

BMJ Best Practice

+ Comorbidities



Treat the whole patient

Clinical decision support for patients with comorbidities: enabling safer care, higher quality and shared decision-making

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Agenda

- Patient perspective
- Quality and safety of care for patients with comorbidities
- BMJ Best Practice
- The problem of comorbidities - Comorbidities Manager
- Clinical Scenario
- Demo
- Your input
- Patient perspective

The voice of patients

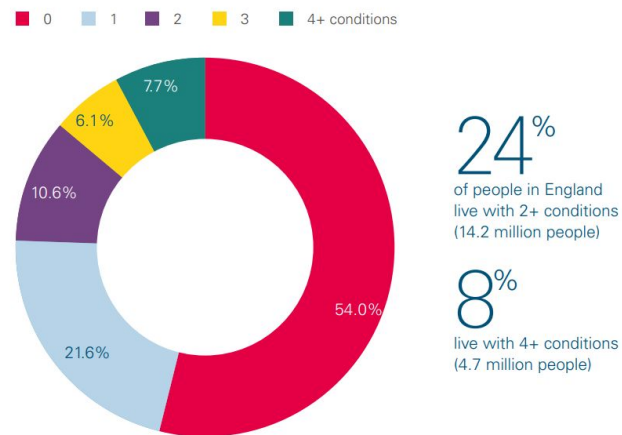
- “I really want my healthcare team to understand that they can't just treat one thing, I now have four health conditions. Each medication may have a knock-on with the others, I went through a really painful time when my cancer meds interfered with my arthritis which then caused a really dark depression. It took me and my family a long time to recover mentally and physically. So when I see a healthcare professional, they need to have some knowledge of kidney cancer, ankylosing spondylitis, epilepsy, depression and ME!”
- “I take quite a few pills, quite a bit of medication. My basic problems are diabetes and heart...and high blood pressure of course. What else? Arthritis. I elevate my legs to take care of the arthritis in the knees”
- “What is the definition of a coexisting condition? Is this based on diagnoses or the patient perspective? Is it a fixed number or fluctuating depending on today's main problem?”

Acknowledgement: Jools Symons. ABC of multimorbidity.

Impact on patients

- Lower quality of life
- Lower physical function
- Poor emotional well-being
- Uncertainty and lack of control
- Polypharmacy and poor adherence
- Multiple doctors and multiple appointments
- Confused communications.

Figure 1: Percentage of people with 0, 1, 2, 3 and 4+ conditions



Impact on quality of care

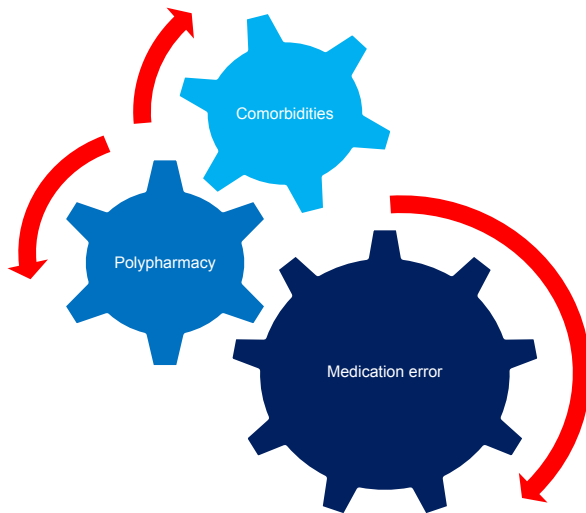
- A variety of measures have been used to assess the quality of care in patients with multiple chronic conditions.
- However, the reliance on measures oriented towards single conditions has been a major deficiency.
- Furthermore, there remain gaps across the quality framework after more recent measures are considered.
- Other measures are needed to provide a more comprehensive way of evaluating quality of care in this group of patients.

Impact on quality of care

- Not enough evidence

But

- Comorbidities – polypharmacy (sometimes > 8 drugs)
- Polypharmacy - medication error
- Physicians involved in caring for these patients report that current decision support is inadequate to optimize benefits and minimize harms in these patients with complex needs.



Briefing: Understanding the health care needs of people with multiple health conditions

Nobili A, Marengoni A, Tettamanti M et al. Association between clusters of diseases and polypharmacy in hospitalized elderly patients: results from the REPOSI study. *Eur J Intern Med* 2011; 22: 597–602.

Barber ND, Alldred DP, Raynor DK, Dickinson R, Garfield S, Jesson B, Lim R, Savage I, Standage C, Buckle P, Carpenter J, Franklin B, Woloshynowych M, Zermansky AG. Care homes' use of medicines study: prevalence, causes and potential harm of medication errors in care homes for older people. *Qual Saf Health Care*. 2009 Oct;18(5):341-6.

Sinnott C, McHugh S, Browne J, Bradley C. GPs' perspectives on the management of patients with multimorbidity: systematic review and synthesis of qualitative research. *BMJ Open* 2013; 3: e003610.

Impact on quality of care

- “Multimorbidity appears to be associated with worse quality of care when measured using a patient-centric approach”
- A higher number of individual conditions is associated with lower ratings of communication. Patients with more chronic conditions gave their doctors modestly lower patient–doctor communication scores than their healthier counterparts.

Impact of multimorbidity on quality and safety of healthcare. Valderas et al.

Fung CH, Setodji CM, Kung FY, Keeseey J, Asch SM, Adams J, McGlynn EA. The relationship between multimorbidity and patients' ratings of communication. J Gen Intern Med. 2008 Jun;23(6):788-93. doi: 10.1007/s11606-008-0602-4. Epub 2008 Apr 22. PMID: 18427902; PMCID: PMC2517863.

Quality care is evidence based care

- Implementation science - to ensure evidence-based medicine is practiced
- But where is the evidence?
- Missing because patients with multimorbidity are **excluded**.

Excluded!

Exclusion of patients with concomitant chronic conditions in ongoing randomised controlled trials targeting 10 common chronic conditions and registered at ClinicalTrials.gov: a systematic review of registration details

- All ongoing RCTs registered from 1 January 2014 to 31 January 2015 that assessed an intervention targeting adults with coronary heart disease (CHD), hypertension, heart failure, stroke/transient ischaemic attack, atrial fibrillation, type 2 diabetes, chronic obstructive pulmonary disease, painful condition, depression and dementia with a target sample size ≥ 100 .
- Among 319 ongoing RCTs, despite the high prevalence of the concomitant chronic conditions, patients with these conditions were excluded in 251 trials (79%). For example, although 91% of patients with CHD had a concomitant chronic condition, 69% of trials targeting such patients excluded patients with concomitant chronic condition(s). When considering the co-occurrence of 2 chronic conditions, 31% of patients with chronic pain also had depression, but 58% of the trials targeting patients with chronic pain excluded patients with depression. Only 37 trials (12%) assessed interventions specifically targeting patients with concomitant chronic conditions; 31 (84%) excluded patients with concomitant chronic condition(s).



BMJ Best Practice

BMJ Best Practice is a point of care clinical decision support tool particularly useful for junior doctors, multidisciplinary teams, specialists working outside of their specialty and GPs.

It is uniquely structured around the patient consultation with advice on symptom evaluation, test ordering and treatment approach.

Evidence based, continually updated, practical, accessible.

- **Ranked one of the best clinical decision support tools** for health professionals worldwide*
- **Scored highest** in an independent study of diagnostic decision support tools**
- **Available nationally to healthcare professionals** in Norway, England, Scotland, and Ireland and used in medical schools around the world.

* JMIR - Providing Doctors With High-Quality Information: An Updated Evaluation of Web-Based Point-of-Care Information Summaries

** Evaluating online diagnostic decision support tools for the clinical setting

Focusing on what's important to users



Speed – Find answers quickly and accurately



Actionable - Practical information for use at the point of care



Access - Access evidence easily anywhere, anytime



Assurance - Important updates, trusted clinical evidence

What juniors need to survive

The problem with ...
Comorbidities

“

Training from **medical school** onwards, clinical teams, and clinical guidelines, however, all tend to be organised along single disease or single organ lines.

The BMJ - Rising to the challenge of multimorbidity
Chief Medical Officers for England, Wales and Scotland



Comorbidities in the acute setting

Most patients in the acute setting have more than one medical condition, but clinical resources only focus on single conditions.

When comorbidities aren't taken into account, patients get **suboptimal care** leading to **worse clinical outcomes**.

Comorbidities also associated with **longer lengths of stay**.

Comorbidities

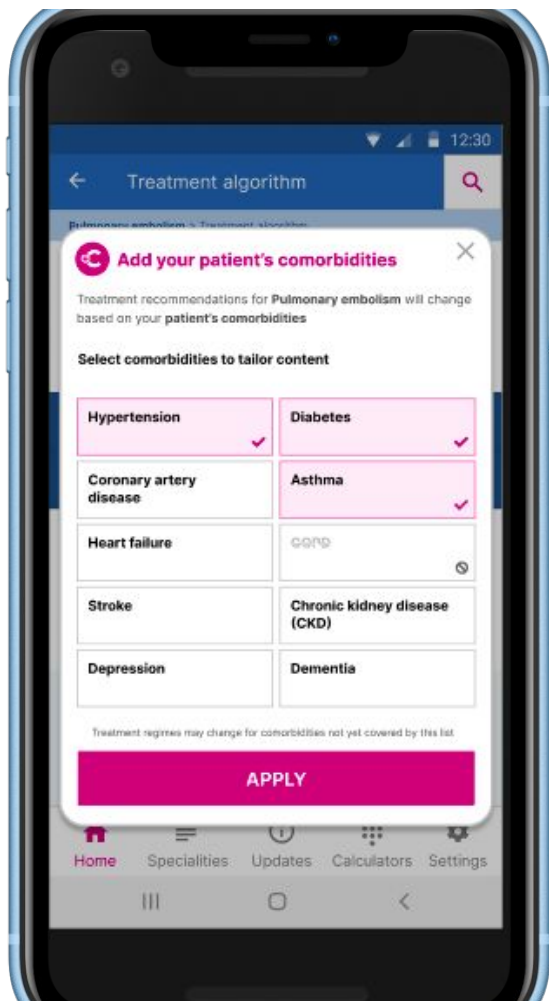
- **One in three adults** suffers from multiple chronic conditions
- In the UK, **one in three adults** admitted to hospital as an emergency have **five or more** conditions
- People with multimorbidity have poorer functional status, quality of life, and health outcomes, and are higher users of ambulatory and inpatient care than are those without multimorbidity. Also higher mortality
- This all poses a **significant problem** for health systems
- **But resources for HCPs only focus on single conditions!**

BMJ Best Practice Comorbidities tool

Add the patient's comorbidities to an existing management plan and get a tailored plan instantly.

Supports healthcare professionals to treat the whole patient when managing acute conditions.

Treat with confidence to improve patient outcomes.





512
combinations per topic

Add your patient's comorbidities

Treatment recommendations for Pulmonary embolism will change dependent on your patient's comorbidities

Select comorbidities

☐ Hypertension

☐ Coronary artery disease

☐ Heart failure

☐ Stroke

☐ Depression

☐ Diabetes

☐ Asthma

☐ COPD

☐ Chronic kidney disease (CKD)

☐ Dementia

Please remember that treatment regimes may change for comorbidities not yet covered by this list.

CLOSE

38,300
across 75+ topics

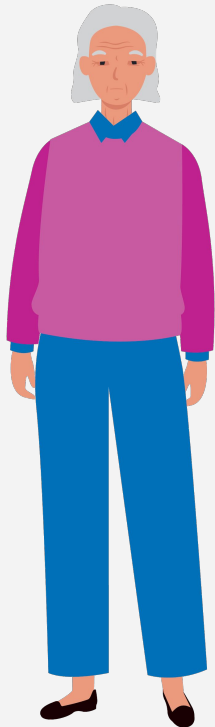
The only CDS tool
designed to address
comorbidities

Clinical scenario

Clinical scenario - COVID-19



Heart failure + Depression



Patient presents

A 70-year-old woman comes to the Emergency Department on Friday evening with shortness of breath and a fever.

She has been unwell for a week and has a history of **heart failure** and **depression**. She is on medication to address her existing comorbidities.

Tests and chest x-ray confirm the clinical suspicion of severe **COVID-19 infection** with bilateral lung infiltrates.

Examination also confirms the patient has crackles throughout her chest and oedema to her ankles.

Clinical scenario - COVID-19



Heart failure + Depression

Clinical scenario A (Comorbidities not actively considered)

COVID-19 managed correctly but heart failure and depression missed. Standard treatment given for COVID-19 infection.



No careful management of her depression. Steroids make it worse.



Heart failure not monitored. Fluid overload.



NSAIDs started. Further fluid overload and renal impairment.



Cardiovascular medication not reviewed. Renal failure worsens.



Clinical scenario B (Comorbidities tool used)

COVID-19, heart failure and depression managed correctly. Patient starts to recover from COVID-19 - heart failure and depression remain well managed.



Careful management of her depression when taking corticosteroids.



Heart failure monitored. Fluid status kept under review.



NSAIDs avoided. No fluid overload or renal dysfunction.



Cardiovascular medication kept under continuous review.



Mood status monitored. Psychiatric liaison if needed.

Clinical scenario - COVID-19



Heart failure + Depression



Patient outcome

As a result of not treating the patient's comorbidities the patient in scenario A becomes seriously unwell - with renal failure, decompensated cardiac failure, and deterioration in her mood.

She is admitted to the intensive care unit and spends an additional 8 days in hospital than the patient in scenario B.

From the patient's perspective, she has had a **prolonged hospital stay, inconvenience, pain, worsening of depression, and distress.**



Clinical scenario - COVID-19



Heart failure + Depression



Costs

The extra cost associated with the patient in scenario A's prolonged length of stay includes:

- The number of bed days and the type of bed days. In this scenario, the extra cost in bed days adds up to £4,636.¹
- Treatment of the depression: £2,085.²

The total extra cost would thus be: £6,721.

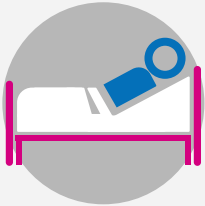
Remember - this is just two comorbidities added to one acute condition for one patient.



Clinical scenario - COVID-19



Heart failure + Depression



25% of patients with severe COVID-19 have a history of heart failure.¹



COVID-19 has been associated with depression among survivors. Previous coronavirus outbreaks have been associated with depression in up to **15% of patients**.^{2, 3}



Over 775,000 patients have been admitted to hospital with COVID-19 in the UK so far (March 2022).

Comorbidities in Sweden

- Melis et al. looked at the incidence and predictors of multimorbidity in elderly people in Sweden. They found that **multimorbidity has a high incidence in old age and that mental health-related symptoms are likely predictors of multimorbidity**, suggesting a strong impact of mental disorders on the health of older people. (1)
- Ergatoudes studied the prevalence of non-cardiac comorbidities and mortality in patients with heart failure in Sweden. They found that **patients with heart failure with preserved ejection fraction had a high prevalence of hypertension, diabetes, stroke/TIA, anemia, pulmonary disease, liver disease, sleep apnea, gout and cancer**. (2)
- Dong et al. looked at multimorbidity patterns of and use of health services by Swedish 85-year-olds. They found **comorbidities to be common and that these tended to occur in clusters** - including vascular, cardiopulmonary, cardiac (only for men), somatic–mental (only for men), mental disease (only for women). Patterns of cardiac and pulmonary conditions were better than a single morbidity in explaining hospitalization. (3)

1. Melis R, Marengoni A, Angleman S, Fratiglioni L. Incidence and predictors of multimorbidity in the elderly: a population-based longitudinal study. PLoS One. 2014 Jul 24;9(7):e103120.

2. Ergatoudes C, Schaufelberger M, Andersson B, Pivodic A, Dahlström U, Fu M. Non-cardiac comorbidities and mortality in patients with heart failure with reduced vs. preserved ejection fraction: a study using the Swedish Heart Failure Registry. Clin Res Cardiol. 2019 Sep;108(9):1025-1033.

3. Dong HJ, Wressle E, Marcusson J. Multimorbidity patterns of and use of health services by Swedish 85-year-olds: an exploratory study. BMC Geriatr. 2013 Nov 6;13:120.

Comorbidities in Norway

- In one study 39% had ≥ 2 multimorbid conditions with ≥ 1 frailty measure, and 17% had ≥ 3 multimorbid conditions with ≥ 2 frailty measures. Multimorbidity with frailty is common, and social inequalities persist until age 80 years in women and throughout the lifespan in men.
- In another study on average, the GPs carried out 20 consultations addressing 43 different issues on a typical day in their practices. Multimorbidity was a factor in 29% of the consultations, mental disorders in 22% and stress and life strains in 18%.
- In another study of stroke the patients had 4.7 (SD: 1.9) chronic conditions corresponding to the predefined list of morbidities.

Kristin Hestmann Vinjerui, Pauline Boeckxstaens, Kirsty A Douglas, Erik R Sund Prevalence of multimorbidity with frailty and associations with socioeconomic position in an adult population: findings from the cross-sectional HUNT Study in Norway. BMJ Open 2020 Jun 15;10(6):

Tor Magne Johnsen, Børge Lønnebakke Norberg, Frode Helgetun Krogh, Johann Agust Sigurdsson, Linn Getz Complex issues in general practice - a prevalence study Tidsskr Nor Lægeforen. 2020 Jun 29;140(10).

Rune Aakvik Pedersen¹, Halfdan Petursson^{2,3}, Irene Hetlevik² Stroke follow-up in primary care: a Norwegian modelling study on the implications of multimorbidity for guideline adherence BMC Fam Pract. 2019 Oct 18;20(1):138.

Comorbidities in Denmark

- Friis et al. conducted a study of the co-occurrence of multiple long-term conditions in people with multimorbidity in Denmark. They found that **33% of the population had 2 or more conditions**. They found a high prevalence of somatic and mental health disorders. (1)
- Schiøtz et al. looked at older adults taking multiple medications. **All participants had two or more chronic conditions; the median number of conditions was 6**. The most prevalent chronic condition was heart disease (87%), hypertension (86%), dyslipidaemia (69%), chronic pain (58%), diabetes (56%), COPD (42%), and osteoporosis (39%). (2)
- Another study by Plana-Ripoll et al. looked at mental health comorbidities. They found that **comorbidity within mental disorders is pervasive, and the risk persists over time**. (3)
- This final study by Taleshan et al. found that **refugees in Denmark had higher risk of multimorbidity**. (4)

1. Friis K, Pedersen MH, Larsen FB, Lasgaard M. A National Population Study of the Co-Occurrence of Multiple Long-Term Conditions in People With Multimorbidity, Denmark, 2013. *Prev Chronic Dis*. 2016 Jan 28;13:E12.

2. Schiøtz ML, Frølich A, Jensen AK, Reuther L, Perrild H, Petersen TS, Kornholt J, Christensen MB. Polypharmacy and medication deprescribing: A survey among multimorbid older adults in Denmark. *Pharmacol Res Perspect*. 2018 Oct 23;6(6):e00431.

3. Plana-Ripoll O, Pedersen CB, Holtz Y, Benros ME, Dalsgaard S, de Jonge P, Fan CC, Degenhardt L, Ganna A, Greve AN, Gunn J, Iburg KM, Kessing LV, Lee BK, Lim CCW, Mors O, Nordentoft M, Prior A, Roest AM, Saha S, Schork A, Scott JG, Scott KM, Stedman T, Sørensen HJ, Werge T, Whiteford HA, Laursen TM, Agerbo E, Kessler RC, Mortensen PB, McGrath JJ. Exploring Comorbidity Within Mental Disorders Among a Danish National Population. *JAMA Psychiatry*. 2019 Mar 1;76(3):259-270.

4. Taleshan N, Petersen JH, Schiøtz ML, Juul-Larsen HG, Norredam M. Multimorbidity and mortality thereof, among non-western refugees and family reunification immigrants in Denmark - a register based cohort study. *BMC Public Health*. 2018 Jul 6;18(1):844.

Comorbidities in Finland

- A study by Husko et al. on **patients with heart failure** in Finland showed a **high prevalence of comorbidities** among these patients. The most common co-morbidities were essential hypertension (58%), chronic elevated serum creatinine (57.3%), atrial fibrillation and flutter (55.1%), and chronic ischaemic heart disease (46.4%). (1)
- A study by Garin et al. of global multimorbidity patterns showed that **Finland had a high prevalence of multimorbidity** (68.25). Multimorbidities reported included angina, arthritis, asthma, cataract, COPD, cognitive impairment, depression, diabetes, edentulism, hypertension, obesity, and stroke. (2)

1. Huusko J, Kurki S, Toppila I, Purmonen T, Lassenius M, Gullberg E, Wirta SB, Ukkonen H. Heart failure in Finland: clinical characteristics, mortality, and healthcare resource use. ESC Heart Fail. 2019 Aug;6(4):603-612. doi: 10.1002/ehf2.12443. Epub 2019 May 3. PMID: 31054212; PMCID: PMC6676304.

2. Garin N, Koyanagi A, Chatterji S, Tyrovolas S, Olaya B, Leonardi M, Lara E, Koskinen S, Tobiasz-Adamczyk B, Ayuso-Mateos JL, Haro JM. Global Multimorbidity Patterns: A Cross-Sectional, Population-Based, Multi-Country Study. J Gerontol A Biol Sci Med Sci. 2016 Feb;71(2):205-14. doi: 10.1093/gerona/glv128. Epub 2015 Sep 29. PMID: 26419978; PMCID: PMC5864156.

Comorbidities in England and Wales

- 59.5% of patients in England and Wales with a heart attack had at least 1 of the following long-term health conditions at the time of their heart attack: diabetes, chronic obstructive pulmonary disease or asthma, heart failure, renal failure, cerebrovascular disease (stroke), peripheral vascular disease, or hypertension.
- Estimates of comorbidity in the community [in Wales] are consistent with previous findings: comorbidity was common, and for some conditions (e.g. COPD and osteoporosis), it was almost ubiquitous.

Hanlon, Peter et al. "Representation of people with comorbidity and multimorbidity in clinical trials of novel drug therapies: an individual-level participant data analysis." *BMC medicine* vol. 17,1 201. 12 Nov. 2019, doi:10.1186/s12916-019-1427-1

Hall, Marlous et al. "Multimorbidity and survival for patients with acute myocardial infarction in England and Wales: Latent class analysis of a nationwide population-based cohort." *PLoS medicine* vol. 15,3 e1002501. 6 Mar. 2018, doi:10.1371/journal.pmed.1002501

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Add your patients' comorbidities and get an instant, tailored management plan.



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 Comorbidities o

Comorbidities

- Challenges to guidelines
- Challenges to quality improvement
 - Measurement
 - Intervention
 - Ongoing measurement

Comorbidities: task

Are comorbidities a challenge for your institution? If so, how?

Is frailty an issue?

What are the main clusters of comorbidities that your patients have? Which combinations prove the most difficult to treat?

What have you done to tackle this so far?

How does the issue of comorbidities present a challenge to quality improvement and patient safety?

How would you use a tool like this?

Nominate a spokesperson and take notes and report back.

“It improved the safety of the medical care he was receiving”: an impact evaluation of BMJ Best Practice Comorbidities in the management of patients with multiple conditions

We asked a cohort of junior doctors to use the BMJ Best Practice Comorbidities Manager in their actual clinical practice. We then asked them to fill in a simple questionnaire outlining what difference, if any, the tool made to their practice.

The evaluation showed that **BMJ Best Practice is effective at helping junior doctors to improve the care that they provide to patients with multiple conditions and that it does have an impact on patient care.**

When it doesn't change practice, it can still have an effect by reassuring junior doctors that their practice is correct.

Evaluation of BMJ Best Practice Comorbidities in the management of patients with multiple conditions - impact on doctors

“The tool was very useful in this lady mentioned, where a **difficult decision had to be made regarding safe anti-platelet therapy** for her acute coronary syndrome but also in the presence of suspected GI [gastrointestinal] bleeding (although she was haemodynamically stable with no significant drop in her serum haemoglobin). **The tool helped me rationalise my choice of agent.**”

Specialty Doctor in Acute Medicine

“It helped me to **consider the co-morbidities instead of having tunnel-vision towards the acute disease process.**” “His systolic blood pressure was 88, however looking back in clinic letters this was his norm and I was able to stop the IVT he had running.” “This improved our care as the fluid may have worsened the situation if left to continue.”

Junior doctor / resident

“It was very useful to have the different options for managing stable and unstable patients, **putting into context all the different comorbidities that needed to be addressed.**”

Internal Medicine Trainee

“While I was confident of the management of his co-morbidities, the tool helped to **maintain a holistic approach to his care.**”

Specialty Doctor in Acute Medicine

“A good reminder to review asthma medications and ensure optimal medications; additionally there was a **prompt to review the patient's mental health which was useful** (depression), particularly when substance misuse was involved.”

Junior doctor / resident

“The treatment algorithm with the comorbidities app showed the **importance of early input from the diabetic team**, especially as the patient was nil by mouth.”

Surgical Trainee / resident

“A good reminder to review diabetic management and we consequently **involved the diabetic specialist nurses** to ensure optimum management of the patient.”

Junior doctor / resident

Evaluation of BMJ Best Practice Comorbidities in the management of patients with multiple conditions - impact on patients

“It improved the safety of the medical care he was receiving.”

Junior doctor / resident

“Allowed a more patient-centred approach and encouraged exploration of patient wishes.”

Junior doctor / resident

“This will help shorten the hospital stay of the patient.”

Surgeon in Training / resident

“Ensured that the patient did not have diabetic-related complications and allowed the team to be more aware of the management.”

Junior doctor / resident

“Following the guidance on the treatment of the acute condition alongside the pre-existing comorbidities, the team was able to get a definite plan from day 0 and the patient was immediately allocated to the most appropriate ward, thus improving the quality of care, shortening the hospital stay and having a better experience overall.”

Senior House Officer / resident

The voice of patients

“I’ve had a number of health concerns recently, it’s been one thing after another.

A **good healthcare professional** for me is one who puts me at ease, listens and really hears, is genuinely empathic, thinks about what is going to work for me and is not dismissive of my opinions.

Honesty regarding their knowledge and ability to refer to others is also vital.”

BMJ Best Practice

+ Comorbidities



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