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**PAIN:
SOME ASPECTS**

Pain: Some Aspects

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Cross-cultural inferences of physical pain and psychological distress-1

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Analysis of more than 500 replies to a questionnaire in six languages shows that nurses from different cultures assume different degrees of suffering in the same patients

AN automobile accident victim, a 45-year-old man, was brought into the emergency room of a large metropolitan American hospital. Accustomed to crises, the nurses on duty immediately reacted to his condition and performed necessary relief measures. In terms of education, training and experience all three were relatively equivalent. Although one was American, the second a recent immigrant from a Northern European country, and the third born and reared in Puerto Rico, they shared a common bond in terms of professional goals—specifically to meet the patient's needs in terms of responding to his physical pain and psychological distress.

When the patient was transferred to the medical-surgical unit later that afternoon, we had the opportunity of talking with them about their personal reactions to this man. The nurse from the Northern European country commented that the man was, 'Very emotional. It turned out he wasn't nearly as injured as I first thought. From the way he carried on you would have thought he was at death's door. His leg got the worst of it. He'll be in traction. I'm not saying he wasn't in pain, but certainly nothing like the pain of another patient we had just seen. His wife was the worst. She was impossible.'

She explained that in her country stoicism and self-control were expected when someone underwent physical or emotional upsets. She recalled that, when she was a child, her parents and her teachers had encouraged emotional restraint. 'My mother always put her fingers to her lips to silence us if one of the kids started crying when they got hurt.'

'Of course,' she added, 'it depends on what's wrong with you. This man

was hurt but not that seriously. At his age he should have been able to hold his emotions more in check.'

The Puerto Rican nurse had a strikingly different reaction to the man's behaviour. According to her, the patient's extreme stress, reflected in his outbursts of emotion, was quite understandable. 'He didn't know if he was permanently injured. At the time we didn't know the extent of his injuries. Expressing feelings is a way of releasing tension.'

She commented that in Puerto Rico people are expected to show how they feel. 'When we're happy we laugh, and when we cry or suffer we show this side of ourselves.' As a child, she remembered her oldest brother falling down from a tree. Because he didn't cry, was silent when their mother discovered him, and continued keeping back his tears at the hospital, everyone in the family worried far more than if he had screamed. For the Puerto Rican nurse, the fact that the 45-year-old man showed his anxiety was quite understandable. In this particular case she wondered if his extreme psychological distress wasn't a matter of concern, about the welfare of his family more than his actual pain.

The American nurse expressed a still different reaction. For her the patient's emotional display had been surprising, simply because of the man's age and his background. 'I always thought men were stoic and stronger. He was unusual because he showed so much of his feelings. The way I feel about a patient depends a lot on the patient and the condition. I think that if the patient had been a young child I would have been more sympathetic. Younger people have a lot more to lose in life than an older person. Also, I realised this man wasn't going to have a per-

manent injury. That was fairly obvious. I think I would have been more upset if he had been severely hurt—face, arms or internal injuries.'

For one nurse stoicism and self-control in the face of suffering was valued; for another, the degree of expressed suffering depended on the patient and his condition, and, for the third nurse, expressive behaviour was not only acceptable but expected.

What accounts for these differences among the three nurses? Regardless of time or place, caring for patients who are suffering is a central aspect of everyday professional reality. Why might nurses with the same objectives and similar technical skills respond differently to an identical patient and situation?

The investigation

In an effort to answer this question we have for the past several years been investigating nurses' beliefs about patient suffering. In the course of our studies we have been able to identify a number of variables which influence the inferences nurses make about patients' physical pain and psychological distress. Age of the patient, nature of severity of illness/injury, social class, patient's ethnic background are some of the factors which influence the kinds of inferences nurses make regarding a specific patient.

In addition to these factors, we have also considered the effect the nurse's own cultural background plays on the kinds of judgements she makes about patients' suffering. From an early age one learns from others culturally appropriate interpretations and responses to various aspects of life. Because cultures differ in customs, values and ways of perceiving various phenomena, it is reasonable to assume that attitudes toward pain and distress are also socially learned behaviours.

In the previous example, the three nurses from different cultures had quite different responses to the same patient. Obviously, individuals within the same culture are not going to think and feel exactly alike; however, given our line of reasoning concerning the influence culture has on attitudes, we wondered if nurses from one culture tended to share similar belief systems and would differ from nurses in another culture in terms of these belief systems regarding suffering.

The specific issues considered in this study were as follows:

1. Do nurses from different cultures infer different degrees of suffering in the same patients? For example, do nurses from the United States infer degrees of physical pain and psychological distress for an American middle-aged woman hospitalised with bleeding

gums which differ from those of nurses in Taiwan for a Chinese patient with the same symptoms?

2. Is there an interaction between both illness and severity and the national background of nurses in the degree of suffering inferred by nurses? For example, do nurses in Thailand infer that a young Thai child with possible leukaemia suffers a degree of pain and distress which differs from the inference of nurses in Japan caring for a Japanese child with the same diagnosis?

3. Is there an interaction between age of patient and national background in the degree of patient suffering inferred by nurses? Cultures place a different value on age. For some cultures old age is perceived positively; in others youth is esteemed and old age rejected. Thus, for example, do Korean nurses infer degrees of suffering for a 65-year-old Korean man who has a fractured femur different from Puerto Rican nurses treating an elderly Puerto Rican male?

4. Is there an interaction between sex of patient and national background in the degree of patient suffering inferred by nurses? Despite the present-day movement toward greater equality between sexes, some cultures view males quite differently. In some cultures being male is equated with considerable value; in other cultures, the opinion might be the converse.

For example, do nurses from Thailand infer greater suffering for Thai males than for females and do their inferences of suffering follow a different pattern from American nurses responding to identically described male and female patients?

Participants in the study consisted of a total of 544 female registered nurses currently employed in the United States, Japan, Puerto Rico, Korea, Thailand and Taiwan. It might be noted that the Puerto Rican nurses, although United States citizens, at their own request wished to be considered separately from nurses born and raised in continental United States. In general, the groups of nurses in the sample were similar to each other in age, experience in nursing, educational background and marital status. An effort was made to have all specialties represented in approximately equal numbers. Thus, the samples of nurses from each culture included nurses working in general medicine and surgery, maternal and child health, public health and psychiatric areas.

The questionnaire distributed to the nurses in each of the six different cultures consisted of 'The Standard Measure of the Inference of Suffering' instrument we have developed for our studies on inferences of suffering. This questionnaire consists of 60 brief

	None	Little	Mild	Moderate	Great	Severe	Very severe
1. Tripping on an uneven pavement block, Louise Crane, seventy years of age, fell and sustained a fractured femur. In traction at the moment, surgery is planned.							
Physical Pain, Discomfort:	1	2	3	4	5	6	7
Psychological Distress:	1	2	3	4	5	6	7
2. Concerned about the appearance of a mole on her upper left arm, thirty-two year old Elizabeth Burdine decided to have the lesion removed in the doctor's office. The pathology report was negative.							
Physical Pain, Discomfort:	1	2	3	4	5	6	7
Psychological Distress:	1	2	3	4	5	6	7

English

	nada	poquito	leve	moderado	grande	agudo	muy agudo
1. La señora, Juana Gomez, tropezó en la acera, al caerse se fracturó un muslo. Ahora está en tracción y la fecha de cirugía está fija.							
Dolor Físico:	1	2	3	4	5	6	7
Ansiedad Sicológica:	1	2	3	4	5	6	7
2. La señora Carmen Bautista, de treinta y dos años de edad, está inquieta sobre la apariencia de un lunar en su brazo izquierdo. Ella decidió ir al médico para removerse el lunar. El informe patológico es negativo.							
Dolor Físico:	1	2	3	4	5	6	7
Ansiedad Sicológica:	1	2	3	4	5	6	7

Spanish

	없음.	조금.
1. 70 세의 김평순 여인은 평정치 않은 길을 걷다가 넘어져서 좌 좌골에 골절상을 입었다. 바로 traction 하고 수술은 계획 되었다.	신체적인 고통, 불편:	1 2
	정신적인 긴장:	1 2
2. 왼쪽 삼박에 사마귀 때문에 근심하고 있는 36 세의 김희순 여사는 의사 진료소에서 사마귀 제거 수술을 하기로 결정했다. 병의 과정, 모습은 비 병증상 이었다.	신체적인 고통, 불편:	1 2
	정신적인 긴장:	1 2

Korean

Sample items from each of the six questionnaires. The order of items was identical: item 1 in English is also item 1 in Spanish, Korean, Chinese, Japanese and Thai. The only changes made were in names (Louisa Crane is Juana Gomez in Spanish; she has appropriate names for the other languages).

		無	極微	微有	中度	很	嚴重	極嚴重
1. 趙老太太年為70四行 走於路不平之街道 而失足跌傷，股骨骨折， 先予骨折牽引治療， 後接腕關節手術治療。	身體方面 之疼痛， 不舒服： 心理方 面之不適：	1	2	3	4	5	6	7
2. 錢女士32歲，因心 其左手臂之一顆後天 所生的黑痣，故決定將 其切除，病理檢查報 告無病。	身體方面 之疼痛， 不舒服： 心理方 面之不適：	1	2	3	4	5	6	7

Chinese

		無	少	微	中度	少	強	非常強
1. 趙老太太年為70四行 走於路不平之街道 而失足跌傷，股骨骨折， 先予骨折牽引治療， 後接腕關節手術治療。	肉体的 苦痛 精神的 苦痛	1	2	3	4	5	6	7
2. 錢女士32歲，因心 其左手臂之一顆後天 所生的黑痣，故決定將 其切除，病理檢查報 告無病。	肉体的 苦痛 精神的 苦痛	1	2	3	4	5	6	7

Japanese

		無	微	中度	強	非常強
1. 趙老太太年為70四行 走於路不平之街道 而失足跌傷，股骨骨折， 先予骨折牽引治療， 後接腕關節手術治療。	肉体的 苦痛 精神的 苦痛	1	2	3	4	5
2. 錢女士32歲，因心 其左手臂之一顆後天 所生的黑痣，故決定將 其切除，病理檢查報 告無病。	肉体的 苦痛 精神的 苦痛	1	2	3	4	5

Thai

vignettes describing a particular patient's illness or injury, sex and age.

Five categories of illness/injuries are used, including cardiovascular, cancer, infection, trauma and psychiatric. Within each category two degrees of severity, mild or moderate, are considered. Both female and male patients are included and three different age groups, four-12, 30-45, and over 65. In summary, there are five illness/injury categories; two levels of severity; two sexes, and three age levels for an overall total of 60 items ($5 \times 2 \times 2 \times 3 = 60$).

Each nurse was asked to make two ratings for each item on a seven point scale, indicating the degree of physical pain and the degree of psychological distress she felt the patient was experiencing. The nurses were told there were no right or wrong answers. We were interested only in their best judgements.

It might be noted that the instrument is not only internally consistent but also manifests a high degree of stability over time. In previous testings using the Spearman-Brown correction the correlation for physical pain was 0.96 and 0.96 for psychological distress. Test-retest correlation for ratings of physical pain was 0.89 and 0.87 for psychological distress.

For testing in countries other than the United States the questionnaire was translated into Japanese, Korean, Thai, Spanish and Chinese. Translators were native speakers in their respective languages as well as registered nurses.

To ensure the accuracy of translation, a 'back-translation' method was used. For each language the translated version of the questionnaire was independently translated back into standard English. Discrepancies between the back-translation and the original English version were identified, and these differences were resolved by a conference of the two translators for each language and the research staff. Other than difference in language, the only other substantive difference between the English version and that in any other language was the substitution of appropriate common names for patients in each country. The illustrations give examples of two items as they appeared in each of the languages.

Cross-cultural inferences of physical pain and psychological distress-2

Lois Leiderman Davitz, PhD Joel R. Davitz, PhD
Yasuko Higuchi, EdD

OUR first hypothesis predicted that nurses in the several countries sampled differed in the degree of suffering inferred. The data clearly and strongly support this hypothesis. For physical pain, the Korean and Japanese samples showed the highest inferences of physical pain. The nurses from Taiwan tended to infer a moderate degree of physical pain with the smallest variability in ratings (see Table 1).

The mean ratings of psychological distress of all cultural groups were higher than for physical pain (see Table 2). Nurses from Korea and Puerto Rico inferred the greatest degree of psychological distress, and the Taiwan sample inferred the least suffering of all the groups. The sample from the United States was in the

middle of the other national groups and the variability was the smallest.

The second hypothesis, which predicted an interaction between illness and severity of patient and cultural background of nurses is also supported. Korean and Japanese samples tended to infer greater pain than the other national groups (see Table 3). The United States and Puerto Rican samples tend to infer less pain than the other groups.

It is interesting to note that all cultural groups show the same rank order of illness categories; the highest mean is trauma, followed by infections, cardiovascular, cancer and psychiatric illness.

The differences in inferences among national groups was also true for psychological distress (see Table 4). Korean and Puerto Rican samples show higher mean ratings than all the other groups. All cultures inferred the highest psychological distress for psychiatric illness. In terms of severity the Puerto Rican sample shows the highest mean rating while for the moderate category the Japanese sample shows the highest mean. The Taiwan sample shows the lowest mean ratings of all groups for both mild and moderate categories (see Table 5 and 6).

The third hypothesis predicted an interaction between age of the patient and national group. The differences among the six different cultural groups were statistically significant. The Japanese, Korean, Thai, and Taiwan samples inferred the greatest pain for the youngest age group with the next highest ratings for the oldest age group. The Puerto Rican sample also inferred the greatest pain for the youngest age group but the next highest rating was for patients in the middle age group. The sample from the United States inferred the greatest pain for the oldest age group followed by ratings for the youngest age group (see Table 7).

The United States, Japanese, Puerto Rican and Taiwan samples inferred the greatest psychological distress for the oldest age groups and the second highest ratings for the middle age, where-

as the Korean and Thai samples inferred the greatest psychological distress for the middle age group, followed by the oldest age group (see Table 8).

The fourth hypothesis predicted an interaction between sex of the patient and national group. The differences among national groups are significant. For ratings of psychological distress the differences for males and females are significant, but the differences between males and females is not statistically significant (see Table 9). The differences among national groups are significant for males, females and the difference between males and females for ratings of physical pain (Table 10).

The hypothesis, therefore, is supported for physical pain but not for psychological distress. Female patients were seen as suffering greater physical pain. The Korean sample inferred the greatest difference between males and females followed by the Japanese, Taiwan, Thai, Puerto Rican and United States samples. Mean ratings for psychological distress in both female and male show the same pattern for all groups.

Implications

This study began with the assumption that attitudes about suffering are, in part, socially learned responses. The results incontrovertibly confirm this assumption. Nurses from one culture were markedly different from nurses in another culture in their inferences of physical pain and psychological distress.

Among all the cultures studied, Japanese and Korean nurses consistently inferred the greatest patient suffering for both physical pain and psychological distress. This finding is extremely interesting in that many people in Western societies think of Orientals as stoic and presumably less sensitive to pain and distress. An example of this belief is a recent patient-nurse encounter observed in a metropolitan hospital. A Japanese man was recovering from surgery and made insistent demands on the staff. At one point he burst into tears. The attending nurse later commented how surprised she had been to observe this reaction. 'I thought Japanese could stand pain. They aren't supposed to show emotion.'

The results of this study provide dramatic evidence of the importance of one's point of view in making inferences about another person's experiences. The findings raise important questions about relationships of nurses to patients. If nurses from one culture hold a particular set of beliefs about another culture, do these beliefs influence the nature of care? To what degree does stereotyping of another culture influence professional practice?

Table 1. Mean and standard deviation ratings of physical pain for each country

	Mean	SD	N
USA	3.00	0.56	85
Japan	3.73	0.67	110
Puerto Rico	3.06	0.67	77
Korea	3.81	0.63	87
Thailand	3.20	0.58	94
Taiwan	3.54	0.54	91

Table 2. Mean and standard deviation ratings of psychological distress for each country

	Mean	SD	N
USA	4.43	0.66	85
Japan	4.64	0.67	110
Puerto Rico	4.80	0.79	77
Korea	4.84	0.52	87
Thailand	4.40	0.55	94
Taiwan	4.06	0.66	91

	Trauma	Cancer	Infection	Cardio-vascular	Psycho-logical	N
USA	3.79 0.77	2.69 0.67	3.66 0.66	2.81 0.56	2.06 0.91	85
Japan	4.60 0.86	3.42 0.76	4.55 0.75	3.44 0.83	2.64 1.05	110
Puerto Rico	4.87 1.04	2.46 0.84	3.71 0.83	2.86 0.77	1.41 0.76	77
Korea	5.03 0.69	3.16 0.88	4.42 0.72	3.68 0.83	2.75 0.98	87
Thailand	4.29 0.84	2.95 0.72	3.73 0.60	3.14 0.75	1.90 0.83	94
Taiwan	4.33 0.70	3.20 0.60	4.07 0.66	3.46 0.61	2.64 0.80	91

Table 3. Mean and standard deviation of ratings of physical pain of five disease variables for each country. (Note: First number given in each cubicle is the mean rating. Second number given in each cubicle is the standard deviation of the ratings.)

	Trauma	Cancer	Infection	Cardio-vascular	Psycho-logical	N
USA	4.25 0.73	4.23 0.80	3.99 0.75	4.58 0.81	5.11 0.78	85
Japan	4.57 0.78	4.03 0.71	4.52 0.83	4.86 0.87	5.22 0.77	110
Puerto Rico	4.85 0.85	4.57 0.94	4.36 0.89	4.75 0.95	5.48 0.92	77
Korea	5.00 0.65	4.34 0.70	4.48 0.68	4.72 0.75	5.66 0.66	87
Thailand	4.39 0.69	3.80 0.64	4.18 0.64	4.42 0.72	5.21 0.66	94
Taiwan	3.99 0.78	3.54 0.84	3.72 0.72	4.08 0.76	5.00 0.77	91

Table 4. Mean and standard deviation of ratings of psychological distress of five disease variables for each country. (Note: First number given in each cubicle is the mean rating. Second number given in each cubicle is the standard deviation of the ratings.)

The data in this study were collected within each culture. They clearly show that the responses of nurses within a culture toward patients of their own culture markedly differ from another culture. The patient descriptions were identical, and yet nurses responded differently to the same information.

An important implication of this study is the appreciation and recognition of markedly different cultural responses to inferences of physical pain and psychological distress of identically described patients. Westerners tend to categorise Oriental cultures into one cluster. Indeed, it might be important to note a reaction of one nurse to our cross-cultural studies. Her comment was, 'Weren't we really comparing Oriental and Western societies?' For her, Japanese, Chinese, Thai, Korean were all part of one group. With re-

gard to inferences of suffering at least, the result of this study demonstrates that Oriental national groups differ among themselves just as one would expect groups from various Western societies to differ.

Among the cultures studied, the Puerto Rican sample showed the lowest inferences of physical pain and the second highest in terms of psychological distress. This finding is in accord with a previous study of ours. The finding cannot, of course, be explained by our data; however, a number of Puerto Rican reviewers reflected that the data made sense to them.

'We can't always judge the amount of physical pain a patient has by his behaviour,' commented one Puerto Rican nurse. She cited a typical situation on an obstetric ward where Puerto Rican mothers might be very emotional

	Mild	Moderate	N
USA	2.63 0.59	3.37 0.57	85
Japan	3.10 0.70	4.36 0.70	110
Puerto Rico	2.86 0.70	3.26 0.72	77
Korea	3.53 0.70	4.08 0.62	87
Thailand	2.77 0.60	3.63 0.65	94
Taiwan	3.25 0.57	3.82 0.58	91

Table 5. Mean and standard deviation ratings of physical pain of two severity variables for each country. (Note: First number given in each cubicle is the mean rating. Second number given in each cubicle is the standard deviation of the ratings.)

	Mild	Moderate	N
USA	3.98 0.74	4.88 0.69	85
Japan	3.93 0.73	5.35 0.69	110
Puerto Rico	4.48 0.84	5.13 0.78	77
Korea	4.42 0.60	5.26 0.51	87
Thailand	3.85 0.60	4.95 0.59	94
Taiwan	3.68 0.72	4.45 0.67	91

Table 6. Mean and standard deviation ratings of psychological distress of two severity variables for each country. (Note: First number given in each cubicle is the mean rating. Second number given in each cubicle is the standard deviation of the ratings.)

even though they were not undergoing unusual labour pains. 'Patients can experience a great deal of psychological distress even with only mild discomfort.'

This finding suggests that for some cultures overt expressions of pain may not necessarily imply severe, moderate, or even mild physical discomfort. In contrast to the Puerto Ricans, the Japanese are taught from early childhood to be less overtly responsive, and the lack of overt expression of physical pain may be totally unrelated to the degree of pain actually being experienced.

The sample from the United States had the second lowest ratings for both physical pain and psychological distress. It is interesting to note that the

	4-12	35-45	65+	N
USA	3.02 0.58	2.96 0.57	3.03 0.61	85
Japan	3.82 0.71	3.63 0.63	3.74 0.77	110
Puerto Rico	3.18 0.70	3.03 0.66	2.97 0.74	77
Korea	3.96 0.65	3.73 0.60	3.75 0.75	87
Thailand	3.31 0.63	3.11 0.58	3.18 0.62	94
Taiwan	3.63 0.58	3.40 0.51	3.59 0.63	91

Table 7. Mean and standard deviation ratings of physical pain of three age groups for each country. (Note: First number given in each cubicle is the mean rating. Second number given in each cubicle is the standard deviation of the ratings.)

	4-12	35-45	65+	N
USA	4.18 0.76	4.47 0.74	4.65 0.70	85
Japan	4.36 0.80	4.78 0.66	4.78 0.71	110
Puerto Rico	4.54 1.07	4.90 0.72	4.97 0.80	77
Korea	4.56 0.76	5.03 0.53	4.94 0.60	87
Thailand	4.03 0.72	4.62 0.60	4.54 0.60	94
Taiwan	3.63 0.80	4.23 0.67	4.34 0.74	91

Table 8. Mean and standard deviation ratings of psychological distress of three age groups for each country. (Note: First number given in each cubicle is the mean rating. Second number given in each cubicle is the standard deviation.)

	Male	Female	N
USA	4.39 0.70	4.47 0.64	85
Japan	4.57 0.69	4.70 0.66	110
Puerto Rico	4.75 0.84	4.86 0.77	77
Korea	4.76 0.56	4.92 0.53	87
Thailand	4.36 0.56	4.43 0.55	94
Taiwan	3.99 0.68	4.14 0.66	91

Table 9. Mean and standard deviation ratings of psychological distress of two sex variables for each country. (Note: First number given in each cubicle is the mean rating. Second number given in each cubicle is the standard deviation.)

	Male	Female	N
USA	2.95 0.55	3.06 0.57	85
Japan	3.70 0.66	3.76 0.69	110
Puerto Rico	3.02 0.70	3.10 0.67	77
Korea	3.79 0.62	3.82 0.66	87
Thailand	3.14 0.61	3.26 0.57	94
Taiwan	3.46 0.55	3.62 0.56	91

Table 10. Mean and standard deviation ratings of physical pain of two sex variables for each country. (Note: First number given in each cubicle is the mean rating. Second number given in each cubicle is the standard deviation.)

majority of our American sample were from Anglo-Saxon or Germanic backgrounds. According to some researchers these groups tend to be somewhat reserved, tend to play down pain. At this point more research is necessary to investigate this notion fully; however, the finding does raise an important issue. If nurses from Anglo-Saxon or Germanic cultures tend to minimise physical pain and psychological distress, how do these belief systems affect relationships when the patient is from another culture? That is, if an Anglo-Saxon or Germanic nurse is working with a patient from another culture, how will her beliefs influence her treatment of such individuals? If the Anglo-Saxon or Germanic nurse places importance on reserve, a certain amount of stoicism, a control of emotions, will she be annoyed, intolerant, with patients from another culture who respond quite differently to suffering?

This poses a very real problem in situations where the nurse encounters patients from markedly different cultural backgrounds. Interviews with nurses revealed innumerable instances when they found themselves reacting strongly to what they felt were unwarranted reactions to situations. One nurse reported, 'The patient was Italian. I had the whole family crying; the patient was carrying on. We hadn't even had him X-rayed and he had himself at death's door. I couldn't help feeling irritated.'

To what degree are meaningful relationships between nurses and patients blocked simply because of vast differences in cultural orientations?

We certainly do not propose that nurses discard their belief systems and become 'universalists' in their thinking. We do suggest, however, that understanding our belief systems about suffering, the cultural patterns which are part of our thinking, can provide us with insights that will help us to deal effectively with patients whose values and attitudes differ from our own. An important consequence of the recognition of cultural differences with respect to beliefs about suffering can prevent a great deal of misunderstanding, misperceptions, and lead to more effective, sensitive patient care.

Counterpains

J. G. Hannington-Kiff, BSc, MB, BS, FFARCS

The use of counter-irritants to help relieve the misery of chronic pain deserves greater attention

THE RELIEF of chronic pain by counter-irritants is a common practice in primitive cultures and is still a basic principle in the folk medicine of our own society.

Huge quantities of proprietary remedies are rubbed in daily by our increasingly ageing population to help relieve the pains associated with degenerative disorders of the musculoskeletal system, which comprise the group of chronic painful conditions most amenable to the effects of counter-irritation.

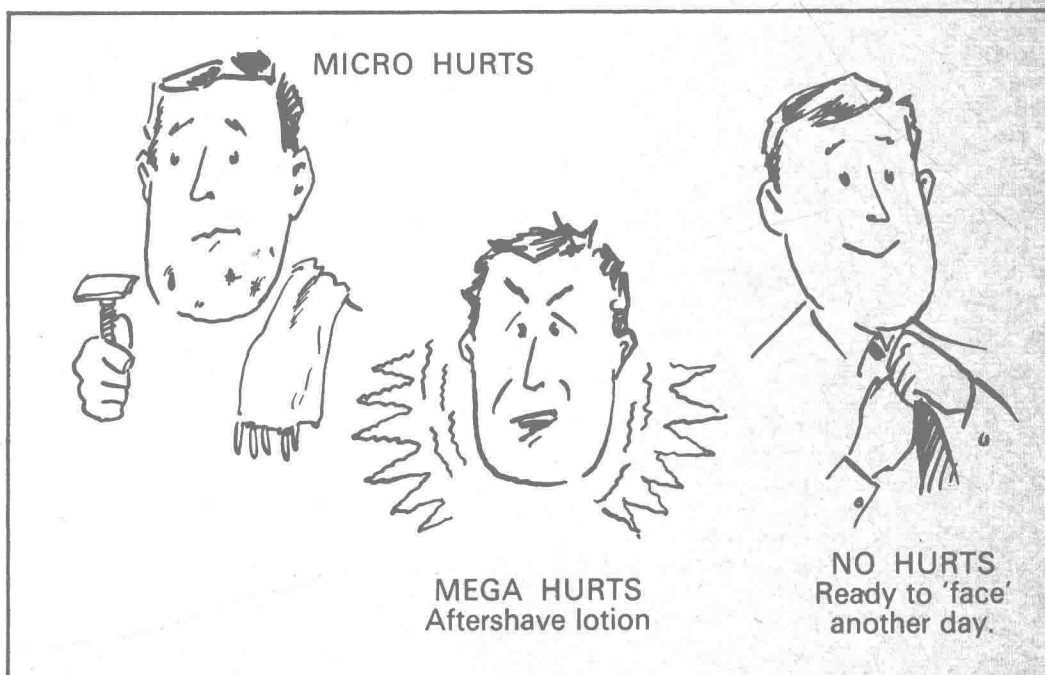
The effectiveness of counter-irritation in relieving niggling pain is generally accepted but little acknowledged in our teaching of pain relief so that the emphasis tends to be on the use of analgesic drugs. This is unfortunate as analgesics like all drugs have unwanted effects: when it is considered that mild analgesics are the most commonly used drugs, both by counter sales and prescription, then many potential dangers could be avoided by encouraging the use of counter-irritation in its various forms where appropriate.

The relief of pain may outlast the duration of activity of the counter-irritant by a period of minutes to hours, sometimes days, and very occasionally the cure is permanent. Even a short period of relief may work wonders for the morale of a patient in persistent nagging pain and it should never be dismissed as of little value.

Pain paradox

An effective counter-irritant must usually be painful to a degree; and I have called this situation in which one pain inhibits another the pain paradox. An everyday example of this effect is the relief of the minor multiple discomforts of the abrasions of shaving by dabbing the skin with aftershave lotion, the alcohol in which causes a sharp episode of acute pain that somehow extinguishes the otherwise predictable period of hours of niggling soreness (see cartoon in which I misuse the units of radio frequency).

A manoeuvre familiar to nurses will be the routine of washing pressure areas which are then rubbed with





surgical spirit and finally powdered. Though this sequence is primarily to avoid pressure sores it will also relieve those aches and pains associated with confinement to bed.

How much of this pain relief is due to the massage and how much to the smarting caused by the surgical spirit is a matter for conjecture. Of course, in both the above examples the placebo effect plays an important part; but this is true of all types of treatment.

Many surface stimuli can relieve or modify the feeling of pain, which range from the commonplace to the exotic. They include, for instance, rubbing, stroking, pressing, tapping, heating, cooling, cupping, piercing, application of chemical irritants, electrical therapy and insect stings.

Such surface stimuli are usually applied in or close to the painful area; but they can be effective when used at a remote site. Especially in musculo-skeletal pain there may be a trigger point, the appropriate stimulation of which will relieve a much wider area involved by pain.

In acupuncture, which has aroused much interest lately in our society, the needle stimulation is often applied remote from the region of pain. Since acupuncture is unlikely to be within the personal experience of many nurses it is worth pointing out that acupuncture must itself usually be painful, at least to a degree, to relieve pain.

On the other hand, counter-irritant ointments, liniments and sprays have very likely been used at some time by the majority of nurses (on their own backs usually) and the stinging, heating or cooling effects which they produce will be familiar.

These preparations on the whole owe their effects to skin irritants like capsicum, to vasodilating agents like methyl nicotinate and to cooling agents like menthol. Some proprietary preparations contain capricious mixtures of stinging, cooling and heating agents to relieve pain!

It is possible that a barrage of almost any stimuli including, or especially, the rubbing-in process required may be effective in relieving pain by simply altering the sensory input and breaking the stereotyped cyclical nervous activity underlying chronic pain.

There is evidence from animal physiology that neurones in the spinal cord can switch their modality of reactivity from muscular to cutaneous so that stirring up the skin receptors with a counter-irritant may interrupt the pain of muscle cramp by taking over the underlying neural basis of the sustained muscle spasm.

The importance of modern views on the central nervous modulation of pain is that they have provided a successful theoretical foundation for the development of new types of electrical ap-

paratus which selectively stimulate thick myelinated nerve fibres that in turn oppose activity in those thin myelinated and unmyelinated nerve fibres thought to subserve pain. Such apparatus has been designed for direct application to the skin over the site of pain, for insertion into regional nerves and for implantation over the spinal cord.

Personal approach

While these developments are of great interest, it should always be remembered that the clinical management of pain involves consideration of the whole patient. Your sympathetic personal approach to a patient who has been thoroughly demoralised by chronic pain will do more good for that patient than you can readily theorise about. What better opportunity is there for you to gain the confidence of an elderly patient than during the massage of a counter-irritant into an aching back or limb?

FURTHER READING

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Treating intractable pain

Changing attitudes and alternatives

Mark Mehta, MB, DA, FFARCS

LAST YEAR *Nursing Times* published articles on terminal cancer (Maher) and transcendental meditation (Rigby) emphasising different, and less commonly known, ways of treating patients with intractable pain. Nurses may have to participate in the management of these difficult cases, when the cause is unknown, as in long-standing backache and sciatica; when the mechanism is ill understood, as in phantom limb sensations after amputation; or when the source is evident but nothing more can be done about it, as in inoperable cancer.

A number of different techniques are now available (Mehta 1973) and these are briefly summarised (Fig 1). However, this article is more concerned with the changes in medical and nursing attitudes, which have been developed traditionally to regard pain in terms solely of their own brand of skills and sometimes to pursue a particular method to the exclusion of all others.

Nurses may recall patients with numerous operative scars, testimony to a series of unsuccessful operations, or those with serious neurological complications after repeated and ill-advised injections into the spinal cord. They may also have seen others, who are sick, confused and dependent on narcotics because they were prematurely given these potent analgesic drugs for long continued pain. Each method of achieving pain relief has its place, but there are recognised limitations when they are continued indefinitely.

Combined approach

The modern tendency is towards collective thinking, or a multi-disciplinary approach blending each component into the overall pattern of management and harnessing the skills of many different specialists to achieve this end. The expert who cannot see beyond his own expertise has been likened to the man who digs a deep hole. The greater the authority the deeper the hole, and the less likely he is to judge whether it has been started in the right place.

We are using this combined approach

in dealing with patients who complain of persistent backache and sciatica, sometimes even after carefully performed laminectomy and spinal fusion. Further surgery is often inadvisable and yet something has to be done for these unfortunate people, who are often in their prime and yet cannot, because of pain, lead a normal existence.

Disastrous situation

It is remarkable how a surgeon, in consultation with a colleague in physical medicine, a physiotherapist and an anaesthetist, can often redeem something from an apparently disastrous situation, which would not have been

possible by any amount of individual effort.

Lateral thinking, popularised by Edward de Bono (1971) and adapted for pain relief by Hannington-Kiff (1974), means examining a difficult problem from another angle and deliberately studying the case with a fresh and unprejudiced outlook. Let me illustrate this with a simple mathematical puzzle:

$$\begin{array}{ccccc} 4 & 5 & 6 & 7 & 8 \\ \hline & , & , & , & , \\ 61 & 52 & 63 & 94 & ? \end{array}$$

If you consider this in the conventional way with logical or vertical thinking, you may start looking for the missing

Fig. 1 Methods of treating chronic pain

		1. Overall management of the patient as an INDIVIDUAL
		2. Attention to RELATED DISCOMFORTS
		3. CHEMOTHERAPY and hormones
I. GENERAL	4. PALLIATIVE e.g. surgery, radiotherapy	
	5. Analgesic and allied DRUGS	
	6. INHALATIONAL methods e.g. Entonox	
	7. PSYCHOTHERAPY	
II. SENSORY DESTRUCTION	1. INJECTION THERAPY e.g. chemical neurectomy	
	2. NEUROSURGERY eg. cordotomy, thalamotomy	
	3. PERCUTANEOUS CORDOTOMY	
	1. PERIPHERAL	Vibration, Percussion Acupuncture Electric stimulation
	2. CENTRAL	Cortical inhibition Transcendental meditation Yoga Hypnosis Sensory distraction and diversion
III. MODIFICATION OF NOXIOUS IMPULSES		

number in a series or by calculating fractions. In fact, this was a problem set for children in an 11+ examination and it is more profitable to look at it in the same way as someone of that age. You will then realise that the bottom number are the squares of the uppers—but the figures are in reverse order. On this basis the correct answer is 46.

It is now recognised that patients who continue to experience pain after destruction or injection of a specific nerve, or of the appropriate tract in the spinal cord, are not imagining their complaints and neither are they necessarily psychologically or emotionally disturbed.

Several alternative routes to the brain have been identified and painful sensations may be travelling along one of these or by way of re-connected synapses in the central nervous system. The limitations of treatment which aims at interrupting nerve pathways are being appreciated, and an alternative approach, arising from Melzack and Wall's gate-control theory (1965), is being adopted.

Pain tolerance

This involves stimulation of pain-inhibitory systems. A common example is rubbing an injured part to alleviate pain, and, in similar vein, are vibration, percussion and pain-relieving sprays. Transcutaneous electrical stimulation with pads placed over specific trigger or needle electrodes over peripheral nerves are more sophisticated ways of recruiting these inhibitory systems and raising the patient's tolerance to pain.

The mystique of acupuncture has been over-publicised recently but the basic mechanism of pain relief, when it is effective, is the same, probably with powerful reinforcement from suggestion and hypnosis.

These methods have no more than a 25–30% success rate in the over-all treatment of chronic pain states. But, being harmless, they are always worth trying in, for example, post-herpetic neuralgia, phantom limb syndromes and hand injuries, where destruction of sensory nerves could lead to serious trophic loss of the superficial tissues.

Other methods

Hypnosis and psychotherapy are other valuable adjuncts to other methods of obtaining analgesia, notably when the symptoms are widespread and difficult to control. In one instance hypnotic suggestion benefited a patient with multiple sclerosis and enabled him to do without powerful narcotic analgesics.

Cortical inhibition of pain is further exemplified by the way in which

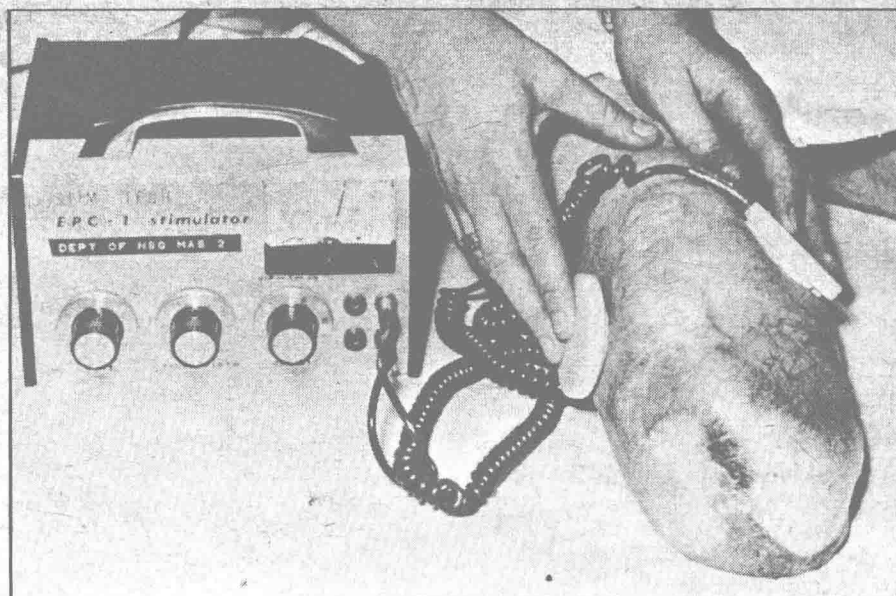
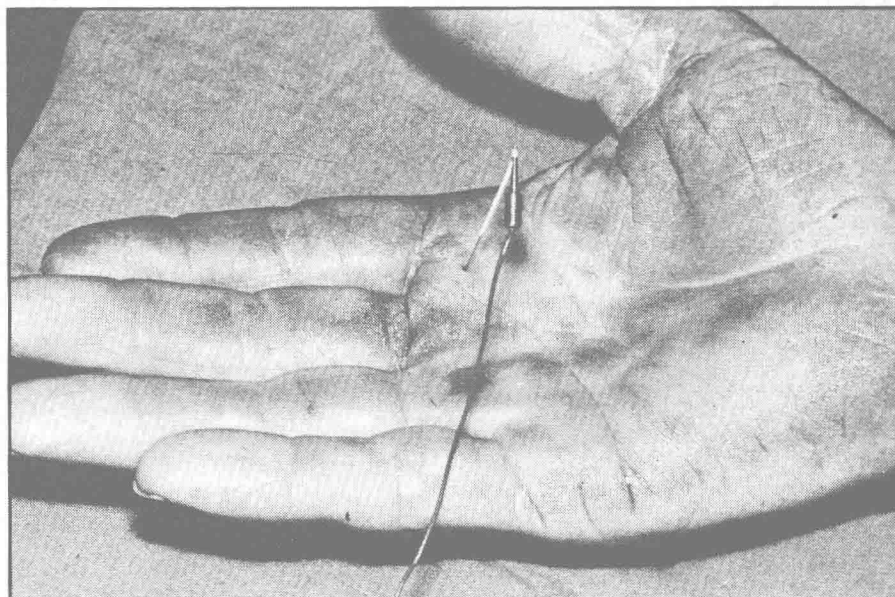


Fig 2 (above). Trans cutaneous electric stimulation for persistent amputation stump pain

Fig 3 (below). Electric acupuncture for intractable pain in the hand after injury at work. This patient continued to have pain in the palm of the hand after satisfactory reconstruction of the superficial tissues. It was impracticable to achieve long-lasting relief with conventional nerve blocks, which might have produced loss of sensation and the risk of trophic ulceration in the hand. Electric acupuncture, repeated at six weekly visits, enabled him to tolerate the discomfort and return to work, even though complete analgesia was not obtained



soldiers and very devout religious people, like the fakirs in India, can withstand levels of discomfort not tolerated by others. Yoga and transcendental meditation also come into this category and we may have underestimated the potential of these methods, which are widely practised in other parts of the world.

Hopefully, this brief review will give wider recognition to the problems of chronic pain and indicate the many ways of dealing with them. We may all be overawed, to some extent, by advances in science but, as Lord Platt drily observed: 'Science has a long way to go before it can afford to sneer at Art'.

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Cold therapy

Monica Everall, MCSP, Dip.TP

The application of ice has now become a therapeutic measure and it is used as often as heat. Some research into the effect of local cooling has been done and methods of application are explained

IT IS only during the last few years that we have become aware of hypothermia. In the autumn and winter months hardly a day passes without we read or hear about hypothermia, or watch its ill effects and learn how they can be avoided. Never a word do we find of its uses; which is a pity because, used locally, cold is frequently more beneficial than heat.

Unfortunately, a certain amount of psychological 'blocking' must be overcome. Heat has been used from time immemorial for the relief of pain and tension, and the thought of ice is associated with aches and pains, muscle tension and shivering. Recently, however, the application of ice has become a therapeutic measure used as often as heat as its great benefits become more widely recognised.

Admittedly, the application of cold to the skin is often unpleasant, but the duration of treatment is short and the patient invariably reports beneficial effects and is happy to continue treatment.

Physiological effects

Research into the effects of local cooling has shown that the main physiological changes take place in the nerve fibres whose conductivity is reduced.

In 1955, Douglas and Malcolm of the National Institute of Medical Research, Mill Hill, published a paper on the subject in *The Journal of Physiology*. Their experiments showed that the degree of this reduction in conductivity varied in the different types of nerve fibres according to their diameter. Fibres of small diameter are more susceptible than those of large diameter.

Among the nerve fibres of small diameter are those conducting impulses of pain to the brain. Pain is, therefore, reduced by the cooling of these fibres.

Also of small diameter are the nerve fibres which transmit impulses from the sensory nerve endings in the muscle fibres, that is muscle spindles, to the central nervous system. These impulses form the afferent constituent

of the stretch reflex. When their conductivity is reduced muscle tone is inhibited. Therefore cooling will reduce spasticity of muscle. This will apply to an increase in tone due to neurological conditions, for example hemiplegia, or to the protective increase in tone which accompanies recent injuries or any other acutely painful condition.

At this stage it is interesting to note that, while heat has similar physiological and clinical effects, further experiments have shown that those produced by cooling are of longer duration. This is because the cooled muscle spindle itself becomes less sensitive and, even when the muscle is exercised, takes some time to return to its former state. The irritability of the muscle spindle is not altered by the application of heat, so as soon as the muscle is contracted the spasm returns.

Further investigations have shown that the power and endurance of muscle groups are increased by the application of cold.

When it is applied to the skin it results in the dilatation of the superficial blood vessels and an increase in the flow of blood through the tissues underlying them. As a result these areas are revitalised and the elimination of waste products and toxic substances is enhanced. Bruising and swelling are reduced in this way.

Once again it may be argued that the application of heat has a similar effect but again, the use of cold can be justified by its shorter application time and the fact that the hyperaemia produced remains for a longer period.

Clinical applications

1. The relief of pain. The application of cold is particularly useful for both acute and chronic muscle and joint pains, and has been proved effective in both rheumatoid and osteo-arthritis and ankylosing spondylitis.

2. To increase the range of movement in painful joints. This is usually limited by pain, and by the protective muscle spasm that occurs to hold the joint in a fixed position. Both these factors are reduced by the application of cold and

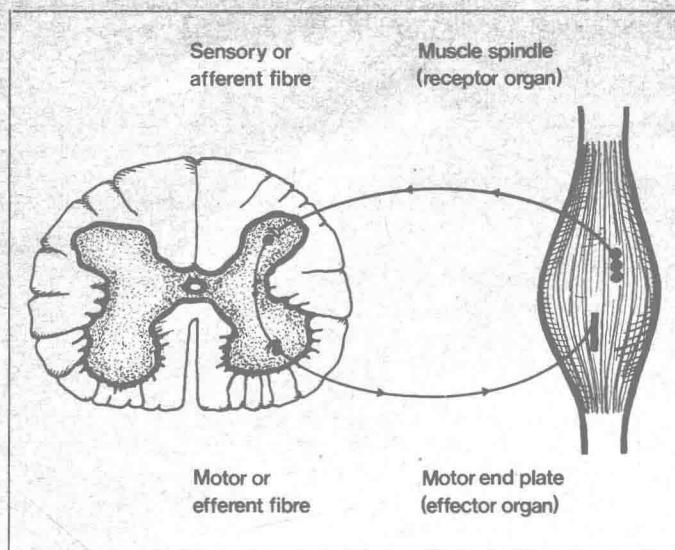


Fig 1. Components of the stretch reflex

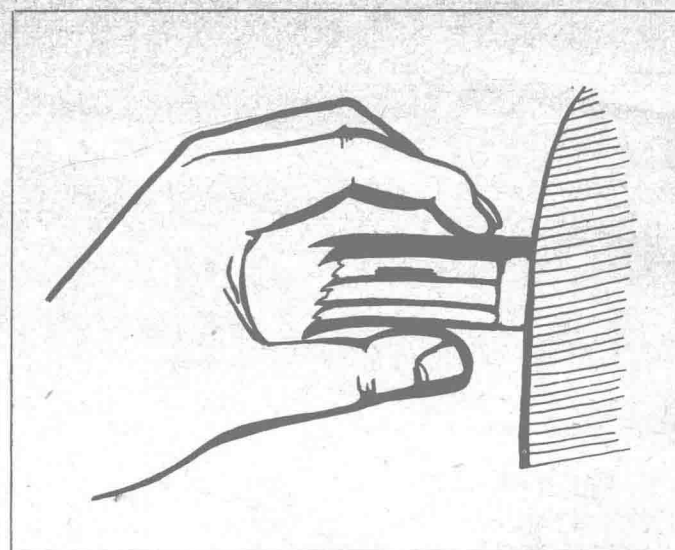


Fig 2. Massage with ice cube in contact with skin

gentle movement can then be encouraged.

3. To reduce swelling. A cold compress is particularly effective in the treatment of recent injuries such as sprained ankle, torn muscle fibres etcetera.

4. The application of cold helps to improve local muscle power and endurance in diseases marked by early fatigue such as multiple sclerosis or poliomyelitis.

5. Cold helps to revitalise areas of the skin subjected to prolonged pressure and thereby prevent pressure sores developing.

6. The muscle spasm that occurs in some diseases of the nervous system, for example in strokes, can be reduced by the application of cold.

Contra-indications

1. Cold therapy should not be applied over areas of skin which are affected by rashes or skin diseases.

2. It must never be used without very careful supervision in cases of circulatory disorders.

3. It is inadvisable to use cold therapy

in the presence of heart disease.

4. Unstable or overemotional people may react unfavourably, in which case cold therapy should not be used.

Methods of application

The choice of method obviously depends on the area to be treated and the condition for which treatment is being given. Another important factor to consider is whether or not the patient should be advised to apply the treatment at home as part of a planned régime. This is usually highly desirable so one of the following methods should be used:

- (a) Cold packs.
- (b) Wet towel method.
- (c) Ice massage.

1. *Cold packs* are a suitable method if the patient lives alone. Requirements are: a Terry towelling bag of a size to cover the affected area, crushed ice, olive or nut oil, paper tissue and a towel.

Smear the area to be treated with oil to prevent an ice burn and then cover it with a single layer of paper

towelling such as that of a kitchen roll. Damp the Terry towelling bag in cold water, fill it with crushed ice and mould this pack to the part. Keep in place for five to 10 minutes.

2. *Wet towel method.* Requirements are: a basin of cold water to which has been added crushed ice, two Terry towels about 30in. x 24in. for soaking, one towel for drying and a rubber or plastic sheet.

The towels should be soaked in the iced water and used alternately well wrung out. Keep in place for one minute. Treatment should last for 10 to 15 minutes.

3. *Ice massage* is particularly useful for treating the small joints of the hands and feet. It is also beneficial when applied over the back of the neck and shoulders.

The requirements are: an ice cube, paper tissue and a towel. Wrap the tissue round the ice cube keeping one side exposed. This should be slowly massaged over the affected area using gentle pressure and small circular movements.

After all of these treatments the area should be dried thoroughly and powdered. Then careful active movements of the affected joints should be tried together with movement of neighbouring joints. At no time should movement be forced or taken beyond the range of pain as this always increases spasm and consequent limitation of movement.

If the treatment has been given to an area subjected to pressure in order to revitalise the tissues, it is essential that pressure should not be reapplied immediately. At least one hour should be allowed for the hyperaemia to disperse.

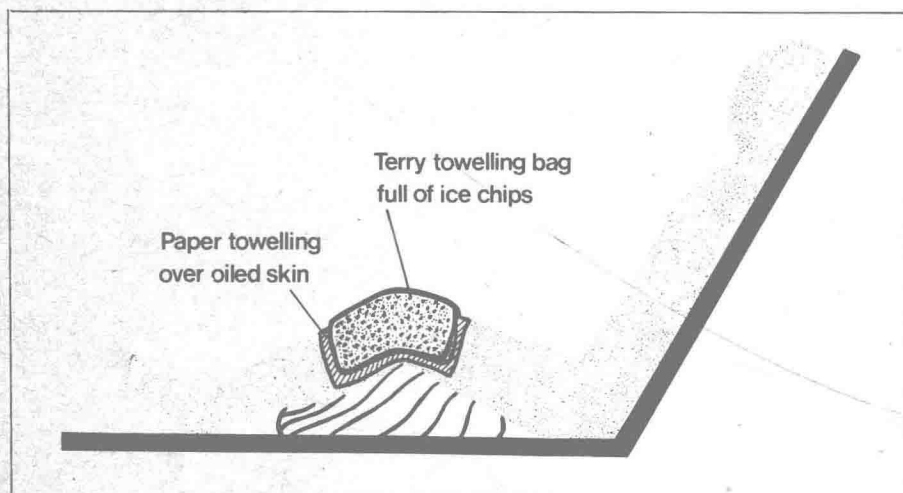


Fig 3. Cold pack to the knee

Postoperative analgesia

THE treatment of postoperative pain has not altered in any essential particular for nearly a century. Indeed the standard régimes for postoperative sedation are not a source of much pride or satisfaction to doctors.

Pain is a subjective symptom. That is, everyone knows what *their* pain feels like but no one knows what anyone else's feels like. Pain follows all but the most trivial operations. But it is usually more severe, more prolonged and less amenable to relief following abdominal operations. There are a number of reasons for this:

1. *Retraction.* The retraction that is necessary during most of these procedures tears and bruises the tissues. More pain is caused by the retractor than by the knife.
2. *Respiration.* The pulling on healing incisions by respiration, especially deep, sighing abdominal breaths, aggravates the pain. Coughing is even more painful. And it is difficult to make any movement in or out of bed without using abdominal muscles.
3. *Muscle spasms.* Muscle spasms occur in many patients after abdominal operations. They may persist for hours or days. They not only pull on the incision but add the pain of cramp to the pain of the incision. This combination all too often resists large doses of strong analgesic drugs. The spasms are a fundamental reflex. Untreated penetrating abdominal injuries, from hunting or fighting, for instance, are always fatal unless the wound is repaired quickly. But if the sufferer survives to reach a safe hiding place, the muscle spasms, by closing the wound, and the resulting pain, by encouraging immobility, provide the best chance of survival.

However, in an adequately sutured and clean wound such a reflex becomes inappropriate. The pain caused by the spasm, far from being necessary to ensure survival, can cause vomiting and leads to immobility, deep vein thrombosis and pulmonary embolus. It also favours shallow, thoracic respiration and prevents coughing and sighing so that pulmonary collapse and bronchopneumonia develop.

Strong analgesics such as morphine, Omnopon (papaveretum) and pethidine relieve the most severe pain if given frequently enough or in large enough doses. But such doses of such drugs may themselves produce nausea and vomiting, depression of respiration and of coughing, and over-sedation and immobility. Anti-emetic drugs are effective and safe and their use forms the main advance in the treatment of postoperative pain during the last century.

Purely analgesic drugs, that is drugs that relieve pain but do not make the patient sleepy or depress respiration,

E. N. S. Fry, MB, ChB, FFARCS, DA

A new system has been developed in the North Tees General Hospital which has many of the advantages of self-demand analgesia techniques, without the need for expensive equipment

have been used. However, they cause too many bad dreams. Anti-hallucinatory drugs may be added but sedate the patient as much as opiate drugs in equivalent doses.

Pain pathway

Noxious impulses are aroused in most body tissues by various stimuli. They are transmitted by pain fibres that run in sensory nerves to the spinal cord. Thence the impulses pass by nerve tracts up to the cerebral cortex where they are appreciated as pain. This pain pathway can be blocked at several different levels by several different ways:

1. The impulses may be prevented from setting out by soaking the wound or infiltrating the tissues around it with solutions of local anaesthetics such as Xylocaine (lignocaine) or Marcain (bupivacaine).
2. The impulses may be prevented from reaching the spinal cord by nerve blocks or epidural blocks.
3. The synapses or relays in the spinal cord may be blocked by being swamped by massive touch or pressure sensations. There is evidence that pain fibres and those carrying touch and pressure are linked in the spinal cord and that strong stimulation of one type can depress the activity of the other. This conception forms the basis of the so-called 'gate' theory of pain and explains many phenomena such as acupuncture, some aspects of heat therapy, counter-irritation, and various forms of vibrational and electrical analgesia.
4. The muscle spasms may be reduced by practising various relaxation techniques, combined with tricks to raise or turn the trunk using limb muscles only.
5. Various sophisticated 'demand' systems have been developed so that a patient may give himself what he re-

quires when he requires it.

6. Recently it has been discovered that the brain produces its own 'opiate-type' drugs. These have not been used yet because the body destroys them so quickly that they have to be applied directly to the brain. Methods of stimulating the brain to produce increased concentrations of its own drug are still in the future. The existence of these drugs does, however, explain why people feel pain so differently, and also why strong analgesics seem to become less effective after prolonged use.

At first the injected opiate acts in addition to the patient's own 'opiate', but later, when the production of the latter has been suppressed (just as cortisone can suppress the body's production of its own cortisone) it has to act alone. And because the brain then depends upon the injected drugs not only for analgesia but also for its proper functioning, the withdrawal symptoms that are such a feature of addiction are explained.

7. Hypnosis is a real phenomenon, though it is not known how it works. Possibly its pain-relieving properties are due to the brain's influencing the passage of noxious impulses passing up the spinal cord and, as it were, closing the gate, or perhaps the hypnotic state encourages the production of the brain's own opiates. Or more probably it is a combination of the two.

8. Inhalations of nitrous oxide and oxygen fed premixed from cylinders (Entonox) or from pipelines or cylinders via mixing valves have been used in obstetrics, first aid, minor procedures and painful physiotherapy for many years. They can produce a useful amount of analgesia after major surgery. In the North Tees General Hospital an efficient home-made light plastic mask has been used, but two factors reduce its benefits. About one-



Fig 1. A patient receiving intravenous analgesia after abdominal surgery

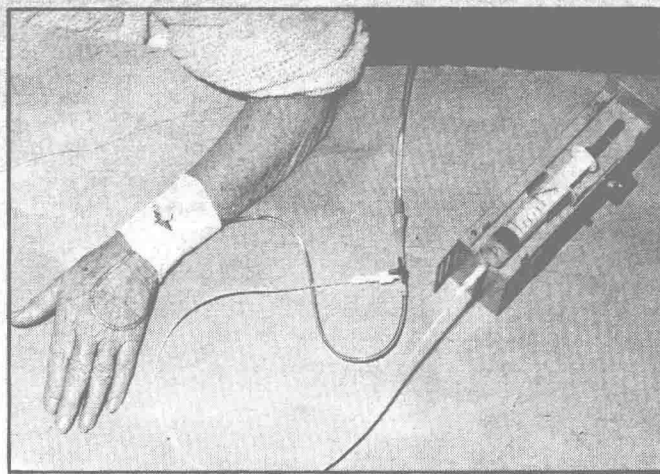


Fig 2. Detail showing the intravenous line attached to the Handley clockwork pump. The extension set with three-way tap allows the patient more freedom of movement

third of patients develop resistance to nitrous oxide and some of the remainder cannot tolerate the mask for more than a few hours.

The methods and techniques indicated above have all been used and all work well with the exception of No 6, but all are too expensive in terms of use of costly equipment or scarce skilled labour to come into routine use in the foreseeable future.

So that is why postoperative pain is treated by opiates, usually Omnopon, morphine or pethidine, with or without anti-emetic drugs such as Stemetil (prochlorperazine), cyclizine or Fentazin (perphenazine). The drugs are injected intramuscularly in doses that are known to be safe and that it is hoped will be adequate, either six- or eight-hourly or at the nurse's discretion. Since the patient's health and safety are properly the main concern of the nurse, and since the injections take from 20 to 40 minutes to act, the patient suffers much pain. And the pain that the patient does suffer lowers the pain threshold and reduces the effectiveness of the drug when it does act.

To provide many of the advantages of self-demand analgesia techniques, without using the expensive equipment that these techniques need, a new system has been developed in the North Tees General Hospital. As soon as the patient is awake and feeling pain, Omnopon, 1mg in 1ml normal saline, is injected intravenously in 2mg doses up to 10mg and thereafter in 1mg doses until the patient is comfortable. The injections are made at one-minute intervals until the patient says that the pain is better and coughs effectively. Ninety minutes later, double the total dose of Omnopon in 20ml of normal saline is infused through an intravenous infusion by a mechanical pump. In the North Tees General Hospital we use a Handley clockwork pump as used

widely for heparin infusion. The infusion takes about 12 hours. The patient has more freedom of movement if an extension set is used with a three-way tap inserted near the patient's end of the infusion set. Three features become quickly apparent:

1. The initial dose of Omnopon varies from 6mg to 45mg and is not related to age, weight or nature of operation and expected severity of pain.
2. It is not necessary to have a standard level of recovery from general anaesthesia at which the initial injections are given. If the patient is sufficiently awake to feel the pain and alert to indicate when it is relieved, the dose of Omnopon necessary to relieve that pain is a reliable guide for the requirements of Omnopon for the next 48 hours. This was the breakthrough that turned an experimental, individually applied technique into a system that can be used safely by trained nursing staff.
3. When receiving Omnopon this way, patients remain alert and active and surprisingly free from nausea and vomiting.

If the infusion is continued for a second 24-hour period, the dose of Omnopon infused each 12 hours is reduced by one-quarter each time for the third and fourth 12-hour period. For example, if the initial dose is 14mg, after 90 minutes Omnopon 28mg in 20ml normal saline is injected during the following 12 hours and repeated for a second 12 hours. The dose for the third 12-hour period is 20mg and for the fourth and last one 15mg. On this régime patients remain alert except during periods of natural sleep, move about and even out of bed, cough and are rarely sick. Patients in plaster jackets or recovering from cholecystectomy are the main exceptions. In the North Tees General Hospital Stemetil is used to treat this complication.

Respiratory depression has never been a problem, but if the patient's

lung function has been impaired by previous disease, Dopram (doxapram), a respiratory stimulant, may be added to the infusion.

A few patients still feel spasms of pain or become sleepy during and for a while after the infusions. To reduce the dose of Omnopon or increase its action a muscle relaxant is required. Valium (diazepam) is quite effective but sedates the patient too much. Myanesin (mephenesin), a muscle relaxant, works well but weakens all voluntary muscles including respiratory muscles. This is not desirable. We have found that Norflex (orphenadrine) is the best drug for this purpose. It is a specific striated muscle anti-spasmodic. It reduces the frequency and strength of the painful spasms without impairing control or power of the muscles. By its use the dose of Omnopon in the 12-hourly infusions may be reduced to one-and-a-half times the initial dose. This gives acceptable analgesia with retention of full awareness and activity.

When their course of intravenous Omnopon is completed, many patients remain comfortable and do not require further analgesia. Others do. If the latter can absorb tablets, Diconal (dipipanone with cyclizine) is given orally; otherwise a few intramuscular injections of Omnopon are given.

In conclusion, the technique described above must be regarded as an experimental one, and although it is managed by trained nursing staff its use is confined to the intensive care unit. But it is hoped to introduce it in the near future to selected intensive nursing beds in general surgical wards. □