**Night-shift work and causes of mortality among radiologic technologists in the United States**

**Inclusion criteria:**

The cohort included 146,022 radiologic technologists, who were certified by the American Registry of Radiologic Technologists (ARRT) for at least 2 years between 1926 and 1982 and resided in the U.S.

In this study, we will include individuals who completed the 2012-2014 questionnaire (n=51,547).

**Follow-up time definition:**

We will consider attained age as the timescale in our analysis. Follow-up will start on the date the 2012-2014 questionnaire was completed and end at the date of death, date of last known vital status, or the end of the follow-up in 2021.

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| **Variable Categories** | **Questionnaires** | **Question Number** | **Variable Definition** | **Notes** |
| Exposures | 2012-2014 | Q38 | Ever experienced permanent night shift |  |
| Exposures | 2012-2014 | Q39 | Ever experienced rotating night shift |  |
| Potential modifying factors | 2012-2014 | Q42 | During the past year, how many hours per day did you sleep in a typical 24-hour period |  |
| Potential modifying factors | 2012-2014 | Q43 | During the past year, how many times in a typical week were your daily activities adversely affected because you got too little sleep |  |
| Potential modifying factors | 2012-2014 | Q44 | During the past year, how much light was visible in your bedroom while you slept |  |
| Potential modifying factors | 2012-2014 | Q45 | During the past year, did you go to bed after midnight at least once a week for at least three months |  |
| Potential modifying factors | 2012-2014 | Q45 | What was your usual bedtime after midnight |  |
| Potential modifying factors | 2012-2014 | Q45 | About how many times per month did you go to bed after midnight |  |
| Potential modifying factors | 2012-2014 | Q46 | What type of person do you generally consider yourself (Morning chronotype) |  |
| Covariates | All |  | Prevalent personal history of all cancers, lung cancer, breast cancer, prostate, and colon cancer, separately |  |
| Covariates | All |  | Prevalent personal history of lung cancer |  |
| Covariates | All |  | Prevalent personal history of breast cancer |  |
| Covariates | All |  | Prevalent personal history of prostate cancer |  |
| Covariates | All |  | Prevalent personal history of colon cancer |  |
| Covariates | All |  | Personal history of cardiovascular diseases |  |
| Covariates | All |  | Calendar year of certification |  |
| Covariates | All |  | Calendar year of working |  |
| Covariates | 1994-1998 | Q3 | Sex |  |
| Covariates | 1994-1998 | Q6 | Race |  |
| Covariates | 2003-2005 | Q137 | Educational level |  |
| Covariates | 2003-2005 | Q140 | Annual household income |  |
| Covariates | 2012-2014 | Q3, Q4 | BMI |  |
| Covariates | 2012-2014 | Q5 | Smoking status |  |
| Covariates | 2012-2014 | Q5 | Duration of smoking (years) |  |
| Covariates | 2012-2014 | Q5 | Pack-years (continuous) |  |
| Covariates | 2012-2014 | Q12 | Family history of cancer in general and for lung, breast, prostate, and colon cancers (no/yes) |  |
| Covariates | 2012-2014 | Q15 | Number of live births (nulliparous, 1, 2, 3, 4, 5, ≥6) |  |
| Covariates | 2012-2014 | Q15 | Age at first birth (continuous and categorical as follows: nulliparous, <25, 25–29, ≥30) |  |
| Covariates | 2012-2014 | Q15 | Breastfeeding (ever/never) |  |
| Covariates | 2012-2014 | Q17 | Age at menopause (continuous and categorical as follows: premenopausal, <45, ≥45) |  |
| Covariates | 2012-2014 | Q19 | Hormone replacement therapy (no, <5 years, ≥5 years) |  |
| Covariates | 1994-1998 | Q34 | Age at menarche (≤11, 12, 13, ≥14) |  |
| Covariates | 1994-1998 | Q39, Q40 | Oral contraceptive use (no, <5 years, ≥5 years) |  |
| Covariates | 2012-2014 | Q40 | During the past year, how many hours per week did you do the following: walk for exercise, moderate exercise, strenuous exercise, weight training or resistance exercises |  |
| Covariates | 2012-2014 | Q41 | During the past year, how many hours per day did you spend: sitting watching TV, video or DVD; sitting or driving in a car, bus, train, plane; other sitting. |  |
| Outcomes |  |  | All causes mortality | Causes of death are determined by death certificates and National Death Index reports for decedents. Underlying causes of death will be coded according to the ICD-10. For cancer mortality, we will consider a SEER Site Recode ICD-O-3/WHO 2008 Definition |
| Outcomes |  |  | All cancer mortality | Causes of death are determined by death certificates and National Death Index reports for decedents. Underlying causes of death will be coded according to the ICD-10. For cancer mortality, we will consider a SEER Site Recode ICD-O-3/WHO 2008 Definition |
| Outcomes |  |  | Lung cancer mortality | Causes of death are determined by death certificates and National Death Index reports for decedents. Underlying causes of death will be coded according to the ICD-10. For cancer mortality, we will consider a SEER Site Recode ICD-O-3/WHO 2008 Definition |
| Outcomes |  |  | Breast cancer mortality | Causes of death are determined by death certificates and National Death Index reports for decedents. Underlying causes of death will be coded according to the ICD-10. For cancer mortality, we will consider a SEER Site Recode ICD-O-3/WHO 2008 Definition |
| Outcomes |  |  | Cardiovascular disease mortality |  |