

HOME BASED MODELS OF CARE

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Please find following a summary of a literature search and relevant results. All articles can be provided in full - email library@monashhealth.org for a list of the articles you require.

QUESTION

How do home-based care models, aimed at substituting and diverting hospital bed usage compare in terms of patient satisfaction, clinical outcomes, and cost-effectiveness? What are the primary barriers to their widespread adoption on both national and international scales, across all age groups?

RESULTS

ONLINE RESOURCES (GREY LITERATURE)

COST ANALYSIS

CADTH (2024). **Virtual Medicine Wards and Hospital-at-Home Programs.** [Link](#)

- What does it cost? (pg. 6). costs associated with HAH services and cost estimations of savings.
- Descriptions and evaluations of HAH programs (pg.7).
Australia: The main reasons for participating in HAH were to receive IV medications, postoperative drain management, rehabilitation in the home, bridging anticoagulant therapy, and intraperitoneal medication delivery.

GUIDELINES

NHS (2024). **Guidance on managing medical equipment within virtual wards (including Hospital at Home).** [Link](#)

- Clinical Engineering optimizes:
Equipment design and procurement
Preparing to use equipment
Using devices
Governance and safety

Victorian Department of Health (2011). **Hospital in the Home Guidelines.** [Link](#)

- Setting of Care (pg. 8).
HITH is delivered to patients in their home or at a temporary residential address that does not normally provide admitted care. Services delivered in other settings are only eligible to be HITH in specific circumstances.

- Range of Service (pg. 10).
The range of services offered is limited by practical and safety aspects and influences patient selection criteria.

National Institute for Health and Care Research (2023). **Hospital at Home: Guiding Principles for Establishing Virtual Acute Care Wards.** [Link](#)

- Key takeaways (pg. 22).
It is important to plan for a single remote patient monitoring platform that interfaces with the hospital's electronic health record system, to reduce user fatigue and burnout. It is unnecessary to acquire the latest technology on the market. It is far more important to assess stakeholder (patient and clinician) and program needs, and ensure the technology matches those requirements. It is critical to establish data security, confidentiality and management protocols for the secure transmission and storage of data from patients managed outside the hospital setting.

PEER-REVIEWED LITERATURE – MOST RECENT FIRST

Articles are grouped by theme:

- Barriers & Facilitators
- Chronic Care
- Cost Effectiveness
- Digital Care
- Paediatrics
- Patient Outcomes

Each article summary contains excerpts from the abstract and an online link.

BARRIERS & FACILITATORS

Ebhabha, V. et al. (2023). **Comparing Patient Preference Between At-home and In-hospital Settings: Systematic Review and Meta-Analysis on Injectable Medications.** *Archives of Pharmacy Practice*, 14(3):98-111. [Full text](#)

This research found no substantial differences in patient outcomes based on the setting. Home care is an important option to support patient autonomy and well-being. The recent global COVID-19 pandemic further highlighted the importance of an option to continue long-term disease management without hospitalization.

Arsenault-Lapierre, G. et al. (2021). **Hospital-at-Home Interventions vs In-Hospital Stay for Patients With Chronic Disease Who Present to the Emergency Department: A Systematic Review and Meta-analysis.** *JAMA network open* 4(6): e111568. [Full text](#)

Patients who received hospital-at-home interventions had lower depression and anxiety than those who remained in-hospital, but there was no difference in functional status. Other patient outcomes showed mixed results. The results of this systematic review and meta-analysis suggest that hospital-at-home interventions represent a viable substitute to an in-hospital stay for patients with chronic diseases who present to the emergency department and who have at least 1 visit from a nurse or physician. Although the heterogeneity of the findings remained high for some outcomes, particularly for length of treatment, the heterogeneity of this study was comparable to that of past reviews and further explored.

CHRONIC CARE

Bransgrove, N.J. et al. (2024). **Barriers, Benefits, and Enablers of Acute Home-Based Care (Hospital In The Home) in Australia for Older People: A Systematic Review.** *Home Health Care Management and Practice*, 0(0):1-11. [Full text](#)

Ten studies were included, consisting mostly of cohort studies in metropolitan areas. Barriers included inefficacy, patient demographics, and carers. Benefits included efficacy, high satisfaction, and medical management. Enablers included education, holistic assessments, and support interventions. Within the literature there was a significant research gap regarding HITH for older people in rural areas of Australia. Patient outcomes were closely aligned with admission pathways.

Wallis, J. A. et al. (2024). **Factors influencing the implementation of early discharge hospital at home and admission avoidance hospital at home: a qualitative evidence synthesis.** *The Cochrane database of systematic reviews*, 3(100909747):CD014765. [Full text](#)

Implementing Admission Avoidance and Early Discharge Hospital at Home services requires early development of policies, stakeholder engagement, efficient admission processes, effective communication and a skilled workforce to safely and effectively implement person-centred Hospital at Home, achieve acceptance by staff who refer patients to these services and ensure sustainability. Future research should focus on lower-income country and rural settings, and the perspectives of systems-level stakeholders, and explore the potential negative impact on caregivers, especially for Admission Avoidance Hospital at Home, as this service may become increasingly utilised to manage rising visits to emergency departments.

Chua, C. et al. (2022). **Perceptions of Hospital-at-Home Among Stakeholders: a Meta-synthesis.** *Journal of general internal medicine*, 37(3):637-650. [Full text](#)

Overall, high levels of satisfaction were expressed by various stakeholders. Continuity of care remains an important factor for patient-centeredness in HaH. Caregivers should be involved in the decision-making process and supported throughout the HaH duration to prevent caregiver burnout. Collaboration and coordination among healthcare professionals are vital and can be strengthened through training and technological advancements of remote patient monitoring. Institutional and organizational support for stakeholders may make HaH a viable solution to modern healthcare challenges.

Barker, R.e. et al. (2021). **Integrating Home-Based Exercise Training with a Hospital at Home Service for Patients Hospitalised with Acute Exacerbations of COPD: Developing the Model Using Accelerated Experience-Based Co-Design.** *International journal of chronic obstructive pulmonary disease*, 16 (0):1035-1049. [Full text](#)

One commonly cited barrier to PR post-hospitalisation relates to poor accessibility. To address this, the aim of this project was to enrol service users (patients with COPD and informal carers) and healthcare professionals to co-design a model of care that integrates home-based exercise training within a HaH scheme for patients discharged from hospital following AECOPD. An integrated model of care has been co-designed by patients with COPD, informal carers and healthcare professionals to address low uptake and completion of PR following AECOPD. The co-designed model of care has now been integrated within a well-established HaH scheme.

Mittaine-Marzac, B. et al. (2021). **Impacts on health outcomes and on resources utilization for anticancer drugs injection at home, a complex intervention: a systematic review.** *Supportive care in cancer*, 29(10):5581-5596. [Full text](#)

Unlike the quality of life remaining similar, patients preferred to be treated at home. Cost savings were in favor of Hospital at Home, but the charge categories used to compare or the home intervention were heterogeneous and rarely integrating relatives' duties and hospital staff's time. Qualitative studies highlighted about benefits and barriers of home. The current state of evidence

shows as it still remains difficult to appraise the anticancer injection at home when considering the details of this complex intervention, the role of each stakeholder, and the missing data.

Coffey, A. et al. (2019). **Interventions to promote early discharge and avoid inappropriate hospital (re)admission: A systematic review.** *International Journal of environmental research and public health*, 16(14): 2457. [Full text](#)

Post-discharge interventions exclusively delivered at home reduced hospital stay and contributed to patient satisfaction. Existing systematic reviews on tele-health and long-term care interventions suggest insufficient evidence for admission avoidance. The most effective interventions to avoid inappropriate re-admission to hospital and promote early discharge included integrated systems between hospital and the community care, multidisciplinary service provision, individualization of services, discharge planning initiated in hospital and specialist follow-up.

COST EFFECTIVENESS

Maresova, P. et al. (2024). **Systematic Review of the Cost-Effectiveness of Home-Based Palliative Care Interventions in Patients with Cancer: A Critical Analysis.** *Cancer management and research*, 16(101512711):1155-1174. [Full text](#)

In conclusion, the studies reviewed highlight significant cost variations and potential savings associated with palliative home-based care for cancer patients. Home-based palliative care, particularly involving medications, has shown favorable cost-effectiveness compared to hospital care. Specialized palliative home care, psychological interventions, and outpatient services further contribute to overall cost savings. However, the economic impact varies across different geographical contexts and cost categories, emphasizing the need for tailored approaches in palliative care planning and implementation.

Vidigal, M. T. C. et al. (2024). **Cost-effectiveness of home care compared to hospital care in patients with chronic obstructive pulmonary disease (COPD): a systematic review.** *Frontiers in medicine*, 11(101648047):1405840. [Full text](#)

Only one study adequately met all items of the risk of bias assessment. Thirteen studies found lower costs and higher effectiveness for home care. Home care showed a better cost-effectiveness ratio than hospital care for COPD patients. Regarding effectiveness, there is no possibility of choosing a more effective care for COPD patients, given the incipience of the data presented on eligible studies. However, considering the analyzed data refer only to high-income countries, caution is required when extrapolating this conclusion to low- and low-middle-income countries.

Curioni, c. Et al. (2023). **The cost-effectiveness of homecare services for adults and older adults: a systematic review.** *International journal of environmental research and public health*, 23(4): 3373. [Full text](#)

This study provides an overview of the literature on the cost-effectiveness of homecare services. The evidence suggests that homecare interventions are likely to be cost-saving and as effective as hospital. The included studies differ regarding the methods used, the types of costs and the patient populations of interest. In addition, methodological limitations were identified in some studies. Definitive conclusions are limited and highlight the need for better standardization of economic evaluations in this area. Further economic evaluations arising from well-designed rcts would allow healthcare decision-makers to feel more confident in considering homecare interventions.

Gonzalez-Jaramillo, V. et al (2021). **Impact of home-based palliative care on health care costs and**

hospital use: A systematic review. *Palliative & supportive care*, 19(4):474-487. [Request article](#)
Stakeholders should recognize HBPC as an intervention that decreases patient care costs at end of life and therefore health care providers should assess the preferences of patients nearing the end-of-life to identify those who will benefit most from HBPC.

Putrik, P. et al. (2021). **Prioritising models of healthcare service delivery for a more sustainable health system: a Delphi study of Australian health policy, clinical practice and management, academic and consumer stakeholders.** *Australian Health Review*, 45(4):425-432. [Full text](#)
Input from an expert stakeholder panel identified healthcare delivery models not previously synthesised in systematic reviews that are a priority to investigate. Strong consensus exists among stakeholders regarding which models require the most urgent attention in terms of (cost-)effectiveness research. These findings contribute to shaping a research agenda on healthcare delivery models and where stakeholder engagement in Australia is likely to be high.

De Sousa Vale, J. et al (2020). **Hospital at Home: An Overview of Literature.** *Home Health Care Management and Practice*, 32(2):118-123. [Request article](#)
the concept of hah encompasses different levels or care schemes. Several examinations and treatments can be carried out at home. Hospital at home may optimize patient flow and relieve pressure on hospital bed availability. However, questions are raised regarding the uncertainty of the efficacy of hah and the limited evidence on which model setting is most appropriate.

Goossens. L. M. A. et al. (2020). **The risk of overestimating cost savings from hospital-at-home schemes: A literature review.** *International Journal of Nursing Studies*, 109(0):103652. [Full text](#)
Almost all studies violated one or more criteria for the risk of overestimation of cost savings. The most frequent problems were the use of average unit prices per inpatient day (not taking into account the decreasing intensity of care) and biased designs. Most studies found cost differences in favour of hospital-at-home; the range varied from savings of 8773 to a cost increase of 2316 per patient. Overall quality of studies was not good, with some exceptions. Many cost savings were probably overestimated.

DIGITAL CARE

Mao, S. et al. (2024). **Electronic symptom monitoring for home-based palliative care: A systematic review.** *Palliative medicine*, 38(8):790-805. [Request article](#)
Introducing electronic symptom monitoring in home-based palliative care holds potential for enhancing patient-reported outcomes, potentially decreasing hospital visits and costs. However, inconsistency in current studies arising from diverse monitoring systems obstructs comparability. To advance, future high-quality research should employ standardized follow-up periods and established scales to better grasp the benefits of electronic symptom monitoring in home-based palliative care.

Norman, G. et al. (2023). **Virtual wards: a rapid evidence synthesis and implications for the care of older people.** *Age and Ageing*, 52(1):afac319. [Full text](#)
There is substantial evidence for the clinical effectiveness of hospital at home but less evidence for virtual wards. Guidance for virtual wards is lacking on key aspects including team characteristics, outcome selection and data protection. We recommend that research and evaluation is integrated

into development of virtual ward models.

Patel, R. et al. (2024). **Remote Vital Sign Monitoring in Admission Avoidance Hospital at Home: A Systematic Review.** *Journal of the American Medical Directors Association*, 25(8):105080. [Full text](#)

This review highlights gaps in the reporting and evidence base informing remote vital sign monitoring in alternatives to admission for acute illness, despite expanding implementation in clinical practice. Although continuous vital sign monitoring using wearable devices may offer added benefit, its use in existing RCTs is limited. Recommendations for the implementation and evaluation of remote monitoring in future clinical trials are proposed.

Pliannuom S. et al. (2024). **Characteristics and Effects of Home-Based Digital Health Interventions on Functional Outcomes in Older Patients With Hip Fractures After Surgery: Systematic Review and Meta-Analysis.** *Journal of medical Internet research*, 26(100959882):e49482. [Full text](#)

Home-based DHIs that integrate communication and feedback, education, and telerehabilitation have demonstrated effectiveness in enhancing functional outcomes among older patients recovering from hip fractures after surgery. These interventions are commonly administered by physical therapists, who play a crucial role in facilitating and guiding the rehabilitation process. However, while the existing evidence supports the efficacy of such interventions, further research is needed to enhance our understanding and optimize the implementation of home-based DHIs for this specific population.

PAEDIATRIC CARE

Graf, D. et al. (2024). **Effectiveness of home treatment in children and adolescents with psychiatric disorders-systematic review and meta-analysis.** *BMC Medicine*, 22(1):241. [Full text](#)

This meta-analysis found no evidence that home treatment is less effective than conventional inpatient treatment, highlighting its potential as an effective alternative in child and adolescent psychiatry. The generalisability of these findings is reduced by limitations in the existing literature, and further research is needed to better understand which patients benefit most from home treatment.

Demetriou, E. et al. (2023). **Burden of paediatric hospitalisations to the health care system, child and family: a systematic review of Australian studies (1990-2022).** *The Lancet regional health*, 40(101774968):100878. [Full text](#)

The review summarises a total of 88 studies published between 1990 and December 2022. Overall, the studies identified that paediatric hospitalisations incur significant financial costs, which have not shown significant reductions over time. In-patient direct hospital costs varied depending on the type of treatment and diagnostic condition. The costs per-case were found to range from just below AUD\$2000 to AUD\$20,000 or more. The financial burden on the family unit included loss of productivity, transport and travel costs. Some studies reported estimates of these costs upward of AUD\$500 per day. Studies evaluating 'hospital in the home' options identified significant benefits in reducing hospitalisations and costs without compromising care.

Detollenaere, J. et al. (2023). **Systematic literature review on the effectiveness and safety of paediatric hospital-at-home care as a substitute for hospital care.** *European journal of pediatrics*, 182(6):2735-2757. [Full text](#)

This review suggests that paediatric HAH care is not associated with more adverse events or hospital readmissions for various clinical indications compared to a standard hospital. Because of the low to very low level of evidence, it is worthwhile to further investigate safety, efficacy and cost effects under strict and well-controlled conditions. This systematic review provides guidance on the essential elements that should be included in HAH care programmes for each type of indication and/or intervention.

Lawrence, J. et al. (2022). **Home Care for Bronchiolitis: A Systematic Review.** *Pediatrics*, 150(4): e2022056603. [Full text](#)

Evidence exists to support HOT as feasible, acceptable, and safe. Evidence of cost-effectiveness remains limited. Further research is needed to understand the relevant impact of HAH versus alternative interventions to reduce oxygen prescribing. Other models of care looking at nasogastric feeding support and remote monitoring should be explored.

PATIENT OUTCOMES

Parker, K. J. et al. (2024). **Clinical outcomes of nurse-coordinated interventions for frail older adults discharged from hospital: A systematic review and meta-analysis.** *Journal of clinical nursing*, 33(11):4184-4206. [Full text](#)

Nurse-coordinated interventions have a significant effect on 1-month readmissions for frail older adults discharged from hospital. The positive effect of interventions on other health outcomes within studies were mixed and indistinct, this is attributed to the large heterogeneity between studies and outcome measures.

Shi, C. et al. (2024). **Inpatient-level care at home delivered by virtual wards and hospital at home: a systematic review and meta-analysis of complex interventions and their components.** *BMC medicine*, 22(1):145. [Full text](#)

Low-certainty evidence suggests that none of technology-enabled care at home models we explored put people at higher risk of readmission compared with hospital-based care. Where limited evidence on mortality is available, there appears to be no additional risk of mortality due to use of technology-enabled at home models. It is unclear whether inpatient-level care at home using higher levels of technology confers additional benefits. Further research should focus on clearly defined interventions in high-priority populations and include comparative cost-effectiveness evaluation.

Leong, M. Q. et al (2021). **Comparison of Hospital-at-Home models: a systematic review of reviews.** *BMJ open*, 11(1):e043285. [Full text.](#)

For suitable patients, HaH generally results in similar or improved clinical outcomes compared with inpatient treatment, and warrants greater attention in health systems facing capacity constraints and rising costs. Preliminary comparisons suggest prioritisation of AA models over ESD due to potential benefits in costs and clinical outcomes. Nonetheless, future research should clarify costs of HaH programmes given the current low-quality evidence, as well as address evidence gaps pertaining to caregiver outcomes and adverse events under HaH care.

APPENDIX

SEARCH METHODOLOGY

A systematic search was conducted for literature. The results were screened by a librarian using [Covidence](#).

SEARCH LIMITS

- English-language
- Published within the last 5 years
- Meta-Analysis or Review

DATABASES SEARCHED

- Medline – index of peer reviewed articles across health sciences and medicine.
- Embase – index of biomed and pharmacological peer reviewed journal articles.
- Emcare – index of nursing, allied health, critical-care medicine and more.
- UpToDate & BMJ Best Practice – synthesised evidence for patient care.
- Grey literature – Google, Google Scholar, Trip database, Biomed Central Proceedings.

SEARCH TERMS

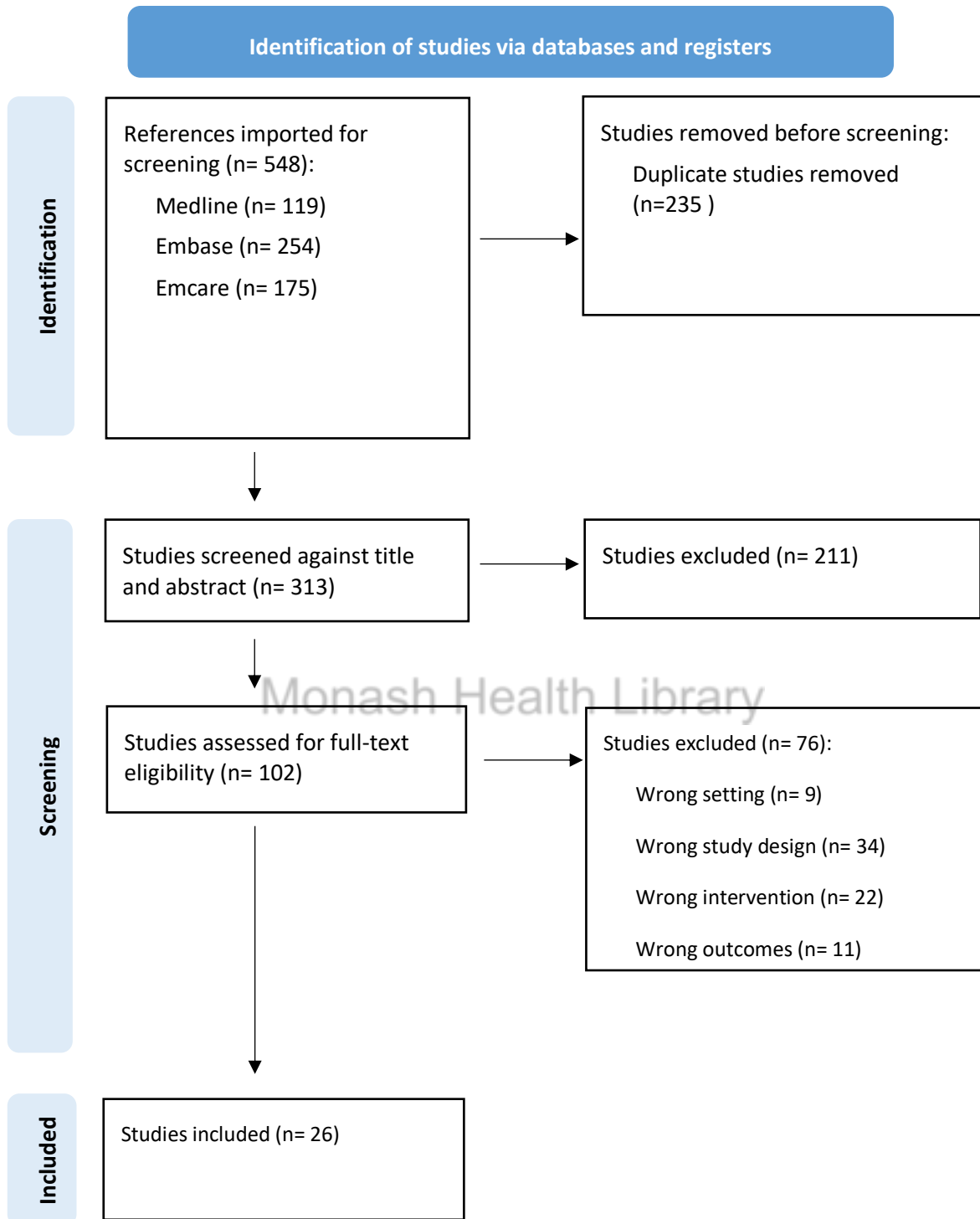
Concept	MeSH headings	Keywords
Hospital	Hospitalization, Inpatients	Inpatient, hospital, ward, admission, patient, setting, care
Home based care	Home Care Services, Home Care Services, Hospital Based	Home based care, hospital in he home, hith, home hospital, own home, home first, bed substitution, bed based substitution
Outcomes	Costs and Cost Analysis, Quality of Health care, Patient Satisfaction, Treatment Outcome	Cost or economics, quality, safety, satisfaction, barrier, enabler, facilitator, treatment outcome, clinical outcome
Review	Meta-Analysis, Systematic Review	Systematic review, scoping review, narrative review, qualitative review, integrative review, metanalysis

MEDLINE SEARCH STRATEGY

Ovid MEDLINE(R) ALL <1946 to October 28, 2024>

- 1 Hospitalization/ or Inpatients/ 170747
- 2 (in?patient* or hospitali*).tw. 490685
- 3 ((hospital or ward or admitted or admission) adj3 (care or based or environment or setting or patient)).tw. 217732
- 4 1 or 2 or 3 723041
- 5 Home Care Services/ or Home Care Services, Hospital-Based/ 39360
- 6 (home based care or hospital in the home or hith or own home or home first).tw. 2968
- 7 ((bed or bed?based) adj3 substitut*).tw. 25
- 8 (hospital adj2 home).tw. 5948
- 9 5 or 6 or 7 or 8 45838
- 10 "Costs and Cost Analysis"/ 52087
- 11 (cost* or flow or economic*).tw. 2012567
- 12 "Quality of Health Care"/ or Patient Satisfaction/ 165152
- 13 (quality or safe or safety or satisf*).tw. 2872293
- 14 ((barrier* and enable*) or (enable* and barrier*) or (barrier* and facilitat*) or (facilitat* and barrier*)).tw. 68103
- 15 Treatment Outcome/ 1215983
- 16 ((treatment or clinical) adj2 outcome*).tw. 381978
- 17 10 or 11 or 12 or 13 or 14 or 15 or 16 5751114
- 18 Meta-Analysis/ 210854
- 19 "Systematic Review"/ 277303
- 20 (systematic adj (review or literature or scoping or narrative or qualitative or evidence or quantitative or meta or critical or mixed studies or mapping or cochrane or integrative)).tw. 346868
- 21 (metaanaly* or meta analy* or meta-analy*).tw. 322934
- 22 19 or 20 or 21 518237
- 23 4 and 9 and 17 and 22 303
- 24 limit 23 to last 5 years 119

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