUDHABI U.A.E**

# Objectives

---

1. Background and epidemiology of Antimicrobial resistance
2. Global health & Economic burden of AMR
3. Global initiatives to Combat AMR
4. Initiatives in ABUDHABI region

# PRE ANTIBIOTIC era At the beginning of the 20th century<sup>1</sup>

- 9 /1,000 women died post-partum due to sepsis
- In some cities **30 % of children died** before their **first birthday**.
- 1/9 people who got serious skin infection died.
- Pneumonia killed 30 % & meningitis 70 %
- Surgery associated high morbidity and mortality

<sup>1</sup>;Centers for Disease Control and Prevention. "Achievements in Public Health, 1900-1999: Healthier Mothers and Babies," Morbidity and Mortality Weekly Report, 48(38): 849-858, 1999. [www.cdc.gov/mmwr/pre-view/mmwrhtml/mm4838a2.htm#fig2](http://www.cdc.gov/mmwr/pre-view/mmwrhtml/mm4838a2.htm#fig2)

# Golden Era of Infectious diseases Management<sup>1</sup>

**This picture changed dramatically with three major developments:**

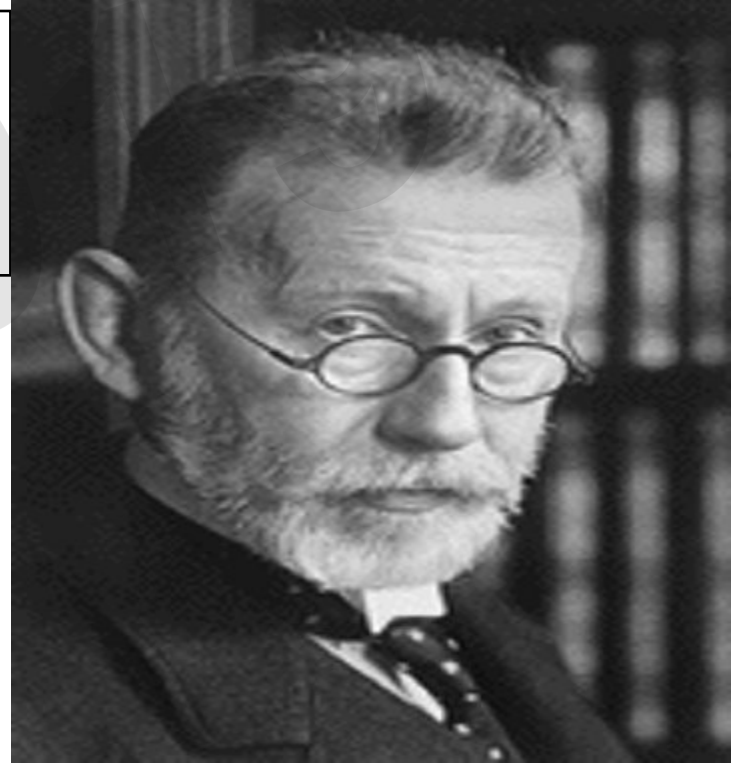
- a. **Discovery of Antibiotics**
- b. **Improvements in public health,**
- c. **Invention of vaccines.**

Over the course of the 20th century, **Deaths from infection declined** markedly contributed **29.2-year increase** in life expectancy.

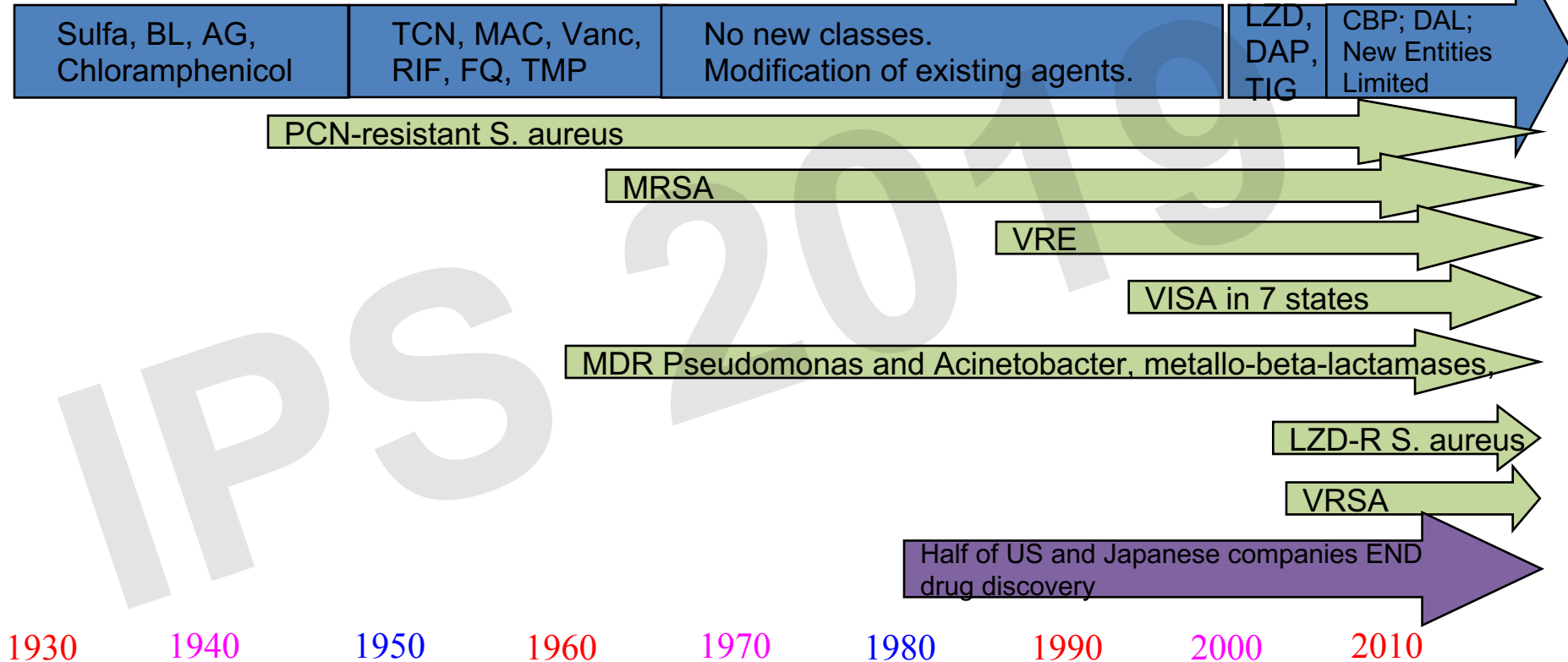
- **Antibiotics, in particular, have saved millions of lives.**

“Drug resistance follows the drug like a faithful shadow.”

Paul Ehrlich 1854-1915



# AMR(Antimicrobial resistance) Through time

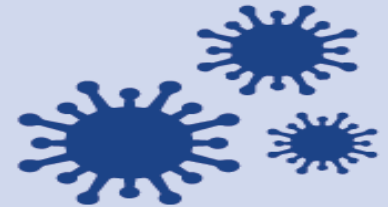


Healthcare burden of AMR (Antimicrobial resistance)<sup>1,2</sup>

# ANTIBIOTIC RESISTANCE: THE GLOBAL THREAT

## Super-Resistant Bacteria: Problem Today, Crisis Tomorrow

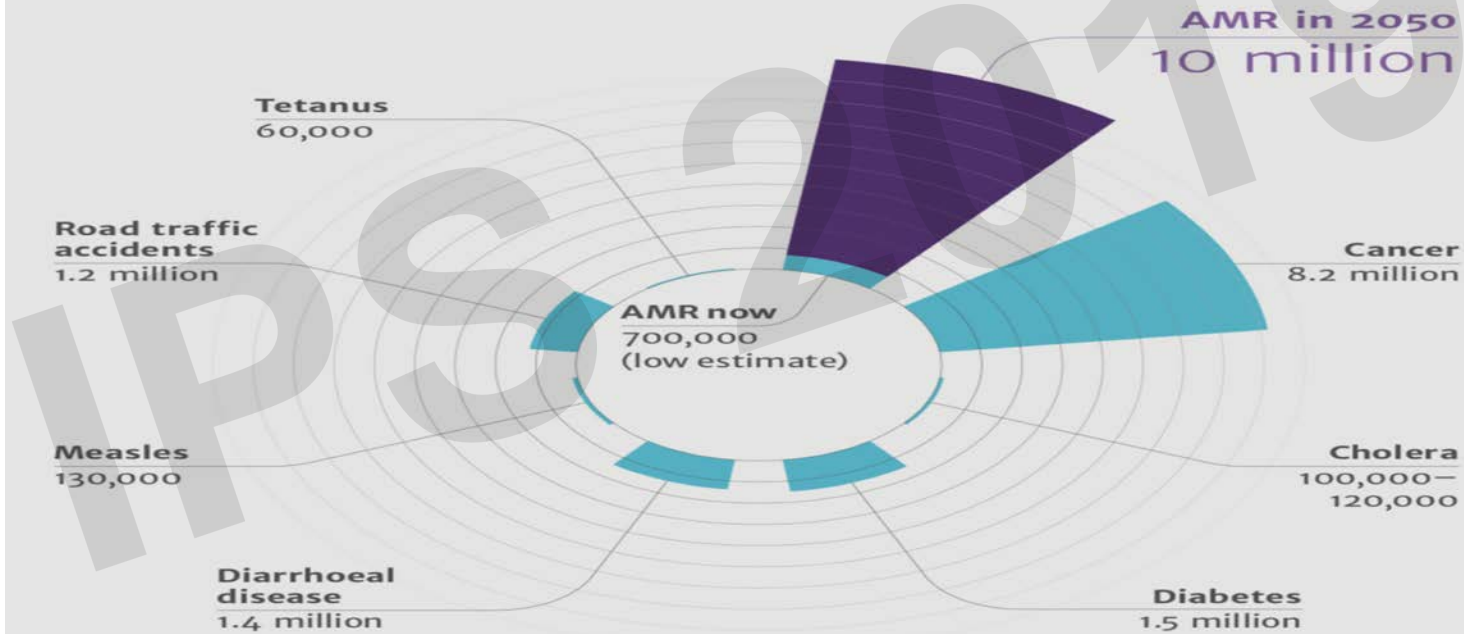
- In India, **58,000+ babies died in one year** from super-resistant bacterial infections, which are usually passed on from their mothers<sup>1</sup>
- In the European Union, antibiotic resistance causes **25,000 deaths per year** and 2.5m extra hospital days<sup>2</sup>
- In Thailand, antibiotic resistance causes **38,000+ deaths per year** and 3.2m hospital days<sup>2</sup>
- In the United States, antibiotic resistance causes **23,000+ deaths per year** and more than 2m illnesses<sup>2</sup>



“Get smart about antibiotics “

# Antimicrobial Resistance: Tackling a crisis for the health and wealth of nations

Deaths attributable to AMR every year compared to other major causes of death

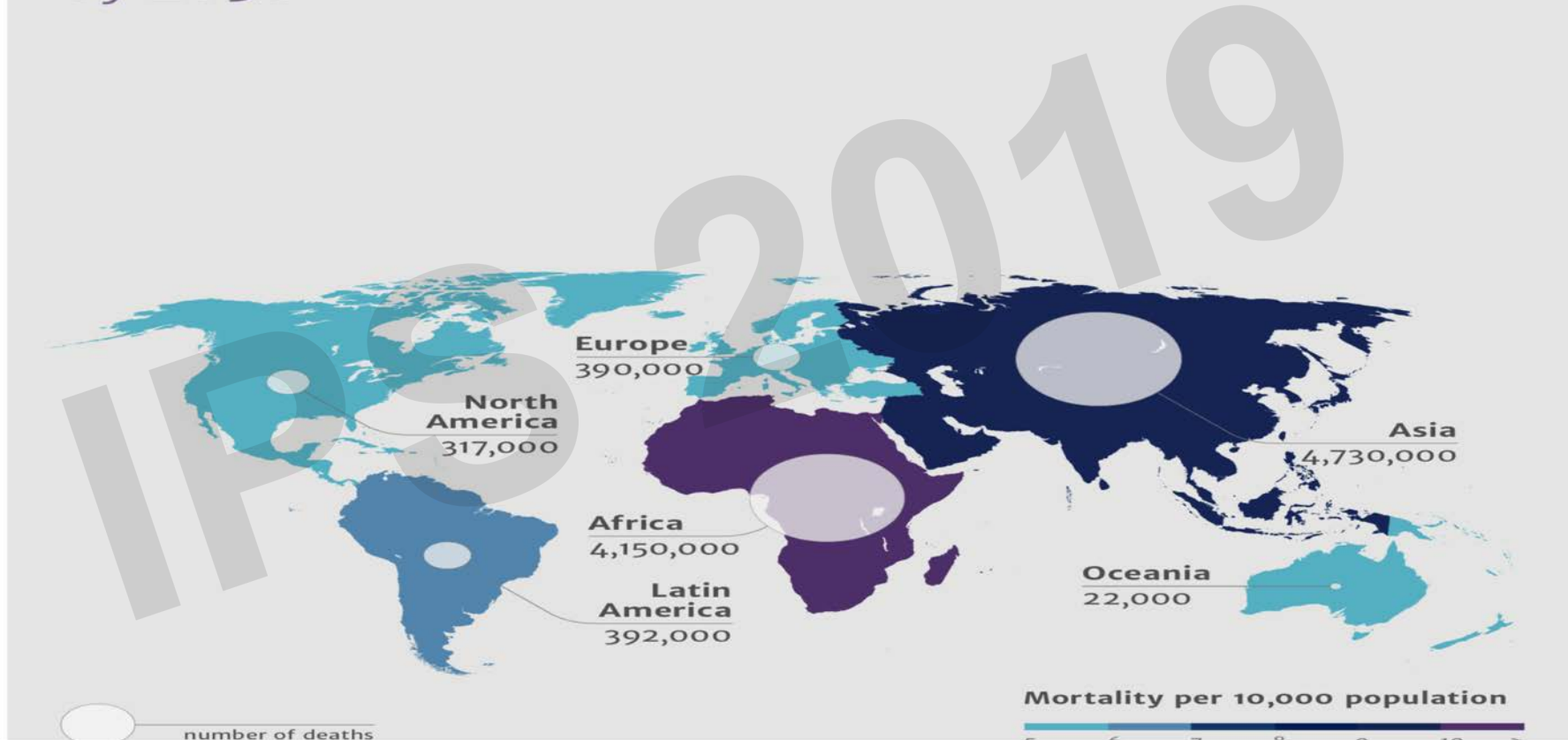


3: The Review on Antimicrobial Resistance Chaired by Jim O'Neill U.K Secretary of Health

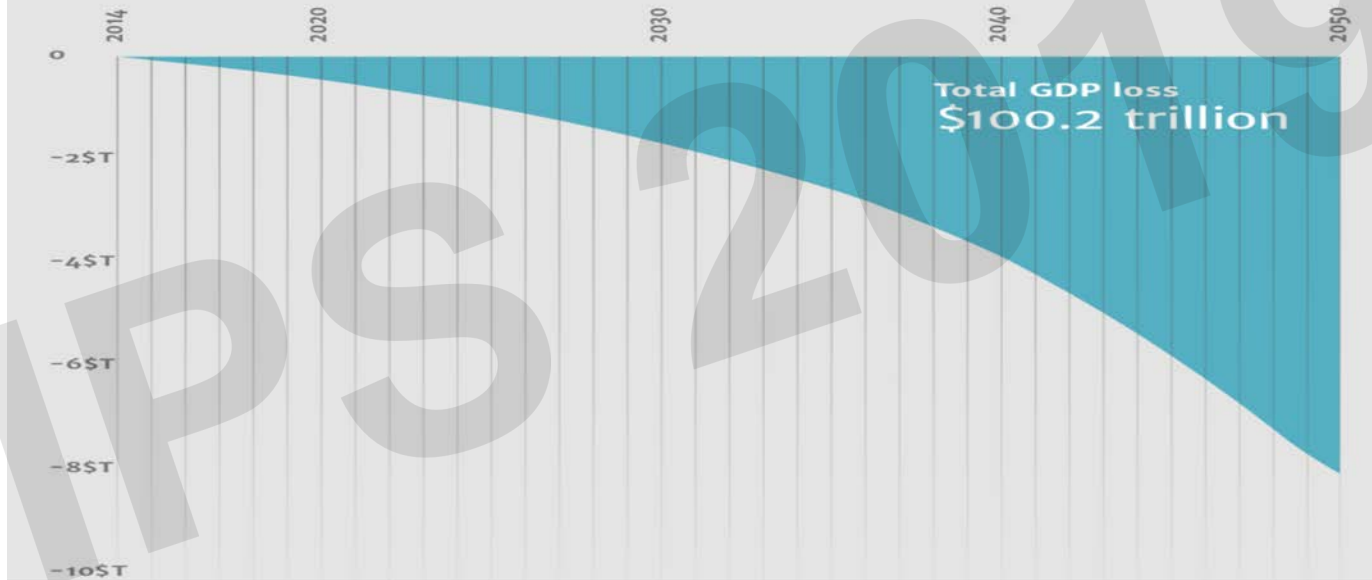
December 2014



# Deaths attributable to AMR every year by 2050



## AMR's impact on World GDP in trillions of USD



Cholera Diarrhoeal disease

[www.who.int/mediacentre/factsheets/fs312/en/](http://www.who.int/mediacentre/factsheets/fs312/en/) [www.who.int/mediacentre/factsheets/fs297/en/](http://www.who.int/mediacentre/factsheets/fs297/en/) [www.who.int/mediacentre/factsheets/fs107/en/](http://www.who.int/mediacentre/factsheets/fs107/en/) [www.sciencedirect.com/science/article/pii/S0140673612617280](http://www.sciencedirect.com/science/article/pii/S0140673612617280)

Measles

Road traffic accidents Tetanus

[www.sciencedirect.com/science/article/pii/S0140673612617280](http://www.sciencedirect.com/science/article/pii/S0140673612617280) [www.who.int/mediacentre/factsheets/fs358/en/](http://www.who.int/mediacentre/factsheets/fs358/en/) [www.sciencedirect.com/science/article/pii/S0140673612617280](http://www.sciencedirect.com/science/article/pii/S0140673612617280)

# Why Focus on Antimicrobial Stewardship ?

- Antimicrobials account for up to **30% of hospital pharmacy budgets**
- **50 % of antimicrobial use in hospitals** is **unnecessary or inappropriate**



- **Antimicrobial resistance,**
- **↑Mortality,**
- **Prolonged hospital lengths of stay,**
- **↑Health care costs** <sup>4,5</sup>

4 Centers for Disease Control and Prevention. Get smart for healthcare. <http://www.cdc.gov/getsmart/healthcare/> (accessed 2011 Aug 22).

5. Costelloe C, Metcalfe C, Lovering A et al. Effect of antibiotic prescribing in primary care on antimicrobial resistance in individual patients: systematic review and meta-analysis. *BMJ*. 2010; 340:c2096. Available at <http://www.bmj.com/cgi/midlookup?view=long&pmid=20483943>. Goff DA. Antimicrobial stewardship: bridging the gap between quality care and cost. *Curr Opin Infect*

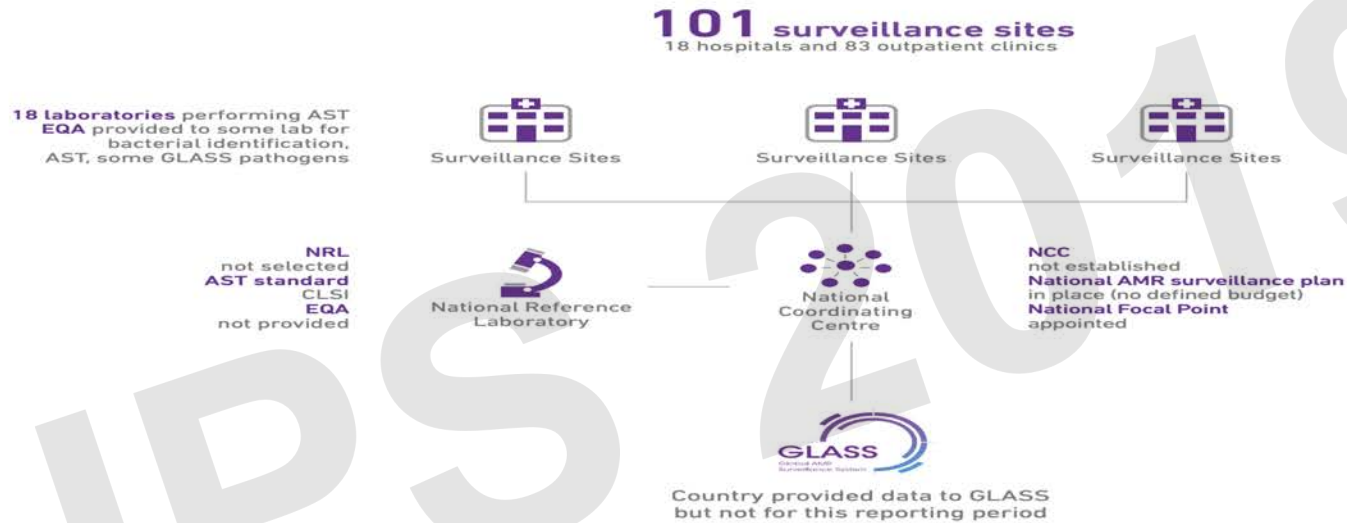
## Strategic objectives

- 1 Improve awareness and understanding of AMR through effective **communication, education and training**
  - 2 Strengthen knowledge & evidence base via **surveillance** and **research**
  - 3 Reduce incidence of infection via effective **sanitation, hygiene & infection prevention** measures
  - 4 Optimize the use of antimicrobial medicines in human and animal health(**Antibiotic stewardship**)
- 1 Research & Development and Investment in Diagnostics, new antibiotics production etc.



UAE is conducting surveillance of AMR since 2010 when the Abu Dhabi – Antimicrobial Resistance Surveillance Program (AD ARS) was introduced<sup>3</sup>

### Current status of the national AMR surveillance system



- In 2015 it was expanded nationwide.
- UAE been enrolled in **Global Antimicrobial Resistance Surveillance System (GLASS)** since April 2017
- **DOH** Has issued guidelines on **ASP and regulated Antibiotics use** i.e no antibiotics without prescription

## Initiatives at SKCM Level

- **ASP has been in place and in practice in different clinical areas of SKMC like in Adult Medical ICUs**
- **Internal Medicine Department and to some extent in Pediatrics**
- **Recently CMO office approved to initiate the hospital wide structured Antibiotic stewardship program across the whole Spectrum of SKMC**

## Initiatives at SKCM Level “Diagnostic stewardship”

- **Bio fire 1 hr** & covers 20 pathogens including gram-ves, gram +ve and viruses ,done Sputum,CSF
- **T2 candida test** directly on blood turnaround **time 3 hrs.**
- **MALDI-TOF** for identification on positive cultures turn around **15 minutes**
- **Vitek Automated system** for drug susceptibility testing ,6-24 hrs
- **PCR for C.Diff** antigen, toxin turn around time **2 hrs.**
- **PCR for T.B** on lower respiratory tract sample turn around time **1&1/2 hr**
- **LAMP Technology** ,PCR DNA amplification for genetic testing resistance gene for CRE
- PCR for MRSA. Turn around < 2 hours

# Education and Awareness Campaign

- ❑ Sessions on topics of infectious diseases and Antibiotics on demand for Medical residents in Internal Medicine
- ❑ Infection control prevention in-house sessions
- ❑ Antibiotic stewardship session for Department of Medicine & Surgery
- ❑ WHO Antibiotic Week Celebration since 2016
- ❑ **Research on ASP 2** published papers plus one under review



## ❑ **Impact of Infectious Diseases Team Consultation on Antimicrobial Use, Length of Stay and Mortality**

Adeel A. Butt, Nawal Al Kaabi, Tehmina Khan, Mohammed Saifuddin, Maqsood Khan, Kalpana M. Krishnanreddy, Waleed H. Jasim, Masalam Sara, Marthinus Pitout, Stefan Weber  
p191-194

Published in issue: September 2015

[Preview](#) | [Abstract](#) | [Full-Text HTML](#) | [PDF](#)



# Snapshots of SKMC Infectious diseases activities

## GULF NEWS HEALTH

March 23, 2017 | Last updated 1 minute ago

HOME UAE NEWS BUSINESS SPORT OPINION LEISURE LIFE&STYLE  
COURTS 4 CRIME 4 WEATHER 1 SOCIETY 15 HEALTH 4 TRANSPORT 3

### Abu Dhabi hospital cuts antibiotic use by 30%

Flagship public hospital takes steps to ensure that antibiotic resistance is not promoted

Published: 16:44 October 10, 2016  
Samihah Zaman, Staff Reporter

GULF NEWS

+MGN



AA+

Abu Dhabi: A structured programme to limit antibiotic misuse has reduced overall consumption of antibiotics by 30 per cent at Abu Dhabi's flagship public health facility.

The initiative, introduced about four years ago, has also allowed for 50 per cent improvement in the type and duration of inpatient antibiotic prescriptions at Shaikh Khalifa Medical City (SKMC), Dr Maqsood Khan, clinical pharmacist and in-charge of the antibiotic stewardship programme, told *Gulf News*.

"There are international fears about superbugs that are becoming resistant to the most 'powerful' antibiotics, known as drugs of last resort. We therefore have a responsibility to act prudently and ensure that antibiotic resistance does not grow due to rampant misuse, overuse or overdosing," Dr Khan said.



# Snapshots of SKMC Infectious diseases activities

## Published evidence from practice of SKMC



### Impact of Infectious Diseases Team Consultation on Antimicrobial Use, Length of Stay and Mortality

Adeel A. Butt, Nawal Al Kaabi, Tehmina Khan, Mohammed Saifuddin, Maqsood Khan, Kalpana M. Krishnanreddy, Waleed H. Jasim, Masalam Sara, Marthinus Pitout, Stefan Weber

Published in issue: September 2015

[Preview](#) | [Abstract](#) | [Full-Text HTML](#) | [PDF](#)

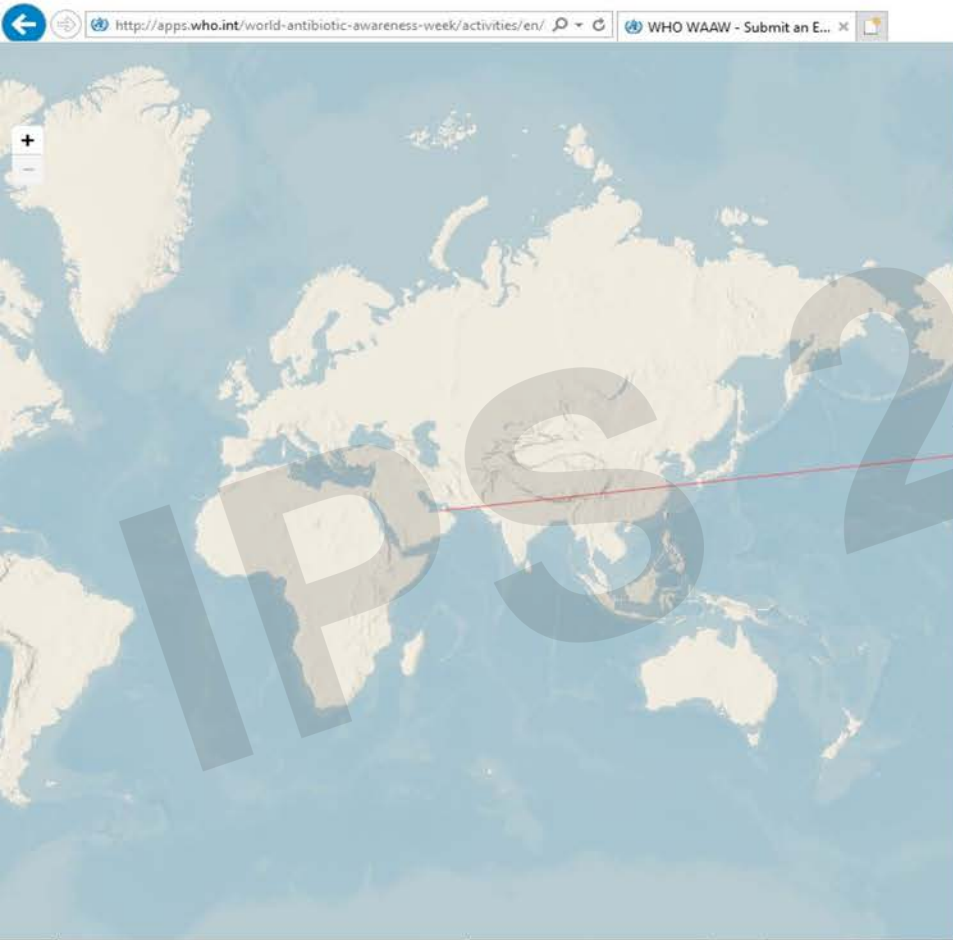
# Celebration of WHO antibiotic week 2016 @SKMC



# W.H.O Antibiotic awareness week celebration



# WHO Antibiotic awareness week 2018



DISCUSSION FORUM/SEMINAR | SHEIKH KHALIFA MEDICAL CITY | UNITED ARAB EMIRATES

📅 14 November 2018 📍 Abu Dhabi, أبو ظبي, United Arab Emirates

✉ Contact: [Maqkhan@seha.ae](mailto:Maqkhan@seha.ae) 🚫 Event closed to public

As Part of WHO Campaign for Antibiotic week awareness . We have arranged lecture/presentation and discussion forum for the Surgery department in their grand monthly meeting and Also did the lecture /presentation and discussion forum for Medicine department in their grand monthly meeting. Surgery department attended by 50 people Approximately 25 surgeons and specialist physicians. Medicine Department Presentation attended by all Consultant Physicians from Internal Medicine, Nephrology, Hematology, G.I, Neurology, Pulmonology and the attendance was approximately 20-25 Physicians . Surgery department event took Place between 7:30 -8:30 AM Medicine Department event took place between 13:00

## References

1. Centers for Disease Control and Prevention. “Achievements in Public Health, 1900-1999: Healthier Mothers and Babies,” *Morbidity and Mortality Weekly Report*, 48(38): 849-858, 1999. [www.cdc.gov/mmwr/pre-view/mmwrhtml/mm4838a2.htm#fig2](http://www.cdc.gov/mmwr/pre-view/mmwrhtml/mm4838a2.htm#fig2)
2. <https://www.who.int/antimicrobial-resistance/en/>
3. The Review on Antimicrobial Resistance Chaired by Jim O’Neill U.K Secretary of Health December 2014
4. Centers for Disease Control and Prevention. Get smart for healthcare. <http://www.cdc.gov/getsmart/healthcare/> (accessed 2011 Aug 22).
5. Costelloe C, Metcalfe C, Lovering A et al. Effect of antibiotic prescribing in primary care on antimicrobial resistance in individual patients: systematic review and meta-analysis. *BMJ*. 2010; 340:c2096. Available at <http://www.bmj.com/cgi/midlookup?view=long&pmid=20483943>. Goff DA. Antimicrobial stewardship: bridging the gap between quality care and cost. *Curr Opin Infect*