Stress in an Irish inner city emergency department revisited (2000-2006)

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Ir J Psych Med 2010; 27(3): 135-137

Abstract

Objectives: Stress levels among staff in the Mater Misericordiae University Hospital Emergency Department were studied by questionnaire in 2000, which demonstrated a high level of self reported stress. The aim of this study was to ascertain if stress levels had reduced following changes in the department.

Method: The study was repeated using the same questionnaire in 2006, after changes had occurred.

Results: There was a significant reduction in the percentage of staff that reported they were under severe or unbearable stress, from 37% in 2000 to 10% in 2006 ($p = 0.002$). A total of 60% felt the social environment of their work was satisfactory in 2006 compared to 40% in 2000 ($p = 0.03$). Compared to 2000, a significantly lower proportion reported they had a low degree of control over their job, and a significantly higher proportion reported a medium level of control over their job in 2006 ($p = 0.03$).

Conclusions: Compared with the results of the previous study, reported stress levels have reduced overall, which coincided with a significant increase in staffing levels in the department.

Key words: Stress; Emergency Department; Medical staff; Over-crowding.

Introduction

The Emergency Department (ED) has traditionally been regarded as a stressful environment for staff, especially for junior doctors on short rotations in training. Stress is defined in the Oxford Dictionary as "a state of mental or emotional strain or tension resulting from adverse or demanding circumstances". Stress levels among ED senior house officers (SHOs),[1] and consultants,[2,3] have previously been studied internationally. However few, if any studies, have looked at stress levels among staff of all disciplines, including both clinical, and non-clinical staff.

Due to the overcrowded nature of Irish EDs, it is imperative that staff of all grades and disciplines 'gel' together, and work as a team to allow for the effective day to day running of the department. A study of staff in the Mater Misericordiae University Hospital (MMUH) ED published in 2000 demonstrated high levels of stress amongst all grades and types of staff.[4] As a result of this, changes were implemented in the department. The study was repeated in 2006 using an identical questionnaire to see if the perceived stress levels had changed.

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SUBMITTED: AUGUST 20, 2009. ACCEPTED: JANUARY 21, 2010.

Methods

The Mater ED has an annual attendance of approximately 50,000 patients, and services an inner city population with a significant burden of medical and social problems. The catchment area includes the city centre, and Mountjoy Prison, the largest prison in the country. The proportion of injury presentations where alcohol was a factor has been documented as being the highest recorded in the country,[5] and opiate dependence related presentations are frequent.

The main working area in the current department was opened in 1968, though modifications have been made to the department since then. In 2000 there were a total of 13 medical staff in the Mater ED with no nurse practitioners at that time. This number increased to a total of 21 in 2006. In addition to this there were four advanced nurse practitioners (ANPs) in 2006. This represents almost a doubling of the number of treating clinicians. The total number of nursing staff in the department increased from 41.5 in 2000 to 57 in 2006. Non-clinical staff numbers also increased *(see Table 1)*.

The questionnaire that was used in the 2000 study,[4] was again circulated to all staff in the department in order that valid comparisons could be made. As in the previous study, the terms 'stress', and 'social environment', were not defined on the questionnaire in order to allow for a subjective rather than objective assessment. The questionnaire was anonymous and confidential. Questionnaires were put in sealed envelopes and deposited in a box. This occurred over a two-month period in December 2005 to January 2006, (the same calendar period which was studied in 1999/2000).

All ED employees, both clinical and non-clinical, including nurses, doctors, receptionists, secretarial, and portering staff were invited to participate. The questionnaire contained detailed questions about levels of stress, stress leave, the causes of stress, degree of control over one's job, perceived support from colleagues, while also allowing room for comments.

Data are reported as frequencies and percents. Comparisons between 2000 and 2006 were carried out using chi-squared tests. Statistical significance was deemed present at $p < 0.05$.

Results

Out of a total 105 ED staff, 76 returned the questionnaire (72%) in 2006, compared to 41 (59%) in 2000. The

https://doi.org/10.1017/S0790966700001312 Published online by Cambridge University Press

Table 1: Staffing levels in Mater Misericordiae Emergency Department 2000/2006

Staff		2000	2006
Medical/ ANP	Consultant	1	3
	Specialist Registrar(SpR)	0	3
	Non SpR Registrar	2	3
	Senior House Officer	10	12
	Advanced Nurse Practitioner	0	4
	Total treating clinicians	13	25
Nursing	Senior Nursing staff (ADON* + CNM**3)	1	2
	CNM** 1 and 2	6	7.5
	Staff Nurses	34.5	44
	Clinical Nurse specialists	0	3.5
	Total Nursing staff	41.5	57
	Health care assistants	0	6
Non clinical	Reception	7	7
	Ward clerk/secretarial	0	2
	Portering	6	6
	Security	2	2
Total		69.5	105

(Assistant Director of Nursing, ** Clinical Nurse Manager)*

Table 2: Results

Variable	2000 (n = 41)		2006 (n = 76)		P Value*
	n	%	n	%	
Level of stress					
- none	1	2	1	1	0.002
- mild/moderate	25	61	67	89	
- severe/unbearable	15	37	8	10	
Job excessively demanding	33	80	45	59	0.07 (ns)
Degree of control over job					
- low	17	41	14	19	0.03
- medium	18	43	49	65	
- high	6	16	11	16	
Satisfactory social environment	16	40	47	60	0.03
Support from work colleagues adequate or better	34	84	69	91	ns

• chi squared test

breakdown by staff category in 2006 was 46/57 (80%) nursing staff; 14/21 (66%) medical staff, and 16/23 (70%) all other staff. The breakdown in 2000 was 22/41.5 (53%) nursing staff, 10/13 (77%) doctors, and 6/15 (40%) of all other staff. A comparison of results from 2000 and 2006 relating to level of stress, perception of degree of demand in, and control over, their job, and the extent of support from colleagues and the social environment are outlined in *Table 2*.

A significantly lower proportion of 2006 respondents reported severe or unbearable stress compared with 2000 (10% vs 37%). Similarly, a lower proportion reported their job to be excessively demanding, though this did not reach statistical significance. These findings together are consistent with the significant reduction in those reporting a low level of control over their job (19% in 2006 vs 41% in 2000). There was a significant increase in the proportion reporting satisfaction with the social environment, and an increase (not significant) in those reporting supportive colleagues, which was already at a high level in 2000.

As in the previous study staff were given a list of causes of stress and asked to rank them in order of greatest to least cause with nine predetermined causes and one 'other', with a space for free text. There was little change in the ranking of causes of stress between the two studies, with the exception of 'the threat of violence'. This dropped from the second most significant cause of stress in 2000 to the sixth in 2006 *(see Table 3)*. Interestingly, in the 'other' category, which allowed free text, three doctors and 10 nurses reported dealing with patient's relatives a significant cause of stress.

Discussion

The results outlined in this study provide encouraging evidence of improvements in the work environment and job conditions of ED staff at MMUH. It would appear that staff are less stressed, more in control of their jobs, and increasingly satisfied with the social environment.

Though the total number of patients attending the ED for the months during which the study was carried out had decreased for the second period, the number of emergency admissions (indicating patient acuity) did not alter significantly. Figures for the number of 'boarders' (ie. admitted patients awaiting ward beds) in the department, and waiting times to be seen were not available for the initial time period studied and thus no comparison could be made. As the increase in the numbers of clinical staff is the most significant change to have occurred in the department since the previous study we believe that this is the main factor involved.

Furthermore it is significant that in 2000 the breakdown of medical staff included 10 SHOs and two registrars on the same rota, and one consultant only. In 2006 there were 12 SHOs, with three SpRs and three registrars on a separate rota providing 24 hour middle grade cover, and three consultants. This increased the number of senior decision makers present around the clock. This also has provided an increase in teaching, training, support, and supervision, thus facilitating a more dynamic, academic, efficient, and effective department, which is better for patient safety and care.

ED SHOs, who constitute the largest proportion of medical staff in Irish and UK departments, were studied in an inner city Emergency Department in London in 2002.[1] Over 50% reported significant psychological distress on the general health questionnaire (GHQ). Interestingly, in an international study of stress amongst emergency physicians in 1994, consultants from the UK reported higher stress levels than their colleagues in North America and Australia, possibly

https://doi.org/10.1017/S0790966700001312 Published online by Cambridge University Press

due to lower staffing levels in UK departments.[3] A study of UK emergency medicine consultants in 2001 reported significantly higher levels of psychological distress compared with consultants in other specialties. A total of 44% of ED consultants had GHQ scores indicative of possible psychiatric 'caseness' (morbidity), compared with 21-28% in other consultant groups, versus 18% in the general population.[2]

Contrasting with this, studies of emergency physicians in Australia in 2004 reported good psychological health; however consultants were still planning to decrease their clinical workload, due to what they reported as excessive workload and lack of resources.[6,7] The increased levels of stress amongst UK consultants has been attributed to increased workload due to lower consultant numbers when compared to healthcare models in other parts of the world.[3] As our consultant staffing levels are closest to the UK model, it seems clear that increasing the numbers of consultants in emergency medicine in Ireland, would impact positively in reducing stress levels amongst ED staff.

After the 2000 study, the hospital management addressed the issue of security and the threat of violence. Security presence was increased; liaison with the police was improved, doors were keypad locked, both personal, and department-based security alarms were provided. This appears to have impacted on our findings, with the threat of violence dropping from second to sixth place. Improvements in the infrastructure of the department, including expansion of shop floor space, changing rooms, staff rooms and the reception area may also have contributed towards increased satisfaction and decreased stress. A new ED has been designed and its construction will hopefully contribute to further improvements in staff psychological wellbeing.

Bed shortages remains by far the most significant factor contributing to workplace stress. As one of the staff reported in free text "If the 30 patients awaiting admission were transferred into beds there would be no problem at all".

Bed shortages in our questionnaire were accepted as being synonymous with ED overcrowding or 'access block' (the prolonged wait for an inpatient hospital bed after emergency department treatment). This finding mirrors that of a previous UK study,[3] which identified lack of beds within the main hospital as the most frequent stressor among ED consultants before the 'four hour target' was implemented.

The association between emergency department overcrowding and increased mortality amongst admitted patients is well established.[8,9] A study of morbidity among elderly patients in our institution, suggests an association between length of stay in ED waiting for a bed and total length of stay in hospital.[10] Overcrowding in Irish EDs is obvious, and unfortunately remains a ubiquitous problem despite government reports predicting it,[11] and task force recommendations as to how to deal with it.[12] Since the introduction of the "four hour target" in the UK, what was a similar problem in UK EDs has now been eliminated.[13] A six hour target should be achievable in our system, as recommended by the *Emergency Department (ED) Task Force Report*, published by the Health Services Executive in June 2007.[12]

Dealing with patients' relatives emerged as a new source of stress identified in the 'other' (free text) category, and this was felt to be predominantly related to waiting times for hospital beds. This was fed back to management and increased input from patient liaison services was implemented. Previous studies of ED SHOs have identified communication difficulty as a significant source of stress, and have recommended increased training in communication skills.[14,15] This would most likely help in dealing with patients' relatives.

Table 3: Factors contributing to stress at work ranked in order of significance

Factor	2000	2006
Bed shortages (Overcrowding)	1	1
Understaffing	3	2
Work environment	4	3
Other	8	4
Dealing with patients	6	5
Threat of violence	2	6
Shift work	10	7
Lack of well being	5	8
Emergencies	9	9
Dealing with other staff	7	10

A free anonymous counselling service is available and advertised to all members of staff in MMUH ED. However, in our study, most members of staff stated that they would approach colleagues in the first instance, if they felt they needed to talk to somebody about stress. Despite adverse physical and psychological conditions, the morale in the department remained relatively 'healthy', as reflected by the satisfaction with the social environment, and supportiveness of colleagues. Overall reported stress levels remain high in keeping with other studies of emergency department medical staff and this study has provided us with valuable information to address the issues involved.

Declaration of interest: None.

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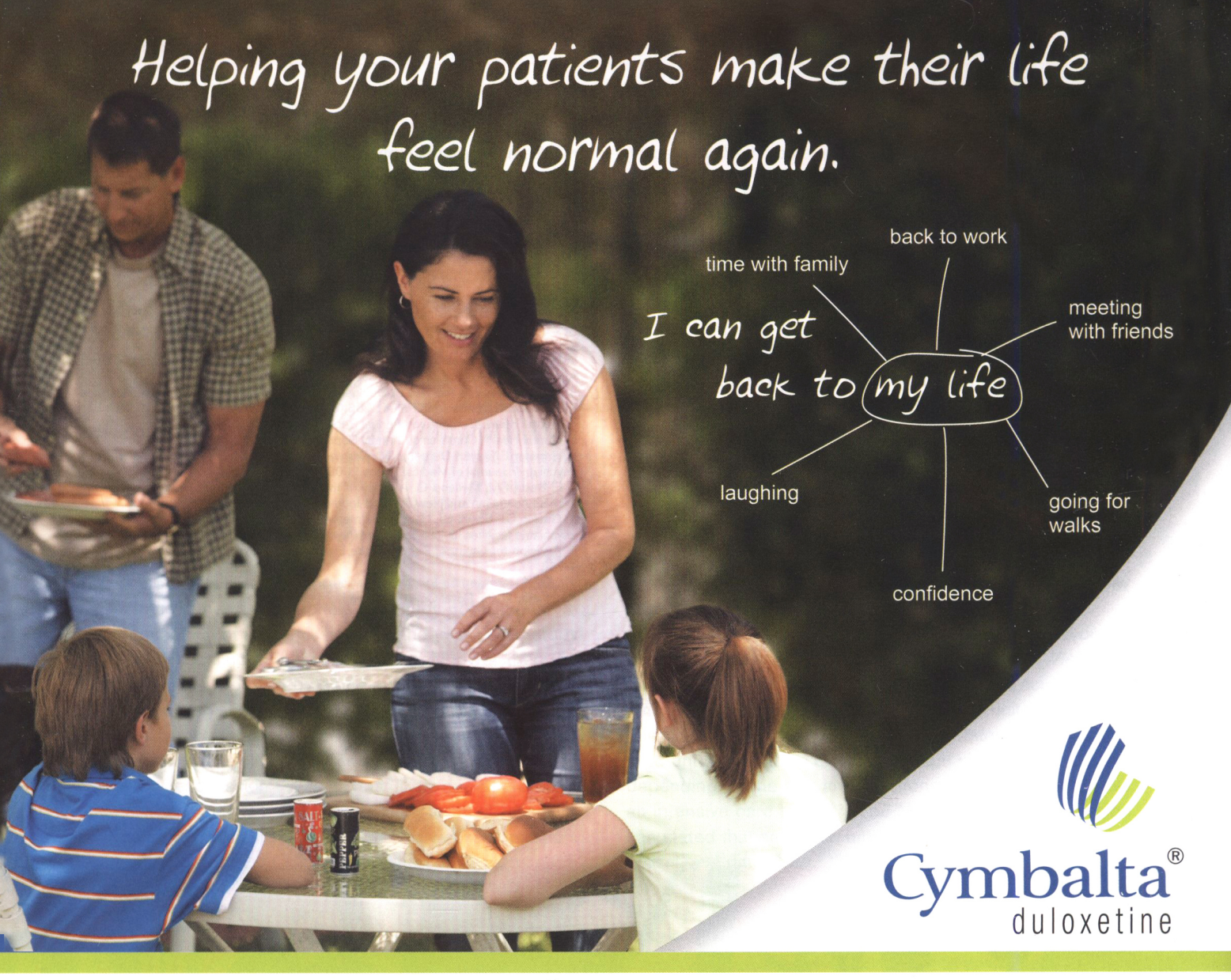

In determining **remission** from depression, patients consider **a return to one's usual, normal self** as very important.[1]

CYMBALTA* (DULOXETINE). REPUBLIC OF IRELAND ABBREVIATED PRESCRIBING INFORMATION. Presentation Hard gastro-resistant capsules, 30mg or 60mg of duloxetine. Also contains sucrose. **Uses** Treatment of major depressive disorder. Treatment of generalised anxiety disorder. Treatment of diabetic peripheral neuropathic pain (DPNP) in adults. **Dosage and Administration** *Major Depressive Disorder* Starting and maintenance dose is 60mg once daily, with or without food. Dosages up to a maximum dose of 120mg per day have been evaluated from a safety perspective in clinical trials. However, there is no clinical evidence suggesting that patients not responding to the initial recommended dose may benefit from dose up-titrations. Therapeutic response is usually seen after 2-4 weeks. After establishing response, it is recommended to continue treatment for several months, in order to avoid relapse. In patients responding to duloxetine, and with a history of repeated episodes of major depression, further long-term treatment at 60 to 120mg/day could be considered. *Generalised Anxiety Disorder* The recommended starting dose in patients with generalised anxiety disorder is 30mg once daily, with or without food. In patients with insufficient response the dose should be increased to 60 mg, which is the usual maintenance dose in most patients. In patients with co-morbid major depressive disorder, the starting and maintenance dose is 60mg once daily. Doses up to 120mg per day have been shown to be efficacious and have been evaluated from a safety perspective in clinical trials. In patients with insufficient response to 60mg, escalation up to 90mg or 120mg may therefore be considered. After consolidation of the response, it is recommended to continue treatment for several months, in order to avoid relapse. Abrupt discontinuation should be avoided. When stopping treatment with Cymbalta the dose should be gradually reduced over at least one to two weeks to reduce the risk of withdrawal reactions. If intolerable symptoms occur following a decrease in the dose or upon discontinuation of treatment, then resuming the previously prescribed dose may be considered. Subsequently, continue decreasing the dose, but at a more gradual rate. *Diabetic Peripheral Neuropathic Pain* Starting and maintenance dose is 60mg daily, with or without food. Doses above 60mg/day, up to a maximum dose of 120mg/day in evenly divided doses, have been evaluated from a safety perspective. Some patients that respond insufficiently to 60mg may benefit from a higher dose. The medicinal response should be evaluated after 2 months treatment. Additional response after this time is unlikely. The therapeutic benefit should regularly be reassessed. **Contra-indications** Hypersensitivity to any of the components. Combination with MAOIs. Liver disease resulting in hepatic impairment. Use with potent inhibitors of CYP1A2, eg, fluvoxamine, ciprofloxacin, enoxacine. Severe renal impairment (creatinine clearance <30ml/min). Should be used in pregnancy only if the potential benefit justifies the potential risk to the foetus. Breast-feeding is not recommended. Initiation in patients with uncontrolled hypertension that could expose patients to a potential risk of hypertensive crisis. **Precautions** Do not use in children and adolescents under the age of 18. No dosage adjustment is recommended for elderly patients solely on the basis of age. However, as with any medicine, caution should be exercised. Data on the use of Cymbalta in elderly patients with generalised anxiety disorder are limited. Use with caution in patients with a history of mania, bipolar disorder, or seizures. Caution in patients with increased intra-ocular pressure or those at risk of acute narrow-angle glaucoma. Duloxetine has been associated with an increase in blood pressure and clinically significant hypertension in some patients. In patients with known hypertension and/or other cardiac disease, blood pressure monitoring is recommended as appropriate, especially during the first month of treatment. Use with caution in patients whose conditions could be compromised by an increased heart rate or by an increase in blood pressure. For patients who experience a sustained increase in blood pressure while receiving duloxetine, consider either dose reduction or gradual discontinuation. Caution in patients taking anticoagulants or products known to affect platelet function, and those with bleeding tendencies. Hyponatraemia has been reported rarely, predominantly in the elderly. Caution is required in patients at increased risk for hyponatraemia, such as elderly, cirrhotic, or dehydrated patients, or patients treated with diuretics. Hyponatraemia may be due to a syndrome of inappropriate anti-diuretic hormone secretion (SIADH). Adverse reactions may be more common during concomitant use of Cymbalta and herbal preparations containing St John's Wort. Monitor for suicidal thoughts, especially during first weeks of therapy, dose changes, and in patients under 25 years old. Since treatment may be associated with sedation and dizziness, patients should be cautioned about their ability to drive a car or operate hazardous machinery. Cases of akathisia/psychomotor restlessness have been reported for duloxetine. Duloxetine is used under different trademarks in several indications (major depressive disorder, generalised anxiety disorder, stress urinary incontinence, and diabetic neuropathic pain). The use of more than one of these products concomitantly should be avoided. Cases of liver injury, including severe elevations of liver enzymes (>10-times upper limit of normal), hepatitis, and jaundice have been reported with duloxetine. Most of them occurred during the first months of treatment. Duloxetine should be used with caution in patients with substantial alcohol use or with other drugs associated with hepatic injury. Capsules contain sucrose. Patients with rare hereditary problems of fructose intolerance, glucose-galactose malabsorption, or sucrose-isomaltase insufficiency should not take this medicine. **Interactions** Caution is advised when taken in combination with other centrally acting medicinal products and substances, including alcohol and sedative medicinal products; exercise caution when using in combination with antidepressants. In rare cases, serotonin syndrome has been reported in patients using SSRIs concomitantly with serotonergic products. Caution is advisable if duloxetine is used concomitantly with serotonergic antidepressants like SSRIs, tricyclics, St John's Wort, venlafaxine, or triptans, tramadol, pethidine, and tryptophan. Undesirable effects may be more common during use with herbal preparations containing St John's Wort. *Effects on other drugs:* Caution is advised if co-administered with products that are predominantly metabolised by CYP2D6 (risperidone, tricyclic antidepressants [TCAs], such as nortriptyline, amitriptyline, and imipramine) particularly if they have a narrow therapeutic index (such as flecainide, propafenone, and metoprolol). *Anticoagulants and antiplatelet agents:* Caution should be exercised when duloxetine is combined with oral anticoagulants or antiplatelet agents due to a potential increased risk of bleeding. Increases in INR values have been reported when duloxetine was co-administered with warfarin. **Undesirable Effects** The majority of common adverse reactions were mild to moderate, usually starting early in therapy, and most tended to subside as therapy continued. Those observed from spontaneous reporting and in placebo-controlled clinical trials in depression, generalised anxiety disorder, and diabetic neuropathic pain at a rate of ≥1/100, or where the event is clinically relevant, are: *Very common (≥1/10):* Headache, somnolence, dizziness, nausea, dry mouth. *Common (≥1/100 and <1/10):* Weight decrease, palpitations, tremor, paraesthesia, blurred vision, tinnitus, yawning, constipation, diarrhoea, vomiting, dyspepsia, flatulence, sweating increased, musculoskeletal pain, muscle tightness, muscle spasm, decreased appetite, flushing, fatigue, abdominal pain, erectile dysfunction, insomnia, agitation, libido decreased, anxiety, orgasm abnormal, abnormal dreams. Clinical trial and spontaneous reports of anaphylactic reaction, hyperglycaemia (reported especially in diabetic patients), mania, hyponatraemia, SIADH, hallucinations, dyskinesia, serotonin syndrome, extra-pyramidal symptoms, convulsions, akathisia, psychomotor restlessness, glaucoma, mydriasis, syncope, tachycardia, supra-ventricular arrhythmia (mainly atrial fibrillation), hypertension, hypertensive crisis, epistaxis, gastritis, haematochezia, dysuria, gastro-intestinal haemorrhage, hepatic failure, hepatitis, acute liver injury, angioneurotic oedema, Stevens-Johnson syndrome, trismus, and gynaecological haemorrhage have been made. Cases of suicidal ideation and suicidal behaviours have been reported during duloxetine therapy or early after treatment discontinuation. Cases of aggression and anger have been reported, particularly early in treatment or after treatment discontinuation. Cases of convulsion and tinnitus have been reported after treatment discontinuation. Discontinuation of duloxetine (particularly abrupt) commonly leads to withdrawal symptoms. Dizziness, sensory disturbances (including paraesthesia), sleep disturbances (including insomnia and intense dreams), fatigue, agitation or anxiety, nausea and/or vomiting, tremor, headache, irritability, diarrhoea, hyperhydrosis, and vertigo are the most commonly reported reactions. The heart rate-corrected QT interval in duloxetine-treated patients did not differ from that seen in placebo-treated patients. No clinically significant differences were observed for QT, PR, QRS, or QTcB measurements between duloxetine-treated and placebo-treated patients. In clinical trials in patients with DPNP, small but statistically significant increases in fasting blood glucose were observed in duloxetine-treated patients compared to placebo at 12 weeks. At 52 weeks there was a small increase in fasting blood glucose and in total cholesterol in duloxetine-treated patients compared with a slight decrease in the routine care group. There was also an increase in HbA1c in both groups, but the mean increase was 0.3% greater in the duloxetine-treated group. *For full details of these and other side-effects, please see the Summary of Product Characteristics, which is available at http://www.medicines.ie/* **Overdose** Cases of overdoses, alone or in combination with other drugs, with duloxetine doses of 5400mg have been reported. Some fatalities have occurred, primarily with mixed overdoses, but also with duloxetine alone at a dose of approximately 1000mg. Signs and symptoms of overdose (duloxetine alone or in combination with other medicinal products) included somnolence, coma, serotonin syndrome, seizures, vomiting, and tachycardia. **Legal Category** POM. **Marketing Authorisation Numbers and Holder** EU/1/04/296/001, EU/1/04/296/002. Eli Lilly Nederland BV, Grootslag 1-5, NL-3991 RA Houten, The Netherlands. **Date of Preparation or Last Review** December 2009. **Full Prescribing Information is Available From** Eli Lilly and Company Limited, Lilly House, Priestley Road, Basingstoke, Hampshire, RG24 9NL. Telephone: Basingstoke (01256) 315 000 or Eli Lilly and Company (Ireland) Limited, Hyde House, 65 Adelaide Road, Dublin 2, Republic of Ireland, Telephone: Dublin (01) 661 4377. *CYMBALTA (duloxetine) is a trademark of Eli Lilly and Company.

Date of Preparation June 2010.

Reference: 1. Zimmerman M, McGlinchey JB, et al. *Am J Psychiatry* 2006;163:148-150.

IECYM00076

https://doi.org/10.1017/S0790966700001312 Published online by Cambridge University Press