Note: For information that is not widely known about Kathryn L. Locatell, M.D., who is from Sacramento, CA, please click on the following exposés at Elder Abuse Exposed.com: 1. "Mark Zahner, CA DOJ's Chief Elder Abuse Prosecutor, Resigns amid Criticism" 2. "CA AG Elder Abuse 'Crackdown' Hits Small Fry, Not Nursing Home Owners"

The CHAIRMAN. Thank you, Ms. Lloyd. Dr. Locatell.

# STATEMENT OF KATHRYN L. LOCATELL, M.D., SACRAMENTO, CA

Dr. LOCATELL. Hello, and thank you so much for inviting me to be here. I am really pleased to be able to talk about some of the things that I can contribute based on my knowledge. I would like to clarify, though, that I am no longer employed as a faculty at the University of California. The funding for my position and my programs was cut recently.

I received some questions from you, Senator Grassley, about prevalence of decubitus ulcers, urinary tract infections, et cetera. I

would like to go through some of these items.

In regard to the existence and prevalence of decubitus ulcers, they are incredibly common still. In a relatively small practice, while I was employed by the university over the past year, I have seen two Stage IV decubitus ulcers to the bone. These wounds are entirely preventable. There is never a reason that a patient should suffer from this type of wound if they are just getting adequate nursing care. In both of these cases, the patients were totally dependent on the staff to provide all of their needs because of disabilities.

In both of these cases, review of the chart indicated that the care had been provided. They had been turned every 2 hours, if you look at the nursing chart. There is no way they could have developed these wounds and had received the care that was charted in their record. In both of these cases, the patients died either directly or

indirectly as a result of these wounds.

Regarding malnutrition and dehydration. I have had many, many of my patients experience unexplained weight loss. Unexplained. Unexplained means, gee, look at the chart, they are eating 83 percent this week. They ate 79 percent last week of a full portion. There is no medical way that these people could lose weight while consuming the amount of food that is documented. In the past 2 years, I have had one of my patients die from dehydration. Totally preventable.

Regarding fractures. I have seen one unexplained, again, unexplained fracture. This patient was virtually a quadriplegic from multiple strokes. The only way she could have suffered this fracture was from some type of trauma and, yet, in the nursing record there was no indication that anything had happened to this patient at all. It was simply observed that the leg was swollen and angu-

lated.

She was sent to the emergency department. The emergency room physician filed an elder abuse report, as he was mandated to do because this is elder abuse. However, the medical director of the nursing home called me and asked me to call that physician and get him to retract his report because, as she put it, we both know these things happen all of the time. Indeed, they do, and they do constitute elder abuse. I have seen it in the last 2 years.

Urinary tract infections are ubiquitous in nursing home practice. The main causes are inadequate hygiene and inadequate fluid intake. These are, to a large extent, preventable as well. But what

is even more preventable is the urinary sepsis that develops when the symptoms go unrecognized. Understaffed, untrained personnel call me when the patient is so critically ill that they need to go to the hospital and spend a couple of weeks there, resulting in a downward spiral that many of them never recuperate from. The earlier subtle signs and symptoms are missed. So it is not until the patient is floridly ill that they actually get attention and treatment.

What are some of the underlying reasons for the development of these very painful, disabling, and inhumane conditions? You have heard it over and over again today—inadequate staffing. Inadequate staffing. There are not enough bodies to provide the care

that these people need.

In the facility where I am medical director, the administrator budgets for temporary staff, and will fill in when people do not show up. The temporary staff, however, is particularly unreliable because they have no accountability. They go from facility to facility. So even the temporary staff it is a body to do the work. In the poorer quality facilities, the staff that call in sick or do not show

up, are not replaced, and this happens over and over again.

Another major reason, inadequate training of staff. These people, as has been mentioned, are hired at minimum wage with very little training among the nursing staff, the licensed nurses. Patients are being sent out of the hospital—you may have heard this term—quicker and sicker. They are being sent out of the hospital quickly to the nursing home. The conditions of these patients are far different than 10 years ago, and the training and the demands of the staff has not kept up with the acuity level of these patients.

Another reason, inadequate compensation of the staff. Minimum salaries are the rule for personnel in nursing homes. Most will eventually leave for better pay and better working conditions.

eventually leave for better pay and better working conditions.

Lack of leadership. Administrators, directors of nursing, and medical directors all share the responsibility for poor care. Medical directors are primarily figureheads. We really have very little say

in how the business is conducted.

When I was asked to participate in preparation for the survey by the Joint Commission, I reviewed the credentials of physicians practicing in my nursing home, and I was really astounded to find out that one had been trained as a pediatrician in another country and had set up a general practice taking care of nursing home patients. Several of them had no training in adult medicine. They had no foundation for taking care of the common conditions that afflict these patients.

Directors of nursing and administrators are more concerned with running a business, and they are out of touch with the care. They are concerned with passing the surveys. When they take such a narrow approach, it pays dividends. They pass. The perception is that the care is adequate. We passed the survey and, as was point-

ed out, all of the dressing that goes on in preparation.

Finally, underlying reasons for all of these conditions: Lack of oversight and enforcement on the part of the regulators. I would like to tell you about the experience I had when I reported an elder abuse case.

An elderly Vietnamese woman who could speak no English was placed in a nursing home when her family could no longer care for

her. I walked in the facility and, at 10:30 in the morning, found her tied in bed with a Posey vest, one of the kind that ties behind you, and around you, and down under the bed rails. In addition, her wrists were restrained. There was an overpowering smell of urine in the room, and a nurse's aide was present, and I said, "Why

is she being restrained like this?"

"Well, she keeps trying to get out of bed. She is trying to pull off her colostomy bag." There were no orders for those restraints on her chart. I went to the charge nurse on duty. This is 10:30 in the morning in the middle of the week. Her nonchalance, her nonchalance was chilling. "Well, you know, we do not want her to get out of bed and fall. Well, she kept pulling off her colostomy bag." This was a terminally ill patient who was there for comfort care in a hospice program.

I reported it as elder abuse. I never got a call back from the state evaluator, never. The ombudsman went in over a week later, and by that time the patient had died. The Elder Abuse Prosecution Unit of the State Attorney General's Office looked at this case and has yet to file any charges. It is my understanding that not a single case of elder abuse has been brought against a nursing facility in

California.

What makes this particular case so egregious, in my opinion, is the total lack of regard for this woman's comfort and dignity in the last days of her life. She could not speak English, she could not communicate, and she was being tied down for the convenience of the staff. This type of occurrence deserves the harshest punishment

that we have, and it should not be tolerated.

Financial considerations drive a lot of what happens in nursing homes; specifically, efforts to maximize revenues for Medicare. Physicians rubber stamp these orders. These facilities cannot get reimbursement from Medicare unless physicians sign the orders. I allude to in my testimony patients who have used up all 100 of their days, in one case, for caring for Stage IV decubitus ulcers that the patient developed while in the facility, all 100 days were used up. I have seen this many times.

When I ask patients about the care they received in nursing homes, I am frequently told that they never saw a physician during their stay. Physicians are absentees in the nursing homes in the

community—in my community.

What are some of the underlying reasons for the average physician's lack of participation in caring for nursing home patients? Lack of training. I know you have heard this before this committee. There is a horrendous lack of training in geriatric medicine today, 10 years ago, 20 years ago. It is only going to become a greater crisis.

Reimbursement for nursing home care is pitifully low. The orthopaedic surgeon may get \$5,000 to repair the hip and take care of the patient. The nursing home doctor gets \$50 to provide all of the care that patient needs throughout the recuperation in the nursing home. I think that is one reason why you are not attracting highly trained doctors to take care of patients in nursing homes. Fifty dollars a month.

Again, oversight and enforcement of the statutes is lacking. A physician in my community was prosecuted and imprisoned for

Medicare fraud for billing patient visits that had never been performed. Yet, when I talk to nurses in my nursing homes in my community, they say he was one of the better doctors that they encountered.

False charting. You have heard a lot about it. I am going to finish by showing you an example of false charting that was just fairly astounding to me, and I stumble across these things. I do not go looking for them. I am taking care of patients. I am reading their charts. I am reading the MDS and finding these things.

There is a poster there of a physician's history and physical. This woman was 86 years old, fell, suffered a hip fracture, was treated in an acute care hospital, transferred to a nursing home. The initial physician who provided her care was also the medical director of the facility. Because of insurance reasons I needed to assume this lady's care, and I saw her 2 days after this note was written.

If you look at this note, this is a form letter, this is a form note that is filled out in the nursing home. I do not know what level this physician would have billed Medicare for, for this evaluation. "Fell, broke hip. Normal, normal, normal. See the records from the other hospital. Diagnosis: Right hip fracture. Status post surgery: High blood pressure and anemia." There is something incredibly critical missing from this whole history and physical, and that is that the woman had severe uterine prolapse. Her entire uterus was sticking out of her body. This is a condition that affects aging women.

Your staffers, Senator Grassley, were kind enough to provide me with a prop. It is that cantaloupe. It is a little bit too big, but this thing was the size of a grapefruit, and you could see it by just a cursory lifting of her gown. He specifically goes out of his way on his H and P to write that the genital urinary examination is nor-

mal.

This entire record is fraudulent, not to mention the fact that the reason this lady fell is that she had been slowly bleeding over time from this prolapsed uterus, had become so anemic that her blood was down a half of its normal value. She was taking care of children in her home. She was providing day care for people in the neighborhood. When she fell, there were 3-year-olds in the home who covered her up with a blanket until adults could get there and call for help.

I mean, there was an incredible history behind what happened to this lady, and this is what we get. And this is why, when the families are calling saying, "Help us," they get no response from the physicians because this is the kind of thing you see, and this man was the medical director of this facility. It is one of the most

cosmetically appealing and expensive in the community.

I do believe that the quality of care in California nursing homes I have practiced in needs improvement. I have cared for hundreds of nursing home residents over the past 4 years, and I have seen some incredibly excellent care by wonderful, dedicated professionals. I am taking care of nursing home patients because I love it, and I believe in it.

Some of my patients have had outstanding care, but are these occurrences aberrations that I have described or are they just the tip of the iceberg? I believe that they are not the tip of the iceberg.

The poor quality of care, indeed, represents betrayal of the trust of the individuals who live in nursing homes and of the taxpayers who must pick up the tab.

Thank you, again. I am sorry my remarks went over. I really appreciate your listening. Thank you.

[The prepared statement of Dr. Locatell follows:]

# TESTIMONY OF KATHRYN L. LOCATELL, MD Before the Hearing of the UNITED STATES SENATE SPECIAL COMMITTEE ON AGING "Betrayal: The Quality of Care in California Nursing Homes" July 27, 1998

Senator Grassley and Members of the Committee:

Thank you for inviting me to discuss some of the grave concerns I have about the quality of care in nursing homes in California. I appear here today as a private citizen and practicing geriatrician who has had extensive experience with these issues over the past several years.

I have had a lifelong interest in caring for nursing home residents. My first job as a internager was in the kitchen of a nursing home. Later, as a nurse's aide, I fainted during my first shift on the job while helping a nurse change the dressings on a patient with several massive, deep decubitus ulcers. My grandfather died of gangrene and sepsis from neglect in a nursing home. While these events took place in the 1970's, and measures have been attempted to improve the care for these vulnerable patients in the intervening years, I will explain in my testimony that conditions in California nursing homes today are equally alarming.

I intend to address the concerns posed by Senator Grassley in his letter to me, and they are as follows:

- The existence, prevalence, and catalyst for malnutrition, dehydration, decubitus
  ulcers, urinary tract infections, fractures, burns and scalding experienced by
  residents in the nursing homes where you have visited patients;
- The falsification of medical records, including a discussion regarding the accuracy of the Minimum Data Set, admission information, and care plans, as well as the motivation and process used to falsify data;
- Your experience and opinion regarding the motivations of nursing home administrators, including a discussion about the use of ancillary services reimbursed by Medicare;
- The approach of physicians to nursing home practice, including a discussion of the impact training and reimbursement have on the quality of physicians treating nursing home residents.

First, in regard to the existence and prevalence of decubitus ulcers, I find that they are still incredibly and unfortunately common. I have cared for hundreds of nursing home patients in the past four years. Since joining the faculty at the University of California my patient census in nursing homes has averaged 30 or fewer patients. However, within the past year, I have seen severe, Stage IV wounds develop in two of my patients, a

## Page 2 Kathryn L. Locatell, MD

startlingly high prevalence. This type of wound is entirely preventable with adequate nursing care.

In both cases, the patients were totally dependent on nursing staff to meet their basic daily needs, and unable to communicate adequately due to stroke or dementia. In both cases, the nursing homes where these patients received care are among the better facilities in Sacramento, with a high proportion of private paying residents.

In both cases, review of nursing aide and licensed nurse charting revealed that the minimum requirement of repositioning the patient every two hours had been carried out. It is just not possible that these patients had been adequately repositioned. The reliability of charting in nursing homes is abysmal, and I will discuss this further.

In both cases the patient died, either directly or indirectly as a result of these wounds.

Next, regarding the issues of malnutrition and dehydration, I have had many, many of my patients experience "unexplained" weight loss and dehydration. On at least one occasion in the past two years, the dehydration was severe enough to result in death. Again, the charting of both nursing assistants and licensed nurses in these cases reflected "adequate" intake, with specific amounts of both food and fluids documented. It is not medically possible that patients could develop such weight loss or dehydration while having consumed the quantities of food or fluids recorded in the medical record.

Regarding fractures, I have seen one "unexplained" fracture in the past two years. The patient was virtually a quadriplegic from multiple strokes, and could only have suffered the fracture through some type of physical trauma. Yet the nursing and nurse assistant notes contain no explanation of how the fracture occurred. It was simply "observed" that the patient's leg was swollen and angulated. In this particular case, the emergency department physician who treated the patient filed an elder abuse report. The medical director of the nursing home subsequently asked me to call the physician and try to convince him to withdraw the report, because "we both know these things happen all the time". Indeed they do, and in my opinion constitute elder abuse.

Urinary tract infections are ubiquitous in nursing home practice. The main causes of these infections are inadequate hygiene and inadequate fluid intake. Many patients have subtle symptoms that go unrecognized by nursing personnel, and a doctor is called when the patient is floridly ill. Physicians rely on trained nursing personnel to report changes of condition, and yet when facilities are understaffed or staffed with temporary or inexperienced nurses, changes in the resident's status often go unrecognized until more severe symptoms develop. I can only estimate the number of patients I have treated for urinary sepsis that went unrecognized. Over the past four years, there have been scores. What are the underlying reasons for the development of these painful, disabling and inhumane conditions? In my opinion:

#### Page 3 Kathryn L. Locatell, MD

- Inadequate staffing. Casual conversation with nursing personnel in nursing homes where I care for patients invariably centers on workload. Nurse's aides routinely work double shifts. Licensed nurses vent their frustration with having their workload doubled when others call in sick or find employment elsewhere. In the facility where I am medical director, the administrator budgets for temporary staff, both licensed and unlicensed. However, temporary staff often proves unreliable and unaccountable for their performance, increasing the stress on permanent employees. But in poorer quality facilities, administrators fail to provide any additional temporary staff, expecting existing staff to simply increase their workload. This results in tremendous stress for the usual employees. It is often this type of stress that leads to neglect and abuse.
- Inadequate training of staff. "Inservices" are provided to many of the employees in
  nursing homes where I practice, yet the baseline knowledge of staff regarding
  geriatric nursing and common medical conditions is quite scant. The acuity of
  illnesses currently treated in skilled nursing facilities is far greater than even 5 years
  ago, and yet the skill level of staff is still geared toward conditions extant in the
  previous decade.
- Inadequate compensation of staff. Minimum salaries are the rule for personnel in nursing homes compared to acute care hospitals. Many of the best nurses leave for better pay and working conditions.
- Lack of leadership. Administrators, Directors of Nursing and Medical Directors all share the responsibility for poor care.
  - Medical Directors are primarily figureheads. They have little or no knowledge of or involvement in decisions about staffing levels or compensation. Few participate in operational decision-making in even a nominal way.

When the facility where I am medical director was preparing for the Joint Commission on Hospitals and Accreditation visit for the purpose of certification, I was asked to review the credentials of physicians practicing in the facility. I was astounded at the credentials of some of these physicians. One had been trained in pediatrics in another country, had become licensed here, and started a general practice including caring for nursing home patients. Another individual's file revealed two years of training in orthopedics; this physician has subsequently developed one of the largest nursing home practices in the community, and is medical director at another of the facilities in the non-profit chain that includes mine. Another was trained in radiology, yet another in vascular surgery and both of these individuals had also developed sizable nursing home practices.

When doctors lack training in adult medicine, as in these cases, they have no foundation for treating such common conditions as diabetes, hypertension, heart

#### Page 4 Kathryn L. Locatell, MD

disease, and dementia to name a few. When I voiced my concerns to corporate administrators, my suggestions were met with extreme unease. I was basically told that I could not exclude these physicians. I did end up declining to credential several physicians with no training in adult medicine.

- ♦ Directors of Nursing and Administrators are concerned with running a business and are out of touch with the care being provided. They tend to concern themselves with making sure regulatory requirements are fulfilled. Taking such a narrow focus often pays dividends in terms of passing state surveys leading to the perception that the care provided is adequate.
- Lack of oversight and enforcement on the part of the regulators. When there is little
  or no attempt by regulatory agencies to evaluate and enforce compliance with State
  and Federal law, it is not surprising that nursing facilities continue to provide
  inadequate and inhumane care.

Last fall I visited a terminally ill patient who had been placed in a nursing facility when her family could no longer provide the care she needed at home. She was a Vietnamese immigrant who spoke no English, who was dying, and who had no way to communicate her needs to the staff. At 10:30 in the morning I was astounded to find her in bed, tightly restrained with a Posey vest on and wrist restraints in place. The smell of urine in the room was overpowering. A nurse's aide was present in the room with the resident. I asked her why the patient was restrained, and was told, "she keeps trying to get out of bed and remove her colostomy bag". There was no order for such restraints on her chart. When I confronted the charge nurse on duty, I was met with a nonchalance that was chilling.

I filed an Elder Abuse Report with the county Ombudsman's Office, as well as a complaint with the state Department of Health Services. In spite of numerous attempts to speak with a nurse evaluator, I never received a returned phone call. The Ombudsman's office was unable to substantiate the complaint because the patient had died before the representative visited the facility, about one week after the incident. I later discovered that the facility had been issued a Class "B" citation for the use of illegal wrist restraint as a result of my complaint. The Elder Abuse Unit of the California State Attorney General's Office investigated the complaint, but has not yet filed criminal charges. It is my understanding that this unit has never prosecuted a single case of elder abuse occurring in nursing homes.

What makes this particular case so egregious in my opinion is the total lack of regard for the patient's rights and comfort, with the restraints placed solely for the convenience of the staff. This woman suffered untold misery as a result of being violated in this way during the last days of her life. This type of occurrence deserves the harshest punishment we have, and should not be tolerated.

## Page 5 Kathryn L. Locatell, MD

Financial considerations drive many of the practices in nursing homes. I would like to comment specifically about two areas of concem: efforts to maximize revenues from Medicare, and the role physicians play in facilitating these efforts.

There is no question that nursing facilities try to maximize reimbursement from Medicare. I see this particularly in cases where patients receive benefits under Part A. The average physician caring for patients in nursing homes in my community will automatically rubber stamp all care being provided. Patients are treated until Medicare days are exhausted. On numerous occasions over the past several years I have treated patients who have spent all one hundred days of their benefit in a single post-hospital nursing home stay for highly questionable indications.

One gentleman who was discharged to a skilled nursing facility for rehabilitation following knee replacement surgery spent 100 days receiving care for Stage IV decubitus ulcors he developed while a patient at the facility. He subsequently received rehabilitation services under Part B while paying privately to stay in a nursing home, and was able to regain independence and return home. Again, the average nursing home doctor will continue to sign the orders and visit every 30 days while taking no active role in directing the patient's care, as was the case for this unfortunate man.

When I ask patients about the care they received in nursing homes, I am frequently told that they never saw a physician during their stay. Physicians are absentees in nursing homes in this community and yet they perpetuate some of the financial abuses by virtue of their absentee approach. As long as the doctor rubber stamps the facilities' requests for services they have carte blanche to bill Medicare for as much as they can. Part B services are also frequently requested by the facility and authorized by the physician, for such things as "caregiver training" to the nurse's aides, and evaluations by therapists for "proper wheelchair positioning" — items that certainly can and should be provided as part of usual care.

What are the underlying reasons for the average physician's lack of active participation in caring for patients in nursing homes? In my opinion:

- They have little or no training in geriatric medicine. This is a well-recognized
  problem in medical education, with prospects looming for an even greater crisis,
  given the expected growth of the older population in coming decades.
  - A very small percentage of residents in training have received any exposure to nursing home care in medical school. The vast majority has never even been in a nursing home.
  - Judging from my review of the credentials of physicians practicing in the nursing facility where I am medical director, at least 50% have received only one year of

# Page 6 Kathryn L. Locatell, MD

post-graduate medical training, the bare minimum required for state licensure. Again, this amount of training does not qualify physicians to care for this population.

- Reimbursement for nursing home care is pitifully low. For approximately \$50 per
  month, the physician is expected to provide all needed services, 24 hours a day, seven
  days a week, to some of the sickest and frailest individuals he or she will ever
  encounter. Much of the care is provided by telephone or fax communication, which
  are not reimbursable services.
- Again, oversight and enforcement of statutes is lacking. When a physician in my
  community was prosecuted and imprisoned for committing Medicare fraud in billing
  for nursing home services, I was told by several nurses who had worked in long-term
  care for many years that "he was one of the better doctors" they see in their facilities!

Finally, I would like to touch on the issue of falsification of records in the nursing home. This problem is so serious that an entire hearing should be devoted to it alone.

False charting occurs on a daily basis in every nursing home I have visited. It is particularly common in nurse's aide charting. Because so much of the nursing home's reimbursement and permit to operate depend on charting, no spot can be left blank. It is preferable to fill in anything, rather than imply the care was not provided or the condition not observed. There are a number of indications that the charting is false.

First, the charting directly conflicts with either what I have observed or been told by a reliable patient or family member. For example, I observe that the patient's dentures are in dire need of cleaning. The patient is unable to do it alone and tells me that they haven't been cleaned since admission. However, the daily care record shows initials present, indicating the care had been provided on every single day, when clearly it had not.

Second, contradictory statements are found in the record, e.g., the licensed nurse's note states patient lethargic with poor oral intake, while the nurse's aide record shows "100%" of fluids were consumed during the same shift. Similarly, large amounts of weight loss occurred while the record documents "90%" or "100%" of each meal has been consumed.

It is particularly common to find discrepancies between the information contained in the Minimum Data Set (MDS) and the clinical charting. Recently one of my patients moved to a new facility. Because I had concerns about the quality of care in the new facility, I read the chart rather carefully. I was surprised to find in the MDS that the patient was considered to be totally dependent for ambulation, while previously she had been ambulatory with a walker. Her husband confirmed that, indeed, she was just as able to walk with her walker as ever. Restorative nurse's aides worked with her three times

#### Page 7 Kathryn L. Locatell, MD

weekly and charted her walking with standby assistance only, which surely places her at a higher level of independence than the entry in the MDS would indicate. In general I would estimate that the information contained in the MDS is accurate only about 50% of the time

Third, on occasions when I have assumed the care of patients from other physicians, I have seen outrageous examples of false or fraudulent documentation.

For example: an 86 year old woman fell, suffering a hip fracture. She is transferred to a skilled nursing facility for rehabilitation under the care of Dr. A, who also happens to be the medical director of the facility. I assume her care the next day because of insurance requirements (she belongs to a Medicare HMO, contracted with UCDavis).

Dr. A's initial history and physical states that he has reviewed the hospital's records, and interviewed and examined the patient. He specifically charts that her physical examination is "normal", specifically including her genitourinary examination as "normal". Each and every record sent to the nursing home from the hospital regarding this patient refers to "severe uterine prolapse", and when I examine the patient I find that this uterine prolapse is impossible to miss upon an even cursory lifting of her gown. Therefore, Dr. A's entire entry into this patient's chart constitutes falsification. He did NOT review the records OR examine the patient as he states he did in his note. Incidentally, this nursing home is one of the most expensive and cosmetically appealing in the community, and its medical director is probably committing this type of fraud on a regular basis!

In conclusion, I do believe that the quality of care in the California nursing homes I have practiced in needs improvement. I have cared for hundreds of nursing home residents in nearly every nursing home in Sacramento over the past four years. Some of my patients have received outstanding care from dedicated professionals in excellent facilities. But are the occurrences I have described today aberrations, or the tip of the iceberg? I fear they are the latter. The poor quality of care indeed represents betrayal, of the trust of the frail elderly who must live in them and of the taxpayers who pick up the tab.

I would again like to thank Senator Grassley and Members of the Committee for allowing me to share my concerns with you. As a physician and concerned citizen, I urge you to continue your investigations with the goal of finding solutions to some of these pressing problems.