Budget Cuts and the Plight of Postdocs

By Merrill Gozner

To earn her Ph.D., Deliya Banda, a newly minted graduate of the University of Maryland School of Public Health, investigated why so few black Americans participate in cancer clinical trials. She helped produce a 15-minute video that addressed their special concerns, especially their fear of ending up in another U.S. government Tuskegee Institute experiment (which did not treat poor black sharecroppers with syphilis). After showing the video to 108 black patients receiving cancer treatment at the Washington Cancer Institute in the nation’s capital, she increased the number willing to participate in trials by one-third.

The next step: getting a grant for wider dissemination of the video to test whether it can substantially increase accrual of black cancer patients, who are under-represented in most trials. But even with Sandra Swain, M.D., a professor of medicine at Georgetown University and newly installed president of the American Society of Clinical Oncology, as Banda’s mentor, the likelihood of landing the grant is slim. Banda, like hundreds of postdoctoral medical candidates across the U.S., faces the toughest financing environment in decades for young researchers. “We need funding to get it out there,” Swain said. “It would be a shame not to act on this.”

The number of promising research projects getting shelved across the U.S. is rising dramatically. The core National Cancer Institute (NCI) budget has been stagnant for nearly a decade, part of the overall cutbacks in National Institutes of Health (NIH) funding. The applicant success rate for NIH grantees has fallen to a record low of 17%. It’s lower at NCI, where the success rate is down to 14%, according to director Harold Varmus, M.D.

Since the doubling of NIH’s budget concluded in 2003, inflation has diminished NCI’s purchasing power by about 20%. Although the $10 billion special appropriation for medical research in the Obama administration’s 2009 stimulus program temporarily offset that decline, most of that money is now through the pipeline. And budgets are threatened with getting worse next year. NCI faces an across-the-board 8.2% cut from budget sequestration.

Leaders in cancer research have reached out to both sides of the aisle on Capitol Hill to explain sequestration’s devastating effect on cancer research in general and new investigators in particular. Varmus held a special briefing in late September at the National Press Club, where he laid out the grim statistics: Cutting NCI’s budget from $5 billion to $4.6 billion would reduce first-time award grants by 40%. “When I get my $5 billion check, I’ve already promised a lot of that to current grantees, to people in the intramural program trying to live their lives at NIH under fiscal austerity, and people doing peer review,” he said. “I have a lot of checks to write before I can begin to write checks to new investigators.”

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Budget Cuts Amid Promising Research

The irony, he said, is that the looming era of budget austerity comes at one of the more promising times in cancer research in recent history. Using sequencing technology developed for the Human Genome Project, scientists catalogue the multiple mutations associated with various cancers into a cancer genome atlas, which translational researchers can use to identify potential targets for drug therapy. The New York Times ran a front-page story explaining how scientists have identified four genetically distinct types of cancer and their mutations.

But discovering which mutations are valid targets for drug therapy, and developing molecules to influence the course of these cancer types, will take years of experimentation. Tight budgets will only slow the effort. “The pace of research is slower than it could be and should be, most obviously because we’re unable to fund all the people who have good ideas,” Varmus said. “And it’s not always easy to predict whose ideas will turn out to be good.”

He lamented the secondary effects these cuts are having on researchers—the “severe feeling of competition and stress that transmits to young trainees” who become less willing to take risks on leading-edge research. “We tend to support safe science rather than revolutionary science, applied work rather than what is new and essential,” he said. “If we don’t invest in basic understanding, we’ll be in trouble in the long run.”

Brain Drain of Young Scientists

Richard Schilsky, M.D., deputy director of the University of Chicago Comprehensive Cancer Center and past president of the American Society of Clinical Oncology, went door to door on Capitol Hill in late September to explain how those cuts affect local institutions. He described the brain drain already under way in his department because of declining research funding.

“A junior basic-science investigator basically shut down his lab and went to work for our development office full-time because he determined he could no longer...
have a successful career in science,” he said. “While that’s good for the development office, it represents a complete change of career path for him.” Also, several previously successful junior clinician–scientists “are reconsidering whether being physician–scientists is a successful career path for them.”

Linda Malkas, Ph.D., deputy director of basic science research at City of Hope in Duarte, Calif., said she recently received five CVs from postdoctoral researchers looking for work because their mentors lost their grants. With her budget already tight and scant prospects for improvement next year, she can’t give them a second look even though she was part of a team that identified a class of compounds that can directly bind to proliferating cell nuclear antigen, a potential anticancer target because it is required for DNA replication. “I’ve developed small molecules that could actually become new drugs,” she said. “This is the joy of my life. I’d like to hire another postdoc, but I feel the need to conserve resources.”

She fears that the U.S. is about to lose two generations of scientists—not only unemployed postdoctoral researchers but also science-oriented physicians in training or college graduates who will avoid research careers because of what happens to young physician–scientists who took that path. “It’s like musical chairs, with a growing pool of postdocs circling around a shrinking number of principal investigators who are getting funded,” she said. “What are we going to do with all these people who have been training to do this all their lives? We’re watching them lose their dreams.”

**The Pill and Ovarian Cancer Prevention**

By Malini Guha

Several decades ago, researchers observed a protective association between oral contraceptives (OCs) and ovarian cancer. Many observational studies across largely unselected populations using “the pill” in different patterns and formulations have replicated this finding, with many finding the risk reduced by up to half, depending on duration of use. OCs are also widely believed to reduce risk of endometrial cancer and possibly colorectal cancer.

Although U.S. women have greater access to OCs now than ever before—owing to a controversial Affordable Care Act provision requiring insurance companies to provide contraception for free—many women opt for birth control with intrauterine devices and implants, especially after a large study published last May in the New England Journal of Medicine found that they prevented pregnancy better than OCs.

And taking the pill just to prevent ovarian cancer is not something major national cancer and gynecology organizations recommend, even though most state that OC use reduces the risk of ovarian cancer. “The choice to use OCs should not be made solely for ovarian cancer prevention,” the Society of Gynecologic Oncology said in a statement. Meanwhile, specific guideline-making bodies, such as the U.S. Preventive Services Task Force, have not made the issue a priority.

“Organizations and medical societies are more comfortable issuing guidelines from evidence from randomized controlled trials [RCTs] after recent mishaps in interpreting evidence from observational studies,” said Eduardo Franco, M.P.H., Dr.P.H., of McGill University in Montreal, Canada. The most commonly cited “mishap” that has made experts particularly cautious is that of hormone replacement therapy’s (HRT) benefits in reducing risk of cardiovascular disease, which observational studies detected but RCTs later contradicted. However, said Franco, “the debate on HRT is still ongoing, and observational studies might not be too far off the truth.”

Also, some experts believe that less chance for bias or confounding exists for OCs than for HRT, with more women being excluded from taking HRT, leading to greater differences between users and nonusers.

In any case, experts generally say that conducting an RCT to definitively show that OCs reduce the risk of ovarian cancer would require tens of thousands of subjects, lasting decades and facing many logistical challenges.

“And to complicate matters, OCs are not interventions that are across the board favorable; there are some downsides too,” said Franco, including a possible slightly increased risk of breast cancer and vascular side effects.

**CDC Commissions Investigative Report**

Ovarian cancer is the fifth leading cause of cancer death in women and has a 5-year overall survival rate of just 44%. And with early detection methods so far showing no benefit in ovarian cancer (the U.S. Preventive Services Task Force in September reaffirmed its guidance against routine screening for average-risk women), researchers are looking at primary prevention more closely.

To investigate the overall risks and benefits of OCs, the Centers for Disease Control and Prevention (CDC) commissioned the federal Agency for Healthcare Research and Quality (AHRQ) to conduct the first comparative effective analysis to inform decisions about using OCs to prevent ovarian cancer. The draft evidence report, *Oral*