

## Annual Report April 2019 to March 2020



**Yellow Card  
Reports  
(Scotland)**



**<1% increase**



**1432 reports**

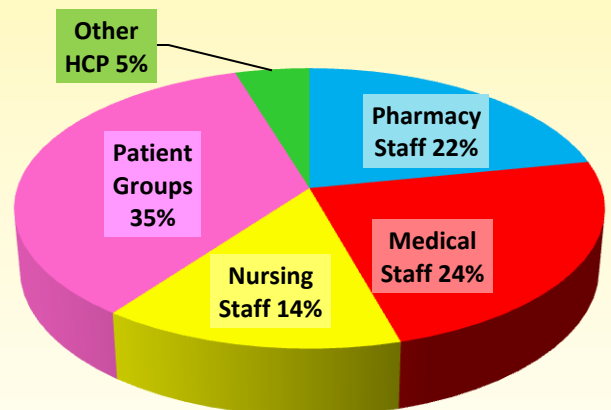


**26 reports per  
100,000  
population**

### YCC Scotland Training

**COVID-19:** During this time we are offering remote teaching and promotional/educational sessions on the Yellow Card Scheme/Adverse Drug Reactions.

### Source of Reports



## Top Reported Medicines

**INFLUENZA  
vaccine**

**GLATIRAMER**

**EDOXYBAN**

**ADALIMUMAB**

**MMR vaccine**

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

## 2019–2020

### 1. Team

<b>Professor Simon Maxwell</b>	Consultant Clinical Pharmacologist/Medical Director YCC Scotland
<b>Professor Angela Timoney</b>	Director of Pharmacy, NHS Lothian
<b>Dr James Dear</b>	Consultant Clinical Pharmacologist/Deputy Medical Director YCC Scotland
<b>Ms Tracy Duff</b>	Lead Pharmacist Lothian Medicines Information Service/ YCC Scotland
<b>Ms Louise Summers</b>	Senior Pharmacist Lothian Medicines Information Service/ YCC Scotland
<b>Mr Alexander Kiker</b>	Information Officer Lothian Medicines Information Service/ YCC Scotland

## 2. Executive Summary

Throughout 2019/2020, the 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.

During 2019/20 the team exceeded targets in relations to the provision of teaching/training to students, healthcare professionals and patient groups alike. Regular scheduled teaching continues to be delivered to non medical prescribers, and undergraduates in pharmacy, pharmacology, medicine and podiatry. The YCCS team also attended several conferences with the YCCS stand, promoting the Yellow Card scheme. Our eLearning modules continue to be embedded in training in Scotland, and are widely used.

It has been a busy year for YCCS, and we are pleased to have avoided an overall decline in reporting, although this is largely due to a further rise in reporting by patient groups in Scotland.

Patient group reporting has consistently risen over the last five years, with a further 6% increase compared to 2018/19. Patients, parents, and carers remain the highest reporting group in Scotland accounting for 35% of the total reports for 2019/20. It is notable that we welcomed a new patient representative, Sue Cole, onto the Advisory Board in 2019/20, which prompted a series of new patient engagement initiatives.

Unfortunately, healthcare reporting is still on the decline, which is mainly due to the decline in reporting from doctors across all sectors. GP reporting has declined a further 14% compared to 2018/19, in spite of continued direct e-YC reporting via *Vision* (GP system). Reporting by hospital doctors has also declined a further 17% compared to 2018/19. Looking forward, we will look to our YCCS Advisory Board for advice on how to better engage with our medical colleagues, to reverse this trend, recognising the challenges we have in Scotland with the lack of integration of e-YC reports with our EMIS (widely used GP system), and hospital prescribing systems (HEPMA WellSky). While there is some progress with EMIS, there has not yet been progress with WellSky (formerly JAC). EMIS-X is the new global EMIS system, which will be available in Scotland, and Yellow Card will be built into this.

We are pleased to see an increase in reporting from hospital nurses (+ 8%), hospital pharmacists (+ 21%) and “other” healthcare professionals. It is likely that the increase in reporting by nurses is driven by non-medical prescribers (NMPs), demonstrating the positive impact of our training. The increase in hospital pharmacist reporting corresponds with an increase in reports submitted via MiDatabank (the pharmacy medicines information database). In addition to our regular teaching of pharmacy undergraduates at the Robert Gordon University, we delivered training to pharmacy student technicians at Edinburgh College, and promoted the YC scheme to pharmacists working in the Scottish prison services, and the National Procurement pharmacy team.

In addition to our regular work to raise the profile of adverse drug reactions (ADRs), our Medical Director (Professor Simon Maxwell) and Deputy Medical Director (Dr James Dear) continue to contribute to valuable research into improving medicines safety. Dr James Dear is a member of the Scientific Advisory Board for the EU TransBioLine Consortium. The TransBioLine project aims to develop novel safety biomarkers that will reliably indicate injury of the liver, kidneys, pancreas, blood vessels, and central nervous system for drug development purposes.

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 Yellow Card Scotland at [yccscotland@nhslothian.scot.nhs.uk](mailto:yccscotland@nhslothian.scot.nhs.uk) for information on how we can help to support any local 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/>.

### 3. Yellow Card Data

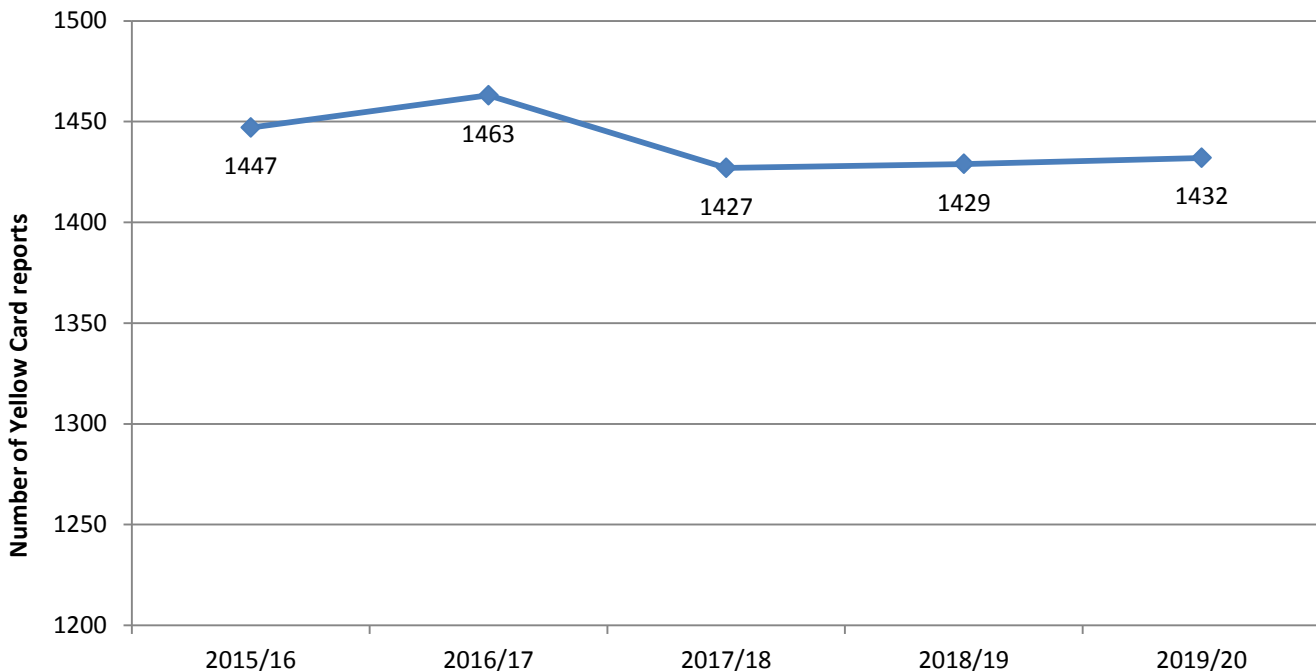
#### 3a Total Scottish Reports

A total of **1432 reports** of suspected adverse drug reactions submitted from Scotland in 2019/20. This represents no significant change on the previous year. Table 1 and Figure 1 below illustrate the trend in reporting in Scotland, over the last 5 years. It can be seen that reporting in Scotland is fairly static.

**Table 1 – Number of Yellow Card Reports from Scotland over the past 5 years**

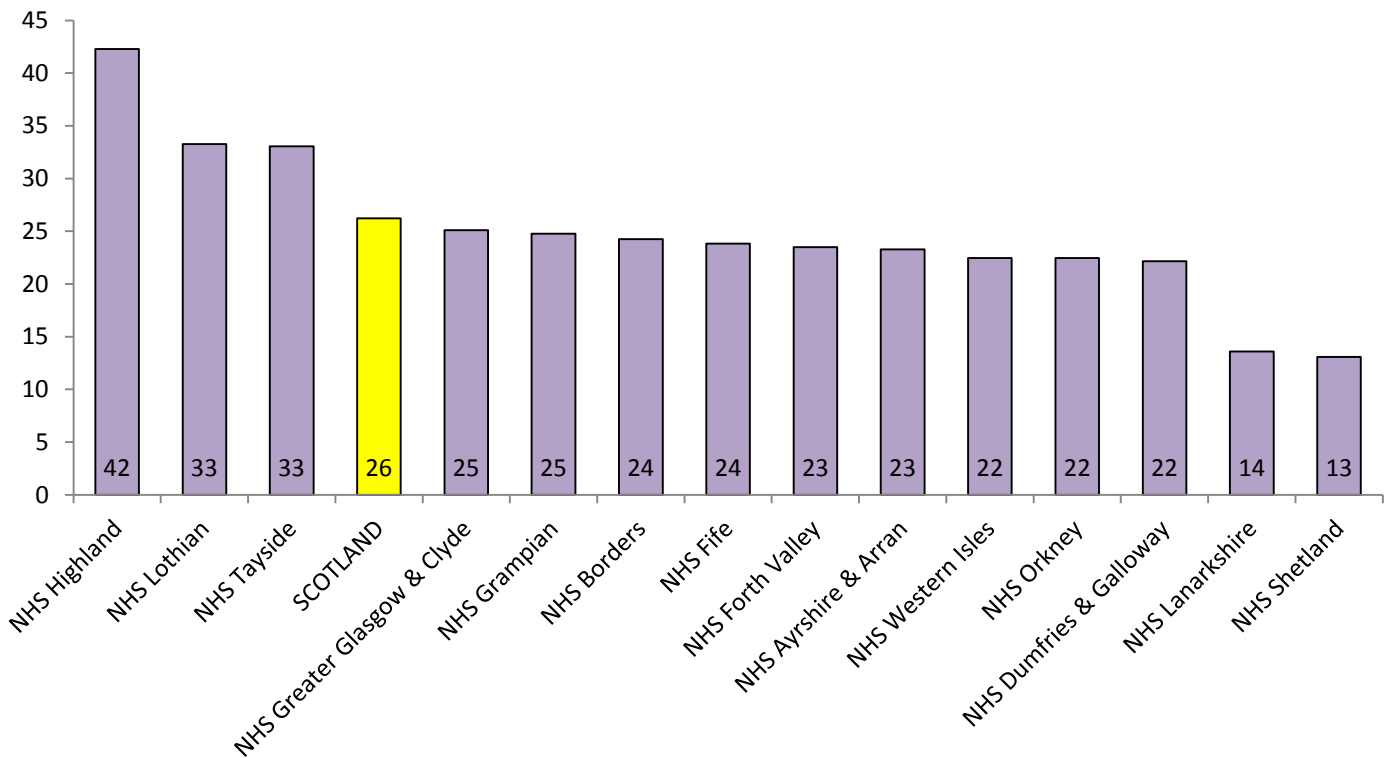
Year	Number of reports	Percentage change on previous year
2015/16*	1447	+17%
2016/17	1463	+1%
2017/18	1427	-2%
2018/19	1429	+<1%
<b>2019/20</b>	<b>1432</b>	<b>+&lt;1%</b>

**Figure 1 - Number of Yellow Card Reports from Scotland over the past 5 years**



*\*The rise in 2015/16 followed the Yellow Card 50<sup>th</sup> Anniversary events and the addition of the NES/YCC Scotland eLearning modules to the core learning for pre-registration pharmacists and trainee doctors. The upward trend in reporting by patient groups also contributed.*

**Figure 2 - Health Board Yellow Card Reporting per 100,000 population (Scotland 2019/20)**



**Statistics from National Registers of Scotland, Population estimates mid-2019\*** 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 shows how health boards in Scotland compare to the Scottish average (reports per 100,000 population). The average number of Yellow Card reports per 100,000 population in Scotland is 26, which is the same as the previous 2 years.

The top 3 reporting health boards (per 100,000 population) in 2019/20 were NHS Highland, NHS Lothian and NHS Tayside. All other health boards reported below the Scottish average (number per 100,000 population).

**Figure 3 – Number of Yellow Card Reports submitted over the last 5 years (top 5 reporting health boards in 2019/20)**

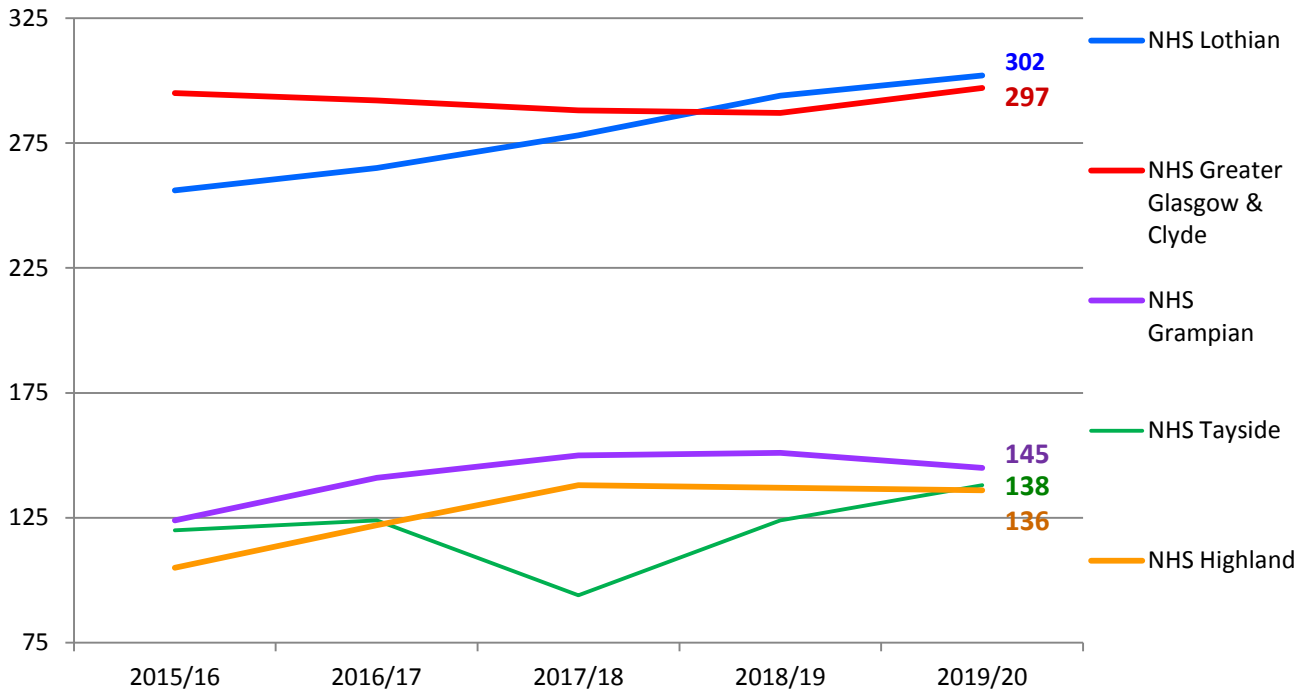


Figure 3 shows the 5 year trend in reporting for the five health boards that submitted the highest number of reports (total) in 2019/20. Of note, these health boards are also the top 5 reporting health boards per 100,000 population. These are NHS Lothian, NHS Greater Glasgow & Clyde, NHS Grampian, NHS Tayside and NHS Highland.

In addition to those illustrated here, notable increases in reporting are evident in NHS Ayrshire & Arran and NHS Dumfries & Galloway, compared to 2018/19. A significant decline in reporting is noted for NHS Lanarkshire, compared to 2018/19, representing its lowest reporting in over 5 years (since 2013/14).

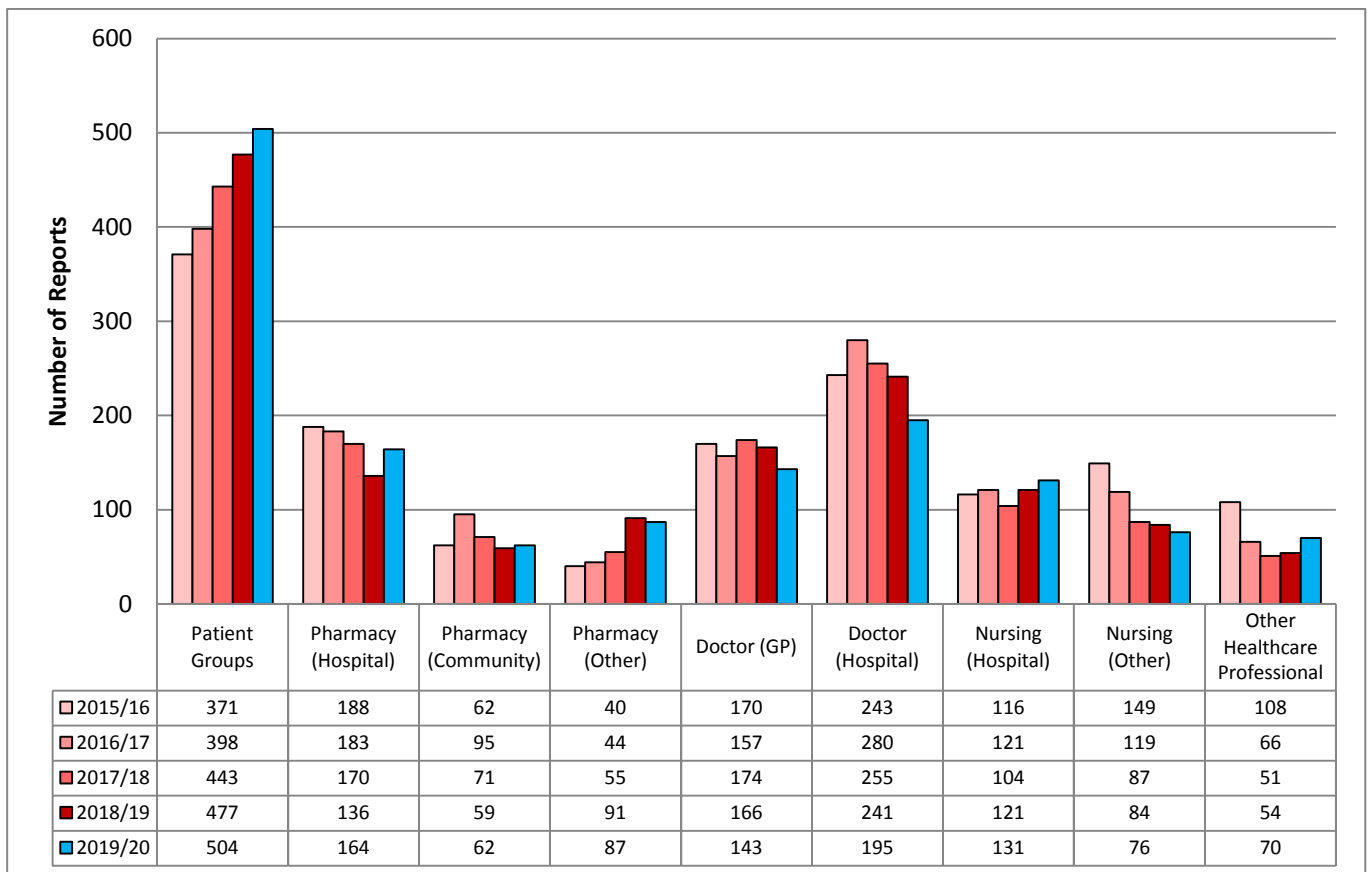
For the NHS Western Isles, NHS Shetland and NHS Orkney, the number of reports is overall too low to allow trend analysis.

Further details can be provided to health boards on request.



### 3b Reporter Qualifications

Figure 3 - Scotland total Yellow Card reports by reporter groups 2015/16 to 2019/20



**Patient Groups:** Patients; Parents; Parents; Consumers

**Pharmacy Other:** Not specified; Pharmacy Assistant/Technician; Pre-Reg Pharmacist

**Nursing Other:** Not specified; Community; Midwife

**Other Healthcare Professional:** Chiropodist; Optometrist; Healthcare Assistant; Radiographer; Paramedic; Dentist; Medical Student; Not specified; Not specified (hospital)

**Healthcare Professionals (HCPs)** accounted for 65% of the total reports; with a slight decrease in the total number of reports from 952 in 2018/19 to 928 in 2019/20. This continues the downwards trend seen over the last four years in reporting from healthcare professional in Scotland, and is mainly due to the decline in reporting from doctors across all sectors. **GP** reporting has declined a further 14% compared to 2018/19, in spite of continued reporting via *Vision* (accounting for 31% of GP reports in 2019/20). **Hospital doctor** reporting has also declined a further 17% compared to 2018/19.

This is offset slightly by an increase in reports from hospital nurses (+ 8%), hospital pharmacists (+ 21%) and “other” healthcare professionals (as noted above).

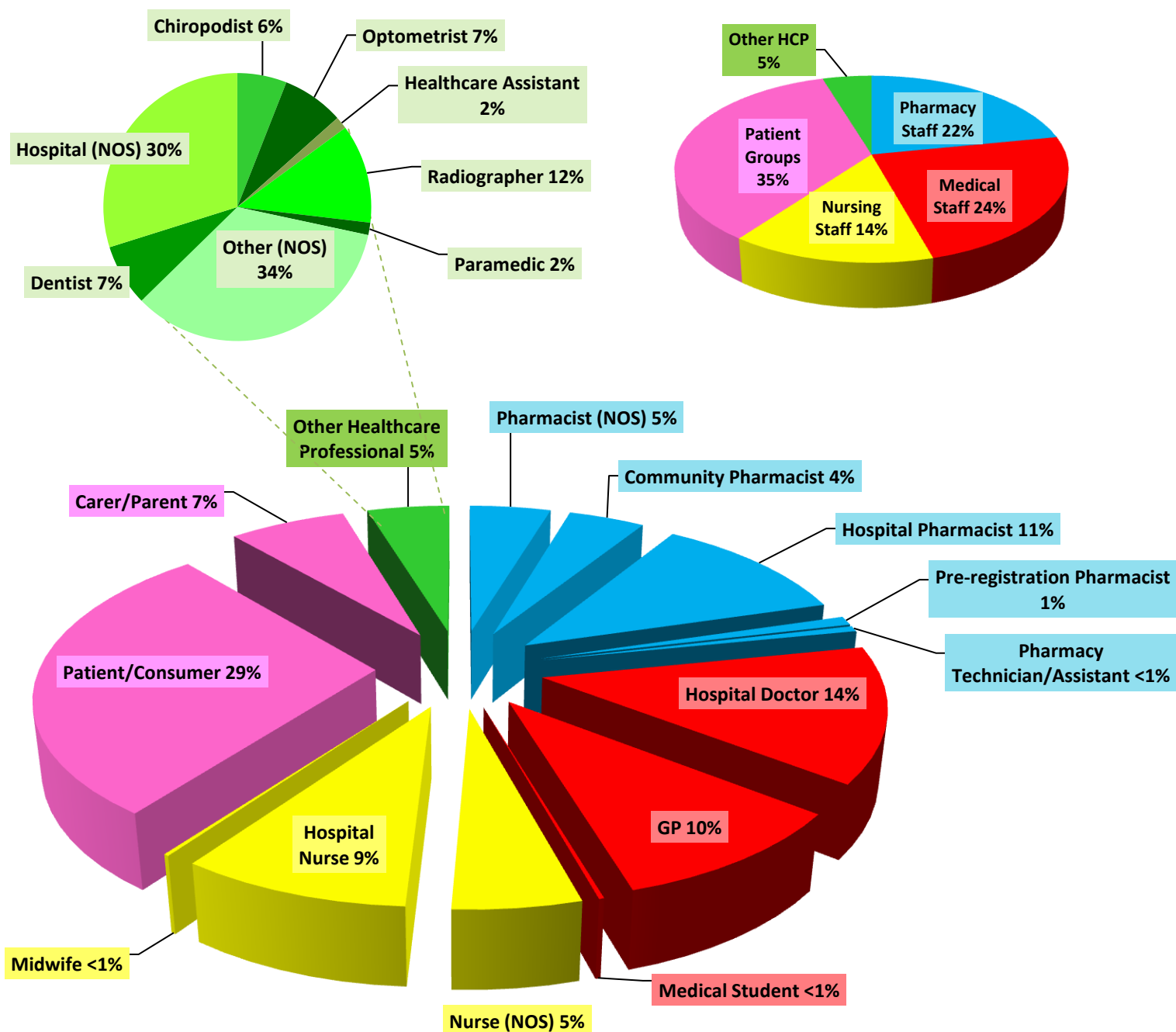
**Patient group** reporting has consistently risen over the last five years, with a further 6% increase compared to 2018/19. Patients, parents, and carers remain the highest reporting group in Scotland accounting for 35% of the total reports for 2019/20, compared to 33% in 2018/19.

Figure 4 shows the contribution of each reporter group to the total reports submitted in Scotland in 2019/20. These are grouped by profession, and subdivided into sector where the data allows.

A further breakdown of the “Other Healthcare Professional” reports is illustrated – collectively these constitute 5% of all Scottish reports. These incorporate the lowest reporting groups (those who submitted 5 or fewer reports), and those not that did not specify their profession, but selected either hospital or other healthcare professional – hospital (NOS) and Other (NOS).

For this year, this includes dentists, healthcare assistant, optometrist, paramedic and chiropodist).

**Figure 4 – Percentage of Total Reports in Scotland for each Reporter Group**



**Table 2 - Reports from hospitals 2019/20 (Scotland)**

Health Board Area	Total reports 2019/20	Hospital reports 2019/20	Hospital reports as a % of Board's total reports	
			2019/20	2018/19
NHS Ayrshire & Arran	86	29	34%	24%
NHS Borders	28	10	36%	47%
NHS Dumfries & Galloway	33	12	36%	21%
NHS Fife	89	21	24%	33%
NHS Forth Valley	72	30	42%	42%
NHS Grampian	145	39	27%	31%
NHS Greater Glasgow & Clyde	297	126	42%	44%
NHS Highland	136	43	32%	34%
NHS Lanarkshire	90	22	24%	42%
NHS Lothian	302	109	36%	34%
NHS Orkney	5	1	20%	30%
NHS Shetland	3	0	0%	33%
NHS Tayside	138	67	49%	25%
NHS Western Isles	6	0	0%	50%
<b>Total (Scotland)</b>	<b>1432</b>	<b>509</b>	<b>36%</b>	<b>35%</b>

**Table 2** shows the number of reports submitted by each health board, and the number, and proportion, which originated from hospitals in each health board.

NHS hospitals this year accounted for 36% of all reports in Scotland. This figure is largely unchanged compared to the previous year, as an increase in reports from hospital pharmacists and hospital nurses offset the decline in reporting from hospital doctors.

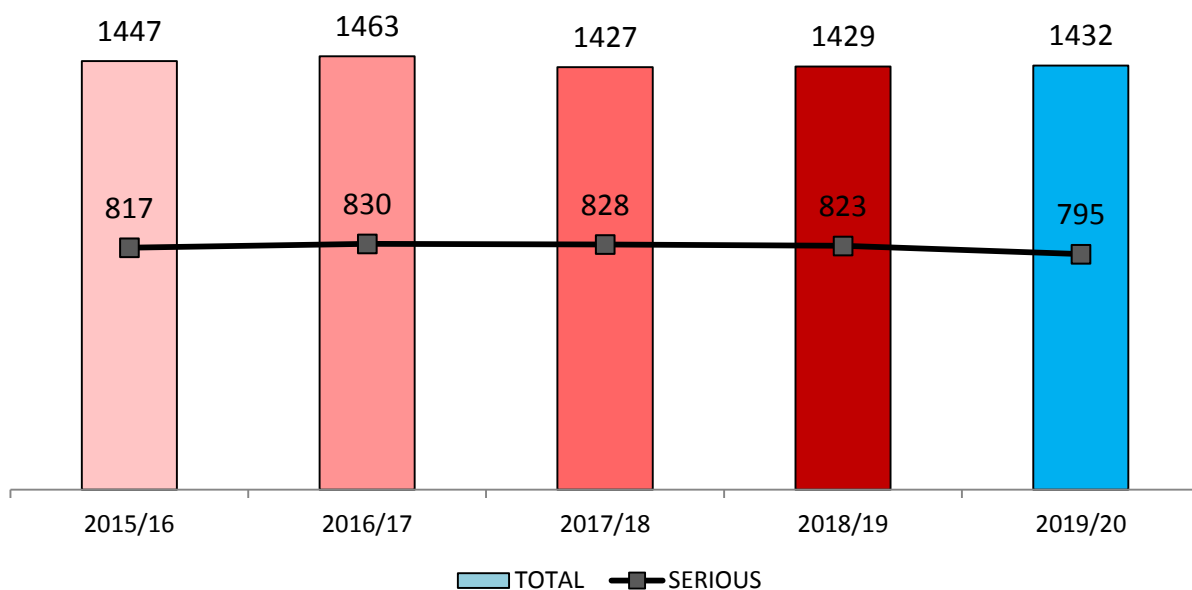
### 3c Serious Reports

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

Year	Number of serious reports	Percentage of total reports	Percentage change on previous year
2015/16	814	56%	+13%
2016/17	830	57%	+2%
2017/18	828	58%	0%
2018/19	823	58%	-1%
<b>2019/20</b>	<b>795</b>	<b>55%</b>	<b>-4%</b>

Table 3 and Figure 5 show the number, and proportion of reports classed as serious that originated from Scotland in 2019/20, and the trend over the last 5 years. A fatal outcome was reported in 42 Yellow Card reports in 2019/20.

**Figure 5 - Serious reports as a proportion of total reports from Scotland 2015/16 to 2019/20**



### 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
2015/16	71	+22%
2016/17	71	0%
2017/18	95	+34%
2018/19	78	-18%
<b>2019/20</b>	<b>42</b>	<b>-46%</b>

• It is important to note that suspected adverse drug reactions do not necessarily have an established causal link between the suspect medicines and the fatal outcome.

### 3e Age Banding (Scotland)

Tables 5 to 7 and Figure 8 show the number of yellow cards reported in Scotland, stratified by the patient's age, for the past 3 years.

**Table 5 - Age Banding Reports Scotland 2017/18 to 2019/20**

Age Banding	Reports 2017/18	Reports 2018/19	Reports 2019/20
Unknown	59	53	47
Under 2 years	40	37	46
2-6 years	45	43	53
7- 12 years	38	33	37
13- 17 years	52	49	42
18-24 years	79	87	116
25-34 years	119	133	167
35-44 years	156	157	158
45-54 years	195	190	182
55-64 years	192	207	190
65-74 years	230	241	210
75+ years	205	199	184
<b>TOTAL</b>	<b>1427</b>	<b>1429</b>	<b>1432</b>

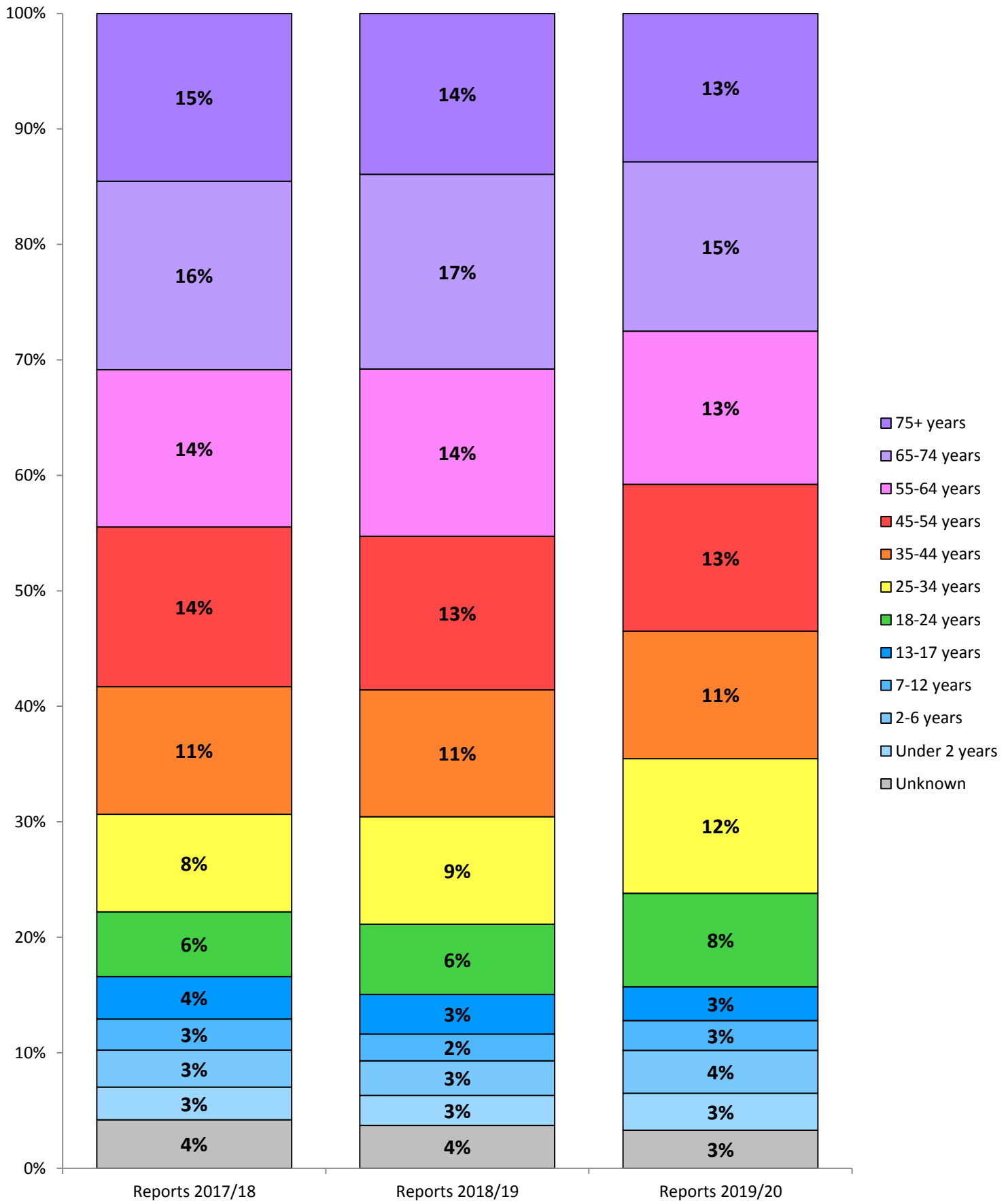
**Table 6 - Age Banding Paediatric Reports Scotland 2019/20**

Age Range	Number of Paediatric Yellow Card Reports	% of Paediatric Yellow Card Reports
Children under (0-11 mths)	25	14%
Children (12- 23 mths)	21	12%
Children (2-11 yrs)	81	46%
Adolescents (12-17 yrs)	51	29%
<b>TOTAL</b>	<b>178</b>	

**Table 7 - Age Banding over 65 years Reports Scotland 2019/20**

Age Range	Number of over 65 yrs Yellow Card Reports	% of over 65yrs Yellow Card Reports
65yrs – 74yrs	210	53%
75yrs – 84yrs	143	36%
85yrs – 94yrs	39	10%
95+	2	1%
<b>TOTAL</b>	<b>394</b>	

**Figure 6 - The percentage of Yellow Card reports from Scotland, stratified by age group (2017/18 to 2019/20)**



### 3f Top 10 Suspected Medicines

**Table 8 - Scottish top ten suspected medicines reported 2018/19 & 2019/20**

2018/19		2019/20		
Rank	Drug Name	Reports	Drug Name	Reports
1	Influenza Vaccine (Inactivated) ▼	45	Influenza Vaccine* (Inactivated ▼/Intranasal)	81
2	Apixaban	28	Glatiramer	32
3	Rivaroxaban ▼	27	Edoxaban ▼	31
4	MMR Vaccine	24	Adalimumab ▼	26
5	HPV Vaccine	23	MMR Vaccine	25
6	=Edoxaban ▼ =Pneumococcal Vaccine	21	Doxycycline	21
7	Sertraline	19	=Empagliflozin ▼ =Sertraline	20
8	Ciprofloxacin	18	-	-
9	=Meningococcal B Vaccines ▼ =Warfarin =Omeprazole	17	HPV Vaccine	17
10	-	-	=Trimethoprim =Clarithromycin =Pneumococcal Vaccine	16

**Table 9 - Top Five Medicines reported for paediatrics and aged 65+ in 2019/20 (Scotland)**

Top reported medicines for paediatrics and over 65yrs 2019/20		
	Paediatrics	Over 65 yrs
1	Influenza Vaccine	Edoxaban ▼
2	MMR Vaccine	Influenza Vaccine* (Inactivated ▼/Intranasal)
3	HPV Vaccine	Rivaroxaban ▼
4	Meningococcal B Vaccines	Apixaban
5	= Rotavirus Vaccine = Diphtheria/Tetanus/Pertusis/Polio Vaccine	=Trimethoprim =Nitrofurantoin =Empagliflozin ▼

#### Notes

▼ Black triangle status (medicines subject to additional monitoring) – in some case this is brand specific  
\* In 2019/20 Influenza Vaccine (Inactivated) and Influenza Vaccine (Intranasal) reports are combined. In 2018/19 these were reported separately.

### 3g Sources of Reports

**Table 10 – Detail for Scottish reports stratified by reporter over last 3 years**

Reporter	2017/18		2018/19		2019/20	
	Number	% of total	Number	% of total	Number	% of total
Carer	16	1%	16	1%	22	2%
Consumer	-	-	2	<1%	3	<1%
Parent	76	5%	81	6%	73	5%
Patient	351	25%	378	27%	406	28%
Community Pharmacist	71	5%	59	4%	62	4%
Hospital Pharmacist	170	12%	136	10%	164	12%
Pharmacist	39	3%	65	5%	66	5%
Pharmacy Assistant	2	<1%	20	1%	8	<1%
Pre-reg pharmacist	14	1%	6	<1%	13	1%
Hospital Nurse	104	7%	121	9%	131	9%
Nurse	84	6%	81	6%	73	5%
GP	174	12%	166	12%	143	10%
Hospital Doctor	247	18%	234	16%	195	14%
Physician	8	1%	7	1%	0	0%
Coroner	-	-	-	-	-	-
Paramedic	-	-	-	-	1	<1%
Dentist	5	<1%	3	<1%	5	<1%
Midwife	3	<1%	3	<1%	3	<1%
Optometrist	5	<1%	3	<1%	5	<1%
Chiropodist	-	-	-	-	4	<1%
Radiographer	8	1%	14	1%	8	<1%
Hospital Healthcare Professional	16	1%	16	1%	20	1%
Healthcare Assistant	-	-	3	<1%	1	<1%
Other Healthcare Professional	15	1%	13	1%	23	2%
Medical Student	1	<1%	2	<1%	3	<1%
Unknown	1	<1%	-	-	-	-
<b>Total</b>	<b>1410</b>		<b>1429</b>		<b>1432</b>	



### 3h Types of reports (Scotland)

**Table 11 - Report submission routes**

Report Type	2018/19		2019/20	
	Number	% of total	Number	% of total
App	4	<1%	11	1%
Electronic Yellow Card	1213	85%	1184	83%
MiDatabank (Pharmacy Medicines Information)	23	2%	53	4%
Paper	119	8%	123	9%
RIDR (Report Illicit Drug Reactions scheme)	-	-	3	<1%
Vision (GP system)	70	5%	58	4%

Table 11 shows the ways in which our reporters submitted Yellow Cards in 2019/20.

## 4. Discussion of Yellow Card Data

A total of 1432 reports were submitted in Scotland in 2019/20, which means that reporting has now remained fairly static over the last 5 years.

### Reporter Groups trends:

- **Patient groups:** Reporting by patient groups has increased again, representing 35% of all reports in Scotland. YCC Scotland welcomed a new patient representative to the Advisory Board this year, prompting a number of new patient engagement activities.
- **Healthcare professionals:** Reporting by healthcare professionals has further declined. This is mainly due to the decline in reporting from doctors across all sectors.
- **Doctors:** GP reporting has declined a further 14% compared to 2018/19, which corresponds with a decline in reports made via Vision. In hospitals, reporting by doctors has also declined a further 17%.
- **Nurses:** Reporting by hospital nurses has increased by 8%. Yellow Card training is provided to most non medical prescriber courses in Scotland, with an expansion in training during the year.
- **Pharmacists:** Reporting by hospital pharmacists has increased by 21%. This corresponds with an increase in reports submitted via MiDatabank. 53% of MiDatabank reports were submitted by NHS Lothian.

### Health board trends:

- **Top 3 reporting health boards (per 100,000 population):** NHS Highland, NHS Lothian and NHS Tayside.
- **Benchmarking:** All other health boards reported below the Scottish average of 26 per 100,000 population.
- **Notable increases:** NHS Ayrshire & Arran and NHS Dumfries & Galloway.

### Suspect Medicines (also see observations):

- **Top 10:** notable changes include the appearance of glatiramer (the highest reported suspect medicine excluding vaccines), and adalimumab.
- **Glatiramer:** 94% of reports were submitted by hospital nurses. The majority (75%) of suspected ADRS were classed as non serious; 31% involved injection site reactions. This may be due to the manufacturers' instructions that patients should be supervised by a healthcare professional the first time they self-inject glatiramer, and for 30 minutes afterwards.
- **Adalimumab:** Reports for adalimumab came from a wide range of reporters, including hospital nurses, pharmacists, patients and other healthcare professionals. Almost half of these were classed as serious. Adalimumab also has black triangle status, which should prompt reporting for all suspected reactions. A number of reports included multiple reactions – these were diverse, although skin reactions and injection site reactions were common themes.
- **Paediatrics:** vaccines are the most commonly reported suspect medicines.
- **Over 65 years:** DOACS (edoxaban, rivaroxaban and apixaban) are the most commonly reported suspect medicines.

### **Serious ADRS:**

- 795 reports were classed as serious (55% of total). No change on past 5 years.
- Edoxaban, empagliflozin, adalimumab, and rivaroxaban are the most frequently reported suspect drugs for serious reactions reported by healthcare professionals.
- Over 300 different suspected medicines were reported – trend analysis difficult.
- **Fatal:** a fatal outcome was reported in 42 reports\*
- 55% of reports with a fatal outcome included anticoagulant medication; edoxaban (19%), rivaroxaban (17%), warfarin (12%), apixaban (5%), or dalteparin (2%). The majority of reactions reported for these drugs were haemorrhage.

### **Other observations:**

- **SGLT2 inhibitors:** Empagliflozin was one of the top 10 reported suspect medicines, and one of the most commonly implicated in serious reports. There were a total of 29 reports for the SGLT2 inhibitors. Of these, there were 11 reports of diabetic ketoacidosis or euglycaemic diabetic ketoacidosis. Following on from the 2015 Drug Safety Update on the risk of diabetic ketoacidosis with SGLT2 inhibitors, an additional Drug Safety Update was published in March 2020 – SGLT2 inhibitors: monitor ketones in blood during treatment interruption for surgical procedures or acute serious medical illness.
- **Montelukast and neuropsychiatric reactions:** the September 2019 Drug Safety Update reminded healthcare professionals of this risk. Of 12 reports for montelukast this year, the majority (9) involved neuropsychiatric reactions including aggression, anxiety, obsessive compulsive disorder, and tics.
- **Quinolones and musculoskeletal and nervous systems reactions:** 20 reports were received for the quinolones - ciprofloxacin (11), levofloxacin (4) and ofloxacin (5). The majority of reports involved adverse reactions affecting the musculoskeletal and nervous systems as outlined in the March 2019 Drug Safety Update article Fluoroquinolone antibiotics: new restrictions and precautions for use due to very rare reports of disabling and potentially long-lasting or irreversible side effects.
- **Rare serious/fatal reactions and Drug Safety Updates:** A number of other rare serious reactions (some with fatal outcomes) were reported, which coincided with warnings in the Drug Safety Update in 2019/20. To protect confidentiality further details are not provided.
- **Community pharmacists - varenicline:** Of 65 reports by community pharmacists, 10 (~15%) involved varenicline, which can be supplied by community pharmacists as second line therapy for smoking cessation. The majority of reported reactions were neuropsychiatric in nature including anxiety, depression, mood changes, and sleep disturbance.
- **Community pharmacists - vaccines:** vaccines represent around 18% of all reports submitted by this group. This likely reflects provision of vaccination services in community pharmacies.

• It is important to note that suspected adverse drug reactions do not necessarily have an established causal link between the suspect medicines and the fatal outcome.

## 5. Promotional activities

### 5a Training delivered to healthcare professionals and their respective groups

#### NES/YCCS ADR e-learning modules

The NES/YCCS ADR modules are hosted in *LearnPro* (for health board employees) and the NES *Turas Learn* for Pharmacy Teams, and data on statistics is only available from *Turas Learn*. From 1st April 2019 – 31st March 2020, there were 353 assessment attempts on *Turas Learn*, with 276 people passing the assessment. However, this is likely to be an under estimate of the overall use given the difficulty obtaining statistics from *LearnPro*.

**Table 12 - Training delivered to healthcare professionals and their respective groups**

Audience	Session	Duration (hours)	No of sessions	Total attendees	Total hours Training
NHS Grampian HCPs	Training on Yellow Card Scheme & ADRs	1	4	40	4
NHS Fife HCPs	Training on Yellow Card Scheme & ADRs	2	2	60	4
Scottish Prison Pharmacy Group	Training on Yellow Card Scheme & ADRs	0.5	1	10	0.5
National Procurement Pharmacy Team	Introduction to the Yellow Card Scheme & Pharmacovigilance	1	1	15	1
NMP Conference 2019, NHS Grampian/RGU	Workshop & Presentation on Yellow Card Scheme & ADRs	1	2	130	2
NMP Students QMU	Training on Yellow Card Scheme & ADRs	2	2	50	4
NMP Students Napier University	Training on Yellow Card Scheme & ADRs	1.5	1	50	1.5
NMP Students Stirling University	Training on Yellow Card Scheme & ADRs	2	1	50	2
HCPs Marie Curie Hospice Edinburgh	Training on Yellow Card Scheme & ADRs	1	1	10	1
Scottish Practice Nurses	Conference Stand at SPNA Annual Conference	6	1	119	6
Internal Medicine MSc Doctors	Clinical Pharmacology teaching	2	1	100	2
Non-medical Prescribers	Conference Stand at NMP Annual Conference	6	1	200	6
Advanced Nurse Practitioners	Conference Stand at Acute Practice Annual Conference	7	1	75	7
Community Pharmacists*	Promotional Items provided to Community Pharmacy*	0.2*	1*	N/A*	N/A*
Healthcare Professionals*	Promotional Items provided to Scottish Health Board Resource Centres*	0.2*	4*	N/A*	N/A*
<b>Totals</b>			<b>18 (23*)</b>	<b>&gt;650</b>	<b>31</b>

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

## 5b Training delivered to patients and their respective groups

**Table 13 - Patient Group Engagement**

Audience	Session type	Duration (hours)	Number of sessions	Audience numbers	Total staff hours
Bronchiectasis Patient Group	Yellow Card Presentation and Discussion	1.5	1	20	1.5
Patient	Telephone support to patient submitting a Yellow Card report	0.2	1	1	0.2
Patient	Email advice to patient seeking information on the Yellow Card Scheme	0.2	1	1	0.2
Patients, Parents, and Carers	Discussion and information session during coffee and tea meeting	1	1	20	1
Patients, Parents, and Carers	Information leaflets provided to hospital communications office	0.2	1	N/A	N/A
Public	Radio show interview	1	1	Unknown	1
Hospital Patients	Hospital radio stations contacted to arrange interviews	0.2	10	N/A	2
High School Pupils*	Careers Day Promotional Material Supplied*	N/A*	3*	240*	N/A*
Public	Lothian Buses, First Buses, ScotRail contacted regarding advertising opportunities	0.2	3	N/A	0.6

## 5c Training delivered to undergraduates

**Table 14 - Training delivered to Undergraduates**

Audience	Session	Duration (hours)	No of sessions	Total attendees	Total hours
Pharmacy Students RGU	Pharmacovigilance, ADR reporting and YCS	1	1	100	1
Podiatry Students QMU	Training on Yellow Card reporting and ADRs	1.5	1	25	1.5
Pharmacy student Technicians Edinburgh College	Training on Yellow Card reporting and ADRs	1.5	1	20	1.5
Pharmacology students UoE	Clinical Pharmacology lecture	2	1	~200	2
Year 6 Medical Students UoE	Pharmacodynamics and Drug Safety lecture	2	1	~300	2
<b>Total</b>					

## **5d Materials developed for YCS promotion**

Our most popular items for promotion (with our YCC Scotland logo):

- Lanyards in striking yellow and black
- Cotton tote bags
- Yellow pens and post it notes
- Multicolour highlighter pens

## 6. Publications

- Hutchinson K, Ricketts W, **Maxwell S**, Ng FL. Candidates registered for reasonable adjustments underperform compared to other candidates in the national undergraduate Prescribing Safety Assessment: retrospective cohort analysis (2014-2018). *Br J Clin Pharmacol*. 2020.
- **Maxwell SRJ**, Webb DJ. Improving medication safety: focus on prescribers and systems. *Lancet*. 2019;394 :283–285.
- Faccenda E, **Maxwell S**, Szarek JL. The IUPHAR Pharmacology Education Project. *Clin Pharmacol Ther*. 2019;105 :45-48.
- Zhang XY, Holbrook AM, Nguyen L, Lee J, Al Qahtani S, Garcia MC, Perri D, Levine M, Patel RV, **Maxwell S**. Evaluation of online clinical pharmacology curriculum resources for medical students. *Br J Clin Pharmacol*. 2019;85 :2599-2604.
- Pettie J, Caparrotta T, Hunter R, Morrison E, Wood D, Dargan P et al. Safety and Efficacy of the SNAP 12-hour Acetylcysteine Regimen for the Treatment of Paracetamol Overdose. *EClinicalMedicine*. 2019;11:11-17.
- Caparrotta T, **Dear J**, Colhoun H, Webb D. Pharmacoepidemiology: Using randomised control trials and observational studies in clinical decision- making. *British Journal of Clinical Pharmacology*. 2019;85(9):1907-1924.

## 7. YCC Website/Social Media

### 7a Website updates

The current host platform for our YCCS Website will be discontinued in late 2020 and we will be moving to a new platform hosted by Scottish Health on the Web (SHOW). This has prompted a refresh of the website, which we have performed using the content management software WordPress.

### 7b Website/Social Media Statistics

#### Website

**Table 15 - Comparison of website hits 2018/19 to 2019/20**

	2018/19	2019/20	% change 2018/19 to 2019/20
Total Number of Daily Unique Visitors	81	108	+33%
Total Number of Page Views	804	1,122	+40%

The YCCS website remains popular, and it will be interesting to see how the usage will change in the coming year following the launch of our new website at SHOW in late 2020.

#### Twitter

**Table 16 - Twitter analytics Apr-March 2017/18 to 2019/20**

	2017/18	2018/19	2019/20	% change 2018/19 to 2019/20
Number of Followers	410	1032	1236	+20%
Tweets sent	171	244	238	-3%
Total number of Engagements*	1,592	2,612	1,880	-28%
Impressions**	123,626	270,200	225,600	-17%

\* Engagements are when a follower interacted with a tweet

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

In 2019/20, our Twitter account @YCCScotland continued to gain new followers, reaching over 1,200 by the end of March 2020. We continue to produce regular tweets, in the form of scheduled standard messages (managed with Hootsuite) and ad hoc messages to highlight potential news items and safety updates of interest, which continue to reach a wide audience of healthcare professionals and the general public.



## 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 improved functionality. The first of these modules has been updated and is awaiting review prior to being hosted on this new platform. In the meantime the remaining five modules have been transferred to the new platform without major updates so all six modules can be uploaded together.
- YCC Scotland Website Update: A new version of the YCC Scotland website has been created using Wordpress to be hosted on a new platform in collaboration with Scottish Health on the Web (SHOW). This has been conducted due to the discontinuation of the current platform, and was used as an opportunity to refresh the look and feel of the website.
- Hospital radio: Following a successful community radio interview with the YCCS team we have reached out to a number of hospital radio stations across Scotland and have arranged further interviews and public service announcements. Many of these interviews have been postponed due to the COVID-19 pandemic, but it is hoped that we will be able to pick these up again moving forward when hospital radio stations are reopened.
- Advisory Group Patient Representative: A new patient representative has joined the YCCS Advisory Group and has already provided a number of suggestions for outreach and promotion of the Yellow Card Scheme.
- Remote teaching and promotion: Due to the COVID-19 situation, face to face teaching has been on hold. However the team are developing new training resources and recorded presentations for remote teaching. Several universities delivering training to NMPs have already been in touch to organise teaching sessions through revised platforms.

## 9. Conclusion

It has been a busy year for YCCS, and we are pleased to have avoided an overall decline in reporting, although this is largely due to a further rise in reporting by patient groups in Scotland.

Patient group reporting has consistently risen over the last five years, with a further 6% increase compared to 2018/19. Patients, parents, and carers remain the highest reporting group in Scotland accounting for 35% of the total reports for 2019/20. YCC Scotland continues to engage with patient groups, and have a number of new initiatives lined up for the year ahead.

Unfortunately, healthcare reporting is still on the decline, which is mainly due to the decline in reporting from doctors across all sectors. GP reporting has declined a further 14% compared to 2018/19, in spite of continued reporting via *Vision* (accounting for 31% of GP reports in 2019/20). Reporting by hospital doctors has also declined a further 17% compared to 2018/19.

This is offset slightly by an increase in reports from hospital nurses (+ 8%), hospital pharmacists (+ 21%) and “other” healthcare professionals. It is likely that this is driven by non-medical prescribers (NMPs), demonstrating the positive impact of our training, with the YCCS team delivering teaching to the NMP students across Scotland. We continue to provide training to our pharmacy undergraduates at the Robert Gordon University, and this year also provided training to pharmacy student technicians at Edinburgh College.

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- Professor James McLay, Senior Lecturer in Clinical Pharmacology and Therapeutics, University of Aberdeen
- Christopher Nicolson, Director of Pharmacy, NHS Shetland & NHS Orkney
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- Leon Zlotos, Principal Lead for Professional Development, NHS Education for Scotland
- Sue Cole, Patient Representative