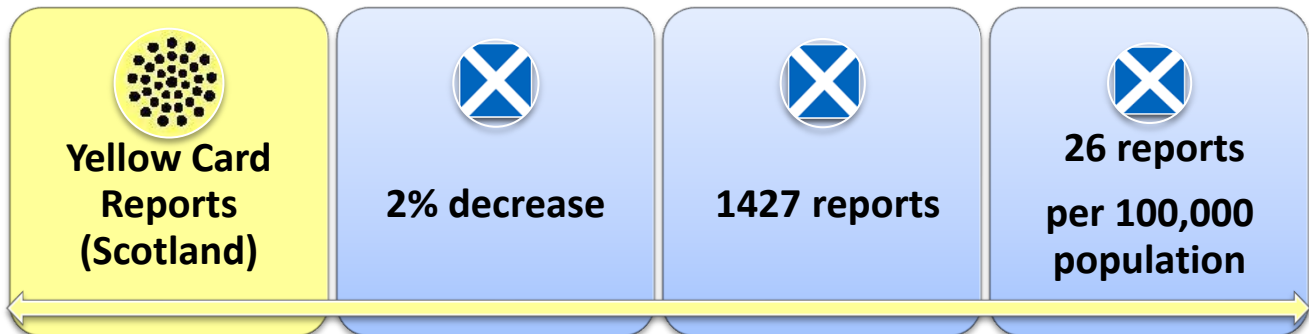
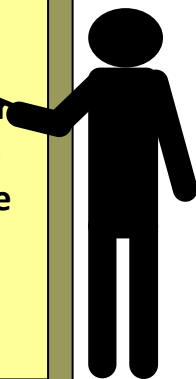


Yellow Card Centre Scotland

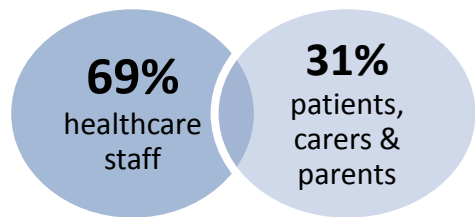


YCC Scotland Training

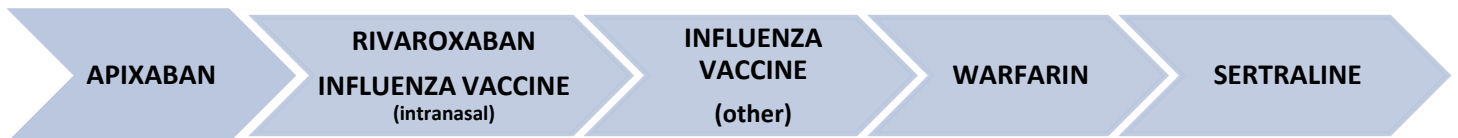
If you would like us to visit with our YCCS conference stand, or to come and talk to your team /group on the Yellow Card Scheme please get in touch.



Source of Reports



Top Reported Medicines



**Annual Report
April 2017 to March 2018**

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

2017–2018

1. STAFF

Professor Simon Maxwell	Consultant Clinical Pharmacologist, Medical Director YCC Scotland
Professor Angela Timoney	Director of Pharmacy, NHS Lothian
Dr James Dear	Consultant Clinical Pharmacologist, Deputy Medical Director YCC Scotland
Ms Tracy Duff	Lead Pharmacist Medicines Information / YCC Scotland
Ms Alison Paterson	Senior Pharmacist Medicines Information / YCC Scotland
Mr Alexander Kiker	Information Officer Medicines Information / YCC Scotland
Ms Fiona Houston	Administrative Assistant Medicines Information / YCC Scotland

2. Executive Summary

Yellow Card Centre Scotland (YCCS) has continued to raise the profile of adverse drug reactions (ADRs) as an important safety and quality issue amongst both healthcare professionals and the public in Scotland through the delivery of training and promotional activities.

In Scotland, Yellow Card reporting has declined by 2% in 2017/18 compared to last year. This reflects an overall decrease in reporting by all hospital healthcare professionals and a significant decline in reporting by nurses across sectors. Conversely, our patient reporting continues to rise, representing 31% of our total reports in Scotland. While we are encouraged to see such a high level of patient reporting, we must endeavour to maintain reporting from healthcare professionals, despite the current challenging workforce pressures.

We are pleased to report that many general practices (GPs) across Scotland are now able to submit electronic Yellow Cards directly via the *Vision* system. This functionality is limited to later releases (DLM 500 or later); but the upgrade from DLM 483 is now nearing completion. Importantly, this feature enables Yellow Card reports to be populated automatically from *Vision*, and sent directly to the MHRA. We are already starting to see evidence of the potential this has for improving Yellow Card reporting in primary care in Scotland.

GP reporting has risen for the first time in five years, with an 11% increase compared to 2016/17. We will continue to encourage the reporting of ADRs by this key target group who have formerly been our most frequent reporters. We hope that these efforts will be boosted with the availability of automatic population of Yellow Cards using the *Vision* electronic system. We will continue to communicate about availability of this system and how to use it.

For the majority of GP practices across Scotland that use the *EMIS* electronic system, we are also pleased to advise that significant progress has been made in regards to the development of an integrated e-YC reporting form. We are advised that this will be ready to pilot in the near future.

In Scotland, we have noted a shift in the mode of delivery of teaching in some undergraduate and healthcare professional courses, from traditional face-to-face teaching, to electronic learning. For that reason, we no longer provide face-to-face training to some institutions which we have historically visited and this is reflected in the lower number of teaching sessions delivered in 2017/18.

Importantly, we have already been adapting to these changes and finding new ways to provide pharmacovigilance training. As well as updating our six e-learning ADR modules, we are developing a short training video to promote the Yellow Card Scheme and ADR reporting. We are hoping to launch the first of our new and improved ADR modules later this year; these will now be provided as 'foundation' and 'advanced' training modules.

Our new electronic YCCS 'tool kit' is now displayed on the front page of our website, and provides quick and easy access to information, and all our educational resources, including *YouTube* videos and infographics. It is aimed at both healthcare professionals and patient groups alike. We would encourage all stakeholders to share this resource widely with your healthcare colleagues in NHS Scotland. For permission to display on any websites, please contact us directly, and we would be happy to make the arrangements.

Our *Twitter* account (@YCCScotland) has proven popular and we continue to Tweet regularly items relating to medicines safety to both the general public and healthcare professionals. Please follow us to receive our safety messages. Our *Twitter* feeds are also now streamed through our website.

The governance of the centre remains with the YCCS Management Board (Chair: Professor Maxwell) and the YCCS Advisory Group (Chair: Professor Timoney). The former group meets four times each to manage operational issues while the latter is a vehicle for Scottish stakeholders oversight, support and direction to our objectives. Details are available on our website <http://www.yccscotland.scot.nhs.uk/>.

3. Yellow Card Data

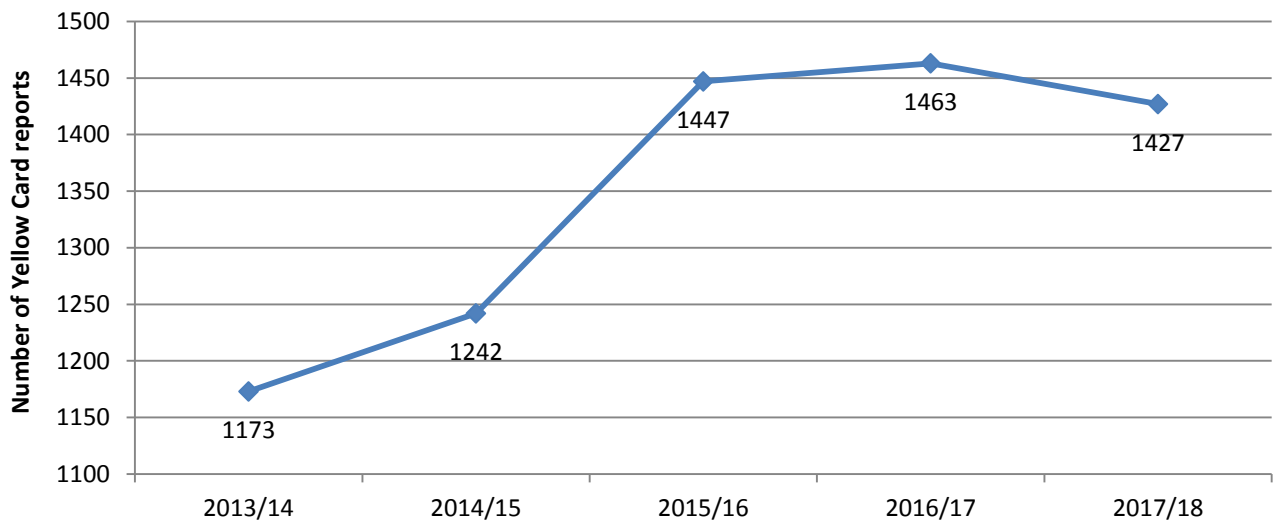
3a Total Scottish Reports

Table 1 – Yellow Card reporting for Scotland 2013/14 to 2017/18

Year	Number of reports	Percentage change on previous year
2017/18	1427	-2%
2016/17	1463	+1%
2015/16	1447	+17%
2014/15	1242	+6%
2013/14	1173	+37%

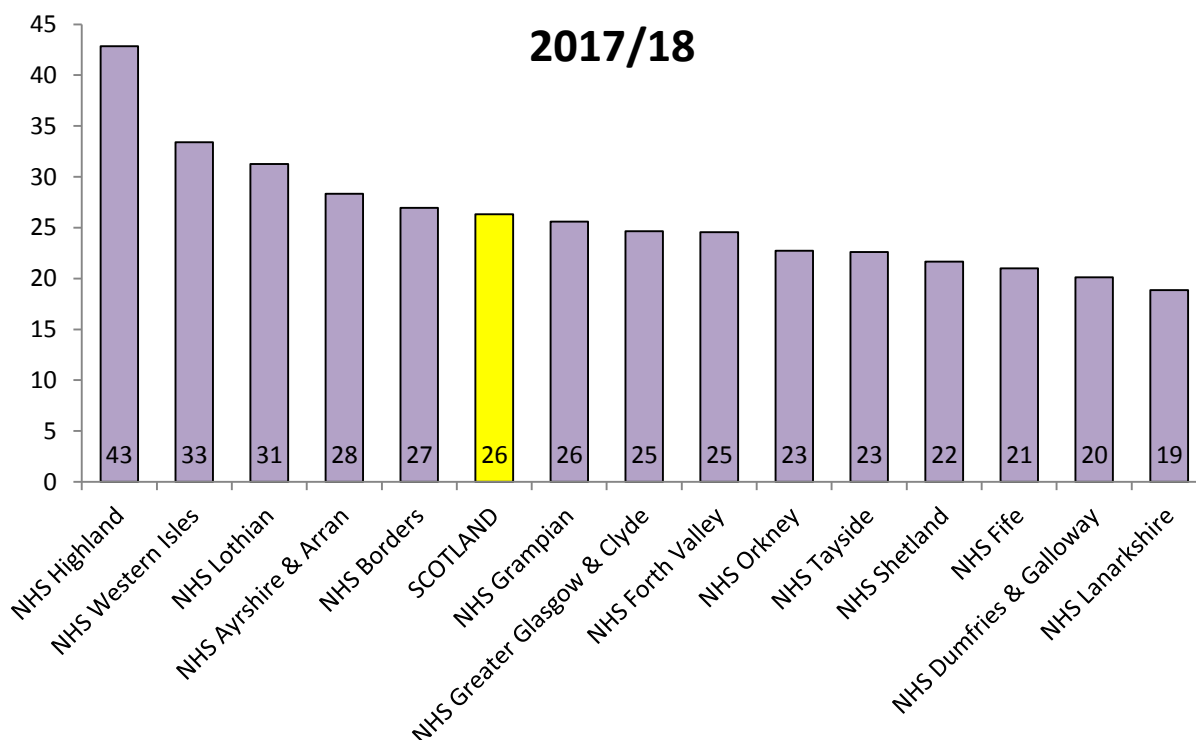
Figure 1- Total number of Yellow Card Reports in Scotland 2013/14- 2017/18

Number of Yellow Card reports (Scotland) 2013/14-2017/18



The total number of Scottish direct reports has fallen for the first time in over 5 years, with a slight (2%) decrease from 1463 in 2016/17 to 1427 in 2017/18. This reflects a decrease in reporting by hospital doctors and pharmacists, and nurses in all sectors.

Figure 2 - Health board Yellow Card Reporting per 100,000 population (Scotland 2017/18)



Statistics from National Registers of Scotland, Population estimates mid-2017* reports for Golden Jubilee Hospital are included in NHS Greater Glasgow and Clyde. Reports for the State Hospital are included in NHS Lanarkshire.

Figure 2 demonstrates that the average number of YC reports per 100,000 population in Scotland is 26; a slight decrease compared to 27/100,000 in the previous year. Compared to 2016/17, increases in reporting are evident in Ayrshire & Arran (24%), Western Isles (13%) and the Highlands (13%). In the Highlands the most notable increase is in reporting by patients and parents, which has doubled compared to the previous year. Slight increases are also apparent in NHS Lothian (5%) and Grampian (6%).

Reporting is static in Greater Glasgow & Clyde, with a decrease in reports from patients and hospitals, but an increase in reports from GPs.

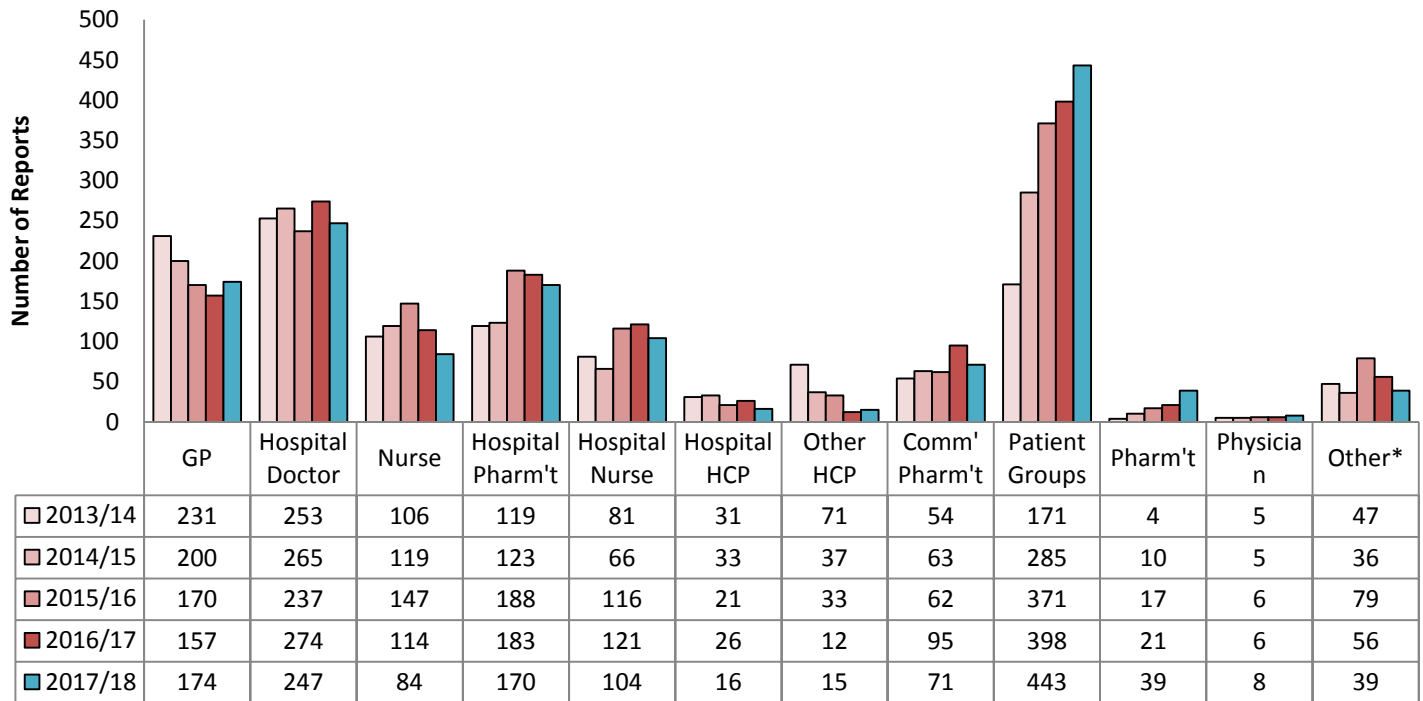
A decrease in reporting is noted for Tayside (-24%), Dumfries & Galloway (-21%), Forth Valley (-19%), Fife (-17%), Lanarkshire (-14%), and the Borders (-9%). Overall numbers are small for the Borders and Dumfries & Galloway, so small changes in the number of reports influence the average, however this reduction is mainly due to reduced reporting from hospitals in both regions.

Large decreases in reporting are also evident for Shetland (-62%) and Orkney (-50%), though it is important to note that for the Western Isles, Shetland and Orkney the overall number of reports are small, and individual reports can therefore significantly influence the average.

3b Reporter Qualifications

Figure 3 – Scotland total Yellow Card reports by reporter qualification 2013/14 to 2017/18

Scotland total Yellow Card reports by reporter qualification 2013/14 to 2017/18



*Other = dentist, healthcare assistant, optometrist, medical student, radiographer, chiroprapist, midwife, pre-registration pharmacist, pharmacy assistant

Healthcare Professionals (HCPs) accounted for 69% of the total reports; with a decrease in the total number of reports from 1065 in 2016/17 to 967 in 2017/18 (9% decrease). This represents a proportional decrease of 4% from 2016/17 (HCPs accounted for 73% of total reports).

GP reporting has risen for the first time in five years, increasing by 11% compared to 2016/17. This is a result of the recent significant progress with the upgrade of VISION, to the latest DML500 versions, which are fully integrated with Yellow Card reporting. Already, Vision reports account for 17% of all GP reports.

Hospital doctors remain the highest reporting HCP group, accounting for 17% of the total reports, despite a decrease of 10% compared to 2016/17.

Nurse (incorporating all community) reporting and **hospital nurse** reporting have declined by 26% and 14%, respectively, compared to 2016/17. This translates to an overall decline in nurse reporting of 20%.

Hospital pharmacist reporting has gone through another slight decline (7%) compared to 2016/17, however it is still much higher than 2014/15 following the 53% increase in 2015/16.

A 33% decline in reporting via Medicines Information (MiDatabank) is noted, from 60 in 2016/17 to 40 this year. NHS Lothian accounted for 45%, NHS Tayside 28% and NHS Lanarkshire 20% of the total reports submitted via MiDatabank in Scotland. The Association of Scottish Medicines Information Practitioners (ASMIP), in collaboration with YCCS continue to promote electronic reporting via MiDatabank across Scotland, however efforts should be made to increase reporting in other health boards across Scotland.

Community pharmacist reporting has decreased this year compared to 2016/17 (25%), however this follows last year's 53% increase, and it should be acknowledged that the current level of reporting is still higher than the years previous to this.

Although reporting by pharmacists in hospital and community has declined, other pharmacist reporting has almost doubled. It is likely this is due to reporting by primary care pharmacists. The reporting groups are being revised, which should better capture the source of pharmacists reporting in future.

Patient group reporting continues to maintain its momentum and place as the highest reporting group, increasing by a further 11% this year and accounting for 31% of the total reports (compared to 27% in 2016/17).

Table 2 - Reports from hospitals 2017/ 18 (Scotland)

Health board Area	Total Reports 2017/18	Hospital Reports 2017/18	Hospital Reports as a % of Board's Total Reports	
			2017/18	2016/17
NHS Ayrshire & Arran	105	39	37%	47%
NHS Borders	31	11	35%	65%
NHS Dumfries & Galloway	30	10	33%	47%
NHS Fife	78	24	31%	34%
NHS Forth Valley	75	26	35%	48%
NHS Grampian	150	39	26%	35%
NHS Greater Glasgow & Clyde	286	117	41%	49%
NHS Highland	137	51	37%	47%
NHS Lanarkshire	123	53	44%	53%
NHS Lothian	277	112	40%	45%
NHS Orkney	5	1	20%	30%
NHS Shetland	5	0	0%	31%
NHS Tayside	94	46	49%	40%
NHS Western Isles	8	3	38%	0%
Golden Jubilee	2	2	N/A	N/A
The State Hospital	1	1	N/A	N/A
Total (Scotland)	1427	537	38%	45%

Table 2 shows that overall, the number of reports received from NHS hospitals this year has declined, reflecting a decline in reporting across all hospital reporter groups including pharmacists, doctors, nurses and other.

3c Serious Reports

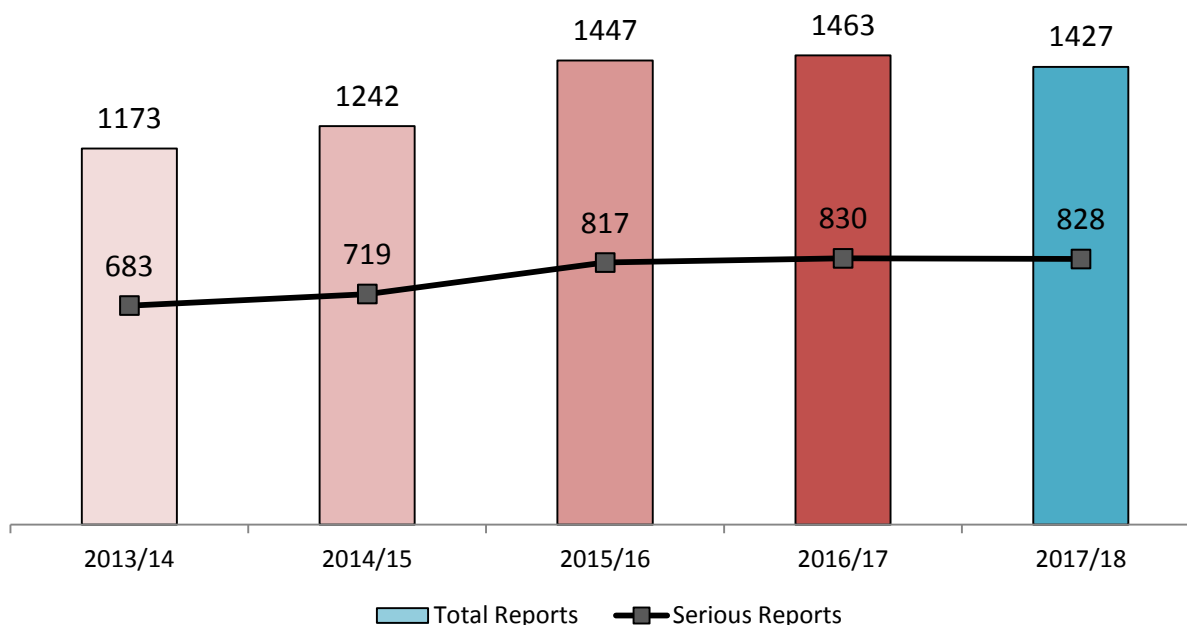
Table 3 - Serious reports over last five years (Scotland)

Year	Number of serious reports	Percentage of total reports	Percentage change on previous year
2017/18	828	58%	0%
2016/17	830	57%	+2%
2015/16	814	56%	+13%
2014/15	719	58%	+5%
2013/14	683	58%	+43%

Table 3 and Figure 4 show the proportion of serious reports has continued to remain constant. Note that 70% of reports from patient groups were considered serious (very similar to 72% in the previous year). The intranasal influenza vaccine was the most commonly implicated drug reported by parents. Patient reporting included a diverse range of drugs; levothyroxine was the highest reported drug (4% of total).

Apixaban, rivaroxaban (BT), warfarin and intranasal influenza vaccines (BT) were the most frequently reported suspect drugs associated with serious reactions.

Figure 4 – Serious reports as a proportion of total reports from Scotland 2013/14- 2017/18



3d Fatal reports

Table 4 - Number of fatalities reported for Scotland in patients with suspected side effects in association with medicines over the last five years

Year	Number of fatal reports	% change on previous year
2017/18	95	+34%
2016/17	71	No change
2015/16	71	+22%
2014/15	58	-8%
2013/14	63	+66%

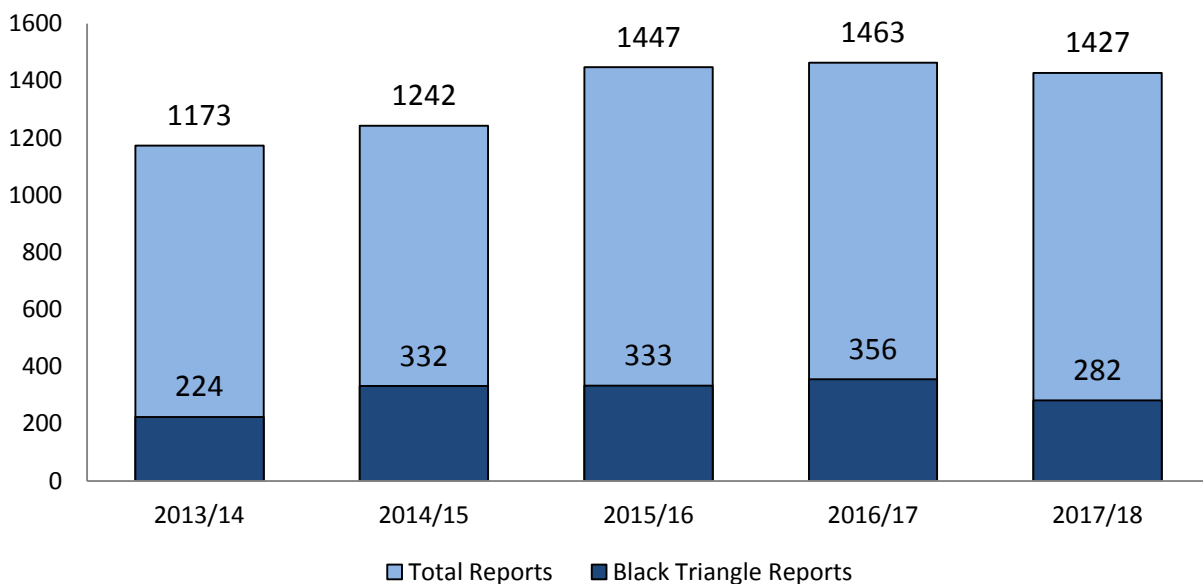
There has been a marked increase in the number of fatal reports compared to the previous year. Half of these involved anticoagulant or antithrombotic agents; 41% involved warfarin, rivaroxaban or apixaban; 9% other antithrombotic agents. 13% involved chemotherapy and a further 8% immunotherapy or other biological agents. Almost half of all reports included bleeding, although this was not necessarily the cause of death and in many cases, multiple reactions were reported.

3d.1 Black Triangle (BT) Reports

Table 5 - Black Triangle reports over last five years (Scotland)

Year	Number of Black Triangle reports	Percentage of total reports	Percentage change on previous year
2017/18	282	20%	-21%
2016/17	356	24%	+7%
2015/16	333	27%	0%
2014/15	332	27%	+48%
2013/14	224	19%	-29%

Figure 5 – Black Triangle reports (Scotland) as a proportion of total reports (2013/14 -2017/18)



The number of BT reports has decreased by 21% compared to the previous year. Last year a high proportion of BT reports were for the new meningococcal B vaccine, intranasal influenza vaccine, Fluarix Tetra and rivaroxaban (40% of overall). These still account for 33% of the total BT reports in 2017/18, however reporting for meningococcal B vaccine in particular has declined.

3e Age Banding (Scotland)

Table 6 - Age Banding Reports Scotland 2015/16- 2017/18

Age Banding	Reports 2015/16	Reports 2016/17	Reports 2017/18
Unknown	32	49	59
Under 2 years	70	44	40
2-6 years	70	54	45
7- 12 years	53	51	38
13- 17 years	83	52	52
18-24 years	89	77	79
25-34 years	112	122	119
35-44 years	135	140	156
45-54 years	147	176	195
55-64 years	206	233	192
65-74 years	212	236	230
75+ years	238	229	205
TOTAL	1447	1463	1427

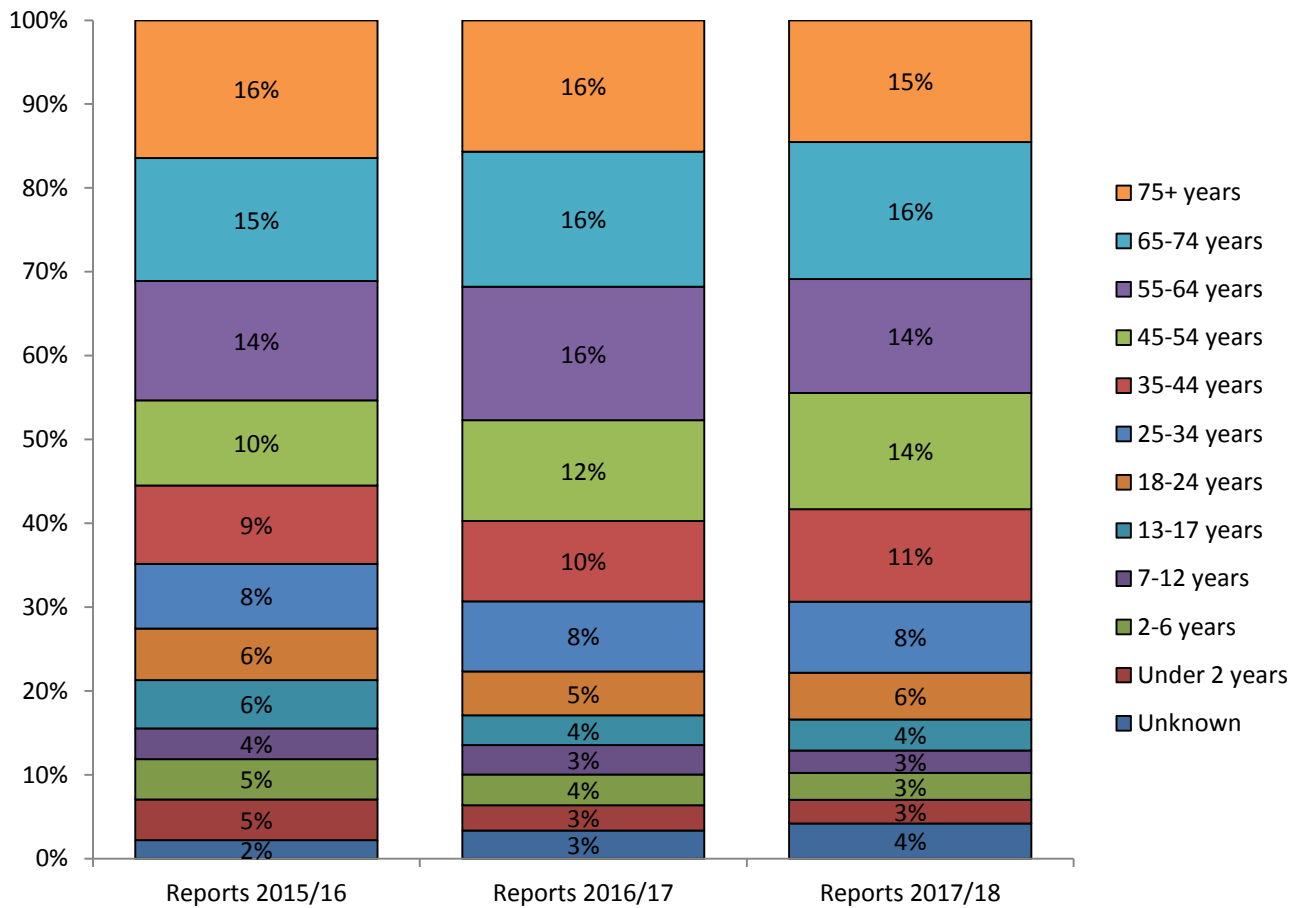
Table 7 - Age Banding Paediatric Reports Scotland 2017/18

Age Range	Number of Paediatric Yellow Card Reports	% of Paediatric Yellow Card Reports
Children under (0-11 mths)	28	16%
Children (12- 23 mths)	12	7%
Children (2-11 yrs)	79	45%
Adolescents (12-17 yrs)	56	32%
TOTAL	175	

Table 8 - Age Banding over 65 years Reports Scotland 2017/18

Age Range	Number of over 65 yrs Yellow Card Reports	% of over 65yrs Yellow Card Reports
65yrs – 74yrs	230	53%
75yrs – 84yrs	132	30%
85yrs – 94yrs	70	16%
95+	3	1%
TOTAL	434	

Figure 6 – The percentage of Yellow Card reports from Scotland, stratified by age group (2015/16-2017/18)



Tables 6-8 and Figure 6 show that there have been no major changes in any of the age bands with respect to the number of reports received compared to the previous year, although there has been an overall drop in the number of paediatric reports received (from 201 to 175; a 13% decrease).

3f Top 10 Suspected Medicines

Table 9 - Scottish top ten suspected medicines reported 2016/17-2017/18 (including vaccines)

Rank	2016/17		2017/18	
	Drug Name	Reports	Drug Name	Reports
1	Meningococcal B Vaccines	43	Apixaban	37
2	Apixaban	37	=Influenza Vaccines (Intranasal) = Rivaroxaban	36
3	Warfarin	33		
4	Rivaroxaban	32	Influenza Vaccines (Exc Intranasal)	29
5	Influenza Vaccines (Intranasal)	31	Warfarin	24
6	=HPV Vaccines = Influenza Vaccines (Exc Intranasal) = Fluticasone/ Vilanterol	24	Sertraline	23
7	Varenicline	23	Varenicline	21
8	Pneumococcal vaccines	20	Meningococcal B Vaccines	20
9	Measles Mumps and Rubella (MMR) vaccines	19	Umeclidinium Bromide	17
10	Omeprazole	18	Levothyroxine	16

Table 11 - Top Five Medicines reported for paediatrics and aged 65+ in 2017/18 (Scotland)

Top reported medicines for paediatrics and over 65yrs 2017/18		
	Paediatrics	Over 65 yrs
1	Influenza Vaccines (Intranasal)	Apixaban
2	Meningococcal B Vaccines	Rivaroxaban
3	= Fluorides = HPV Vaccines = Meningococcal A/C/W135/Y Vaccine = Measles Mumps & Rubella (MMR) vaccines	Warfarin
4	Poliomyelitis Vaccine/Diphtheria and Tetanus Vaccine	= Umeclidinium Bromide = Formoterol Fumarate Dihydrate/Aclidinium Bromide
5	= Rotavirus Vaccine = Poliomyelitis / Diphtheria/ Tetanus/ Pertussis Vaccine	= Valsartan/Sacubitril = Fluticasone/Vilanterol

Table 12 - Top Ten Black Triangle Medicines 2016/17- 2017/18 (Scotland)

2016/17		2017/18	
Generic Drug Name	Reports	Generic Drug Name	Reports
Meningococcal B Vaccines	43	= Influenza Vaccines (Intranasal) = Rivaroxaban	36
Rivaroxaban	32	-	
Influenza Vaccines (Intranasal)	30	Meningococcal B Vaccines	20
Fluticasone/Vilanterol	24	Umeclidinium Bromide	17
Umeclidinium Bromide	17	= Formoterol Fumarate Dihydrate/Aclidinium Bromide = Influenza Vaccines (other)	13
Dasabuvir Sodium Monohydrate	14	-	
Dapagliflozin	12	= Apremilast = Empagliflozin	10
= Infliximab = Empagliflozin	11	-	
Apremilast	8	= Rituximab = Elbasvir/Grazoprevir = Vilanterol Trifenatate/Umeclidinium Bromide = Nivolumab = Canagliflozin	6
= Aflibercept = Nivolumab	7	-	

A similar number of reports were received for apixaban, rivaroxaban and influenza vaccines compared to last year, although the number of reports received in relation to meningococcal B vaccine has halved. In general vaccines feature less prominently in the top ten, except in paediatrics which was predominantly vaccines.

Sertraline was the sixth top drug reported this year, with a number of reports received for levothyroxine and iron isomaltose. There was no pattern to the reactions reported for sertraline which were diverse; although 74% were reported as serious (40% of which were patient reported). All the levothyroxine reports were from patients; 70% of these were classed as serious. Reported reactions were also wide ranging with no particular pattern. The majority of these do not appear to meet the MHRA criteria for serious.

3g Sources of Reports

Table 13 - reports received by reporter origin (Scotland)

Reporter	2015/16		2016/17		2017/18	
	Number	% of total	Number	% of total	Number	% of total
Carer	7	0.5%	13	1%	16	1.1%
Parent	87	6%	73	5%	76	5.4%
Patient	277	19.1%	312	21%	351	24.9%
Community Pharmacist	62	4.3%	95	6%	71	5%
Hospital Pharmacist	188	13%	183	13%	170	12.1%
Pharmacist	17	1.2%	21	1%	39	2.8%
Pharmacy Assistant	6	0.4%	6	<1%	2	0.1%
Pre-reg pharmacist	17	1.2%	17	1%	14	1%
Hospital Nurse	116	8%	121	8%	104	7.4%
Nurse	147	10.2%	114	8%	84	6%
GP	170	11.7%	157	11%	174	12.4%
Hospital Doctor	237	16.4%	274	19%	247	17.5%
Physician	6	0.4%	6	<1%	8	0.6%
Coroner	-	-	-	-	-	-
Dentist	22	1.5%	6	<1%	5	0.4%
Midwife	2	0.1%	5	<1%	3	0.2%
Optometrist	3	0.2%	-	-	5	0.4%
Chiropodist	1	0.1%	-	-	-	-
Radiographer	26	1.8%	19	1%	8	0.6%
Hospital Healthcare Professional	21	1.5%	26	2%	16	1.1%
Healthcare Assistant	1	0.1%	-	-	-	-
Other Healthcare Professional	33	2.3%	12	1%	15	1.1%
Medical Student	1	0.1%	3	<1%	1	0.1%
Unknown	-	-	-	-	1	0.1%
Total	1447		1463		1410	

3h Types of reports (Scotland)

Table 14 Report submission routes

Report Type	2016/17		2017/18	
	Number	% of total	Number	% of total
App	3	<1%	4	<1%
Electronic YC	1211	83%	1150	82%
MiDB	60	4%	40	3%
Paper	189	13%	183	13%
RIDR	-	-	3	<1%
Vision	-	-	30	2%

Table 14 shows a similar proportion of paper and electronic reports to last year. The most notable change being the addition of reports received through Vision, which is a modest proportion overall, but it is anticipated this will increase with the completion of the upgrade, and with continued promotion by YCCS. Reporting via MiDatabank has declined by 33% compared to last year.

4. Discussion of Yellow Card Data

A total of 1427 Yellow Card reports were submitted in Scotland in 2017/18, an overall decrease of 2% compared to 1463 in 2016/17. The average number of YC reports per 100,000 population in Scotland has also declined from 27 in 2016/17 to 26. This reflects an overall decrease in reporting by hospital healthcare professionals, and healthcare professionals in general, particularly from nurses, compared to the previous year. This is likely a consequence of the mounting workforce pressures in the NHS, and will continue to be a challenge to Yellow Card reporting in the foreseeable future.

Overall the number of reports received from NHS hospitals has declined from 660 in 2016/17 to 537 in 2017/18 (19% decrease), representing a proportional decrease of 7% (from 45% to 38% of total reports). Hospital doctors remain the highest reporting HCP group, accounting for 17% of the total reports, despite a decrease of 10% compared to 2016/17.

Nurse (incorporating all community) reporting and hospital nurse reporting have declined by 26% and 14%, respectively, compared to 2016/17. This translates to an overall decline in nurse reporting of 20%.

Decreases are also evident in reporting by both hospital (7%) and community pharmacists (25%), with a 33% decline in electronic reporting via Medicines Information systems (MiDatabank). Reporting by pharmacists in other sectors (primary care) however has increased.

Notably, GP reporting has risen for the first time in five years, increasing by 11% compared to 2016/17. This is likely a direct result of the recent significant progress with the upgrade of VISION, to the latest DML500 versions, which are fully integrated with Yellow Card reporting. Already, Vision reports account for 17% of all GP reports. This clearly demonstrates the importance of ease of reporting, and it is hoped that this improved functionality will reverse the decline in overall reporting in Scotland in 2018/19.

Patient groups accounted for 31% of the total reports, and are by far the highest reporting group in Scotland. This reflects a further 11% increase in patient reporting from last year.

There has been no change in the number of serious reports compared to last year. Similar to last year, 70% of reports from patient groups were considered serious; indicating that education around the criteria may be helpful. Patient reporting included a diverse range of drugs; levothyroxine was the highest reported drug (4% of total). The intranasal influenza vaccine was the most commonly implicated drug reported by parents.

There have been no major changes in any of the age bands with respect to the number of reports received, although there has been a further 13% decline in the number of paediatric reports received. This reflects a reduction in reports for the meningococcal B vaccine (BT status), since its introduction into the routine childhood immunisation programme in September 2015.

A marked increase in the number of fatal reports compared to the previous year is noted. Half of these involved anticoagulant or antithrombotic agents; 41% involved warfarin, rivaroxaban or apixaban; 9% other antithrombotic agents. 13% involved chemotherapy and a further 8% immunotherapy or other biological agents. Almost half of all reports included bleeding, although this was not necessarily the cause of death and in many cases, multiple reactions were reported. This may reflect improved vigilance in reporting adverse drug reactions with fatal outcomes.

Vaccines generally are less prominent in the top 10 suspect medicines reported, except in paediatrics which was predominantly vaccines. The influenza vaccine (Tetra and the intranasal are BT) and the meningococcal B vaccines (BT) remain in the top 10. Reporting levels for the anticoagulants rivaroxaban, apixaban and warfarin are similar to last year, and remain in the top 5 suspect medicines reported.

Sertraline was the sixth top drug reported this year, with a number of reports received for levothyroxine and iron isomaltose. There was no pattern to the reactions reported for sertraline which were diverse; although 74% were reported as serious (40% of which were patient reported). All the levothyroxine reports were from patients; 70% of these were classed as serious. Reported reactions were also wide ranging with no particular pattern. Several reports are also noted for the new biosimilar rituximab brands and for elbasvir-grazoprevir which was accepted for use in NHS Scotland early 2017 (BT).

Reporting routes are similar to the previous year, except for the appearance of reports populated from Vision in the latter half of the year.

5. Promotional activities

5a Training delivered to healthcare professionals and their respective groups

ADR e-learning modules

The NES/ YCCS ADR modules are hosted in LearnPro (for health board employees) and the NES digital platform for pharmacy teams (formally Portal, but now Turas Learn). Changes in the LearnPro reporting function have resulted in temporary difficulties with access to data on statistics. Portal / Turas Learn currently report only on completion of the final MCQ for all modules not on the overall usage of the modules. However, the modules continue to be a well used resource in Scotland, and remain embedded in our blended learning for healthcare professionals.

The modules are in the process of being updated, and the new modules will developed to allow tracking of the user “status” (completed/ in progress/ failed).

Institutional changes in delivery of teaching

In Scotland, there has been a general shift in the mode of delivery of teaching in undergraduate and healthcare professional courses, away from traditional face to face teaching, towards e-learning.

As such, we no longer provide face to face training to some institutions which we have historically provided training to, including the Dundee non-medical prescriber (NMP), and Strathclyde University Pharmacy undergraduate courses. This is reflected in the overall (lower) number of teaching sessions delivered (tables 16 and 18) this year, although we do have new arrangements in place to provide teaching to NMPs in NHS Forth Valley and NHS Stirling later this year.

Importantly, we are adapting to these changes in teaching, and finding new ways to provide our training. As well as our commitment to updating our e-learning modules, we plan to develop a short training moodle on YC reporting, for the Pharmacist Independent Prescriber course. If this is successful we will consider wider roll-out. We have also developed generic training slides, which we have provided for the purpose of hospital nurse education on the YC scheme. Our new e-“tool kit” also provides quick and easy access to information, and all our educational resources.

Table 16- Training delivered to healthcare professionals and their respective groups

Audience	Session	Duration (hours)	No of sessions	Total attendees	Total hours Training
Postgraduate (MSc Internal Medicine)	Lecture- Adverse Drug Reactions	1	1	60	1
Non Medical Prescribers (Napier)	Blended Learning- ADRs & YC Reporting	1.5	2	130	3
Non Medical Prescribers (QMU)	Blended Learning- ADRs & YC Reporting	2	1	53	2
Advanced Nurse Practitioners	Presentation on PV and YCCS	1	1	20	1
Hospital Nurses	Short presentation (YCCS)	0.25	1	8	0.25*
Primary care pharmacists	Short presentation (YCCS)	0.25	1	50	0.25
Scottish Pharmacists in Mental Health	Stand	1	1	25	2
Paediatric Medical Grand Rounds (all HCP)	Presentation on PV and YCCs	0.5	1	36	0.5
Royal College of Physicians NES training day (Core Medical Trainees)	Lecture- ADRs	0.75	1	40	0.75
NMPs Conference (Edinburgh)	Stand/ lecture	3	1	140	6
Parkinson's Excellence Network South East meeting	Promotion of YCCS	3.5	1	20	3.5
Totals			12	582	20.25

*Indirect through provision of slides for delivery by HCP

5b Training delivered to patients and their respective groups

Table 17 Patient Group Engagement

Audience	Session type	Duration (hours)	Number of sessions	Audience numbers	Total staff hours
Patients	Promotional items	70 bundles including patient cards supplied to HCP for distribution to patients			
Patients	Promotional items	60 bundles issued to Community Pharmacist Champions for distribution to patients			
General Public	Twitter feeds	YCCS Twitter follows a number of patient groups, and regularly tweet messages aimed at patients and carers.			
Parkinson's Network Scotland	Signed up to new Basecamp information sharing site				
Patients, parents and carers	GP slides promoting ADR awareness/ YC reporting	In development, for display in patient waiting areas.			
Mental Health Newsletter article for patients	Awareness bulletin	3	1	1000	3
Mental health network Glasgow	Presentation	1	1	8	1
Parkinson's Excellence Network meeting South East	Meeting	3.5	1	20	3.5
Totals			8		

We have taken a different approach to reaching patients in 2017/18, aiming to reach the broader general public rather than targeting specific patient groups. This is proving successful as patient reporting continues to rise.

5c Training delivered to undergraduates

Table 18 Training delivered to Undergraduates

Audience	Session	Duration (hours)	No of sessions	Total attendees	Total hours
Undergraduates (Medical-Edinburgh)	Lecture- Adverse Drug Reactions	1	3	750	3
Undergraduate (Pharmacy- RGU)	Lecture- Pharmacovigilance	1	1	120	1
Undergraduate (Podiatry- QMU)	Presentation and workshop	2	1	24	4
Total			5	894	8

5d Materials developed for YCS promotion

- New lanyards with a more striking yellow ribbon.
- New multicolour highlighter pens
- New cotton shopper bags
- YCC Scotland online “Toolkit” launched
- Patient article on medicines side effects published in Mental Health Network Newsletter of the Mental Health Network GG&C (Spring 2017)
- Article on Yellow Card reporting published in NHS GG&C Medicines Update (24/01/18)
- Article on Yellow Card reporting in Scotland published in NHS Lothian Prescribing Bulletin (January 2018)
- Article on Yellow Card reporting published in Community Pharmacy Champions Newsletter (July 2017)

6. Publications

- Brinkman DJ, Tichelaar J, Okorie M, Bissell L, Christiaens T, Likic R, Mačiulaitis R, Costa J, Sanz EJ, Tamba BI, Maxwell SR, Richir MC, van Agtmael MA; Pharmacology and therapeutics education in EU needs harmonisation and modernisation: A cross-sectional survey among 185 medical schools in 27 countries. *Clin Pharmacol Ther.* 2017 Mar 15. doi: 10.1002/cpt.682. [Epub ahead of print]
- Rajasekaran SK, Schnipper J, Kripalani S, Ramanan R, Maxwell S, Karpa K, Durning S, Nierenberg D, Kenison K, Englander R. Medication Safety Curricula in US Medical Schools—A Call for Action. *Med.Sci.Educ.* 2017; DOI 10.1007/s40670-017-0388-2
- Maxwell SRJ, Coleman JJ, Bollington L, Taylor C, Webb DJ. Prescribing Safety Assessment 2016: Delivery of a national prescribing assessment to 7,343 UK final-year medical students. *Br J Clin Pharmacol.* 2017;83:2249–2258.
- Brinkman DJ, Tichelaar J, Okorie M, Bissell L, Christiaens T, Likic R, Mačiulaitis R, Costa J, Sanz EJ, Tamba BI, Maxwell SR, Richir MC, van Agtmael MA; Education Working Group of the European Association for Clinical Pharmacology and Therapeutics (EACPT). Pharmacology and therapeutics education in EU needs harmonisation and modernisation: A cross-sectional survey among 185 medical schools in 27 countries. *Clin Pharmacol Ther.* 2017 Mar 15. doi: 10.1002/cpt.682. [Epub ahead of print]

7. YCC Website/ Social Media

7a Website updates

Following a full refresh last year, this year's focus has been on improving the content layout. Of particular note;

- We have uploaded our electronic "tool kit" to the main page for easy access to all our information and training materials. We would be delighted to share the link with any health boards or patient groups that wish to make this available on their own web pages.
- Our Twitter feeds are now streamed though the website, making our safety messages available to everyone.

7b Website/Social Media

Website

Table 19- Comparison of website hits 2015/16- 2017/18

	2015/16	2016/17	2017/18	% change 2016/17- 2017/18
Total number of unique visitors	209	143	278	+94%
Total number of page views*	2,498	1,235	1,110	-10%

*the Total number of Page Views for 2017/18 was obtained by working out and removing those views which come from YCC Scotland staff members and webmasters.

Following the refresh last year, we are pleased to note that the number of visitors to the website has doubled.

Twitter

Table 20- Twitter analytics Apr-March 2016/17 & 2017/18

	2016/17	2017/18	% change 2016/17- 2017/18
Number of Followers	51	410	+704%
Tweets sent	40	1,235	+328%
Total number of Engagements*	148	1,592	+976%
Impressions**	7944	123,626	+1456%

* Engagements are when a follower interacted with a tweet

** Impressions are the number of tweets delivered to twitter feeds

Our Twitter account @YCCScotland has proven very popular since its launch last year, with >400 followers, and increasing. We continue to Tweet regularly items of interest to both the general public and healthcare professionals, in relation to medicines safety. Most importantly, the number of engagements (interactions) has massively increased.

We are working to expand our suite of standard tweets (managed with Hootsuite).

8. Research and ongoing initiatives

ADR Modules: YCCS are currently working with NES on the updates to the ADR modules. The new modules will be arranged into “foundation” and “advanced” levels, have an updated and more interactive content, and will be developed to allow tracking of the user “status” (completed/ in progress/ failed). This will provide opportunity for accreditation.

Moodle training: YCCS are developing a short moodle promoting the Yellow Card Scheme to Independent Prescribers for use at RGU. If this proves successful we will seek to roll this out further.

YCCS Toolkit: This is now finalised, and displayed on the front page of the YCCS website. YCCS are actively promoting this across Scotland to both healthcare professionals and patient groups. YCCS are in discussion with the MHRA regarding UK wide adoption of this resource, and options for making this resource available internationally.

9. Conclusion

It has been a challenging year for YCCS, and it is slightly disappointing to see a 2% decline in reporting, albeit small. This reflects a decrease in reporting by hospital doctors and pharmacists, and nurses in all sectors. This has occurred despite YCCS exceeding all targets related to the provision of education/ training of undergraduate and post-graduate students, and healthcare professionals (HCPs), on pharmacovigilance and the Yellow Card Scheme. Mounting workforce pressures in the NHS should be acknowledged, and will continue to present challenge to Yellow Card reporting in the foreseeable future.

It is, however, encouraging to see an upturn in reporting by GPs, following the last 5-year decline. This is most likely a direct result of the recent upgrade of Vision in Scotland, enabling electronic YC reports to be populated automatically from Vision, and sent directly to the MHRA. Since its availability in Scotland in the past year, 17% of all GP reports have been via Vision. This clearly demonstrates the importance of ease of reporting, and it is hoped that this improved functionality will help reverse the overall decline in reporting in Scotland in 2018/19. YCCS will continue to promote e-YC reporting via Vision across Scotland to all healthcare professionals working in primary care. As 56% of GP practices in Scotland use EMIS rather than Vision, we will keenly await the anticipated enablement of this functionality in EMIS, and engage with those practices in due course.

YCCS are working with the Association of Medicines Information Practitioners (ASMIP) to identify and address the barriers to medicines information pharmacists reporting via MiDatabank, given the 33% decline in reporting via this method compared to the previous year.

Notably, patient reporting continues to rise in Scotland, with an 11% increase in reports from patient groups compared to the previous year. Patient groups now account for 31% of all YC reports in Scotland, representing the biggest reporting group by far. This aligns with the Scottish Government vision for Realistic Medicine, and YCCS will continue to raise patient awareness of possible side effects to their medicines, and the importance of taking action, including reporting Yellow Cards. The high proportion of patient reports classed as serious indicates that further information would be helpful, and this will be taken forward as an action for 2018/19.