IN THE NAME OF GOD

Shift work

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CIRCADIAN RHYTHMS

9 MELATONIN SECRETION STARTS

MIDNIGHT

2 SLEEP DEEPEST

3 SKIN REPAIR PEAKS

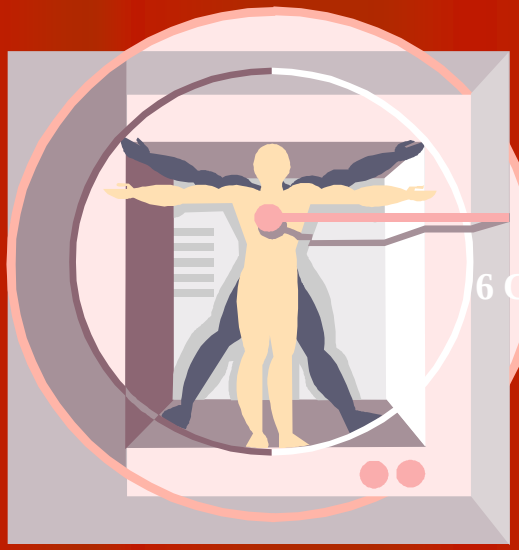
4 NATURAL CHILDBIRTH

5 BODY TEMP LOWEST

7 BODY TEMP PEAKS

6 TASTE MOST ACUTE

6 EVENING



6 MORNING

6 CORTISOL, INSULIN HIGHEST

7 BP AND PULSE SURGE

4-6 LUNG AND HEART EFF MAX, MUSCLE STRENGTH PEAKS

8 MELATONIN OFF

9 BODY WT LOWEST

2-4 REACTION TIME BEST, EYE HAND COORD

NOON

10 MENTAL ALERTNESS HIGHEST

12 N MOOD HIGH

CIRCADIAN RHYTHM HEALTH EFFECTS

8-11 PAIN TOLERANCE LOWEST

MIDNIGHT

2 CONG HEART FAILURE

3 SIDS DEATHS

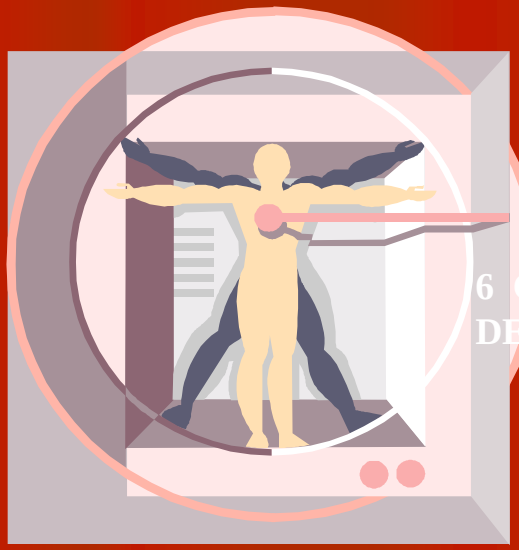
4 MIGRAINES

5 ASTHMA ATTACKS

7 BLOOD PRESSURE HIGHEST

6 CHOLESTEROL LEVELS INCREASE

6 EVENING



6 MORNING

6 GREATEST LIKELIHOOD OF DEATH

7 HAY FEVER, COLD, FLU

4-6 ULCER, OSTEOARTHRITIS PAIN,

8 NOSEBLEEDS

9 HEART ATTACKS STROKE

2-4 TENSION HEADACHES

NOON

12 STOMACH ULCER

Shift Work

نوبت کاری

ساعات معمول کار روزانه از ۶ صبح تا ۶ بعد از ظهر میباشد. هر نوبت کاری که خارج ازاین ساعت انجام شود را نوبت کاری یا شیفت کاری می گویند . نوبت کاری یک برنامه کاری غیر استاندارد می باشد.طبق آمار کشورهای پیشرفته ، ۲۰ درصد کارگران تمام وقت دارای کار نوبتی میباشند.

Shift work prevalence

- Not a new phenomenon, but now vastly more frequent.
- 20% of workers are shift workers at some point in their lives.

Shift work definition

- Work a defined period of time
- Working time can be at any time of the 24-hr day
- Fixed shifts -- working the same time every day
- Rotating shifts -- working time of day changes from time to time

Shift length

- length of shift: most common is 8 hours
- others are 10, 12 and 6 hours
- Shift changes become more difficult after age 40

Serious adverse health consequences of shift work

- 20% decrease in life span
- 62% sleep disturbance
- higher rate of accidents on the job
- high risks of fatal commuting accidents
- Increase risk of ulcers
- Increase incidence of depression and mood swings

Shift work is also linked to:

- Drug and alcohol abuse
- Altered immune response
- Infertility in women
- High divorce rate.

Cardiovascular effects of shift work is ...

- Linked to chronic hypertension
- Increased cardiovascular mortality
- Risk worse than smoking a pack of cigarettes per day
- Risk for dysrhythmias

Tolerance to shift work

- Better in younger persons (under 40, or pre-menopausal)
- Better in childless persons
- 20% of people have no trouble changing shifts
- 60% have moderate hardship
- 20% have extreme difficulty

Shift work patterns

- Most work has been done on 8 hour shifts
- 12 hour shifts no longer permitted in most industries
- Rotating shifts
- Isolated shifts
- Random shifts

Shift schedules

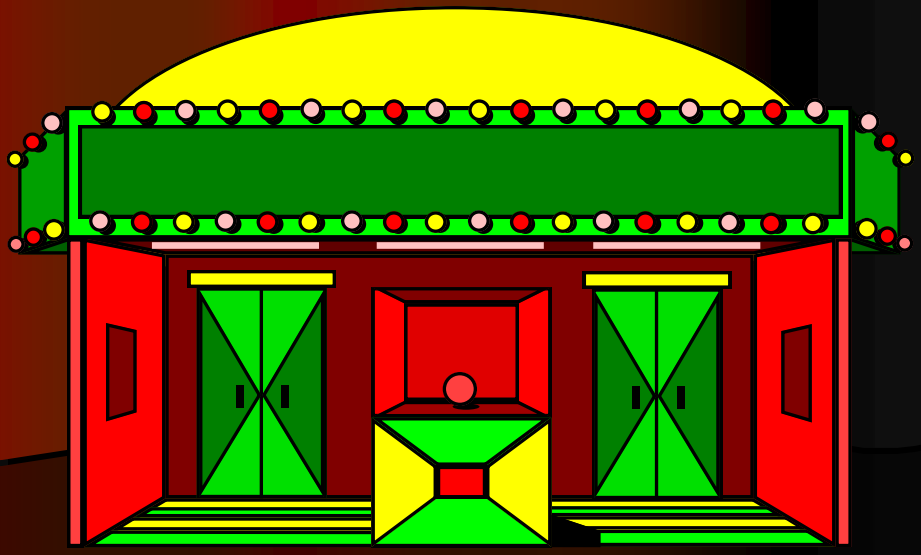
- Optimum: days only; in synchronous with your own best working time
- Next best: same shift every day, even if not most suited to your optimal time; or isolated nights
- Worst: randomly rotating shifts

Rotation patterns: Swing shifts

- Phase advance: one week days, one week evenings, one week nights
- Phase retreat: one week days, one week nights, one week evenings

Strategies to improve health for shift workers

- Sleep hygiene
- Napping at work
- Shift rotation patterns
- Food & exercise
- Social life



If you must be a shift worker:

- Learn how to sleep well
- Learn how to change your circadian rhythms smoothly
- Use circadian principles to make your work and home life better
- Educate your schedule-maker
- Educate and enlist your family

Living the Strategic Life

- Avoid vigorous exercise at least 4 hours prior to bedtime (Regular exercise is recommended.)
- Avoid cigarettes, alcohol, and caffeine 4-6 hours prior to bedtime
- Avoiding large meals and excessive fluids just before bedtime

Environmental control

- Light – adequate at work
- Dark – during sleep time
- Noise – shut out during sleep
- Room temperature
- Exercise, Diet

Sleep Hygiene

- Temperature: between 22 - 24 C
- Bedroom: Condition yourself that Bed = Sleep time
- Keep sleep time sacred, and minimize care-giving responsibilities during that time.

Diet

- troubled by early awakening? => try bedtime snack.
- Milk products seem to improve sleep.
- Great care to eat appropriately during the working / waking time

Drugs and Pharmacology

- Drugs to sleep or to wake or re-synchronize
- health care shift workers are at high risk for drug addiction

Melatonin

- Melatonin is a re-synchronizer
- used in the treatment of circadian rhythm sleep disorder especially in blind persons

Melatonin

- 3-6 mg, taken one hour prior to desired (new) sleep time
- Full effects of chronic exposure not yet known.

Caffeine

- harmless in small doses
- taking caffeine to get through the night shift may interfere with day sleep
- careful with timing of caffeine intake

ريتم هاي فيزيولوژيك در انسان

- 1) ريتم سيركادين، چرخه هاي بمدت يك شبانه روز مي باشد.

- 2) ريتم اينفراديان، فركانس آن بيشتر از يك شبانه روز مي باشد مثل سيكل قاعدگي

Biologic rhythms

- All body systems change rhythmically
- 90 minute alertness cycle
- Monthly fertility cycle
- Sleep/wake generally 23-26 hour cycle

Rhythm disorders

- Normally, biologic cycles kept in synch by signal substances such as melatonin, cortisol and others
- Disruption in these systems have profound health implications.
- Disrupted by both internal and external signals
- Cycles re-synchronize at different rates

Causes of circadian rhythm disorders

- Genetics
- Medications
- Pregnancy
- Shift work

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Adverse Health effects of shiftwork

- Breast Cancer, Endometrial Cancer : increased in women who are not exposed to enough darkness; mechanism unclear; proposed mechanism is melatonin deficiency.
- Prostate Cancer: increased most in rotating shift workers when compared to fixed-night shift-workers, who have an extremely minimal risk.
- Peptic Ulcer Disease /Obesity / Cardiovascular Disease
- Pregnancy Issues: night work and high work load increase the risk of spontaneous abortion

پيامد هاي سلامتي

- **اختلال خواب:** در برنامه نوبت كاري بويژه نوبت شب نه تنها نياز است كارايي كارگر در اوقات شب بالا باشد بلكه ايجاب ميكند كه كارگر در روز بخوابد .بدليل تغييرات سيركادين ، عوامل محيطي و اجتماعي و محدوديت هاي برنامه كاري ، بيشتر كارگران شب كار مداوم و يا چرخشي بطور مزمن دچار محروميت نسبي از خواب ميشوند .
- **پيامدهاي روحي رواني:** شكايات روحي و رواني ، تنش، استرس و اختلال و در روابط اجتماعي از مشكلاتي هستند كه باعث انصراف كارگر از نوبت كاري مي شود.

ساير پيامدهاي سلامتي

- **اختلالات گوارشي** : اين اختلالات شامل سوء هاضمه، گاسترويت، اولسرپيتيك، يبوست و كوليت ميباشد.
- **پيامدهاي قلبي عروقي**
- **افزايش كلسترول كل، افزايش LDL و كاهش HDL**
- **يافته هاي توليد مثلي:** در خانم هاي باردار، نوبت كاري احتمالا باعث افزايش خطر زايمان زودرس و نارسينوزاد ميشود كه علت آن را خستگي شديد و كار زياد ميدانند.

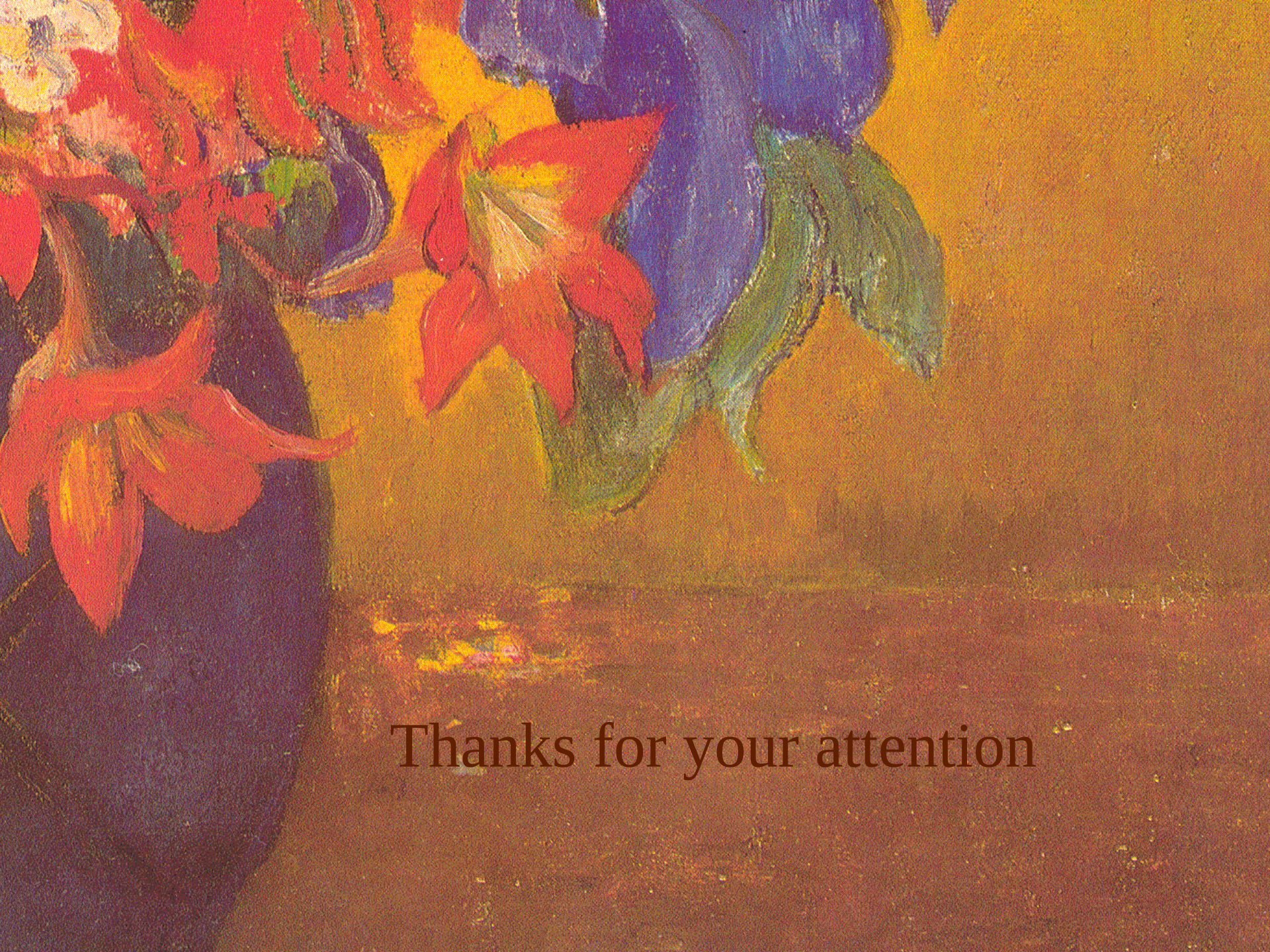
پیامد های ایمنی:

خستگي و خواب آلودگي کارگر براي برخي از صنايع مثل مراکز انرژي هسته اي و کارخانجات سازنده مواد شيميايي که از نظر ايمني کل جامعه بسيار حياتي است، اهميت خاصي دارد.

آمار حوادث رخ داده در این مراکز مربوط به کسر خواب بوده است.

راهکارهايي براي انطباق با مشکلات نوبت کاري و کاهش اثرات سوء آن :

- در صورت امکان از برنامه نوبت کاري اجتناب شود.
- برنامه نوبت کاري بايد قابل پيش بيني وبا چرخ به سمت جلو باشد.
- بهتر است از شروع نوبت کاري در صبح خيلي زود (4 تا 6 صبح) اجتناب شود.
- حداقل دو روز تعطيل بعد از آخرين نوبت کاري شبانه بدليل زمان کافي براي خواب مدنظر باشد.
- مدت نوبت کاري شبانه نبايد بيشتر از 8 ساعت باشد البته براي کارهاي فيزيکي وجسماني سنگين و کارهاي فکري دشوار



Thanks for your attention