Implementation of Case Management to Increase Quality of Nursing Services: A Systematic Review

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Keywords: Case Management, Quality, Nursing Service, Systematic Review.

Abstract: Background: Case management becomes a global issue of health care in hospitals and requires special attention in its implementation. The purpose of this study is to identify the various impacts of case management implementation to increase the quality of nursing services. The Keywords that used are case management, quality, nursing service, systematic review. Method: Journal had searched towards multiple database: Proquest, Medline, Google Scholar, Science Direct. It used limited time in July 2012 to December 2017. From 1679 articles, only 15 articles that suitable with the inclusion criteria. Result: From 15 literatures have been obtained various impact of case management implementation to increase quality of nursing service on various aspects such as, patient safety, pain management and comfort, patient satisfaction level, self care, patient anxiety level, and patient's behavior (knowledge and skills). The instruments used to measure the implementation of case management include questionnaires, checklist observation form, and interview form. The most commonly used instrument types are Nursing Case Manager (NCMs) and Target Case Management (TCM). Discussion: Implementation of case management will give a positive impact in the process of health services, especially to increase the quality of nursing services. Implementation of case management can provide positive support in hospitals to implement excellent management and health care systems to minimize complaints, lengthy ALOS, and expensive financial. In the process of case management implementation is expected to have good cooperation and collaboration of all elements in the hospital to run optimally and provide a positive impact to increase the quality of nursing services.

1 BACKGROUND

Case management is an intervention strategy used by providers and healthcare systems to support patients, coordinate health service, facilitate results, both in price and quality (Huber, 2010). Case management is a procedure for planning, searching, evaluating, and monitoring services that patients get from several health professions (Sunaringtyas & Sulisno, 2015; Rohmah N, 2011). Nursing service as an integral part of the hospital also determines how the quality of the hospital (Azwar, 2016). Quality of nursing service consists of 6 (six) aspects. There are patient safety, pain and comfort management, patient satisfaction level of service, self care, level of patient anxiety, and behavior (knowledge, attitude, and skill) patient. One indicator the quality of nursing service is dissatisfaction that not only affects to the hospital clients but also to other communities. The impact of this makes customers choose to other hospital (Hartini, 2009).

The professional health workers that can do case management is case manager. Case managers are generally responsible for the coordination and continuity of patient care or at a specific service phase clearly identified very closely to the patient so that case management model led by the case. manager is able to realize health service based on patient centered care (Aeni, 2014). Some accredited hospitals are recommended to streamline the implementation of case management models.

Based on research conducted by Mark, et all 2016, data were obtained from Amida Care, a special medical services agency handling HIV located in New York. The study found that 840,000 people in New York who were infected with HIV infection had not been adequately handled due to financing problems and patients' discomfort during treatment. With the quasi experimental design of

pre-existing group, from 2072 respondents in the period January 2011-September 2012 by using billing system, Standard Operational Procedure (SOP) and clinical pathway of HIV. Based on the research, it was found that Target Case Management (TCM) can minimize the treatment financing and and discomfort. It also increase the satisfaction of HIV patients by 73%.

Experimental panel studies agreed on a case management nursing model as an attempt to realize the preference or the right of patients to determine treatment options according to their needs and expectations (Morales-Asencio et al, 2010). Case management is led by a case manager who works together to make care planning to fit the desired and needed patient.

Based on the successful research of case management, the author are interested to perform further analysis on the impact of case management implementation in improving the quality of nursing service. With this analysis, it is expected to increase the quality of health services and support the success of monitoring and evaluation of the accreditation process at the hospital.

2 METHODS

Literature search in major database such as PROQUEST, SCIENCEDIRECT, MEDLINE, and GOOGLE SCHOLAR with the key of case management, quality, nursing service, systematic review. The time limit used is July 2012 to December 2017. From 1679 articles obtained, only 15 articles met the inclusion criteria. Inclusion criteria of the article: RCT research design, dependent variable of nursing service quality, samples are health workers in the hospital, and the parameters assessed are the intensity and quality of case management implementation. We use the tools CASP (Critical Appraisal Skills Programme) from Public Health Resources Unit, UK to analyse the article research and to select the articles that have ethical approval.

From 15 literatures has been obtained various impacts of case management implementation in improving the quality of nursing service in various aspects such as patient safety, pain and comfort management, patient satisfaction level of service, self care, patient anxiety, and behavior (knowledge, attitude and skill) patients. Instruments used to measure the implementation of case management include questionnaires, checklist observation sheets, and interview sheets. The most commonly used

instrument types are Nursing Case Manager (NCMs) and Target Case Management (TCM).

3 RESULTS

Research conducted by Casey, et all 2016 on the implementation of case management in emergency cases. The study was conducted at 258 bed suburban hospitals in California from February 2006 to December 2014.

4 DISCUSSION

4.1 Patient Safety

The researchers identified 199 patients for 6 years or more. The average patient visit repeated 16 times during one year. After the implementation of case management the patient visits repeatedly reduced only 2 times in the 8th year. Case management can effectively decrease repeated patient visits in emergency cases. Implementation of case management in this case aims to improve the accuracy of patient identification which is the first point of patient safety indicators.

4.2 Pain and Comfort Management

Research conducted by David, et all 2015 on the implementation of case management in pediatric cases in Ugandan hospitals. There were 30,351 data analyzed and included in the inclusion criteria. From the data obtained 92% included in the criteria suspect malaria 81% have done by case management, 32% using antibiotic treatment 89% have done by case management, 30% included in the criteria 38% have done by case management, 20% included in the criteria suspect diarrhea have 18% done by case management.

Significantly case management can effectively manage the 4 cases of pediatrics by using distraction techniques controlled by nurses in the child's room to decrease pain and discomfort.

4.3 Patient Satisfaction Level of Service

A study conducted by Mark, et all 2016, data was obtained from Amida Care, a special medical services agency handling HIV located in New York. The study found that 840,000 people in New York who were infected with HIV had not been

adequately handled due to financing problems and patients' discomfort during treatment. With the quasi experimental design of pre-existing group, from 2072 respondents in the period January 2011-September 2012 by using billing system, Standard Operational Procedure (SOP) and clinical pathway HIV.

Based on the research, it was found that Target Case Management (TCM) can decrease the financing, discomfort and increase the satisfaction of HIV patients by 73%.

4.4 Self Care

Research conducted by Francisco, et al 2014 on the implementation of case management in handling cases in patients with chronic diseases. Observational and analytical cohort studies in patients with multimorbidity. The instruments used are Bartel Index and Caregiver Burden Index scores. The results will be compared between nursing service who done case management (62 patients) and nurses who did not do it (193 patients).

Based on the research, it was found that there were 255 patients (24.32% with management cohort compared with 75.68% control cohort). The tools of Hospital Case Manager can significantly increase the level of patient satisfaction on health services and decrease the level of dependence of patients so that patients can gradually perform self-care independently without the help of nurses.

4.5 Patient's Anxiety Level

Research has been done by Penelope, et all 2014 on the implementation of case management in pediatric patients with cases of pneumonia. A study of perspective to determine the effect of Child Lung Health Program (CHLP) on the severity of pneumonia in infant and children. Implementation was carried out during October, 1st, 2000 – December, 31th, 2005 at 25 pediatric installations in the Malawi region. Research data were compared in the first 3 months of implementation and after implementation.

During the implementation of data obtained 47.228 children in the hospital with the severity level of heavy and very heavy in the range of 8-9%. There was a significant association of CHLP effect on children with the severity level of heavy in odd ratio 0.70 (95% CI: 0.50-0.98); p = 0.036). There was no significant correlation between CHLP effect on children with very heavy in odd ratio 0.97 (95% CI: 0.72-1.30); p = 0.8). The severity is affected by

the child's anxiety level during hospitalization. The CHLP program implemented in the child's room can decrease the anxiety of the child during hospitalization so as can support the pediatric treatment process with Pneumonia.

4.6 Patient's Behavior (Knowledge, Attitude, and Skill)

Research conducted by Andjela, et all 2017 on the implementation of case management in handling the patient's repeated visits (readmission) Diabetes Mellitus (DM). Researchers conducted a 30-day restrospective analysis of readmission in DM patients with the period July 2010 - December 2011. After that in the period January 2012 - June 2013 have done the implementation of diabetes case management. This data was obtained from 4472 RM of patients returning at 18 months pre intervention period and 32046 RM at 18 months post intervention.

From the data in the level 30 days of DM patient's readmission significantly decreased from 20.1 (pre) to 17.6 (post), intervention (p<0.0001). Patients who were followed up by the DM educator had the lowest 30-day readmission rate (15% during the study) approaching the non-DM patient readmission level at the Nebrasca health center. The DM nurse development program and the Diabetes case manager effectively decrease the rate of readmission. Patients monitored by DM educators showed the lowest rates of readmission with behavioral changes (knowledge, attitude, and skills) to decrease the recurrence of symptoms in DM patients.

5 CONCLUSION

Systematic reviews from 15 health journals show the successful implementation of case management in improving the quality of nursing services. Sixth indicator quality of nursing service are patient safety, pain and comfort management, patient satisfaction level, self care, patient's anxiety, and behavior (knowledge, attitude, and skill) of patient. Implementation of case management can provide positive support in hospitals to implement excellent management and health care systems to minimize complaints, lengthy ALOS, and expensive financing. In the process of case management implementation is expected to have good collaboration of all elements in the hospital and provide a positive impact on improving the quality of health services.

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APPENDIX

No	Author	Title	Method	Result
1	Glyn Elwyn BA MB BCh MSc FRCGP PhD, Meryl Williams BSc SRN RM SP, Catherine Roberts BN (Hons) RGN, Robert G Newcombe PhD CStat FFPH, Judith Vincent BSc Pharm MRPharms 2008	Case management by nurses in primary care: analysis of 73 'success stories'	Independent variable : Case management Dependent variable: Primary health care system This is a qualitative study, undertaken as part of a wider evaluation. The project was designed by the Swansea Local Health Board to implement nurse case management in primary care. Case manager nurses were allocated to five volunteer practices and the work started in April 2005. The aim of the overall project was to reduce, if possible, from an agreed sample of practices, the number of unplanned medical admissions referred to the Swansea NHS Trust's group of hospitals..	The total number of patients consented and placed on case-management caseloads was 121. This number represents the overall caseload taken on by the five nurses over the 12-month study. From this overall caseload of 121 patients, 73 'success stories' were collected during the year, indicating that the nurses felt they had made a significant positive difference for over half the patients on their caseloads. 1. Assessment and coordination of care (35) 2. Diagnosis and coordination of care (29) 3. Admission to non-acute bed (5) 4. Terminal care facilitated (3) Case management by nurses based in primary care provides a type of care to elderly patients. It is clear from these accounts that the case-manager role is regarded as enabling innovative nursing practice to increase the satisfaction and quality of health services..
2	Jee Young Joo , PhD, RN , and Diane L. Huber , PhD, RN, NEA-BC, FAAN 2014	Evidence-Based Nurse Case Management Practice in Community Health	Independent variable : *Nurse Case Management* Dependent variable: *Community health* Nurse case management (CM) practice with NCMs in community-based settings. The design of this study was an exploratory, descriptive secondary analysis of 4 types of service by 11 NCMs, delivered to selected Medicare benefi ciaries in community settings. Descriptive statistics and ANOVA tests were calculated.	The majority of CM services were delivered in home care services in the community. Most of the 4 types of services are home, telephone, clinic, and mixed care that positively changed patients' quality measure outcomes such as self-care activities of daily life, quality of life, and well-being. The results contribute to understanding how community health nurses may choose to select home care interventions for effectiveness.
3	Dwi Kartikasari, Aryo Dewanto, Fatchur Rochman 2016	The Effect of Health Service Quality to Satisfaction and Trust in Bunda Kandangan Hospital, Surabaya.	Independent variable : quality of health service Dependent variable: Satisfaction and trust of patients Data were collected using questionnaires. Questionnaires were given to patients in the hospitalization unit of RSBK. The sample of this study is 121 people. Data were analyzed by Structural Equation Modeling (SEM) with SPSS AMOS software.	The study shows that service quality has a direct and indirect effect on patients' trust. Service quality has indirect effects on patient's trust through patient satisfaction as interviening variable. There is a significant direct effect of service quality on patients' satisfaction, but there is no significant indirect effect of service quality on patients'satisfaction through patients' trust.

4	Mark Brennan-Ing, Liz Seidel, Leslie Rodgers, Jerome Ernst, Doug Wirth, Daniel Tietz, Antonio Morretti, Stephen E. Karpiak 2016	The Impact of Comprehensive Case Management on HIV Client Outcomes	Independent variable : *Comprehensive Case management* Dependent variable: *HIV client outcomes* Data were obtained from Amida Care. Amida Care operates not-for-profit Medicaid and Medicare HIV Special Needs Plans (SNPs), providing managed care to HIV-positive people in New York City. The Amida Care database provides a consolidated source of member and claims information which is permanently maintained. Data on all members receiving TCM as determined by billing and procedure codes were extracted from the Amida Care database to provide the information for the analyses described below (N = 2072), from the start of the study period (January 2011) to the end of the study period (September, 2012).	The average age of the TCM sample was 48.0 years, 33% were women and 67% were men. Based on the research, TCM can reduce cost of medicine, increase the patient's comfort and the satisfaction of HIV patient in the range 73%.
5	David Sears, Arthur Mpimbaza, Ruth Kigozi, Asadu Sserwanga, Michelle A. Chang, Bryan K. Kapella, Steven Yoon, Moses R. Kamya, Grant Dorsey, Theodore Ruel 2015	Quality of Inpatient Pediatric Case Management for Four Leading Causes of Child Mortality at Six Government-Run Ugandan Hospitals	Independent variable: *Pediatric Case magement* Dependent variable : Four case management categories were defined for analysis: suspected malaria, selected illnesses requiring antibiotics, suspected anemia, and diarrhea. All children up to the age of 14 years admitted to six district or regional hospitals over 15 months were included in the study.	A total of 30,351 admissions were screened for inclusion in the analysis. Ninety-two percent of children met criteria for suspected malaria and 81% received appropriate case management. Thirty-two percent of children had selected illnesses requiring antibiotics and 89% received appropriate antibiotics. Thirty percent of children met criteria for suspected anemia and 38% received appropriate case management. Twelve percent of children had diarrhea and 18% received appropriate case management. Multivariable logistic regression revealed large differences in the quality of care between health facilities. There was also a strong association between a positive malaria diagnostic test result and the odds of receiving appropriate case management for comorbid non-malarial illnesses-children with a positive malaria test were more likely to receive appropriate care for anemia and less likely for illnesses requiring antibiotics and diarrhea.
6	Fransisco P Garcia-Fernandez,	Effect of hospital case-	Independent variable: hospital case manager nurses Dependent variable:	The study included 255 patients with complex chronic disease (24·32% in management cohort vs. 75·68% in control

				cohort). The nurse case-managed group had significantly lower Barthel Index and higher Caregiver Burden Index scores and a significantly longer hospital stay. At 90 days postdischarge, no significant intergroup differences were observed in Barthel Index or Caregiver Burden Index scores, primary care resource consumption, readmission rate or mortality rate; the case-managed patients showed a significantly higher satisfaction level with their care and its continuity. Nurse case management prevents a post discharge increase in the dependence of multimorbid patients and the burden of their caregivers.
	Maria J Arrabal-Orpez, Maria del Carmen Rodrigues-Torres, Carmen Gila-Selas, Issabel Carrascosa-Garcia, Juan M Laguna-Parras Journal of Clinical Nursing, 2014	manager nurses on the level of dependence, satisfaction and caregiver burden in patients with complex chronic disease	Level of dependence, satisfaction, and caregiver An observational and analytical cohort study was undertaken in multimorbid patients. Data were gathered on Barthel Index and Caregiver Burden Index scores, primary care resource consumption, readmission and mortality rates, and patient satisfaction with care and care continuity. Results were compared between nurse case-managed (n = 62) and control (n = 193) multimorbid patients using univariate and bivariate analyses.	
7	Andjela Drincic, Elisabeth Pfeffer, Jiangtao Luo , Whitney S. Goldner 2017	The effect of diabetes case management and Diabetes Resource Nurse program on readmissions of patients with diabetes mellitus	Independent variable: Diabetes case management and Diabetes Resource Nurse Program Dependent variable: Readmission pasien DM We performed retrospective analysis of 30-day readmission rates of patients with diabetes before (July 2010–December 2011), and after (January 2012–June 2013) starting the implementation of this tiered inpatient diabetes care delivery model.	We analyzed 34,472 discharged patient records from the 18-month pre-intervention period, and 32,046 records from the 18-month post-intervention period. The overall 30-day readmission rate for patients with diabetes decreased significantly from 20.1% (pre) to 17.6% (post) intervention (p < 0.0001). Patients seen by diabetes educators had the lowest 30-day readmission rates (15% during the whole study), a rate approaching the overall hospital readmission rates in those without diabetes in our institution. The Diabetes Resource Nurse program is effective in decreasing readmission rates. Patients seen by the diabetes educators have the lowest rates of readmission.
8	Wiwin Nur Aeni Nursing Department, Health Education Institute, Indramayu, West Java, Indonesia 2016	Pengembangan Case Manager dalam *Patient Centered Care*	Independent variable: *Case Manager* Dependent variable: *Patient Centered Care* Systematic review to analysis the development of case manager towards the fulfillment of the rights of patients. This study used critical appraisal method by leveling the evidence based nursing from proceeding, thesis, dissertation, national as well as international journals.	Case manager can meet patients' rights through effective communication. Case manager works closely with the patient so that the maintenance time nurse to the patient lasts a long time since the patient came to the patient's home. Case manager through its role in collecting and organizing various data related to the patient and treatment process which traces the disease, needs, and the potential that exists in the patient so that reconcile the needs/expectations and patient compliance.
9	Penelope M. Enarson, Robert P. Gie3, Charles C. Mwansambo, Ellubey R.	Reducing Deaths from Severe Pneumonia in Children in Malawi by Improving	Independent variable: Pneumonia case management Dependent variable: Rating of deaths from severe pneumonia in children A prospective, nationwide public health intervention was studied to evaluate the impact	Following implementation, 47,228 children were admitted to hospital for severe/very severe pneumonia with an overall CFR of 9,8%. In both analyses, the highest CFR was in the children 2 to 11 months, and those with very severe pneumonia. The majority (64%) of cases, 2–59 months, had severe pneumonia. In

	Maganga5, Carl J. Lombard6, Donald A. Enarson, Stephen M. Graham

2014 | Delivery of Pneumonia Case Management | on pneumonia specific case fatality rate (CFR) in infants and young children (0 to 59 months of age) following the implementation of the CLHP. The implementation was step-wise from October 1st 2000 until 31st December 2005 within paediatric inpatient wards in 24 of 25 district hospitals in Malawi. Data analysis compared recorded outcomes in the first three months of the intervention (the control period) to the period after that, looking at trend over time and variation by calendar month, age group, severity of disease and region of the country. The analysis was repeated standardizing the follow-up period by using only the first 15 months after implementation at each district hospital. | this group there was a significant effect of the intervention Odds Ratio (OR) 0,70 (95%CI: 0,50–0,98); p = 0,036), while in the same age group children treated for very severe pneumonia there was no interventional benefit (OR 0,97 (95%CI: 0,72–1,30); p = 0,8). The nationwide implementation of the CLHP significantly reduced CFR in Malawian infants and children (2–59 months) treated for severe pneumonia. |
| 10 | Casey A. Grover, MD, Elizabeth Crawford, BS, and Reb J. H. Close, MD

2016 | The Efficacy Of Case Management On Emergency Department Frequent Users: An Eight-Year Observational Study | Independent variable: *case management*
Dependent variable: *emergency department case*
This was an observational study of ED usage conducted at a community hospital that has an ED case management program in which frequent users of the ED are enrolled and provided with intensive care management to reduce ED use. The study was conducted at a 258-bed suburban hospital on the West Coast, with an annual ED census of approximately 50,000 patients per year. The study was granted institutional review board exemption by the hospital committee on research. | We identified 199 patients that were enrolled for 6 or more years. Patients averaged 16 visits per person per year in the year prior to enrollment. Patients averaged the following number of visits per person per year after enrollment: year 1 (7.1), year 2 (4.1), year 3 (3.1), year 4 (3.3), year 5 (3.1), year 6 (2.0), year 7 (2.1), and year 8 (1.9), all statistically significant compared to the year prior to enrollment. Twenty-nine patients, despite case management, continued their frequent use, and required a revision to their plan of care. Five patients required a second revision to their plan of care secondary to recurrent ED usage. Persistent use despite case management was primarily due to prescription medication misuse and chronic pain. Case management of ED frequent users seems to be an effective means to reduce ED usage in both the short and long term. Patients with prescription drug misuse or chronic pain may continue to demonstrate frequent use despite case management, and may require revisions to their plan of care. |
| 11 | Wilson Abreu, Cristina Barroso, Maria de Fátima Segadães, and Silvia | Promotion of Self-Care in Clinical Practice: Implications for Clinical Supervision in Nursing | Independent variable: Clinical supervision
Dependent variable:
Self care
This quantitative study was developed in a hospital in the North of Portugal. Participants were 110 patients hospitalized | The test of hypothesis found significant statistical differences (*p*<0.05) between the interventions chosen by specialist nurses and those of the medical records; the hypothesis was, therefore, generally confirmed. the quality of healthcare provided by nurses depends on their ability to have an impact |

	Teixeira 2015		in a ward of the above-mentioned hospital. Two instruments were used to collect data. The first was a questionnaire focused on self-care and was filled out by rehabilitation nurses. The second instrument evaluated self-care as recorded in nurses' electronic records filled during the caring process.	on self-care.
12	Fery Agusman Mendrofa[1], Chatarina U. Wahyuni[3], Nursalam[2], Hasan Machfoed[4], Kuntoro[3], Hari Basuki Notobroto[3], Rachmad Hargono[3], Bagus Widjonarko[5] 2015	Independency Models of Nursing Self-Care for Ischemic Stroke Patient	Independent variable : Independency models of self care (self care and family support) Dependent variable : Selfcare of ischemic stroke patient A cross-sectional survey research design was used. Data was collected with interviews by home visited method. Data were analyzed with confirmatory analysis for determined of validity and reliability indicator, models analyzed by SEM (Structural Equation Model) The study was conducted on 65 patients with stroke who perform hospital clinical visited at Panti Wilasa dr. Cipto and general government hospital of Semarang.	Family support such as information, instrumental, reward and emotion were valid indicator for family support. Self care indicators such as eat, bath, titivate, dress, defecating, urination and transfer to building of self-care. Indicators of eating, bathing, titivate, dress, defecate, urination, and transfer is an indicator for self care. It could be concluded that eating, bathing, ornate, dress, and the transfer is valid and reliable. Model showed that self-care needs were improved of self-carepatients with through family support.
13	Ilkay Culha[1], Nedime Kosgeroglu[2], Ozge Bolluk[3] 2016	Effectiveness of Self-care Education on Patients with Stomas	Independent variable: Self care education Dependent variable: Patients with stoma This intervention study was carried out with 64 stoma patients 32 of whom were intervention group and 32 of whom were control group at one university research hospital and two state hospitals at Eskisehir in Turkey. After stoma surgery, planned self-care education was given to intervention group, and control group had routine service care. After surgery, personal data collection form and Self-Care Agency Scale (SCAS) were filled by both intervention and control groups at 1 and 3 weeks later.	It was found that self-care agency scores increased in both intervention and control groups 3 weeks later and the increasing extent in the intervention group was higher than the control group ($p<0.001$). Also there was found a positive correlation between self-care agency and stoma knowledge scores ($r=0.466$, $p<0.01$) of intervention group. Education may assist on self-care agency and stoma knowledge of patients with stoma.
14	Esa Kurnia, Dept. Epidemiologi FKM	*Association Between Family Support and*	Independent variables in this study were age, gender, occupation, and family support.	The study showed the majority of respondent had a stroke aged 43–61 years, male, and didn't work. Most of respondents got a good family support, so

	UNAIR 2016	*Post-Stroke Activity of Daily Living Autonomy*	Dependent variable was ADL independent of post-stroke. This research included observational studies, the design of the study was cross-sectional design. Fourty seven respondents were involve taken using simple random sampling. Research was conducted at the medical rehabilitation of RSU Haji Surabaya in June-July 2015.	that respondents can be more autonomous in activities. Based on analysis using Chi-quare, there was an association between family support and ADL independent of post-stroke, p-value = 0.018 with α = 0.05, but there was no association between age, sex and occupation with ADL autonomy of post-stroke. It was hoped that family create a calm situation, and create activities that are beneficial to the independence of the post-stroke.
15	Jonathan Stokes, Maria Panagioti, Rahul Alam, Kath Checkland, Sudeh Cheraghi-Sohi1, Peter Bower 2015	Effectiveness of Case Management for 'At Risk' Patients in Primary Care: A Systematic Review and Meta-Analysis	Independent variable: Case management Dependent variable: At Risk patients in Primary Care We carried out a systematic review and meta-analysis of the effectiveness of case management for 'at-risk' patients in primary care. Six bibliographic databases were searched using terms for 'case management', 'primary care', and a methodology filter (Cochrane EPOC group).	A total of 15,327 titles and abstracts were screened, 36 unique studies were included. Meta-analyses showed no significant differences in total cost, mortality, utilisation of primary or secondary care. A very small significant effect favouring case management was found for self-reported health status in the short-term (0.07, 95% CI 0.00 to 0.14). A small significant effect favouring case management was found for patient satisfaction in the short- (0.26, 0.16 to 0.36) and long-term (0.35, 0.04 to 0.66). Secondary subgroup analyses suggested the effectiveness of case management may be increased when delivered by a multidisciplinary team, when a social worker was involved, and when delivered in a setting rated as low in initial 'strength' of primary care.