Health, Social Care and Sport Committee Inquiry : Sepsis

1. My name is Dr. Paul Morgan, I am a GMC registered Medical Practitioner (registration number 3076785) employed by the Cardiff and Vale University Local Health Board (Cardiff and Vale UHB) as a Consultant in Intensive Care Medicine and Sepsis Lead. In addition, I am a collaborator and Principal Investigator with "Project Sepsis" in Cardiff University and also a Lead Volunteer in Wales for the UK Sepsis Trust. The views expressed here are mine on behalf of Cardiff and Vale UHB but are not necessarily representative of Cardiff University or the UK Sepsis Trust.

Sepsis Data

2. Statistics on the numbers of sepsis cases across the UK, the number of deaths and the numbers of those left with life-changing and life-limiting consequences of sepsis is largely based on estimates from a variety of data sources such as the Patient Episode Database for Wales (PEDW), clinical coding and data submissions on sepsis cases from the Health Boards to Welsh Government. As the primary source of such information is inconsistent (usually based on what clinicians have recorded in medical notes), it can call into question the accuracy of the data. Some Health Boards are using data captured from sepsis screening tools to report to Welsh Government but the results from the "Size of Sepsis in Wales" and "Defining Sepsis In The Wards" (DESEPTIW) studies (for which I am a Principal Investigator) shows that the screening process isn't necessarily followed consistently. In Cardiff and Vale UHB, we have created an electronic data capture system for this but it still relies on a clinician using the tool appropriately and accurately - we will be conducting data quality reviews in due course.

Presentation, Recognition and Responses

3. What does appear to be true and consistent across the UK is that the bulk of sepsis cases (70-80%) are presenting in primary care, community care and hospital "front-door" settings. Unfortunately, despite awareness-raising and education programmes, these are where the missed opportunities for timely, life and limb-saving early diagnosis and treatment are most likely to occur. Education is being provided to Primary and Community Care in a variety of ways, such as lectures to General Practitioner (GP) education sessions and to care home staff. More recently the Cardiff and Vale UHB launched its Community Health Pathways page for sepsis – a world first among health care organisations also using the Community Health Pathways project. The Welsh Ambulance Service Trust (WAST) is also looking at improving its response to an urgent call from a GP for rapid transport to hospital for probable sepsis patients and has also conducted a clinical trial on the taking of blood cultures and giving of a broad-spectrum antibiotic in suspected sepsis cases. Paramedics now routinely use the National Early Warning Score (NEWS) when assessing unwell patients, communicating this to receiving teams in acute hospitals. GPs are also now encouraged to calculate a NEWS and use that when communicating with WAST call handlers. An extensive programme of education is also provided within the Cardiff and Vale UHB to staff in acute services in a variety of ways such as drop-in days, simulation-based training, lectures to trainee doctors and face-to-face teaching. In addition, e-learning modules are available via the Electronic Staff Record. Staff are also encouraged to access learning provided by the UK Sepsis Trust. Currently, however, there is no mandatory training in sepsis for any staff

group. This is understandable as there is a lot of mandatory training for staff and it can be difficult to access.

Sepsis incidence and outcomes

4. It is estimated that across Wales, the numbers of sepsis cases is around 10,000 with over 2200 deaths. It is also estimated that over 25% of sepsis survivors are left with medium to long-term consequences, sometimes lumped together under the umbrella term "Post Sepsis Syndrome". This typically affects sufferers for several months to several years, some are affected for life (e.g. those who have required amputations). Maternal sepsis is one of the biggest causes of maternal morbidity, as shown in the annual confidential reports into maternal death. A huge problem here is that both early and late pregnancy can make clinical and biomarker tests difficult to interpret. Research is being undertaken to try to improve maternal sepsis identification and therefore treatment. The bulk of sepsis deaths are likely to not be preventable as sepsis may occur as part of a normal end-of-life scenario in patients with chronic health conditions or with significant clinical frailty. However, it may well be that about 25% of sepsis-related deaths are preventable by appropriate, timely treatment and the impact on sepsis survival and survivorship of early treatment is unknown. It would seem logical that such early treatment would have a positive impact on sepsis survivorship.

Sepsis care after hospital discharge

5. Currently, the only organised aftercare for sepsis survivors is provided by a small number of support groups run by the UK Sepsis Trust. Primary and community care services are ill-equipped to provide - and often largely ignorant of - the needs of sepsis survivors. The only secondary care services are those provided to amputees. This is a wholly-inadequate service provisions.

Sepsis costs to the economy

6. Patients with sepsis are currently estimated to consume about 30% of all resources utilised in Intensive Care Units (ICUs) across the UK. Sepsis is an incredibly expensive illness to care for, both in hospital and afterwards. A 2017 report by the York Health Economics Consortium estimated that sepsis costs between £1.5 and £2 billion in direct healthcare costs and a further £9.8 to £13.7 billion in indirect costs such as loss of tax revenue, provision of state benefits etc. It is unclear as to how much of these costs could be reduced by timely, appropriate treatment and better aftercare, but the evidence shows that prompt recognition and treatment of sepsis is life and limb-saving. Sepsis survivors are more likely to die sooner than those who haven't had sepsis, related to the direct effects of sepsis on pre-existing or new sepsis-induced organ dysfunction. There is evidence that sepsis can result in elevated levels of blood markers of inflammation for up to 1 year afterwards, no doubt contributing to the high incidence of readmissions and the increased mortality rate seen in sepsis survivors.

Public awareness of sepsis

7. The public profile and awareness of sepsis has improved in recent years since the formation of the UK Sepsis Trust and the annual World Sepsis Day events across Wales, but there is still a gap in public knowledge about this illness and the all-too-often terrible consequences it has in terms of deaths and also the effects it has on survivors. A government-sponsored awareness programme, such as has been shown to be successful in raising the awareness of stroke, would likely make a

significant impact. In the meantime, awareness is being raised through mainstream and social media, and also by sepsis-related story lines in television serial dramas such as Coronation Street. There is still huge scope for doing more.

Professional awareness of sepsis

8. Awareness of sepsis amongst healthcare professionals has undoubtedly increased significantly but we still see far too many examples of failure to recognise sepsis through the failure to believe objective information such as NEWS and therefore to use a screening tool, leading to a delay in acting despite the clear need for urgent treatment. The data collected for the DESEPTIW studies shows ongoing failure to treat in a timely manner with antibiotics and failures to collect appropriate specimens such as blood and sputum for culture. Thus it seems that despite the work done to date, there is still a great deal more work to be done to improve sepsis awareness amongst the public and also healthcare professionals across the spectrum. The need for urgent recognition and treatment has to be counterbalanced by genuine concerns about inappropriate treatment, as not every acutely unwell patient has sepsis and the overwhelming majority of infections do not lead to sepsis. Improving the use of screening tools and prompt senior medical reviews should prevent the over-use of inappropriate antibiotics and improve antimicrobial stewardship. There is a need for a balance between giving junior staff permission to act without fear of unwarranted criticism, supported by education and timely senior clinician review with test results to enable appropriate decisions regarding diagnosis and treatment. Improving rapid diagnostic tests will be a major advance, with several technologies available. However, of those that are commercially available, none have been approved by the National Institute for Health and Care Excellence (NICE) as being good enough. Other research projects currently in progress may provide a better quality test.

NICE guidance and quality standards

9. In July 2016, NICE published its guidance document NG51. In September 2017, it then published its Quality Standard QS161.

10. It would be beneficial to compare sepsis care in Wales with the NICE Quality Standard 161:-

11. Statement 1: People with suspected sepsis are assessed using a structured set of observations to stratify risk of severe illness or death.
    - The universal use of NEWS in Welsh acute hospital settings and its rollout into other healthcare settings is the foundation of the assessment of the acutely unwell patient

12. Statement 2: People with suspected sepsis in acute hospital settings and at least 1 of the criteria indicating high risk of severe illness or death, have the first dose of intravenous antibiotics and a review by a senior clinical decision-maker within 1 hour of risk being stratified.
    - This is a standard which is not fully complied with, as shown in data submissions on compliance with sepsis screening and delivery of the “Sepsis Six” care bundle. This is reinforced by data collected for the DESEPTIW studies

13. Statement 3 People with suspected sepsis in acute hospital settings who need treatment to restore cardiovascular stability have an intravenous fluid bolus within 1 hour of risk being stratified.
    - As for statement 2, this is not fully complied with. However, evidence collected since the development of the NICE NG51 and QS161 suggests that an intravenous fluid bolus may not

have a great bearing on the outcomes from sepsis as first thought. Further research is needed to examine the impact of an intravenous fluid bolus on both mortality and morbidity.

14. Statement 4 People with suspected sepsis in acute hospital settings who receive intravenous antibiotics or fluid bolus are seen by a consultant if their condition fails to respond within 1 hour of initial treatment.
    - As discussed above, it is unclear that such a review occurs as a matter of routine, particularly for patients presenting with sepsis outside of normal working hours. Even if such work could be incorporated into consultant job plans, current staff shortages and the impact of various regulations and taxation regimes will have a significant negative impact on the ability to provide such a service out of hours

15. Statement 5 People with suspected sepsis who have been stratified as at low risk of severe illness or death are given information about symptoms to monitor and how to access medical care.
    - A safety-netting approach should be adopted but there is no evidence that shows that such an approach has been taken in acute hospital settings. Similarly, it seems to be that such an approach is not commonly taken in primary or community settings or by staff of WAST.

Summary

16. In summary, while there has been a great deal of work undertaken to improve sepsis awareness, recognition, treatment and outcomes, there is still a lot more to be done across the spectrum from raising public awareness, supporting the ability of healthcare professionals to recognise and respond appropriately and to support sepsis survivors while still recovering in hospital and when back in the community.