PHARMACEUTICAL
PRESS
Essential Knowledge

Guidance for patient with septic shock

Guidance to support the multidisciplinary team manage a critically ill patient with septic shock.

Supporting complex decision-making in critical care

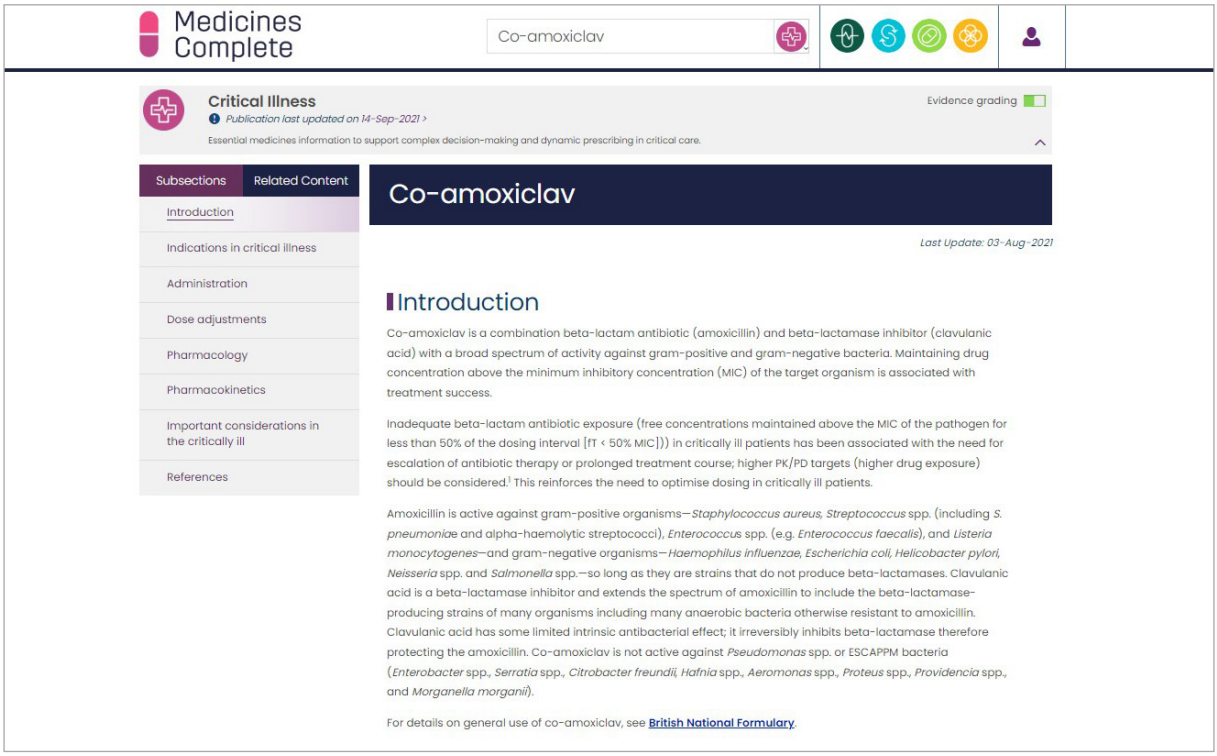
Critical Illness

Guidance for patient with septic shock

Using essential knowledge at the point of care

AK, a 42-year-old male, is transferred from a surgical ward to the intensive care unit (ICU) with septic shock. He had abdominal surgery five days earlier.

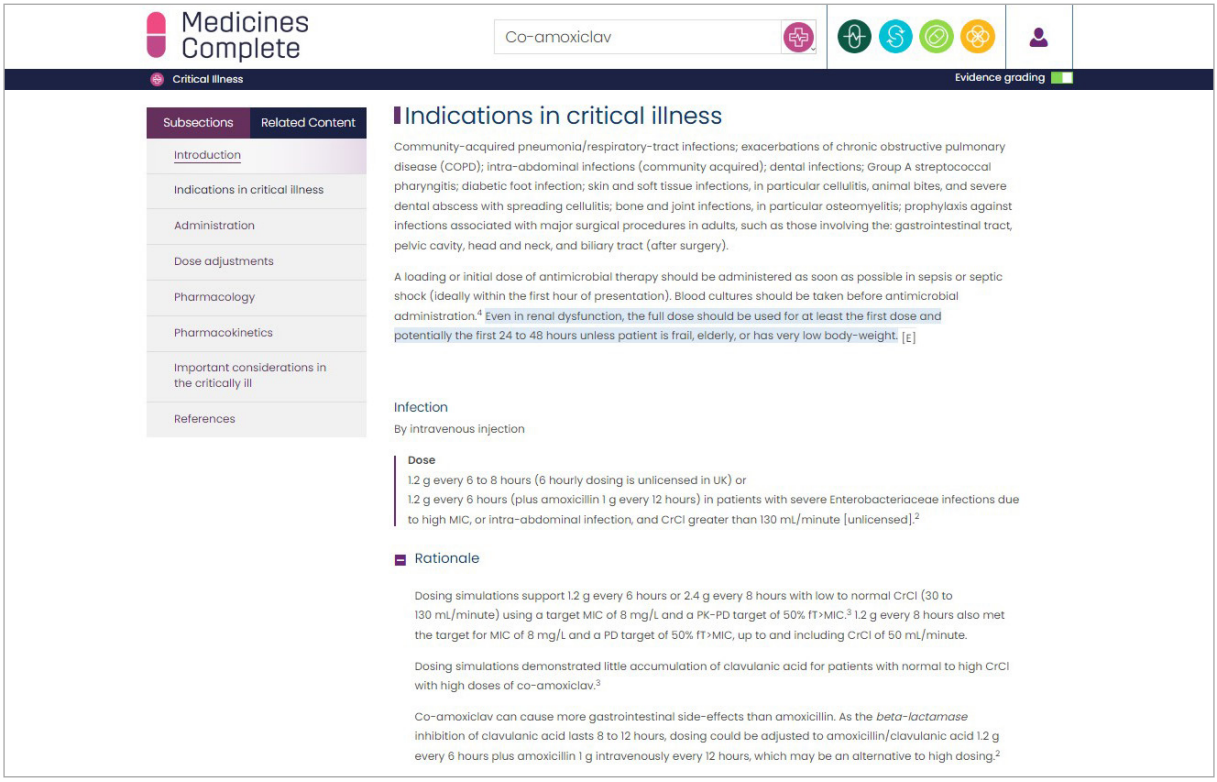
Critical Illness drug monographs are intended to provide comprehensive guidance to support the care of acutely unwell adult patients, managed in ICU. Monographs are presented in a standardised format including information on indication and dose, administration, dose adjustments, pharmacokinetics (PK) and pharmacodynamics (PD) observed in critical illness, as well as other important considerations in this patient group. The evidence-based recommendations consider the effects of acute illness and organ failures, as well as the impact these have on optimising drug therapy.



Dosing

Suspecting a severe Enterobacteriaceae infection, the team review the latest evidence to guide the dosing of co-amoxiclav.

The dosing information is immediately accessible and adapted for reference at the patient bedside. Where dosing information is unlicensed, this is clearly indicated with the relevant references cited.



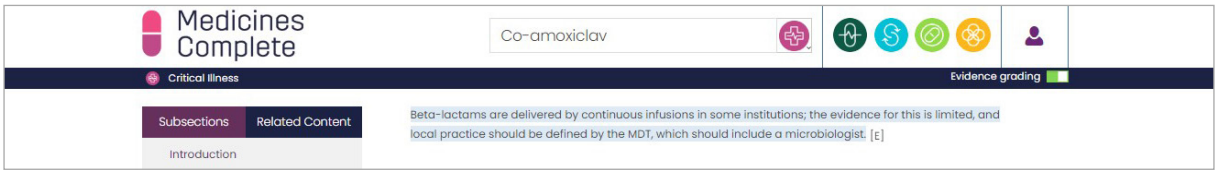
Rationale

Comprehensive information is available through the expandable rationale section that provides a detailed clinical commentary. The rationale explains the evidence behind the recommendations and provides expert critical appraisal of the literature, to inform further review and study.

Expert opinion

While the evidence-based literature in critical care has strengthened over the last few years, there are many situations where evidence is lacking or inconclusive. In these situations, recommendations reflect best-practice and the consensus opinion of the Critical Illness editorial team, comprised of

world-renowned critical care, renal and antimicrobial experts working in clinical practice. These recommendations are identified clearly as expert opinion and have been evidenced-graded within the drug monograph.



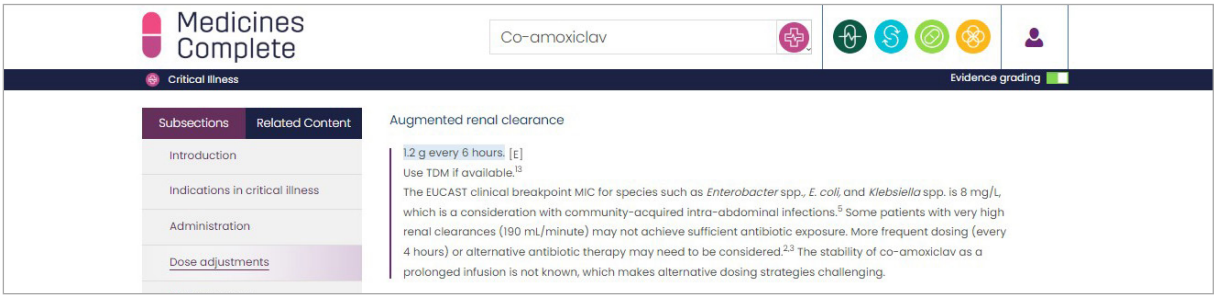
Dose adjustments

There is a high clinical suspicion that AK has augmented renal clearance (ARC) and the Minimum Inhibitory Concentration (MIC) for Enterobacteriaceae is anticipated to be high. To account for the changes in clearance, AK's co-amoxiclav is increased to optimise dosing.

Drug monographs have been specifically designed to consider PK and PD changes observed in critical illness. The risk in critical illness, especially with some antimicrobials in the acute phase, is that insufficient doses are given. This can be due to changes associated with critical illness PK or because doses are incorrectly adjusted in acute kidney injury, renal replacement therapy, or other extracorporeal circuits.

Critical care patients are at high risk of adverse reactions and side effects from drugs, with some easier to predict than others. Toxicity caused by the accumulation of drugs is often considered and drug interactions are well recognised, although not always acted upon in clinical practice. Therefore, a balance between toxicity and undertreatment has to be made. Ideally, this should be done on a daily basis.

Critical Illness provides detailed recommendations on dose adjustments including those required for acute kidney injury, chronic kidney disease, ARC and extra-corporeal membrane therapies.



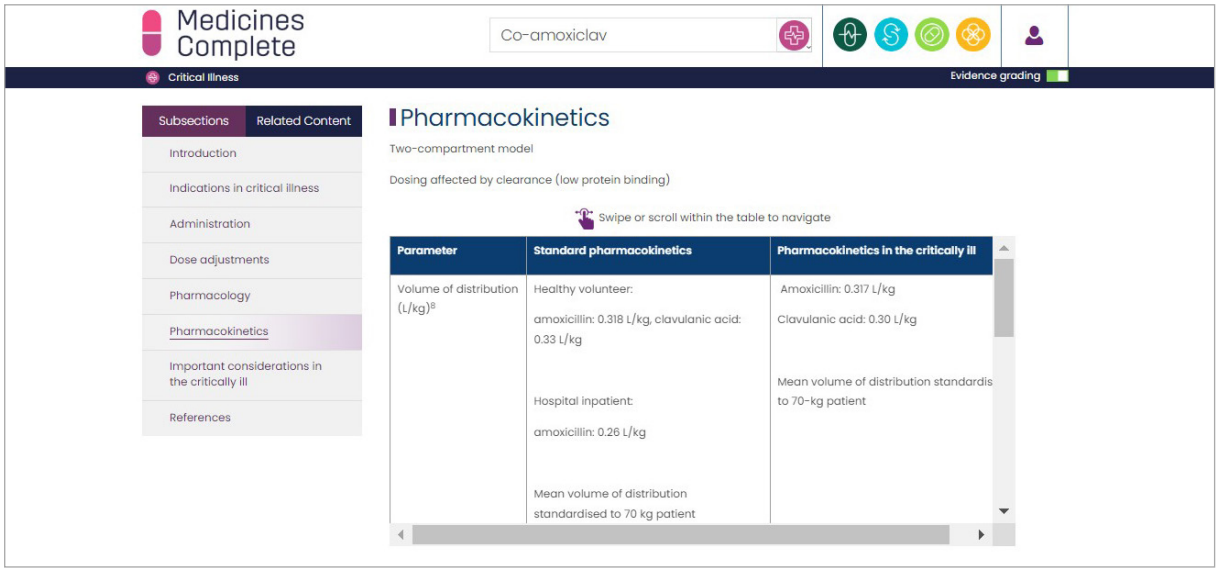
Pharmacokinetics

The ICU pharmacist wants to learn more about the other potential differences in PK parameters to consider.

To provide effective and safe treatment, it is crucial to understand the PK of a drug, and how the PK will be affected by critical illness.

Critical Illness provides information on PK parameters, including key differences between healthy, hospitalised, and the critically ill. These differences can be significant and standard drug information is often not suitable in critical care.

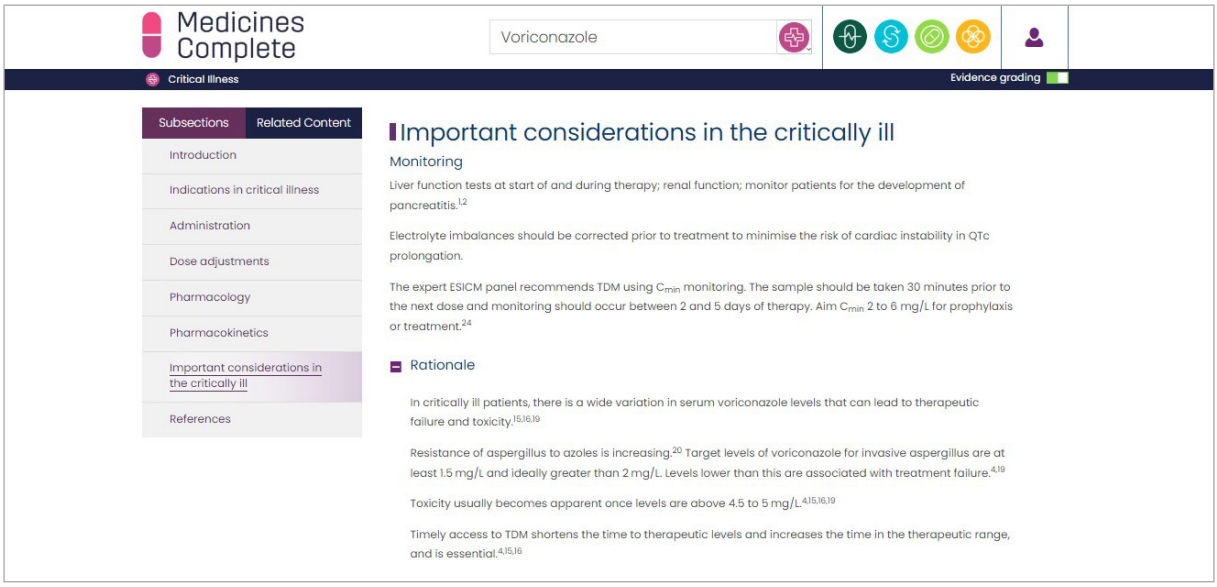
Curated by international experts and supported by recent PK studies, the information gives the multidisciplinary team the knowledge to make decisions on drug selection, dosing, monitoring, and aids in identifying the risk of an adverse effect.



Monitoring

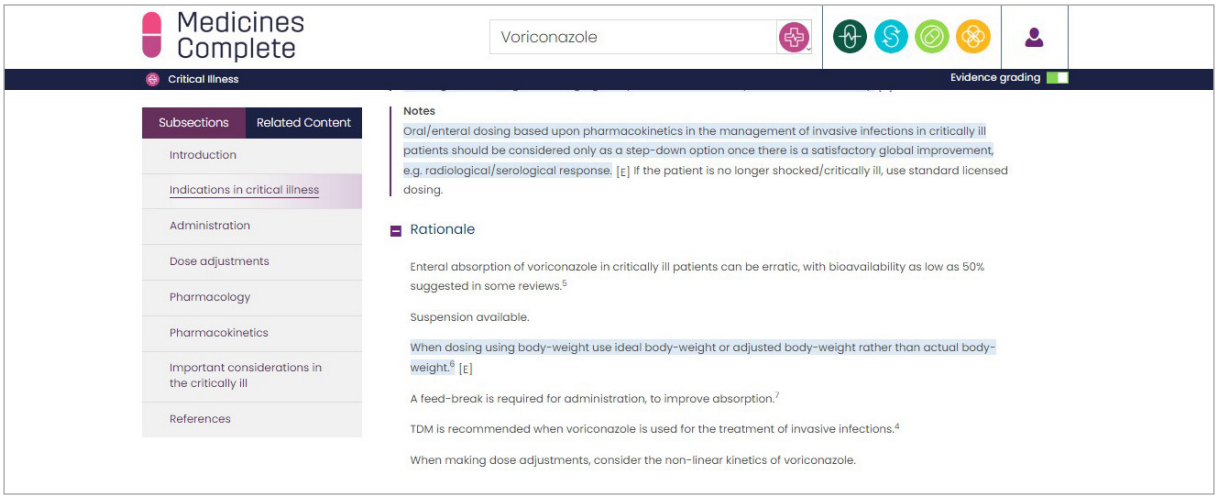
72 hours later, a fluconazole-resistant candida infection is reported in AK's results. The Infectious Diseases team recommend voriconazole with therapeutic drug monitoring (TDM) to ensure treatment is within the optimal range. The team would like to confirm the best practice for voriconazole TDM.

Critically ill patients are at risk of drug-related harm, both from toxicity as well as therapeutic failure. Drug monographs provide actionable monitoring recommendations, including TDM targets where relevant. Like other monograph sections, recommendations are based on evidence, are fully referenced, and include an expandable rationale section with detailed clinical commentary.



A week later AK is improving, and the team considers switching the voriconazole from IV to oral. The team are unclear on when this change should be made.

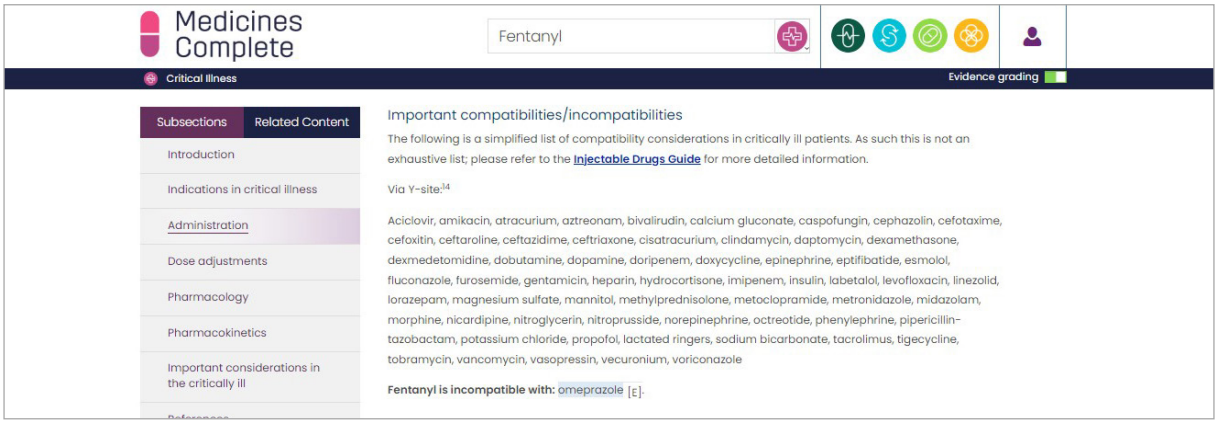
Decisions on drug dosing and administration should be made regularly as a patient's clinical status can rapidly change. Critical Illness provides dosing recommendations to support dynamic prescribing, in this case including advice on how and when to approach a change in route or formulation.



Administration

While reviewing the patient's chart, the nurse is concerned about any incompatibilities with his other medicines which include fentanyl, omeprazole and midazolam. They plan to run several drugs through a Y-site.

Delivering multiple drugs intravenously is common in this setting and introduces challenges with administration and timing. Essential compatibilities/incompatibilities are included in the drug monograph, saving time by removing the need to consult a separate resource.



Related content

AK's condition has stabilised and he is transferred back to the general surgical ward. The ward pharmacist reviews AK's medication chart using MedicinesComplete.

MedicinesComplete makes it easy for healthcare professionals to access essential medicines information at the point of care. Related content suggestions are provided so that users can easily move between trusted evidence-based resources including British National Formulary, Stockley's Drug Interactions and Martindale: The Complete Drug Reference.