



Characteristics of distractions in the intensive care unit: how serious are they and who are at risk?

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Abstract

INTRODUCTION :

Distractions and interruptions of doctor' s work, although common and potentially deleterious in the intensive care unit (ICU), are not well studied.

前言：

医生分心，工作受到干扰，尽管在重症监护室（ICU）常见，甚至存在潜在的危害，但是还没有得到深入研究。





Abstract

METHODS :

We used a simple observational method to describe the frequency, sources and severity of such distractions, and explore at-risk situations in the ICU. Independent paired observers separately shadowed eight residents and three fellows for 38 sessions (over 100 hrs) in a 20-bed medical ICU.

研究方法:

我们使用一个简单的观察方法来描述干扰受到的频率、来源以及严重程度,并探讨在ICU的风险情况。独立观察人士在38天内分别对在20个床位的ICU工作的八个住院医师和三个同伴进行跟踪。





Abstract

RESULTS :

In total, 444 distractions were noted. Interobserver agreement was excellent at 99.1%. The mean number of distractions/doctor/hr was 4.36 ± 2.27 . Median duration of each distraction was 2 mins (interquartile range 2–4 mins; range 1–20 mins). The top three initiators of distractions were other doctors (35.1%), nurses (30.4%) and oneself (18.7%). Of the 444 distractions, 107 (24.1%) were prolonged (lasting ≥ 5 mins), 210 (47.3%) led to a complete pause of current activity and 85 (19.1%) led to complete abandonment of the current activity.

结果: 总共有444分心被指出。观察者们一致率达到99.1%。其中医生平均每小时分心 4.36 ± 2.27 分钟。平均每个干扰持续时间为2分钟。分心排名前三位为其他医生(35.1%)、护士(30.4%)和自己(18.7%)。444干扰, 107人(24.1%)能继续工作(持续 ≥ 5 分钟), 210人(47.3%)进行了全面暂停当前活动, 85人(19.1%)导致完全放弃当前的活动。





Abstract

On multivariate analysis, physician seniority, time of session and day of week did not predict frequency of distraction. After adjusting for time of session, day of week and type of current activity, urgent distractions (to see another patient, perform immediate procedures or administer medications) and physician juniority were associated with major distractions (complete interruption or termination of current activity), while only urgent distractions were associated with prolonged distractions.

多变量分析显示：医师的资历、会话和工作的时间并不能预测分心的频率。医生年少、每周的工作内容、当前活动状态以及紧急事情(如需马上看另一个病人, 立即处理病情或下医嘱等)与分心有关。





Abstract

CONCLUSION :

Distractions are common in the ICU and junior doctors are particularly susceptible to major distractions.

结论:分心在重症监护室非常常见,尤其是初级医生。





INTRODUCTION

In medical practice, distractions and interruptions frequently occur and can cause medical errors that may affect patient safety, possibly due to the disruption of cognitive processes. Distractions can lead to interruptions by breaking current task activity.

在医疗实践中,分心和干扰频繁发生可能导致医疗错误,可能会影响病人安全,可能导致认知过程的中断。干扰可能导致中断打破当前的任务活动。





INTRODUCTION

They may be particularly deleterious in high-stakes environments such as the intensive care unit (ICU), where physicians are confronted with up to 1,000 pieces of information per patient every day.

他们可能是特别高风险环境，如重症监护室(ICU)，那里的医生每天对每个病人至少面临1000多条信息。





INTRODUCTION

The characteristics of distractions in the ICU setting are not well studied. Baseline data are crucial to direct and assess the effects of quality improvement interventions. Apart from the frequency of distractions, knowledge of the nature of distractions, their impact on the original activity and the risk factors for these distractions would also be relevant. However, in general, we found that certain studies had omitted distractions that did not lead to interruptions.

分心在ICU的干扰特性还没有得到深入研究。基线数据是至关重要的指导和评估质量改进措施的影响。除了干扰的频率、干扰的性质,影响原始活动和这些分心的危险因素与分心也有一定关系。然而,总的来说,我们发现,某些研究忽略掉的分心,并没有导致活动的中断。





INTRODUCTION

The tools used to study distractions have ranged from simple forms to complex instruments using proprietary software. Simple forms are likely to be more useful for individual ICUs to audit their own interventions. Thus, in the present study, we used a simple observational method to describe the frequency, sources and severity of distractions, and delineate at-risk situations in our ICU.

用于研究干扰的工具具有简单的表格和专有复杂软件的仪器。简单的形式可能更适合ICU个人用来审核自己的干预措施。因此,在本研究中,我们使用一个简单的观察方法来描述频率、来源和干扰的严重性,以及描绘ICU高危情况。





METHODS

The study took place in the 20-bed medical ICU of a 1,000-bed tertiary-care hospital. The average workday was 0730–1730 hrs on weekdays (Monday to Friday) and 0730–1230 hrs on weekends (Saturday and Sunday). The ICU operated as a ‘closed’ model, and other specialties were consulted as needed. Medical records were partially computerised.

研究地点：有1000张床位三级医院的ICU病房，床位20 张。工作日（周一到周五）：平均工作时间为730 - 1730小时；周末（周六和周日）：730 - 1230小时。ICU的操作为一个封闭的模式，并根据需要与其他专业进行商量，医疗记录部分电脑化。





METHODS

All observations were performed over six weeks from 11 May to 26 June 2011. The study protocol was approved by the Institutional Review Board. We were guided by the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) statement.

研究方案在STROBE的指导下最终被研究机构审查委员会批准，为期6周，从5月11日到2011年6月26日。





METHODS

Two physician-led ICU teams operated on weekdays and one on weekends. Each team consisted of one attending (consultant), one fellow (registrar) and two residents (medical officers). Out of-office hours were covered by one fellow and one resident. Residents and fellows were rotated into the ICU at monthly intervals.

两个physician-led ICU小组操作在工作日和一个周末。每个团队由一个顾问，一个同事和住院医师组成。办公时间由一个同事和一个住院医师组成。住院医师和同事在ICU病房轮转。





METHODS

To investigate the major burden of distractions, we chose to observe only residents and fellows during office hours.

为调查干扰的主要因素, 我们只选择在办公时间观察住院医师和同事。





METHODS

As the more senior doctors (attending or consultant) were likely to be in the ICU for only brief periods of time (e.g. during ward rounds), it was held that observation of senior doctors would not have accurately reflected the problem of distractions experienced by most physicians working in the ICU.

高级医生在ICU很可能只有短暂的时间, 有人认为观察高级医生不会准确地反映大多数医生在ICU工作遇到的干扰问题。





METHODS

A convenience sample of doctors was observed, according to the approach adopted in previous studies.

根据先前研究中采用的方法观察医生。





METHODS

We used structured paper forms to collect observational data. 'Distractions' were defined as breaks in attention, evidenced by observed behaviour such as orienting away from a task or responding verbally.

'Interruptions' were breaks in task activity, as evidenced by observed cessation of a task.

我们使用结构化的纸制表格来收集观测数据。“分心”被定义为转移注意力,可以观察到的行为,如定向远离任务或口头回应。“中断”指在任务活动期间休息,就证明了任务的终止。





METHODS

As distractions may or may not lead to interruptions, we used the former term to encompass all events. Communications and actions that were part of current activity (e.g. procedure-related instructions by supervising staff during central line insertions) were not considered distractions or interruptions.

干扰可能会或可能不会导致中断, 我们使用了前者术语包含所有事件。如果是因通信或操作而受到的影响, 则不纳入考虑范围。





METHODS

Current activity at the time of distraction, type of distraction, initiator of distraction and severity of distraction were all coded as numbers to facilitate data entry. Participation in ward rounds were taken as primarily administrative type tasks that took place within a consultant-led ward round.

当前活动在分心的时候，注意力转移的类型，分心的严重程度都有已经编码好的数字来表示，以方便数据录入。





METHODS

Self-distractions were distractions initiated by the doctor being observed and not by any external party. We defined urgent distractions as those that involved requests to see another patient, perform immediate procedures or administer medications. The duration of distractions was measured to the nearest minute, and distractions that lasted ≥ 5 mins were deemed to be prolonged.

自干扰是由医生发起的杂念，是能够观察到的，而不是由其他导致的。我们将紧急干扰定义为那些涉及请求看另一个病人，立即执行的程序或管理药物。干扰的持续时间测量精确到分钟，并且干扰时间 ≥ 5 分钟，被认为延长。





METHODS

The severity of distractions was graded in a manner similar to prior research, as follows: (a) no effect on activity; (b) momentary pause (activity resumes during distraction); (c) complete pause (activity resumes only after distraction ceases); and (d) doctor abandons activity and attends to distraction.

干扰的严重程度分级的方式类似于之前的研究, 具体如下:
a、活性无明显影响; b、短暂的停顿(分神时活动能恢复); c、完全暂停(分心停止后才开始活动); d、医生放弃当前活动, 完全分心。





METHODS

The latter two categories were considered to constitute major distractions. Although a recent publication had used a similar observational instrument, ours was developed independently. Each distraction was observed until it ended. Prolonged distractions were not considered to be major distractions if the current activity was unaffected or resumed during the distraction

后两类被认为是重大的干扰。尽管最近公布了类似的观测仪器,但我们是自主研发的。观察每个分心,直到它结束。如果当前活动不受影响或者能快速恢复,则延长分心不被认为是主要的干扰。





METHODS

Our observers consisted of three fixed pairs of nursing students in their third (final) year of studies, with each having about a year of practical ward experience. Each observer underwent a one-hour didactic lecture and a one-hour directly observed dummy session conducted by the first author.

我们的观察员由三对固定的大三护理专业同学组成, 各有大约一年的临床工作经验。每个观察员都接受了1小时的教学讲座, 并且和第一作者进行了一个小时的直接观察虚拟会议。





METHODS

The three pairs of observers undertook the observations equitably and independently. Each pair of nursing students was at the hospital approximately twice a week and observed any of the ICU doctors who were working at that time. There was no selection bias for the doctors observed, as they did not work solely on specific days and the nursing students did not time their observation sessions according to any particular doctor' s schedule.

三队观察员观察公平、独立。每一对护理学生每周去医院两次, 随即观察正在ICU工作的任何时间。她们没有固定的观察医生, 因为他们的工作时间不固定, 观察员的时间与特定医生的时间也不相吻合。





METHODS

During the observation sessions, the observers kept an appropriate distance from the observed doctors and did not interrupt them or other ICU staff (shadowing technique). Observations were carried out without advance warning to the doctors and regardless of whether the doctors were involved in ward rounds. Verbal consent was taken immediately before observation of all doctors.

在观测期间, 观察者与被观察的医生保持一定的距离, 对病房里的工作人员不造成影响。不管医生是否参与查房, 无预警的进行观察。





METHODS

We aimed to collect at least 100 hrs of observational data, which would be twice the duration of observations previously undertaken in the largest dedicated ICU study to date. Pearson' s correlation analysis was performed for the distraction counts by the first and second observer in each pair.

我们的目的是至少收集100小时的观测数据,与之前研究相比,时间是之前的两倍。皮尔逊相关性分析进行观测的时间是通过在每对观察员(第一和第二观察者)对分心观察时间的平均数。





METHODS

Other statistical analyses were not performed for interobserver correlations, as the observations showed near-perfect concordance (for all characteristics of the observations, including frequency, current activity and type, initiator and severity of distraction). This was possible since the frequency of distractions observed per hour was manageable for accurate data capture.

随着观察显示, 观察的所有特征, 包括频率、当前活动状态以及类型、引发因素和干扰的严重程度, 近乎一致。这是可能的, 因为每小时观察到的干扰频率是可管理的准确数据。





METHODS

All other analyses were based on the observations collected by the first observer of each pair. Multiple linear regression was performed to analyse any effects of physician seniority (considered senior if the doctor has been in medical practice for ≥ 3 yrs), time of session (morning/afternoon) or day of week (weekday/weekend) on distraction frequency.

用多元线性回归来分析任何影响医师资历（工作时间 ≥ 3 年，被认为是高级）、分心时间（上午/下午）或周（工作日/周末）的干扰频率。





METHODS

Using major distraction (complete interruption or termination of current activity) and prolonged distraction (≥ 5 mins) as outcomes, binary logistic regression analyses were performed using physician seniority, urgency of distraction, time of day, day of week and type of current activity as explanatory variables.

以主要干扰(完全中断或终止当前活动)和长时间分心(≥ 5 分钟)作为结果,以二元逻辑回归分析分心的紧迫性,时间,周和当前活动类型作为解释变量。





METHODS

We broadly classified the types of current activities into administrative, procedural and communication activities. Continuous data was expressed as mean \pm standard deviation and non-parametric data was expressed as median (interquartile range [IQR]).

我们广泛的当前活动的类型分为行政、程序和交流活动。连续数据被表示为平均值 \pm 标准偏差和非参数数据表示为中位数(四分位范围(差))。





METHODS

Statistical significance was assumed if p-value was < 0.05 . All analyses were performed using the Statistical Package for the Social Sciences version 19.0 (SPSS Inc, Chicago, IL, USA) and Stata version 11 (StataCorp LP, College Station, TX, USA) software

如果p值 < 0.05 ，则有统计学意义。所有分析均采用统计学软件19.0（SPSS公司，芝加哥，IL，USA）和Stata的版本11（StataCorp唱片，学院站，TX，USA）software





RESULTS

A total of 11 doctors (age range 24–34 years) were observed, including 8 residents (6 men), and 3 fellows (all men). One male resident was a senior doctor in medical practice for more than three years who was on attachment to the ICU, while the others had work experience ranging from six months to two years.

总共有11名医生（年龄范围24-34岁）进行了观察，其中包括8个住院医师（6名男性），和3名研究员（均为男性）。其中一位男医生是从事医疗行业三年以上的资深医生，而其他人工作经验，从半年到两年不等。





RESULTS

Four doctors (one senior resident and three fellows) were considered to be senior doctors. All doctors who were approached agreed to participate in the study.

四个医生(一位资深医生和三个同事)被认为是高级医生。
所有的医生都同意参与这项研究。





RESULTS

A total of 38 observation sessions were carried out – 23 morning sessions (0700–1200 hrs) and 15 afternoon sessions (1201–1800 hrs). Of these, 26 sessions were on weekdays and 12 were on weekends. Residents were observed during 30 sessions, while fellows were observed during the remaining 8 sessions.

共有38观测时段进行 - 23天上午的会议（0700-1200小时）和15天下午的会议（1201至1800年小时）。其中，26天在工作日，周末工作的有12天。





RESULTS

Residents were observed proportionally more often than fellows, as ICU fellows at our institution had other concurrent non-ICU duties such as performing bronchoscopies at the endoscopy suite and running outpatient clinics. Therefore, fellows could not be observed during their periods of non-ICU duties.

ICU住院医生被观察到的比例比其他同事更常见, 在ICU工作的一些同事并不只是做ICU工作, 如进行支气管镜检查等。因此, 这些人不能在非加护病房工作的时间观察。





RESULTS

A total of 38 observation sessions were carried out – 23 morning sessions (0700–1200 hrs) and 15 afternoon sessions (1201–1800 hrs). Of these, 26 sessions were on weekdays and 12 were on weekends. Residents were observed during 30 sessions, while fellows were observed during the remaining 8 sessions.

共有38个观测进行会话- 23早上会议(0700 - 0700小时), 15日下午会议(1201 - 1800小时)。其中, 26日会议是在工作日和周末12人。居民被观察到在30个交易日, 而同伴观察期间剩下的8会话。





RESULTS

Residents were observed proportionally more often than fellows, as ICU fellows at our institution had other concurrent non-ICU duties such as performing bronchoscopies at the endoscopy suite and running outpatient clinics. Therefore, fellows could not be observed during their periods of non-ICU duties.

ICU住院医生与其他类型的同事相比被观察更常见。如进行支气管镜检查是在其他场所。因此,这些人不能在非ICU工作的时候观察。





RESULTS

The median duration of each session was 180 mins (IQR 150–180 mins; range 60–210 mins). The total duration of observation was 6,025 mins (or 100.4 hrs).

每个会话的平均持续时间是180分钟 (IQR 150 - 180分钟; 范围60 - 210分钟)。观测的总持续时间是6025分钟 (100.4小时)。





RESULTS

The mean number of distractions/doctor/hr was 4.36 ± 2.27 , which did not differ by the time of day (morning 4.3 ± 2.6 ; afternoon 4.5 ± 1.6 ; t-test $p = 0.720$). The median duration of each distraction was 2 mins (IQR 2–4 mins; range 1–20 mins).

每个医生每小时被干扰的平均次数是 4.36 ± 2.27 ，并没有相差一天的时间（上午 4.3 ± 2.6 ；下午 4.5 ± 1.6 ；t检验 $p = 0.720$ ）。每个分心的平均持续时间为2分钟（IQR 2 - 4分钟；范围1 - 20分钟）。





RESULTS

A total of 107 (24.1%) distractions were prolonged, lasting ≥ 5 mins. Senior doctors were more frequently distracted by urgent tasks when compared to junior doctors, but the difference was not statistically significant (25.0% vs. 19.8%; $p = 0.312$).

总共有107（24.1%）的干扰是长期的，持续 ≥ 5 分钟。相比于初级医生，高级医生们在进行紧急任务时更容易分心，但差异无统计学意义（25.0%：19.8%， $P=0.312$ ）。





RESULTS

There were no sequential distractions, i.e. first distraction leading to a change in activity, followed by a second distraction that affected the new activity. The characteristics of the distractions noted are shown in Table I.

如表一所示：没有连续的干扰，即第一次分心导致活动的改变，第二次分心影响了新活动。





RESULTS

Multiple linear regression showed that seniority of doctor, time of session or day of week had no effect on distraction frequency (Table II). The type of current activity was also not related to the time of day ($p = 0.113$; Fisher's exact test).

多元线性回归分析显示，医生的资历，会话时间或星期时间对分心频率（表二）没有任何影响。当前活动的类型也与干扰时间没有多大的关系（ $P = 0.113$ ，Fisher精确检验）。





RESULTS

After adjusting for the time of session, day of week and type of current activity, urgent distractions and juniority were found to be associated with major distractions (Table III). However, only urgent distractions were associated with prolonged distractions (Table IV).

在调整了会话的时间, 周和当前活动类型后, 紧急分心和年少被认为与主要干扰(表3)有关。然而, 只有紧急的干扰与长期干扰(表4)。





RESULTS

Compared to communication activities (such as examining patients, talking to patients, relatives or colleagues), doctors who were performing administrative activities (conducting ward round, writing or reading notes, typing medication or treatment orders) were less liable to be distracted (Table III).

相对于沟通活动（如检查病人，与病人及亲属或同事交谈），执行管理活动（进行查房，读或写笔记，下医嘱，做治疗）的医生不太容易分心（表三）。





DISCUSSION

Distractions in our ICU were common (~ 4.5 distractions/doctor/hr) and usually of short duration (~ 2 mins each). The number of distractions was not influenced by physician seniority and time or day of week.

在我们的重症监护病房干扰是常见的（4.5次/杂念/医生/小时），通常持续的时间短（每2分钟）。分心不会受到医生的资历、时间或周影响。





DISCUSSION

Urgent distractions and juniority were associated with major distractions, and only urgent distractions were associated with prolonged distractions. Our results suggest that our observational instrument, while simple to use, was highly reliable in the ICU setting.

紧急分心，年少与主要干扰有关，只有紧急的干扰与长期的干扰有关。我们的研究表明，结果表明，我们的观察方法简单易用，在ICU高度可靠。





DISCUSSION

Prior studies were found to have yielded comparable frequencies of distractions, validating our simple observational method. For instance, Ballermann et al found a mean interruption rate of 3.8 times per hour among ICU physicians.

之前关于干扰频率的研究验证了我们简单的观察方法。例如, Ballermann等人发现, 干扰频率平均以3.8倍每小时的速度在干扰ICU医生。





DISCUSSION

A more recent study reported a frequency of 6.5 times per hour, although this finding was based on data from only three ICU shifts. Nonetheless, these studies suggest that distractions in the ICU are less frequent than in emergency departments (~7–10 per hour).

最近的一项研究报告显示，平均每小时6.5倍，尽管这一发现是基于从只有三个ICU的数据的而来。尽管如此，这些研究表明，ICU的干扰比在急诊科(7 - 10每小时)的少。





DISCUSSION

We found that both physicians and nurses were equally liable to distract residents/fellows in the ICU, and this finding is similar to that in the emergency department. This is, however, unlike the situation in a general healthcare setting, where nurses and beepers were reported to be the main sources of distractions.

我们发现, 无论是医生还是护士, 在ICU都容易受到干扰, 这个发现类似于急诊科。然而, 一般医疗环境的情况下, 护士和传呼机是干扰的主要来源。





DISCUSSION

We also found that, in the ICU, self-distraction was as frequent as distraction by other doctors, unlike in the emergency department, where the converse was true. In our study, the low number of distractions from relatives was due to visitation restrictions (i.e. lunch time and evenings) at our centre.

我们还发现，在ICU自我分心是与频繁被其他医生打扰有关，与急诊科有所不同。在我们的研究中，较低的干扰与在工作场所探访亲戚（即午餐时间和晚上）有关。





DISCUSSION

It is unclear why current administrative activities were negatively associated with major distractions. However, we believe that this finding was likely related to the shorter duration of administrative activities that our doctors engaged in, as compared to communication or procedural activities.

但是目前尚不清楚为什么当前行政活动与主要干扰负相关。然而,我们认为,这一发现可能是与行政活动的持续时间较短有关。





DISCUSSION

Our results highlighted the significance of distractions in the ICU setting. The great majority of distractions resulted in interruptions, and approximately 20% of distractions led to complete abandonment of the prior activity. A comparable situation was reported in the emergency department, where doctors did not return to 18.5% of the interrupted tasks.

我们的研究结果强调了分心在ICU的重要性。绝大多数的分心导致当前活动的中断, 大约有20%的干扰导致医生完全放弃当前活动。与急诊科类似, 有18.5%的医生被中断后没有恢复到当前工作。





DISCUSSION

Distractions may in turn lead to medical errors, which are common in the ICU. Possible interventions to avoid distractions include application of the 'sterile' cockpit concept in the form of a 'no interruption zone' and wearing 'do not disturb' vests. In addition, doctors and nurses could both develop situational awareness of distractions in order to minimise them.

分心很可能导致医疗事故,这在ICU是很常见的。必要的干预措施也是有必要的,如“无菌区域”“加护病房”“请勿打扰”等,以便将医生和护士受到的分心降到最低。





DISCUSSION

One could argue that distractions can also be good for patient care, if doctors were required to urgently fulfill other tasks. We examined this reasoning and found that urgent tasks, such as examining patients for new and potentially important clinical signs, administering medications and performing procedures, were associated with both severe and prolonged distractions.

有人说如果要求医生尽快完成其他任务，分心也有利于病人的护理。我们研究了推理，分心紧急任务，如检查病人的新的或潜在的重要临床症状，及时管理药物和执行程序，与长期干扰和干扰的严重程度有关。





DISCUSSION

Additionally, junior doctors were probably responsible for the tasks related to the distractions and this could have increased their vulnerability to distractions.

此外，初级医生可能是因负责相关的任务而分心，这可能增加了干扰的几率。





DISCUSSION

The strengths of our study include the consistent use of independent paired observers. This enabled us to internally validate our observational method. Our observers achieved an agreement rate of 99.1%, which is similar to the overall agreement of 99.48% achieved using more complex methods. We also characterised distractions as fully as possible, including those that did not lead to interruptions.

我们研究的优势包括坚持使用成对的独立观察员。这使我们能够在内部验证我们的观察方法。我们的观察取得了99.1%的一致率。我们尽可能让干扰的特征全面,包括那些没有导致中断的干扰。





DISCUSSION

Our observation time, which exceeded 100 hrs and was therefore higher than that reported by previous studies, helped to reduce sampling bias. We also chose to observe only residents and fellows (instead of including attendings), as they do most of the groundwork and bear the brunt of distractions in the ICU.

我们的观察时间超过100小时，因此高于先前的研究报道，有助于减少抽样偏差。我们也只选择观察住院医师和同事（而不是包括主治医师），因为他们做最基础的，并承担着在ICU分心的各个冲击。





DISCUSSION

We acknowledge the limitations of our study. Our results are not generalisable to distractions after office hours. Although we studied only events in a medical ICU, the distraction frequency reported from a mixed medical-surgical ICU was similar. We observed only residents and fellows, as attending physicians are involved in important decision-making and distractions could have deleterious effects on them.

我们承认我们研究的局限性。我们的研究结果没有考虑干扰是由在办公时间以外引起的。虽然我们只研究了ICU医疗事件，只观察住院医师和同事，而主治医师参与重大决策可能对他们产生影响。





DISCUSSION

In addition, the Hawthorne effect may have led participants to modify their activities based on the presence of an observer, but this effect may be minimal, especially with repeated exposure of the participants to research activities. While fluctuations in patient number, new admissions and seniority of the bedside nurse may have influenced the frequency and severity of distractions, we expected such variations to even out over the six weeks of observations.

另外，霍桑效应可能导致参与者修改基于观察者们已经记录好的内容，但这种影响可能是最小的，尤其是重复暴露研究活动的参与者。虽然病人数量的波动，床边的新护士和资历护士可能对干扰的频率和严重程度有一定的影响，但是我们预计这种差异至少观察6周以上，所以不纳入考核范围。





DISCUSSION

We did not determine whether tasks were completely and successfully handed over to another doctor so that interruptions were avoided, even though studies suggest that the process of handing over may also be fraught with difficulty.

我们没有确定任务是否成功交接给另一个医生, 以便避免中断。研究表明交接的过程也可能困难重重。





DISCUSSION

We also did not determine whether the distractions actually led to medical errors emanating from the original activity, although the latter has been shown to be true in the paediatric ICU and general ward settings. Even though distractions may not lead to clinical errors, they can harm work efficiency by prolonging the time required to complete the original task.

我们还没有确定干扰导致医疗差错是否来自最初的活动，尽管后者在儿科ICU和普通病房已被证明。即使没有干扰也可能导致医疗事故，但是它们可能会延长完成原始任务所需要的时间，降低工作效率。





DISCUSSION

We hope that our study will stimulate further research into the frequency and severity of medical errors caused by distractions. It is also important to differentiate the kinds of medical errors that stem from various types of current activities and distractions.

我们希望我们的研究将促进下一步研究，即医疗事故的频率和严重程度与干扰有关。同样重要的是要区分各种医疗事故源于干扰的何种类型。





DISCUSSION

Indeed, a recent systematic review of autopsy studies suggested that major misdiagnoses occurred in 6% of ICU deaths and estimated that 40,500 adult patients in the United States may die with an ICU misdiagnosis annually.

事实上，最新尸检研究表明，主要误诊发生在重症监护室死亡人数的6%，在美国估计有40500成人患者中每年可能死在ICU误诊。





DISCUSSION

In conclusion, our study has found a high frequency of distractions in the ICU, and adds new information on the characterisation and risks for major distractions. Distractions frequently lead to interruptions while working, and junior doctors in our study were particularly susceptible to major distractions.

总之，我们的研究发现分心在ICU高频率发生，经常导致当前工作的中断，初级医生们特别容易受到重大干扰。





DISCUSSION

Our simple observational instrument was both reliable and internally valid, and may facilitate future research in this area. Strategies for improving the quality and safety of ICU care should include interventions to manage distractions, especially among junior doctors.

我们内部的简单观察方法既可靠又有效, 并可能促进未来在这个领域的研究。提高ICU护理质量和安全策略应该包括干预干扰管理, 特别是初级医生。

