STEROID GUIDELINES AUDIT RESULTS

274 patients were under active follow up between the audit dates. Notes for all these were audited.
59% (163) were not on steroids during this time
21% (57) were already on steroids so were not included in the audit
20% (54) were included in the audit.

Of the 54 patients audited:

- 4 were commenced on 2 separate courses of steroids, and were therefore audited twice (58 incidents)
- 4 were excluded in view of the indication for their steroid (1 COPD, 3 chemo)

This left 54 incidents of steroid prescribing in 51 patients to audit.

Indications and doses used:

Indication:	**No.:**	**Median dose (dex, mg):**	**% in guidelines**
Appetite/energy	19	4	84%
Bowel obstruction	3	8	66%
Brain tumour/raised ICP	7	12	29%
Cord compression	1	16	100%
Liver capsule pain	7	8	0
Neuropathic pain	4	3	0
Nausea/vomiting	6	5	33%
SVCO	2	12	50%
Unclear	6	7	
Other	5	8	
Total	**60**	**6**	**40%**

In 6 cases, there were 2 or more indications for the steroid, making 60 indications to audit, of the 54 incidents.

The 'other' indications were squashed stomach (3), breathing (2), lymphoedema (1) and laryngeal tumour swelling (1).

On the whole the lower doses (eg appetite and energy) seemed to follow the guidelines more often. There was a tendency to give lower doses than recommended in those with bowel obstruction and particularly brain tumours, perhaps because of concerns about side effects. Liver capsule pain was consistently treated with 8mg rather than the 6mg suggested by the guidelines. This suggested to me that people may disagree with the guideline doses, or be judging each case on merit.

Whether guidelines were followed:

Steroid started by	Followed	Not followed	Not applicable	Unclear	Total
CPCT	60% (6)	30% (3)	-	10% (1)	10
Hospice Dr	46% (13)	36% (10)	18% (5)	-	28
GP	0%	60% (3)	-	40% (2)	5
Hospital Dr	29% (5)	47% (8)	-	24% (4)	17
By hospice	*50%*	*34%*	*13%*	*3%*	*38*
By others	*23%*	*50%*	*-*	*27%*	*22*
Total	*40%*	*40%*	*8%*	*12%*	*60*

This shows that in about half of the cases in which the hospice team advise steroids be commenced, the guidelines are followed, although a significant proportion were started for an indication for which there was no guideline ('not applicable').
CPCT are more likely to follow guidelines than hospice doctors.

It is not surprising that the proportion following the guidelines is lower in the group advised by professionals outside the hospice, as they may not be aware we have guidelines or may have different ones of their own. The indication for commencing steroids was unclear in a significantly higher proportion of this group, as they have their own notes. If we are involved in the monitoring of steroids in this group of patients we need to make an early effort to find out the indication and plan so that it can be recorded in our notes.

GI cover:

Steroid started by	GI cover given	Already on	Not given	Given later	Following guidelines	Total
CPCT	10% (1)	70%(7)	20% (2)	1	0%	10
Hospice Dr	26% (6)	57% (13)	17% (4)	1	4% (1)	23
GP	0%	60% (3)	0% (2)	0	0%	5
Hospital Dr	38% (6)	56% (9)	6% (1)	1	25% (4)	16
By hospice	*21%*	*61%*	*18%*	*2*	*3%*	*33*
By others	*29%*	*57%*	*14%*	*1*	*19%*	*21*
Total	*24%*	*59%*	*17%*	*3*	*9%*	*54*

In those commenced on steroids by the hospice team, 82% had GI cover, but only 3% followed the guideline of lansoprazole 15mg.

In those commenced by others, 86% had GI cover, with 19% following hospice guidelines, presumably unconsciously – they may have their own guidelines in hospital or GP surgeries.

On the whole, where guidelines were not followed it was because a higher dose eg lansoprazole 30mg was given.

Plan for reduction of steroid dose:

Steroid started by	Plan made	Plan followed	Plan made later	Dose adjusted according to condition
CPCT	70% (7)	45% (3)	20% (2)	10% (1)
Hospice Dr	57% (13)	62% (8)	22% (5)	22% (5)
GP	20% (1)	0%	20% (1)	40% (2)
Hospital Dr	38% (6)	50% (3)	25% (4)	38% (6)
By hospice	*61%*	*55%*	*21%*	*18%*
By others	*33%*	*43%*	*24%*	*38%*
Total	*50%*	*48%*	*22%*	*28%*

This shows that according to the documentation we have, in the hospice we are better at making and keeping to plans for reduction of steroid dose, but we are still not making plans for this in all patients. CPCT were more likely to make a plan than the doctors, but plans made by doctors were more likely to be followed.

If plans were not made at the outset, the majority had a plan made at a later date (usually by hospice doctor or CPCT), or adjustments made according to the condition of the patient.

In total 70% of the patients (23) started on steroids by the hospice team had some form of review and dose adjustment, compared to 76% (16) of those started by others (often done by hospice team in any case)

Length of time on steroids by indication:

Indication	<5 days	5-10 days	10-20 days	20-40 days	40-80 days	>80 days	Median duration
Appetite/energy		3	7	4	2	3	10-20 days
Bowel obstruction	2		1				<5 days
Brain tumour/raised ICP			1	1	5		40-80 days
Cord compression					1		40-80 days
Liver capsule pain	2	1	1		1	2	10-20 days
Neuropathic pain		1		2		1	20-40 days
Nausea/vomiting		1	4			1	10-20 days
SVCO			1	1			10-40 days
Unclear		2	3	1			10-20 days
Other	1	2	1		1		5-20 days

Length of time on steroids by dose:

Dose (mg)	<5 days	5-10 days	10-20 days	20-40 days	40-80 days	>80 days	Median duration
2 and below		1	2	2	1	1	20-40 days
4		2	7	4	2	3	10-40 days
6			3			2	10-20 days
8	3	3	4	1	2	1	10-20 days
12		2			2		10-40 days
16	1		2	1	2		10-40 days

Length of time on steroids by prescriber:

Steroid started by	<5 days	5-10 days	10-20 days	20-40 days	40-80 days	>80 days	Median duration
CPCT		1	4	2	1	2	10-40 days
Hospice Dr	4	5	7	4	2	1	10-20 days
GP		1	2	1		1	10-20 days
Hospital Dr		1	6		6	3	40-80 days
Total	*7% (4)*	*15% (8)*	*35% (19)*	*13% (7)*	*17% (9)*	*13% (7)*	***10-20 days***

Length of time on steroid by whether guidelines were followed and whether plan was made:

	<5 days	5-10 days	10-20 days	20-40 days	40-80 days	>80 days
Number that followed guidelines	2 (50%)	2 (25%)	10 (54%)	5 (71%)	4 (44%)	3 (43%)
Number in which plan was made	1 (25%)	4 (50%)	10 (54%)	4 (57%)	2 (22%)	4 (57%)

In 8 of the patients I felt that their steroids should be reviewed because of the duration of the treatment.

It seemed that the long duration of the steroid treatments for brain tumours was probably acceptable, since most were being adjusted according to the patients condition.

Documentation in hospice notes

Started by	**Poor documentation**
CPCT	20% (2)
Hospice doctor	18% (5)

GP	60% (3)
Hospital doctor	38% (6)

The notes audited were only the ones kept by the hospice and there may be much more information held in GP and hospital notes. Even so the importance of gathering information from other sources to complete our notes is again highlighted, especially when it appears that the hospice team often review and adjust steroid doses started by other professionals. There is also a risk that some patients, like the 7 who remained on steroids until the present day (up to 3 1/2 months) will remain on an inappropriate dose because they are not being reviewed.

Steroid guidelines survey

	CPCT (6)	**Hospice Drs (4)**
Refer to them	4	1
Already know them	1	3
Don't use them	1	
Follow them		
0-25% time	2	1
50% time		1
75-100% time	3	2
Fill in sheet		
Always	1	
Occasionally	2	
Never	3	4
Confident in guidelines		
Yes	6	1
No		3

This shows that on the whole, CPCT use the guidelines more, perhaps because they have more faith in them being evidence-based than the medical team. It is not usual practice to use the red sheet for documentation.

References for steroid guidelines

Cord compression
12-20mg/day

1) Loblaw D, Lapierre N (1998) Emergency treatment of malignant extradural spinal cord compression: an evidence-based guideline. *Journal of Clinical Oncology* 16, 1613-24
2) Vecht C et al (1989) Initial bolus of conventional versus high dose dexamethasone in metastatic spinal cord compression. *Neurology* 39, 1255-1257
3) Twycross R, Wilcock A (2001) Symptom management in advanced cancer (3rd edition) p269

Cerebral metastases
16-24mg/day

4) Koeler P (1995) Use of corticosteroids in neuro-oncology. *Anticancer drugs* 6, 19-33
5) Vecht CJ et al (1994) Dose-effect relationship of dexamethasone on Karnofsky performance in maetastatic brain tumour – a randomised study of doses 4, 8, 16mg per day. *Neurology* 44. 675-80

Bowel obstruction
6-16mg/day

6) Hardy J et al (1988) Pitfalls in placebo controlled trials in palliative care – dexamethasone for the palliation of malignant bowel obstruction. *Palliative Medicine* 12, 437-42
7) Laval G et al (2003) The use of steroids in the management of inoperable intestinal obstruction in terminal cancer patients – do they remove obstruction? *Palliative Medicine* 14, 3-10
8) Feuer DJ et al (1999) Systematic review and meta-analysis of corticosteroids for the resolution of malignant bowel obstruction in advanced gynaecological and gastrointestinal cancers. *Annals of Oncology* 10, 1035-41
9) Twycross R, Wilcock A (2001) Symptom management in advanced cancer (3rd edition) pp113-114

SVCO
16mg/day

10) Baker GL, Barnes HJ (1992) Superior vena cava syndrome – etiology, diagnosis and treatment. *American Journal of critical care* 1, 54-64
11) Yellin A et al (1990) Superior vena cava syndrome. *American review of respiratory disease* 141, 1114-18
12) Perez CA, Presant CA, Van Amburg AL, 3rd (1978) Management of superior vena cava syndrome. *Seminars in oncology* 5, 123-34

Nausea and vomiting
8-20mg/day

13) Gralla RJ et al (1999) for the American Society of Clinical Oncology. Recommendations for the use of anti-emetics: evidence based, clinical practice guidelines. *Journal of Clinical Oncology* 17, 2971-94
14) Aapro MS (1991) Present role of corticosteroids as antiemetics. *In Recent Results in cancer research* vol 121, pp 91-100
15) Gralla RJ (1989) An outline of antiemetic treatment. *European Journal of cancer and clinical oncology* 25 (suppl 1):7-11
16) Editorial (1991) Ondansetron versus dexamethasone for chemotherapy-induced emesis *Lancet* 338: 478
17) Sridhar K et al (1992) Five-drug anti-emetic combination for cisplatin chemotherapy *Cancer investigation* 10, 191-199

Pain (including liver capsule) 7)+
4-8mg/day

18) Farr WC (1990) the use of corticosteroids in symptom management in terminally ill patients. *American Journal of hospice care* 7, 41-6
19) Cherny N, Portenoy RK (1994) Cancer pain – principles of assessment and syndromes. In *Textbook of pain* pp 787-823

Lymphangitis
8-12mg/day

20) Sawin SW et al (1995) Recurrent squamous cell carcinoma of the cervix with pulmonary lymphangitic metastasis. *International Journal of gynaecology and obstetrics* 48, 85-90
21) Bruce DM, Heys SD, Eremin O (1996) Lymphangitis carcinomatosa: a literature review. *Journal of the Royal College of Surgeons Edinburgh* 41, 7-13
22) Hardy JR et al (2001) A prospective survey of the use of dexamethasone on a palliative care unit. *Palliative Medicine* 15, 3-8

Appetite, well-being, energy
3-5mg/day for 2-4 weeks

23) Moertel CG et al (1974) Corticosteroid therapy of preterminal gastrointestinal cancer. *Cancer* 33, 1607-9
24) Willox JC et al (1984) Prednisolone as an appetite stimulant in patients with cancer. *BMJ* 288, 27
25) Della Cuna GO, Pellegrini A, Piazzi M (1989) Effect of methylprenisolone sodium succinate on quality of life in preterminal cancer patients – a placebo controlled multicentre study. *European Journal of cancer and clinical oncology* 12, 1817-21
26) Bruera E et al (1985) Action of oral methylprednisolone in terminal cancer patients - a prospective randomised double blind study. *Cancer treatment reports* 69, 751-4
27) Popiela T, Lucchi R, Giongo F (1989) Methylprednisolone as palliative therapy for female terminal cancer patients. *European Journal of cancer and clinical oncology* 25, 1823-9

Revised steroid guidelines using available evidence

Spinal cord compression
16mg/day

Cerebral metastases
16mg/day starting dose, up to 24mg/day if indicated

Intestinal obstruction
8mg/day, if conservative management not effective at one week

SVCO
16mg/day

Nausea/vomiting
8mg/day

Neuropathic/bone/liver pain
8mg/day

Lymphangitis
8mg/day

Appetite/energy/wellbeing
4mg/day

Summary
16mg/day for cord compression, cerebral mets, SVCO
8mg/day for bowel obstruction, nausea, neuropathic/bone/liver capsule pain, lymphangitis
4mg/day for appetite/energy/wellbeing

Dose of steroids should be adjusted according to the individual patient, depending on risk of side-effects, previous steroid doses and response to treatment.

Review
For bowel obstruction and cord compression, review at 3 days.
For all other indications, review at 7 days.

If no benefit, and patient not previously on steroids, stop completely.
If no benefit and patient previously on steroids, reduce to previous dose.

If treatment is effective, continue steroids on a reducing regime. Drop by 2mg every 5-7 days depending on response. Some patients may need a maintenance dose

All patients should also be prescribed a PPI eg lansoprazole 30mg od.