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Who's Doing the Math? Are We Really Compensating Research Participants?

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Abstract

Although compensation for expenses to participants in research projects is considered important and the primary reason for paying, there is no evidence to support that investigators and IRB members actually calculate participant cost. Payment recommendations for six hypothetical studies were obtained from a national survey of IRB chairpersons (N = 353) and investigators (N = 495). Survey respondents also recommended payment for specific study procedures. We calculated participant cost for the six hypothetical cases both by procedures and by time involvement. A large percentage recommended only token payments for survey, registry, and medical record review studies. Most chose payment for pharmaceutical studies but the recommended payment did not compensate for calculated costs. Results suggest that compensation and reimbursement as the primary reasons for paying research participants may not match actual practice.

Keywords

payment; Institutional Review Board; ethics

“Can i persuade you to be in a study against your better judgment by paying you more money?” This question has prompted ethical debate and aligned some against paying research participants. The ethical debate of paying research participants has been reviewed generally by Ripley (2006) and specifically for social behavioral research by Permuth-Wey and Borenstein (2009). Although altruistic reasons for participating in studies are commonly declared to be a primary motivator, financial payment does improve participation (Doody et al., 2003; Fry & Dwyer, 2001). This has also been seen for healthy volunteer studies where the most important motivator was financial (Aby, Pheley, & Steinberg, 1996; Bigorra & Baños, 1990; Chang et al., 2004; Hassar et al., 1977; Novak, Seckman, & Stewart, 1977; Whinnery, 1982).

A national survey by Ripley et al. (2010) showed that compensation and reimbursement are the primary stated reasons why investigators (78%) pay and IRB chairpersons (77%) approve paying participants. These results are similar to Dickert and Grady's (1999) survey of research organizations, which said that most paid for time (87%), inconvenience (84%), and travel (68%). Fifty-eight percent described payment as an incentive. The modeling of payment in the Ripley et al. (2010) survey showed that payment as an incentive is important for most studies.

There is little empirical data to show that in practice the amount paid for study participation correlates with activity or actual participant cost. A study by Grady (2005) reviewed 467 protocols and consent forms. She found that payment was given for different types of studies and that the dollar amounts varied widely. Payment varied even for similar studies or for the same study at multiple sites. The amount also varied for similar types of procedures at the same site. Latterman and Merz (2001) reviewed 109 published research studies from 1997–1998 in ten journals and showed weak correlations of payment to study activities and time requirements. Information regarding payment to participants was obtained either from the article or from discussion with the authors. Of the 66 studies that involved students, 64 were published in psychology journals and 74% of those only involved course credits. For the other studies monetary payments ranged from \$1 to \$730. They noted that large payments were paid for studies that involved multiple interactions, increased time, invasive procedures, and increased numbers of tasks. For studies involving a survey only the mean cash payment was \$13 (range \$1–25), interviews \$24.40 (range \$10–100), and interventional study \$445 (range \$160–730). In a multiple regression analysis, they found that subjects were paid on average about \$9.50 per hour of active participation plus an average sum of over \$12 for each additional task involved in the study.

If compensation is the key reason for payment, or even one of the elements of payment, the investigator determining payment and the IRB approving the payment must determine or at least estimate the actual costs to participants. The study by Grady (2005) would suggest that this is not the method being used for determining payment if similar types of studies or similar procedures receive varying compensation. To examine whether investigator and IRB recommendations for payment for different types of studies align with actual costs of participation, we calculated participant costs for hypothetical research studies and compared them to recommendations for payment.

Methods

The study was approved by the Institutional Review Board (IRB) at Virginia Commonwealth University (VCU). Our use of the web-based surveys in this research has been fully described (Ripley et al., 2010). In brief, 1600 NIH-funded human subject researchers and 1600 IRB chairpersons across the United States were sent a web-based survey via e-mail invitation. An additional 300 IRB chairpersons received a letter invitation to the web-based survey. 455 investigators (28.3% response rate) and 353 IRB chairpersons (18.6% response rate) answered the survey. All responses were electronically sent and recorded anonymously. The survey asked best answer, multiple choice, and open text questions. The surveys had previously been piloted locally (Ripley et al., 2008; Ripley, Macrina, & Markowitz, 2006). Descriptive statistics were used where appropriate and are reported as percentage or mean $\pm$ SD. Results of the surveys are reported separately (Ripley et al., 2010).

Participants were asked to give their recommendation for payment for specific research activities: an hour-long survey, blood sample, urine sample, x-ray, clinic visit, or overnight stay. There were also short hypothetical case scenarios where participants were asked to determine appropriate payment for the study. The case scenarios included information on procedures, clinic visits, overnight stays, type of study (therapeutic or non-therapeutic), involvement of healthy volunteers, and for drug studies, incidence of predicted side effects. After each case scenario, the participant was asked to rate risk, inconvenience, and difficulty recruiting as minimal, medium, or high. They were also asked to rate as important or not important in their determination of payment: patient or healthy volunteer participant, income of participant, and budget/funding source of the study. Finally, they were asked to state their payment recommendations. Choices were: no payment, payment for parking or bus fare, a

gift from a catalog or movie tickets, and money. If they selected money, they were asked to choose when and how to give the money—for example, at the completion of the study, prorated, or prorated with a completion bonus—and to state dollar amounts. The modeling of these cases was previously reported as well as a full report of IRB chairpersons and investigators payments (Ripley et al., 2010).

For purposes of this study, the estimated cost to the hypothetical participant was calculated for each case. To estimate cost and standardize calculations, several assumptions were made that were not provided to the survey respondents. Transportation costs were calculated on the basis of 20 miles round trip and 50¢/mile. Because the duration of a clinic visit varies, and time involved for a visit includes travel, parking, waiting, and the actual visit, we calculated for two time durations (1.5 hours and 3 hours/visit). For the pharmacokinetic case, an additional 2 hours was added to the time of telemetry to allow for the required time to set up and complete the study.

Several methods for determining payment have been recommended in the literature (Dickert & Grady, 1999; Grady, 2005; Saunders & Sugar, 1999). Two are used here as the basis for estimating and calculating costs. The first, Wage Payment, uses a standard wage for time involved but can supplement for uncomfortable procedures (Dickert & Grady, 1999). The other is the Reimbursement Model, which aims to make the study cost neutral by providing payment for the subject's expenses. Calculated expenses for this model vary by participant's salary (Dickert & Grady, 1999). For this study, payment was calculated at a minimum wage of \$7.25 per hour (comparable to unskilled labor for the Wage Payment Model), and it was also calculated at \$10, \$20, and \$100 per hour to show the impact of various salaries in the Reimbursement Model. In addition to calculations for time, study procedures such as blood draws and urine samples are included, as well as recommended payment for specific activities. Calculations for time and procedures are compared to the survey respondents' recommendations for payment. The average payment recommendation for specific activities is shown in Table 1. Many investigators (32.5%) were also IRB panel members and most IRB chairpersons were also investigators (79%). For this study, responses from both the surveys were merged and recommended payments represent averages from both IRB chairpersons and investigators.

Hypothetical Case Scenarios

Below are the hypothetical case scenarios used in the survey.

Case 1: Registry, Phone Survey and Medical Record Review—Dr. Brown is enrolling for a lupus registry sponsored by the NIH. Patients are being enrolled at diagnosis. A phone follow-up including a quality of life survey and a health status survey are planned for every six months after enrollment. Medical data including lab work as clinically indicated will also be obtained from the patients' record every clinic visit.

Case 2: Substance Abuse Survey—Dr. Jones is recruiting patients who are substance abusers for a survey of factors influencing continued drug abuse. The surveys will ask questions regarding obtaining drugs, employment, depression, financial status, and past criminal charges. The surveys will be done in a private place. The surveys will take two hours to complete. A urine drug screen will also be obtained. Surveys will be coded and the key kept locked in the investigator's office. Three months later, the participants will fill out the same surveys and will have another urine drug screen performed. She hopes to use this study as preliminary data for an R01 submission. There is no direct funding for the current study; however, she does have some discretionary funds that she could use.

Case 3: Survey of Twins, DNA—Twin Towers, a research unit, is enrolling 200 twins (ages 18–40) in a survey study of genetic influences on athletic achievement. The study will require a 30-minute survey asking about past and present sports involvement and awards received. A cheek brushing for DNA will also be performed.

Case 4: Cancer Treatment Trial—An NIH-sponsored multicenter trial of a new cancer regimen XYZ for metastatic breast cancer is being planned. It will enroll 100 patients. Drugs X, Y, and Z have all been used in the past as monotherapy and shown to have benefit in non-metastatic breast cancer and *in vitro* studies have shown synergy of the drugs. This study will use the medications in combination and with higher doses of X than previously used for six monthly cycles. Participants will be randomized to the XYZ or to standard of care chemotherapy protocols. Other than the usual side effects of chemotherapy, the potential risks of XYZ include arrhythmias, acute renal failure, and cardiomyopathy. Participants will have a minimum of every other week clinic visits during the six months and bimonthly visits for two years. Clinically relevant lab work and x-rays will be obtained.

Case 5: Healthy Volunteer Pharmacokinetic Study—Survey respondents received one of the following three levels of inconvenience:

Level 1: Low Inconvenience: Sky Pharmaceuticals is beginning a phase 1 escalating dose trial of a new anti-arrhythmic medication. Twenty normal healthy adult volunteers will be admitted to the research unit and have telemetry monitoring for 12 hours following a single IV dose. Blood samples will be drawn 10 times during those 12 hours for a total of 150 ml of blood. Risks of the medication are known to include: bradycardia, dizziness, arrhythmias, and palpitations.

Level 2: Medium Inconvenience: Sky Pharmaceuticals is beginning a phase 1 escalating dose trial of a new anti-arrhythmic medication. Twenty normal healthy adult volunteers will be admitted to the research unit and have telemetry monitoring for 48 hours following a single IV dose. Blood samples will be drawn 20 times during those 48 hours for a total of 150 ml of blood. Risks of the medication are known to include: bradycardia, dizziness, arrhythmias, and palpitations.

Level 3: High Inconvenience: Sky Pharmaceuticals is beginning a phase 1 escalating dose trial of a new anti-arrhythmic medication. Twenty normal healthy adult volunteers will be admitted to the research unit and have telemetry monitoring for 96 hours following a single IV dose. Blood samples will be drawn 30 times during those 96 hours for a total of 150 ml of blood. Risks of the medication are known to include: bradycardia, dizziness, arrhythmias, and palpitations.

Case 6: Hypertension Study—Rainbow Pharmaceutical is planning to study their new blood pressure medication. They will be enrolling 400 adult stage 1 hypertensive participants (Systolic BP 140–159 or diastolic 90–99 mm Hg) in an active treatment eight-week outpatient study. Participants will be taken off their usual blood pressure medications for one week prior to starting the study medication. There will be six clinic visits during the trial. In prior studies with this medication, less than 10% of participants have reported side effects. These side effects have included fatigue, dizziness, and nausea. All side effects resolved after stopping the medication.

Results

Full demographic data is reported elsewhere (Ripley et al., 2010). In brief there were a total of 808 total usable surveys (overall 23.1% response rate, investigators 28.3% and IRB

chairpersons 18.6%) with investigators (51.2% male, mean age $\pm$ SD 47.5 $\pm$ 10.3) and IRB chairpersons (61.2% male, mean age $\pm$ SD 54.4 $\pm$ 9.8) distributed evenly across the United States.

The average payment for different study procedures recommended by the participants in the investigator/IRB surveys is shown in Table 1. Table 2 shows the calculations by time and activities and for activities. No payment, payment for parking, or a small gift from a catalog are collectively labeled as no or token payment. Table 2 also indicates the percentage of respondents choosing a token payment and the amount recommended by those choosing monetary payments.

Discussion

These cases were designed to reveal payment ranges chosen by investigators and IRB chairpersons for different types of protocols and the factors that determined an individual's payment choice. The comparison calculations here are somewhat artificial as respondents were not given specific times for visits or travel distances on which they might base similar calculations of participant costs. Respondents were not asked what the participant costs were, but rather were asked their recommended payment. The calculations herein should serve as ranges to compare to respondents' choices. Grady (2001) has recommended paying participants as unskilled workers (Grady, 2001). Shamoo and Resnik (2006) concurred with a guarantee of minimum wage for healthy volunteers and that there be no upper limit. Latterman and Merz (2001) showed that, for a sample of studies, the average payment was \$9.25 per hour. For this study, cost was calculated using a range of payments to show the difference if calculating cost at minimum wage or for a participant with a higher pay scale. Cost for time was calculated starting at a minimum wage (\$7.25/hr) and went up to \$100/hr.

Perhaps the most striking result is the percentage of respondents for each type of study who chose a token payment. A token payment was considered any of the three payments that did not provide a monetary payment (no payment, payment for parking, and a gift from a catalog or movie tickets). If the primary reason for paying individuals is to reimburse and compensate an individual, then clearly, each of these studies cost something for the participant to be in the study. For some of these studies, like the lupus registry that includes several phone surveys and uses standard of care medical labs and medical record review, there is a minimal time or effort commitment of the individual. However, minimal is not zero and participation in this type of study with a token payment would rely on participant's perception of the altruistic value of the study. For those survey respondents who did choose a payment for the lupus registry, the amount is about what would be predicted using the average recommended payment for a survey (\$22 for an hour survey). If calculated by time at minimum wage, the recommended payment would be higher. If calculated by time at rates above minimum wage, the recommended payment would likely far exceed the study budget.

For the substance abuse survey and drug screen, a smaller percentage recommended a token payment compared to the lupus registry results or twin DNA study. The substance abuse study requires more time and contains sensitive questions. Using the procedure payments for a survey and visits, the mean recommended payment would be about half of the calculated cost. Using time as the cost calculator, the chosen payments were closer to those calculated even at \$10/hr, particularly in terms of the mean prorated payment. Those who chose prorated with a completion bonus would add about \$23, on average, more to the time calculation.

The percentage of individuals choosing a token payment for the twins' survey and DNA study is closer to the lupus registry study than the substance abuse study. The chosen

payment is about what the procedure cost would be and the time calculations are close to the single and prorated payments if using a time rate of \$20/hr. The reason that a token payment was chosen more often for a survey-type study asking health questions about lupus and a survey study looking at athletics and a DNA sample compared to a survey regarding substance abuse and a drug screen is unclear. Nor is it clear why the chosen monetary payment for the twins' survey and DNA is higher than for the other two survey studies. Perhaps respondents felt that paying compensation for studies is only relevant when setting payment for studies that require more time or have higher risk questions and procedures.

In the case of the therapeutic cancer treatment trial, individuals would be receiving treatment regardless of study enrollment, but they could receive an experimental combination rather than standard treatment. The 42% of survey respondents who chose only a token payment may have considered the treatment aspect of this study as negating the need for payment. Compared to payment calculations based on the number and duration of clinic visits and transportation costs, there is a large discrepancy with recommended payment. An important point when considering cost to the participant is that any visit which is standard of care could potentially require insurance co-pays for the visits, labs, and X-rays. This would further add to the cost of the study to the participants. The half of respondents choosing a single payment also chose a low amount based on payment as compensation.

Healthy volunteer participants in pharmacokinetic studies have traditionally been perceived as motivated by financial gain rather than altruism (Aby, Pheley, & Steinberg, 1996; Bigorra & Baños, 1990; Chang et al., 2004; Hassar et al., 1977; Novak et al., 1977; Whinnery, 1982). Shamoo and Resnik (2006) and Resnick (2008) have recommended that participants in such studies be guaranteed minimum wage. Following that reasoning, labor rules about more work, more pay should apply. The current study asked for payment recommendations for three different levels of inconvenience (each survey respondent saw only one level). The time commitment began at 12 hours of telemetry and increased to 48 hours and 96 hours. Yet the mean recommended payments increased from \$278 to \$509 as time increased by a total of 84 hours. Recommendations for prorated and prorated with a bonus payment did not show increases with increased time and more blood draws. For someone looking for quick money, the value of participation could be perceived as adequate at these mean levels.

The hypertension study is a placebo controlled treatment trial. One-fourth of respondents would not provide payment for the study. Participants would have out-of-pocket expenses for transportation and missed work and, therefore, receiving no payment is not a cost-neutral study. Those recommending payment agree somewhat with the time calculations at minimum wage. This would best fit Dickert and Grady's (1999) Wage Payment Model.

Although compensation is considered the primary purpose for paying participants, these cases show that many investigators and IRB chairpersons do not consider compensation to be required and that expenses to the participant are either acceptable or not even thought about. The Federal Regulations provide for additional expenses as one of the additional elements of informed consent to include if doing so adds to the understanding for a particular study (Department of Health and Human Services, 2009). Anecdotally, consent forms do not usually state additional expenses not compensated for by payment. For those respondents who chose a money payment, the ranges are from lower than minimum wage to \$20/hr and vary by case, suggesting that investigators and IRBs do not routinely or consistently calculate participant cost.

Although calculation of costs is necessary if the payment is intended to reimburse or compensate for actual costs to the participant, the impact of actually determining these costs has been questioned. McKeganey (2001) noted that paying participants sets up an

expectation of payment that smaller studies could not meet, which might make those studies impracticable. These concerns were also noted by Lemmens and Elliott (2001), who questioned whether small studies can afford to compete for enrollment with large well-funded studies. Toumbourou et al. (2004) put this in terms of a threat to research, “On a more materialistic level, a general threat to research may occur if payment to participants was required or expected and therefore became common practice” (p. 585). They go on to note that a consequence could be increased cost of research as these payments would need to be added to the research budgets.

Calculating participant costs does not necessarily dictate payment, but rather that costs be acknowledged and that participants be made aware of additional costs they will incur because of participation. Such acknowledgment may mean that small studies which are unfunded or larger funded studies which cannot afford to fully reimburse/compensate the individual will need to rely on other benefits of the study (for example, laboratory work, more frequent clinic visits and healthcare provider contact, and supplied medication) and altruism for recruitment.

The ethical debate regarding payment has centered on the concern that payment is unduly influential or coercive. The results of this study show that in these hypothetical cases, payment approximately matches calculations based on time or procedures and is sometimes considerably less than even this modest assessment of cost to the participant. It was the exception that survey respondents recommended higher monetary payments than those calculated. At best, the payments compensated for actual costs to the participant. Based on these calculations, it is hard to argue that paying actual costs is undue or coercive. Although those respondents choosing money chose payment sums close to calculated costs for some studies, it must be remembered that many individuals chose only a token payment where the costs to the participant would not be compensated. Our data do not suggest that payments as recommended today are in general undue or coercive to individuals to participate.

Research Agenda

The results of this study do not take into consideration value of the study to the participant. Such value could be perceived as value to society or directly to themselves for therapeutic trials or for trials in areas of interest to the individual. The calculations also did not take into consideration non-financial costs such as emotional stress or logistical issues. These additional factors need to be studied in tandem with financial costs.

The impact of standard of care costs to individuals (and third-party payers) should be evaluated. Evaluation should include how standard of care is determined and what costs these procedures have for the participant. For example, does frequency of visits or laboratory work for study participants actually match non-study participants, and how does any variation, such as co-pays, affect cost to the participant.

Participant perspectives on study value and costs likely affect their willingness to participate. Exploring whether willingness to participate is impacted by study payment as either compensating for cost or contributing toward value may help determine methods of increasing participation in research.

Best Practices

Investigators and IRB members should consider actual costs to individuals participating in their trials. Trials requiring larger amounts of time, more procedures, increased travel, and even additional co-pays should be especially considered. The purpose of payment for a particular trial should be acknowledged. Is it a token payment in appreciation for enrolling,

compensation for actual costs, or an incentive to enroll? When possible, payment should seek to compensate for costs to the individual and when there are discrepancies between payment and cost, either the inherent value of the study should compensate or the prospective participant should be provided with a frank discussion of personal cost.

Investigators should consider value, costs, and payment when planning studies. Maximizing this relationship should improve recruitment and, if the relationship holds during a study, should help improve retention.

Educational Implications

Investigators should be educated about the variety of costs that can accrue to a study participant, including how to calculate or even estimate cost to a participant in a proposed study. While not all study budgets will allow compensation, it is disingenuous to not, at minimum, recognize inherent study costs to the participant. At the same time, investigators can try to maximize the value of the study to the individual. Likewise IRB members should be educated to look at financial costs, decide if they are compensated and, if not, whether they are adequately elucidated in the consent process.

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Biographies

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Master's degrees are in nursing and religious and biomedical ethics and she has a Ph.D. in biomedical ethics. Dr. Markowitz assisted with the study design and interpretation.

Chris Gennings is Professor in the Department of Biostatistics at Virginia Commonwealth University (VCU). She is Director of the Research Incubator within the Center for Clinical and Translational Research at VCU. Dr. Gennings analyzed and modeled the responses from the surveys.

TABLE 1

Average Recommended Payment for Study Procedures (combining Investigators and IRB chairpersons).*

	Therapeutic Trial	Non-therapeutic Trial
Clinic Visit	\$25	\$26
Blood Sample	\$16	\$20
Urine Sample	\$12	\$12
Overnight stay	\$120	\$129
One-hour Questionnaire	\$21	\$22

* Ripley et al., 2010.

TABLE 2

Calculation of Participant Costs for Cases and Respondents' Recommended Payments.*

Study and Activities	Payment by Activities	Payment by Time At \$7.25/hr, \$10/hr, \$20/hr, \$100/hr	Percentage Recommending Token Payment	Recommended dollar Payments
Case 1. Registry, Phone Survey, Medical Record Review. Phone Surveys every 6 months. Calculated for 2 years.	15-min survey $\times$ 4 surveys = 1 hour \$ = 1-hr survey = 1 $\times$ (22) = \$22 30-min survey $\times$ 4 surveys = 2 hours \$ = 2-hr survey = 2 $\times$ (22) = \$44	15-min surveys: \$ = 1 hr(wage) \$7.25, \$10, \$20, or \$100 30-min surveys: \$ = 2 hr(wage) \$14.50, \$20, \$40, or \$200	60%	28% average single payment of \$18.37 (range \$5–50) 10% prorated payment total average \$36 (range \$7–200)
Case 2. Substance Abuse Survey. Two visits. At each visit, there is a 2-hour survey and a urine drug screen.	\$ = 2(visit) + 2(travel) + 2 (urine) + 4(1-hr survey) \$ = 2(26) + 2(10) + 2(12) + 4(22) = \$184	\$ = 4 hr(wage) + 2(travel) + 2(urine) \$ = 4(7.25) + 2(10) + 2(12) = \$74 \$ = 4(10) + 2(10) + 2(12) = \$84 \$ = 4(20) + 2(10) + 2(12) = \$144 \$ = 4(100) + 2(10) + 2(12) = \$444	33%	11% single payment of \$81 (range \$20–1000) 34% prorated total amount of \$71 (range \$20–200) 22% prorated payment with a completion bonus for a total of \$107 (range \$15–600).
Case 3. Twin study involving dNA collection. One visit, cheek brushing for DNA. 30-min survey.	\$ = 1(visit) + 1(travel) + 0.5(survey) \$ = 1(26) + 1(10) + 0.5(22) = \$48	\$ = 1.5(wage) + 1(travel) + 0.5(survey) \$ = 1.5(7.25) + 1(10) + 0.5(22) = \$31.88 \$ = 1.5(10) + 1(10) + 0.5(22) = \$36 \$ = 1.5(20) + 1(10) + 0.5(22) = \$51 \$ = 1.5(100) + 1(10) + 0.5(22) = \$171	54%	37% single payment of \$48 (\$5–300) 9% prorated payment totaling \$65 (\$15–300).
Case 4. Cancer Treatment Trial. 24 visits (calculated for 1.5-hr visits and 3-hr visits).	\$ = 24(visit) + 24(travel) \$ = 24(25) + 24(10) = \$840	\$ = 24(1.5-hr(wage) + 24(travel)) \$ = 36(7.25) + 24(10) = \$501 \$ = 36(10) + 24(10) = \$600 \$ = 36(20) + 24(10) = \$960 \$ = 36(100) + 24(10) = \$3,840 \$ = 24(3-hr(wage) + 24(travel)) \$ = 72(7.25) + 24(10) = \$762 \$ = 72(10) + 24(10) = \$960 \$ = 72(20) + 24(10) = \$1,680 \$ = 72(100) + 24(10) = \$7,440	42%	51% single payment of \$496 (\$50–10,000) 7% chose a prorated payment totaling \$1,685 (range \$120–120,000).
Case 5. healthy volunteer Pk Study low Inconvenience. [†] 2-hour setup time, 12-hour stay with 10 blood draws.	\$ = 1(visit) + 1(travel) + 10 (blood) \$ = 1(26) + 1(10) + 10(20) = \$236	\$ = 14(wage) + 1(travel) + 10(blood) \$ = 14(7.25) + 1(10) + 10(20) = \$311.50 \$ = 14(10) + 1(10) + 10(20) = \$350 \$ = 14(20) + 1(10) + 10(20) = \$490 \$ = 14(100) + 1(10) + 10(20) = \$1,610	3%	62% single payment of \$277 (range \$50–2,500) 12% prorated payment totaling \$852 (range \$150–3,000) 23% prorated payment with completion bonus totaling \$914 (range \$170–3,500).
healthy volunteer Pk Study Medium Inconvenience. [†] 2-hour setup time, 48-hour stay with 20 blood draws.	\$ = 2(overnight stays) + 1(travel) + 20(blood) \$ = 2(129) + 1(travel) + 20(20) = \$668	\$ = 50(wage) + 1(travel) + 20(blood) \$ = 50(7.25) + 1(10) + 20(20) = \$772.50 \$ = 50(10) + 1(10) + 20(20) = \$910 \$ = 50(20) + 1(10) + 20(20) = \$1,410 \$ = 50(100) + 1(10) + 20(20) = \$5,410	4%	57% single payment of \$363 (range \$15–2000) 11% prorated payment totaling \$1,850 (range \$200–15,000) 28% prorated payment with a completion bonus totaling \$819 (range \$100–3,250).
healthy volunteer Pk Study high Inconvenience. [†] 2-hour setup time, 96-hour stay with 30 blood draws.	\$ = 4(overnight stays) + 1(travel) + 30(blood) \$ = 4(129) + 1(10) + 30(20) = \$1,126	\$ = 98(wage) + 1(travel) + 30(blood) \$ = 98(7.25) + 1(10) + 30(20) = \$1,320.50 \$ = 98(10) + 1(10) + 30(20) = \$1,540 \$ = 98(20) + 1(10) + 30(20) = \$2,570 \$ = 98(100) + 1(10) + 30(20) = \$10,410	5%	46% single payment of \$509 (range \$25–3,000) 16% prorated payment totaling \$644 (range \$150–1,500) 33% prorated payment with a completion bonus totaling \$768 (range \$50–3,900)
Case 6. hypertension Placebo Controlled Treatment Trial.	\$ = 6(visit) + 6(travel) \$ = 6(25) + 6(10) = \$210	\$ = 6(1.5(wage) + 6(travel)) \$ = 6(1.5(7.25) + 6(10) = \$125.80 \$ = 6(1.5(10) + 6(10) = \$150	22%	12% single payment of \$208 (range \$25–600) 29% prorated payment totaling \$196 (range \$48–750)

Study and Activities	Payment by Activities	Payment by Time At \$7.25/hr, \$10/hr, \$20/hr, \$100/hr	Percentage Recommending Token Payment	Recommended dollar Payments
Six visits (calculated with 1.5-hr and 3-hr visits).		$\$ = 6(1.5)(20) + 6(10) = \240 $\$ = 6(1.5)(30) + 6(10) = \960 $\$ = 6(3)(\text{wage}) + 6(\text{travel})$ $\$ = 6(3)(7.25) + 6(10) = \190.50 $\$ = 6(3)(10) + 6(10) = \240 $\$ = 6(3)(20) + 6(10) = \420 $\$ = 6(3)(100) + 6(10) = \$1,860$		37% prorated payment with a completion bonus totaling \$184 (range \$45–750).

* For procedures, the amount used for each procedure is the average dollar amount recommended by the participants (Table 1) for that procedure. Because not all the cases provided time requirements (i.e., length of clinic visits), we estimated that travel, parking, waiting, and the visit would likely require 1.5 hours per clinic visit at a minimum. However, we also calculated a longer visit for the hypertension and cancer treatment studies, i.e., 3 hours. Round-trip travel cost = 20 miles $\times$ \$0.50 = \$10 per visit.

[†] PK = Pharmacokinetic.