

Scottish Microbiology & Virology Network (SMVN)

Annual Report 2022 - 2023

Lead Clinician:

Scientific Manager:

Programme Manager:

Programme Support Officer:

Dr Martin Connor

Dr Fiona MacKenzie

Camilla Young

Nurjan Rakymova

A key objective for the Scottish Microbiology and Virology Network (SMVN) has always been preparedness to respond to outbreaks and national emergencies, which has been realised in the response to the COVID-19 pandemic (caused by the virus SARS CoV-2).

The global pandemic is an unprecedented situation which has placed the SMVN community front and centre of NHS Scotland's response. The SMVN has met the enormous challenge of rapidly introducing, developing and maintaining an NHS laboratory diagnostic service to deliver SARS CoV-2 testing, whilst also informing and driving testing strategy and policy.

The SMVN has demonstrated exceptional leadership in a number of key areas including procurement, equipment / test validation, innovation, staffing, quality management, near patient testing, strategy development, production of weekly performance data reports for Scottish Government (SG) and informing policy as SG transitions towards an endemic state. The network has been responsive and flexible in a fluid and challenging situation.

Of note, further to the awards received by the SMVN in the previous reporting year, the following were awarded / noted during the current reporting period:

Fiona MacKenzie was announced as Scottish Healthcare Leader of the Year (sponsored by NHS Scotland, Scottish Government and NHS Education for Scotland) in November 2022.

The SMVN received a "Highly Commended" award in the Collaborative Procurement Initiative Award category at the GO Awards Scotland 2022 / 23 along with key national partners.

Marie Todd (the SG Minister for Public Health, Women's Health and Sport) attended the SMVN Educational Event in June 2022 to personally thank SMVN members for going "above and beyond the call of duty" to play such a crucial role in Scotland's response to the pandemic.

A. Current position

Meeting the relentless demands put upon Clinical Microbiology / Virology / SMVN colleagues throughout the pandemic has placed significant strain on staff throughout the network. During the SMVN Steering Group meeting held in March 2023, members reflected on the impact of the pandemic. For most people outside the SMVN, COVID-19 is over and has little impact on their day-to-day life. Not so for the SMVN as it continues to deliver a pillar 1 diagnostic testing service for NHS Scotland patients with all the challenges that continues to bring. Laboratory personnel are not on the "front line" and feel under-recognised and under-valued. The expectations and relentless pace of the past three years are taking their toll on the SMVN community and significant workforce challenges are now emerging. Many are suffering from burnout whilst others have decided to retire or otherwise leave the profession. Not only has this created challenges within Health Boards but also within the SMVN. As members prioritise their Health Board commitments, there is reduced capacity to support the SMVN workplan and increased reliance is being placed upon the SMVN Scientific Manager / Clinical Lead who are already over committed in these roles.

B. SARS CoV-2 Testing Technical Group

The SMVN SARS CoV-2 Testing Technical Group (chaired by Dr Fiona MacKenzie) has been pivotal in the management of COVID-19 throughout the pandemic. It continued to meet twice weekly into May 2022; then weekly until March 2023 then fortnightly in April 2023. In May 2023 the group stood down and its activities were absorbed into the newly formed SMVN Scientific Group which meets a minimum of monthly and which has a wider remit.

The group provides national coordination of efforts, national rollout of equipment, peer support, sharing intelligence and experiences, sharing reagents / assays / consumables, subject matter expertise, input / feedback / commentaries on national papers from other groups. It also has close contact with the Specialist Virology Centres, Public Health Scotland (PHS), NSS National Procurement(NP), Scottish Government, UK Government and companies providing equipment and tests as well as collating management data and reports. The group is also used as a conduit for sharing information and communications from other national groups.

Rationale for Health Board testing is: Local provision of PCR diagnostic testing services is essential for patient treatment and management; in particular to avoid unnecessary cross-transmission of the virus and unnecessary deaths. Rapid testing has, in particular, been used on unscheduled admissions to inform patient placement and on staff to enable safe return to work during times of extreme pressure.

Health Board testing has responded to changes in Scottish Government policy direction, the most significant of which was cessation of asymptomatic screening in September 2022.

The net result has been delivery of a patient centred, safe, effective, equitable and sustainable service for SARS CoV-2 (and other pathogen) testing.

Towards the end of the reporting period, the SMVN (in collaboration with National Procurement) developed a £28 million budget for COVID-19 tests and equipment service & maintenance for 2023 / 24 which was approved by Scottish Government.

C. SARS CoV-2 Testing Informatics

The SMVN continued to have responsibility for collating, analysing, visualising and presenting information on SARS CoV-2 testing performance within NHS Health Board laboratories on a weekly basis. Throughout 2022 – 23 the SMVN provided performance metrics reports to Scottish Government which helped inform national strategy. Data provided by Health Board colleagues was analysed and reported upon by Dr Fiona MacKenzie (SMVN Scientific Manager) in collaboration with Gavin Hallford (Data Analyst, Information Management Service). From May 2023, a reduced report (detailing weekly Health Board / national trends in test numbers) will be submitted monthly to Scottish Government colleagues to monitor demand and expenditure against the £28 million budget.

D. SMVN Infection Prevention and Controls Doctors (IPCD) Group

The role of IPCDs in the COVID-19 pandemic continues to be crucial with the provision of subject matter expert input into a number of national policy documents and guidelines.

This group provides a very active forum for IPCDs to contribute to a large number of national guidelines / policies, collaborating with e.g., Antimicrobial Resistance & Healthcare Associated Infection (ARHAI) Scotland (and its numerous sub-groups), Advisory Committee on Antimicrobial Prescribing, Resistance and Healthcare Associated Infection (APRHAI), NHS Scotland Assure, PHS Public Health Microbiology, Chief Nursing Officer (CNO), ICM network, ICN network etc. They also provide an essential role in peer support across NHS Boards.

E. SMVN Mycobacterial (TB) Testing Group

The SMVN business case, leading to the national procurement of a “Once for Scotland” solution for Molecular Diagnostics for the Rapid Identification of TB was successfully executed pre-pandemic. Rollout of molecular diagnostics for TB across Boards was paused during the pandemic due to the equipment being used for COVID-19 testing. The work was restarted and significant progress made during the current reporting period with agreement on a national diagnostic testing algorithm, verification of the new tests and rollout thereafter. Health Board workforce challenges which have emerged as a result of the pandemic have impacted on this work stream: there was a delay in going live with testing in most Health Boards and a small number have been unable to complete the verification / go-live process to date but are being supported by the network to do so.

It transpired that the number of molecular tests being purchased is below the commitment level in the national contract. This is due to a general decline in demand for mycobacterial testing since the start of the pandemic. The SMVN has committed to collate up-to-date mycobacterial test requests to quantify the reduction.

F. Antimicrobial Resistance (AMR) Diagnostics Group

This SMVN Sub-Group has remained active despite prioritisation of COVID-19. In particular, Dr Mairi Macleod (Group Chair) has maintained engagement with bioMérieux in order for the NHS Scotland Vitek 2 equipment to be updated to include the most recent annual EUCAST interpretive criteria and dosing guidelines. Via the chair, the group has also maintained close contact with the British Society for Antimicrobial Chemotherapy (BSAC) AST Steering Group, the Scottish Antimicrobial Prescribing Group (SAPG), ARHAI Scotland and the Scottish One Health Antimicrobial Use and Antimicrobial Resistance (SONAAR) programme.

G. Molecular Testing

The landscape across NHS Scotland changed significantly due to equipment becoming available for SARS CoV-2 testing which may be used for a range of additional molecular tests. This subgroup was formed to provide strategic direction and guidance across Scotland, with representatives identified across all NHS Health Boards.

The group chair (J. Shone) successfully presented an outline case for the introduction of enteric PCR testing across Health Boards, to the Laboratory Executive Board (LEB). The group / SMVN are now developing the full business case in collaboration with the Scottish Health Protection Network; it is running behind schedule due to local Health Board pressures for the group chair.

In response to (i) pathogens of public health concern that emerged during the current reporting period and (ii) identification of a lack of Scottish service for 16S / 18S rDNA PCR (with samples being referred to England) this group was assigned additional tasks to develop cases to expand local / national / regional molecular diagnostics. This is being addressed with the aid of a newly appointed co-chair for the group (L. Batchelor).

H. SMVN Mycology Group

During the COVID-19 pandemic, higher than normal cases of fungal infections in ICU patients were observed. This group was established to assess the burden of fungal infections in Scotland and to standardise diagnostics and therapy of fungal infections. The group conducted a survey of laboratory practice, and the results were presented by the group chair (A. Bal) at the SMVN Education Day in June 2022. Due to local Health Board pressures for the group chair, a co-chair has been appointed (D. Lockhart) to help fulfil the objectives of the group.

I. SMVN Sexual Health Laboratory Group

This SMVN Subgroup was established to liaise closely with and include sexual health leads and PHS, to address issues such as implantation of British Association for Sexual Health and HIV (BASHH) guidelines, roll out of new platforms for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* (CT / NG) testing as well as HIV testing. During the reporting period this group became a “special interest group” meaning it is self-supporting and does not require NNMS resource.

J. STI Home Testing

The SMVN has had significant engagement with the STI Home Testing Programme Board via its Project Manager (K. Bethell), focusing on the laboratory testing part of the end-to-end process. The SMVN presented a high-level options paper on possible locations for Chlamydia and Gonorrhoea (CT / NG) NAATs with local Health Board testing coming out as the preferred option. This received agreement from the Project Manager who set about supporting this option. The SMVN came to a consensus on two different national CT / NG sample collection devices which received approval. The SMVN engaged with the Project Manager about Syphilis and HIV self-taken blood tubes but as this service is provided by both Microbiology / Virology and Blood Sciences laboratories, co-ordination of this part of the project sat with

the Project Manager with no significant progress made. Current discussions are around the commissioning and governance for self-testing, which the SMVN is happy to engage in.

K. SMVN Cystic fibrosis (CF) Microbiology Group

CF Microbiology is a challenging sub-specialty and there is a general lack of national / international guidance. The SMVN CF Microbiology guidelines were produced in 2015. The reconvened SMVN CF Microbiology Group has updated the guidance which is awaiting final approval.

L. Education Event

The first post-pandemic face-to-face SMVN Education event took place in Edinburgh on 9 June 2022 with 112 enthusiastic attendees. It was attended by Marie Todd (the SG Minister for Public Health, Women's Health and Sport) who personally thanked SMVN members for going “above and beyond the call of duty” to play such a crucial role in Scotland’s response to the pandemic.

The meeting focused on COVID-19, updates from SMVN sub-groups and pathogens of public health concern.

M. Benchmarking / Workforce Planning

The SMVN is committed to the development of a flexible and sustainable workforce and has been part of the laboratories-wide workforce planning initiative since inception. The SMVN provided workforce information for the 2021/22 data collection.

The SMVN collected workforce / benchmarking data in 2022 but, due to the SMVN COVID-19 demand on the Information Management Service, the data was not analysed / reported. This data set will be analysed alongside the 2023 data and the report updated to reflect the bigger data set.

N. Continuous Improvement

The SMVN Operational Group (SMOG) will consider a return to benchmarking across microbiology and virology services in the second half of 2023 /24.

O. Looking forward

The SMVN is committed to delivering a workplan geared towards service modernisation in the post-pandemic landscape.

Demands made upon the SMVN continue to be significant and, at times, over and above the planned workplan due to the requirement for responsiveness. Clinical Microbiology / Virology, along with Infectious Diseases, are the only two specialties in human medicine subject to external living forces (pathogenic bacteria, viruses, fungi, parasites). Outbreaks of pathogens of public health / IPC significance appear to be on the increase and impact upon the SMVN without warning. For example, during the reporting period, the SMVN has had to respond and contribute to management of outbreaks of Mpox, *S. pyogenes* (invasive group A Strep; iGAS), Hepatitis (non A to E) in children, *Neisseria gonorrhoeae*, antibiotic resistant organisms etc. This need for such responsiveness is likely to increase, not decrease.

As the Microbiology / Virology workforce in NHS Scotland Boards struggle in the aftermath of the pandemic, SMVN members (including sub-group chairs) are struggling to commit time and energy to the network and place greater reliance on the SMVN Scientific Manager and Clinical Lead. Maintaining the SMVN leadership therefore continues to be crucial.

The SMVN continues to be aware of potential challenges that may face diagnostic microbiology laboratories over the coming years. The ability to adapt and change diagnostic capability is a priority to a modern microbiology service in support of the aims of the NHS in Scotland. Future threats may include diverse issues and events such as an Influenza pandemic; workforce shortages across the diagnostic discipline range; climate change and global warming impacting on insect vectors and infectious disease diagnostic requirements; and uncertain geopolitical stability and associated movements of vulnerable population groups such as observed with Ukraine and Sudan. Potential threats and awareness of Bioterrorism agents must continue to be considered by SMVN laboratories. Links with Scot Gov and wider UK 4-Nations objectives, such as HCAI Strategy and UK AMR NAP will require co-ordinated SMVN microbiology diagnostic support.

Future SMVN interaction with the new Diagnostic Strategy Network (DSN) will require a management process that will ensure that the close support and active involvement of SMVN members is maintained, and that the objectives and priorities of the microbiology diagnostic community is both appreciated and encouraged going forward.

P. Finance

National Diagnostic networks have an allocated budget of £5,000. Total spend for SMVN during 2022/23 was £3,357. This spend was against the Education event held on 9 June 2022.