Monitoring Near Real-Time Patient and Medicines Data

- Prescribing occurs at a point in time based upon the information available at that time
- A patient's condition, information and data change constantly
- ICNet Pharmacy constantly reviews:
    - **all** the patients;
    - **all** the information; and
    - **all** the data *post-prescription*
- Alerting you to focus interventions in a timely manner.
- See the priority patients first each day
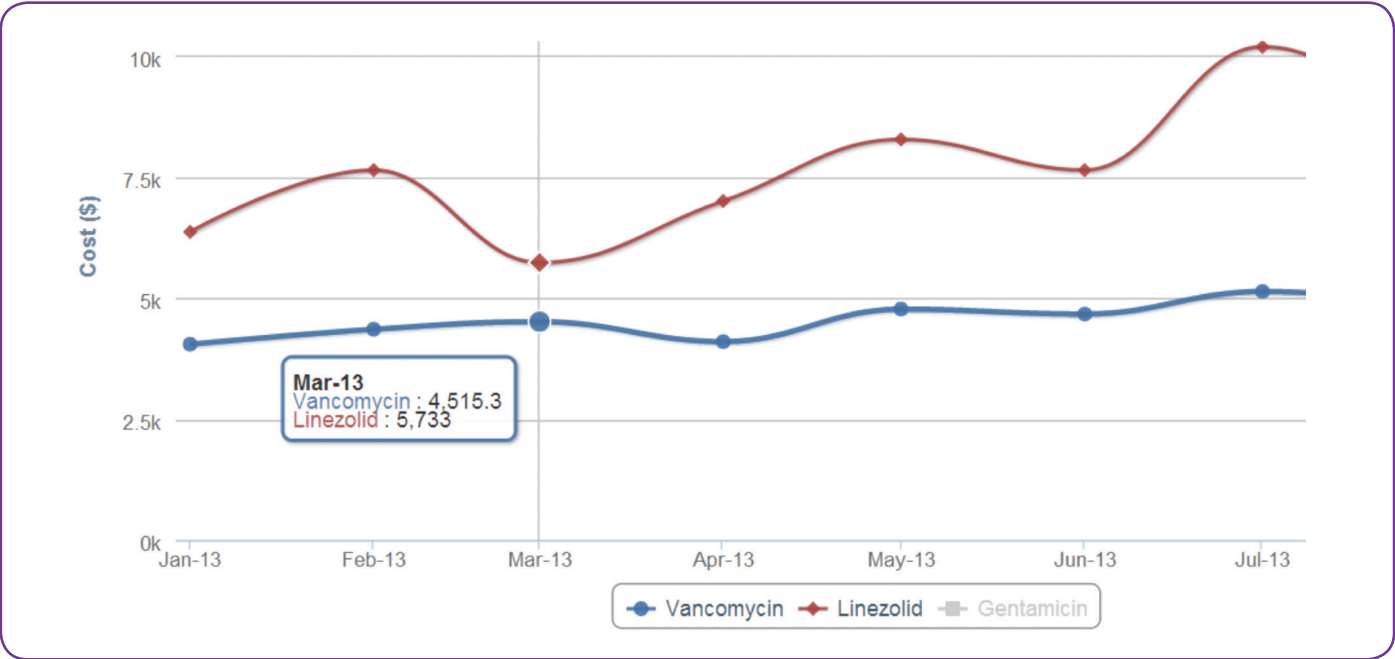
Fig 3. Medicines Cost Report

Image from ICNet Software

> Over the past 8 months, our pharmacy department has been utilising ICNet to enhance our antimicrobial stewardship efforts. The training and implementation of ICNet was made very easy through the help of the company's dedicated employees. With their assistance, we were able to customise and develop many unique alerts and reports. On a daily basis, pharmacists are able to review things such as patients with extended-spectrum beta-lactamase positive cultures, low/elevated vancomycin troughs, use of carbapenems, positive cultures with no antimicrobial therapy, etc. With the real time reporting of information, our pharmacy department is often the first to notify clinicians of important results. This allows therapy to be modified and optimised in a more timely fashion. Using ICNet in our small institution has saved time by cutting down on manual chart reviews. With the help of this program in larger institutions, I speculate ICNet can save incredible amounts of time as well as lower overall costs associated with the inappropriate use of antimicrobials.

Christine Barabas, Pharmacist, South County Hospital, Rhode Island, USA

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CLINICAL SURVEILLANCE SOFTWARE FOR
INFECTION PREVENTION | PHARMACY | SURGICAL OUTCOMES

*1   http://www.textbookofbacteriology.net/resantimicrobial.html
*2   PLoS One. 2009 Feb; 4(2): 1-7. Adverse drug reactions in hospital in-patients: A prospective analysis of 3695 patient-episodes. (Davies, EC, Green CF, Taylor S, Williamson PR, Mottram DR, Pirmohamed M.)Van Den Bemt PM, Poolman JB, Stoker LJ, Egberts AC, Postma MJ.)
*3   Value Health. 2011 Jan; 14(1): 34-40. Preventable hospital admissions related to medication (HARM): cost analysis of the HARM study. (Leendertse AJ, Van Den Bemt PM, Poolman JB, Stoker LJ, Egberts AC, Postma MJ.)
*4   Institute for safer medicines practice: Anticoagulants the leading reported drug risk in 2011 (May 31, 2012)
*5   CDC, http://www.cdc.gov/, 2013

Europe | Africa | North America | South America | Asia Pacific

Antimicrobial Stewardship and Medication Safety Software

Powering Sustainable Safer Medicines

Baxter

Safer Global Medicines Management is a Local Responsibility

ICNet understands that surveillance technology plays a critical part in protecting patients from the harm of adverse drug events and is the cornerstone of an effective antimicrobial stewardship program.

A patient's condition changes by the hour. Any prescribing that occurs is based on the best information and practices available at that time. Introduction of medication can have unforeseen effects: patients' conditions can change without warning and make the prescription inappropriate and/or the medication ineffective. ICNet Pharmacy constantly monitors the patient following the prescription, alerting the appropriate clinicians as soon as a clinically meaningful change occurs. This could be that a bug is resistant to an antibiotic or that a patient's International Normalised Ratio (INR) reading has breached its safe levels. The system provides you with the tools to configure any scenarios that are relevant to your care programmes.

- About 70% of the bacteria that cause infections in hospitals are resistant to at least one of the drugs most commonly used for treatment. Some are completely resistant.[*1]
- Adverse Drug Events occur in 10-20% of hospital inpatients.[*2]
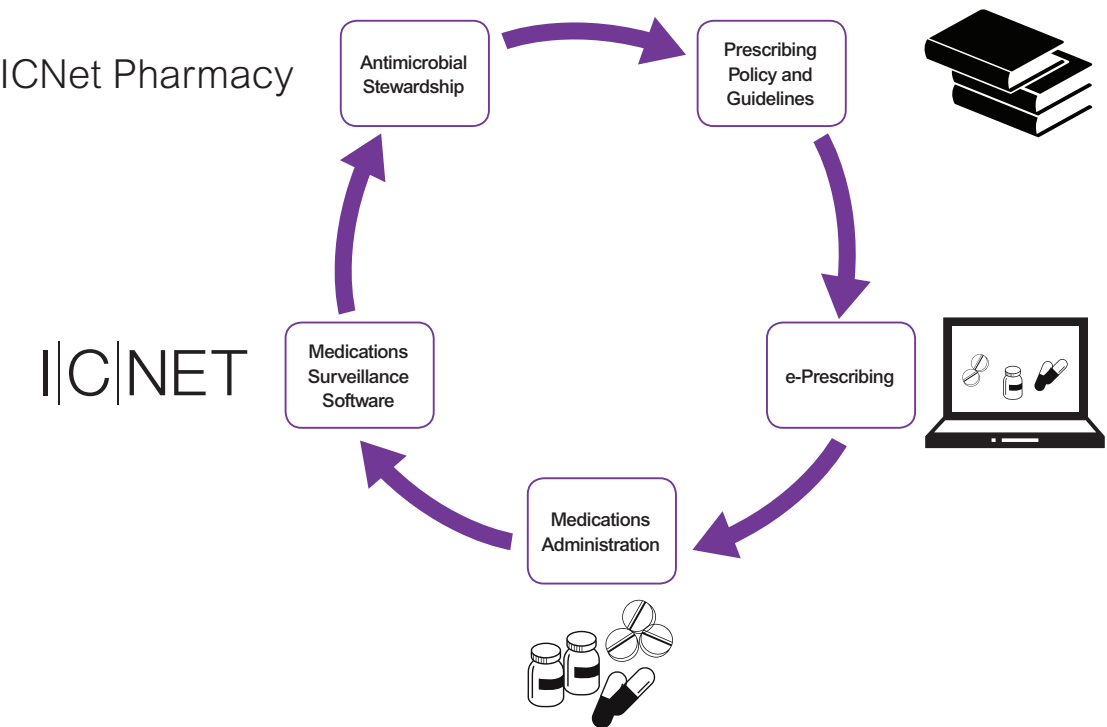
Many Adverse Drug Events (ADEs) are preventable. ADEs can cause serious harm to patients and can lead to hospitalisation or even death. ADEs are a burden, not only to patients and their relatives, but also to society and have the potential to involve high costs. The average medical costs for one preventable medication-related hospital admission were €5,461.[*3]

Between 2 - 4 million people in the USA suffered serious, disabling or fatal injury associated with prescription drug therapy. The most frequently identified were the anticoagulants.[*4]

ICNet Post Prescribing Clinical Surveillance Software

ICNet Pharmacy is built on an advanced data analytics engine. ICNet Pharmacy allows users to define complex criteria to identify clinically significant events that allow healthcare professionals to quickly intervene. ICNet Pharmacy has tools designed to support pharmacy workflow and intervention management. ICNet software will integrate data from laboratory, patient, observations, prescribing and surgery data systems to enable a wide range of patient based alerts and reports that give local flexibility in both medicines management and focused antimicrobial stewardship programmes.

Fig. 1. Cycle of Information

Build Your Safer Drug Therapies Programme

Monitor and Analyse

- Near real-time customisable alerts and reports
  - Monitor all medications
  - Specialist tools for Antimicrobial Stewardship needs
- Post-prescription patient monitoring
- Integrated Medication, Microbiology, Surgical, Radiology, Device, Infection, Vitals and Observation data
- Analyse interventions and alarms
- Stewardship programs
- Cumulative antimicrobial susceptibility data (Antibiograms)
  - Inform the local prescribing policy
- Drug utilisation (DDD and DOT)
- NHSN Antimicrobial Use and Resistance program
- Prioritise patients
- Outpatient Parenteral Antimicrobial Stewardship

Specialisms

- Antimicrobial Stewardship
- Anti-coagulation therapy monitoring
- Glycaemic control monitoring
- Adverse drug reactions
- Antibiotic associated C. difficile infections

Costs Analysis

- Drug cost analysis reports
- Compare costs benefits of different therapies

Fig. 2. C. difficile levels vs Consumption of Third Generation Cephalosporins (Drug utilisation)
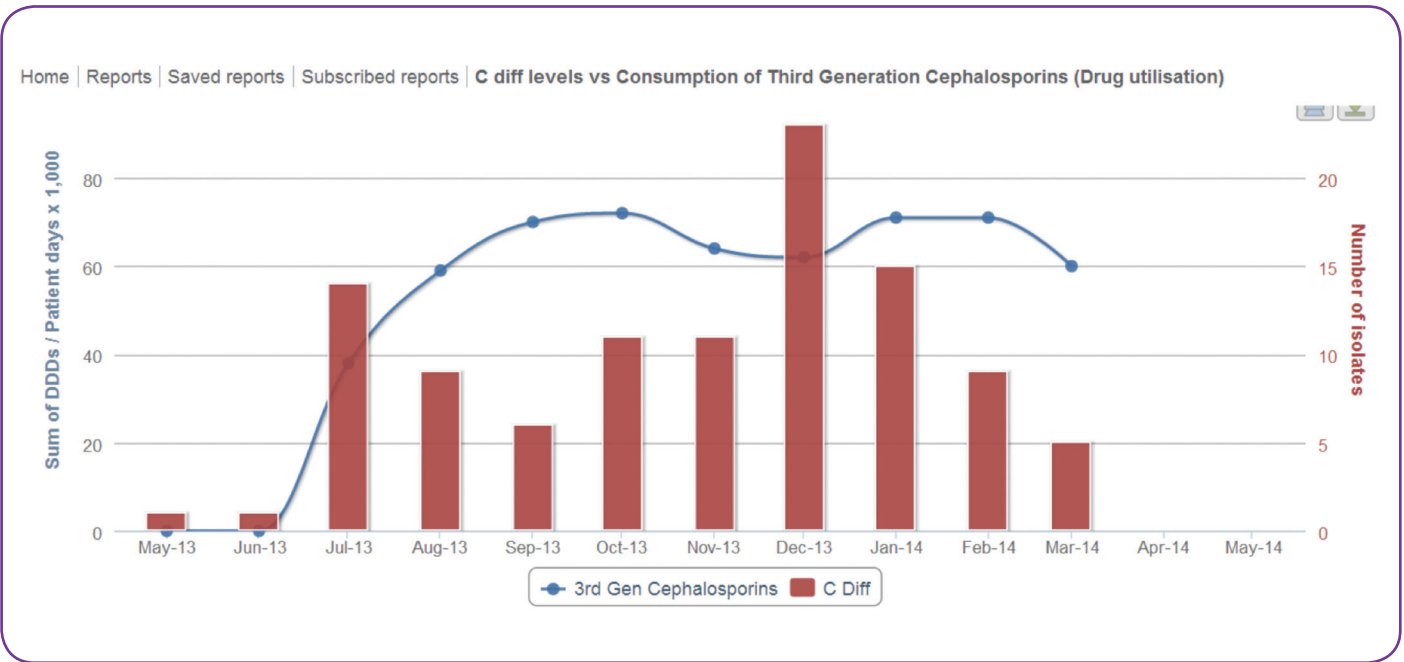

Image from ICNet Software

Designed to Help Improve and Optimise Therapy and Outcomes

For the Patient

- Reduce the risk of harm by checking I am on the right drug
- Reduce risk of me getting C. difficile infections
- Reduce my stay in hospital switching me as early as possible to oral drugs so I can go home
- Safely monitor my reactions throughout my stay
- Alert my doctor to any infections I get after I leave the hospital
- Constantly monitors the efficacy of my therapy
- Checks I only have the drugs I need for as long as I need them

For the Pharmacist

- Manage patients' responses to drugs following prescription – give me up to date information in real-time
- Provide allergy alarms
- Medication cost analysis
- Instant and reliable analysis on resistance burden in my hospital
- Accurately inform my prescribing policy
- Alert me early to trends in increased resistance (MDROs)
- Participate in NHSN, antimicrobial use and resistance (AUR)
- Contribute to International programs (WHO/CDC/ARHAI)
- Determine relationships between different data sets e.g. antimicrobials + C. difficile
- Provide daily patient prioritisation lists

For the Hospital

- Reduce risk of harm to patients
- Promote co-operation and information sharing with all stakeholders
- Ensure compliance to local, national and global antibiotic guidelines
- Reduce risk of litigation
- Reduce length of stay
- Reduce expenditure on antibiotics
- Create effective education and benefit change management programs
- Reduce readmissions due to ineffective prescribing
- Enhance infection prevention and control
- Strengthen resistance tracking

" Patients getting powerful antibiotics that treat a broad range of infections are up to 3 times more likely to get another infection from an even more resistant germ. (CDC[*5])

Decreasing the use of antibiotics that most often lead to C. difficile infection by 30% (this is 5% overall antibiotic use) could lead to 26% fewer of these deadly diarrheal infections. These antibiotics include fluoroquinolones, β-lactams with β-lacatamase inhibitors, and extended-spectrum cephalosporins (CDC[*5]) "

" ICNet is becoming an integral tool used to provide daily reports for our Pharmacy Antibiotic Stewardship Program. Additionally, participation in the CDC date reporting network provides us with reliable benchmarking and utilisation data.

Phil Holman, Pharmacist, Enloe Medical Center, California, USA

ICNet has been an asset for our antimicrobial stewardship program. The ability to customise alerts and generate reports on microbiologic and antibiotic usage data is critical. The ICNet staff has been a good resource in terms of their responsiveness to questions and issues, as well as their willingness to assist and tailor approaches to the institution. "

Matthew Pike, Pharmacist, Carle Foundation Hospital, Illinois, USA