YCC Scotland

Annual Report April 2011 to March 2012

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

2011-2012

1. STAFF

Professor Simon Maxwell – Consultant Clinical Pharmacologist, Medical Director YCC Scotland

Mrs Melinda Cuthbert – Lead Pharmacist Medicines Information / YCC Scotland

Dr James Dear, Consultant Clinical Pharmacologist, Deputy Medical Director YCC Scotland

Professor Nick Bateman – Medical Director of Scottish Poisons Information Bureau and former Medical Director YCC Scotland

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

Mrs Anne MacKay – Information Officer Medicines Information / YCC Scotland

2. SUMMARY

Yellow Card Centre Scotland has had an active year with strategic development of initiatives to support the work of the Yellow Card Scheme and patient safety with medicines. We have been actively working with the Scottish Government Chief Pharmacist's Office, the NHS Education for Scotland, the Scottish Health Informatics Programme, and Health Improvement Scotland to promote initiatives on pharmacovigilance throughout Scotland. In addition, there have been three meetings of the Management Board and two Advisory Group meetings.

Members of the team continue to support and deliver educational sessions and have provided 13 ADR specific presentations to different groups of professionals and students.

Despite this work there has been a 9% decrease observed in reporting in Scotland during 2011/12. There was, however, an 18% increase seen with paediatric reports across Scotland.

There were 6 Yellow Cards send directly to YCC Scotland (i.e. legacy Yellow Cards) processed throughout the year many of which the majority came from Yellow Cards in superseded versions of the BNF which still carried the YCC Scotland address. All processing of follow up data has been transferred to the MHRA.

During August 2011 Mrs Anne MacKay joined the YCC Scotland team as the new Information Officer. At the end of March 2012 Professor Nick Bateman retired after many years of service as the inaugural and dynamic Medical Director of YCC Scotland.

Following piloting of the linking of the electronic Yellow Card to the UKMI MiDatabank, this facility has now been rolled out nationwide and is available in all Medicines Information centres that have MiDatabank version 3.1 throughout the UK. The uptake has been slower than anticipated so the maximum benefit from this reporting development is yet to be achieved. Within Scotland, there are only 2 of the 9 medicines information services currently contributing to these electronic yellow card reports. Implementation of electronic Yellow Card reporting within the other services is pending upgrade; or funding for installation of a server to support the installation of the software.

Collaboration between Health Improvement Scotland (HIS) and YCC Scotland to ensure to principles of the YCC Scotland Promoting Safer Medicines in Scotland document was reflected in the HIS Medicines Strategy. Further to this work stream further engagement with the Short Life Working Group on a refresh of the Scottish Area Drugs and Therapeutics Committees (ADTCs) remits is ongoing. The desired outcome is that the underpinning principles for patient safety and avoidance of adverse events with medicines are incorporated into the governance framework for ADTCs in all Health Boards across Scotland.

During 2011/12 the development and implementation of the new YCC Scotland Website occurred with the assistance of Mr Stephen Harris, Web Designer within NHS Lothian.

A business case was produced in collaboration between YCC Scotland and NHS Education in Scotland (NES) for the development of a series of 6 e-Learning modules covering ADRs and ADR reporting. This business case was championed by Rose Marie Parr and Sonya Lam, who are have key strategic roles within NES and are members of the YCC Scotland Advisory. This business case was subsequently successful in March 2012 and the developed modules will be used to facilitate greater access to ADR resources within the post-graduate education of all healthcare professionals. It is hoped that these modules will also address some of the problems of delivery of face-to-face learning sessions across Scotland.

Following contact between YCC Scotland and the Chief Pharmacist's Office at the Scottish Government is has been agreed that links to the electronic Yellow Card will be added to the latest version of the Pharmaceutical Care Records being used as part of the Chronic Medication Scheme.

Professor Maxwell has contributed to the development of the Single Prescription Administration Record for Scotland. The YCC Scotland Advisory Group were given an opportunity to review the working draft for comment and respected a specific section being included to cover adverse drug reactions.

YCC Scotland has also provided input to the Short Life Working Group regarding the inclusion of ADRs and allergy reporting on TRAK – the computerised patient management system used widely throughout Scotland.

3. YELLOW CARD DATA

	Reports in 2010-2011	% of UK Total	Reports in 2011-2012	% of UK Total	% Change on Previous Year
(3.1) Total UK Reports (exc. MAH holders)	12196		13216		10%↑
(3.2)Total Scottish Reports	1008	8%	914	7%	9%↓
	Reports in 2010-2011	**% of Scottish Total**	**Reports in 2011-2012**	**% of Scottish Total**	
(3.3)Serious Reports Scotland	641	55%	482	51%	25%↓
(3.4)Black Triangle Reports Scotland	363	31%	289	32%	20%↓
(3.5)Fatal Reports Scotland	34	3%	27	3%	20%↓

3.1 Total UK Reports (excluding Market Authorisation Holders reports)

The total number of UK reports for England and Wales increased from 12196 in 2010/11 to 13216 in 2011/12 demonstrating an increase of 10%.

3.2 Total Scottish Reports (excluding Market Authorisation Holders reports)

The total Scottish Reports decreased by 9% from 1008 in 2010/11 to 914 in 2011/12.

3.3 Serious Reports (Scotland)

Serious reports from Scotland decreased from 641 in 2010/11 to 482 in 2011/12 showing a 25% drop. In 2011/12, 51% of all Scottish reports were classified as serious compared with 55% the previous year.

3.4 & 3.11 Black Triangle Reports (Scotland)

Black Triangle reporting in Scotland reduced from 363 in 2010/11 to 289 in 2011/12 i.e. a drop of 74 reports resulting in a 20% reduction. This is proportional to the overall drop in reporting as in 2010/11 Black Triangle reports had comprised 31% of all Scottish reports, and in 2011/12 they were responsible for 32% of all reports.

Varenicline was the most frequently reported Black Triangle drug in Scotland in 2011/12 with 119 reports.

3.5 Fatal Reports (Scotland)

The number of fatalities reported for Scotland decreased from 34 in 2010/11 to 27 in 2011/12 i.e. a 20% decrease. This appears to be in line with the overall reduction in ADR reporting with a reduction of 25% in serious reports being submitted.

3.6. Age Banding Reports Scotland 2011-2012

Age Banding	Reports in 2010-2011	% 2010-2011 Total	Reports in 2011-2012	% 2011-2012 Total	% Change on Previous Year
Child <18	116	11%	137	15%	18%↑
18-24	49	5%	40	4%	18%↓
25-34	91	9%	92	10%	1%↑
35-44	129	13%	101	11%	22%↓
45-54	157	15%	149	16%	5%↓
55-64	180	18%	149	16%	17%↓
65-74	121	12%	127	14%	5%↑
75-84	89	9%	53	6%	40%↓
>85	17	2%	14	2%	18%↓
Age not specified	59	6%	52	6%	12%↓
TOTAL	**1008**		**914**		

3.7 Age Banding Paediatric Reports Scotland 2011-2012**

ICH Age Range	Paediatric Yellow Card Reports	% of Paediatric Yellow Card Reports
Preterm newborn infants	0	0
Term newborn infants (0-27 days)	0	0
Infants & toddlers (28 days – 23 months)	24	17%
Children (2-11 years)	35	25%
Adolescents (12-18 years)	82	58%
TOTAL	**141**	

****Please note that reports for patients aged 18 years old have been included in paediatric report numbers, these patients are part of the 18-24 year old age banding in the Age Banding Reports Scotland 2011-2012 table.

3.6. & 3.7 Age Banding (Scotland)

There have been a few minor changes in reporting by age band with a slight increase in reporting in children and adolescents less than 18 years of age which has bucked the overall trend for a decrease in reporting.

When reporting regarding children was broken down by age band, as in the previous year, there were no reports for infants under 27 days of age. Adolescents (12 to 18 years) again were the age group with the highest number of reports with 82 reports being submitted comprising almost 60% of all reports in those of 18 years or under. The majority of these reports, approximately 45, will be for the HPV vaccine which is normally given to young women in this age band.

3.8 Sources of Yellow Card Reports (Scotland)

Source of Reports Scotland	Reports in 2010-2011	% of 2010-2011 total	Reports in 2011-2012	% of 2011-2012 total	% Change on Previous Year
Carer	5	<1%	11	1%	+120%
Community Pharmacist	55	5%	33	4%	-40%
Consumer	0	0%	0	0%	-
Dentist	1	<1%	2	<1%	+100%
GP	244	24%	181	20%	-26%
Hospital Doctor	200	20%	159	17%	-20%
Hospital HCP	61	6%	34	4%	-44%
Hospital Nurse	40	4%	47	5%	+17%
Hospital Pharmacist	77	8%	73	8%	-5%
Medical Student	0	0%	2	<1%	≈+200%
Nurse	118	12%	122	13%	+3%
Optometrist	0	0%	1	<1%	+100%
Other HCP	67	7%	97	11%	+45%
Parent	10	1%	16	2%	+60%
Patient	89	9%	98	11%	+10%
Pharmacist	22	2%	8	<1%	-64%
Physician	19	2%	21	2%	+11%
Pre-Reg Pharmacist	0		6	<1%	≈+600%
Radiographer	0		3	<1%	≈+300%
TOTAL	**1008**		**914**		

HCP = Health Care Professional

3.8 Sources of Yellow Card Reports (Scotland)

Healthcare Professionals submitted 789 reports comprising 86% of all Scottish reports while **Patient Groups** submitted 125 reports making up the remaining 14%. The previous year Healthcare Professionals submitted 90% of reports and Patient Group submitted 10%

92 of the 125 Patient Group reports (74%) were considered to be serious which, as in previous years, is above the overall Scottish average of 51% of all reports being deemed serious. This could be because patients, parents and carers often only think it appropriate to submit a Yellow Card if they think it is a serious reaction. It must also be borne in mind that if a report is submitted as “serious” by the reporter, the MHRA do not down-grade this even if it does not specifically meet criteria for being serious.

GPs reporting decreased by 26% from 244 in 2010/11 to 181 in 2011/12. Thus GP reporting in Scotland decreased from 24% to 20%. GPs continue to be the group who submits the most Yellow Cards in Scotland. GPs submitted 86 serious reports i.e. 48% of all their reports were classified as serious.

Hospital Doctors reporting also decreased from 200 in 2010/11 to 159 in 2011/12 showing a 20% decrease and giving them 17% of all Yellow Card reports. 112 (70%) of all hospital doctor reports were classed as serious. This is

higher than the national average. This could be because hospital doctors come across so many ADRs that they tend to only report the more serious ones.

Nurses (unspecified) reporting increased marginally from 118 to 122, a 3% increase. Serious reports comprised 26 (21%) of all reports which is lower than the national average.

Patient, Consumer, Parent and **Carer reporting**
Overall patient reporting including patient, carer, consumer and parent reporting rose from 104 in 2010/11 to 125 in 2011/12 **Parent** reporting increased from 10 to 16 reports, **Patient** reporting increased from 89 to 98 (increase of 10%), C**arer** reporting increased from 5 to 11 and there were no **Consumer** reports submitted in 2011/12. One would like to think that the increased patient group reporting may at least in part have been affected by the Community Pharmacist campaign on ADR reporting which had run during the January and February just prior to this financial year. However a similar number of reports had been submitted during each quarter which suggests that it is less likely that the campaign had any direct effect as you would expect the number of reports to tail off over time following the campaign.

Hospital Pharmacists reporting was lower than in the previous year by 5% and this group submitted 8% of all Scottish Yellow Card reports, the same as the previous year. Of the 73 hospital pharmacist reports 60 were serious (82%). This suggests that, similarly to hospital doctors, these pharmacists are more likely to submit a report if they consider it to be serious..

Other Healthcare Professionals (unspecified) reporting increased by 29% compared with the previous year and the overall percentage of the Scottish Yellow Card total increased from 7% in 2010/11 to 11% in 2011/12. Of the 97 reports submitted 39 (40%) were classified as serious which is lower than the Scottish average. This group is likely to include podiatrists, physiotherapists and other non-medical prescribers and it is feasible that the increase in reporting could be directly associated with the considerable level of teaching to this group being provided both by members of the YCC Scotland Management Board team and some of the Advisory Group team.

Hospital Healthcare Professional reports reduced by 44% compared with the previous year however this group continued to provide 4% of all Scottish Yellow Card reports. Of the 34 reports, 20 (59%) were serious. This continues the trend that hospital professionals in general are more likely to be reporting more serious reports and fewer minor ADRs.

Hospital Nurse reporting was increased by 17% in 2011/12 compared with the previous year. The overall percentage of Scottish Yellow Card reports submitted by hospital nurses increased from 4% to 5%. Of the 47 reports 26 (55%) were classified as serious. As in previous years it appears that hospital nurses are more likely to be reporting serious ADRs than their community colleagues possibly because more serious ADRs occur in secondary care where higher doses of more potent drugs are often used.

Community Pharmacist reporting decreased by 40% during 2011/12 from 55 to 33 reports. The previous year there had been a significant increase in community pharmacist reporting in Ayrshire and Arran involving varenicline being prescribed in community pharmacist led smoking cessation clinics. In 2010/11 this group submitted 26 varenicline related Yellow cards however in

2011/12, although the clinics were still running, the number of varenicline related Yellow Cards from Ayrshire and Arran community pharmacists has dropped to 5. Only 12% of the community pharmacy Yellow Card reports submitted were classified as serious (4 reports) and this is below the overall average of 51% for all Scottish reports.

Unspecified Pharmacists provided 8 reports which was a 64% reduction on the previous year involving less than 1% of all Scottish reports. 1 (12%) of these reports was recorded as serious.

Physicians submitted 21 reports which was an 11% increase on the previous year while still retaining 2% of all Scottish reports. 10 (48%) were recorded as being serious ADRs.

Optometrists submitted 1 Yellow Card report in 2011/12. This was an increase on the previous year and it is possible that it was as a result of YCC Scotland having met with the Professional Executive Advisor of Optometry Scotland on 31st March 2011 to promote reporting of ADRs by optometrists.

Dentist reporting increased from 1 to 2 in 2011/12 and these were both classified as a non-serious adverse reaction.

For the first time there were individual reports submitted from radiographers who submitted 3 Yellow Cards, 1 serious; Medical students who submitted 2 Yellow Cards, none serious and Pre-registration pharmacists who submitted 6 Yellow Cards from 4 different regions, 5 of which were serious. This may reflect the impact of undergraduate teaching being provided to these student groups.

3.9 Top Ten Medicines reported 2011-2012

Ranking	Scotland Medicine Name	Number of reports (Direct only)	UK Medicine Name	Number of reports (Direct and Indirect)
1	Varenicline	119	Clozapine	3828
2	HPV Vaccines	45	HPV Vaccine	1029
3	Influenza Vaccines	29	Varenicline	865
4	Adalimumab	22	Ranibizumab	553
5	Pneumoccocal vaccines	21	Adalimumab	451
6	Etonogestrel	20	Influenza Vaccines	387
7	Diphtheria containing vaccines	17	Etonogestrel	361
8	Fluorescein sodium	13	Simvastatin	269
9 =	Salicyclic Acid	12	Streptococcus Pneumoniae vaccine	259
9=	Simvastatin	12	Infliximab	248

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

3.10 Top Five Medicines reported in Paediatric Reports 2011-2012

Paediatric Ranking	Medicine Name
1	Human papilloma virus vaccine
2	Pneumococcal polysaccharide conjugate vaccine
3	Diphtheria, tetanus, pertussis, poliomyelitis and haemophilius type B conjugate vaccine
4	Measles, mumps and rubella vaccine
5 =	Meningococcal group C conjugate vaccine
5 =	Atomoxetine

3.11 Top Five Black Triangle Medicines (Scotland) 2011-2012

Generic Medicine Name	Yellow Card Reports
Varenicline	119
Adalimumab	22
Pneumoccal vaccines	13
Etonogestrel	11
Duloxetine}	10}
Liraglutide}	10}

3.9, 3.10, 3.11 Top Ten Medicines Reported (Scotland) including Black Triangle and Paediatric Reports

Varenicline was the most reported drug for ADRs in Scotland in 2010/11 with 119 Yellow Card submissions, 36 (30%) of which were classified as serious including 7 reports of suicidal ideation, 3 attempted suicides and 1 completed suicides which was all very similar to the previous year. Varenicline continues to have Black Triangle status, being the most frequently reported Black Triangle drug and it is expected that

a high proportion on non-serious ADRs should be being reported compared with the national average of 51%. Varenicline is in 3rd position in the UK Top Ten with clozapine topping the UK national list. As in previous years it is noted that the majority of clozapine reports are submitted direct from the manufacturers who closely monitor all blood dyscrasias associated with clozapine use rather than being reported direct from the healthcare professionals. As the manufacturers are based outside Scotland, this means that there are far more clozapine reports nationally than from Scotland.

HPV vaccines ADRs were the second most frequently reported in Scotland and in the rest of the UK in 20/11/12 which is the same as in 2010/11 although the number of reports has dropped from 51 to 45. The HPV vaccine was also the most frequently reported product in children and adolescents. Although this product had had its Black Triangle status removed in October 2010 nurses have continued to be fairly vigilant in reporting ADRs with 29 of the Yellow Cards coming from nurses, 21 of which were not considered serious

Influenza Vaccine, which incorporated the HINI strain (pandemic flu), was the third most reported product in Scotland with 29 reports and the sixth most reported in the UK.

Adalimumab was the 4th most frequently reported drug in Scotland with 22 reports (15 serious including suspected neoplasms and infections) , the second most frequently reported Black Triangle drug in Scotland and was the 5th most commonly reported drug in the whole of the UK.

The **Pneumococcal Vaccines** are in 5th position in the Scottish Top Ten having been in 7th position the previous year. The new 13 capsular Prevanar 13 with Black Triangle status was introduced in Scotland in 2010 and may have resulted in a delayed increase in Yellow Card reporting from 14 reports in 2010/11 to 21 reports in 2011/12. Of the 12 reports for the Black Triangle Prevenar 13, 10 were not considered serious compared with only 2 of the 12 reports for the well established Pneumovax II product being used for adults at that time being considered non-serious. Prevenar 13 was the second most commonly reported product in children and adolescents and the third most commonly reported Black Triangle product in Scotland. Throughout the whole of the UK the pneumococcal vaccines (Streptococcus pneumoniae) were 9th in the top 10

In 6th position in Scotland was **Etonogestrel** with 20 reports. This is also in 7th position in the UK as a whole and the 4th most frequently reported Black Triangle drug in Scotland. 11 of the reports involved Nexplanon, the newer Black Triangle formulation of this device, 4 of which were serious. The remaining 9 reports were for the older Implanon formulation which, although no longer being prescribed, was still in-situ in a lot of patients and 3 of these were serious. Thus the ratio of serious to non-serious reports was very similar for both the older and the newer Black Triangle product.

Although they do not appear in the UK Top Ten, **Diphtheria Containing Vaccines** were the 7th most frequently reported product in Scotland with 17 reports submitted, 5 serious, from a broad range of reporters including nurses, patient/parents, GPs and other healthcare professionals. They are also third most frequently Paediatric product reported in Scotland.

In 8th equal place was **Florescein sodium** with 13 reports, the same as the previous year. All 13 reports were submitted from the same Health Board area from hospital

nurses, hospital healthcare professionals and a physician and reports were submitted during every quarter of the year with 7 of the 13 considered serious.

In 9th equal position were **Salicylic acid** and **Simvastatin,** neither of which is under intensive surveillance with 12 Scottish reports each. **Simvastatin** was also in 8th place UK wide and 9 of the 12 reports were considered serious which is to be expected with such a well established drug.

All 12 reports for **Salicylic acid** were submitted from the same reporter type during the same quarter from the same region and post-code with 9 of the 12 reported as soft tissue necrosis and 3 as ulcer. We have confirmed with the MHRA and each report is regarding a different patient so it appears that the reported had collected a batch of ADRs associated with salicylic acid products over a period of time and submitted them in bulk.

4. Interpretation of Reporting Figures

A total of 914 Yellow Card reports were submitted from Scotland covering 327 different drugs. As in the previous year, in 2011/12 the top two reported products were varenicline and HPV vaccine. Varenicline continues to be under intensive surveillance. The remaining items in the Scottish top 10 are similar to the previous year with fluorescein sodium being widely reported from one Health Board and salicylic acid being extensively reported by another.

There has been an overall drop of 9% in Yellow Card reporting from Scotland whereas the UK as a whole has shown a 10% increase in reporting. It is not clear from the data available how many of the extra reports in the UK as a whole might have been attributed to clozapine reporting which has increased substantially although these are likely to have come direct from Market Authorisation Holders and therefore not have any impact on the figures being considered. This downward trend in Scottish reporting clearly needs to be reflected upon and will be treated as a matter of urgency by the YCC Scotland Management Board and Advisory Group. It is hoped that the current ongoing initiatives will help contribute to reversing the downward trend observed.

5. Follow-Up Reports

All Follow-Up reports are now being managed by the MHRA directly and YCC Scotland is no longer involved in this activity.

6. Promotional Activities

Detail talks given and audience

Dear J. Adverse Drug Reactions and Yellow Card reporting. Toxtalks Seminar, Edinburgh (September 2011)

Detail training and audience

Cuthbert M ADRs lecture and workshop for Independent Prescribers. University of Dundee (October 2011)

Cuthbert M ADRs lecture and workshop for Independent Prescribers. University of Dundee (March 2012)

S Maxwell. ADR lecture to University of Edinburgh Medical 1st and 3rd Year Students (2012)
Maxwell S. Safe Prescribing session with University of Edinburgh Medical 4th and 5th Year Students (2012)

Maxwell S. Medication errors lecture University of Edinburgh MSc Internal medicine (2 sessions in 2012)

Noble S. ADR lecture and workshop for Independent and Supplementary Prescribers. Napier University (October 2011)

Noble S. ADR lecture and workshop on for final year Biomedical Sciences students. Edinburgh University (November 2011)

Noble S. ADR lecture and workshop for MSc Podiatry students. Queen Margaret University, Edinburgh (January 2012)

Noble S. ADR lecture and workshop for undergraduate Podiatry students. Queen Margaret University, Edinburgh (January 2012)

Noble S. ADR lecture and workshop for Independent and Supplementary Prescribers. Napier University Edinburgh (October 2011)

Noble S. ADR lecture and workshop for Independent and Supplementary Prescribers. Napier University Edinburgh (March 2012)

Detail meetings (non MHRA) attended in YCC capacity

Maxwell S. Scottish Health Informatics Programme. SHIP Retreat, Dunblane (19th-20th May 2011).

Cuthbert M, Maxwell S. Meeting with NHS Education for Scotland multiprofessional leads to discuss requirements and platforms for delivery of education on adverse drug reactions and reporting (29 August 2011).

Cuthbert M. NHS Lothian Steering Group for service evaluation of medicines errors (02 December 2011).

Detail materials developed to promote YCS

Cuthbert M. Module 1: Basic principles of adverse drug reactions drafted for story board (December 2011).

Detail development of YCC website
During 2011/12 we secured permission from NHS Lothian to start developing the new YCC Scotland website and were allocated a web developer. The current website continued with basic updates while the majority of our resources were directed towards designing and developing the new site which was scheduled for launch 1st October 2012.

Anything else applicable to promotion within your region

Monthly dissemination of Dear Healthcare Professional letters summary from the MHRA to key contacts within each health board for onward cascade.

Annual reports for each health board across Scotland on reporting via the Yellow Card Scheme.

7. Publications

Dear, J.W., Simpson, K., Nicolai, M.P.J., Catterson, J.H., Street, J., Huizinga, T., Craig, D., Dhaliwal, K., Webb, S., Bateman, D.N. & Webb, D.J. Cyclophilin A is a damage associated molecular pattern molecule that mediates acetaminophen-induced liver injury. *Journal of Immunology* 2011;187:3347-3352.

Murray, D.B., Potts, S., Haxton, C., Jackson, G., Sandilands, E.A., Ramsey, J., Puchnarewicz, M., Holt, D.W., Johnston, A., Bateman, D.B. & **Dear, J.W.** "Ivory wave" toxicity in recreational drug users; integration of clinical and poisons information services to manage legal high poisoning. *Clinical Toxicology* 2012;50:108-13.

Rahmner PB, Eiermann B, Korkmaz S, Gustafsson LL, Gruvén M, **Maxwell S**, Eichler HG, Vég A. Physicians' reported needs of drug information at point of care in Sweden. *British Journal of Clinical Pharmacology* 2012;73:115-25.

Ross S, **Maxwell S**. Prescribing and the core curriculum for tomorrow's doctors: BPS Curriculum in Clinical Pharmacology and Prescribing for Medical Students. *British Journal of Clinical Pharmacology* 2012;74:644-661.

Sims MC, Hall DP, Hall N, Archibald AM, **Maxwell SR.** Teaching medical students prescribing skills: a near-peer approach. *Medical Education* 2011;45:1144-5.

Starkey Lewis, P.J.*, **Dear, J.*,** Platt, V., Simpson, K.J., Craig, D.G.N., Antoine, D.J., French, N.S., Dhaun, N., Webb, D.J., Costello, E.M., Neoptolemos, J.P., Mogg, J., Goldring, C.E., Park, K. Circulating microRNAs as potential markers of human drug induced liver injury. *Hepatology* 2011;54:1767-76. * co-first authors

Street, J.M., Birkhoff, W., Menzies, R.I., Webb, D.J., Bailey, M.A., **Dear, J.W.** Exosomal transmission of functional aquaporin 2 in kidney cortical collecting duct cells. *Journal of Physiology* 2011;589:6119-27.

Street, J.M., Barran, P.E., Mackay, C.L., Weidt, S., Balmforth, C., Walsh, T.S., Chalmers, R.T., Webb, D.J. & **Dear, J.W.** Identification and proteomic profiling of exosomes in human cerebrospinal fluid. *Journal of Translational Medicine* 2012;10:5.

8. Research

An ISAC application was made in March 2012 for Yellow Card reporting data to assess the impact of the Scottish Public Health Campaign via community pharmacies ob patient reporting of ADRS, including herbal medicines. This application was subsequently approved. Analysis of this dataset will be progressed once received.