

New onset depression following MI: Time to rethink the effects of depression?

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What we already know...

- Depression has been shown to be independent risk factor for mortality and morbidity post MI (up to x 4)
- There is a dose-response relationship between severity of depression and outcome
- Two systematic reviews confirm that depression predicts a two-fold increase in all cause and cardiac mortality in established CHD patients (*Barth et al., 2004; van Melle et al., 2004*)



Is there a relationship?

- Not all studies confirm the relationship between depression and mortality (e.g. *Dickens et al., 2004 Lane et al., 2001; Schleifer et al., 1989*)
- Many of these studies have robust methodology
- Psychological interventions have failed to have an effect on mortality (e.g. ENRICHD)



Confounding factors

- How depression is measured
- Timing of the assessment
- Length of follow-up
- Severity of heart disease
- Co-morbid conditions
- Underlying physiological changes
- Unable to conclude the extent to which depression predicts mortality



What we did: The MIDAS Study

- Prospective cohort design
- Screened 1034 patients 3-4 days post MI
- Excluded: 380; Refused: 65
- Assessed 589 patients after MI
- Mean age: 60 yrs (11.1); Male – 414 (70.3%)
- Initial study: assessments at baseline & 12 months

Main outcomes: death from cardiac cause and further cardiac events over 12 months



Key Measures

Psychosocial	Physiological
<ul style="list-style-type: none">• HADS• Psychiatric interview (SCAN)• SF-36• Social stress (LEDS)• Social support• Illness beliefs (IPQ)	<ul style="list-style-type: none">• WHO criteria MI• Severity of index MI<ol style="list-style-type: none">1. Killip class2. CPKs3. Medication on discharge4. Echocardiogram (n=379)

Initial findings

- **No differences in mortality**
- Lack of a **close confidant**, but not depression, predicted further cardiac events
- Probably reflects improved treatment
- The association may be mediated by unhealthy behaviours and lack of compliance
- Findings compatible with difficulties in early life linked to heart disease



Follow up data

- In view of previous heterogeneous findings we examined data from our original prospective study
- Main outcome: **cardiac mortality** from death certificate
- Available for nearly whole sample – Office of National Statistics UK (587/588)
- Obtained outcome data on mortality 8 years post index MI



Timing of depressive episode

- To assess the relationship we divided patients who had completed the HADS at baseline and 12 months into 3 groups:
 - 1) **Pre-MI depression** (n=96)
 - 2) **Not depressed** (n=273)
 - 3) **New onset depression** (n=71)
- *Analysis – Kaplan Meier survival analysis was compared using pair-wise Log-rank (Mantel-Cox) analysis*



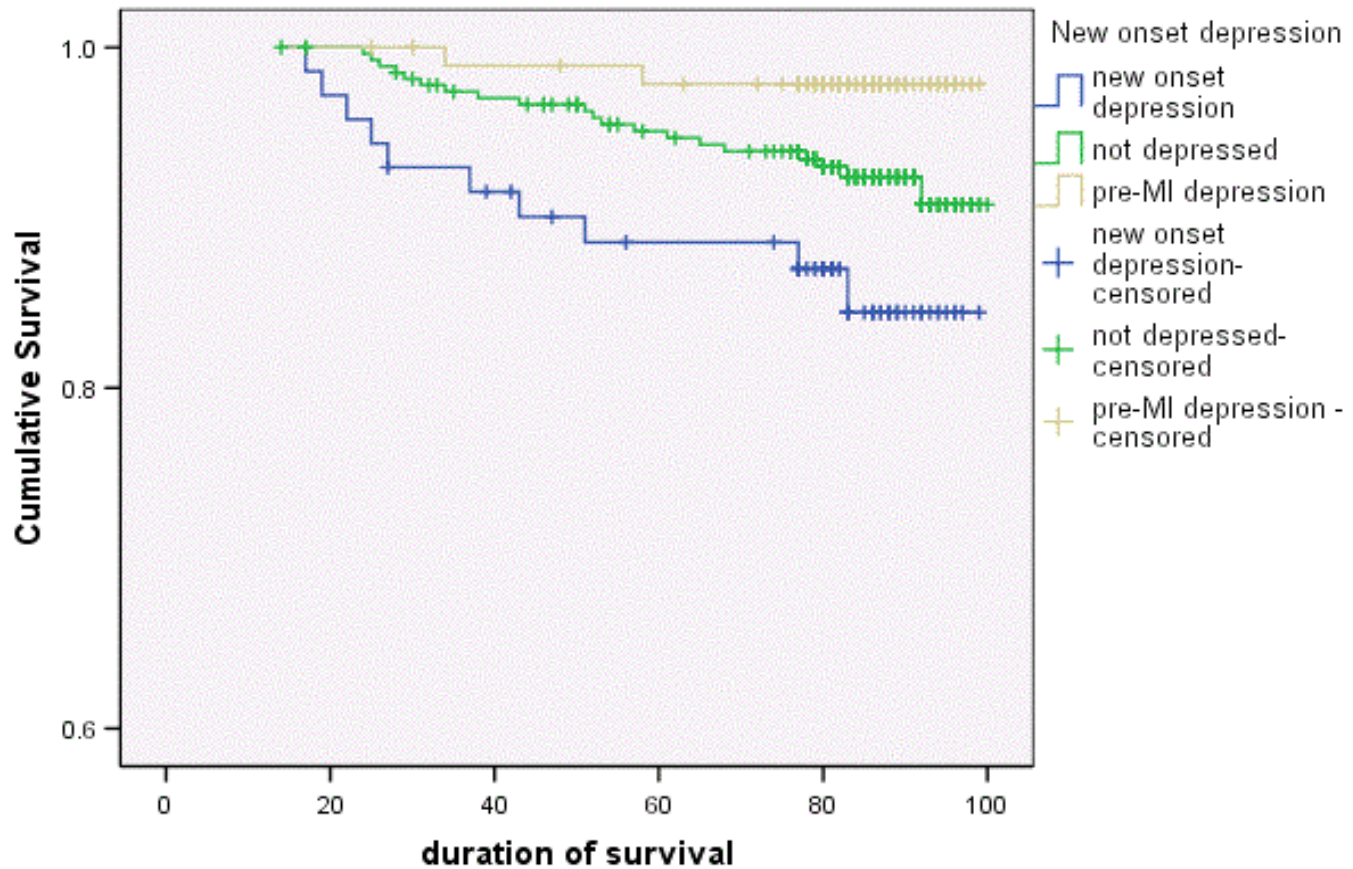
Depression and Mortality

- Patients who developed depression in the year following MI showed an increase in long-term cardiac mortality (*New onset depression*)
- This adverse effect remained stable when controlling for demographic factors, conventional cardiac risk factors, severity of MI and post discharge medication
- *Pre-MI depression* did not increase the risk of mortality


*Dickens, McGowan et al., Psychosomatic Medicine 70:
450-255 2008*

Cox's regression analyses	Regression coefficient	p-value	Hazards ratio (Exp (B))	95% CI for Hazards ratio
Age	0.06 (0.021)	0.007	1.06	1.02-1.11
Angina pre-MI	1.42 (0.38)	<0.0005	4.15	1.96-8.80
Killip class 2/3	0.79 (0.32)	0.013	2.21	1.18-4.13
Beta-blockers discharge	-0.99 (0.43)	0.02	0.37	0.16-0.85
New onset depression	0.84 (0.41)	0.038	2.33	1.05-5.16

Survival Functions



What others have found...

- We found that patients who develop **new episodes of depression post-MI** are **twice as likely to die from cardiac causes** in the following **7 years** (HR=2.33)
 - de Jonge et al (2006) found risk of fatal and non-fatal events was increased more than 50% over **2.5 years** (HR=1.67)
 - Grace et al (2005) found increased cardiac mortality in ACS patients at **5 years** (HR=1.53)
 - Parker et al (2008) poorer cardiac outcomes over **1 year**
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What we need to find out...

- Underlying mechanisms by which depression is associated with MI may differ (*genetic/physiological/environmental*)
- The relationship between post MI depression, **severity of disease** and **physiological correlates** (*inflammation, HR Variability*)
- Are there different subtypes? Intervention trials need to consider separately **pre-MI** and **post-MI** depression
- Need for more complex explanatory models and pathways – we only have so many pieces of the jigsaw!



What can we do to enhance recovery and rehabilitation...

- Increase the detection and treatment of depression
 - Raise awareness
 - Improved training
 - Recognise, acknowledge, & treat depression
- Cardiac rehabilitation – tailored, format, inclusive, accessible
- By treating depression we can improve HRQoL, physical functioning, treatment adherence, motivation for life style change, relationships = **patient related outcomes**

REMEMBER:

The heart and mind are **NOT**
separate organs!



The MIDAS Team

- **Chris Dickens**, Senior Lecturer and Honorary Consultant in Psychological Medicine
- **Linda McGowan**, Lecturer in Women's Health
- **Carol Percival**, Research Assistant
- **Barbara Tomenson**, Statistician
- **Lawrence Cotter**, Consultant Cardiologist
- **Anthony Heagerty**, Professor of Cardiology
- **Francis Creed**, Professor and Honorary Consultant in Psychological Medicine,



Do beliefs about illness play a role?

- In the days following MI, patients who **subsequently developed depression** more likely to believe:
- Their heart disease would last a long time ($p=0.012$) (*Time-line*)
- Their heart disease was unlikely to be cured ($p=0.038$) (*Cure-control*)



Aims

- To provide a brief overview research concerning the effects of depression on outcome following myocardial infarction
- Is the timing of the depressive episode important?
- Discuss directions for both future research and implications for practice

