Risk Assessment of Community Acquired Pneumonia

M A Faiz
Professor of Medicine
Dhaka Medical College

- 5-11/1000 adult
- 5%-12% of all LRTI
- Hospitalization: 22-50% of CAP
  1.1-4/1000 of population
- ICU support: 5-10% of admission

- Mortality:
  - Community: <1%
  - Hospital: 5.7-12%
  - ICU: >50%
- Economic consequences (UK)
  - Direct health care cost: 441mill £
  - Cost in community 100 £ /episode
  - Hospitalized pts1700-5100 £/pt

Resource consulted

- *Guidelines for the management of adults with CAP. American Thoracic Soc. 2001*
- *BTS guidelines for the management of CAP in adults- 2001*
- *BTS guidelines for the management of CAP in adults- 2004 update*
- *CAP: an international derivation and validation study 2003*

Evidence category

*Table 1 Brief description of the generic levels of evidence and guideline statement grades used**

Evidence level	*Definition*	*Guideline statement grade*
Ia	A good recent systematic review of studies designed to answer the question of interest	**A+**
Ib	One or more rigorous studies designed to answer the question, but not formally combined	**A–**
II	One or more prospective clinical studies which illuminate, but do not rigorously answer, the question	**B+**
III	One or more retrospective clinical studies which illuminate, but do not rigorously answer, the question	**B–**
IVa	Formal combination of expert views	**C**
IVb	Other information	**D**

General Recommendations

- Severity assessment recommended: plan appropriate management
- Adverse prognostic factors: increased risk of death
- Categorization of CAP: aid to clinical judgement
- Regular assessment of severity: mandatory

Adverse prognostic features

- ‘Pre-existing’ adverse prognostic features
- ‘Core’ clinical adverse prognostic features
- ‘Additional’ clinical adverse prognostic features

‘Pre-existing’ adverse prognostic features

- Age- 50 years and over (Ib)
- Presence of coexisting disease (Ib)
  - Congestive cardiac failure
  - Coronary artery disease
  - Stroke
  - Diabetes mellitus
  - Chronic lung disease
  - Cancer

‘Core’ clinical adverse prognostic features (CURB)

- Confusion: new mental confusion, Abbreviated Mental Test Score 8 or less (Ib)
- Urea: raised > 7 mmol/l (Ib)
- Respiratory rate: raised > 30/min (Ib)
- Blood pressure: low blood pressure (SBP<90 mm Hg and/or DBP<60 mm HG) (Ib)

The Abbreviated mental Test
(each question scores 1 mark, total 10 marks)

- Age
- Date of birth
- Time (to nearest hour)
- Year
- Hospital name
- Recognition of two persons (e.g. doctor, nurse)
- Recall address (e.g. 42 West Street)
- Date of First World War
- Name of monarch
- Count backwards 20 -> 1
- A score of 8 or less= mental confusion

‘Core’ clinical adverse prognostic features (CURB)

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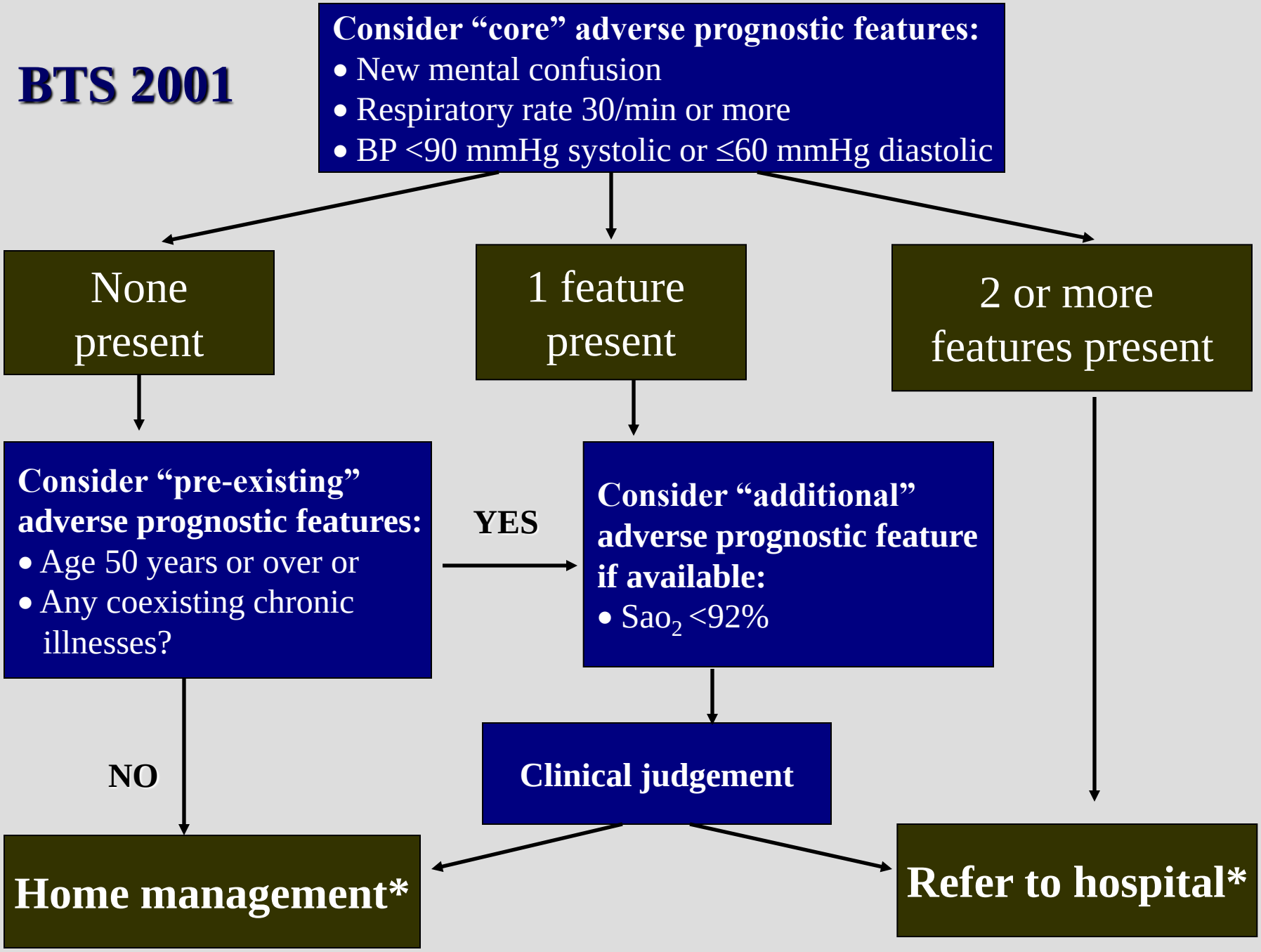
Additional clinical adverse prognostic features

- Hypoxaemia (SaO_2 <92% or PaO_2 <8 kPa) (Ib)
- Bilateral or multilobe involvement on the chest radiograph

BTS 2001


Consider "core" adverse prognostic features:
• New mental confusion
• Respiratory rate 30/min or more
• BP <90 mmHg systolic or ≤60 mmHg diastolic
None present
1 feature present
2 or more features present
Consider "pre-existing" adverse prognostic features:
• Age 50 years or over or
• Any coexisting chronic illnesses?
YES
Consider "additional" adverse prognostic feature if available:
• Sao_2 <92%
NO
Clinical judgement
Home management*
Refer to hospital*

BTS 2004 update

Any of:
- **C**onfusion*
- **R**espiratory rate ≥30/min
- **B**lood pressure (SBP <90 mmHg or DBP ≤60mmHg)
- Age ≥ **65** years

CRB-65 score

0	1 or 2	3 or 4
GROUP 1 **Mortality low (1.2%)** (n = 167, died = 2)	GROUP 2 **Mortality intermediate (8.15%)** (n = 455, died = 37)	GROUP 3 **Mortality high (31%)** (n = 96, died = 30)
Likely suitable for home Treatment (B)	**Likely need hospital referral and assessment** ***Short stay inpt/OP treat***	**Urgent hospital Admission (B)**

Treatment options

*Defined as a Mental Test Score of 8 or less, or new disorientation in person, place or time

Recommendations

- Patients who display no adverse prognostic features are at **low risk** (1.2%) of death and do not normally require hospitalization for clinical reasons *(D =>B)*
- Patients who display 3 or more ‘core’ adverse prognostic features are at **high risk** (31%) of death and should be referred urgently to hospital *(D =>B)*
- Short stay in pt/out patient treatment may be considered for CRB-65 score 2 *(B)*

- For all patients the decision to treat at home or refer to hospital is a matter of clinical judgement
- When deciding on home treatment, the patient's social circumstances and wishes must be taken into account in all instances

BTS 2001

Consider "core" adverse prognostic features:
- new mental confusion
- urea >7mmol/l
- respiratory rate 30/min or more
- systolic BP <90 mmHg or diastolic BP ≤60 mmHg

None present

1 feature present

2 or more features present

Consider "pre-existing" adverse prognostic features:
- Age 50 years or over or
- Any coexisting chronic illnesses?

YES

Consider "additional" adverse prognostic features:
- Pao_2<8 kPa/Sao_2 <92% (any FiO_2)
- CXR: bilateral/multilobar shadowing

NO

Clinical judgement

Consider managing as **outpatient***

Manage in hospital As **non-severe CAP***

Manage in hospital as **severe CAP**

BTS 2004 update

Any of:
- **C**onfusion*
- **U**rea >7mmol/l
- **R**espiratory rate ≥30/min
- **B**lood pressure (SBP <90 mmHg or DBP ≤60mmHg)
- Age ≥ **65** years

CURB-65 score

0 or 1

GROUP 1
Mortality low (1.5%)
(n = 324, died = 5)

Likely suitable for home treatment

2

GROUP 2
Mortality intermediate (9.2%)
(n =184, died = 17)

Consider hospital supervised treatment
Options may include:
(a) short stay inpatient
(b) Hospital supervised outpatient

3 or more

GROUP 3
Mortality high (22%)
(n = 210, died = 47)

Manage in hospital as Severe pneumonia
Assess for ICU Admission especially if CURB-65 score = 4 or 5

Treatment options

*Defined as a Mental Test Score of 8 or less, or new disorientation in person, place or time

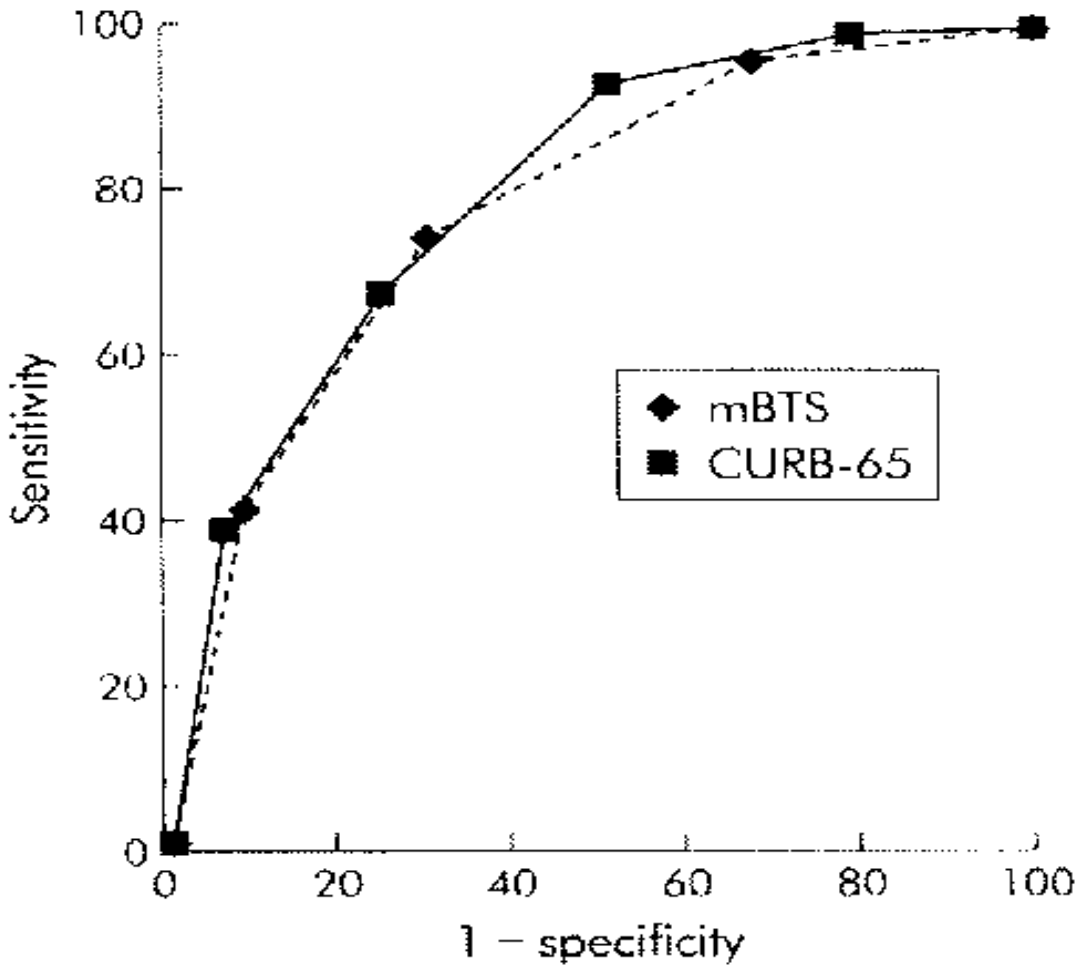


Fig: Receiver operating curves for modified BTS (mBTS) rule and CURB-65 score

Recommendations 2001

- Patients who have two or more ‘core’ adverse prognostic features are at high risk of death and should be managed as having severe pneumonia (A-)
- One ‘core’ adverse prognostic features are at increased risk of death. Severe or non- severe pneumonia? Apply clinical judgement assisted by ‘pre-existing’ prognostic features and ‘additional’ adverse prognostic features (D)
- No ‘adverse’ prognostic features: manage as non-severe pneumonia and may be suitable for outpatient treatment or early hospital discharge (B+)

Recommendations

	2001	2004 update
Severe CAP	Two or more ‘core’ adverse prognostic features (A-)	CURB-65 score 3 or more (B+)
Non-severe CAP	One ‘core’ adverse prognostic features (D)	CURB-65 score 2 (B+)
Outpatient	No ‘adverse’ prognostic features (B+)	CURB-65 score 0-1 (B+)

Recommendations

- Regular assessment of disease severity for ALL patients following hospital admission (D)
- All patients who display one or more ‘core’ adverse prognostic features on admission should be reviewed medically at least 12h until shown to be improving. (D)

Summary

- Assessment of severity in CAP is mostly clinical, simple, feasible
- Severity is directly related to outcome
- Adaptation and implementation of assessment of severity in CAP to country perspective is necessary


Thank You