Indian Institute of Technology Delhi
School of Interdisciplinary Research (SIRe)

PhD Project

Project Details

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<th>Project Title</th>
<th>Impact of Air Pollution on clinical outcomes among patients with Heart Failure</th>
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Project Summary

Air pollution is the third largest health risk factor in India. Patients with heart failure have very poor prognosis despite best available medical therapy. The cardiovascular outcomes like hospitalization and death are further aggravated with air pollution. However, most of the studies on impact of air pollution on heart failure outcomes are from western countries. The air pollution levels are far higher in India and other developing countries and its impact on these patients have not been studied. In this study we propose to study the impact of exposure of air pollution on morbidity and mortality in a cohort of heart failure patients. A case-crossover design will be deployed to study the impact of air pollution on heart failure hospitalization and death.

PhD Supervisors

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<th>Role</th>
<th>Faculty</th>
<th>Academic Unit in IITD</th>
<th>Email ID</th>
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<tbody>
<tr>
<td>Supervisor 1</td>
<td>Prof Sagnik Dey</td>
<td>Centre for Atmospheric Sciences</td>
<td><a href="mailto:sagnik@cas.iitd.ac.in">sagnik@cas.iitd.ac.in</a></td>
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<td>Supervisor 2</td>
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Project requirements (Student qualifications, experience required, etc)

- MSc/MPH (with GATE/NET/INSPIRE) or MTech in Atmospheric Science/Environmental Science/BioSc/Biotech/Phys/Chem/Maths/Stat/any relevant discipline
- Desirable: Experience in R/Python/STATA

Source of funding (IRD/FITT Project details, if any)

We are looking for students with own fellowship (CSIR/UGC/INSPIRE), or if available, Institute fellowship.

Role of Faculty Members involved:

Prof Sagnik Dey works on exposure modelling and developed satellite-based air pollution exposure database for India. He would guide the student in exposure analysis using portable sensors (and its calibration against reference-grade monitors), satellite data and models.

Prof Ambuj Roy is a faculty in cardiology with interest in field of heart failure. He has access to a cohort of heart failure patients on which this study will be performed. He would be the clinical guide of the student and provide...
inputs on study design. He would follow-up these patients and provide inputs on risk adjusted analytical plan for outcomes.

The project is highly interdisciplinary as it requires expertise in exposure assessment (IITD supervisor) and in medical science (AIIMS supervisor). It is an ideal interdisciplinary project that AIIMS-IITD program typically looks for.