



SLEEP APNEA: WHY IT MATTERS

CHALLENGE

As our population ages, we recognize that more people will be touched by conditions such as cancer, heart disease, stroke and diabetes – all of which, we are now learning, are linked to sleep apnea. Affecting approximately 10% of the adult population, sleep apnea is a disorder that causes a person to stop breathing repeatedly during sleep because of recurrent collapse of the throat. When left untreated, sleep apnea is associated with up to a four-fold increase in stroke, heart failure and motor vehicle accidents. Sleep apnea is only properly diagnosed in less than 15 per cent of those who have it.



WHAT OUR RESEARCH TELLS US

As the world's #1 rehabilitation research centre, Toronto Rehab is an international leader in sleep medicine including sleep apnea, which affects nearly 2 million Canadians. Our research has helped show that:

- **Stroke patients have a much higher prevalence of sleep apnea than the general population.** Furthermore, among stroke patients, those with sleep apnea were more disabled and spent more time in rehabilitation than those who did not have the sleep apnea. Toronto Rehab researchers have demonstrated that treating sleep apnea with continuous positive airway pressure (CPAP) improved recovery from stroke, especially by improving mobility.
- **Sleep apnea is very common in patients with heart failure.** Our researchers helped demonstrate that obstructive sleep apnea is a previously unrecognized contributor to the development and worsening of heart failure and that treating sleep apnea with CPAP in such patients improved heart function.
- **Fluid retention and sleep apnea are linked.** This helps explain how exercise significantly decreases the severity of sleep apnea by reducing fluid accumulation in the legs during the daytime, resulting in less fluid shift out of the legs overnight and less accumulation of fluid around the neck than those who do not exercise. It has also propelled our studies into alternative treatments such as compression stockings.

SOLUTIONS

Toronto Rehab is helping expand and accelerate specialized research, teaching and clinical work to improve diagnosis and develop new treatments surrounding sleep apnea and rehabilitation. Our sleep experts include:

- **Dr. Douglas Bradley**, holder of the Clifford Nordal Chair in Sleep Apnea and Rehabilitation Research, is helping Toronto Rehab lead the way in developing innovative new treatments and technologies such as BresoDx[®], a game-changing device for the diagnosis of sleep apnea at home.
- **Dr. Azadeh Yadollahi**, a research scientist, has expertise in analyzing respiratory sounds and their application for diagnosing sleep apnea, and is exploring new links between sleep apnea and conditions such as asthma and Chronic Obstructive Pulmonary Disease.
- **Dr. Hisham Alshaer**, a physician and biomedical engineer, was recently acknowledged as UHN Co-Inventor of the year. Together with Dr. Bradley, Dr. Alshaer led the development of BresoDx, a portable diagnostic device for sleep apnea. His research is dedicated to developing diagnostic and therapeutic instrumentation from inception to productization.

IMPROVING DIAGNOSIS AND TREATMENT OF SLEEP APNEA

Furthering Toronto Rehab's international leadership in sleep apnea and rehabilitation research will enhance care and quality of life while relieving the burden of sleep apnea and its cardiovascular complications on the health care system. With donor support, Toronto Rehab can expand research in these areas by promoting and completing large-scale initiatives, translating research findings into clinical practice, and attracting new investigators into this field through:



- **Chair in Sleep Apnea and Rehabilitation Research:** Originally established as a five-year expendable Chair, in 2018, a new investment will be required to renew the Chair in Sleep Apnea and Rehabilitation Research. At Toronto Rehab, research chairs expand the horizons of rehabilitation science and showcase our international leadership in rehabilitation research, provide a continuous and reliable source of income to fund research, and secure commitment between Toronto Rehab and renowned professionals within the rehabilitation science field.
- **Clinical Research Fellowships:** Representing the pinnacle of rehabilitative training, Toronto Rehab Fellowships are available to only the best and brightest minds in the field of rehabilitation sciences. They are also critical to our effectiveness in both a clinical and research capacity. Fellows help meet the growing patient demand for care by supporting the work in our clinics. They subsequently go on to deliver more care in other facilities and lead in growing research and education in the sleep apnea field across Canada and abroad.
- **Sleep Research Lab Equipment:** Toronto Rehab's three-bedroom sleep lab is outfitted with state-of-the-art polysomnographic, cardiovascular, audio and video-monitoring, and alertness-testing equipment. Unfortunately, much of the equipment has a 5-year lifespan and will soon be in need of replacement.
- **Sleep Apnea Research Innovation Fund:** An important new resource for propelling discovery, this discretionary fund will help bridge the funding gap in the development of new technologies and treatments and provide educational opportunities to nurture the next generation of clinical and research leaders.

FUNDING OPPORTUNITIES:

- Chair in Sleep Apnea and Rehabilitation Research - \$2 million
- Clinical Research Fellowship Program - \$1 million
- Sleep Apnea Research Innovation Fund - \$500,000
- Sleep Research Lab Equipment - \$250,000

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