Depression occurs concurrently with cardiac disease, and is an independent risk factor for adverse cardiac outcomes. However most cardiac patients with depression remain inadequately treated. Treatment of depression in primary care can be improved by patient centred consultations between general practitioners and psychiatrists. The Identifying Depression as a Comorbid Condition (IDACC) study was a prospective cohort study with a nested randomised controlled trial that monitored depression in patients admitted to hospital for cardiac conditions, followed them for 12 months, and tested a GP focussed intervention designed to improve the detection and management of depression. This intervention included offering psychiatric advice to the GP through enhanced primary care (EPC) multidisciplinary case conference, reimbursable under the Medicare Benefits Schedule. The other two components of the EPC package, health assessments and care planning, had a rapid uptake, but case conferencing has not. General practitioners feel the EPC items are ‘more trouble than they are worth’. Barriers to uptake identified by GPs include compliance, work practice, and cultural barriers between general practitioners and psychiatrists.

BACKGROUND
The Identifying Depression as a Comorbid Condition (IDACC) study aimed to identify depressive symptoms in hospitalised cardiac patients and support management of depression in general practice.

OBJECTIVE
This post hoc analysis of the IDACC trial examines the effectiveness and practicality of different forms of communication between hospital psychiatric services and general practitioners.

METHODS
We randomised 669 cardiac inpatients with depressive symptoms, identified with the Center for Epidemiological Studies Depression Scale (CES-D), to an intervention or usual care control group. Individual depression scores and depression management guidelines were sent to GPs of all intervention patients. Where possible, psychiatric advice was provided to the GP either by multidisciplinary enhanced primary care case conference or one-to-one telephone advice.

RESULTS
Multidisciplinary case conferences were implemented for only 24% of intervention patients. General practitioners received individual telephone advice in 40% of cases, and 36% received written information only. The psychiatrist telephone advice resulted in a significant reduction in the proportion of patients with moderate to severe depression 12 months after cardiac hospitalisation (19% vs. 35%).

DISCUSSION
Screening, combined with psychiatrist telephone advice to GPs, was simple to organise and effective in reducing depression severity after cardiac admission.
practice and hospitals. Enhanced primary care has been a one-sided development, with many state funded services finding it difficult to participate because of time and staffing demands.

Analysis of the IDACC trial on the basis of 'intention to treat' has demonstrated benefit from the intervention. Despite substantial support to implement multidisciplinary case conferences in the IDACC trial, it became evident early that they were difficult to implement, and two other forms of the intervention evolved: a telephone call to the GP from the study psychiatrist (GS), or written information alone. This article reports a post hoc analysis of the three forms of intervention against usual care.

Methods
In four major public hospitals in Adelaide (South Australia) during the period August 2000 to June 2002, patients were recruited after the first day of an admission for myocardial infarction, unstable angina, arrhythmia, heart failure, coronary artery bypass graft surgery or angioplasty (Figure 1). Those who consented were given a set of questionnaires including the Center for Epidemiological Studies Depression scale (CES-D). Consistent with previous research, a cut-off score of CES-D ≥16 determined depression ‘caseness’ with CES-D 16–26 indicating mild depression, and CES-D ≥27 moderate to severe depression. Of the 1541 participants, 669 (43%) scored CES-D ≥16 and were randomised to the control (usual care) or intervention group. Randomisation was linked to the GP to ensure that the impact of GP education was specific to intervention GPs. Depression status of patients at 12 months was assessed by a mailed questionnaire, with nonrespondents receiving a postcard reminder, then an additional copy of the questionnaire, and finally a telephone call. This achieved a follow up rate of 78% (Table 1).

All intervention GPs received individual patient depression scores and an education pack ‘Depression and heart disease: guidelines for management in general practice’ posted out immediately after randomisation. Intervention patients were referred to the cardiac rehabilitation nurse and the psychiatry liaison registrar who saw the patient individually and recorded issues arising from consultations. Next, the trial coordinator attempted to arrange an EPC telephone case conference between the patient’s GP, the cardiac nurse and the psychiatry registrar. The GP could claim a rebate of $43.50 for participating in a case conference for 15–29 minutes. Psychiatry liaison registrars received an incentive payment of $75 for every trial patient seen, and $75 for every case conference completed. In two hospitals, these payments went directly to the registrar, and in the other two they were paid to the psychiatry department. During the case conference, the patient’s depression screening score, and specific issues noted by the nurse and registrar were discussed. The intervention GPs were offered additional assistance in patient management, namely telephone advice from the psychiatrist on the project team, or fast-track referral for their patient to be seen either by the project psychiatrist, or the head of consultation-liaison psychiatry in the relevant hospital. Furthermore, intervention patients could be referred by their GP for 6–8 sessions of cognitive behaviour therapy (CBT), provided free of charge at one hospital location.

If an EPC case conference could not be arranged, the GP was offered ‘telephone advice’ from the study team consultant psychiatrist. This discussion generally lasted 5–10 minutes, covering the patient’s screening scores, the GP’s knowledge of the patient history, general advice, and the offer of additional assistance in patient management, described above. If neither a case conference nor phone advice took place, management, described above. If neither a case conference nor phone advice took place, the patient’s ‘intention to treat’ has demonstrated benefit from the intervention. Despite substantial support to implement multidisciplinary case conferences in the IDACC trial, it became evident early that they were difficult to implement, and two other forms of the intervention evolved: a telephone call to the GP from the study psychiatrist (GS), or written information alone. This article reports a post hoc analysis of the three forms of intervention against usual care.

Methods
In four major public hospitals in Adelaide (South Australia) during the period August 2000 to June 2002, patients were recruited after the first day of an admission for myocardial infarction, unstable angina, arrhythmia, heart failure, coronary artery bypass graft surgery or angioplasty (Figure 1). Those who consented were given a set of questionnaires including the Center for Epidemiological Studies Depression scale (CES-D). Consistent with previous research, a cut-off score of CES-D ≥16 determined depression ‘caseness’ with CES-D 16–26 indicating mild depression, and CES-D ≥27 moderate to severe depression. Of the 1541 participants, 669 (43%) scored CES-D ≥16 and were randomised to the control (usual care) or intervention group. Randomisation was linked to the GP to ensure that the impact of GP education was specific to intervention GPs. Depression status of patients at 12 months was assessed by a mailed questionnaire, with nonrespondents receiving a postcard reminder, then an additional copy of the questionnaire, and finally a telephone call. This achieved a follow up rate of 78% (Table 1).

All intervention GPs received individual patient depression scores and an education pack ‘Depression and heart disease: guidelines for management in general practice’ posted out immediately after randomisation. Intervention patients were referred to the cardiac rehabilitation nurse and the psychiatry liaison registrar who saw the patient individually and recorded issues arising from consultations. Next, the trial coordinator attempted to arrange an EPC telephone case conference between the patient’s GP, the cardiac nurse and the psychiatry registrar. The GP could claim a rebate of $43.50 for participating in a case conference for 15–29 minutes. Psychiatry liaison registrars received an incentive payment of $75 for every trial patient seen, and $75 for every case conference completed. In two hospitals, these payments went directly to the registrar, and in the other two they were paid to the psychiatry department. During the case conference, the patient’s depression screening score, and specific issues noted by the nurse and registrar were discussed. The intervention GPs were offered additional assistance in patient management, namely telephone advice from the psychiatrist on the project team, or fast-track referral for their patient to be seen either by the project psychiatrist, or the head of consultation-liaison psychiatry in the relevant hospital. Furthermore, intervention patients could be referred by their GP for 6–8 sessions of cognitive behaviour therapy (CBT), provided free of charge at one hospital location.

If an EPC case conference could not be arranged, the GP was offered ‘telephone advice’ from the study team consultant psychiatrist. This discussion generally lasted 5–10 minutes, covering the patient’s screening scores, the GP’s knowledge of the patient history, general advice, and the offer of additional assistance in patient management, described above. If neither a case conference nor phone advice took place, the default intervention, ‘GP education only’,
Results
There was no difference between patients in the control group and the three forms of intervention on 20 baseline variables assessed (including demographic, self reported past history of cardiac or emotional health problems or risk factors, and hospital admission details). Nor was there any difference in the proportion of depressed patients or gender of patients across the three forms of the intervention (Table 2).

Both psychiatry liaison and the cardiac rehabilitation nurses saw 102 patients during their hospital admission, of whom 79 had an EPC case conference (24% of the intervention group) (Figure 1). There was substantial variation in the frequency of psychiatry consultations between hospitals, but no increased uptake where psychiatry registrars were paid directly for their work. However, multidisciplinary case conferences with GPs would be easily delivered. Of the additional support offered to GPs, 10 patients were referred and received ‘fast-track’ psychiatrist appointments, while four were referred to, and three completed, a course of CBT.

At 12 months, when the three forms of intervention were compared with the control group, only the psychiatrist telephone call led to a significant reduction in the proportion of patients with moderate to severe depression (CES-D ≥27), 19% vs. 35% (RR: 0.55, 0.34–0.86), NNT 7 (4–24) (Figure 2).

Discussion
This study confirms the high prevalence of depression among hospitalised cardiac patients. A previous analysis of the IDACC randomised control trial on the basis of ‘intention to treat’ has demonstrated a clinically meaningful effect of targeted psychiatry liaison with GPs.10 However, this post hoc analysis indicates that a telephone call from a psychiatrist to the GP was easier to organise and more effective in reducing depression severity of the patients than an EPC case conference.

Major barriers to implementing EPC case conferences became apparent shortly after this study commenced. As well as GP barriers, there were problems within the hospitals; large differences in the numbers of patients reviewed by consultation liaison psychiatry across the four hospitals suggest that hospital culture, work practices, and psychiatry registrar workload were factors. In the public hospital system, as clinical units are organised in multidisciplinary teams, it has often been assumed that EPC case conferences with GPs would be easily implemented. However, multidisciplinary teamwork generally occurs within defined

Table 3. Psychiatry liaison visits by hospital

<table>
<thead>
<tr>
<th>Psychiatry liaison visit</th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital A*</td>
<td>23 (22)</td>
<td>83 (78)</td>
<td>106</td>
</tr>
<tr>
<td>Hospital B**</td>
<td>58 (55)</td>
<td>48 (38)</td>
<td>106</td>
</tr>
<tr>
<td>Hospital C*</td>
<td>18 (27)</td>
<td>49 (73)</td>
<td>67</td>
</tr>
<tr>
<td>Hospital D**</td>
<td>18 (35)</td>
<td>34 (65)</td>
<td>52</td>
</tr>
<tr>
<td>Total</td>
<td>117 (35)</td>
<td>214 (65)</td>
<td>331</td>
</tr>
</tbody>
</table>

* Financial incentives paid to psychiatry registrars
** Financial incentives paid to psychiatry department

Table 4. Intervention effect at 12 months (control vs. intervention subgroup)

<table>
<thead>
<tr>
<th>Moderate to severe depression at 12 months</th>
<th>RR (95% CI)</th>
<th>NNT (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>No n (%)</td>
<td>Yes n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control (no intervention)</td>
<td>155 (65)</td>
<td>82 (35)</td>
<td></td>
</tr>
<tr>
<td>Case conference</td>
<td>41 (72)</td>
<td>16 (28)</td>
<td>1.2 (0.8–2.0)</td>
</tr>
<tr>
<td>Telephone advice</td>
<td>68 (81)</td>
<td>16 (19)</td>
<td>1.8 (1.2–3.0)</td>
</tr>
<tr>
<td>GP education only</td>
<td>51 (71)</td>
<td>21 (29)</td>
<td>1.2 (0.8–1.8)</td>
</tr>
</tbody>
</table>

Italics indicate significant differences at p<0.017
Research: Depression after cardiac hospitalisation – the Identifying Depression as a Comorbid Condition (IDACC) study

Clinical areas, and scheduling joint consultations across disciplines, even as part of a research protocol, was difficult. A phone call from the consultant psychiatrist to the GP of the depressed patients was much easier to achieve.

Of note, there was a low uptake of the additional assistance offered to GPs, with very few patients being referred for either further psychiatric review or a course of CBT. This is consistent with findings of Buchan and Boldy, that GPs rarely made referrals for mental health problems until their own resources were exhausted and the situation became urgent.

There are shortcomings of these findings: post hoc analyses are not hypothesis driven, we did not use a randomly allocated comparison of different methods of providing psychiatric advice, and those GPs who accepted the intervention may have differed from those who declined, even though the different patient groups were comparable in demographic characteristics.

As brief telephone contact between GPs and an experienced psychiatrist was the only form of intervention significantly better than usual care, this suggests that future efforts should be aimed at providing GP assistance in this direct manner. As the high prevalence of depression in cardiac patients is well documented and can be treated, we recommend that this simple intervention be

Figure 1. Flow of participants through the trial

Figure 2. Depression severity at 12 months

Depression category: not depressed (CES-D ≤15), mild depression (CES-D 16–26), moderate to severe depression (CES-D ≥27)

Cardiac inpatients, consented (n=1541)

Screening for depressive symptoms (ie. CES-D ≥16)

Depressed (n=669, 43%)

Not depressed (n=872, 57%)

Randomised

Intervention (n=331, 50%)

Control (n=338, 50%)

GP education: information pack + patients depression scores sent

Referral to psychiatry liaison and cardiac rehabilitation nurse

Seen by psychiatry liaison (psych: n=117), seen by cardiac rehabilitation nurse (CRN: n=144)

Seen by psych & CRN: n=102, 31%

Not seen by psych &/or CRN: n=229, 69%

Attempted to schedule case conference

Case conference took place (n=79/102, 77%)

Case conference did not take place (n=23/102, 23%)

Referred for telephone advice

Telephone advice took place (n=3/102 3%)

Telephone advice did not take place, ie. GP education only (n=100/229, 44%)

Reasons:
- Patient died or withdrew: 11
- GP refused: 23
- GP not available: 44
- No GP: 6
- Not recorded: 16

Telephone advice took place (n=129/229, 56%)

Telephone advice did not take place, ie. GP education only (n=20/102, 20%)

Reasons:
- Patient died or withdrew: 5
- GP refused: 15
explored further as a way of providing better outcomes for patients.

**Implications of this study for general practice**

- Nearly half of patients admitted to public hospitals with cardiac conditions were found to be depressed on screening and without intervention, a third remained moderately to severely depressed 12 months later.
- GPs should consider proactively screening all cardiac patients discharged from hospital for depression.
- GPs can intervene effectively to reduce depression in this group when prompted by a telephone call from a consultant psychiatrist.

Conflict of interest: none declared.

**Acknowledgments**

Thanks to the participating patients, the IDACC Advisory Group for advice and assistance, the heads of cardiology departments for cooperation and support, heads of psychiatry and psychiatric consultation liaison services, psychiatric registrars, medical, and mental health and cardiac nursing staff for their role in implementing the trial, and to Graeme Tucker and Naomi Guiver for statistical advice.

Funding was provided by the South Australian Department of Health (formerly Department of Human Services) and grant funding from the Commonwealth Mental Health Strategy.

**References**

6. IDACC website. Available at: www.idacc.healthbase.info/.

**Correspondence**

Email: afp@racgp.org.au