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CLINICAL EXCELLENCE COMMISSION

How the SEPSIS KILLS app will help improve patient outcomes

Mary Fullick, Tony Burrell, Jun Bai,

Clinical Excellence Commission

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- Systemic response to an infection leading to shock, organ failure and death
- High mortality and morbidity
- Increasing incidence
- High costs – acuity, LOS, ICU hours
- Difficult diagnosis especially in the elderly and young

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The problem in NSW

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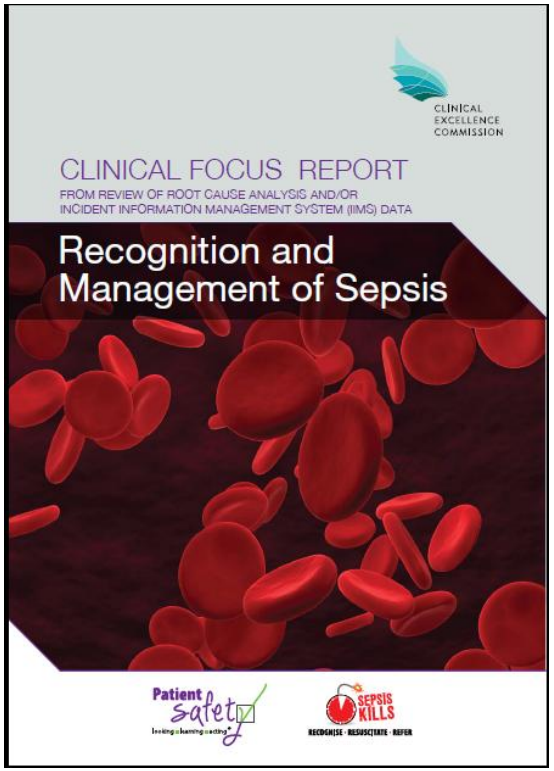
- 167 sepsis related incidents over 18 month period from IIMS
- Failure to **recognise** sepsis
- Failure to take **appropriate and timely action**
- Poor patient outcomes
- Failure to see sepsis as a **medical emergency**



CEC Clinical Focus Report - Dec 2009

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The SEPSIS KILLS solution….

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RECOGNISE:

Risk factors, signs and symptoms of sepsis and inform senior clinician

RESUSCITATE:

With rapid antibiotics and IV fluids within one hour

REFER:

To specialist care and initiate retrieval if needed

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Sepsis Toolkit

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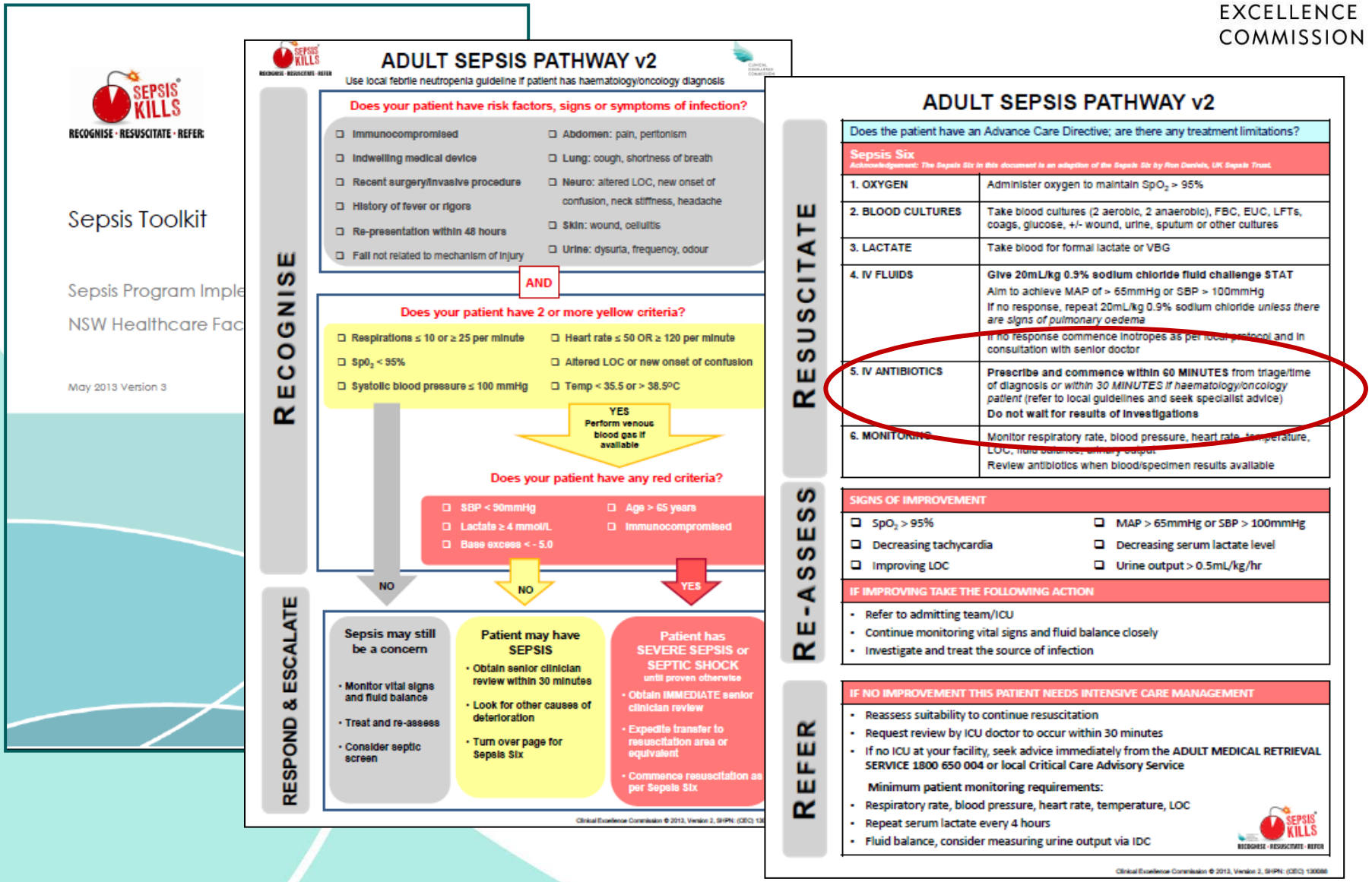

Antibiotics in sepsis

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- IV broad spectrum antibiotics within 60 minutes
- Delay leads to increased mortality - Kumar 2006
- Critical decisions often made without definitive data
- Inappropriate initial antimicrobial therapy for septic shock reduces survival five-fold (52% - 10.3%) - Kumar 2009
- Prevent Rx failure, toxicity, C-diff, resistance
- Most of the antibiotics prescribed by junior doctors

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Variations in culture & practice

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- Delays in prescribing and administration
- Investigations and specimens
- Emphasis on infusion
- Gentamicin particular issue
- Communication

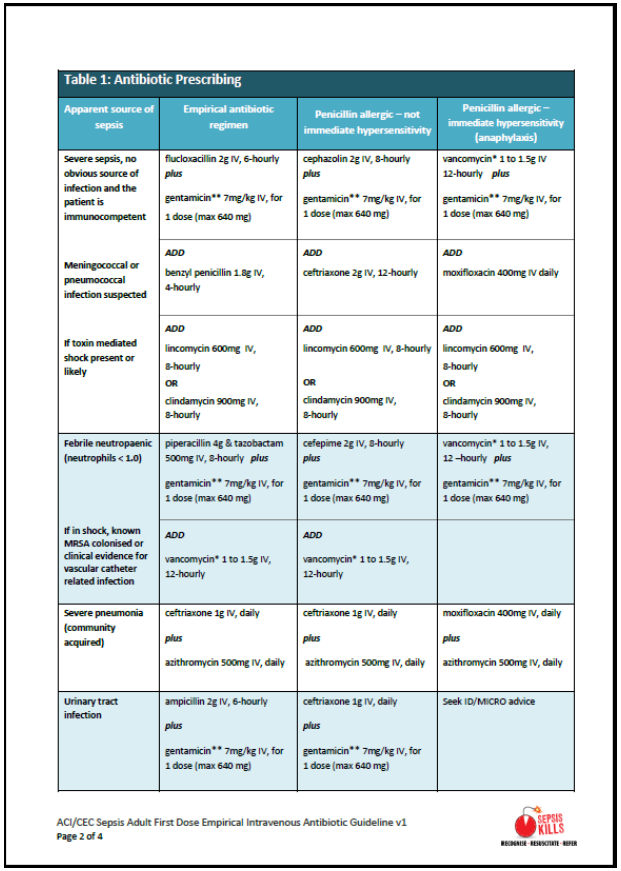

Table 1: Antibiotic Prescribing

Apparent source of sepsis	Empirical antibiotic regimen	Penicillin allergic – not immediate hypersensitivity	Penicillin allergic – immediate hypersensitivity (anaphylaxis)
Severe sepsis, no obvious source of infection and the patient is immunocompetent	flucloxacillin 2g IV, 6-hourly *plus* gentamicin** 7mg/kg IV, for 1 dose (max 640 mg)	cephazolin 2g IV, 8-hourly *plus* gentamicin** 7mg/kg IV, for 1 dose (max 640 mg)	vancomycin* 1 to 1.5g IV 12-hourly *plus* gentamicin** 7mg/kg IV, for 1 dose (max 640 mg)
Meningococcal or pneumococcal infection suspected	*ADD* benzyl penicillin 1.8g IV, 4-hourly	*ADD* ceftriaxone 2g IV, 12-hourly	*ADD* moxifloxacin 400mg IV daily
If toxin mediated shock present or likely	*ADD* lincomycin 600mg IV, 8-hourly OR clindamycin 900mg IV, 8-hourly	*ADD* lincomycin 600mg IV, 8-hourly OR clindamycin 900mg IV, 8-hourly	*ADD* lincomycin 600mg IV, 8-hourly OR clindamycin 900mg IV, 8-hourly
Febrile neutropaenic (neutrophils < 1.0)	piperacillin 4g & tazobactam 500mg IV, 8-hourly *plus* gentamicin** 7mg/kg IV, for 1 dose (max 640 mg)	cefepime 2g IV, 8-hourly *plus* gentamicin** 7mg/kg IV, for 1 dose (max 640 mg)	vancomycin* 1 to 1.5g IV, 12 –hourly *plus* gentamicin** 7mg/kg IV, for 1 dose (max 640 mg)
If in shock, known MRSA colonised or clinical evidence for vascular catheter related infection	*ADD* vancomycin* 1 to 1.5g IV, 12-hourly	*ADD* vancomycin* 1 to 1.5g IV, 12-hourly	
Severe pneumonia (community acquired)	ceftriaxone 1g IV, daily *plus* azithromycin 500mg IV, daily	ceftriaxone 1g IV, daily *plus* azithromycin 500mg IV, daily	moxifloxacin 400mg IV, daily *plus* azithromycin 500mg IV, daily
Urinary tract infection	ampicillin 2g IV, 6-hourly *plus* gentamicin** 7mg/kg IV, for 1 dose (max 640 mg)	ceftriaxone 1g IV, daily *plus* gentamicin** 7mg/kg IV, for 1 dose (max 640 mg)	Seek ID/MICRO advice

ACI/CEC Sepsis Adult First Dose Empirical Intravenous Antibiotic Guideline v1
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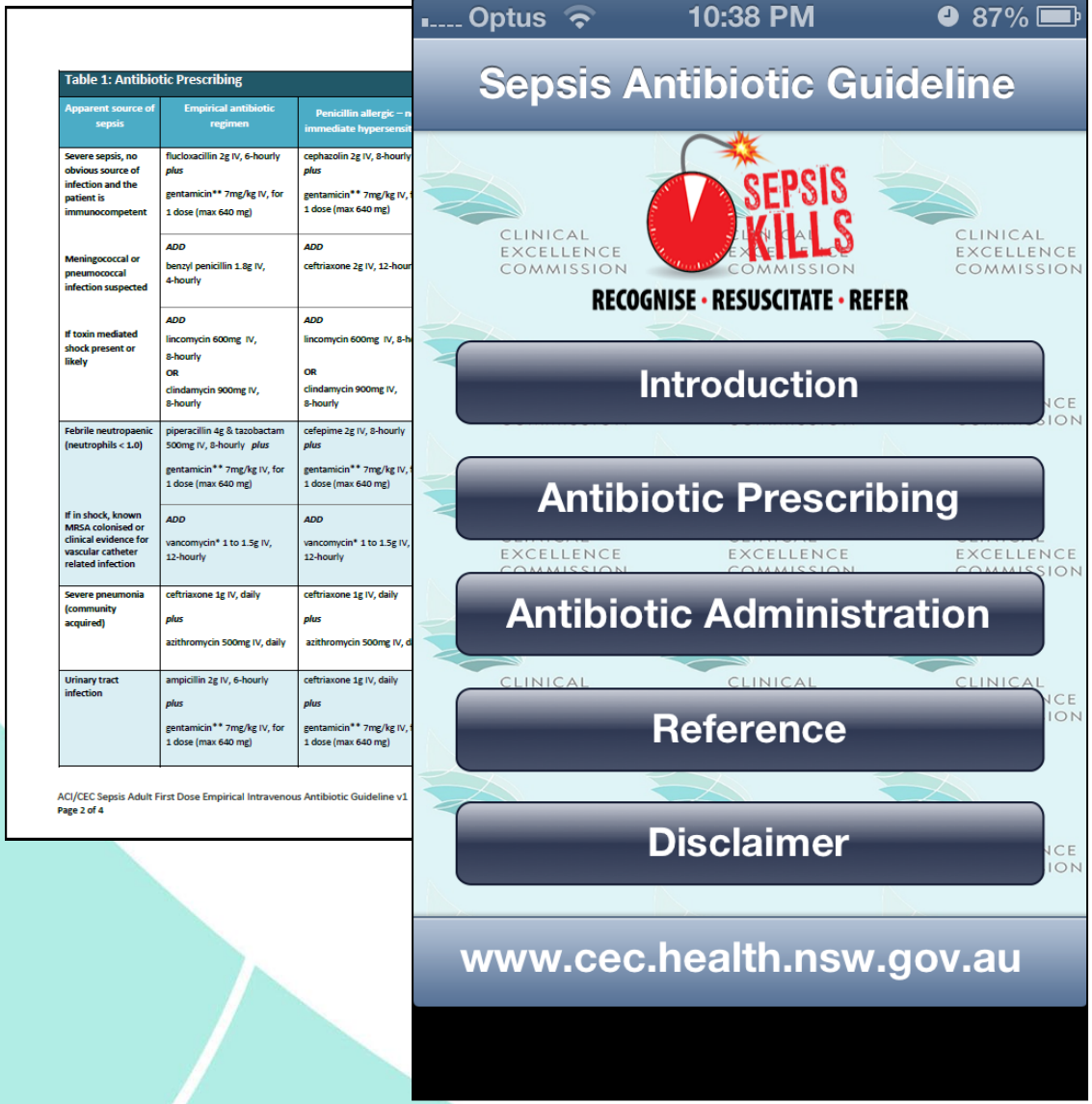

- Apple Store
- GooglePlay

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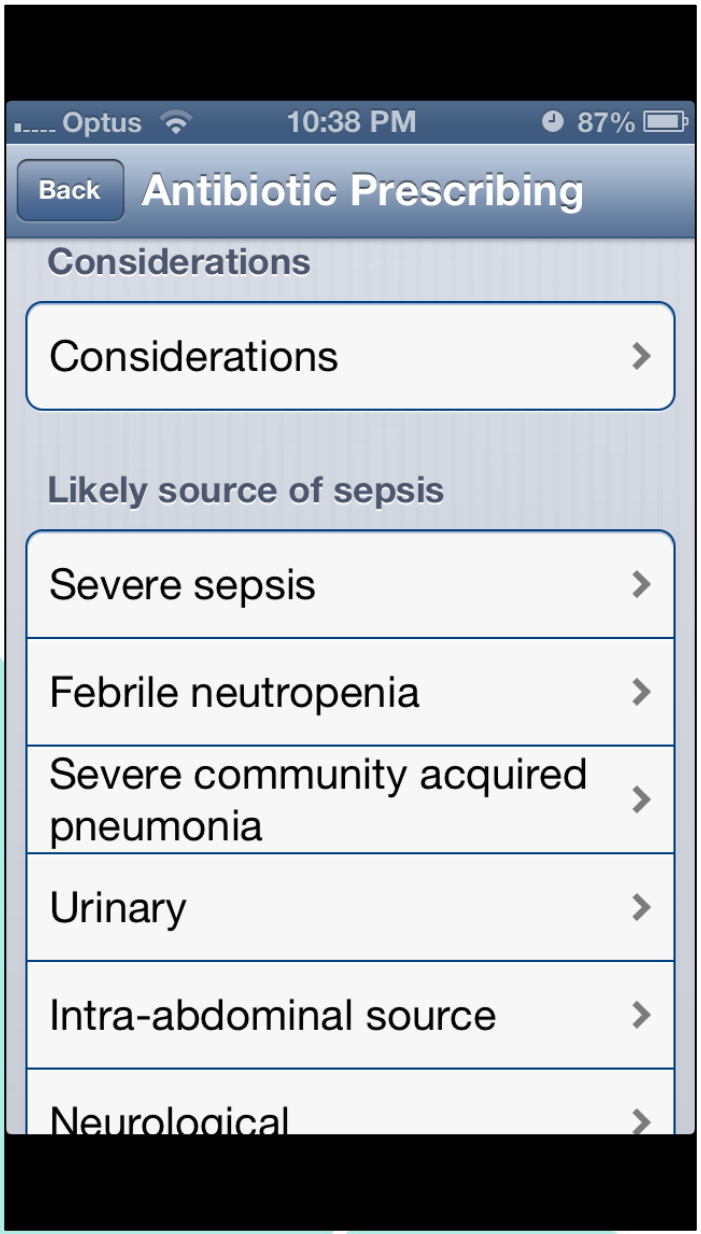

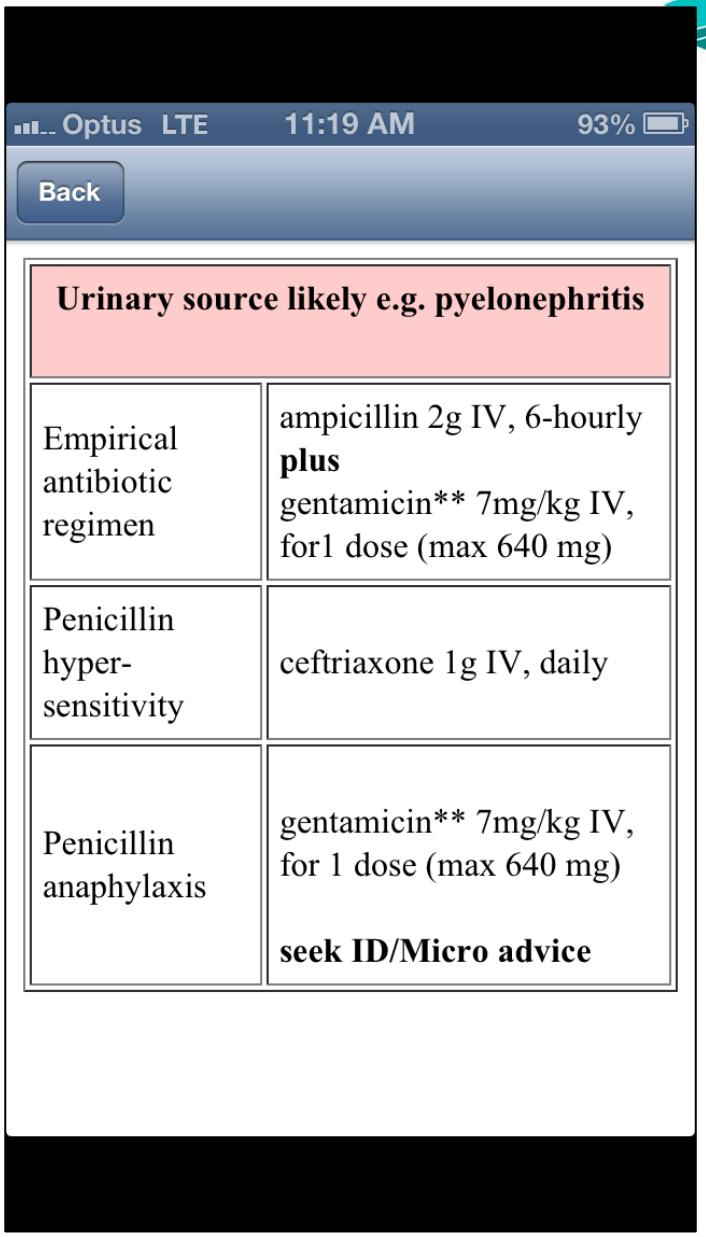

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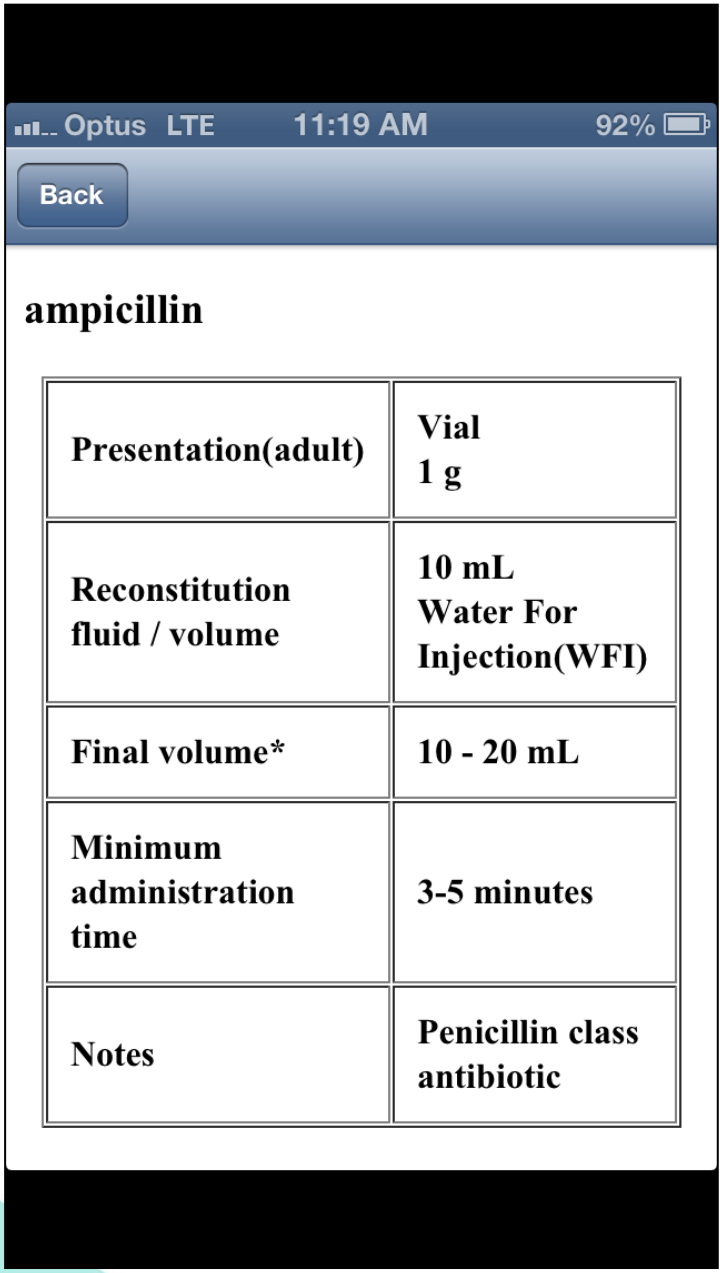

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Point-of-care information

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- Created by clinicians for clinicians
- Combines evidenced based science with technology
- Provides on-the-spot clinical decision support for prescribing and administration
- Reduces reliance on memory, paper or electronic versions of CEC guidelines or TG
- Plans to expand to wider Sepsis Toolkit information
- Apple, GooglePlay, Twitter *@sepsiskills*

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Who is using it?

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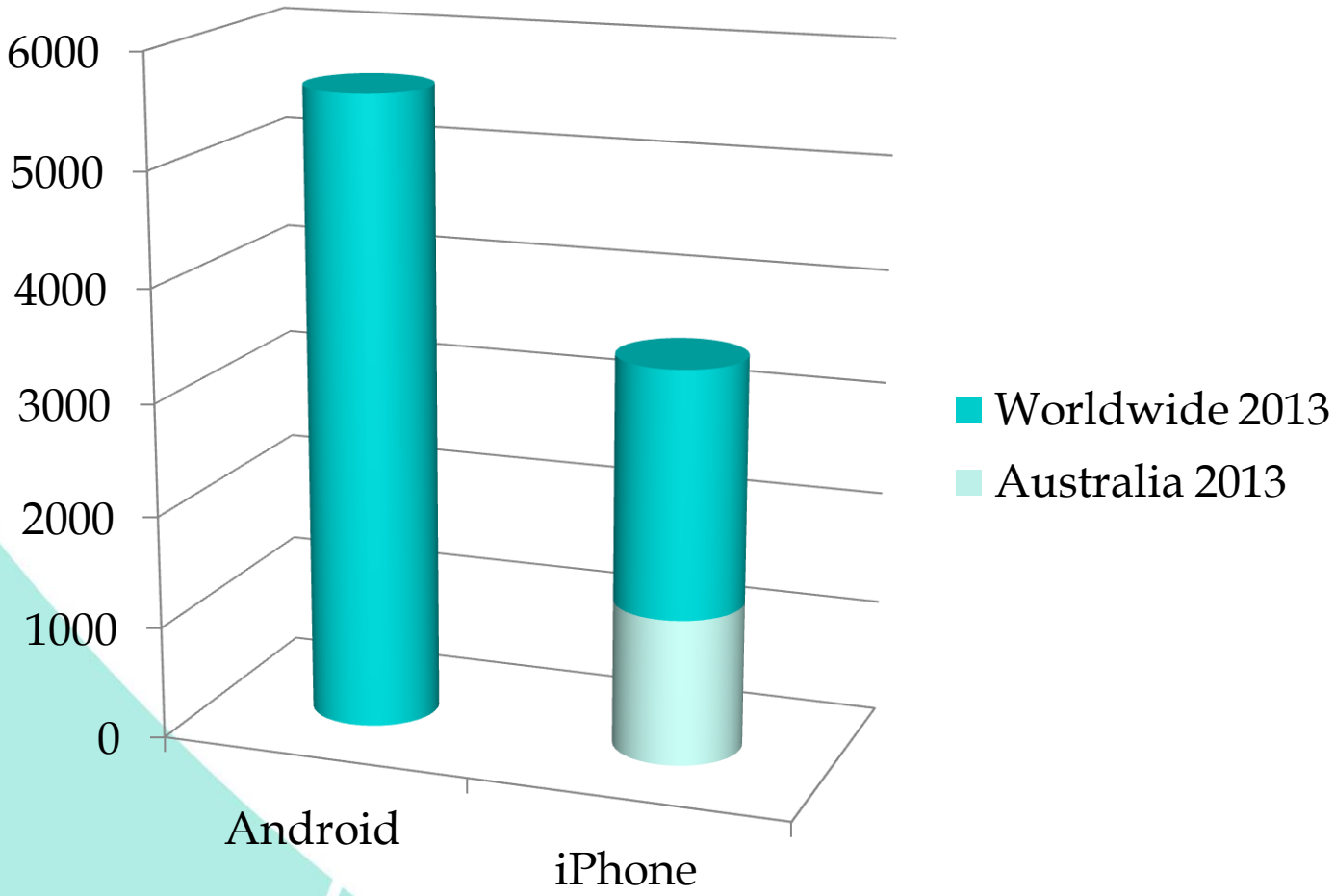

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Does it make a difference?

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- Improved accessibility
- Anecdotal evidence that there is now greater knowledge and consistency in prescribing
- One study on PDAs & POC information….
  - Increased self-reported drug knowledge 78.9%
  - Improved drug related decisions – 80.3%
  - Reduced potential ADEs – 63.1%
  - Estimated frequency of reduced ADEs

    None – 50.2%

    1-2/week 42.8%

    >2/week – 7%

    - Rothschild J Am Med Inform Ass 2002

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CEC data: NSW median time to administration of first IV antibiotic

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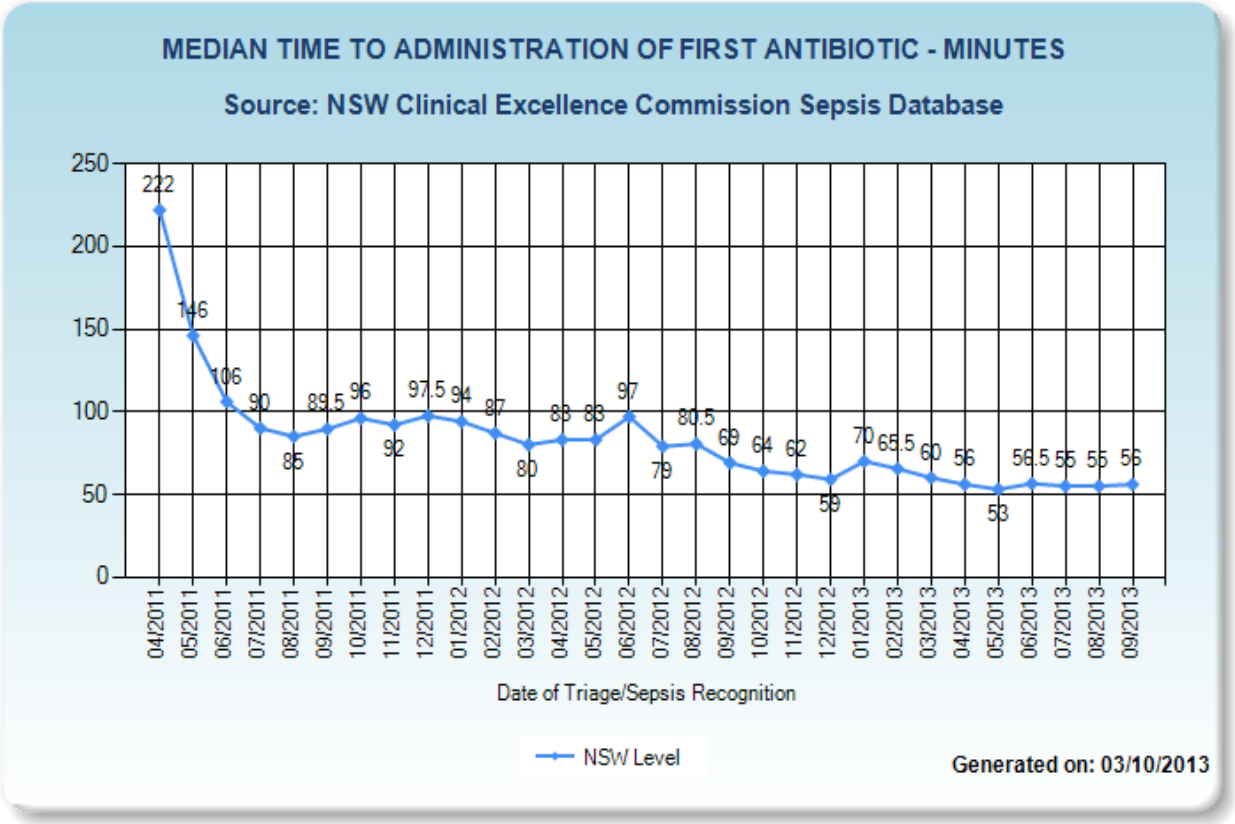

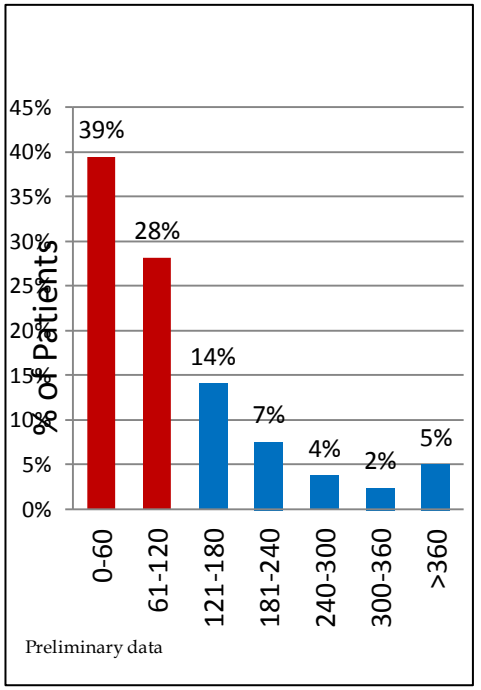

Reduced LOS from 8.66 to 6.54 days

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Final thoughts…

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- Sepsis is a medical emergency
- Delay to antibiotics impacts on mortality
- Prescribe it – get it – give it – NOW!
- How long does it take for antibiotics to be given in your health facility?

Don’t turn your back on the bomb!

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