Payment to healthcare professionals for patient recruitment to trials: a systematic review

J Bryant, J Powell

Establishing the clinical and cost effectiveness of interventions in healthcare largely depends on good quality randomised controlled trials (RCTs). One element of quality in RCTs is the recruitment of sufficient participants to test a priori hypotheses with statistical confidence and to minimise bias.[1] However, many RCTs fail to meet their recruitment targets.[2]

One strategy to increase recruitment to trials is to pay healthcare professionals to recruit subjects either by providing financial incentives or by reimbursing excess costs incurred. Many pharmaceutical companies provide inducements but this is not common practice in publicly funded research programmes. Such programmes need to have confidence that payments are worthwhile. We did a systematic review, therefore, to synthesise the evidence on the effectiveness of payment to healthcare professionals for patient recruitment to trials.

Methods and results

We searched electronic databases (Cochrane Library, Medline, Embase, CINAHL, PsycINFO, Science Citation Index/Social Science Citation Index, Current Controlled Trials, Clinical Trials.gov, Health Management Information Consortium, National Research Register) from inception to July 2004 for published English language studies of any payment or reimbursement to any healthcare professional recruiting patients to trials with reported recruitment rates. We also searched bibliographies and grey literature. Two independent investigators assessed inclusion criteria, data extraction, and quality using standard systematic review methodology. Quality assessment used the DuRant tool.

The evidence is very limited in quantity and quality and is inconclusive. No controlled trials comparing recruitment rates achieved with and without financial incentives were identified. Three cross-sectional surveys,[3–5] within the context of experimental studies, were identified which considered recruitment rates and the attitudes and characteristics of clinicians in relation to some financial incentive or reimbursement (table).

None set out to test a hypothesis; all relied on finding associations between characteristics of the practice or clinician and patient recruitment. Other methodological limitations included lack of control groups, self selection of respondents, and inadequate data analysis.

One primary care study reported no relation between incentive driven motivation and number of patients recruited[3]; the other primary care study[4] did not report a correlation between financial reimbursement and recruitment rates but concluded from multivariate analysis that patient recruitment by general practitioners may be aided by a range of strategies, including financial incentives. The hospital based study reported that payment to the participating clinics was considered to be of only minor importance for both participation in trials and for recruiting patients.[5]

Comment

The limited evidence is surprising when considering the extensive use of payment to healthcare professionals to recruit patients to trials. Although we may have missed some studies it is unlikely that we will have missed rigorous experimental studies designed specifically to investigate financial incentives for recruitment of patients to trials. It may be that such studies are considered unnecessary, either because of extrapolation from the effects of incentives in other areas of healthcare or research (for example, to achieve high immunisation uptake or increase postal survey response rates), or because the success of incentives is self evident. It is unlikely that companies would invest in financial incentives for no return. That such a widespread practice has not undergone experimental evaluation is interesting for three main reasons, however. Firstly, there are important associated ethical issues concerning potential conflicts of interest, disclosure to patients, and implications for

Studies of payment to healthcare professionals for patient recruitment to trials

Study	Payment	Results
De Wit, 2001, Netherlands[3] Survey in cohort/RCT in primary care	$25 (£15; €21) per patient recruited to cohort study $70 per patient recruited to RCT; incentive paid to family practitioner	Financial incentive important for participation: 15% respondents Univariate analysis (number recruited to study and financial incentive): Odds ratio cohort study: 1.2 (95% CI 0.4 to 4.1) Odds ratio RCT: 2.0 (0.6 to 6.4)
Pearl, 2003, New Zealand[4] Survey after RCT in primary care	$NZ150 (£61; $104; €89) per patient recruited to RCT; financial reimbursement paid to general practitioners	Agreed or strongly agreed financial incentives should be paid: 85% referring GPs Multivariate analysis showed various strategies aid recruitment including financial incentive, which might be enhanced by closer collaboration between GPs and researchers
Hjorth, 1996 Sweden, Norway, Denmark[5] Survey after RCT in hospital setting	$150 per patient recruited up to $450 for follow-up >18 months; reimbursement paid to clinics	Financial incentive very great or great importance: 14/93 respondents Reimbursement considered adequate: 42/92 respondents Most important factor for recruitment: scientific aim of the study

Wessex Institute for Health Research and Development, Boldrewood, University of Southampton, Southampton SO16 7PX
J Bryant
senior research fellow
Section of Public Health and Epidemiology, Warwick Medical School, University of Warwick
J Powell
senior clinical lecturer
Correspondence to:
J Bryant
J.S.Bryant@soton.ac.uk

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What is already known on this topic

Many randomised controlled trials fail to recruit their target number of participants, which has implications for the validity of their findings

Privately funded research often provides financial incentives to increase patient recruitment, but this is less common in publicly funded research

What this study adds

Evidence on the effectiveness of payment to healthcare professionals for recruiting patients to trials is lacking; funding bodies must consider whether to extrapolate from the evidence of effectiveness of financial incentives in other areas or to undertake new work

informed consent procedures and for the doctor-patient relationship. Secondly, it would be easy to randomise the payment of incentives in a multicentre RCT. Thirdly, there are considerable resource implications associated with research participation. Rigorous evidence from well conducted studies is needed to inform recruitment strategies before publicly funded research programmes can consider the use of financial incentives.

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Ethical approval: Not needed.

1 Halpern SD, Karlawish JHT, Berlin JA. The continuing unethical conduct of underpowered clinical trials. *JAMA* 2002;288:358-62.
2 Prescott RJ, Counsell CE, Gillespie WJ, et al. Factors that limit the quality, number and progress of randomised controlled trials. *Health Technol Assess* 1999;3:1-143.
3 De Wit NJ, Quartero AO, Zuithoff AP, Numans ME. Participation and successful patient recruitment in primary care. *J Fam Pract* 2001;50:976-81.
4 Pearl A, Wright S, Gamble G, Doughty R, Sharpe N. Randomised trials in general practice: a New Zealand experience in recruitment. *N Z Med J* 2003;116:681-7.
5 Hjorth M, Holmberg E, Rodjer S, Taube A, Westin J. Physicians' attitudes toward clinical trials and their relationship to patient accrual in a Nordic multicenter study on myeloma. *Control Clin Trials* 1996;17:372-86.

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When I use a word

Incestuous sheets

It has been said that there is only one taboo about incest—mentioning it. There are no exact synonyms for incest, no euphemisms, no slang terms.

Nevertheless, incest is mentioned widely in art and literature, from the Bible, through the many brother-sister relationships in mythology, to the latest example, Audrey Niffenegger's graphic novel *The Three Incestuous Sisters*. In the movies, perhaps the best known example is Roman Polanski's *Chinatown*, in which Jake Gittes (Jack Nicholson), by slapping her again and again, jolts Evelyn Mulwray (Faye Dunaway) into admitting her guilty secret about Katherine (Belinda Palmer): "She's my sister … my daughter … my sister … my daughter … my sister and my daughter." Can so much guilt ever have been borne by that little particle "and"? But did Polanski know, when he (or his screenwriter, Robert Towne) called Mrs Mulwray's daughter Katherine, that the Greek word katharos, pure, is related to incest?

Consider the Indo-European root KASTR, to cut. A Roman camp, castra, was a place where the ground had been cut clear, and a castle (castella, château, alcazar) had a moat cut around it. A caret is a sign below the line to show that something has been cut out. The Latin castus meant cut free of fault, or pure. A caste is a group of pure individuals, cut off from others. To castigate is to drive (Latin agere) into purity, hence to punish. The cestus was Venus's girdle, which kept the wearer pure until it was removed. The Greek equivalent was the zoster, the source of Aphrodite's eroticism. When Herakles was sent on his mission to obtain the girdle of the Amazon queen Hippolyta, he was actually being instructed to deflower her, which he did. When Siegfried seduces his half-aunt Brunnhilde he first tears off her magic girdle.

But the modern meaning of incest developed quite late. There was no single word for incest in ancient Greek or Latin. The Greeks called it anosos sunousia (unholy intercourse), the Romans sanguis contumelia (translated into German as Blutschande, blood dishonour). And the Latin word incestus originally meant simply impure in a religious or sexual sense, not necessarily incestuous. The earliest recorded example in English is from as late as the 13th century.

Although there seems to be no culture in which some form of incest is not taboo, what actually constitutes incest varies from culture to culture. Strict laws enunciated in the Old Testament (Leviticus 18:6-18 and elsewhere) prohibited various forms of incest (called arayot in the Talmud), but the text is strewn with exceptions; Sarah, for example, was Abraham's half-sister (Genesis 20:12). However, elsewhere the Old Testament also specifically sanctioned, indeed mandated, is the levirate (Latin levir = brother-in-law), the custom that a man should marry his brother's childless widow (Deuteronomy 25:5-10). Yet four times in the play Hamlet calls Claudius incestuous for marrying his dead brother's wife. And when Henry VIII decided to annul his marriage to Katherine of Aragon, he blamed her inability to produce a male heir on their incestuous relationship, she having been the widow of his brother, Arthur.

In some cultures father-daughter incest accounts for the vast majority of cases, while in others the brother-sister relationship is rife and sometimes encouraged. Despite Oedipus, the mother-son coupling is relatively uncommon (4% in one German series). According to Freud, the oedipal urge is associated with a castration complex. The Greek god Kronos castrated his father, Uranos, before inseminating his sister Rhea, thus incestuously sowing the seeds of his own destruction. And what links castration and incest is the Indo-European root KASTR.

Jeff Aronson *clinical pharmacologist, Oxford (jeffrey.aronson@clinpharm.ox.ac.uk)*