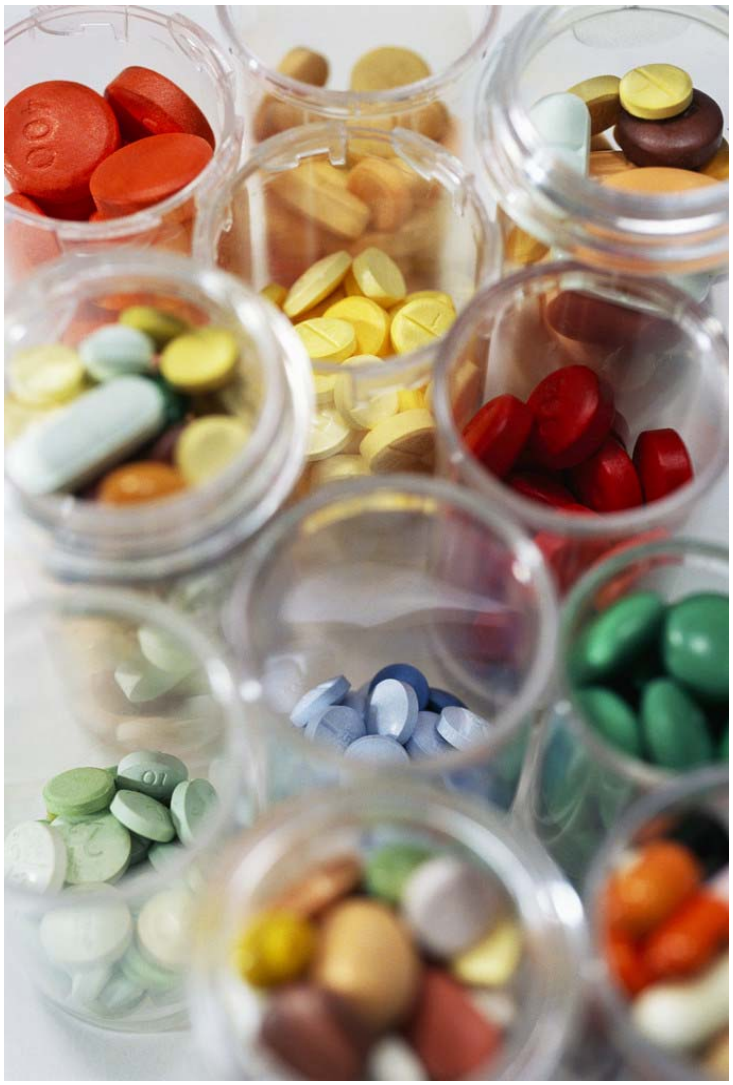
NHS SCOTLAND

YCC Scotland



Annual Report April 2008 to March 2009

ANNUAL REPORT OF THE YELLOW CARD CENTRE SCOTLAND TO THE MEDICINES AND HEALTHCARE PRODUCTS REGULATORY AGENCY

2008/09

1. STAFF

Professor Nick Bateman – Professor in Clinical Toxicology, Consultant Physician, Director NPIS and Ex-Medical Director YCC Scotland.

Mrs Melinda Cuthbert – Principal Pharmacist Medicines Information / YCC Scotland

Professor Simon Maxwell – Professor in Clinical Pharmacology, Medical Director YCC Scotland (From January 2009)

Mrs Sinéad McGhee – Information Officer Medicines Information / YCC Scotland

Mrs Sheila C Noble – Senior Pharmacist Medicines Information / YCC Scotland

Dr Ruben Thanacoody – Consultant Physician, Royal Infirmary of Edinburgh

2. SUMMARY

2008/09 has been another busy and pro-active year for YCC Scotland. The Year started in April with the final part of the Community Pharmacy Patient Yellow Card Reporting Campaign and the subsequent ongoing development and organisation of the research project to analyse the outcome data from the campaign.

There has been one meeting of the YCC Scotland Advisory Group and four Management Board meetings during one of which we had a discussion with Alison Strath of the Scottish Government to learn about the Pharmacy Strategy and identify where ADR reporting and YCC Scotland would fit in most effectively. Early in 2009 Professor Simon Maxwell formally took over as Medical Director of YCC Scotland. As Dr Ruben Thanacoody was retiring from the Management Board at the end of March 2009 due to a move to Newcastle and was thus unable to take the Deputy Medical Director position, Professor Nick Bateman agreed to stay on in the capacity of Ex-Medical Director until a replacement for Dr Thanacoody could be identified. We are most grateful to Dr Thanacoody for his input to YCC Scotland and wish him well in his new position.

Throughout the year the majority of the 4000 posters designed to provide information on ADR reporting for Nurses and Midwives have been distributed throughout Scotland to both primary and secondary care settings.

Members of YCC Scotland have provided a number of training sessions to promote effective Yellow Card Reporting. This included giving presentations at five Grand Rounds, two additional presentations to Health Care Professionals and eight teaching sessions to undergraduate and postgraduate students. Two YCC Scotland members actively participated in the meeting held at the MHRA HQ to develop

professional and lay teaching packs on ADR reporting and Professor Bateman has attended seven PEAG meetings throughout the year.

Following appropriate training, the YCC Scotland website has been updated by one of the team and there are plans to redesign the website over the next year.

Throughout 2008/09 a total of 73 Yellow Card reports were followed up by YCC Scotland, a 92% increase on the previous year. The response rate was 86% which was an improvement on the 74% response rate the previous year. A number of Legacy Yellow Cards have also continued to be forwarded appropriately to the MHRA via the YCC Scotland office.

3. YELLOW CARD DATA

	2007/08	% of UK Total	2008/09	% of UK Total	% increase or decrease on previous year
(3.1) Total UK Reports (exc MAH holders)	12713		14292		12% increase
(3.2)Total Scottish Reports	1214	9.5%	1477	10.3%	22% increase
		% of Scottish Total		**% of Scottish Total**	
(3.3)Serious Reports Scotland	878	72%	763	52%	13% decrease
(3.4)Black Triangle Reports Scotland	403	33%	632	43%	57% increase
(3.5)Fatal Reports Scotland	38	3%	43	3%	13% increase
(3.6)Age Banding Scotland	**2007/08**	**% of 2007/08 Total**	**2008/09**	**% 2008/09 Total**	**%Change on previous year**
Child <18	129	11%	318	22%	147% increase
18-24	41	3%	48	3%	17% increase
25-34	108	9%	113	8%	5% increase
35-44	160	13%	191	13%	19% increase
45-54	186	15%	201	14%	8% increase
55-64	217	18%	228	15%	5% increase
65-74	192	16%	166	11%	13.5% decrease
75-84	99	8%	98	7%	1% decrease
>85	29	2%	38	3%	31% increase
Age not specified	53	4%	76	5%	43% increase
Total Reports by age	1214		1477		22% increase

3.7 Sources of Yellow Card Reports

Source of Reports Scotland	Reports in 2007/08	% of 2007/08 total	Reports in 2008/09	% of 2008/09 total	% increase or decrease on previous year
Carer	8	<1%	10	<1%	20% increase
Community Pharmacist	34	<1%	49	3%	44% increase
Dentist	3	<1%	5	<1%	66% increase
GP	353	29%	373	25%	6% increase
Hospital Doctor	178	15%	213	14%	20% increase
Hospital HCP	77	6%	102	7%	32% increase
Hospital Nurse	34	3%	51	4%	50% increase
Hospital Pharmacist	125	10%	116	8%	7% decrease
Literature	1	0%	0	0%	100% decrease
Nurse	83	7%	240	16%	189% increase
Optometrist	2	<1%	1	<1%	100% decrease
Other HCP	100	8%	114	8%	14% increase
Parent	9	<1%	15	1%	67% increase
Patient	145	12%	138	9%	5% decrease
Pharmacist	39	3%	25	2%	36% decrease
Physician	31	3%	25	2%	19% decrease
SUM	**1222**		**1477**		**20.9% increase**

HCP = Health Care Professional

3.8 Top Ten Medicines reported 2008/09

Ranking	Scotland Medicine Name	Number of reports	UK Medicine Name	Number of reports
1	Varenicline	237	Varenicline	2099
2	HPV vaccines	193	HPV vaccines	1679
3	Diphtheria-containing vaccines	35	Clozapine	1628
4	Pneumococcal vaccines	28	Infliximab	527
5	Simvastatin	23	Simvastatin	400
6	Adalimubab	17	Paroxetine	371
7	Citalopram	16	Adalimumab	371
8	Omeprazole	16	Paracetamol	355
9	Duloxetine	15	Etanercept	322
10	Etanercept	14	Risperidone	288

3.9 Top Five Black Triangle Medicines (Scotland) 2008/09

Generic Medicine Name (Brand Name)	Yellow Card Reports
Varenicline (Champix)	237
HPV vaccine (Cervarix)*	193
Etanercept (Enbrel)	14
Diphtheria-containing vaccines (Pediacel)	13
Infliximab (Remicade)	12

* Reports that listed an unspecified HPV vaccine were included in this count as the brand Cervarix was contracted to supply NHS Scotland.

3A. INTERPRETATION

3A.1 Total UK Reports (excluding Market Authorisation Holders reports)

The total number of Yellow Card reports for the UK increased by 1579 in 2008/09 compared with 2007/08 i.e. a 12% increase. The introduction of the HPV vaccine (Cervarix) in the late summer of 2008 resulting in 1679 Yellow Card reports appears to be the major cause for this increase in reporting.

3A.2 Total Scottish Reports (excluding Market Authorisation Holders reports)

The total number of Scottish Yellow Card reports submitted in 2008/09 increased by 263 compared with 2007/08 i.e. a 22% increase. Scottish reports represented 10.3% of all UK Yellow Card reports. This was an increase on 9.5% in the previous year and considerably above what would be expected with the Scottish population comprising 8.4% of the total UK population (based on statistics from mid 2008 obtained via the Office of National Statistics). Increased reports from Health Care Professionals linked to the introduction of the HPV vaccine is likely to have contributed to the overall increase in reports. Scottish reporters are continuing to submit more Yellow Card reports per head of population than the UK average.

3A.3 Serious Reports (Scotland)

In 2008/09 the total number of serious ADRs reported in Scotland decreased by 13% from 878 in 2007/08 to 763 in 2008/09. From the data available we are not able to identify the reason for this decrease in serious ADR reporting. The total number of Patient/Carer/Parent reports stayed the same with 162 in 2007/08 and

163 in 2008/09 thus this is unlikely to have had a major effect on the number of serious reports submitted. In 2007/08 there were 145 Scottish reports regarding aspirin compared with less than 14 reports for aspirin in 2008/09. One might assume that, as aspirin is a well established drug, the majority of reports would thus tend to be of a serious nature however, as Pravangettes (pravastatin and aspirin) was introduced as a black triangle drug during this period, it is possible that a number of non-serious reports were submitted for this product in response to its Black Triangle status thus resulting in fewer of the aspirin reports being serious in 2007/08.

The introduction of the HPV vaccine during 2008 resulted in a large number of non-serious ADR reports for this Black Triangle product of which only 35 of 193 reports (18%) were classed as serious. In addition, the majority of reports for varenicline (Champix), another Black Triangle product and the most commonly reported product for the year, were considered not to be serious with only 94 out of 237 varenicline Yellow Cards reports (40%) being classified as serious. This helped to skew the overall percentage of serious reports resulting in only 52% of all Scottish Yellow card reports being classed as serious in 2008/09 compared with 72% in the previous year.

3A.4 & 3A.9 Black Triangle Reports (Scotland)

The number of Scottish Black Triangle reports in 2008/09 was 229 higher than for the previous year resulting in a 57% increase in Black Triangle reporting in Scotland. This was partly as a consequence of the 193 Black Triangle reports for the HPV vaccine (Cervarix) which was introduced during 2008. In addition there was a slight rise (11) in varenicline reporting with an increase from 226 in 2007/08 to 237 in 2008/09.

It should be noted that the number of Black Triangle reports identified in the 2007/08 Annual Report was subsequently found to be incorrect. There were 196 Black Triangle Reports identified from the Quarterly Statements supplied from the MHRA for that period. YCC Scotland subsequently identified 226 reports for varenicline alone over the same period. The MHRA concluded that the discrepancy was due to technical issues with the Black Triangle criteria in their database. The data for 2007/08 Black Triangle reports have therefore been re-calculated using the same criteria as were used for calculating the 2008/09 data.

The vast majority of Black Triangle reports were for varenicline (Champix) and Cervarix HPV vaccine. Of the other drugs in the Top Five Black Triangle Medicines, etanercept reports were continuing to come in with 14 in 2008/09 compared with 19 the previous year; Pediacel diphtheria containing vaccine had a similar rate of reporting with 13 reports in 2008/09 compared with 11 the previous year and Infliximab reporting had increased from 5 in 2007/08 to 12 in 2008/09.

3A.5 Fatal Reports (Scotland)

The number of fatal reports has increased from 38 in 2007/08 to 43 in 2008/09 showing an increase of 13%. By contrast the overall level of serious ADR reporting has decreased by 13%. As we do not currently have access to details of the medicines associated with fatalities, it is not possible to comment further upon this increase in reporting of drug related fatalities.

3A.6 Age Banding (Scotland)

There was a marked 218% increase in ADR reports for children under 18 years involving 189 more reports than in the previous year. This can largely be explained by the 193 reports for the new HPV (Cervarix) vaccine which was introduced during the year and is generally given to girls who are under 18 years of age. There was a notable 13.5% decrease in ADR reporting in the 65-74 year age band with 26 fewer reports. This was unexpected as this age group is generally associated with high drug use and associated ADRs however the reduction in reporting of aspirin related ADRs may possibly have been related to this overall decrease in reporting in this age group.

3A.7 Sources of Yellow Card Reports (Scotland)

GPs continue to be the group who submit the highest volume of Yellow Cards providing 25% of all reports submitted in 2008/09. This was a 6% increase in the number of Yellow Cards submitted by GPs compared with the previous year. This builds upon the encouraging upward trend in reporting noted from 2006/7 levels. 48% of GP reports were classed as serious.

Nurses (unspecified) submitted 16% of all Yellow Cards in Scotland. This was a 189% increase (157 more reports) compared with the previous year. During 2008/09 the YCC Scotland ADR Poster for Nurses has been distributed widely throughout surgeries and hospitals in Scotland providing useful information on when and how to report ADRs and raising awareness of ADR reporting. In addition more nurses continue to receive formal training on ADR reporting as undergraduates and as postgraduates training to be independent or supplementary prescribers. Those involved with Patient Group Directions will also have raised awareness of ADR reporting. Unspecified Nurses were the highest reporters of ADRs to the HPV vaccine launched during 2008/09 with 131 of the 193 reports being submitted by this group and a further 21 reports being submitted by Hospital Nurses. 24% of all Unspecified Nurse reports were classed as serious with only 21 of the 131 HPV vaccine reports being serious ADRs.

Hospital Doctors were next most often to submit a Yellow Card providing 14% of all reports and showing an encouraging 20% increase in reporting compared with the previous year. It is probable that the DOTS ADR training package, the ongoing rolling programme of Grand Round presentations on ADR reporting and other presentations and publications on the subject may have influenced this increase in reporting. 163 of the 213 (76%) Hospital Doctor reports were for serious ADRs.

Patient reporting provided 9% of all Scottish reports. The total number of patient reports decreased from 145 in 2007/08 to 138 in 2008/09 showing an overall 5% decrease. The Community Pharmacy Patient Reporting Campaign which was launched in February 2008 resulted in a large increase in patient reporting during February and March of that year. The campaign ended on 5th April 2008 and patient reporting started to decline slowly from April onwards ultimately resulting in an overall decrease in patient reporting compared with the previous year. This suggests that repeated promotional campaigns will be necessary to provide a sustained increase in patient reporting. **Carer** reporting increased from 8 in 2007/08 to 10 in 2008/09 and **Parent** reporting increased from 9 in 2007/08 to 15 in 2008/09 resulting in an overall increase in reports from the general public of one report (162 in 2007/08 increased to 163 in 2008/09) with public reporting providing 11% of all Yellow Cards in 2008/09. It may be of interest that 6 of the public reports were concerning the HPV vaccine. Of all the public Yellow Cards,

90 (55%) were considered to be serious. This is very close to the overall average for Scotland of 52% serious ADR reporting.

Hospital Pharmacists submitted 8% of all Yellow Cards. For the second year running Hospital Pharmacist reporting has dropped with a 7% decrease on the previous year. As discussed in the 2007/08 Annual Report this may be partly due to other Hospital Health Care Professionals submitting more reports thus reducing the need for Hospital Pharmacists to submit Yellow Cards on their behalf. There also continues to be a shortage of Hospital Pharmacists resulting in serious understaffing with fewer pharmacists available to submit Yellow Cards and less time available for those who are in post. This worrying downward trend in reporting may therefore reflect the current retention and recruitment situation in pharmacy. It is of note that 100 of the 116 Yellow Cards (86%) submitted by hospital Pharmacists were for serious ADRs compared to the Scottish rate of 52% serious ADRs. Hospital Pharmacists did not submit any reports regarding the HPV vaccine.

Other Health Care Professionals also submitted 8% of Yellow Cards with an 8% increase on the previous year. The YCC posters disseminated throughout Scotland may have had some impact upon this result together with training packages on ADR Reporting provided by YCC Scotland to Podiatrists and other Non-Medical Prescribers. As reporters often fail to record a professional designation on the original Yellow Card report it is possible that other reporter groups, such as pharmacists, have been included in this section. Serious ADRs comprised 41% of all reports from this group.

Hospital Health Care Professional reports increased from 77 in 2007/08 to 102 in 2008/09, a 32% increase raising their input to overall Scottish reporting to 7%. Again the presence of YCC ADR posters on-site and access to formal training on ADR reporting may have had an influence on this increase in reporting. Serious ADRs comprised 57% of all Hospital HCP reports and this group only reported 3 non-serious reactions to the HPV vaccine.

Hospital Nurse reporting provided 4% of all Yellow Card reports. There was an overall increase of 17 Hospital Nurse Yellow Cards showing a 50% increase on the previous year. As with Unspecified Nurses and other Health Care Professionals, it can be proposed that the Posters and ADR training for supplementary and independent nurse prescribers at Queen Margaret University and the University of Abertay by YCC Scotland may have helped with this improvement in reporting. Hospital Nurses submitted 21 ADR reports for the HPV vaccine, 4 of which were classed as serious ADRs and the overall percentage of serious reports from this group was 43%.

Community Pharmacists provided 3% of all Yellow Card reports. There were 15 more reports received from Community Pharmacists in 2008/09 compared with the previous year however there was a decrease of 14 **Unspecified Pharmacist** reports so the increase may be at least partly due to a shift in classification. It is however possible that the increase in Community Pharmacist reporting is attributable to an ongoing effect of the Community Pharmacist Patient Reporting Campaign of February to April 2008 raising awareness of Yellow Card Reporting. 41% of Community Pharmacist reports were classed as serious with no reports on the HPV vaccine being submitted.

Physician reporting decreased by 6 Yellow Cards resulting in Physicians providing 2% of all Scottish reports. As GP and Hospital Doctor reports have

increased by 35 it is possible that the decrease in Physician reports is due to reclassification rather than an actual decrease in reporting.

Optometrist and **Dentist** reporting continues to be very low. There were 5 reports from Dentists, 2 more than the previous year, and 3 of these reports were concerning a serious ADR. There was only one non-serious report from Optometrists, one less than the previous year. Neither of these groups has had any formal training on ADR reporting from YCC Scotland. Despite a number of attempts to liaise with the Scottish Dental Schools we have not been able to arrange any teaching sessions with them and this requires to be pursued further.

3A.8 Top Ten Medicines Reported (Scotland)

Varenicline is the most frequently reported drug in both Scotland and the whole of the UK. With 237 reports, 94 of which were classed as serious ADRs, Scottish varenicline reports provide 11% of all UK reports. This is slightly higher than the expected 8.4% based upon population. As with 2007/08 varenicline has continued to have a high media profile.

HPV vaccines were the second most frequently reported products in 2008/09 in both Scotland and the UK. The 193 Scottish reports made up 11% of all UK reports for HPV vaccines thus in excess of the expected 8.4%. The HPV vaccine was introduced for vaccination of school-age girls during the early autumn of 2008 and the nurses involved have clearly been very vigilant in reporting both serious and minor ADRs in line with the recommendations for a new Black Triangle product.

Diphtheria-containing vaccines were the third most reported product in Scotland although they did not reach the Top Ten nationwide. With 35 reports this was an increase on the 30 reports for the same range of products in the previous year.

Pneumococcal Vaccines were the fourth most frequently reported products in Scotland in 2008/09 with 28 reports received. These vaccines were not included in the Top Ten nationwide. One of the products, Prevanar, which is used more often in childhood vaccination, had had Black Triangle status up until May 2008 however this was removed in June 2008. Scottish reports for Pneumococcal vaccines increased from 16 in 2007/08 to 28 in 2008/09.

Simvastatin was the 5th most frequently reported product in both Scotland and the UK as a whole.

Adalimumab was the 6th most frequently reported product in Scotland and the 7th most frequently reported in the UK as a whole.

Citalopram, Omeprazole and **Duloxetine** were 7th, 8th and 9th in the Scottish Top ten although they were not included in the UK-wide Top Ten.

Etanercept was the 10th most frequently reported product in Scotland and the 9th most frequently product UK-wide although Scottish reports only made up 4% of all the UK reports for etanercept. There were 14 reports from Scotland for etanercept in 2008/09 which was less than the 19 Scottish reports in the previous year.

Although paracetamol was still in the top 10 in the UK, there were far fewer Scottish reports in 2008/09 and it did not reach the Scottish Top Ten.

In summary, the two most frequently reported drugs, vareniclene and HPV vaccine were the same for Scotland and the UK as a whole and dominated both groups of reports. There were slight variations in levels of reporting of other drugs however the general trend was very similar.

4. Follow up of reports

Number of reports followed up	73
Responses received	63
Null returns	10
Response still active	0
Response rate	86%

There were almost twice as many reports followed up in 2008/09 compared with the previous year (38 follow-ups in 2007/08) and the response rate was also better in 2008/09 compared with a 74% response rate in the previous year.

5. Promotional Activities

Detail talks given and audience

Noble S. Adverse Drug Reactions. Monklands Hospital Grand Round (14 May 2008).

Noble S, Adverse Drug reactions. Greater Galsgow Health Board (11 June 2008).

Maxwell, S. Adverse Drug Reactions. Southern General Hospital Postgraduate Clinical Society meeting, Glasgow (11 November 2008).

Maxwell, S. Adverse Drug Reactions. Western General Hospital Grand Round, Edinburgh (26 November 2008).

Cuthbert, M. Adverse Drug Reactions. Stobhill Hospital Grand Round, Glasgow (15 January 2009).

Bateman, DN. Adverse Drug Reactions, the why, the where and the when. Grand Round, Raigmore Hospital, Inverness (6 March 2009).

Noble S. Adverse Drug Reactions.Hairmyres Hospital Grand Round (13 March 2009).

Detail training and audience

Noble S. Adverse Drug Reactions Lecture and workshop. Undergraduate Nurse programme, University of Abertay (2 June 2008).

Noble S. Adverse Drug Reactions Lecture and workshop. Supplementary Prescribers Course, Queen Margaret University, Edinburgh (9 September 2008).

Noble S. Adverse Drug Reactions Lecture and workshop. Supplementary Prescribers Course, Queen Margaret University, Edinburgh (2 October 2008).

Cuthbert M. Adverse Drug Reactions Lecture. BSc (Honours) Biomedical Science Course, University of Edinburgh (22 October 2008).

Noble S. Adverse Drug Reactions Lecture and workshop. MSc Podiatry, Queen Margaret University, Edinburgh (6 January 2009).

Noble S. Adverse Drug Reactions Lecture and workshop. Undergraduate Podiatry, Queen Margaret University, Edinburgh (16 January 2009).

Noble S. Adverse Drug Reactions Lecture and workshop. Supplementary Prescribers Course, Queen Margaret University, Edinburgh (3 March 2009).

Cuthbert M. Pharmacovigilance Lecture. Fourth Year Pharmacy Undergraduate Programme, Robert Gordon University, Aberdeen (20 March 2009).

Detail meetings (non MHRA) attended in YCC capacity

Cuthbert M. ITrak ADR recording, Reproductive Medicine Directorate, Royal Infirmary of Edinburgh (30 October 2008).

Detail materials developed to promote YCS

The completion of the dissemination of 4000 ADR reporting posters aimed at nurses, midwives and specialist community public health nurses to health boards across Scotland for display in clinical areas. This was achieved with the assistance of the Chief Executives/ Directors of Nursing from the respective Health Boards.

Noble S. MHRA meeting on production of professional and lay training packs, London (3 July 2008).

Promotional lanyards, pen-pots and pens were purchased for promoting YCC Scotland.

Detail development of YCC website

All required updates were completed (as per MHRA contract). The website will be redesigned in 2010 to allow for a weekly news feed and updated links to pages pending purchase of required software to underpin.

Anything else applicable to promotion within your region

6. Publications

Adams RD, Lupton D, Good AM, **Bateman DN**. UK childhood exposures to pesticides 2004-2007: a TOXBASE toxicovigilance study. Archives of Disease in Childhood 2009; 94: 417-420.

Afshari R, Maxwell SRJ, Webb DJ, **Bateman DN**. Morphine is an arteriolar vasodilator in man. British Journal of Clinical Pharmacology 2009; 67: 386-392.

Aronson JK, Barnett DB, Breckenridge AM, Ferner RE, Jackson P, **Maxwell SR**, McInnes GT, Rawlins MD, Ritter JM, Routledge P, Walley TJ, Webb DJ, Williams D, Woods KL. The UK's NHS and pharma: need for more clinical pharmacologists. Lancet 2009;373:1251-2.

Attina TM, Malatinob LS, **Maxwell SR**, Padfield PL, Webb DJ. Phosphodiesterase type 5 inhibition reverses impaired forearm exercise-induced vasodilatation in hypertensive patients. Journal of Hypertension 2008;26:501–507.

Baillie JK, Thompson AAR, Irving JB, Bates MGD, Sutherland AI, MacNee W, **Maxwell SRJ**, Webb DJ. Oral antioxidant supplementation does not prevent acute mountain sickness: double blind, randomized placebo-controlled trial. Quarterly Journal of Medicine 2009;102:341-8.

Heaton AF, Webb DJ, **Maxwell SRJ**. Undergraduate preparation for prescribing: the views of 2413 UK medical students and recent graduates. British Journal of Clinical Pharmacology 2008;66:128-134.

Jessop V, **Maxwell S**. Preserving objectivity in medical education. Lancet 2009;373:2196-7.

Likić R, **Maxwell SRJ**. Prevention of medication errors: Teaching and training. Br J Clin Pharmacol 2009;67:656-661.

Likic R, Vitezic D, **Maxwell S**, Polasek O, Francetic I. The effects of problem based learning integration in a course on rational drug use: a prospective, comparative study between two Croatian medical schools. European Journal of Clinical Pharmacology 2009;65:231-237.

Macleod SM, Clark R, Forrest J, Bain M, **Bateman DN**, Azuaro-Blanco A. A review of glaucoma treatment in Scotland 1994-2004. Eye 2008; 22: 251-255.

Maxwell SR. Rational prescribing: the principles of drug selection. Clinical Medicine 2009;9:481–5.

Maxwell SRJ. Why should your hospital have a Department of Clinical Pharmacology? Experience from the UK. Japanese Journal of Clinical Pharmacology & Therapeutics 2008;39:141S-144S.

Maxwell SRJ, Webb DJ. Receptor functions. Medicine 2008;36:344-349.

Maxwell SR, Webb DJ. Internet pharmacy: a web of mistrust? British Journal of Clinical Pharmacology 2008;66:196-8.

Members of EMERGE, the Erice Medication Errors Research Group; Agrawal A, Aronson JK, Britten N, Ferner RE, de Smet PA, Fialová D, Fitzgerald RJ, Likić R, **Maxwell SRJ**, Meyboom RH, Minuz P, Onder G, Schachter M, Velo GP. Medication errors: problems and recommendations. Br J Clin Pharmacol 2009;67:592-598.

Pakravan N, Simpson KJ, Waring WS, Bates CM, **Bateman DN**. Renal injury at first presentation as a predictor for poor outcome in severe paracetamol poisoning referred to a liver transplant unit. European Journal of Clinical Pharmacology 2009; 65: 163-168.

Pakravan N, Waring WS, Sharma S, Ludlam C, Megson I, **Bateman DN**. Risk factors and mechanisms of anaphylactoid reactions to acetylcysteine in acetaminophen overdose. Clinical Toxicology 2008: 46: 697-702.

Payne RA, Oliver JJ, Bain M, Elders A, **Bateman DN**. Patterns and predictors of re-admission to hospital with self-poisoning in Scotland. Public Health 2009; 123: 134-137.

Payne RA, **Maxwell SR**. Deprivation-based risk scores: the re-emergence of postcode prescribing in the UK? Journal of Cardiovascular Medicine 2009;10:157-60.

Payne RA, Webb DJ, **Maxwell SR**. Assessing cardiovascular risk. Correction and transparency of BNF risk charts. British Medical Journal 2009;338:2330.

Raine C, Webb DJ, **Maxwell SR**. The availability of prescription-only analgesics purchased from the internet in the UK. British Journal of Clinical Pharmacology 2009;67:250-4.

Rodrigues J, Sengupta A, Mitchell A, Kane C, Kane C, **Maxwell SRJ**, Cameron H, Ross M, Ford M. The South-East Scotland Foundation doctor teaching programme? Is near-peer teaching feasible, efficacious and sustainable on a regional scale? Medical Teacher 2009;31:e51-7.

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Thanacoody HKR, Good AM, Waring WS, **Bateman DN**. Survey of cases of paracetamol overdose in the UK referred to NPIS consultants. Emergency Medical Journal 2008; 25: 140-143.

Wall AJB, **Bateman DN**, Waring WS. Variability in the quality of overdose advice in Summary of Product Characteristics (SPC) documents: gut decontamination recommendations for CNS drugs. British Journal of Clinical Pharmacology 2009; 67: 83-87.

Waring WS, Rhee JY, **Bateman DN**, Leggett GE, Jamie H. Impaired heart rate variability and altered cardiac sympathovagal balance after antidepressant overdose. European Journal of Clinical Pharmacology 2008: 64: 1037-1041.

7. Research

Davidson, K. MSc Clinical Pharmacy, University of Strathclyde, Glasgow. Title: Acute Renal Adverse Drug Reactions (ongoing).

Cuthbert, M. Master of Philosophy, University of Strathclyde, Glasgow. Title: Improving Standards of Pharmacovigilance in Oncology (Date of submission October 2009).

Pilot study for monitoring adverse drug reactions associated with paediatric medicines (specifically in the treatment of epilepsy, depression and Attention Deficit Hyperactivity Disorder) in Aberdeen and Lothian (Ongoing).

The ISAC data for the assessment of patient reporting during the community pharmacy campaign in Spring 2008 was received in May 2009. Outcome to be reported in 2009-2010 report.