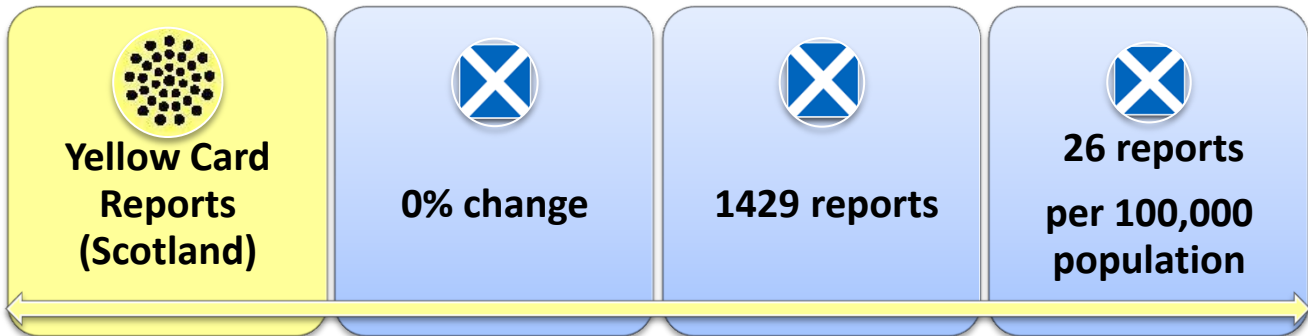
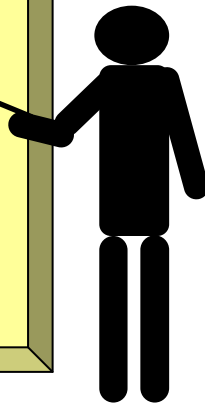


Yellow Card Centre Scotland

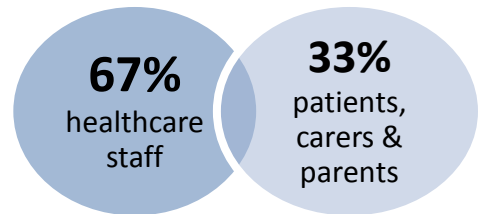


YCC Scotland Training

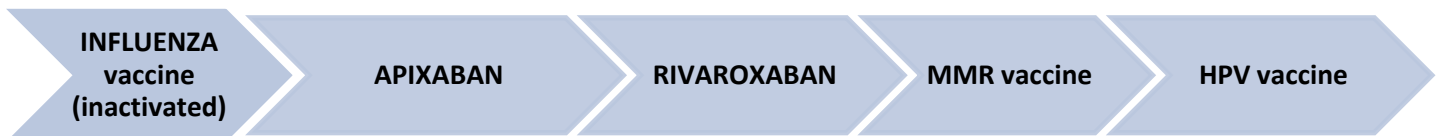
If you would like us to visit with our YCCS conference stand, or to come and talk to your team /group on the Yellow Card Scheme please get in touch.



Source of Reports



Top Reported Medicines



**Annual Report
April 2018 to March 2019**

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

2018–2019

1. STAFF

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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.

Despite another challenging year, a total of 1429 Yellow Card reports were submitted in Scotland in 2018/19, which means that the overall level of reporting is unchanged compared to 2017/18. This is something of an achievement given the current service pressures. This reflects another increase in reporting by patient groups, offset by a slight overall decrease in reporting by healthcare professionals. It is very encouraging that reporting from patient groups continues to gain momentum in Scotland, representing a further 8% increase in reporting from patients, carers, patients and other consumers compared to 2017/18. However, it is equally important that healthcare professionals continue to ensure that they report suspected adverse drug reactions.

The Yellow Card (YC) Scheme continues to depend on healthcare professionals to report suspected adverse drug reactions that are serious, or occur with black triangle medications; even those reported by patients should still ideally be reported by healthcare professionals and typically complement each other. Healthcare professionals working in hospital are key in identifying and reporting suspected harm from medicines that result in patient admissions, or that result in complicated or prolonged inpatient stays.

Likewise, it is crucial that healthcare professionals working in community and general practice are vigilant to any suspected adverse drug reactions emerging after discharge, or that present in these sectors.

In the May *Drug Safety Update**, the MHRA highlighted a significant decline in reporting of suspected adverse drug reactions via YCs from key reporter groups across the UK in 2018, compared to 2017. UK-wide declines in reporting by healthcare professionals were noted for hospital pharmacists (-11%), community pharmacists (-14%), GPs (-4%), hospital doctors (-7%), physicians (-46%) and nurses (-5%). Overall, reporting from healthcare professionals in hospitals declined by 7%. It is estimated that only 10% of serious adverse drug reactions, and 2–4% of non-serious adverse drug reactions are reported.* The risk of missing important safety signals is even more concerning in light of this UK-wide decline in reporting by healthcare professionals. We urge all healthcare professionals to report suspected adverse drug reactions that are serious or medically significant, or that are associated with newer medicines (irrespective of whether they are serious or not), to improve understanding of the benefits and risks of medicines in the real world setting.

In Scotland, we have seen a similar decline in reporting from community pharmacists (-17%), GPs (-5%), hospital doctors (-5%) and overall from healthcare professionals in hospitals (-6%). This is likely to be 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. However, notable differences to the UK trend are evident in Scotland for hospital pharmacists; their reporting showed a marked decline (-20%) in 2018/19, accompanied by reduced reporting by medicines information centres via MiDatabank. Conversely, we have seen an overall increase in nurse reporting (+7%), driven primarily by reports from hospital nurses (+16%), offsetting a decrease in reporting in the community.

The transformation of services in general practice is likely to have contributed to the the rise in reporting from pharmacists in primary care, and significant decline in pharmacist reporting in hospital and community sectors. Future efforts to increase reporting by pharmacists should concentrate on promoting reporting via available electronic systems; *Vision* (when available in primary care) and MiDatabank (hospital), and through better engagement with pharmacy students, pre-registration trainees and pharmacy technicians across sectors. YCCS will continue to engage with institutions to provide input into teaching in relation to pharmacovigilance.

GP reporting has decreased in spite of increased electronic reporting via *Vision*, which accounted for 36% of all GP reports in 2018/19. Last year we were pleased to advise of the ability to submit electronic Yellow Cards (e-YCs) directly via the *Vision* GP system (DLM 500 release or later). This feature enables Yellow Card reports to be populated automatically from *Vision*, and sent directly to the MHRA. For the 56% of GP practices across Scotland that currently use the EMIS electronic system, we can report that this functionality will be available in the 9.4 EMIS Web release (and later versions), soon to be piloted in NHS England. Re-provisioning is also underway in NHS Scotland, and approval for use of GP IT systems in NHS Scotland will be subject to meeting Scottish requirements. This includes requirements for integrated e-YC reporting. While this is very good news, it is estimated that the earliest date at which a new GP IT system will go live in a GP Practice will be June 2020, and the new systems will be rolled out across Scotland over a period of approximately 30 months. YCC Scotland will continue to monitor the progress of this, and work with health boards to promote e-YC reporting as soon as it becomes available.

We are still in the process of updating our six NES/ YCCS ADR e-learning modules. This has been complex and time-consuming process, with the YCCS team assuming responsibility for the transfer to a new platform and directly implementing the changes, including new illustrations and functional changes. However, in the long run, this will enable better functionality, facilitate future updates/ changes and will allow tracking of user “status” (completed/ in progress/ failed). Importantly, the modules continue to be well used, and remain embedded in our blended learning teaching sessions. We were also delighted to oblige a request to make these available globally via the Global Pharmacovigilance (Global Health Network) website, where they are featured on their homepage.

In 2018/19, our Twitter account @YCCScotland gained more than 1000 followers. We regularly Tweet items relating to medicines safety to both the general public and healthcare professionals. Social media has successfully provided a platform to promote awareness of the Yellow Card Scheme, and our centre in Scotland, and we are proud to have gained an international following, and even have pharmacovigilance organisations from across the world translating our tweets and retweeting them.

Please discuss this report, and the importance of reporting suspected adverse drug reactions to the Yellow Card Scheme with your colleagues and peers. Do not hesitate to contact us at Yellow Card Scotland for information on how we can help to support any local events or initiatives to raise awareness in your area.

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 year 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/>.

* MHRA Drug Safety Update, published May 2019. Yellow Card: please help to reverse the decline in reporting of suspected adverse drug reactions. (<https://www.gov.uk/drug-safety-update>)

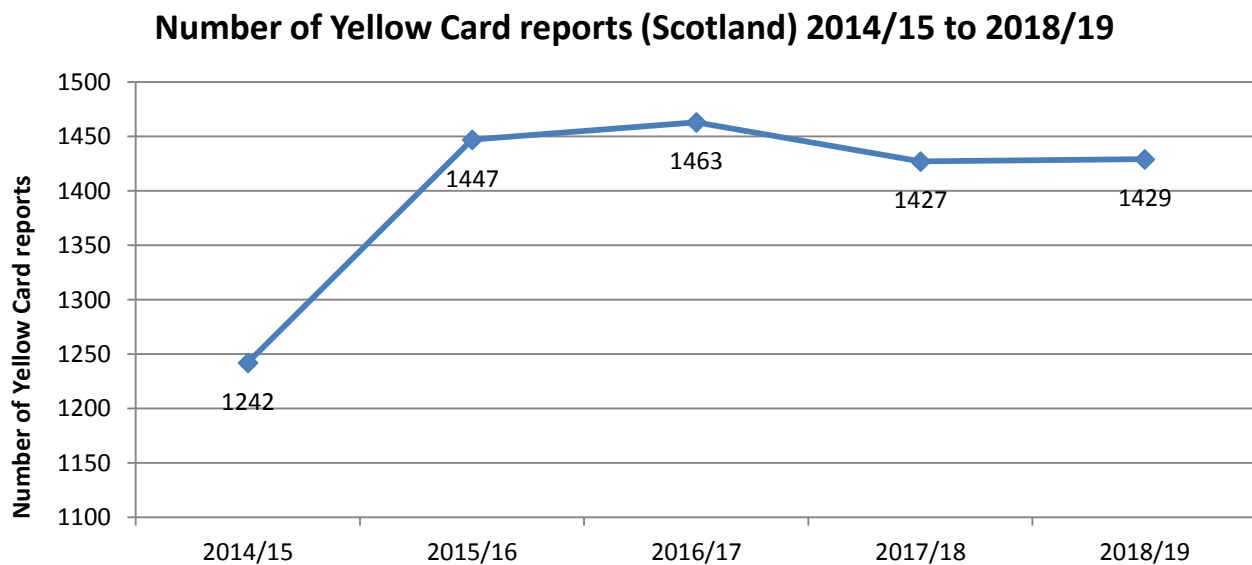
3. Yellow Card Data

3a Total Scottish Reports

Table 1 - Yellow Card reporting for Scotland 2014/15 to 2018/19

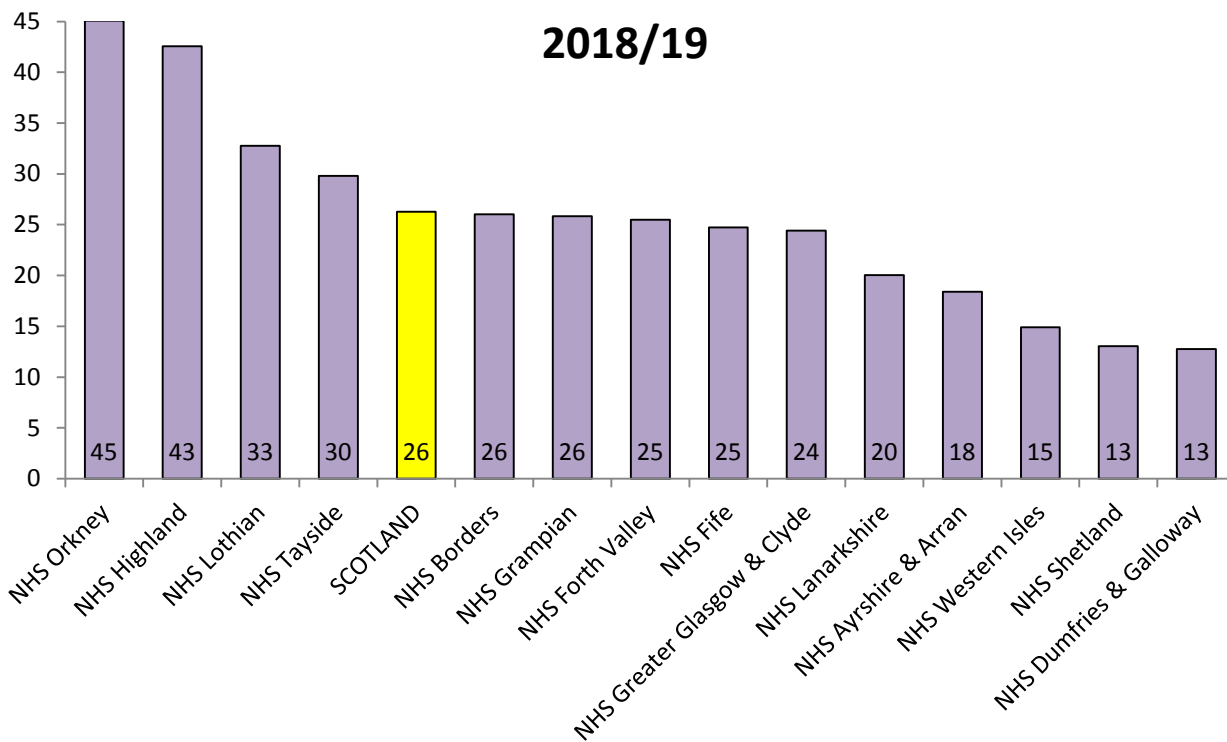
Year	Number of reports	Percentage change on previous year
2018/19	1429	0%
2017/18	1427	-2%
2016/17	1463	+1%
2015/16	1447	+17%
2014/15	1242	+6%

Figure 1 - Total number of Yellow Card Reports in Scotland 2014/15 to 2018/19



As can be seen in Table 1 and Figure 1, the total number of Scottish direct reports has remained stable compared to 2017/18. This is in spite of an overall decrease in reporting by healthcare professionals across Scotland, which was only offset by a rise in reports submitted by patient groups.

Figure 2 - Health board Yellow Card Reporting per 100,000 population (Scotland 2018/19)



Statistics from National Registers of Scotland, Population estimates mid-2018* 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, the same as in the previous year. Compared to 2017/18, increases in reporting are evident in Tayside (+32%) and Fife (+18%). Slight increases are also apparent in Forth Valley (+4%), Lanarkshire (+6%), and Lothian (+6%).

In addition to Scotland as a whole, reporting remains the same as in the previous year for Grampian, Greater Glasgow & Clyde, and Highland.

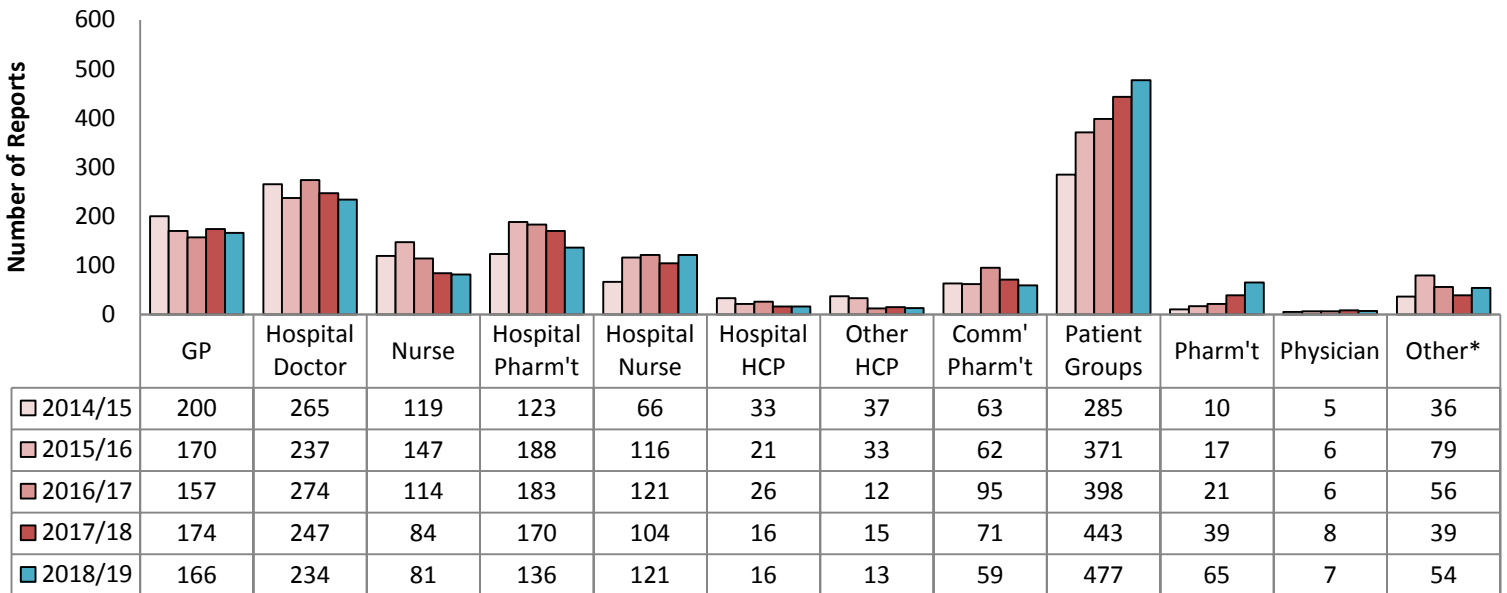
A decrease in reporting is noted for Ayrshire & Arran (-35%) and Dumfries & Galloway (-37%). There is also a slight decrease evident in the Borders (-3%).

Large decreases in reporting per population are also evident for Shetland (-40%) and Western Isles (-56%), and a large increase is evident for Orkney (+100%). It is important to note, however, that for the Western Isles, Shetland and Orkney the overall number of reports are very small, and individual reports can therefore significantly influence the average. For example, in 2018/19 a total of 10 reports were submitted from Orkney, compared to 5 in 2017/18.

3b Reporter Qualifications

Figure 3 - Scotland total Yellow Card reports by reporter qualification 2014/15 to 2018/19

Scotland total Yellow Card reports by reporter qualification 2014/15 to 2018/19



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

Healthcare Professionals (HCPs) accounted for 67% of the total reports; with a slight decrease in the total number of reports from 967 in 2017/18 to 952 in 2018/19. This represents a proportional decrease of -2% from 2017/18 (HCPs accounted for 69% of total reports). This is due to a decline in reporting from all healthcare professional groups with the exception of nurses, driven by a small increase in hospital nurse reporting. A shift in pharmacist reporting is also notable, with an increase pharmacist reporting in primary care offset by a decline in reporting from pharmacists in community and hospital.

GP reporting has decreased by -5% compared to 2017/18, following last year's encouraging rise. This fall is in spite of continued reporting via *Vision*, which accounted for 36% of all GP reports.

Hospital doctors remain the highest reporting HCP group, accounting for 16% of the total reports, which represents a proportional -1% decrease compared to 2017/18 (number of reports has decreased -5%). Reports from hospital doctors also account for 25% of all healthcare professional reports.

Nurse (incorporating all community) reporting has declined by -4% compared to 2017/18; however **hospital nurse** reporting has risen by +16%. This translates to an overall increase in nurse reporting of +7%. Nurses are the only group of healthcare professionals who have increased reporting. Of note only 3 reports were received from midwives (the same number as reported in 2017/18).

Hospital pharmacist reporting has gone through another significant decline (-20%) compared to 2017/18, the lowest it's been since 2014/15.

Community pharmacist reporting has also significantly declined again compared to 2017/18 (-17%), the lowest it's been in the last 5 years.

Although reporting by pharmacists in hospital and community has declined, "other" pharmacist reporting has increased by +67% compared to 2017/18. These are largely reports from **pharmacists working in primary care**. Despite this proportional increase, it should be noted that the numbers are still relatively low (65 reports in 2018/19 compared to 39 in 2017/18). This translates to an overall decline in pharmacist reporting of -7% compared to 2017/18. Of note, the number of reports from pre-registration pharmacists and pharmacy assistants has increased, accounting for the increase evident in the "other" (all HCP) group.

Patient group reporting continues to gain momentum in Scotland (a further 8% increase in reporting is evident); this remains our highest reporting group, accounting for 33% of the total reports (compared to 31% in 2017/18). Of a total of 477 reports in 2018/19; 378 (79%) were from patients, 81 (17%) from parents, 16 (3%) from carers and 2 (<1%) from consumer/ other non-healthcare professional.

This rise in patient reporting has offset the general decline in reporting from healthcare professionals maintaining the overall numbers of reports in Scotland.

Table 2 - Reports from hospitals 2018/19 (Scotland)

Health Board Area	Total reports 2018/19	Hospital reports 2018/19	Hospital reports as a % of Board's total reports	
			2018/19	2017/18
NHS Ayrshire & Arran	68	16	24%	37%
NHS Borders	30	14	47%	35%
NHS Dumfries & Galloway	19	4	21%	33%
NHS Fife	92	30	33%	31%
NHS Forth Valley	78	33	42%	35%
NHS Grampian	151	47	31%	26%
NHS Greater Glasgow & Clyde	281	119	44%	41%
NHS Highland	137	46	34%	37%
NHS Lanarkshire	131	54	42%	44%
NHS Lothian	294	100	34%	40%
NHS Orkney	10	31	30%	20%
NHS Shetland	3	1	33%	0%
NHS Tayside	124	31	25%	49%
NHS Western Isles	4	2	50%	38%
Golden Jubilee	6	6	N/A	N/A
The State Hospital	1	1	N/A	N/A
Total (Scotland)	1429	507	35%	38%

Table 2 shows that overall, the number of reports received from NHS hospitals this year has declined to 507 (from 537 in 2017/18), reflecting a decline in reporting from hospital doctors and pharmacists, and in spite of a rise in reporting from hospital nurses. Reporting from other hospital healthcare professionals has remained the same.

3c Serious Reports

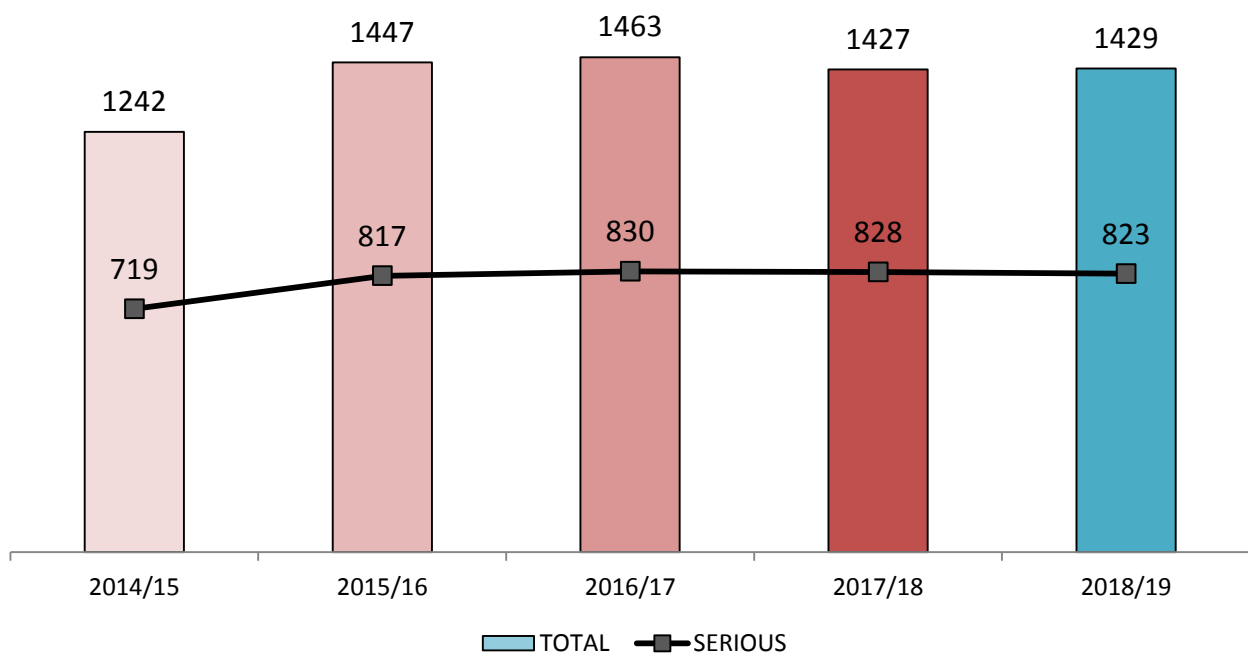
Table 3 - Serious reports over last five years (Scotland)

Year	Number of serious reports	Percentage of total reports	Percentage change on previous year
2018/19	823	58%	-1%
2017/18	828	58%	0%
2016/17	830	57%	+2%
2015/16	814	56%	+13%
2014/15	719	58%	+5%

Table 3 and Figure 4 show the proportion of serious reports has remained constant at 58% of the total reports. This is influenced by the high proportion of patient group reports which are reported as serious; 72% (342/ 477) of all patient group reports are marked as serious. Patient reports account for 42% of all serious reports.

Rivaroxaban, apixaban, warfarin and edoxaban were the most commonly implicated drugs in serious reports from healthcare professionals (collectively accounting for approximately 14% of all serious reports from healthcare professionals).

Figure 4 - Serious reports as a proportion of total reports from Scotland 2014/15 to 2018/19



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
2018/19	78	-18%
2017/18	95	+34%
2016/17	71	0%
2015/16	71	+22%
2014/15	58	-8%

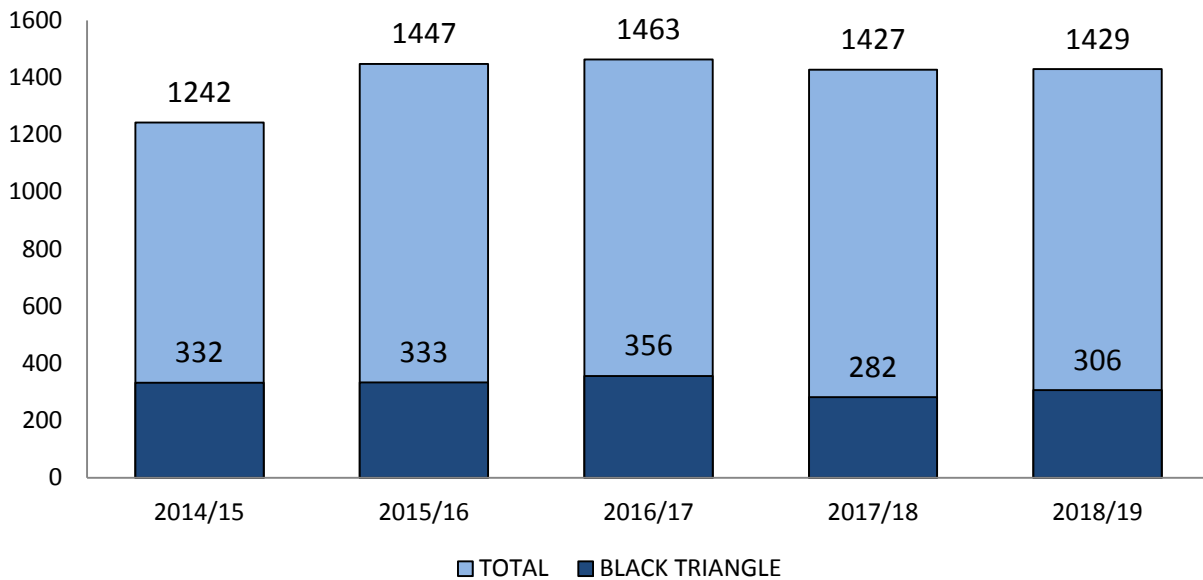
The number of fatal reports has declined (-18%) in 2018/19, compared to 2017/18. Of the total fatal reports, 46% were reported in association with anticoagulant or antithrombotic agents; 15% involved warfarin and 23% involved either rivaroxaban, apixaban or edoxaban. The majority of reactions reported for these drugs were haemorrhage. Immunotherapy and other biological agents were amongst the other most commonly reported drugs. This is similar to the previous year.

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
2018/19	306	21%	+9%
2017/18	282	20%	-21%
2016/17	356	24%	+7%
2015/16	333	27%	0%
2014/15	332	27%	+48%

Figure 5 - Black Triangle reports (Scotland) as a proportion of total reports (2014/15 to 2018/19)



NOTE: the numbers reported for Black Triangle (BT) drugs are approximate (and likely to be an underestimate). This is due to the increasing number of biosimilar drugs and vaccines available, which may or may not be BT depending on the specific formulation or brand. For example for enoxaparin sodium; Clexane is NOT BT, whereas the biosimilars Arovi, Inhixa and Enoxaparin BECAT are BT. Our ability to identify these new biosimilars relies on the reporter providing the brand, however in many cases this is not reported. It was not possible to determine if any of the enoxaparin reports were for the new biosimilars (BT), and therefore they do not show up in this report (they are however included in the overall drugs report).

Identifying which vaccines are BT is also challenging, and for some vaccines requires very specific details to be reported. For example for the inactivated influenza vaccines *Mylan Tetra*, *Sanofi Quadrivalent* and *Trivalent* are BT, but *Seqiris Fluad*, *GSK Fluarix Tetra* and *Seqirus Trivalent* are not. For the HPV vaccines, *Gardasil 9* is BT, but *Gardasil* and *Cervarix* are not. We have only classed these as BT where the information provided has allowed us to do so. However, it is possible, for example, that reports for *Gardasil 9* have been reported as *Gardasil*. This applies similarly to the influenza vaccines.

3e Age Banding (Scotland)

Table 6 - Age Banding Reports Scotland 2016/17 to 2018/19

Age Banding	Reports 2016/17	Reports 2017/18	Reports 2018/19
Unknown	49	59	53
Under 2 years	44	40	37
2-6 years	54	45	43
7- 12 years	51	38	33
13- 17 years	52	52	49
18-24 years	77	79	87
25-34 years	122	119	133
35-44 years	140	156	157
45-54 years	176	195	190
55-64 years	233	192	207
65-74 years	236	230	241
75+ years	229	205	199
TOTAL	1463	1427	1429

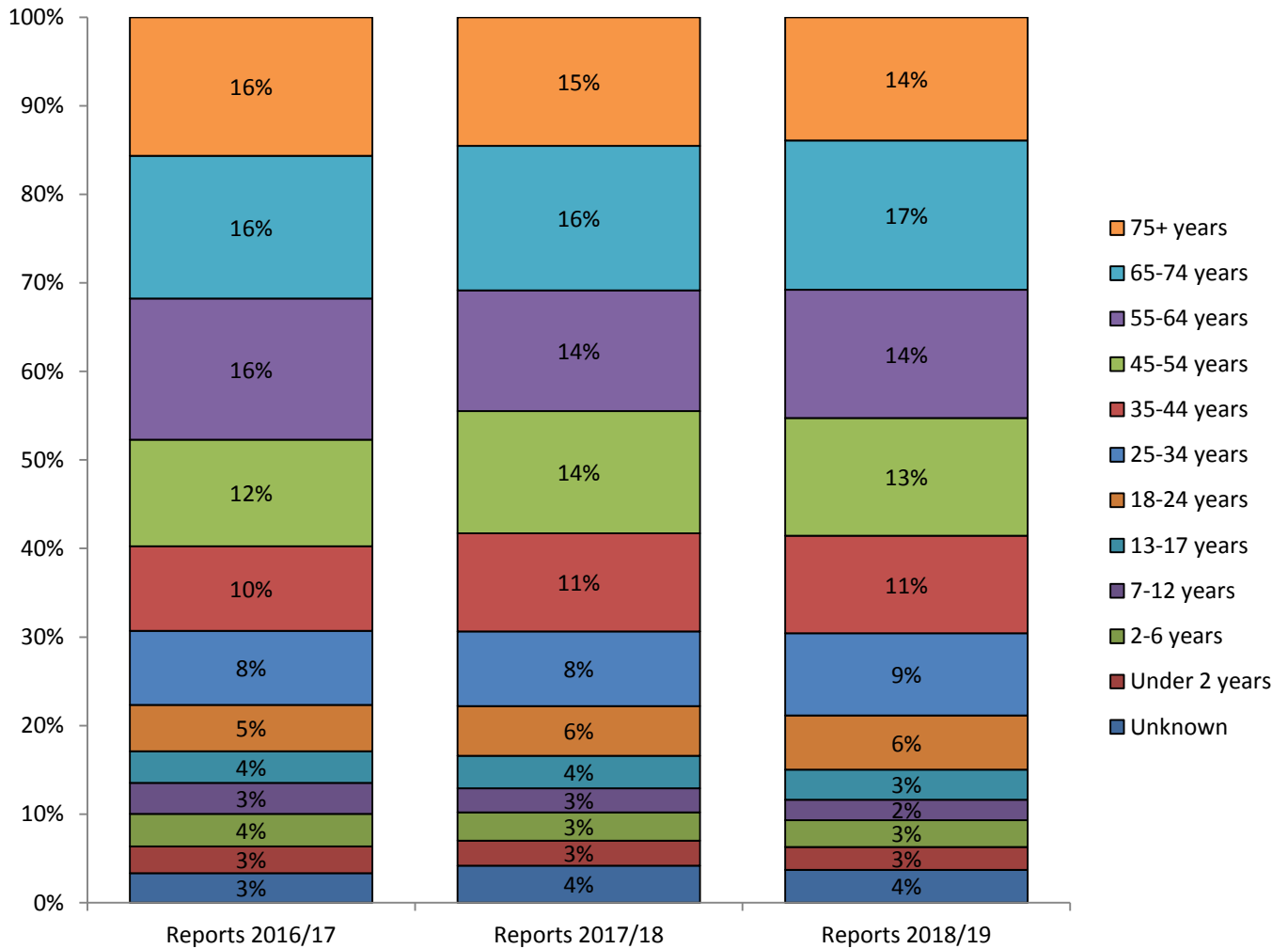
Table 7 - Age Banding Paediatric Reports Scotland 2018/19

Age Range	Number of Paediatric Yellow Card Reports	% of Paediatric Yellow Card Reports
Children under (0-11 mths)	18	11%
Children (12- 23 mths)	19	12%
Children (2-11 yrs)	69	43%
Adolescents (12-17 yrs)	56	35%
TOTAL	162	

Table 8 - Age Banding over 65 years Reports Scotland 2018/19

Age Range	Number of over 65 yrs Yellow Card Reports	% of over 65yrs Yellow Card Reports
65yrs – 74yrs	241	55%
75yrs – 84yrs	144	33%
85yrs – 94yrs	53	12%
95+	2	0%
TOTAL	440	

Figure 6 - The percentage of Yellow Card reports from Scotland, stratified by age group (2016/17 to 2018/19)



Tables 6 to 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 a further overall decline (-7%) in the number of paediatric reports (162 in 2018/19 compared to 175 in 2017/18).

3f Top 10 Suspected Medicines

Table 9 - Scottish top ten suspected medicines reported 2017/18 to 2018/19 (including vaccines)

Rank	2017/18		2018/19	
	Drug Name	Reports	Drug Name	Reports
1	Apixaban	41	Influenza Vaccine (Inactivated)	45
2	=Influenza Vaccines (Intranasal) = Rivaroxaban	36	Apixaban	28
3	-	-	Rivaroxaban	27
4	Influenza Vaccines (Exc Intranasal)	29	MMR Vaccine	24
5	Warfarin	24	HPV Vaccine	23
6	Sertraline	23	=Edoxaban =Pneumococcal Vaccine	21
7	Varenicline	21	Sertraline	19
8	Meningococcal B Vaccines	20	Ciprofloxacin	18
9	Umeclidinium Bromide	18	=Meningococcal B Vaccines =Warfarin =Omeprazole	17
10	Levothyroxine	16	-	-

Table 11 - Top Five Medicines reported for paediatrics and aged 65+ in 2018/19 (Scotland)

Top reported medicines for paediatrics and over 65yrs 2018/19		
	Paediatrics	Over 65 yrs
1	MMR Vaccine	Apixaban
2	HPV Vaccine	Edoxaban
3	Meningococcal B Vaccines	Rivaroxaban
4	Pneumococcal Vaccine	Warfarin
5	Meningococcal ACWY Vaccine	Influenza Vaccine (Inactivated)

With the introduction of edoxaban in Scotland for NVAf, we can see that this is now ranked in the top 10 suspected medicines reported on YCs. This corresponds with a decrease in the number of reports for rivaroxaban, apixaban and warfarin compared to 2017/18; however the overall number of reports for DOACs remains similar (representing 5% of the total).

The increase in the number of inactivated influenza vaccine reports reflects the increase in BT reports for the new inactivated influenza vaccines. As expected, the most commonly reported suspected medicines for children in 2018/19 were vaccines; and the most commonly reported suspected medicines for patients > 65 years were DOACs and warfarin.

Table 12 - Top Ten Black Triangle Medicines 2017/18 to 2018/19 (Scotland)

2017/18		2018/19	
Generic Drug Name	Reports	Generic Drug Name	Reports
= Influenza Vaccines (Intranasal) = Rivaroxaban	36	Rivaroxaban	27
-		Edoxaban	21
Meningococcal B Vaccines	20	Influenza Vaccine (inactivated)	16
Umeclidinium Bromide	18	=Glecaprevir/Pibrentasvir =Infliximab	14
= Formoterol Fumarate Dihydrate/Aclidinium Bromide = Influenza Vaccines (inactivated)	13		-
-		=Adalimumab =Influenza Vaccine (intranasal)	13
= Apremilast = Empagliflozin	10		
-		Rituximab	12
= Rituximab = Elbasvir/Grazoprevir = Vilanterol Trifenatate/Umeclidinium Bromide = Nivolumab = Canagliflozin	6	=Etanercept = Meningococcal B Vaccines	11
-			

In 2018/19 there were less reports for both meningococcal B (Bexsero) and intranasal influenza vaccines; likely due to the change in BT status for both in the latter half of the year. With the introduction of new inactivated intranasal influenza vaccines, there is a slight increase in reporting of these, compared to 2017/18. The most notable change is the increase in reports for glecaprevir/pibrentasvi (Maviret) which was approved for use in NHS Scotland in adults for the treatment of chronic hepatitis C in November 2017. Rivaroxaban and edoxaban were the top 2 reported BT drugs in 2018/19.

3g Sources of Reports

Table 13 - reports received by reporter origin (Scotland)

Reporter	2016/17		2017/18		2018/19	
	Number	% of total	Number	% of total	Number	% of total
Carer	13	1%	16	1%	16	1%
Consumer	-	-	-	-	2	<1%
Parent	73	5%	76	5%	81	6%
Patient	312	21%	351	25%	378	27%
Community Pharmacist	95	6%	71	5%	59	4%
Hospital Pharmacist	183	13%	170	12%	136	10%
Pharmacist	21	1%	39	3%	65	5%
Pharmacy Assistant	6	<1%	2	<1%	20	1%
Pre-reg pharmacist	17	1%	14	1%	6	<1%
Hospital Nurse	121	8%	104	7%	121	9%
Nurse	114	8%	84	6%	81	6%
GP	157	11%	174	12%	166	12%
Hospital Doctor	274	19%	247	18%	234	16%
Physician	6	<1%	8	1%	7	1%
Coroner	-	-	-	-	-	-
Dentist	6	<1%	5	<1%	3	<1%
Midwife	5	<1%	3	<1%	3	<1%
Optometrist	-	-	5	<1%	3	<1%
Chiropodist	-	-	-	-	-	-
Radiographer	19	1%	8	1%	14	1%
Hospital Healthcare Professional	26	2%	16	1%	16	1%
Healthcare Assistant	-	-	-	-	3	<1%
Other Healthcare Professional	12	1%	15	1%	13	1%
Medical Student	3	<1%	1	<1%	2	<1%
Unknown	-	-	1	<1%	-	-
Total	1463		1410		1429	

3h Types of reports (Scotland)

Table 14 - Report submission routes

Report Type	2017/18		2018/19	
	Number	% of total	Number	% of total
App	4	<1%	4	<1%
Electronic YC	1150	82%	1213	85%
MiDB	40	3%	23	2%
Paper	183	13%	119	8%
RIDR	3	<1%	-	-
Vision	30	2%	70	5%

Table 14 shows a slight increase in the proportion of electronic reports received, with a reduction in paper reports. Notably, reports submitted via *Vision* have more than doubled since 2017/18. As expected the majority of these are from GP's (84%), however other healthcare professionals including nurses and pharmacists are also using *Vision* to report.

There has been another significant decline (-42%) in the number of reports made via MiDatabank in Scotland in 2018/19, with numbers overall very low. This follows a -33% decline in 2017/18.

UK wide reporting via MiDatabank accounted for >30% of total reports received from hospital pharmacists in 2018. By comparison, in Scotland only 23/ 136 (17%) of reports from hospital pharmacists were via MiDatabank. Despite this, NHS Lothian remained in the top 10 reporting Medicines Information centres in the UK in 2018 (January–December); accounting for 52% of reports in Scotland in 2018/19.

4. Discussion of Yellow Card Data

A total of 1429 Yellow Card reports were submitted in Scotland in 2018/19, which means that the overall level of reporting is unchanged compared to 2017/18. The average number of YC reports per 100,000 population in Scotland also remains at 26. This reflects another increase in reporting by patient groups, offset by a slight overall decrease in reporting by healthcare professionals. Reports from patient groups now constitute 33% of all reports in Scotland compared to 67% from healthcare professionals (by comparison, in 2017/18, 31% of reports were from patient groups and 69% were from healthcare professionals). This makes patient groups by far our biggest reporting group in Scotland, with 79% of these from patients.

It is very encouraging that reporting from patient groups continues to gain momentum in Scotland representing a further +8% increase in reporting from patients, carers, patients and other consumers compared to 2017/18. However, it is equally important that healthcare professionals continue to ensure that they report suspected adverse drug reactions.

There are several important differences in reporting from healthcare professionals and patient groups, notably in the types of suspect medicines they report, the types of reactions that they report and how they classify them. Patient reports cover a very diverse range of medicines (>150 different lines) including herbal medicines and over the counter medicines for treating minor ailments. Adverse drug reactions in children, those that occur due to drug interactions, or from use of herbal medicines are specific areas of MHRA interest, and patients, parents and carers are ideally placed to report these. The majority of suspected

adverse drug reactions reported by patient groups are classed as serious (72%), however in many cases this is most likely due to severity of symptoms rather than seriousness (e.g. life threatening, causing or prolonging hospitalisation, disabling or causing congenital abnormalities). Many reactions reported as serious, and understandably important to the patient, do not fulfil the MHRA criteria for serious. Only 8% of reported suspected medicines from patient groups are BT (still a significant contribution). YCC Scotland will continue to encourage reporting from patient groups in 2019/20, but some education around the criteria may be helpful.

In May (*Drug Safety Update*), the MHRA highlighted a significant decline in reporting of suspected adverse drug reactions (via the YC Scheme) from key reporter groups across the UK in 2018, compared to 2017. UK wide declines in reporting by healthcare professionals were noted for hospital pharmacists (-11%), community pharmacists (-14%), GPs (-4%), hospital doctors (-7%), physicians (-46%) and nurses (-5%). Overall reporting from healthcare professionals in hospitals declined by -7%. 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.

In Scotland, we have seen a similar decline in reporting from community pharmacists (-17%), GPs (-5%), hospital doctors (-5%) and overall from healthcare professionals in hospitals (-6%). Important differences to note are the significantly greater decline in reporting from hospital pharmacists (-20%) compared to the rest of the UK, however in contrast we have seen an overall increase in nurse reporting (+7%). This is driven by a +16% increase in nurse reporting in hospitals. In 2018/19 the proportion of the total reports submitted by hospital nurses was similar to the proportion submitted by hospital pharmacists.

This is very encouraging for nurses, and it is likely that this is driven by nurse non-medical prescribers (although there is no formal way to capture this currently). Non-medical prescribers (NMPs) are our main group of healthcare professionals whom we provide regular teaching to, and in 2018/19 we were requested to provide teaching to two further NMP courses.

Only 3 reports were received from midwives (the same number as reported in 2017/18). These healthcare professionals have a key role in promoting the safety of medicines in pregnancy and breastfeeding, and are ideally placed to report adverse drug reactions occurring at this time. YCCS will seek to engage with midwives in 2019/20, to increase reporting in this area, which is known to suffer from under-reporting.

The further significant decline in reporting from pharmacists in hospital and community sectors is of concern. Changes to the pharmacy workforce in Scotland have likely contributed. Other pharmacist reporting has increased by +67% compared to 2017/18; these are mostly from pharmacists working in primary care. Despite this proportional increase, it should be noted that the numbers are still relatively low (65 reports in 2018/19 compared to 39 in 2017/18). Of note, the number of reports from pre-registration pharmacists and pharmacy assistants has increased, accounting for the increase evident in the "other" (all HCP) group.

In line with the overall decline by hospital pharmacists, there has been another significant decline (-42%) in the number of reports made via MiDatabank (from Medicines Information Centres) in Scotland in 2018/19, with overall numbers being very low, and much lower than in the rest of the UK. In Scotland only 17% of reports from hospital pharmacists were via MiDatabank in 2018/19. Despite this, NHS Lothian remained in the top 10 reporting Medicines Information centres in the UK in 2018, accounting for 52% of reports in Scotland in 2018/19. Efforts to increase reporting by pharmacists should concentrate on promoting reporting via available electronic systems; *Vision* (primary care) and MiDB (hospital), and through better engagement with pharmacy students, pre-registration trainees and pharmacy technicians across sectors.

GP reporting has decreased by -5% compared to 2017/18, following last year's encouraging rise. This fall is in spite of increased electronic reporting via *Vision*, which accounted for 36% of all GP reports in 2018/19. This decline in GP reporting is in line with the rest of the UK, which is not bad considering the limited availability of e-YC integrated clinical systems in Scotland (versus the rest of the UK). Notably, reports submitted via *Vision* have more than doubled since 2017/18. As expected the majority of these are from GP's (84%), however other healthcare professionals including nurses and pharmacists are also using *Vision* to report.

The number of fatal reports has declined (-18%) in 2018/19, compared to 2017/18. Of the total fatal reports, 46% were reported in association with anticoagulant or antithrombotic agents; 15% involved warfarin and 23% involved either rivaroxaban, apixaban or edoxaban. The majority of reactions reported for these drugs were haemorrhage. Immunotherapy and other biological agents were amongst the other most commonly reported drugs. This is similar to the previous year.

The proportion of serious reports has remained constant at 58% of the total reports. Rivaroxaban, apixaban, warfarin and edoxaban were the most commonly implicated drugs in serious reports from healthcare professionals (collectively accounting for approximately 14% of all serious reports from healthcare professionals).

With the introduction of edoxaban in Scotland for NVAF, the number of reports for rivaroxaban, apixaban and warfarin decreased in 2018/19 compared to 2017/18; however the overall number of reports for DOACs was similar (representing 5% of the overall total). The increase in the number of inactivated influenza vaccine reports reflects the increase in BT reports for the new inactivated influenza vaccines. As expected, the most commonly reported suspected medicines for children in 2018/19 were vaccines; and the most commonly reported suspected medicines for patients > 65 years were DOACs and warfarin.

5. Promotional activities

5a Training delivered to healthcare professionals and their respective groups

NES/ YCCS ADR e-learning modules

We are still in the process of updating our six ADR e-learning modules. This has been a fairly complex process, with the YCCS team assuming responsibility for the transfer to a new platform and directly implementing the changes, including new illustrations and functional changes. In the long run the new platform will enable better functionality, facilitate future updates/ changes and will allow tracking of the user "status" (completed/ in progress/ failed).

Currently the modules are hosted in *LearnPro* (for health board employees) and the NES *Turas Learn* for Pharmacy Teams. Changes in the *LearnPro* reporting function has resulted in difficulties with access to data on statistics. However, from a pharmacy team perspective *Turas Learn* reports only on completion of the final MCQ for all modules not on the overall usage of the modules. From 1st April 2018 – 31st March 2019, there were 215 assessment attempts on Learn, with 179 people passing the assessment. However, this is like to be an under estimate of the overall use given the limitations mentioned.

From *Google analytics*, views of the modules via Turas Learn pharmacy pages are as follows;

- Module 1 571 page views and 369 unique page views
- Module 2 203 page views and 136 unique page views
- Module 3 159 page views and 105 unique page views
- Module 4 135 page views and 87 unique page views
- Module 5 164 page views and 98 unique page views
- Module 6 142 page views and 87 unique page views

Note these statistics are only estimates of NHS Scotland pharmacy visits to these pages. We unfortunately do not have statistics on other users, for example by non-medical prescribers.

Following a request received via our Twitter account, our ADR modules are also featured on The Global Pharmacovigilance (Global Health Network) website homepage, and included on their e-learning pages. Global Pharmacovigilance is an open-access collaborative for sharing experiences, knowledge and tools relating to pharmacovigilance and other patient/research participant safety-related issues.

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	2	1	70	2
Non Medical Prescribers (University of Stirling)	Blended Learning- Pharmacovigilance & YC Scheme	1.5	2	105	3
Non Medical Prescribers (CPD event University of Stirling)	Presentation- Pharmacovigilance & YC Scheme	1	1	50	1
Non Medical Prescribers (CPD Day Forth Valley)	Presentation- Pharmacovigilance & YC Scheme	1	1	60	1
Non Medical Prescribers (Napier)	Blended Learning- ADRs & YC Reporting	1.5	1	50	1.5
Junior Doctors (Lothian)	Short presentation (YCCS)	0.25	2	35	0.5
Medical Unit Trainees	Lecture- Adverse Drug Reactions	2	1	70	2
Medicines Homecare Team (Pharmacy Technician)	Provision of information for research project on YC Scheme	0.5	2	1	1.0
Non Medical Prescribers (QMU)	Blended Learning- Pharmacovigilance & YC Scheme	1	1	48	1
Allied Healthcare Professionals (National Leads)	Presentation on YC Scheme at National Leads Meeting	0.5	1	15	1
Non Medical Prescribers Scottish Conference (QMU)	Promotion with YCCS stand at conference	5.5	1	136	5.5
Advanced Nurse Practitioners	Stand at ACAP 9th Annual Conference, Glasgow	7.5	1	110	5.5
Healthcare Professionals (mostly pharmacy)	Stand at Celtic Conference for Pharmacy Management	6	1	195	8
NHS Ayrshire & Arran*	100 bundles of YCCS promotional material supplied for 5-day long safety campaign.	5 day event	n/a	n/a	n/a

Audience	Session	Duration (hours)	No of sessions	Total attendees	Total hours Training
NHS Greater Glasgow* & Clyde	50 Promotional items provided for YCC lecture	1	n/a	60	1
Association of Teaching Hospital Pharmacists (ATHP) Spring Conference*	50 bundles of YCCS promotional material supplied	n/a	n/a	n/a	n/a
Royal College of Physicians of Edinburgh Event- Medicines of the older person*	50 Promotional flyers and patient reporting leaflets supplied	n/a	n/a	n/a	n/a
General Practitioners & Primary Care Pharmacists*	Developed and circulated a 1-page flyer and memo promoting e-YC reporting via VISION	n/a	n/a	n/a	n/a
Society of Acute Medicine, Amsterdam	Lecture- New Approaches to Management of Paracetamol Overdose	n/k	1	n/k	n/k
British Pharmacology Society	Lecture- The role of biomarkers in translational pharmacology	n/k	1	n/k	n/k
European Association of Poisons Centres and Clinical Toxicology, Bucharest	Lecture- Susceptibility to acetaminophen-induced liver toxicity: the role of liver metabolism	n/k	1	n/k	n/k
American Society of Nephrology, San Diego	Lecture- Extracellular vesicles in the Tubular System	n/k	1	n/k	n/k
Totals				>1000	34

*Indirect through provision of slides and/or other training material

Further attempts were made to progress the plans for developing a 10 minute moodle on Yellow Card Reporting, for the Pharmacist Independent Prescriber Course at Robert Gordon University (RGU), to no avail. This is still something that YCCS would be keen to support, should RGU wish to pursue this in future.

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, parents & carers	Promotional items/ NHS hospital stands	Over 200 bundles including patient information cards and patient reporting leaflets supplied to HCP for distribution to patients at various events			
General Public	Twitter feeds	YCCS Twitter is followed by a number of patients and patient groups, and regularly tweet messages aimed at patients and carers.			
Bronchiectasis Patient Group	Discussion with patient representative	Arranged to present at a future meeting of the group.			
Scottish Government Cross-Party Groups	Outreach emails	Emailed various groups offering to present or attend meetings to discuss YC Scheme			
Patients, parents and carers	Promotional slides	GP slides promoting ADR awareness/ YC reporting for display in waiting rooms of primary care surgeries have been produced. These are with the advertising company.			

We have continued our approach from 2017/18, aiming to reach the broader general public rather than targeting specific patient groups, and indirectly promoting patient reporting to healthcare professionals. This approach continues to be effective, as patient reporting has risen once again in 2018/19. This has also generated requests from patient groups for us to attend patient group meetings, and other public (community) events (for example we are scheduled to attend a coffee morning for the over 55's, and have recently attended a Breathtakers group meeting to discuss YC reporting).

5c Training delivered to undergraduates

Table 18 - Training delivered to Undergraduates

Audience	Session	Duration (hours)	No of sessions	Total attendees	Total hours
Medical Students (Lothian)	Lecture- Adverse Drug Reactions	1.5	1	300	1.5
Undergraduate Podiatry (QMU)	Presentation- Pharmacovigilance & YC Scheme	2	2	58	4
Undergraduate Pharmacy students (RGU)	Lecture- Pharmacovigilance & YC Scheme	1	1	100	1
Total			4	458	6.5

5d Materials developed for YCS promotion

We continually stock up on our most popular items for promotion (all with our YCC Scotland logo);

- Lanyards in striking yellow. We have also purchased our previous style of black ribbon lanyards, as they are frequently requested.
- Cotton tote bags. These prove particularly popular at conferences and events where people often want to take away batches of our information leaflets and laminated CRIB sheets for colleagues.
- Yellow pens and post it notes.
- New multicolour highlighter pens. These are always in high demand at events and prove useful for drawing in the crowds to our YCCS stand.

We also prepared a 1-page flyer and memo to promote e-YC reporting via *Vision* to GPs and Primary Care pharmacists in Scotland.

The team are looking into new promotional items for 2019/20. We plan to include a promotions tab on our website, so that people can view our items, and submit requests for these for use at local medicines safety awareness events.

6. Publications

- Brinkman DJ, Tichelaar J, Mokkink LB, Christiaens T, Likic R, Maciulaitis R, Costa J, Sanz EJ, Maxwell SR, Richir MC, van Agtmael MA; Education Working Group of the European Association for Clinical Pharmacology and Therapeutics (EACPT) and its affiliated Network of Teachers in Pharmacotherapy (NOTIP). Key Learning Outcomes for Clinical Pharmacology and Therapeutics Education in Europe: A Modified Delphi Study. *Clin Pharmacol Ther.* 2018;104:317–325. doi: 10.1002/cpt.962. Epub 2018 Jan 30.
- Hardisty J, Davison K, Statham L, Fleming G, Bollington L, Maxwell S. Exploring the utility of the Prescribing Safety Assessment in pharmacy education in England: experiences of pre-registration trainees and undergraduate (MPharm) pharmacy students. *Int J Pharm Pract.* 2018 Aug 8. doi: 10.1111/ijpp.12479. [Epub ahead of print]
- Faccenda E, Maxwell S, Szarek JL. The IUPHAR Pharmacology Education Project. *Clin Pharmacol Ther.* 2019 Jan;105:45-48. doi: 10.1002/cpt.1278. Epub 2018 Dec 26.
- Dear J. Randomised open label exploratory, safety and tolerability study with calmagafodipir in patients treated with the 12-h regimen of N-acetylcysteine for paracetamol overdose-the PP100-01 for Overdose of Paracetamol (POP) trial: study protocol for a randomised controlled trial. *Trials.* 2019 Jan 8;20(1):27. doi: 10.1186/s13063-018-3134-1.
- Channavajhala SK, Bramley R, Peltz T, Oosthuyzen W, Jia W, Kinnear S, Sampson B, Martin N, Hall IP, Bailey MA, Dear JW, Glover M. Urinary Extracellular Vesicle Protein Profiling and Endogenous Lithium Clearance Support Excessive Renal Sodium Wasting and Water Reabsorption in Thiazide-Induced Hyponatremia. *Kidney Int Rep.* 2018 Sep 22;4(1):139-147. doi: 10.1016/j.ekir.2018.09.011. eCollection 2019 Jan.

- Wong A, Homer N, Dear JW, Choy KW, Doery J, Graudins A. Paracetamol metabolite concentrations following low risk overdose treated with an abbreviated 12-h versus 20-h acetylcysteine infusion. *Clin Toxicol (Phila)*. 2019 May;57(5):312-317. doi: 10.1080/15563650.2018.1517881. Epub 2018 Nov 19.
- Oosthuyzen W, Ten Berg PWL, Francis B, Campbell S, Macklin V, Milne E, Gow AG, Fisher C, Mellanby RJ, Dear JW. Sensitivity and specificity of microRNA-122 for liver disease in dogs. *J Vet Intern Med*. 2018 Sep;32(5):1637-1644. doi: 10.1111/jvim.15250. Epub 2018 Aug 2.
- Ten Berg PW, Shaffer J, Vliegenthart ADB, McCrae J, Sharkey N, Webb DJ, Dear JW. Attending a social event and consuming alcohol is associated with changes in serum microRNA: a before and after study in healthy adults. *Biomarkers*. 2018 Dec;23(8):781-786. doi: 10.1080/1354750X.2018.1499128. Epub 2018 Aug 23.
- Pettie J, Burt A, Knipe DW, Torrance H, Dow M, Osinski K, Greig R, Sabatini D, Easterford K, Dear J, Eddleston M. New drug controls and reduced hospital presentations due to novel psychoactive substances in Edinburgh. *Br J Clin Pharmacol*. 2018 Oct;84(10):2303-2310. doi: 10.1111/bcp.13672. Epub 2018 Jul 20.
- McCrae JC, Morrison EE, MacIntyre IM, Dear JW, Webb DJ. Long-term adverse effects of paracetamol - a review. *Br J Clin Pharmacol*. 2018 Oct;84(10):2218-2230. doi: 10.1111/bcp.13656. Epub 2018 Jul 20. Review.
- Th'ng F, Vliegenthart B, Lea JD, Antoine DJ, Dear JW, Mole DJ. Evaluation of plasma microRNA-122, high-mobility group box 1 and keratin-18 concentrations to stratify acute gallstone disease: a pilot observational cohort study in an emergency general surgery unit. Edinburgh Emergency Surgery Study Group, Royal Infirmary of Edinburgh, NHS Lothian. *BMJ Open*. 2018 Apr 27;8(4):e020061. doi: 10.1136/bmjopen-2017-020061.
- McDermott JH, Reynard C, Perry J, Dear JW, Child F, Jenner R. Acute carbon monoxide toxicity in a paediatric cohort: analysis of 10 boys poisoned during a scuba diving lesson. *Clin Toxicol (Phila)*. 2018 Sep;56(9):856-859. doi: 10.1080/15563650.2018.1444175. Epub 2018 Mar 8.
- Dear JW. New biomarkers for drug-induced liver injury. *Hepatology*. 2018 Jun;67(6):2480-2481. doi: 10.1002/hep.29865. Epub 2018 Apr 27. No abstract available.

7. YCC Website/ Social Media

7a Website updates

We continue to stream our regular Twitter updates through our Yellow Card Scotland website, upload relevant news articles and carry out routine maintenance. We have not made any significant changes following last year's major refresh. However, we will be moving to a new platform in 2019/20, so a further refresh will be necessary.

7b Website/Social Media

Website

Table 19 - Comparison of website hits 2017/18 to 2018/19

	2016/17	2017/18	2018/19	% change 2017/18 to 2018/19
Total number of unique visitors	143	278	245	-12%
Total number of page views*	1,235	1,110	994	-10%

*the Total number of Page Views for 2017/18 & 2018/19 was obtained by working out and removing those views which come from YCC Scotland staff members and webmasters.

In 2017/18 the number of visitors to the website doubled following a significant refresh which included improvements to content layout, uploading our "toolkit" and streaming our Twitter feeds through the website. Further to this, we have not considered that further changes have been necessary, and have been concentrating on expanding our engagement via Twitter. It is reassuring that the website remains popular, and the slight decline following the peak last year is as expected.

Twitter

Table 20 - Twitter analytics Apr-March 2017/18 to 2018/19

	2016/17	2017/18	2018/19	% change 2017/18 to 2018/19
Number of Followers	51	410	1032	+152%
Tweets sent	40	171	244	+43%
Total number of Engagements*	148	1,592	2,612	+84%
Impressions**	7944	123,626	270,200	+118%

* Engagements are when a follower interacted with a tweet

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

In 2018/19, our Twitter account @YCCScotland gained >1000 followers. We continue to produce regular tweets, in the form of programmed standard messages (managed with Hootsuite) and ad hoc to highlight potential news items and safety updates of interest. These are aimed broadly at both healthcare professional and the general public. This form of engagement has reached out to new groups, including members of the public, and has generated multiple requests for training and education on the Yellow Card Scheme. It has proven very successful in promoting awareness of the Yellow Card Scheme, and our centre in Scotland. We are proud to have an international following, and even have pharmacovigilance organisations from across the world translating our tweets and retweeting them.

8. Research and ongoing initiatives

- NES/ YCCS ADR Modules: We are still in the process of updating our six ADR e-learning modules. This has been a fairly complex process, with the YCCS team assuming responsibility for the transfer to a new platform and directly implementing the changes, including new illustrations and functional changes. In the long run the new platform will enable better functionality, facilitate future updates/ changes and will allow tracking of the user “status” (completed/ in progress/ failed). We are close to completion of the first revised module, and we hope the next five will be quicker to update now we are familiar with the new software, and have assistance from our colleagues at NES. It should be noted that when we first embarked on this piece of work the intention was just to move platforms, with minor tweaks only to content. However, we took advantage of the opportunity to undertake a more significant update of the content, layout and illustrations. As such this has resulted in a much bigger piece of work than first anticipated, and will consume much of our time into 2019/20. However, we are confident that this will be a very worthwhile project.
- A review of the Yellow Card & Adverse Drug Event reporting for the Rheumatology Homecare Medicines within NHS Lothian (HNC Pharmacy Technician project): The aim of this HNC project was to determine the extent of ADR reporting amongst clinicians and homecare providers, for rheumatology medicines supplied via Homecare, within NHS Lothian. Specific objectives of the project were to identify practice across health boards in Scotland with regard to ADR reporting for homecare medicines; to establish current processes within the rheumatology teams in NHS Lothian and analyse ADR reporting by rheumatology clinicians and the relevant homecare providers. While homecare providers were found to be reporting ADRs via their own pharmacovigilance teams, gaps in reporting were identified for the clinicians. From YC data, it was established that reports were being completed for the relevant medicines (BT and biosimilars), although it was not possible to establish which of these were supplied via homecare schemes. These were largely reported by hospital pharmacists. Questionnaires identified gaps in reporting of ADRs from other clinicians. The following recommendations were made; patient information leaflets informing patients how to report via the YC scheme could be provided during clinic appointments, and education sessions should be delivered to the clinical teams involved. YCCS will work with the homecare pharmacy team to ensure that these actions are completed.
- Hospital radio: the YCCS team were delighted to be guest speakers on the health show of a community radio station earlier in the year, and are keen to reach out to local hospital radio stations to deliver similar sessions aimed at patients, parents and carers to promote better awareness of adverse drug reactions, and of the Yellow Card Scheme.

9. Conclusion

It has been another challenging year for YCCS, and we are pleased to have avoided an overall decline in reporting. The patterns seen in Scotland are similar to that of the rest of the UK, with a decline in reporting by healthcare professionals in hospitals.

This likely reflects the ongoing workforce pressures in the NHS, and as noted last year, will continue to present challenge to Yellow Card reporting in the foreseeable future.

Most notable is the significant -20% decline in reporting by hospital pharmacists, and -17% decline in reporting by community pharmacists, but this is not too surprising given the current high vacancy rates in these sectors following the recruitment drive in general practice. In line with this, an increase in reporting by “other” pharmacists is evident, which is largely due to reporting from primary care pharmacists.

Reporting by hospital pharmacists via MiDatabank is very low in Scotland compared to the rest of the UK, and has suffered another decline (-42%) in 2018/19. Efforts to increase reporting by pharmacists should concentrate on promoting reporting via available electronic systems; *Vision* (primary care) and MiDB (hospital), and through better engagement with pharmacy students, pre-registration trainees and pharmacy technicians across sectors. The YCCS team currently provide teaching to Pharmacy Undergraduates at Robert Gordon University, and until the content changed, used to present to the 4th year MPharm students at Strathclyde University. Given this decline in reporting by pharmacists, further exploration of YCCS engagement with pharmacy students is warranted.

The 5% decline in GP reporting is in line with the rest of the UK, which is not bad considering the limited availability of e-YC integrated clinical systems in Scotland. Notably, reports submitted via *Vision* have more than doubled since 2017/18, and accounted for 36% of all GP reports in 2018/19. This demonstrated the potential impact that better integration of e-YC reporting could have, and we hope that introduction of this functionality in EMIS (currently >50% of GP practices in Scotland) will positively influence GP reporting in Scotland.

The exception to this trend is the overall increase in nurse reporting (+7%) evident in 2018/19. This is driven by a 16% increase in nurse reporting in hospitals. In 2018/19 the proportion of the total reports submitted by hospital nurses was similar to the proportion submitted by hospital pharmacists. This is very encouraging for nurses, and it is likely that this is driven by non-medical prescribers (NMPs). This demonstrates the positive impact of our training, with the YCCS team delivering teaching to the NMP students at the University of Stirling, Edinburgh Napier University and Queen Margaret University, as well as presenting at NMP CPD events in Stirling, Forth Valley and attending the Scottish NMP Annual Conference in 2018/19. Ongoing teaching on these courses is confirmed for 2019/20.

Once again we have seen an increase (+8%) in reporting by patient groups in Scotland, now accounting for 33% of our total reports. This follows a continuation of our approach, aiming to reach the broader general public rather than targeting specific patient groups, and indirectly promoting patient reporting via healthcare professionals. YCCS will continue to raise patient awareness of possible side effects to their medicines, and the importance of taking action, including reporting Yellow Cards. It would be useful to investigate with our patient groups where they have learned about the YC Scheme, and whether they have been influenced by a healthcare professional.