approaching many physicians, he was eventually able to get about a dozen on his team.

Clinicians help to identify patients eligible for the study. Crucially, they can boost recruitment by mentioning that they are excited about the project, says Jeff Burns, director of the Clinical and Translational Science Unit at the University of Kansas Medical Center in Kansas City. But the next steps of enrolment — pre-screening the patients by reviewing medical histories, approaching them to gauge interest, discussing protocols and informed consent, and setting up in-person screening visits — require a huge amount of work. A common mistake is for novice investigators to rely too much on the clinician's office to sign up patients. Clinicians and their staff focus on treating patients, not research; as a result, a study can fall by the wayside "unless someone is there to push the protocol and research agenda", says Chu. Enrolment should be monitored at each step by a team member fully invested in the study — perhaps the principal investigator, a trainee physician doing a medical residency or a medical student. Researchers with sufficient funds can hire a dedicated recruitment coordinator to screen prospective participants for any reasons they should be disqualified from the study, as well as to explain the study and its risks and send out consent forms.

RECRUITMENT DRIVE

It took Chu six months to design his study, get IRB approval and assemble a research team. Only then could he begin recruiting patients and collecting data. A few months into data collection, he ran a preliminary analysis that revealed that he would in fact need several hundred participants in each study group to provide a significant result. By the end of his fellowship year, he had enrolled only 50.

One problem was that a potential participant's cardiologist and surgeon often disagreed about whether they should discontinue or continue the anti-platelet medication, so Chu could not invite that person to participate in the study. Furthermore, potential participants' medical histories were often more complex than anticipated, making it difficult to determine who was suitable for the trial.

Enrolment challenges are not unusual. A 2011 study found that nearly one-third of clinical studies terminated at Oregon Health and Science University (OHSU) in Portland between 2006 and 2009 were under-enrolled for various reasons; such terminations cost OHSU at least $1 million in 2009 alone (D R. Kitterman *et al. Acad. Med.* **86**, 1360–1366; 2011). Low recruitment is a big problem in the United States and elsewhere, says William Balke, a programme director of clinical-research services at the University of California, San Francisco (UCSF). "If we don't do a better job [at recruitment], we're wasting the public's money and we're not advancing science," he adds. One reason for the problem is a lack of thorough feasibility analysis to determine, for example, whether there are enough patients to do the desired study.

Some institutions run formal recruitment programmes; for example, UCSF has a Recruitment and Implementation Core, which serves the university and affiliated investigators. Investigators can also turn to online participant registries and tools such as ResearchMatch.org — a free online service that connects volunteers with researchers — or even use less conventional communication routes, such as social media. "We have been extraordinarily, surprisingly successful recruiting patients through Craigslist and keeping in touch with them through e-mail, text messages and Twitter," says Balke.

But researchers need to exercise caution when reaching out to patients through social media. Rahlyn Gossen, founder of Rebar Interactive, a digital-marketing company based in New Orleans, Louisiana, which recruits and retains study subjects, says that researchers' messages to potential participants need to be approved by the local IRB, regardless of whether they are online. Regulations on patient recruitment were not written with social media in mind, so Gossen recommends that investigators check with the board before they submit their official protocol for approval. "Some boards might allow you some variation, but I've also run into some that won't let you post on social media at all," she says.

"If we don't do a better job at recruitment, we're wasting the public's money."
William Balke

At the end of Chu's clinical-trial year, he and his supervisor decided to turn the trial into a feasibility study, to be completed while Chu finishes medical school. Still, he feels that he accomplished a lot in one year — and he learned a lot about the complexities of the clinical-trial process. Now in his fourth year of medical school, Chu is still enrolling patients and collecting data, and is looking forward to launching a new clinical trial in the future. "It's a learning experience," he says. With the understanding he has gained, Chu expects his next trial to be "easier to manage". ■

Kelly Rae Chi *is a freelance writer based in Cary, North Carolina.*

FUNDING

NSF grant changes

The US National Science Foundation (NSF) has changed some of its grant-submission requirements, effective from 14 January. The project-summary section of the submission now asks applicants to use separate text boxes for their proposal overview, their description of the project's intellectual merit and their explanation of its broader impacts. Submitting these sections as one document will cause the application to be rejected. NSF spokeswoman Maria Zacharias says that reviewers were spending too long teasing out the merits and impacts of proposals. Applicants may also now list research products such as patents, data sets or software in addition to publications — a boon for junior investigators, says Zacharias. The changes stem from a review by the NSF's oversight board, and a federal directive that the agency recognize the broader impact of research it supports.

TENURE

Respect for librarians

Many more US university librarians should be tenured faculty members, argue groups representing universities and colleges, academic libraries and professors. A statement released on 10 January and spearheaded by the American Association of University Professors in Washington DC notes that librarians support research needs, contribute to intellectual and academic freedom, perform outreach and should have a right to contribute to university policy. "There's a lack of recognition as to what librarians actually do," says Deanna Wood, an associate professor and reference librarian at the University of New Hampshire in Durham and part of the Joint Committee on College Library Problems, which drafted the statement.

SALARIES

Academic pay lagging

Early-career scientists with full-time jobs in US academia earn an average of US$58,000 annually, less than those in industry, non-profit or government, says a report from the US National Science Foundation (NSF). Industry pays the most: $100,000 per year in early career, and $130,000 for those 10 years past their PhDs. Academics who got a doctorate a decade ago or more earn $93,000 a year on average. Daniel Foley, a statistician for the NSF in Arlington, Virginia, says that the data underscore the need to train researchers for work outside academia.