

Postgraduate Education and Infection Control

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Notice of Disclosure and Provenance

Dr Shaban is:

- Professor of Infection Prevention and Control at Griffith University and Gold Coast University Hospital and Health Service
- Director, Griffith Graduate Infection Control Program at Griffith University, and offers suite of tertiary programs from Graduate Certificate through to Doctor of Philosophy
- President, ACIPC
- Former CAPS Chair and Member
- Editor-in-Chief, Australasian Emergency Nursing Journal

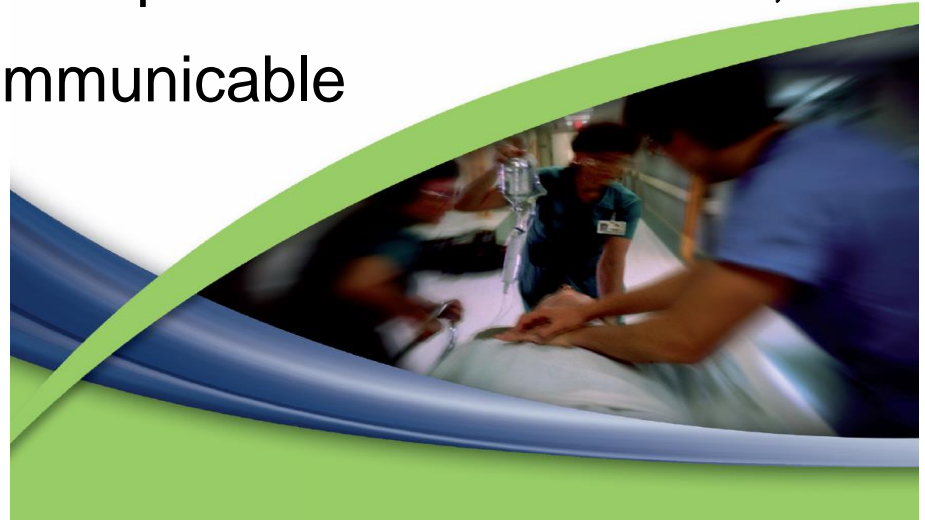
Health and Care...

- To reduce mortality and morbidity
- Alleviate pain and suffering
- Make better the lives of others
- Context matters
- Hospital, Community traditions...
- Healthcare-associated infection, communicable disease...
- Hospital vs. Community-acquired...
- **The challenges of “where”**
- **What is a medical or health “emergency”**



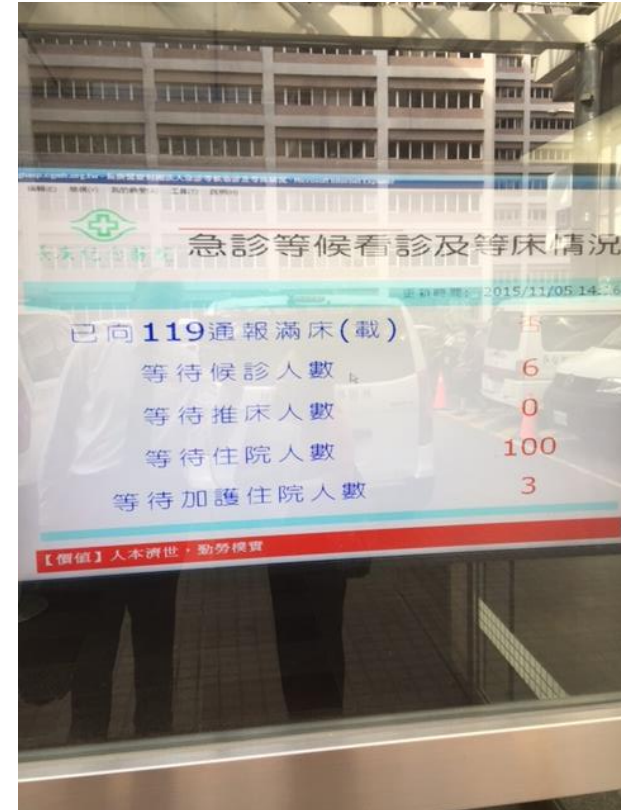
Emergency care?

- What's different about emergency care?
- What do this mean for infection prevention and control, managing infection, and communicable diseases?



What are the challenges?

- Time
- Numbers of patients
- Acuity of patients
- Poor predictability
- “Rubber walls”
- Uncertainty
- Limited previous assessment/treatment/diagnostics
- Ambulance Ramping
- Access Block, Overcrowding
- Communication challenges and difficulties
- Expectations
- Disasters
- Events within the hospital
- Variable settings and resources
- Open all hours
- And on and on and on...

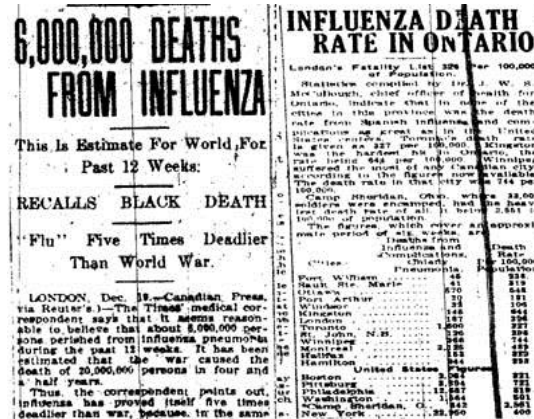


Issues of interest...

- **Wound care and MDROs**
 - » Sepsis
 - » Shifting patterns of care from inpatient to community = more complex wounds
- **Gastrointestinal diseases**
 - » Norovirus, Cholera, Hepatitis A
- **Respiratory Infections**
 - » Influenza, Community-acquired pneumonia
- **Communicable real-world “Pandemics”**
 - » MERS-CoV, Ebola, Measles

Pandemics... Nothing new?

- 1890 H2N?
- 1900 H3N8
- 1918 H1N1 (Spanish Flu)
- 1957 H2N2 (Asian Flu)
- 1968 H3N2 (Hong Kong Flu)
- 1977 H3N2 H1N1 (Russian Flu)
- 1997 H5N1 (Avian Flu)
- 2009 H1N1 (Swine Flu)



What was different about H1N1 2009?

Emergency Departments had a primary public health response....

H1N1 2009 – Health Emergency



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[Australian Flood Disaster](#)
[Pandemic \(H1N1\) Influenza 2009](#)

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Many Australian Government agencies have a role to play during significant emergencies in Australia and the surrounding region. The Department of Health and Ageing, in collaboration with the Australian Health Protection Committee (AHPC) and in cooperation with relevant state and territory health authorities, as specific coordination responsibilities in the event of national health emergencies.

Health emergencies include:

- significant communicable disease outbreaks, e.g. an influenza pandemic
- chemical, biological or radiological incidents either criminal or accidental
- mass casualty incidents, e.g. an earthquake or transport accident
- any emergency where there are a significant number of people needing medical treatment which requires a coordinated national approach
- any emergency where a contingent of Australian medical personnel is required for deployment

During health emergencies this web site will be updated to communicate situational information, important health messages, and other health related response arrangements.



**Pandemic (H₁N₁) 2009 Influenza
Outbreak in Australia: Impact on
Emergency Departments.**



Funded by



FitzGerald GJ, Patrick JR, Fielding EL, Shaban RZ, Arbon P, Aitken P, Considine J, Clark MJ, Finucane J, McCarthy SM, Cloughessy L, Holzhauser K. *Pandemic (H₁N₁) 2009 Influenza Outbreak in Australia: Impact on Emergency Departments*. (ISBN: 978-1-74107-322-5) Queensland University of Technology. 2010.

Background

- EDs are at the forefront of Australia's health disaster response
 - immediate patient care
 - system-wide patient facilitation
- Pandemic (H1N1) 2009 Influenza presented Australian EDs with
 - challenges relating to diversity of roles in disease containment & management
 - opportunity to describe the extended clinical impact of pandemic disease
- Major impact of ED function...

Lessons and Recommendations

1. There is a need for **a single authoritative source of information and lead agency for response** that is well regarded. **Consistent, timely, accurate messaging** required to avoid confusion, which is more likely to cause injury to patients and adversely impact ED staff.
2. **Information should be provided in an organised and consistent format, regardless of the means of distribution.** Multiple means are necessary, but a consistent message is vital. A simplified 'state-of-the-art' summary re-issued regularly, and published in juxtaposition with only the more recent updates will promote communication for during pandemics.
3. There is a need for **active engagement and collaboration with the media and for clinicians to aid this process by disciplined approaches.** Appropriate communication strategies are needed that reflect local engagement. However, this process must also take cognisance of the need for consistent information.

Lessons and Recommendations

4. **Standardised clinical approaches are critical.** Guidelines need to be issued, and in the case of Pandemic (H1N1) 2009 Influenza were found to be very useful. Standardised approaches to triage are necessary to ensure consistency in assessment. EDs need to review their management of infectious patients. Guidelines for managing infectious patients in EDs should be reviewed and include managing infectious patients in a pandemic.
5. **Policies regarding the establishment of flu clinics should be in place and strategies determined for rapid implementation when an outbreak occurs.** All services, including pre-hospital services, should be engaged in the development and approval of these policies and strategies.
6. **ED design reviewed** to determine how to better accommodate infectious patients during a pandemic and on an every-day basis.

Lessons and Recommendations

7. **ED infection control procedures** and the related behaviours of ED staff in both normal and emergency situations must be reviewed.
8. There is a need to address a **range of occupational health and safety issues including leave, immunisation, infection control, and entitlements to compensation.**
9. **Clinical supplies required during a pandemic must be identified, and strategies designed to ensure access and availability.** These include embedded stockpiles and dedicated stockpiles.
10. **Standard policies for PPE and antiviral agents** must be developed consistently applied.
11. Strategies to create **surge capacity** within EDs for staff, equipment, physical space and stores need to be identified.

Lessons and Recommendations

12. **Peer and local support strategies** should be developed to ensure staff feel their needs are provided for, thereby **creating resilience, dependability, and stability in the ED workforce**. These strategies also need to identify mechanisms for peer support and need to address staff resilience and psychological first aid.
13. Planning frameworks should be reviewed to clarify the **relationship between pandemic plans and disaster plans**.
14. There is a need to recognise that **EDs have limited capacity as indicated by Ambulance Ramping and Access Block**. **Tailoring of their role** during pandemics for the reality of service delivery must occur.

What are the “IP&C current practices” in ED...

Literature Review (n=23)

Carter, Pouch & Larson (2014). American Journal of Infection Control. 42,957-962

- Adherence to Hand Hygiene
- Aseptic technique
- Appropriateness of urinary catheterization
- Aseptic technique during central venous catheter insertion
- ED-placed CVC and related infectious outcomes
- Equipment decontamination

What's missing from this list?

What else are we really **NOT doing?**

Breaking the Chain on Infection



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BREAKING THE CHAIN OF INFECTION



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Table 1. Current gaps in emergency management that have infectious disease implications

Gaps in emergency management that may affect infection transmission

- Community settings (alternate care sites and shelters) lack infection prevention guidance
 - Health care providers in all settings require more infection prevention education
 - Nonhospital-based health care workers have historically received the least infection prevention education
 - Nonhospital-based health care workers may be the first to recognize or respond to an infectious disease issue during a disaster but have received little to no training in this area
 - Nonhospital-based health care workers lack access to the Health Alert Network and other existing methods of communicating infection prevention-related information
 - Few infection preventionists are subject matter experts in infectious disease disasters, such as bioterrorism and pandemics
 - Infection preventionists need more education related to planning for infectious disease disasters, including triaging patients, social distancing, surveillance methodologies, and others
 - Effectiveness of current electronic surveillance systems for disasters has not been established
 - Public health professionals' knowledge about infection prevention is not known
 - Surge capacity as it relates to infection prevention issues (such as negative-pressure room/area surge capacity) is lacking and needs to be better defined
 - Crisis standards of care need to be developed and evaluated; may have an impact on infection spread during disasters
 - General public requires more education about the potential infectious disease implications of disasters and strategies they can implement to help prevent the spread of infection
-

Rebmann, T. (2009). APIC's role in emergency management: Proceedings of the 2008 APIC Emergency Preparedness Mini-Summit. American Journal of Infection Control, 37(4), 343–348.

Table 1. Components of an emergency management plan that require IP input

Issue/topic requiring infection prevention input

Having around the clock infection control coverage^{27,29,47}
 Facility assessment/hazard vulnerability assessment^{9,11-13}
 Participation in disaster drills involving a biologic agent^{6,9,11-13,28,29,39}
 Strategies for receiving and posting health alert messages within the facility²⁹
 Negative-pressure surge capacity^{27,29,38,39}
 Safe patient specimen collection procedures^{9,11,32}
 Patient management^{6,9,11-13,38,39}
 Food safety^{6,11-13,39}
 Water management^{6,12,13,28,39}
 Sanitation control^{12,13,39}
 Pet management³⁹
 Environmental decontamination^{6,9,11-13,28,30,32,38,39}
 Development of crisis standards of care that affect infection transmission^{6,9-14,16,25,29,31,38,39}
 Prioritization for limited supplies of anti-infective therapy^{9,11-13,26,39}
 Screening/triage protocols^{6,8-13,17,19,25,26,37,39}
 Occupational health/safety procedures^{6,9,11-13,26,28,32,35,37,39}
 Outbreak investigation coordination^{6,11-13,19,25,31,32,35,37-39}

Table 2. Patient management issues that have infectious disease implications and require IP input

Patient management issue/topic requiring infection prevention input

Screening/triaging patients for infection^{6,8-13,17,19,25,26,37,39}
 Patient decontamination^{11-13,39}
 Patient transport^{9,39}
 Patient placement and cohorting^{6,8-14,17,25,35,37,39}
 Isolation^{6,8-13,25,26,32,37-39}
 Quarantine¹⁰⁻¹³
 Supply shortages^{6,11-13,16,26,37,39}
 Procedures for obtaining and handling patient specimens safely^{9,11,32}
 Discharge management^{9,39}
 Postmortem care^{6,9,11,12,39}

Rebmann, T. (2009). APIC State-of-the-art report: The role of the infection preventionist in emergency management. American Journal of Infection Control, 37(4), 271–281.

The answer? Credentialling of all HCW

American Journal of Infection Control 40 (2012) 294-5



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Commentary

The value of certification and the CIC credential

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Infection prevention and control certification examination major content area	Number examination questions	Percent examination questions
Preventing/controlling the transmission of infectious agents	39	26
Surveillance and epidemiologic investigation	38	25
Identification of infectious disease processes	18	12
Management and communication (leadership)	16	11
Education and research	14	09
Employee/occupational health	10	07
Not disclosed	15	10

Evidence base ?

- Growing evidence based demonstrating the value of credentialing
- Certified individuals in the technology industry, regardless of their educational background, outperform their noncertified counterparts.³
- The relationship between certified nurses and patient care quality is well established. High performing organizations with Magnet Status or other specialty certifications recognize that credentialed staff is an important indicator to patients and employers that their professionals are qualified and competent.⁴
- Studies indicating a correlation between success (eg, reduced infection rates, improved outcomes) and IP certification are starting to emerge. Most recently, a team from Columbia University, Porgorzelska et al, published study results linking lower methicillin-resistant *Staphylococcus aureus* infection rates in California hospitals to program directors certified in infection prevention and control.⁵
- Krein et al indicated that certified IPs may be better prepared to interpret the evidence and promote key infection prevention practices within their organization. ⁶

Evidence base ?

- Another study published several years ago by Krein et al indicated that certified IPs may be better prepared to interpret the evidence and promote key infection prevention practices within their organization. 6
 - Additionally, employers are starting to indicate that CIC is preferred or required. Clearly, more research is needed. However, the early indicators are encouraging: certification does, in fact, make a difference.
-
- *American Association of Critical-Care Nurses. AACN Certification Corporation.*
 - *Safeguarding the patient and the profession: the value of critical care nurse certification. Am J Crit Care 2003;12:154-64.*
 - *Porgorzelska M, Stone PW, Larson EL. Certification in infection control matters: impact of infection control characteristics and policies on rates of multi drug-resistant infections. Am J Infect Control 2012;40:96-101.*
 - *Krein SL, Hofer TP, Kowalski CP, Olmsted RN, Kauffman CA, Forman JH, et al. Use of central venous catheter-related bloodstream infection prevention practices by US hospitals. Mayo Clin Proc 2007;82:672-8.*

US Evidence

Major article

Certification in infection control matters: Impact of infection control department characteristics and policies on rates of multidrug-resistant infections

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Key Words:

Antibiotic resistant infection
Hospital-associated infections
Infection control

Background: The study objective is to describe infection control policies aimed at multidrug-resistant organisms (MDRO) in California hospitals and assess the relationship among these policies, structural characteristics, and rates of methicillin-resistant *Staphylococcus aureus* (MRSA) or vancomycin-resistant *Enterococcus* (VRE) bloodstream infections and *Clostridium difficile* infections.

Methods: Data on infection control policies, structural characteristics, and MDRO rates were collected through a 2010 survey of California infection control departments. Bivariate and multivariable Poisson and negative binomial regressions were conducted.

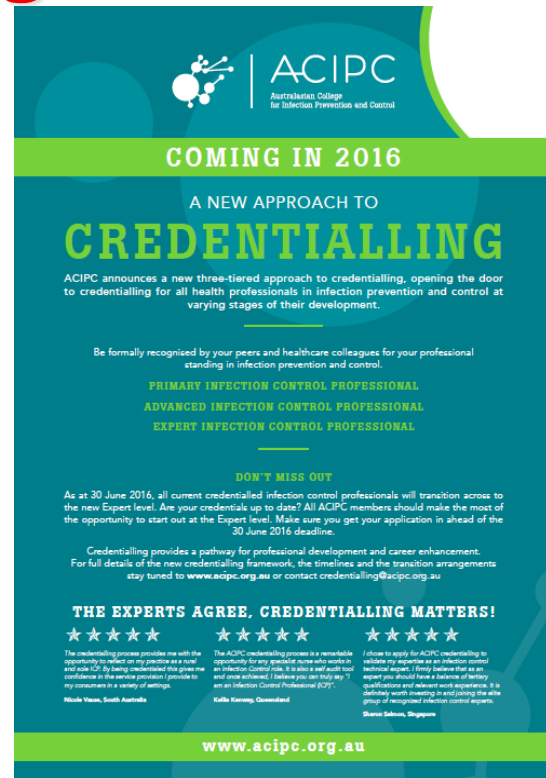
Results: One hundred eighty hospitals provided data (response rate, 54%). Targeted MRSA screening upon admission was reported by the majority of hospitals (87%). The majority of hospitals implemented contact precautions for confirmed MDRO and *C difficile* patients; presumptive isolation/contact precautions for patients with pending screens were less frequently implemented. Few infection control policies were associated with lower MDRO rates. Hospitals with a certified infection control director had significantly lower rates of MRSA bloodstream infections ($P < .05$).

Conclusion: Although most California hospitals are involved in activities to decrease MDRO, there is variation in specific activities utilized with the most focus placed on MRSA. This study highlights the importance of certification and its significant impact on infection rates. Additional research is needed to confirm these findings.

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Reforming ACIPC Credentialling for all

- Change in our model
 - 1990-2015: Single Credential for Expert
 - 2016: New three-tiered system
 - Primary, Advanced, Expert
 - Scope of practice in infection control – **all** health, allied health and other professionals
 - New ACIPC Standards for Practice (2016)
 - Designations for employment and appointments
-
- Evidence-base for safety and quality in healthcare
 - Nexus of research, education and practice



New Level – Primary ICP

Primary (PICP)

Knowledge	
	ACIPC Basic IC course or equivalent
	submission (role)
	professional development including examples like the Commission Modules
	professional review (more senior)
	hand hygiene online modules
	RN/EN/NP, RMO, PCA/AIN, scientist, epi, dental, allied, public health/environmental, child care, vet/animal, pharmacy (list the regulated any others can make an application/case for it, submission of a CV with a letter from their employer professions), industry could make a case
	College reflective practice (based on role) - employed for 12 months in the role, a professional review that is prescribed by their manager
Attitude	
	12 months part-time dedicated to IC (tie to professional review)
	a reflective piece about their role over the last 12 months
	identify a mentor to help them with their reflective piece (review it and provide feedback)
Behaviour/Skills	
	professional review (prescribed at level or senior and not someone who reports to you)
	submission of a CV
	documentation (registration etc)

New Level – Advanced ICP

Advanced (AICP)

Knowledge	
	– Grad Cert in IC (as a named Award), must demonstrate the skill set and attributes of level one as part of it
	3+ years part-time in IC
Attitude	
	reflect on their role x 3 pieces (prescribed) adopt the same portfolios as exists now (one mandatory on the role and the other two they can chose from what we currently have)
	demonstrate giving back to the College or the profession/professional service (eg sitting on a committee, research, participating in SIGs, presenting at conferences)
Behaviour/Skills	
	professional review (prescribed at level or senior and not someone who reports to you)
	submission of a CV; documentation (registration etc)

New Level – Expert Infection Control Practitioner

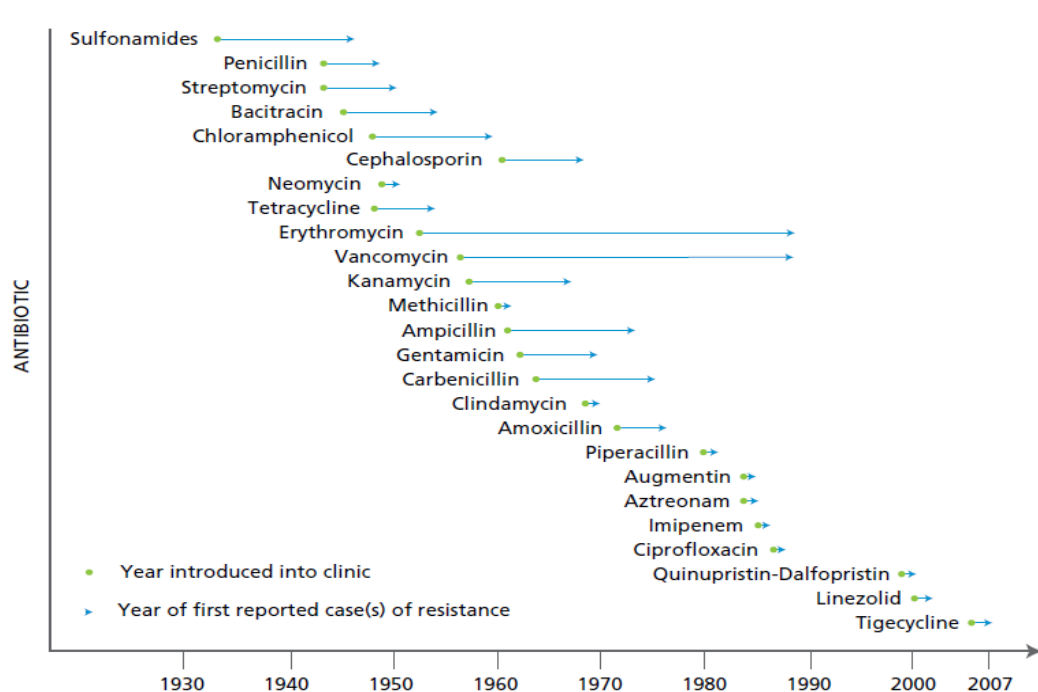
Expert (EICP)

Knowledge	
	Masters (as a named Award) or higher and includes PhD
	5+ years (FTE +)
Attitude	
	reflection x 3 (role, knowledge generation, what has been your contribution to the profession)
	category on giving back/professional service; professional review (prescribed)
Behaviour	
	CV + evidence of registration and employment

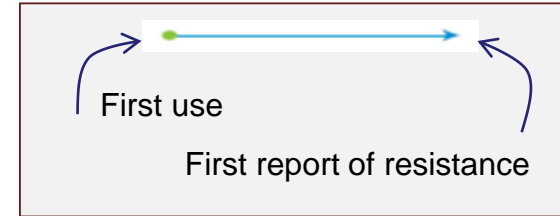
Real Reform...

- Professional college and universities working together
- Lessons learned
- Critical gaze that focuses on epidemiologically the scientific basis of infection
- Must bring the parent disciplines together
 - ✓ Emergency Care (Medicine, Nursing, Paramedicine), Infection Control, Infectious Diseases, Public Health, Sciences.. etc
- Changing patterns of disease, emerging, reemerging
- Infection & infectious diseases are “everywhere”... Alert, but not alarmed
- Re-conceptualize what is meant by a health emergency
- Bring patients and the community with us
- Serious global threat that will bring this home like no other.... Not if, but when...
 - Antimicrobial Resistance

Emergence of antibiotic resistance



Note: Some of the dates are estimates only.



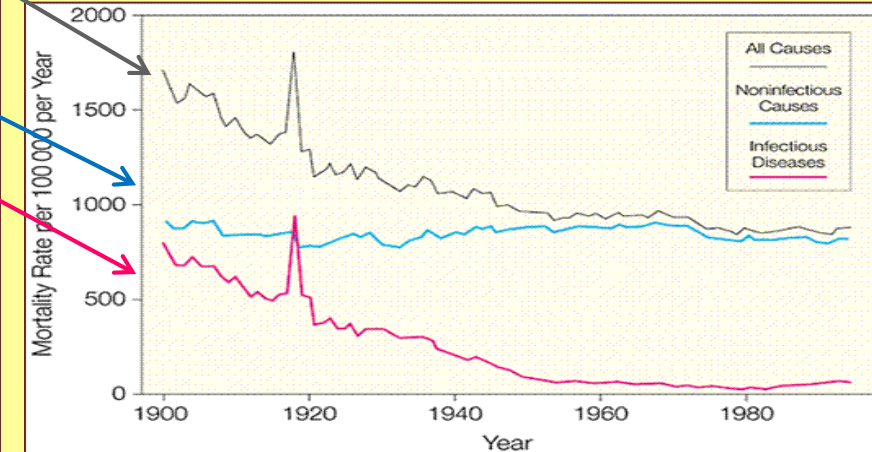
AMR important?

- Compare changes in mortality in 20th century due to:
 - » Non-infectious causes
 - » Infectious diseases
- Major contributors to decline in infectious disease mortality
 - » Vaccines
 - » Antimicrobials
 - » Infection control and public health interventions e.g. sanitation
- Antimicrobials are important contributors to human health and well-being

Trends in Infectious Disease Mortality in the United States During the 20th Century FREE

Gregory L. Armstrong, MD; Laura A. Conn, MPH; Robert W. Pinner, MD

Figure 2. Crude Mortality Rates for All Causes, Noninfectious Causes, and Infectious Diseases



Armstrong GL, Conn LA, Pinner RW. Trends in Infectious Disease Mortality in the United States During the 20th Century. *JAMA*.1999;281(1):61-66. doi:10.1001/jama.281.1.61.

Thank you