

Clinical Governance Jan 2011: Pneumonia

Dr Ed Cetti

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Enhancing Quality – Pneumonia pathway

- Programme moved from USA to North West UK, now South East Coast
- Aims to improve Pneumonia care according to a few, ‘evidence based’ measures (metrics)
- By doing this ?reduce mortality
- In NW UK – an overall 10% improvement in metrics led to an 8% fall in mortality

Pneumonia Measures

Measure Names

Oxygen Assessment

Antibiotic Selection

Blood Cultures Performed in A&E Prior to Initial Antibiotic Received

Antibiotics Received Within 6 Hours of Hospital Arrival

Smoking Cessation

The SASH Team

- Enhancing Quality Committee
- Consultant Respiratory Physician
- Specialist Respiratory Nurse
- Coding
- AMU Sister

- AMU Physicians

Acute Pneumonia Pathway

SOB / Cough/ Fever/ Chest pain / Sputum/ Sepsis
SUSPECT PNEUMONIA
 Atypical presentations: confusion, falls

Assess O2 sats, BP, RR, HR

Urgent CXR, blood cultures, FBC, U&E, LFT, CRP, glucose

Confirm diagnosis
CURB-65 score for severity

Antibiotics as per Trust guidelines
 According to severity
 Start immediately
Give 1st dose <4hrs from admission time

CURB-65:

New Confusion (AMT <9): 1

Urea >7: 1

RR > 30: 1

BP <90 systolic or 60 diastolic: 1

Age >64: 1

0-1 Low severity

2 Moderate Severity

3-5 High Severity

Score 0-1: ?Home treatment

2: Short hospitalisation

3-5: Consider Outreach review

**Blood cultures if:
 No antibiotics pre-hospital
 AND
 CURB Score 2-5**

**Smokers:
 Give Smoking Cessation Advice
 And record it**

Any Diagnosis of Pneumonia:

Please inform Shona loakim Ext. 6629 / Bleep 588

Early Results

- July 2010 – SASH Quality Care Score- 78% - Joint highest in region
- August score – 80%
- But problem collecting retrospective data – July SASH had 77% data complete – target 95%

Progress Since

- Collecting data on weekly basis from coding
- Prospectively on AMU & Tilgate
- To date – 292 cases
- 93% data entered up to October

Challenges

- Improving assessment of severity – CURB-65
- Improve use of and recording of blood cultures
- Improve smoking cessation advice



Death rate too high in some areas

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IMPROVING: But there is still room for improvement, according to the Dr Foster Good Hospital Guide

By David Farbrother David.Farbrother@Essnmedia.Co.Uk

THE number of patients dying at East [Surrey](#) Hospital after being admitted for hip fractures, pneumonia and strokes is too high, according to a new report.

The hospital met its targets in every other area assessed under the Dr Foster Good Hospital Guide, and local health bosses have pledged that improvements are being made in areas wanting.

The figures released by the hospital watchdog were for Surrey and Sussex [NHS](#) Healthcare Trust (SASH) in the financial year 2009/2010.

And [Michael Wilson](#), who became chief executive around two months ago, has admitted there are areas the trust needs to improve.

He told the Mirror: "I would say that we have a number of things we should be proud of, and some we should not be proud of.

"Our mortality rate further down the line for strokes is not what we would like it to be. And the number of people that get into dedicated stroke beds is far short of where it should be.

"Patients who have strokes are seen by acute physicians and the care they get at [East Surrey Hospital](#) – it's nothing short of outstanding, probably one of the best models I've seen in England.

Dr Foster Data

Standardised mortality ratios This basket contains five of the 56 conditions that comprise the HSMR: heart attacks, stroke, pneumonia, congestive heart failure and broken hips.

| Lower than expected mortality | Ratio | Higher than expected mortality | Ratio |
|--|-------|---|-------|
| Ashford and St Peter's Hospitals NHS Trust | 83 | County Durham and Darlington NHS Foundation Trust | 113 |
| Bradford Teaching Hospitals NHS Foundation Trust | 87 | Derby Hospitals NHS Foundation Trust | 115 |
| East Kent Hospitals University NHS Foundation Trust | 81 | East and North Hertfordshire NHS Trust | 118 |
| Frimley Park Hospital NHS Foundation Trust | 84 | Great Western Hospitals NHS Foundation Trust | 117 |
| Imperial College Healthcare NHS Trust | 83 | Hull and East Yorkshire Hospitals NHS Trust | 115 |
| Mid Staffordshire NHS Foundation Trust | 74 | Royal Bolton Hospital NHS Foundation Trust | 118 |
| North West London Hospitals NHS Trust | 88 | Shrewsbury and Telford Hospital NHS Trust | 117 |
| Plymouth Hospitals NHS Trust | 87 | South London Healthcare NHS Trust | 112 |
| Royal Free Hampstead NHS Trust | 79 | Surrey and Sussex Healthcare NHS Trust | 121 |
| St George's Healthcare NHS Trust | 87 | The Royal Wolverhampton Hospitals NHS Trust | 121 |
| University College London Hospitals NHS Foundation Trust | 73 | | |
| University Hospitals Bristol NHS Foundation Trust | 84 | | |

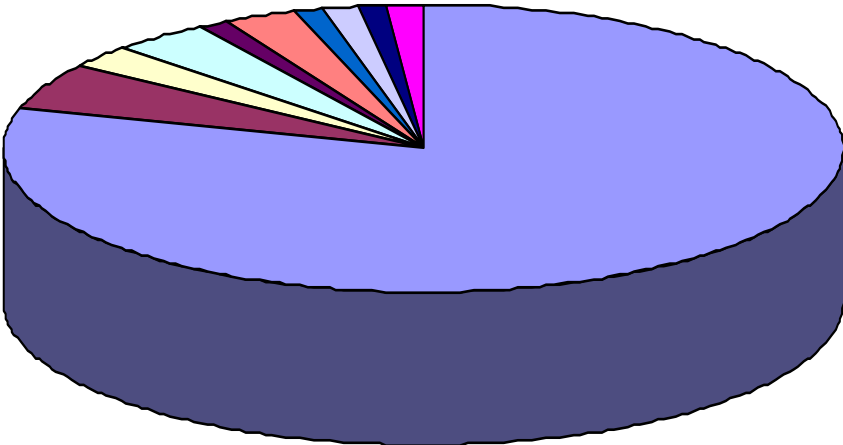
Possible Explanations

- Poor quality care for pneumonia at SASH
- Incorrect coding / death certification
- Excess co-morbidities

Pneumonia Deaths – Case Reviews

- 78 Case Notes reviewed
- RIP – April – November 2010
- Reviewed cause of death – notes, Imaging, bloods etc.
- A priori markers of quality of care, each case assessed according to these and overall assessment of any deficiencies

Causes of Death



- CAP
- HAP
- Lung Cancer
- Heart Failure
- Mediastinitis
- COPD
- Asthma
- Alcoholic Liver
- Cerebral bleed
- Bronchiectais

Demographics

- Age at admission: Mean 81 yrs, Median 86 yrs, Range 37 – 100
- 14/62 cases (23%) Nursing home / bed-bound
- 29/62 cases (47%) had severe co-morbidities – severe anorexia, COPD, cancer, fibrosis etc.

'Good Quality Care'

- Seen by Consultant <12 hrs of arrival or <24 hrs
- Pneumonia diagnosis made by admitting junior Dr , or if not on post-take round
- Correct antibiotics prescribed on admission (SASH Antibiotic Policy)
- Antibiotics administered <4hrs after arrival
- Seen by Chest Physician
- Overall assessment of medical care

Seen by Consultant

- 38/62 cases (61%) within 12 hrs of arrival
- 21/62 (34%) 12-24 hrs
- 3 cases – RIP before seen

Was Pneumonia Diagnosis Made?

- 54/62 (87%) by clerking junior Dr
- 51/57 (89%) on Consultant PTWR

SUMMARY OF EMPIRIC ANTIMICROBIAL REGIMENS FOR THE TREATMENT OF COMMON INFECTIONS IN ADULT PATIENTS (SEPTEMBER 2008) – doses based on normal renal function

Full detailed policy & formulary - available on Trust Intranet

Issued by the IPCAS Team



Principles of good antibiotic prescribing:

- Always take appropriate cultures before antibiotic administration where clinically feasible
- **THINK - does the patient require an antibiotic now?** Consider antibiotic choice (use following formulary for guidance), dose and mode of administration (IV for patients with severe infections &/or with impaired gastrointestinal absorption) appropriate to most likely clinical diagnosis
- Consider individual patient factors in all cases (eg allergies, previous antibiotic history or infection, renal & hepatic function, pregnancy, immuno-suppression, predisposition to C.difficile disease)
- AVOID/MINIMISE use of (IV/PO) cephalosporins, quinolones (eg. ciprofloxacin) and clindamycin especially in patients ≥ 65 years of age
- Prescribe legibly on drug chart with reason for administration and stop and/or review date – sign all entries clearly
- **Need for IV administration must be reviewed at 48 hours at the latest** – switch to oral alternative as soon as possible
- Review requirement for antibiotic regularly (indication, dose, route)
- Follow up all culture results and rationalise antibiotics according to microbiology culture & sensitivity results.
- Single dose antibiotic surgical prophylaxis (up to 24 hours if orthopaedic implant surgery or prolonged operation >4 hours)
- Consult Duty Consultant Microbiologist for advice as appropriate (Crawley Hospital x 3083 or via ESH or Crawley Hospital switchboards)

Standard Empirical Regimens

| Urinary Tract | 1 st line | Penicillin (β-lactam) allergy |
|---|--|--|
| Lower UTI | Trimethoprim 200mg po bd or Nitrofurantoin 50mg po qds for 3d in women and 7d in men Alternative (eg pregnancy): Cefradine 500mg po bd | As per standard regimen |
| Catheter related UTI | Bacteriuria almost universal. Reserve antibiotics for clear signs of infection in the absence of a more likely source. Send CSU only if active infection suspected clinically. | |
| Suspected upper UTI &/or urinary sepsis | Co-amoxiclav 1.2g iv tds ± single dose Gentamicin 5mg/kg iv For 7-10d in most instances - dependent upon culture results | Cefuroxime 1.5g iv tds ± single dose Gentamicin 5mg/kg iv If severe β-lactam allergy: Ciprofloxacin 500-750 mg po bd ± single dose Gentamicin 5mg/kg iv |
| Respiratory Tract | 1 st line | Penicillin (β-lactam) allergy |
| Acute infectious exacerbation of COPD | Mild: Amoxicillin 500mg po tds or if Amoxicillin within previous 1 month, Co-amoxiclav 625 mg po tds Severe: Amoxicillin 1g iv tds or if Amoxicillin within previous 1 month give Co-amoxiclav 1.2g iv tds Treatment duration usually 5-7d – switch to po at 48h | Doxycycline 200mg po stat then 100mg od for 5-7d Cefuroxime 1.5g iv tds or if severe β-lactam allergy, Clarithromycin 500mg po/iv bd |
| Mild uncomplicated CAP (CURB-65 score <2) | Amoxicillin 1g po tds for 7d | Erythromycin 500mg po qds or Clarithromycin 500mg po bd |
| Uncomplicated CAP requiring admission (CURB-65 = 2) | Amoxicillin 1g iv tds + if atypical cause likely Clarithromycin 500mg po bd until afebrile for 48h then Amoxicillin 1g po tds ± Clarithromycin 500mg po bd for total 7-10d for most cases (up to 3/52 if atypical cause confirmed) | Cefuroxime 1.5g iv tds until afebrile for 48h then Cefaclor 500mg po tds + if atypical cause likely Clarithromycin 500mg po bd If severe β-lactam allergy: Levofloxacin 500mg po bd |
| Complicated CAP (CURB-65 ≥ 3) | Co-amoxiclav 1.2g iv tds + Clarithromycin 500mg iv bd until afebrile for 48h then Co-amoxiclav 625mg po tds + Clarithromycin 500mg po bd Treatment duration 10-14d for most cases (up to 3/52 if atypical cause confirmed) | Cefuroxime 1.5g iv tds + Clarithromycin 500mg iv bd If severe β-lactam allergy: Levofloxacin 500mg iv bd and Clarithromycin 500mg iv bd |
| Hospital-acquired pneumonia (HAP) Do not routinely use a macrolide | Co-amoxiclav 1.2g iv tds if not recently prescribed otherwise, after discussion with Consultant Microbiologist, Tazocin 4.5g iv tds Treatment duration usually 7-10d | Discuss with Microbiology Consultant |

Regimens if high C.difficile rates – as advised by IPCAS Team

| 1 st line | Penicillin (β-lactam) allergy |
|--|---|
| As for standard regimen | Gentamicin 5mg/kg iv od |
| Tazocin 4.5g iv tds ± single dose Gentamicin 5mg/kg iv od | Imipenem 500mg iv qds (unless severe β-lactam allergy) |
| 1 st line | Penicillin (β-lactam) allergy |
| Doxycycline 200mg po stat then 100mg od for 5-7d | |
| As for standard regimen | |
| Benzylpenicillin 1.2g iv q4h + Clarithromycin 500mg iv/po bd | Discuss with Consultant Microbiologist |
| Tazocin 4.5g iv tds + Clarithromycin 500mg iv/po bd | Teicoplanin 400mg iv q12h for 3 doses then od + Clarithromycin 500mg iv/po bd |
| Tazocin 4.5g iv tds | Imipenem 500mg iv qds (unless severe β-lactam allergy) |

Correct Antibiotics

- 46/62 (74%) cases initial abx were correct
- 16/62 (26%) they were NOT
- 2 cases – oral abx for moderate / severe pneumonia
- 14 cases – No macrolide (Clarithromycin)
 - 10 no macrolide at all
 - 4 no macrolide initially, added later

Prompt Administration of Antibiotics

- 49/60 (82%) abx were given <4hrs from arrival in hospital
- 11 cases >4hrs
 - 3 because medical expected and ED did not prescribe abx – delay of 9 hrs in 1
 - 2 there was long delay between clerking and abx - >2 hrs

Seen by Chest Physician

- 34/62 cases – 55%

Summary of Deficiencies

- None in 41/62 cases – 66%
- 16/62 (26%) – Initial abx choice
- 11/60 (18%) – Delay in giving abx
- 1 case - -delay in action on high K+
- No deficiencies in level of care, e.g. NIV, Critical care outreach or ICU admission

Action Points

- Antibiotic policy needs reinforcing – juniors and Consultants
- All juniors already have pocket sized version
- Ongoing pneumonia pathway education, CURB-65 score, prompt abx
- Need to look at ED processes, especially for medical expected patients