J. healthc. qual. res. 2019;34(2):93–96

FUNDACIÓN ESPAÑOLA DE CALIDAD ASISTENCIAL

Journal of Healthcare Quality Research

www.elsevier.es/jhqr

SHORT ORIGINAL

Improving the screening of tuberculosis in patient admitted in a secondary care hospital of La Habana

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Received 12 August 2018; accepted 14 November 2018
Available online 4 March 2019

KEYWORDS
Tuberculosis;
Sputum-smear positive;
Screening;
Diagnosis;
Hospital;
La Habana

Abstract
Introduction: The reduction of tuberculosis reported in admitted patients in a community hospital in La Habana (Cuba) was identified as a quality gap and priority for action. The objective was to increase by 50% the number of bacilloscopies and smear-positive tuberculosis confirmed by December 2017.
Patients and methods: A quality improvement initiative was conducted from January 2017 to December 2017 in a 300-bed secondary care teaching hospital. The improvement project was addressed to patients admitted with respiratory infections (upper or lower). The baseline was considered the period from January to December 2016. The intervention period was from January 2017 to June 2018. The intervention includes training activities for medical staff, monthly monitoring of bacilloscopies performed and feedback and analysis with leaders and departments.
Results: During the baseline period seven patients were confirmed with pulmonary tuberculosis and 160 bacilloscopies were performed (mean 40 bacilloscopies/quarter). During the intervention period were confirmed 22 cases of tuberculosis and 577 bacilloscopies were performed (mean 96 bacilloscopies/quarter).
Conclusions: The number of bacilloscopies and sputum smear tuberculosis was successfully increased in admitted patients using the staff education, monitoring, and feedback as intervention measures. The next steps of the project will be focused in achieve the sustainability of the intervention, evaluation of educational needs of medical staff and design training activities accordingly and, screening of latent tuberculosis infections using of tuberculin skin test in selected high risk admitted patients.

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https://doi.org/10.1016/j.jhqr.2018.11.004
2603-6479/

PALABRAS CLAVE
Tuberculosis;
Frotis positivo;
Pesquisa;
Diagnostico;
Hospital;
La Habana

Mejora de la pesquisa de tuberculosis en pacientes ingresados en un hospital de cuidados secundarios en La Habana

Resumen
Introducción: La disminución de los diagnósticos de la tuberculosis en pacientes ingresados en un hospital comunitario en La Habana (Cuba) se identificó como una brecha de calidad y prioridad para la acción. El objetivo: fue aumentar en un 50% el número de baciloscopias y tuberculosis con frotis positivo para diciembre de 2017.
Pacientes y métodos: Una intervención para la mejora de la calidad se realizó desde enero de 2017 hasta diciembre de 2017 en un hospital docente de atención secundaria de 300 camas. El proyecto de mejora se dirigió a pacientes ingresados con infecciones respiratorias (superiores o inferiores). El periodo de base se consideró desde enero a diciembre de 2016. El período de intervención fue de enero de 2017 a junio de 2018. La intervención incluyó actividades de capacitación para el personal médico, monitoreo mensual de baciloscopias realizadas y retroalimentación y análisis con líderes y departamentos.
Resultados: Durante el período basal se confirmaron siete pacientes con tuberculosis pulmonar y se realizaron 160 baciloscopias (media 40 baciloscopias / trimestre). Durante el período de intervención se confirmaron 22 casos de tuberculosis y se realizaron 577 baciloscopias (media 96 baciloscopias / trimestre).
Conclusiones: El número de baciloscopias y la tuberculosis pulmonar se incrementaron en los pacientes ingresados utilizando la educación del personal, el monitoreo y la retroalimentación como medidas de intervención. Los próximos pasos del proyecto se centrarán en lograr la sostenibilidad de la intervención, la evaluación de las necesidades educativas del personal médico y diseñar actividades de capacitación y el cribado de infecciones latentes de tuberculosis mediante la prueba de mantoux en pacientes seleccionados de alto riesgo.

Introduction

The incidence of tuberculosis in Cuba has been in 6–7 cases per 100,000 inhabitants during the last decade and the goal of the national program for its prevention and control is to achieve the elimination rate by 2050.[1,2] This program focuses its activities at the primary health care including early diagnosis and treatment and the screening of the population at risk at the community.[3] In addition, screening and management of latent tuberculosis infections are recommended in high-risk populations or those in close contact with confirmed cases.[3] However, a significant proportion of patients are confirmed with tuberculosis in hospital facilities after what are referred to their primary care to follow the treatment on ambulatory bases. It is a general consensus that diagnosis of tuberculosis in hospital facilities is related, in the majority of cases, with failure in the keys activities of the local program.[4]

During the recent years in the community hospital under the study, was observed a reduction of tuberculosis reported from twelve cases per year during 2005–2011 to 6–7 cases per year after that period. In a risk assessment conducted by the hospital infection control department in 2016, the low number of cases reported annually was considered related to missed diagnosis, reason why it was a priority for action in order to improve the quality of tuberculosis screening in admitted patients.

Patients and methods

A quality improvement initiative was conducted from January 2017 to December 2017 in a 300-bed secondary care teaching hospital in La Habana City. The hospital has inpatient facilities for internal medicine, geriatrics, critical care unit, and surgical departments. The hospital receives adults patients from three municipalities of La Habana (La Lisa, Marianao, Playa) with 400,000 inhabitants.

The improvement project was addressed to patients admitted with respiratory infections (upper or lower) and the goal was to increase by 50% the number of bacilloscopies and smear-positive tuberculosis confirmed by December 2017.

The baseline was considered the period from January to December 2016. The intervention period was from January 2017 to December 2017, but because no additional intervention was introduced this period was prolonged two additional quarters (until June 2018). The intervention includes the following measures: (1) frequent training activities for medical staff (doctors, nurses) including conferences and workshop. The conferences were focused on the epidemiology of tuberculosis, risk factors, and diagnosis. The workshop was dedicated to presentation and analysis of quality issues identified in the monitoring and diagnosis of tuberculosis during the intervention period and cases analysis, (2) monthly monitoring of bacilloscopies performed by departments

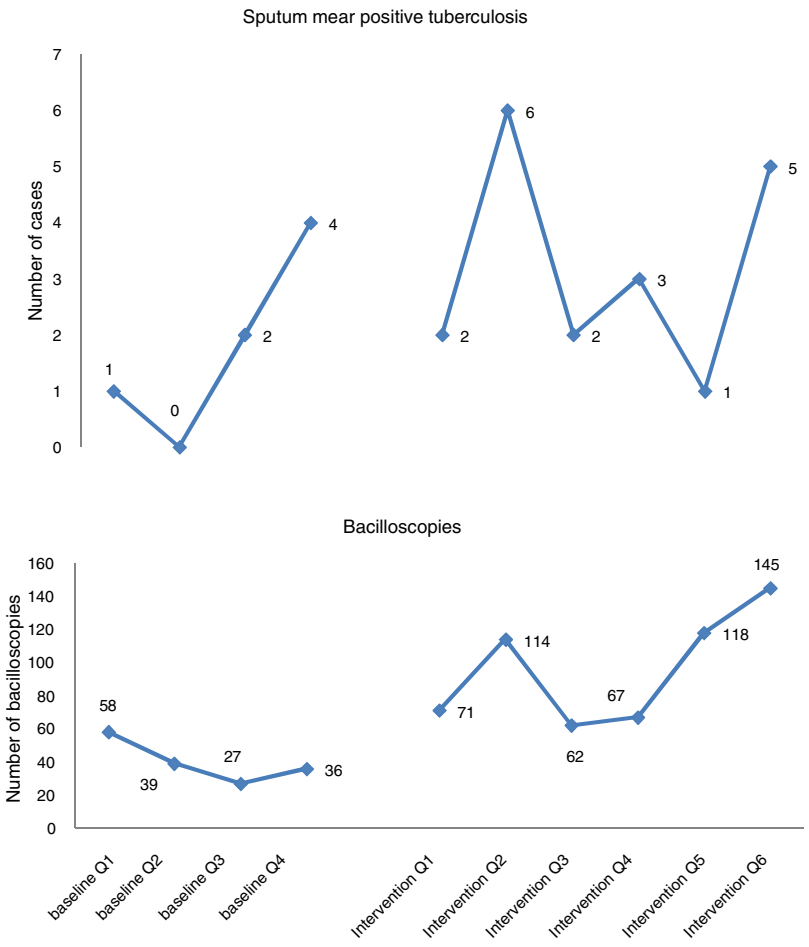

Figure 1 Sputum smear positive tuberculosis confirmed and bacilloscopies performed by quarter during baseline (Jan–Dec 2016) and intervention period (Jan 2017–June 2018).

(internal medicine, geriatrics, critical care units), (3) monthly data feedback and analysis with leaders and departments.

Data were collected from the laboratory department (bacilloscopies performed) and from the medical record department (patient file of confirmed cases). The diagnosis of tuberculosis was confirmed by bacilloscopies or others non-laboratory test, including image and histopathological test. The Tuberculin Skin Test (TST) test was available to support the diagnosis.

Results

During the baseline period, quarter 1 to 4, seven patients were confirmed with pulmonary tuberculosis and 160 bacilloscopies were performed (mean 40 bacilloscopies/quarter). During the intervention period were confirmed 22 cases of tuberculosis which three patients was confirmed post-mortem, 17 patients were pulmonary tuberculosis with positive smear and two patients with others localizations (pulmonary plus ganglionar, and pulmonary plus meningeal). Also, 577 bacilloscopies were performed (mean 96 bacilloscopies/quarter) during the intervention period. The TST was used in only one confirmed patient (pulmonary plus ganglionar tuberculosis). Finally, during the period January 2017 to June 2018 was observed an increase of 240% in bacilloscopies performed and 181% in smear-positive tuberculosis in comparison with the baseline (Fig. 1).

Discussion

The timely diagnosis and treatment of tuberculosis have a definitive impact on patient recovery and the prevention and control of tuberculosis in the community. The adverse effect of diagnostic delay has been described in Cuban patients with 36 days between first symptoms and physicians contact in those with worse outcomes.[5]

The delayed diagnosis has a definitive impact in mortality and others patient outcomes, and the risk of nosocomial transmission.[6,7] Also, the beneficial effect of TB screening should be considered.[8]

In the facility under the study, the community-acquired pneumonia was the most common infectious disease as a cause of admission, and mainly in patients older than 60 years old and with risk factors for tuberculosis infection. The probable causes of the deficiencies observed in the baseline period may be related to poor training of professionals, especially those recently hired. In addition, the deficient functioning of the monitoring of quality indicators of the tuberculosis control program at the hospital level,

the feedback to professionals and the implementations of corrective actions.

The healthcare system component of the diagnostic delay of tuberculosis has been related to false perceptions of the low probability of tuberculosis at the community, and deficiencies in the training of healthcare professional regarding its screening and diagnosis.[9,10] There are two studies that describe the effect of educational interventions in improving the diagnosis of tuberculosis in primary care of two municipalities from La Habana, while no previous papers refers to interventions conducted in hospital facilities.[2]

The principal limitation of the study is it single-center design. Nevertheless, the intervention carried out includes basic measures applicable to any low resources settings, where the unavailability of electronic medical record or others technologies could limit the possibilities of tuberculosis screening.

In conclusion, the number of bacilloscopies and sputum smear tuberculosis was successfully increased in admitted patients using the staff education, monitoring, and feedback as intervention measures. The next steps of the project will be focused in (1) achieve the sustainability of the screening of tuberculosis in admitted patients with respiratory symptoms, (2) evaluate educational needs in medical staff and design training activities accordingly and, (3) screening of latent tuberculosis infections using of TST test in selected high risk admitted patients.

Conflict of interests

The authors declare that they have no conflict of interest.

Acknowledgement

The authors would like to thank the support of Ms. Guillermina Fernandez Sanchez for the support during research.

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