Featured Researcher
Dr. Cohen talks about greenhouses and gravity

SRBA: A New Drug
A review of the first selective relaxant binding agent

A History Lesson
How $50K started this department

Much more... new faculty... ongoing research... international meetings...
I began my role as Program Director (PD) just a few short months ago. During this time, several concerns have arisen, contributing to the growth of several gray hairs on my head!

The support of the faculty has eased considerably my transition in the PD role. The CA-1 residents gave us rave reviews on the content and presentation of the basic science lectures. And our efforts were not in vain, as evidenced by the outstanding scores on their first metrics exam.

We also give a wonderful round of applause to our recent graduates. The written board pass rate was 100%! We wish them continued success in their careers.

I am very much indebted to the Faculty for all your efforts in establishing a dynamic and productive educational environment for all of the residents. Thank You!

Kang Rah, MD

It is my distinct pleasure to present the inaugural edition of behind the screen, the official newsletter of the Department of Anesthesiology at Rutgers, The State University of New Jersey!

We hope to improve communication among all members of the Department via this medium. We may share all manner of information and gather feedback on the common issues that matter to us as clinicians, academicians, educators and members of the health care community.

Everyone’s voice is important. We encourage your participation and your contribution!

Christine W. Hunter, MD
Chair

Today we incorporate a new face to our already busy, but not-so-visible department with the addition of this newsletter of the Department of Anesthesiology at Rutgers Robert Wood Johnson Medical School. Too often we hear from friends, the public, and even colleagues: “What does an anesthesiologist do?” We hope that with this new informational tool, we can help spread the word on issues related to anesthesia within our institution and the practice as a whole. In the coming issues, we shall delve into multiple topics related to the educational, informational, and research-oriented missions of our Department and its sections: critical care, cardiac, obstetric, pediatric, perioperative ultrasound, acute and chronic pain, and regional. We shall also show you that our jobs don’t end when the drapes come down. We hope that this periodical will serve as a communication tool for our colleagues as well as for patients and their relatives. We welcome notices regarding exciting activities, research projects, and personal anecdotes from our colleagues that they would like to share with the department. We extend an invitation to patients who would like to share their experience with our department as well.

We appreciate this opportunity to shine a light on the Department.

The Editors

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**Featured researcher: Dr. Shaul Cohen**

by Sagar S. Mungekar

“"He liked to sit leaning back," Dr. Shaul Cohen explains, "like this," as he mimics the movement in his chair. "I was in the army then," he adds, as he continues his story.

Born in Israel, Dr. Cohen served a total of four years in the military. He had deferred until after he had completed training at the Medical School of the Hebrew University in Jerusalem in the early 70s. "I was just waiting for the movie to start when I heard the announcement: ‘Is there a medic here?’” The soldier in the recumbent position had been bitten in the neck by a poisonous snake—rampant in the area. Dr. Cohen and a few of his colleagues ran to assist. In the field and with limited equipment, they quickly intubated his trachea, securing his airway. They delivered antivenom and rushed the soldier to safety. And this was all prior to his completing his anesthesia residency.

Currently the director of Obstetric Anesthesia and previously everything from a captain in the army to the chairman of an anesthesia department, Dr. Cohen has accomplished several lifetime accolades. All who have worked with Dr. Cohen know that his educational pearls are punctuated with stories such as the one above.

Dr. Cohen trained with Dr. George Martin, who is often credited as the principle advocate for the use of epidural anesthesia to ease pain for routine deliveries at a time when an epidural would not be expected. A recent study he presented noted that sometimes this technique failed; there would be no loss of resistance to air, but advancing the catheter caused it to enter the dural space by the principle advocate for the use of epidural anesthesia to ease pain for routine deliveries at a time when an epidural would not be expected. A recent study he presented noted that sometimes this technique failed; there would be no loss of resistance to air, but advancing the catheter caused it to enter the dural space.

Dr. Cohen noted that sometimes this technique failed; there would be no loss of resistance to air, but advancing the catheter caused it to enter the dural space. He had a theory: “For those cases,” he continues, “we can offer a sphenopalatine ganglion block,” a minimally invasive technique that palliates the strong headache that accompanies a dural puncture. A recent study he performed showed that it can avoid having to place an epidural blood patch the traditional way, which can carry a much higher risk of infection than this block.

Currently, he is working on several studies, one of which—the gravity technique—relies on the free flow of the epidural fluid to achieve a spinal block to improve patient satisfaction and analgesia. Outside the hospital, Dr. Cohen is just as active. He carries two smart phones to show off pictures of scores of tropical flowers that bloom in his hothouse greenhouse. "It's what helps me stay above ground," he comments about his hobby. And when does he expect to retire? He answers very bluntly: "Never."
Evidence-based medicine is the cornerstone of our practice. Keeping up with scientific advancements helps us offer the best care to our patients. For this issue, Dr. Neethu Kumar has reviewed the current literature and provided us with viewpoints on two issues: one that is a new solution to an old problem, and the other, a concept revisited.

Sugammadex is a new class of medications called selective relaxant binding agents (SRBAs). This medication acts to encapsulate free circulating steroidal nondepolarizing neuromuscular blocking agents, decreasing the amount interacting at the receptor sites. The sugammadex structure contains 8 glucose molecules with negatively charged side chains. The ring with a lipophilic interior binds to aminoesteroid relaxants with a 1:1 ratio, removing the relaxant from the neuromuscular junction. The resultant complex lacks relaxing properties and is excreted within 24 hours via the kidneys (96%), expiration and feces (0.02%); the remaining is slowly decomposed in the liver. This binding has a very high association constant, rendering the incidence of residual neuromuscular block extremely low while avoiding the side-effects associated with traditional reversal agents. Sugammadex shows the highest affinity for rocuronium, then vecuronium, and the lowest for pancuronium.

Sugammadex is currently only for single-dose use. The recommended dose depends on the level of neuromuscular blockade (NMB) and is reduced with smaller doses needed for a light block compared with a deep block. For routine reversal, if spontaneous recovery of a light NMB (reappearance of T2 with rocuronium or vecuronium has occurred, a sugammadex dose of 16 mg·kg⁻¹ is recommended. A sugammadex 4 mg·kg⁻¹ dose is recommended if recovery has reached 1 to 2 post-tetanic counts (profound NMB) after rocuronium or vecuronium. For the immediate reversal of NMB, a sugammadex dose of 16 mg·kg⁻¹ at 3 minutes after the administration of rocuronium is recommended. Preventative measures should be taken in the severely renal impaired, until more data is available.

The most frequently reported adverse events in clinical trials of sugammadex were hypotension, QTc prolongation (>400 ms), bronchospasm, constipation, hyperacidity, and dygeusia (altered taste sensation). Sugammadex has been demonstrated to be highly effective and generally well tolerated during Phase I-II testing. Sugammadex was approved by the European Commission in July 2008 for routine reversal of rocuronium or vecuronium and for immediate reversal of rocuronium in adults, and for routine reversal following rocuronium in children and adolescents. In the US, sugammadex was issued a not approvable–letter by the FDA in August 2008. The FDA cited concerns over potential hypersensitivity reactions which was based on data from one volunteer who displayed clinical evidence of hypersensitivity after hypersensitivity during the infusion of a 32 mg·kg⁻¹ dose and the retrospective identification of potential hypersensitivity reactions in previous studies.

In summary, sugammadex has an onset ten times faster than neostigmine and three than edrophonium, very low incidence of side effects, and, with use be used even when deep neuromuscular block is present. It has been widely used in adults and children in Europe, Australia, Iceland, New Zealand, and some countries in South America with great success. Some practitioners no longer use other means of reversal. Its main limitation, as far as has been related, is its high price.

Numerous studies have shown glycemic control in patients undergoing coronary artery bypass grafting (CABG) with diabetes mellitus and those with hyperlipidemia, strokes the risk of perioperative morbidity and mortality and improves long term survival.

In 2005, Gandhi et al. looked at the effects of intensive intraoperative insulin therapy in 400 elective patients undergoing CABG. Patients were prospectively randomized to a continuous insulin (glucose 80–100 mg·dL⁻¹) or a conventional group with (glucose less than 200 mg·dL⁻¹) using intermittent boluses of IV insulin. The incidence of diabetes was 20% in both groups. There was no difference between the groups in the composite incidence of death, sternal wound infections, prolonged ventilation, cardiac arrhythmias, or perioperative mortality in patients undergoing surgical CABG surgery. Although studies have shown glucose levels less than 180 mg·dL⁻¹ reduces morbidity and mortality in patients undergoing CABG, the optimal range of glucose levels is not clear. In the study by Van der Woude et al., blood glucose levels were maintained 80–100 mg·dL⁻¹ and there was no effect on morbidity and mortality in patients who had undergone a CABG and spent less than 3 days in the ICU.

Lazar et al. looked at effects of a more aggressive regimen for glycemic control in diabetics. Patients were prospectively randomized to aggresive (80–120 mg·dL⁻¹) or moderate (120–180 mg·dL⁻¹) glycemic control. More aggressive glycemic control did not have any significant improvement in clinical outcomes that could not otherwise be achieved with more moderate control. Bhamidipati et al. also showed the least amount of morbidity and mortality was with moderate glycemic control (120–179 mg·dL⁻¹) in diabetic patients undergoing CABG.

The American College of Physicians recommends a moderate glycemic level of 140–200 mg·dL⁻¹ in surgical and medical ICU patients. Studies in this area will help further determine the most optimal level of glycemic control in patients undergoing CABG.

References and suggested reading
Our department members have presented dozens of research abstracts and case reports just this year at meetings in the USA and abroad. If your abstract is accepted at any of the listed meetings or another one, please let us know. We will include a summary. You may even be chosen as a featured researcher. E-mail any editor for more information.
Anesthesia technicians by Quiana Frazier

Anesthesia patient safety outcomes are based on the combined efforts of many individuals within the anesthesia care team. Robert Wood Johnson University Hospital (RWJUH) is no exception. The anesthesia care team consists of anesthesiologists, certified registered nurse Anesthetists (CRNAs), residents and anesthesia technicians (ATs). Anesthesia technicians provide the necessary tools, support, and expertise needed to help the anesthesia care team perform their job safely and successfully. They assist the anesthesia care team in all phases of patient care: preoperative, intraoperative and postoperative.

There are several educational programs that have helped ATs obtain the necessary critical skills and knowledge that they need to be successful in this field. The American Society of Anesthesia Technologists and Technicians (ASATT) is one. Founded in 1989, ASATT is an organization that focuses primarily on the education of anesthesia technologists and technicians. ASATT also provides standards of practice guidelines that help with AT daily practice.

Here at RWJUH we have a team of nineteen ATs who are responsible for coverage in the following areas: main operating rooms, pediatric operating rooms, labor and delivery, radiology department, cardiac catheterization laboratory, endoscopy suites, as well as other areas where acute anesthesia care is provided (emergency rooms, intensive care units, and hospital floors). The ATs help ensure that patient safety is the department’s priority.

What is anesthesia? by Enrique Pantin

The word “anesthesia”, also written “anæsthesia” is derived from the Greek ἀναισθήσις (anaisthēsis) meaning “without”, and σύνεια (suiēia) meaning “sensation”. Simply said, it means “without sensation”. The first written known use of the word goes back to 1721, when it appeared in Nathan Bailey’s Universal English Dictionary. The search for pain control can be traced far back in history. Sleep potions were described by Homer in the Odyssey, but it was really not until 1824 when a young British doctor, Henry Hill Hickman, was able to anesthetize successfully animals using a gas called nitrous oxide. He had many detractors, and failed to convince the French Academy on its potential on humans and fell in disgrace.

In January 1842, Crawford W. Long used ether to remove a neck tumor from James Venable in Georgia, but his experience went mostly unnoticed. Soon thereafter, he had to stop using ether when he was almost killed by the people of his town. The first successful public anesthetic demonstration was done by William T. G. Morton using ether on October 16, 1846 in the amphitheater of Massachusetts General Hospital. He anesthetized Mr. Gilbert Abbott. He began by saying, “doctor, your patient is ready”, a phrase uttered to his day by anesthesiologists. Once Dr. Warren finished removing the neck tumor and the patient awoke without recollection of pain, he told the audience “Gentlemen, this is no humbug”.

The discovery of surgical anesthesia is considered by many as the biggest contribution the USA has made to medicine.

Stan the man by Quiana Frazier

Stanley Sowa, or “Stan the man”, as some would call him, has played a very special role in the Anesthesia department at Robert Wood Johnson University Hospital. Stan was unique because he worked every other weekend faithfully until he retired in 2013. He has made a great difference in the lives of so many including his coworkers. We honor him for that.

Stanley Sowa attended the Alexian Brother Nursing School in Chicago and graduated in 1966. He also attended and graduated from Jersey Shore Medical Center (JSMC) School of Anesthesia in 1971. After graduating, he became the Director of the school until they closed. Stan began his journey working weekends here at Robert Wood Johnson University Hospital when it was “Middlesex General Hospital” in 1977. In 1984 he became affiliated with the University of Medicine and Dentistry (UMDNJ) and the rest is history. Stan currently resides in Shark River Hills, New Jersey with his wife, daughters, son-in-law, grandchildren and a host of animals that he adopts from Bruce Springsteen’s farm. We would like to congratulate Stan on his retirement. He has been a dedicated and appreciated member of the anesthesia team for over 30 years and we are happy that he will have the opportunity to spend time with his family. We wish him nothing but the best as he embarks on his next venture.

Stanley Sowa is seen here earlier this year holding a copper kettle, a device invented in the 1950s that was used to deliver a standard volume of inhaled anesthetic vapor to the patient.

New faculty members

Dr. Christine Curcio, joined our practice in July 2013 as part of the Pediatric Anesthesia team. Dr. Curcio completed her internship and anesthesia residency at Stony Brook University Hospital in Stony Brook, NY in 2012 and went on to complete a fellowship in pediatric anesthesia at University of Michigan’s Mott Children’s Hospital in 2013.

Dr. Gina George, born and raised on Long Island, New York, completed an accelerated seven-year medical program at New York College of Osteopathic Medicine in Old Westbury, NY after which time she completed her internship at North Shore University Hospital. She then continued her training with us in an anesthesia residency. She started working at Rutgers Robert Wood Johnson University Hospital on August 2013.

Dr. Jessica Perez, graduated from Ross University School of Medicine, Dominica, West Indies, did her anesthesia residency at St. Barnabas Medical Center, and went to Children’s Hospital of Michigan where she completed a pediatric anesthesia fellowship in June 2013. She joined our Pediatric Anesthesia Team in July of this year.

Dr. Jayesh Thaker, graduated from the State of Gujarat Medical School in Gujarat, India, completed in 1996 his anesthesia residency at Brookdale Medical Center, New York. He has worked in two states, New York and New Jersey, and came back to us on October 2013 to work sharing time at our Ambulatory Center and Rutgers Robert Wood Johnson University Hospital. We welcome back Dr. Thaker!

Dr. Melissa Wu, completed her undergraduate school at Rutgers in 2003. She attended medical school and completed her anesthesia residency at Rutgers Robert Wood Johnson Medical School, formerly (UMDNJ), graduating in June 2013. She started working at Rutgers Robert Wood Johnson University Hospital in August 2013.
In the late 1960s it was recognized that the number of medical schools in New Jersey compared to neighboring states, and in particular, to the size of the population, was woefully inadequate.

One of the consequences of this realization became plans for a medical school to be built on the Busch campus of Rutgers University. It was envisioned that this would be a two-year school that would feed medical schools in the North east with third-year clinically ready medics to be divided such that daily, the private anesthesiologists would have a rival for the patient population. with St. Peter's in particular having long traditions of service to the community, and hospitals. They both had long traditions of serving the community—were enlisted for the bulk of patients. In the late 70s, Middlesex General Hospital was in ill financial health. This reality, coupled with the need for an inexpensive clinical campus, morphed into a grand bargain that in a complex contract gave the medical school the right to appoint the chiefs of service of the various specialties at Middlesex in return for state support for items such as house staff salaries (for a vastly increased number of interns and residents) and improvements to the physical plant. One of the major carve-outs, which was later determined to be woefully inadequate, was the status of the anesthesiology department, which had functioned as a private practice for many decades.

When the medical school started an open-heart program in the late 70s, the private anesthesiologist refused to cover these long and difficult cases, which led the surgery department to set up a section of anesthesia within itself and hire out anesthesiologists. It also led to a global agreement between the private anesthesia practice and the surgery department—signed off by the dean at the time—that the ten rooms in the operating suite at Middlesex would be divided such that daily, the private practice was expected to cover seven rooms and the university, three, including the new open-heart room. Since the private practice group contained five anesthesiologists and two nurse anesthetists, this meant that they committed their entire roster irrespective of call status to work every day, with the nurse anesthetists nominally being supervised by an anesthesiologist who was simultaneously administering anesthesia. Lunch breaks and calls of nature were answered by either delaying case starts in the private practice rooms or turning the case over to ‘Dr. Ventila- tor’ be it the anesthesiologist care giver’s out of the room for between ten to thirty minutes.

There was some indication that during the 70s, Middlesex General Hospital was in ill financial health. This reality, coupled with the need for an inexpensive clinical campus, morphed into a grand bargain that in a complex contract gave the medical school the right to appoint the chiefs of service of the various specialties at Middlesex in return for state support for items such as house staff salaries (for a vastly increased number of interns and residents) and improvements to the physical plant. One of the major carve-outs, which was later determined to be inadequate, was the status of the anesthesiology department, which had functioned as a private practice for many decades.

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The first appointed chairman was dressed in a lab coat, DDS, MD, who came from the University of Iowa, although he had grown up and lived in New York. As it happened, he was an anesthesiologist completing a fellowship in pediatric cardiology at the University of Iowa. Dr. Klein was also a two-year veteran of the United States Air Force, and had spent nearly eight years at the University of Iowa Hospital ending with a clinical appointment as director of the operating room suite in one of the larger hospitals in the United States.

Negotiations were entered rather shuffily in a scheme for the University to buy out the private practice. Their initial negotiating position was based upon a buyout of 17 years. The university’s position was a five-year buyout, which led to many tense moments in the operating room, partic- ularly when matters of the standard of care came up. To further complicate an already tangled and complex situation, the Department of Anesthesia pushed ahead to estab- lish an anesthesiology residency. The first residents, a group of four started on July 1, 1985…

Watch for the continuation of this story in the following issue of behind the screen.

The history of our department

Memoranda

compiled by Ashley Glor

General announcements

by Allen Solina

A multi-disciplinary RWJ-specific
Regulating Compliance Committee is in place to ensure compliance with all
regulating agencies: JCAHO, Department
of Health, and CMS. Representatives from medical, anesthesia, surgery, pharmacy, nursing, and ancillary support will collaborate to keep the whole of perioperative services compliant and up to date on all new and existing compliance regulations.

Cardiac anesthesia

by Anne Pallar

One of the original founding surgeons of RWJ’s cardiothoracic Surgery Di-
vision in the Surgery Department of Dr. Peter Scholer has retired.

A new cardiothoracic surgeon, Dr. Aarick Ghali, who graduated from Columbia University in California started to work with us. He has been hired to replace Dr. Thomas W. Prendergast as the heart transplant surgeon. Dr. Prendergast left to work at Jersey City Medical Center a few months ago but has continued to provide heart transplant care at RWJ.

I posit a synthetic analog of propo
cyclin is now being utilized inhaled as an adjunct to or in some cases as a replace-
ment for nitric oxide in patients with pul-
momary hypertension undergoing cardiac surgery. It is commercially available in 1 in 2,000 units for ethylene oxide sterilization, and 10 and 20 mg mL⁻¹, and can be stored at room temperature. Dosage initi-
ated for cardiac surgery is 2.5 or 5.0 gently

Levered via nebulizer, prostaglandins have been shown to have comparable efficacy
and hemodynamic effects to inhaled ni-
tric oxide at a fraction of the cost.

Endoscopy

by Dennis Hall

Many endoscopists are instituting a split preparation for patients whose pro-
cedure times are scheduled to begin after
3:00 p.m. This allows for a better colonic preparation for colonoscopy. The second end of preparation is to begin after the first end of preparation is done. This allows for a faster time to be spent at the endoscopy suite at 6:00 a.m. prior to start time and it is 8-16 oz. of clear liquid, keeping within the NPO guidelines for procedure: 4 hours for clear.

Pediatrics

by Victorino Vital

A new pediatric order set will be integrated into SCM. All preoperative (e.g., medication and allergy) and all medications will be included (pain medi-
cations, respiratory treatments, etc.) in a patient-specific order set.

Coming soon is the grand opening of the new pediatric operating rooms located in the Bristol Myers Squibb Chil-
dren’s Hospital on the seventh floor.

There are four large operating rooms and two smaller procedure rooms, one of which will be used for pediatric endoscopy.

The department has seen an increase of 50% in the volume of interventional neurosurgical cases just during summer 2013. The increase is mainly done in the neurosurgery suites in the radiology department. State of the art develop-
ments in the treatment of brain tumors and patients and surgeons flocking to these facilities have proven to be minimally invasive techniques. One such technique—stent placement for cerebral aneur-
sms—may be the most advantageous for those with limited cerebral vessels. This wire mesh, cylindrical device is made of a nickel-cobalt chromium alloy and is located across the neck of the aneurysm redirecting blood flow away from the aneurysm. This will allow the surgery team to perform a brain aneurysm surgery in one procedure and form a blood clot which prevents the rupture of the aneurysm.

Off-site anesthesia

Room 9 in Special procedures in the radiology department has a new hema-
trolyte-monitor that moves freely from the classroom to the ceiling and is located directly in front of the anesthesia machine.

There is a portable end-tidal CO₂, ma-
ing it easy to read the levels in the endoscopy depart-
ment for all off-site location that require anesthesia, but are not equipped with such monitoring.