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Giving babies the chance of a lifetime

Introduction
Some parents may regard movement monitors (also known as breathing, respiration or apnoea monitors) as a tool to combat cot death. Now available in shops for as little as £60, the monitors are promoted as giving "reassurance" and "peace of mind".
This factfile has been prepared to give objective information about monitors and their use, and to address any misconceptions that may arise.

What are movement monitors?
Movement monitors sound an alarm after a pre-set time (usually 20 seconds) if they fail to detect a baby's breathing movement. There are four main types:

1) a sensor pad, held in contact with the baby's abdomen by tape or an elastic belt, detects breathing movement
2) a pressure pad, placed under the baby, detects changes in distribution of the baby's weight caused by breathing movement
3) an electrode attached to the baby's chest, and an electronic monitor records changes in a small electrical current due to breathing movements
4) an ultrasound beam generated from a unit fixed to the wall above the baby's cot which detects movement in the baby's chest and tummy.

Some models include accessories such as nightlights and room thermometers. Monitors should not be confused with the popular listening devices that enable parents to hear the baby while in a different room. There are also monitors that resemble closed circuit televisions, which allow parents to view their babies on-screen.

Can movement monitors prevent cot death?
Despite their widespread use there is no research evidence that monitors prevent cot death. Babies can and do die whilst on a monitor (1).

Two surveys of UK paediatricians, carried out by FSID in 1989 and 1998, found that 16% and 13% of the respondents respectively had experienced a baby die whilst using a monitor (2 3).

A further survey of UK consultant paediatricians, conducted in 1993, found 64 babies had died whilst on movement monitors at home (4).

Large scale studies looking specifically at the effect of monitor use on infant mortality rates have not been carried out. Since cot death is relatively rare, such studies would have to involve an enormous number of babies to obtain reliable statistical information comparing babies on monitors to others at equal risk.

The Confidential Enquiry into Stillbirths and Deaths in Infancy, the largest ever cot death study conducted in the UK, found with regard to monitors a 'lack of any apparent value from such devices in the prevention of deaths'(5).

Cot death and apnoea
Apnoea means that airflow into the lungs has stopped. This pause in respiration may be:

- central - breathing movements stop
- obstructive - the windpipe or airway has become blocked
- mixed - a combination of the two

Irregular breathing and short apnoeic pauses are normal in young babies and usually have no adverse effects. Sometimes babies can stop breathing for a longer period and have a sudden drop in blood oxygen levels, and their skin may become blue or white.

Some babies may also become floppy or stiff, or have a staring spell. This is called an apparent life-threatening event (ALTE) and is very frightening to parents and other observers. In these instances the baby may need vigorous stimulation and / or resuscitation to start normal breathing. ALTEs may be associated with an identifiable disease or condition (eg: an infection or as a result of inhalation of vomit) but in about half of the cases a cause is not found (6 7).

There are some similarities between babies who have prolonged ALTEs and cot death babies: for example they occur in the same age range, are more frequent in boys than girls, and are more common in premature babies (8).

Some babies with unexplained ALTEs may have repeat attacks (9).

Some babies have been shown to be at a greater risk of sudden death (9 10)but in a UK survey fewer than 4% of cot death babies had a history of apnoea (11).

A prospective study of 10,000 infants born between 1979 and 1982 found no difference in breathing patterns between babies who survived and those who subsequently died as cot deaths, further undermining any idea that monitoring breathing can prevent cot death (12).

Advantages of movement monitors
 If a baby has an apnoeic attack for longer than the pre-set time, the monitor will alarm. Most babies start breathing again spontaneously or when picked

up. Very occasionally it may be necessary to attempt resuscitation. Many parents who have previously had a baby die as a cot death find that by using a movement monitor they gain reassurance with their next baby from knowing that they will be alerted should the baby stop making normal breathing movements.

• Some bereaved parents have said that if a monitor does nothing else, at least it gives them the chance to reach their baby if they stop breathing, so they don't die alone, something which many regret (13).

Disadvantages
Whilst the use of movement monitors may give considerable psychological support to some parents, there are several disadvantages.

• The most serious is that none of these movement monitors detect obstructive apnoea, when breathing movements may continue although little or no oxygen is reaching the baby's lungs because of an obstruction in their windpipe. In these instances the alarm will not ring.

• Nearly all movement monitors give false alarms which may heighten parents' anxiety as well as disturb the baby's sleep. False alarms may occur for a variety of reasons. For example, the sensor pad becomes detached, or the abdominal movements become so small that the alarm rings (14). A trial of ultra-sound monitors in 'Which?' Magazine found that seven out of ten mothers testing the monitor switched it off because of repeated false alarms (15).

• Some parents become psychologically dependent on the monitor, and occasionally refuse to stop monitoring (12). Some rely upon the monitor for assurance that the baby is breathing and therefore may not look out for other signs of illness or observe the baby's overall health and development (1).

• For some parents, childcare is made more stressful. Parents may become frightened to go anywhere without the monitor and come to feel socially isolated and different from others (9).

• An ALTE may happen without a prolonged period of apnoea. One study found that only 10% of ALTEs (detected by a fall in blood oxygen levels) were accompanied by apnoea of 20 seconds or more (2). So monitors, in these instances, would not be useful.

• Sadly, it is not always possible to revive a baby when breathing movements have stopped and even if the baby is revived, irrevocable brain damage may have occurred (16).

When should monitors be used?
The US National Institutes of Health Consensus (7) say that monitors are neither necessary nor desirable for normal, healthy babies. The Royal College of Paediatrics and Child Health suggests that some types of monitors for home use may be considered for two groups of babies:

1) After a baby has had an ALTE, depending on the nature of the event and whether a cause is known
2) Subsequent sisters or brothers of babies who died as sudden infant deaths

In FSID's 1998 survey of paediatricians, 95% of respondents said that monitors should only be used under the direct supervision of a health professional, who is able to assess the individual baby and the whole package of care appropriate (2).
FSID recommends that in all cases where a baby is monitored it is essential that:
• this is done under the supervision of a paediatrician or other doctor
• parents are instructed in the use and limitations of the monitor
• parents are trained in resuscitation techniques
• the cost and period of monitoring is discussed, and
• medical and technical back-up is easily available
• parents and carers continue to follow the Reduce the Risk of cot death advice.

Where are movement monitors available?
Monitors are available under professional supervision through FSID's Care of the Next Infant Scheme (CONI). This scheme, run in partnership with the NHS, provides structured support for families with a new baby who have had a previous baby die as a cot death and may be understandably anxious. CONI Plus also provides support to:

• families whose babies have died for reasons other than cot death
• the extended families of cot death babies
• parents whose babies have suffered an ALTE.

Monitors are a popular component of the support the CONI scheme offers. A report on the first 5000 babies to use the scheme found that 86% of families chose to use a monitor. Of those families, overall 79% reported that it always gave them confidence, 11% were given confidence sometimes, and 10% were only rarely given confidence.

However, over the scheme's first ten years, the proportion of parents reporting that monitors always gave them confidence has gradually declined from 84% to 75% (17).

Parents on CONI are carefully briefed about what monitors can and cannot do. They are offered it as one part of a broader package of support, including weighing scales and a weight chart, room thermometer, symptom diary and advice from a specially trained midwife or health visitor.

Parents are also given cardio-pulmonary resuscitation training; but know that monitors cannot stop their baby dying. Parents wanting more information on the scheme should contact FSID's 24

hour helpline on 020 7233 2090.

New research has shown unless cot death parents are given support in using a monitor only half (54%) will use it daily (18).

Other types of monitors

There are other types of equipment in addition to simple movement monitors. Some use other ways of monitoring respiration eg:

- using a heated probe attached to the baby's skin to measure blood oxygen pressure page 4
- measuring oxygen saturation with a clip
- detecting airflow through the nose
- monitoring heart rate

These monitors are more complicated and expensive. While these may be useful for individual babies who have a diagnosed medical problem, as yet there is no evidence that they are effective in preventing cot death.

Reduce the Risk of Cot Death:

- Place your baby on the back to sleep
- Cut smoking in pregnancy - fathers too!
- Do not let anyone smoke in the same room as your baby
- Do not let your baby get too hot
- Keep your baby's head uncovered - place your baby with feet to the foot of the cot, to prevent wriggling down under the covers
- If your baby is unwell, seek medical advice promptly
- Do not fall asleep together with your baby on a sofa
- Keep your baby's cot in your bedroom for the first six months
- Do not share a bed with your baby if you or your partner are smokers, have been drinkingor taking medication or drugs that make you drowsy or extremely tired.

Written Feb 1992, revised Nov 1996 and April 2001

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