A service improvement report of blood-borne virus screening in a high secure mental hospital

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Abstract

Background: Patients in a high secure hospital are a high-risk population for exposure to blood-borne viruses (BBV) because of previous lifestyles.

Objective: This service improvement study intends to improve patients care by the Infection Prevention and Control Team (IPCT) coordinating the BBV screening and vaccination programme within the hospital.

Methods: A retrospective review of patients' notes in 2007 and 2016 was used.

Results: The results show an increase in screening offered and screening undertaken from 2007 to 2016. It also identifies an increase in hepatitis B vaccination programmes completed.

Discussion: The expansion of the IPC and Physical Healthcare Team appear to be associated with the increase of screening and vaccination rates.

Keywords

Blood-borne virus, BBV, mental health, infection prevention, vaccination

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Background

Blood-borne viruses (BBV) are serious infections that can be transmitted parenterally and sexually. Meade and Sikkema (2005) show that people with severe mental health problems engage in riskier sexual and drug-taking behaviour, thus increasing the risk of contracting a BBV. This is supported by Rosenberg et al. (2010), who state that people with co-morbid severe mental illness and a substance use disorder are at an elevated risk of infection from BBVs, adding that they generally do not access screening or treatment services.

Many people with serious mental health problems engage in behaviours that increase their risk of infection with BBVs, including unprotected sex with multiple partners, sex work (or sex trading—performing sexual acts in exchange for a commodity), and intravenous drug use (or having a sexual partner who is an injecting drug user) (Cournos, 2005). Further risk can result from hyper sexuality during an acute phase of mental illness, as well as co-morbid substance misuse problems that can lead to sexual

risks while intoxicated (Carey et al., 1997). Finally, people with serious mental illness who live in shared accommodation might share personal equipment (e.g., razors, toothbrushes), which might increase the risk of hepatitis B and hepatitis C transmission.

Prevalence studies have shown that serious mental illness increases the risk factor for BBV infection from 0.1% in the whole population to 6.7% of the population where mental illness is a factor (Lagios et al., 2007; Public Health England [PHE], 2014).

Immunisation is recommended by PHE for individuals who are at increased risk of hepatitis B because of their lifestyle, occupation or other factors. Although HIV and hepatitis C are serious infections, they are treatable. The prognosis relating to these infections is much improved by

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earlier detection and treatment. This emphasises the need for a robust screening programme (HPA, 2011). (NICE, 2014)

The high secure hospital admits patients aged > 18 years who have been assessed as posing a grave and immediate danger to themselves and/or the public; many will have been admitted via the Criminal Justice System.

Patients within the high secure hospital are a high-risk population for exposure to BBVs because of previous risky lifestyle choices including injecting drugs and sexual behaviours and the presence of severe mental illness; in addition, there is an increased risk of further transmission in hospital between patients, or between patients and staff, through either violence to other patients and staff or self-harm. All patients are admitted to a clinical service in the high secure hospital and are detained under the Mental Health Act (MHA) 1983 and are suffering from mental disorder.

Martinez-Sanvisens et al. (2009) identified that developing a personality disorder is four times more likely with people who abuse substances than the general population. Walker (2013) adds that although there are overwhelming barriers for accessing screening and treatment for those most at risk, these can be overcome with coordinated strategies.

National Institute for Health and Clinical Excellence (NICE) guidance 2012 and 2016 recommends that awareness of hepatitis B and C is raised within the general population and people at increased risk of hepatitis B and C infection.

The purpose of the study was to determine the prevalence of BBVs, screening and vaccination and to evaluate the impact of improvement strategies implemented between 2007 and 2016. This is a service improvement study using audits of patient records in 2007 and 2016; this work was undertaken in a high secure mental health hospital.

Aims/Objectives

The aims and objects of this study are:

- To comply with NICE guidance 2012 and 2016;
- To identify patients who will benefit from hepatitis B immunisation and identify patients needing treatment of chronic hepatitis C or HIV;
- To contribute anonymously to regional and national PHE mandatory and voluntary surveillance of BBV infections;
- To identify if the service improvement increased the uptake of screening and vaccination.

Methodology and sample

Before 2010, screening and vaccination programmes for patients were initially led by the medical team and not all

patients were included. Medical teams would risk assess and decide which patients were to be offered screening and vaccination.

An audit was undertaken by medical staff which collected data of patients who had been offered screening and patients who had been vaccinated for hepatitis B using patient's paper healthcare records and medication charts held at ward level of all patients within the high secure hospital in 2007.

From 2011, responsibility for BBV screening and the vaccination programme was transferred to the Infection Prevention and Control Team (IPCT). The interventions used to improve awareness and uptake of the screening and vaccination programme included the use of posters on the wards and invitation letters sent to all patients in the hospital.

The IPCT assessed the current process by reviewing patient's healthcare electronic records. Using the (PSDA) model, they planned to improve patient awareness and uptake of screening and vaccination programmes available within the hospital (NHS Improvement, 2018).

The IPCT carried out the improvement plan by identifying patients with no or limited history of previous screening and/or vaccination using medical records. The IPCT worked with the ward teams and the Physical Healthcare Team which is made up of Practice Nurses and General Practitioners and an Advanced Nurse Practitioner to identify patients with mental capacity issues; a multidisciplinary approach was used to gain consent from the patients or to act in best interest of the patient for screening and vaccination to be provided.

All relevant patients were invited to clinics providing screening and vaccination. The IPC team also provided screening and vaccination on the wards for patients who could not attend the clinics.

Alongside identifying current patients for screening and vaccination, all new admissions were referred to the Physical Healthcare Team and offered screening and vaccination. Automated recalls were set up for patients who declined, and screening and vaccination were re-offered at their annual physical health review.

The data were collected by the IPCT from all patients in the hospital in 2016 following the interventions identified above, by running screening offered and vaccination offered reports in electronic healthcare records (RIO) and Systm1 electronic healthcare records in April 2016. Table 1 shows the timeline of interventions (Figure 1).

Ethics

This service improvement study intends to improve patients care and therefore does not need ethical approval. Confidentiality was maintained and no identifiable patient data were shared.

Table 1. Time line of interventions.

Intervention	Guidance	Year
IPC team took responsibility		2011
Awareness posters to all wards	NICE guidance to increase awareness of hepatitis B and C in the general population and people with increased risk of infection	2012
Invites to attend BBV clinic	NICE guidance to increase screening to identify the need for treatment and vaccination for hepatitis B infection	2013
Automated recall on healthcare records for previous refusal	NICE guidance to increase screening to identify the need for treatment for hepatitis B infection CQUINN targets to offer screening to all patients	2014
New admission referrals	NICE guidance to increase screening to identify the need for treatment for hepatitis B infection	2015
Introduction of dry spot testing	NICE guidance to offer screening for HIV in alternate settings	2016

Table 2. Table of patients offered screening.

2007 baseline total screening offered				
Total patients (n)	Screened for hepatitis B (n)	Screened for hepatitis C (n)	Screened for HIV (n)	Vaccinated for hepatitis B (n)
352	267	90	85	39
2016 total screening offered				
Total patients (n)	Screened for hepatitis B (n)	Screened for hepatitis C (n)	Screened for HIV (n)	Vaccinated for hepatitis B (n)
312	308	308	308	293
Admission screening for 1 January 2017 to 30 October 17				
Total admissions (n)	Screened for hepatitis B (n)	Screened for hepatitis C (n)	Screened for HIV (n)	Vaccinated for hepatitis B (n)
34	31	31	31	6

Results

Analysis of the data identified the patient population in 2007 was 352. This decreased to 312 in 2016 due to changes within the hospital. A total of 312 invitation letters for BBV were sent out in 2016.

The results in Table 2 show that four patients were not screened for BBVs in 2016. This was due to patients refusing and no previous screening data were found in the medical records. The data also show that from the 312 patients only 293 received vaccinations, again this is due to patients refusing vaccination and that some patients had previous vaccination history within the medical records which screening confirmed.

Discussion

The purpose of the study was to determine the prevalence of BBVs, screening and vaccination and to evaluate the

impact of improvement strategies implemented between 2007 and 2016. This is a before and after study using audits of patient paper records in 2007 and electronic records in 2016. This work was undertaken in a high secure mental health hospital.

This study has found an increase in patients receiving screening for BBVs and completing hepatitis B vaccination programmes following the introduction of the IPCT and this team taking responsibility for the service (Figure 1 and Figure 2).

The service now offers BBV screening to all new admissions and follow-up appointments are given to patients with positive results. These follow-ups lead to a referral to the hepatology specialist services for treatment where appropriate. The IPCT also coordinates hepatitis B vaccination programme for all patients and collects data for Commissioning for Quality and Innovation (CQUINN) reports alongside quarterly and annual reporting within the Trust.

Figure 1. Screening and vaccination data. **Figure 2.** % of patients screened for BBV's.

With the increasing evidence that people with serious mental illness have significant health inequalities, the World Health Organization comprehensive mental health action plan 2013 led to the British Medical Association (2014) identifying an increasing prominence in the UK population that have mental health issues. This has led to an increase in physical health screening, health education and improving access to treatment in primary and secondary care for patients with severe mental health issues. However, sexual health needs, including screening for and the prevention of sexually transmitted infections and BBVs, are neglected in this population (NICE, 2012). Of particular concern is the higher risk of BBV infections (HIV, hepatitis B virus and hepatitis C virus), shown by prevalence studies done over the past 30 years (PHE, 2014).

It is thought that the introduction of BBVs CQUIN targets during 2014–2015 will have brought about an improvement in the results. In addition, this has seen the introduction of an accelerated hepatitis B vaccination programme, which has a much-reduced timeframe, and this may also have contributed to the improvement.

Figure 3. Screening data.

Alongside screening and vaccination for hepatitis B, there was also a great improvement in offering screening for hepatitis C virus and treatment for patients indicating past infection, thereby providing the opportunity to prevent serious long-term sequelae (e.g. cirrhosis and hepatocellular carcinoma). This was due to full BBV screening being requested on a single sample rather than requesting hepatitis B alone.

An increase in the number of patients screened for HIV has also been seen and two patients have been treated for HIV during their admission to the high secure hospital.

Carey et al. (1997) stated that current research showed less than half of people with severe mental health issues received testing for BBVs although the increased risk factors were well acknowledged by Meade and Sikkema (2007).

Hughes et al. (2016) identified that screening programmes for BBVs in people with mental health issues had been neglected by both researchers and policy makers.

The introduction of NICE guidance between 2012 and 2016 has increased awareness of BBV screening and the provision of resources for the IPC team to run effective screening programs across the whole forensic service.

Although it is recognised that the methodology employed in the 2007 and 2016 audits differed, in that data were mainly collected from the patients' healthcare records rather than directly from Systm1 electronic healthcare records as in the later audit, and that the study population size was small, the results of 2016 have shown great improvement. The patients within the study were all inpatients within the hospital; therefore, the IPCT could work closely with the patients which produced a smaller than expected refusal rate. Figure 3 shows the continued screening by the IPCT.

The current literature shows a lack of studies in BBV screening programmes available for people with mental health issues in the UK. This study supports Perrett et al.'s (2013) development of BBV screening in Welsh prisons.

Both studies show the positive impact of providing a screening programme.

Conclusion

Although the findings of the study suggest that BBV screening and vaccination programmes have improved with the establishment of an IPCT, further research is needed as the study was conducted using different data collection methods at two data points, 2007 and 2016.

The study was only conducted in one hospital within the Trust; therefore, further research is needed across the Trust and across the wider health economy.

The IPCT continue to coordinate and develop the BBV screening and vaccination programme within the hospital.

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