

The AMA's *National Code of Practice - Hours of Work, Shiftwork and Rostering for Hospital Doctors* was developed through a consultation process with stakeholders including all Australian hospitals, State health administrations, medical and regulatory organisations, doctors and a range of other bodies and individuals.

The Code was adopted by the Federal Council of the Australian Medical Association in March 1999 and issued widely throughout the industry and profession.

The AMA has actively sought comment on the Code since its release, in the light of the experiences of hospitals and doctors in its implementation. Feedback has generally been very positive, with the most significant barrier to implementation identified as resource constraints within the hospital system. There has been no suggestion that anything should be changed in the Code itself. It now stands as the accepted standard for safe working hours for hospital doctors in Australia and is referenced by standards organisations such as the Australian Council for Safety and Quality in Health Care, the Australian Council on Healthcare Standards and Postgraduate Medical Education Councils.

Based on the risk factors listed in the Code, the AMA developed a risk assessment methodology which measures the risk level of each situation against a risk rating scale. Using this tool, the AMA collected detailed information from over 400 hospital doctors across Australia and analysed the risk levels of their working hours. The methodology and results were published in the AMA's report *Risk Assessment of Junior Doctor Rosters* published in July 2001 and available on the AMA website. AMA Branches can supply risk assessment checklists and produce individual risk ratings against the standard scale.

The AMA encourages all hospitals and doctors to become familiar with the Code, to review their rostering and working arrangements in the light of the risk assessment guidelines contained in it and to implement suitable changes to reduce their risk profiles. Feedback is welcome and can be directed to :

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Further information, including details of research and policy papers that were produced and utilised by the AMA Safe Hours Project in the development of the *National Code of Practice*, may be found on the AMA website at <http://www.ama.com.au>.

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Background

The quality of patient care in the Australian hospital system is considered to be amongst the best in the world. The training and education system for doctors underpins this continuing level of excellence.

Hospital medical practice sometimes requires the working of extended hours for service provision and continuity of care. In addition, the often unpredictable call on hospital services creates circumstances in which long hours are worked by doctors. This code has been prepared in recognition of both the special characteristics of the hospital sector and the need to manage risks associated with shiftwork and extended hours.

The code has been developed in response to long standing concerns about the impact of shiftwork and extended hours on hospital doctors, particularly junior doctors. The risks that fatigue and sleep deprivation create for both the individual health and safety of the doctor and for the quality of care afforded to patients are addressed in this code.

The code is one part of a broader education and awareness program to change the current individual and organisational beliefs and culture that support working hours and patterns that would be considered unacceptable in most other industry sectors.

The code has also been prepared in recognition of the responsibilities of employers and employees under Occupational Health and Safety (OH&S) legislation. A list of Australian OH&S legislation is at Appendix A. In this legislative framework a safe system of work needs to be provided to protect employees and others (including patients) affected by the employers' activities. This is in contrast to the individual liability model, more commonly associated with incidents involving patient treatment.

1.1 PURPOSE

This code provides practical guidance on how to eliminate or minimise risks arising from the hazards associated with shiftwork and extended working hours.

1.2 SCOPE

This code applies to all hospital employers and salaried hospital doctors.

The scope of the code is limited to hazards related to shiftwork and extended working hours and the effect on the health and safety of individual doctors and impacts on patient care.

Other hazards present in a hospital environment are not covered in this code and reference should be made to other legislation, standards, codes and guidance material in relation to those hazards.

1.3 STATUS OF THE CODE

This code is a voluntary code developed to be compatible and consistent with OH&S legislation in each State and Territory.

A voluntary code does not have any specific legislative standing but provides

recommendations for duty holders to consider in meeting their obligations. A distinction needs to be drawn between a Voluntary Code and an Approved Code of Practice that is made under relevant State and Territory legislation.

An Approved Code of Practice supports either general duties in an OH&S Act or specific duties in a regulation. Compliance with guidance provided in an approved code is not mandatory but duty holders should follow such a guide unless they have an alternative method that achieves the same safety outcome. An approved code has evidentiary status and may be used in a prosecution to demonstrate a failure to meet a duty.

A Voluntary Code, such as this national code, does not have evidentiary status but has legal status like all other guidance in that it contributes to “the state of knowledge” about a particular hazard or risk and the ways of mitigating that hazard or risk.

1.4 LEGISLATIVE FRAMEWORK

This code operates in the context of OH&S legislation that sets out a general duty of care for employers to provide and maintain a safe and healthy workplace. Legislation in most states and territories follows this formulation with the duty of care qualified by an expression such as “so far as is practicable”.

“Practicable” means that the duty to provide and maintain a safe and healthy workplace is qualified by:

- The cost of removing or mitigating a hazard or risk.
- The state of knowledge about the hazard or risk.
- The state of knowledge about measures to control risks.
- The severity of the hazard or risk.

Consequently, this code provides guidance on practicability in relationship to the hazards and risks associated with extended working hours.

Modern OH&S law is described as performance based, highlighting the achievement of safety outcomes rather than defining in great detail the way in which the outcome is to be achieved. This code is drafted within this framework to enable flexibility and innovation in managing risks.

1.5 GENERAL DUTIES IN MORE DETAIL

The duties set out in Australian OH&S legislation normally cover a duty to:

- Provide and maintain a safe system of work (e.g. work scheduling).
- Provide adequate information, training, instruction and supervision to employees (e.g. hazard information and emergency preparedness training).
- Consult with employees and elected representatives on health and safety at work (e.g. changes to work systems or introduction of new equipment).
- Monitor the health of employees.
- Keep information and records about the health of employees.

- Monitor conditions at work to ensure exposure thresholds are not breached (e.g. concentrations of airborne contaminants).
- Provide adequate welfare facilities for employees (e.g. washrooms, lockers etc).

Employers have an obligation not only to employees but also to contractors and their employees.

Further, in some Australian OH&S legislation employers have a duty to others involved or impacted by their business. For example, students in schools, customers in stores, visitors in factories and patients in hospitals are all owed a duty of care by employers in control of workplaces.

Employees also have a duty of care under OH&S legislation to take reasonable care for their own health and safety, and for the health and safety of others who also may be affected by the employees' acts or omissions at the workplace. They also have a duty to cooperate with the employer in their efforts to provide a safe and healthy workplace.

An employee means all those employed under a contract of employment and covers both managerial and non-managerial employees.

1.6 RELATIONSHIP OF THE CODE TO AWARD AND AGREEMENT PROVISIONS

Each State and Territory has specific industrial relations provisions regulating hours of work and rostering practices. The minimum standards vary from jurisdiction to jurisdiction but nothing in the code should be read as altering these minimums. Award and Industrial Agreement provisions primarily relate to pay and penalty rates, whereas the code provides guidance on risks arising from shiftwork and extended hours.

1.7 SHIFTWORK AND EXTENDED HOURS

1.7.1 The Body Clock

In a hospital setting doctors frequently work shifts or extended hours that mean they are working when they normally would be sleeping and sleeping when they would normally be working. Circadian rhythms, which repeat approximately every 24 hours, are associated with many human functions including body temperature, hormone production and sleep and wakefulness.

Work schedules where people are expected to be awake and active at an inappropriate time in the cycle causes disruption of circadian rhythms. In addition environmental cues (like light and dark) that keep an individual's cycles on track are out of coordination.

These disruptions impact on the quantity and quality of sleep, impact on task performance and also create a sense of personal dislocation and imbalance.

1.7.2 Sleep and Fatigue

Disruptions to normal sleep routines are often associated with night shift, where the major difficulty is getting adequate, high quality, restorative sleep during the day. This is not only because of potential disruptions but also because of the different sleep types (eg. REM sleep) linked to body temperature.

Extended hours sometimes combined with night work creates a similar problem. The cumulative result of these disruptions is lack of sufficient sleep, which may lead to what is called sleep debt.

Fatigue is tiredness that results from physical or mental exertion. In a hospital the need to concentrate and be on one's feet over a long period of time is likely to cause fatigue.

Both lack of sleep and fatigue, individually and in combination, can adversely affect task performance levels, individual health and safety and the safety of others.

1.7.3 Disruption to Social and Family Life

Work scheduling will influence the availability of employees to participate in social and family activities. Shift workers find it difficult to maintain a social and family life and sometimes may neglect rest and sleep in order to be with friends or family.

The dislocation of family and social life may result in pressures on relationships, excessive domestic workloads and inability to participate in community activity. As with sleep and fatigue, this has implications for task performance and health and safety.

1.7.4 Effects on Health

Continued exposure to the disruptions and dislocations created by work scheduling may have deleterious effects on the health of individuals.

The most common short term effect is gastro-intestinal problems that arise from night shift related sleep disruptions.

The research on long term health effects is equivocal but the following areas have been highlighted in research findings:

- Increased risk of cardiovascular disease.
- Effects on women including irregular menstrual cycles.
- Diverse range of complaints sometimes overlaid by stress created by social and family dislocation.

Difficulty in being able to follow health or medication regimes because of schedules is another factor influencing the health of employees.

In an examination of all these issues it is important to recognise that individual differences in response to the disruptions of circadian rhythms, normal work and sleep routines and dislocation of social and family life may be significant.

In the absence of definitive evidence about those best suited to shiftwork the best means of managing these differences is through informed participation by doctors in the work scheduling process.

HAZARD IDENTIFICATION, RISK ASSESSMENT AND RISK CONTROL

The primary OH&S legislation requires risks to be controlled. Specific regulations require employers to identify hazards, assess any risks associated with hazards and implement controls for risk so far as is practicable.

The method of assessing risks will vary according to the nature of hazards and the industry in which they are found. For example, in chemical processing industries complex quantitative risk assessment methods may be used because of the potential severity of failures and the high levels of interdependence of hazards. Conversely, a small domestic building site may use simple observational methods to identify hazards and assess risks.

Risk controls are normally seen in terms of a hierarchy of control ranging from “hardware” controls like engineering or design, through substitution and isolation, to “software” controls like training, administrative measures and personal protective equipment.

In order to be consistent with the philosophy and approach of current OH&S law and Approved Codes of Practice, the hazard identification, risk assessment and risk control model is used in this code.

2.1 HAZARD IDENTIFICATION

The employer should ensure that all hazards associated with shiftwork and extended working hours in a hospital are identified. A hazardous agent or process is one which has the potential to cause harm. Hazard identification should be undertaken as part of the business planning process of the hospital and be regularly reviewed in light of changing circumstances.

Information on hazards can be collected from:

- Daily, weekly, monthly and annual working time records.
- Workers compensation, absence and sick leave records.
- Incident and injury records associated with extended working hours.
- Views of doctors collected through hospital surveys, complaints or disputes involving extended working hours.
- Health surveillance records.
- Reports or advice from specialists in work scheduling, shiftwork and fatigue.
- Research findings into the impact of extended hours on work performance and health and safety.

This hazard identification phase needs the active involvement of doctors through consultative arrangements like OH&S Committees or other hospital based forums.

2.2 TYPICAL HAZARDS ASSOCIATED WITH SHIFTWORK AND EXTENDED HOURS

There has been considerable research into the disruption of natural body rhythms or circadian rhythms by work scheduling that requires individuals to be awake when they

would normally be asleep. Secondly, changing work schedules, including shiftwork and extended hours, may put these natural rhythms out of coordination. Sleep disruption and fatigue have been associated with shiftwork.

Consequently, the common hazards associated with extended hours revolve around work scheduling, the relationship to circadian rhythms and other scheduling and organisational factors that exacerbate these situations.

2.2.1 Excessive Consecutive Hours Worked in Any One Period

The number of hours normally worked in shift or “ordinary” hours is set out in various industrial agreements, however, these ordinary hours may be extended through overtime and “call back” arrangements to deal with heavy workloads.

Working long hours in any one period (usually beyond 10 hours) may have a number of effects:

- Where extended hours are part of a rotating shift, further disruption to circadian rhythms may result.
- Lack of sleep and fatigue.
- Reduced work performance particularly in the early hours of the morning.

2.2.2 Lack of Rest Within and Between Work Periods

Within a period of extended hours, breaks should be taken where practicable, to enable recovery from intensive periods of concentration and physical work.

Lack of suitable rest periods between periods of work presents a significant hazard.

Lack of opportunity for undisturbed continuous sleep because of excessive hours worked and the maintenance of the rostered work schedule may lead to chronic fatigue and sleepiness sometimes referred to as sleep debt. This is especially a concern for those working rotating shifts or permanent night shifts or for those whose extended hours take them into the night shift period.

2.2.3 Inappropriate Speed and Direction of Shift Rotations

The disruptions to sleep, personal and social life and the onset of fatigue are related to the difficulty the human body has adapting to changing work routines. Permanent night shift workers may get used to their work tasks but research suggests they never really adapt, as many return to a normal day schedule on their day off. This is to maintain their social life with family and friends. In this situation body rhythms never completely adapt to night work and cumulative sleep debt and fatigue can reach levels at which safe performance of duties is compromised.

In this sense there is less difference between permanent and rotating shifts than is normally assumed.

The direction of the shift rotation refers to the order of shift changes.

A forward or clockwise rotation is for day (normally 8 am through to 5 pm) to evening (normally 4 pm through to 11 pm) to night (normally 11 pm through to 8 am)

A backward or anti-clockwise rotation is from day to night to evening shift.

The rotation direction likely to optimise health and safety will vary according to body rhythms.

It is generally accepted that a forward rotation is more beneficial than a backward rotation. This is because it is easier to go to bed later and wake up later than to have to go to sleep earlier and earlier as required in a backward rotation.

The speed of rotation is the number of days an individual spends on a particular shift before a change occurs to another shift or to time off periods.

A slowly rotating schedule, working for example 3 to 4 weeks on the same shift, appears to allow greater time for body rhythms to adjust and adapt. However, as the quality of day sleep is lower, such long cycles may create an accumulating sleep debt and fatigue problem. This can be exacerbated because workers usually return to a day schedule on their days off to fit in with family and social life.

A fast rotation, every two days for example, may enable the worker to maintain normal circadian rhythms, as body functions do not have time to start adjusting to night shifts.

Such rapid rotations also allow individuals to get through tough shifts and not allow sleep debt to accumulate. The disadvantage is that while on night shifts individuals will be out of balance with natural body clock rhythms.

2.2.4 Irregular and Unpredictable Work Schedules

Whatever the individual experience of different shift speed and rotations, it is more favourable to have a regular and predictable work scheduling arrangement. One of the areas in which shifts and extended hours impacts most is on family and social life and predictability of scheduling minimises the potential social dislocation. Unpredictability of work scheduling also compromises the quality of rest time if there is the continual possibility of recall to duty.

Consequently, on-call arrangements both on-site and off-site also need to be structured in accordance with the issues considered under hazards already outlined.

Where rostering or on-call arrangements provide for doctors to remain on the hospital campus on-site facilities should maximise the opportunity for undisturbed rest and sleep. Where recall to duty is involved, particular attention should be given to the individual's current and recent work pattern in order to minimise hazards created by disruption of body rhythms and the potential for reduced work performance.

2.2.5 Night Shift or Extended Hours that Lead into Night Shift

The combined effects of sleep deprivation and disruption to the body's internal clock come together after an individual works a night shift or where prolonged hours stretch into the night shift.

Circadian rhythms can cause performance levels to vary and many aspects of human performance are at their lowest level at night with 2am to 6am recognised as a low alertness period.

This is overlaid by lack of sleep caused by the reduced length of day sleep between consecutive night shifts.

Working on a night shift, whether it is one off or as part of an ongoing roster, represents a hazard for doctors working extended hours.

2.2.6 *Type of Work and Additional Workloads*

There is research that indicates particular types of tasks are performed better at particular times of the day than others. For example, tasks involving simple monitoring of activity improve over the day but are poorer at night.

Performance reductions with particular types of tasks can be modified by factors like the length of time involved doing them and the intrinsically interesting or satisfying nature of the work. For doctors this means that performance may be maintained over longer periods for complex tasks but simpler, routine medical or administrative tasks may not be completed to a satisfactory level.

Where this situation is compounded by the demands of education and training at peak periods in the working year, this hazard is greater. Study demands that eat into normal rest periods represent a particular concern for trainee doctors as the possibility of sleep deprivation and fatigue increases. Secondly, the effectiveness of the actual learning and education process is reduced.

2.2.7 *Potential Exposure to Other Hazards*

Exposure levels and thresholds for hazards like chemicals are usually calculated on a normal 8 hour working day basis. Extended hours of work and exposure need to be considered in assessing the risks associated with these kinds of hazards.

2.3 RISK ASSESSMENT

The employer should undertake a risk assessment to determine if there is any risk associated with the hazards identified.

A risk is the likelihood of injury or illness arising from any exposure to a hazard. Risk assessment is a process to determine the likelihood and impact of injury or illness for those exposed to the hazard. The risk assessment should consider any controls or methods already being used to control risk and assess the effectiveness of such current methods.

Risk assessment methods should be identified that are appropriate for the hazards identified and may include:

- Use of specialist expertise in scheduling and shiftwork.
- Use of techniques that enable calculation of potential sleep deprivation and fatigue risk factors.

- Consultation with staff on “best fit” schedules and on individual orientations to different work schedules.
- Use of available research on shiftwork and extended hours.

A risk assessment checklist and guide is set out below to assist in the assessment process and the recommended standards should form the basis of any work scheduling for doctors. Where these standards are not practicable, the employer should institute actions to minimise the impact of any individual hazard or the cumulative effect of related hazards.

2.3.1 Risk Assessment Checklist and Guide

The hazards associated with shiftwork and extended hours are complex and interrelated. In addition, individuals have different circadian rhythms that affect their performance at different times of the day.

Consequently, the risk assessment process needs to not only consider risks arising from schedules but also involve close consultation with doctors in order to achieve the best result.

The following checklist includes a number of defined operating standards and thresholds at which action should be triggered. Where these minimum standards are not being met a higher risk exposure is possible and consideration needs to be given to ways in which hazards can be eliminated or individual elements can be counter-balanced by other compensating aspects.

The checklist is in the form of questions to which an affirmative response would indicate risk controls need to be considered.

In using this checklist, administrators and staff should assess the risks associated with identified hazards.

The hazards and their associated risks are interrelated and in many cases cumulative. The traditional risk assessment model of frequency, severity and probability of occurrence is difficult to apply with these hazards but the following guidelines drawn from the checklist illustrate a risk continuum from lower, to significant, to higher.

The Guide is not intended to be exhaustive but rather a tool in the assessment of risks. Other factors that need to be considered include:

- Lifecycle (eg. age or family commitments).
- The intensity and nature of work (eg. high concentration tasks, physically demanding tasks or decision making tasks).
- Work environment (eg. appropriate light sources and ventilation).
- Incidence of sleep disorders, including shiftwork related insomnia.

It should be noted in the Guide that hours worked refers to all hours whether rostered or not. Similarly overtime refers to all overtime worked whether rostered or unrostered.

RISK ASSESSMENT CHECKLIST

1	Are doctors regularly scheduled to work more than 10-hour shifts?
2	Do doctors work through a full shift cycle (ie. 24 hours or more) at least once in a 7-day period?
3	Do doctors work more than 14 consecutive hours in any one period (including overtime and recalls) at least twice a week?
4	Is the minimum period of rest between scheduled work less than 10 hours?
5	Are the total hours worked <ul style="list-style-type: none"> • in a 7-day period more than 70 hours (including overtime and recalls)? • in a 14-day period more than 140 hours? • in a 28-day period more than 280 hours?
6	Is the minimum non-work time <ul style="list-style-type: none"> • in a 7-day period less than 88 hours? • in a 14-day period less than 176 hours? • in a 28-day period less than 352 hours?
7	Is there less than a 24-hour break free of work in a 7-day period?
8	Are there less than two 24-hour breaks free from work in a 14-day period?
9	Are there less than eight 24-hour periods free from work in a 28-day period?
10	Are doctors rostered for on-call duty more than once every three days?
11	Does the shift rotation move anti-clockwise?
12	Does the shift rotation change direction and speed over a 28-day period?
13	Have the actual hours worked and the times at which they have been worked in the last 28 days varied from the posted roster by more than 25%?
14	Is a doctor scheduled for more than three night shifts in a 7-day period?
15	Is a doctor rostered for on-call duty comprising more than 24 hours of the minimum 88 hours free from work in a 7-day period?
16	Is a doctor scheduled to work night shifts whilst peak educational and training requirements have to be met?

RISK ASSESSMENT GUIDE (based on a 7 day period)

*Lower Risk	* Significant Risk	*Higher Risk
Less than 50 hours worked	50 to 70 hours worked	More than 70 hours worked
No more than 10 consecutive hours in any one period	Up to 14 consecutive hours in any one period	14 or more consecutive hours worked at least twice
Scheduled shift hours worked	Scheduled shift plus part of next shift worked	A full shift cycle worked of at least 24 hours.
Three or more short breaks taken during shift	One or two short breaks taken during shift	No short breaks taken during shift
Little or no overtime	More than 10 hours overtime	More than 20 hours overtime
Rostered for on-call less than 3 days in 7 days	Rostered for on-call duty 3 days or more in a 7-day period	Rostered on-call continuously for more than a 7-day period
No night shift or extended hours into night shift	At least 2 night shifts or extended hours into night shift	At least 3 night shifts or extended hours into night shift
Minimum 10 hour breaks between work periods and 2 days free of work	Minimum 10 hour breaks between work periods and 1 day free of work	Less than minimum 10 hour break on at least two work periods and no full day free of work
Forward shift rotation and predictable cycle	Forward shift rotation but changed cycle	No stable direction or speed of rotation
No changes to roster without notice	Changes to roster through overtime and recalls worked	Roster changed so much because of overtime and recalls so as to be unpredictable
Maximum opportunity for sleep to be taken at night including two full nights of sleep.	About two-thirds of sleep able to be taken at night including one full night of sleep.	Less than half of sleep able to be taken at night and no opportunity for one full night of sleep.

*Each Lower Risk Element to be scored at 1

*Each Significant Risk Element to be scored at 2

*Each Higher Risk Element to be scored at 3

The Guide is based on a 7-day cycle but as the hazards of shiftwork and extended hours are cumulative this model should be applied to a 14-day period and a 28-day period as the items in the higher risk column create a greater risk the longer they are present. For example, if less than half of any sleep is able to be taken at night over a long period then the effects of sleep deprivation may be evident in work performance and on individual health.

A simple scoring system may assist in assessing risks for doctors. Lower Risk Elements are worth 1 point, Significant Risk 2 points and Higher Risk 3 points and when a Significant or Higher Risk Element is present for consecutive 7-day periods the points should be doubled on a rolling basis and then returned to normal points when the cycle is broken.

For example, a doctor who worked more than 70 hours a week for 4 weeks would be scored at 24 points in the final week. Conversely, if the 70-hour week was a one off then the score at the end of the 4-week period would be between 6-9 points.

Another example would be where at least two night shifts are worked in a week but breaks are taken within shifts, the minimum break between shifts is maintained and the shift cycle is predictable. In this case a potential high risk is balanced by other measures and the overall profile may be kept at the lower risk end of the scale.

The purpose of scoring is to provide a crude but simple way of highlighting risks to doctors, to the hospital and to those dependent on both. The profile can be adjusted to add specific risk factors relevant to the type of hospital and used to establish a preferred profile that meets patient and doctor needs as well as obligations to provide and maintain a safe and healthy workplace.

2.4 RISK CONTROL

Under OH&S legislation an employers' duty is to control risk by either eliminating the hazard or by minimising the risk associated with the hazard.

As hours of work are an administrative or organisational matter the controls must be applied at a lower level of what is normally called the hierarchy of control. At the top of the hierarchy are controls that do not rely on human action (e.g. design, engineering), through to those that are dependent on individual and organisational measures (e.g. training, scheduling and personal protective equipment).

The effectiveness of controls at the level of individual and organisation is dependent on shared ownership of the protocols and arrangements to control risks.

Risk controls for shiftwork and extended hours cannot be set out as a series of stand alone solutions that will be effective in all cases. A series of strategies should be used including:

- (i) Design Principles for Schedules
- (ii) Information, Supervision, Consultation & Training
- (iii) Facilities and Services
- (iv) Monitoring and Review

2.4.1 *Design Principles for Schedules*

Scheduling the work of doctors in hospitals to eliminate or minimise the risks to their health and safety and to those affected by their actions is the key control measure. The following performance based principles should underline the design of work schedules, which should be designed to:

- Minimise the occasions on which doctors are required to work more than 10 hours in a period.
- Ensure that minimum breaks between shifts enable doctors a minimum 8 hours continuous sleep before resuming duty.
- Ensure that any period of extended hours is compensated with a longer break before resuming a shift.
- Use a forward shift rotation to minimise individual adaptation problems.
- Avoid rapid shift changes such that at least a 24 hour break is provided before rotating to a new shift.
- Ensure doctors have regular time (a minimum of 24 hours) free of work in a 7-day period in which unrestricted sleep is possible.
- Minimise consecutive night shifts in order to limit reductions in performance levels caused by circadian rhythm imbalances.
- Ensure that longer breaks between and following night shift are provided.
- Account for 'covering' contingencies caused by sickness or absences.
- Maximise the opportunity to take breaks within shifts.

In some cases these design principles will not accord with current practices, and hospitals should ensure that any risks are appropriately managed. For example, permanent night shift arrangements for specific doctors may achieve the outcome of minimising night shift for others. Similarly, long cycle night shifts with long breaks following may be used to provide predictability in work scheduling.

Other risk control strategies that should be used in managing workloads include:

- Where practicable, complex tasks should be scheduled during the day and routine and administrative tasks should be minimised or redesigned to ensure doctors can focus on core duties in their working time.
- Undertaking complex tasks early in the shift where practicable.
- The allocation of staff numbers to peak times and demands is a fundamental factor in minimising the exposure to risks associated with extended working hours. Numbers and types of doctors should be rostered on the basis of predictable demands for services by daily, weekly, seasonal and annual trends.
- Replacing or substituting rostered doctors where extended hours have created a risk to doctor health and safety and patient welfare.
- Deferring non-urgent work to allow appropriate rest and recuperation for doctors.

2.4.2 *Information, Supervision, Consultation and Training*

Information

Doctors should be provided with information on shiftwork and extended hours including information on:

- The hazards associated with shiftwork and extended hours.
- Potential health and safety impacts of shiftwork and extended hours.
- Duties under the OH&S legislation of employers and employees.
- How to identify problems associated with lack of sleep and fatigue.
- Individual strategies to best manage shiftwork and extended hours.
- Sleep disorders, sleep hygiene and non pharmacological approaches to insomnia.
- Services available to assist doctors to cope with shiftwork and extended hours.
- The hospital system for reporting incidents related to shiftwork and extended hours including mechanisms for doctors to report problems they experience in relation to excess hours, fatigue and sleep deprivation.

Supervision

Supervision ensures that tasks are performed safely and work instructions and procedures are adhered to. Supervision should be commensurate with the complexity of tasks to be undertaken and enable prompt action to be taken to maintain health and safety standards.

Access to specialist clinical support should be available especially during night shifts.

Supervisors should be aware of shiftwork and extended hours related hazards and take action within their allocated responsibility to eliminate or minimise hazards.

Consultation

The obligation to consult with employees is an employer duty set out in OH&S Acts and Regulations and is part of the process for providing a safe and healthy workplace. Consultation with employees and their representatives, OH&S representatives, and OH&S Committees is relevant to achieving effective outcomes.

In the case of working hours, consultation is a key part of risk control as schedules and workloads will impact on individuals differently.

Consequently, an important part of developing effective controls through work scheduling and task allocation is consultation with those working shifts and with potential exposure to risk.

Doctors should be involved in the development of rosters having regard to the design principles set out above. They should also be involved in decisions to vary schedules from these design principles.

Individual differences in rhythm characteristics (morning/eveningness) may mean some are better suited to scheduling at specific periods in a shift cycle. These characteristics may not be as important as broader work/life balance issues but reinforces the need for active staff involvement in work scheduling.

If work scheduling is a managerial task with little staff input then both the regularity and predictability of the roster will decrease as ad hoc adjustments are continually made to address individual circumstances.

Training

Hospital employers should ensure that doctors are provided with appropriate training to minimise the risks associated with extended hours and shiftwork.

An induction program should include reference to the following:

- Duties of employers and employees.
- Circadian rhythms and their relationship to work scheduling.
- Shiftwork schedules and design principles.
- Hazards associated with shiftwork and extended hours.
- Health and safety impacts of shiftwork and extended hours.
- Incident reporting.
- Individual strategies for coping with shiftwork and extended hours.

Providing appropriate training is essential to risk control by:

- (i) Enabling informed input to work scheduling.
- (ii) Enabling critical self assessment in terms of readiness for duty.
- (iii) Understanding and recognising sleep debt and fatigue circumstances.

2.4.3 Facilities and Services

An essential control strategy is to provide suitable facilities in which doctors can have short or extended breaks during shifts or short naps within long shifts.

Hospitals should provide:

- Rest areas in which doctors can take short breaks from duty.
- Locker rooms and showers.
- Suitable facilities for doctors where required on the hospital campus to enable a minimum of 8 hours undisturbed sleep between shifts or to have short naps within long shifts.
- Access to suitable catering facilities providing nutritional food and beverages consistent with diet guidelines that maximise the ability to work shifts and extended hours.
- Access to counselling services to assist in any issues arising from the disruption to individual, family or social patterns caused by shifts or extended hours.
- Access to advice on diet and physical fitness.

2.4.4 Monitoring and Review

By the nature of work scheduling and unanticipated workloads in hospitals the system of risk controls needs constant monitoring and review.

The process of monitoring should be done on a single shift basis, over 7, 14 and 28-day periods to establish potential risk exposures and to actively manage known risks in the upcoming period.

Real time monitoring is especially important in known risk periods such as between 2 am and 6 am where body temperature is at its lowest. Similarly risks related to commuting after long shifts have been worked is a matter for both employer and doctor to monitor closely.

Where it is not practicable to keep working hours within the lower risk levels (less than 50 hours per week) then close monitoring of the related risk factors needs to be undertaken.

The schedule of actual hours worked should be reviewed at least every month to identify opportunities to reduce or eliminate risks. This review should involve doctors or their representatives.

The review process should include an examination of any incidents related to doctor or patient welfare that may have been associated with hazards arising from shifts or extended hours. Secondly, the review should draw on longer-term incident reporting to determine any trends requiring preventative action.

In addition health surveillance to monitor doctor's health in relation to established health effects of shiftwork and extended hours is recommended.

2.5 INCIDENT REPORTING AND INVESTIGATION

A required element of a safe system of work is reporting of incidents that either caused injury, or had the potential to do so. Comprehensive and thorough reporting enables corrective action to be taken and allows better prevention planning to take place.

Depending on the nature of the incident regulatory agencies require the reporting of incidents involving death, injury and dangerous occurrences.

The hospital should establish policies and procedures that:

- Define the kinds of incidents that should be reported.
- Encourage staff to report incidents.
- Enable incidents to be recorded and analysed for underlying causes.
- Ensure incidents are investigated and any required corrective action is taken.
- Make information available for the review process outlined in 2.4.4.

2.6 RECORD KEEPING

Most OH&S regulation requires records of risk assessments to be kept and to be available to the regulatory authority on request.

Hospitals should keep a record of risk assessments conducted either in a generic sense to apply to all work scheduling or to document how alternative ways of managing specific risks were established.

Risk assessment records should also be available to employees on request.

Keeping records of training provided to doctors is also recommended.

Other record keeping flows from the incident and injury reporting mechanisms referred to in 2.5 and hospitals are already required to keep injury and incident records under relevant OH&S, Dangerous Goods and Workers Compensation legislation.

EMPLOYEE DUTIES

As noted earlier in the code, whilst employers have the primary duty of care, there is an employee duty to assist the employer in meeting health and safety obligations and to take reasonable care not to put themselves, or others, at risk.

Translating this duty to shiftwork and extended hours an employee would be expected to:

- Participate in training provided to gain an understanding of the hazards of shiftwork and extended hours.
- Ensure that breaks provided within and between shifts are used for rest and recuperation.
- Report incidents arising from hazards related to shiftwork and extended hours.
- Recognise signs of sleep deprivation or fatigue and the impact on themselves and others.
- Report to supervisors on circumstances in which fatigue and lack of sleep is impacting on individual well being and patient care.
- Understand the implications of voluntarily seeking additional hours, both at the hospital and elsewhere, that may increase risks to health and safety and patient care.

It is recommended that hospitals develop with doctors and their representatives a policy on work readiness covering such matters as drugs and alcohol, extra curricular commitments including other jobs and education and training commitments.

REFERENCES

Some useful sources for more information include:

- Drew Dawson and Kathryn Reid, *Equating the Performance Impairment Associated with Sustained Wakefulness and Alcohol Intoxication*, The Centre For Sleep Research, University of Adelaide, The Queen Elizabeth Hospital, 1997.
- Roger R. Rosa and Michael J. Colligan, *Plain Language About Shiftwork*, US Department of Health and Human Services, National Institute for Occupational Safety and Health, July 1997.
- The Centre for Sleep Research, University of Adelaide, The Queen Elizabeth Hospital: A range of publications including *Understanding Shiftwork and Living with Shiftwork* available on the internet at <http://www.unisa.edu.au/sleep/>
- Ann Williamson, *The Effects Of Workloads And Hours Of Work On Medical Officers, A Review Of The Literature*, National Institute of Occupational Health and Safety, 1995.
- Meredith Wallace, *OH&S Implications of Shiftwork and Irregular Hours of Work*, National Occupational Health and Safety Commission, 1998.

APPENDIX A - LEGISLATIVE REFERENCES

The following Acts contain the general duties that are referred to in Sections 1.4 and 1.5 of the Code.

Victoria	Occupational Health and Safety Act 1985
New South Wales	Occupational Health and Safety Act 2000
South Australia	Occupational Health, Safety and Welfare Act 1986
Tasmania	Workplace Health and Safety Act 1995
Queensland	Workplace Health and Safety Act 1995
Western Australia	Occupational Safety and Health Act 1984
Commonwealth	Occupational Health and Safety (Commonwealth Employment) Act 1991
Australian Capital Territory	Occupational Health and Safety Act 1989
Northern Territory	Work Health Act