DAC® Hydrogel Coating — Frequently Asked Questions (FAQ)

Product Overview

Q1: What is DAC® Hydrogel Coating?
A: DAC® (Defensive Antibacterial Coating) is a CE-marked, fast-resorbable hydrogel composed of hyaluronic acid and polylactic acid. It is applied directly to orthopaedic and trauma implants at the time of surgery, forming a temporary physical barrier to prevent bacterial adhesion and biofilm formation, while permitting normal bone healing and osseointegration.

Q2: How long has DAC® been in clinical use?
A: DAC® has been commercially available for over 10 years, with no modifications since its launch. During this time a wealth of clinical experience has been gained see Q11 below.

Preparation & Use

Q3: How is DAC® supplied and prepared?
A: DAC® is supplied as a sterile powder, which is mixed in the operating theatre with sterile water to create a hydrogel. Preparation typically takes 3 to 5 minutes. Once mixed, you can leave the two syringes connected until the hydrogel is needed. Mixing should take place 10 to 15 minutes before use, therefore it is recommended to mix at the start of the procedure.

Q4: How far in advance can DAC® be prepared before surgery?
A: The hydrogel can be hydrated and prepared up to 4 hours prior to application.

Q5: How much DAC® is needed for a procedure?
A: A 5ml syringe is generally sufficient to coat a primary cementless hip or knee arthroplasty implant. Larger implants or complex revision cases may require a 10ml size.

Q6: Does DAC® require refrigeration?
A: Yes — unopened DAC® should be stored between 2°C and 8°C. Once mixed, it can remain at room temperature in the sterile field in theatres until required.

Q7: Is there a technique video available?
A: Yes — DAC® mixing and application videos are available at: https://www.dac-coating.com/dac/video/

Q8: What training resources are provided?
A: Adler Ortho UK offers face-to-face theatre training, DAC® instructions supplied in every box, theatre wall posters, mixing videos, surgical technique brochures and on-site clinical support.

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DAC® and Antibiotics

Q9: Is DAC® as pharmaceutical product?
A: No — DAC® is licensed as a medical device and is not supplied in combination with any other products. DAC® is licensed as a physical barrier coating without antibiotics and is intended for the prevention of infection.

Q10: Are there any clinical studies on DAC® being used with antibiotics and what safety and efficacy effect would this have on the product?
A: Yes — There have been a large number of independent studies *[1,2,3], where antibiotics have been used in conjunction with DAC® Hydrogel to ensure its safety and efficacy. Since Antibiotics are not supplied with DAC® the choice and use is at the surgeons discretion, appropriate to the patient. Allergies to antibiotics must be considered if they are to be used as well as the overall level of antibiotics the patient is receiving. In general studies conducted have used a concentration of 2% to 5%.

Q11. What do the results of DAC® without antibiotics show in the short medium and long term?
A: We have conducted a retrospective, matched case-control study evaluating DAC® gel, a hyaluronan-based barrier, in reducing post-operative infections following fracture fixation.

Patients:
DAC® group: 150 patients (May 2023 – April 2024)
Control group: 150 patients (Jan 2021 – Aug 2022)

Intervention:
DAC® gel was applied to implant surfaces (plates, screws, nails) without added antibiotics, alongside standard surgical care and systemic prophylaxis.
Follow-up: **1–3 weeks, 3 months, and 6 months post-op**

6-Month Outcomes:
Control group: 8 infections (of which 2.2% required DAIR, 9% needed prolonged antibiotics (p = 0.0023 vs DAC®)
DAC® group: 1 infection

These early results suggest DAC® may reduce infection rates in at-risk fracture patients. Full findings awaiting publication.*[4]

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Clinical Performance & Evidence

Q12: What clinical evidence supports DAC®?
A: DAC® is supported by over 50 published studies, papers, abstracts and presentations over a 10 year period, including two multi-centre randomised controlled trials M-RCT :

- Fast-resorbable antibiotic-loaded hydrogel coating to reduce post-surgical infection after internal osteosynthesis: a multi-centre randomised controlled trial. J Orthop Traumatol. 2017 Jun;18(2):159-169 *[5]*

- Does an Antibiotic-Loaded Hydrogel Coating Reduce Early Post-Surgical Infection After Joint Arthroplasty? J Bone Jt Infect. 2016 Jul 19:1:34-41.*[6]*

Q13: What infection reduction rates have been reported?
A: Clinical studies report a reduction in infection rates in high-risk revision cases, with significant reductions also seen in primary arthroplasty procedures.

Q14: Is there evidence of DAC® remaining on implants after press-fit insertion?
A: Yes — Animal and Human femur studies confirm that around 80% of DAC® hydrogel remains on the implant surface following press-fit insertion, with the remainder adhering to surrounding bone.

Q15: Does DAC® affect osseointegration or implant fixation?
A: No — DAC® fully resorbs within 72 hours and has demonstrated no adverse effects on bone healing or cemented fixation in both preclinical and clinical studies.

Q16: Can DAC® be applied to cemented implants?
A: It can be applied to surfaces not covered by bone cement, such as press-fit extensions or non-cemented modular components in hybrid procedures.

Q17: Are there any adverse effects reported?
A: Adverse reactions are rare since DAC® is manufactured from

- Hyaluronic acid (HA) is a naturally occurring substance found in the human body. Highly biocompatible, surfaces coated with HA show minimal bacterial biofilm growth, making it renowned for its exceptional moisture retention capabilities.

- Poly-lactic acid (PLA) is a safe, biodegradable and bio-absorbable synthetic polymer obtained from renewable sources (corn or other cereals). It is commonly used in various applications, including medical devices. PLA decomposes into harmless byproducts in the environment, contributing to its eco-friendliness.

Q18: Is there a contraindication if DAC® contacts soft tissue?
A: No adverse effects have been reported when DAC® comes into contact with surrounding soft tissues.

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Availability, Pricing & NHS Use

Q19: Is DAC® available on NHS Supply Chain frameworks?
A: DAC® is currently available through the **All Wales** and **Scottish National Frameworks** and a submission has also been made to the **NHS TOS3 framework**. As DAC® is a unique product, the framework team is currently reviewing its classification to determine the most appropriate category.

In the meantime, many NHS hospitals procure DAC® directly via **local purchasing routes**. If you require further information on local procurement options or processes, please contact your local DAC® representative, who will be happy to assist.

Q20: Which UK hospitals use DAC®?
A: A large number of high-volume oncology, revision and trauma centres have all used DAC® routinely for several years. Reference presentations have been made at Welsh Orthopaedic Society 2024, BAJIS 2024, and BHS 2025 for example.

Q21: What does DAC® cost?
A: Prices for this unique Hydrogel are available from your local Adler Ortho representative.

Q22: Is DAC® NICE approved?
A: A submission has been made for a NICE technology appraisal. Review timelines are ongoing. The volumes of clinical papers are available on the website.

Additional Clinical and Economic Value

Q23: How does DAC® compare to other infection-prevention products?
A: DAC® is the only CE-marked, fast-resorbable hydrogel with over a decade of clinical evidence across orthopaedic procedures. Unlike newer or unproven products, DAC® has established efficacy and no reported product-related adverse events.

Q24: What are the economic benefits?
A: A healthcare economic study by Trentinaglia et al. demonstrated that antibacterial coatings like DAC® reduce healthcare costs by preventing infections, particularly in high-risk patients. A UK multi-centre study (Garfield et al., 2020) found that prosthetic joint infections following primary hip replacement increase NHS inpatient costs by over £33,000 — rising significantly higher in revision cases.

Q25: Where can I find out more clinical evidence ?
A: A comprehensive list of all clinical papers on DAC can be found on the website www.dac-coating.com

Refs.

**1 Overstreet D, McLaren A, Calara F, Vernon B, McLemore R. Local gentamicin delivery from resorbable viscous hydrogels is therapeutically effective. Clin Orthop Relat Res. 2015 Jan;473(1):337-47. doi: 10.1007/s11999-014-3935-9. Epub 2014 Sep 17. PMID: 25227556; PMCID: PMC4390953.*

**2 Drago L, Boot W, Dimas K, Malizos K, Hänsch GM, Stuyck J, Gawlitta D, Romanò CL. Does implant coating with antibacterial-loaded hydrogel reduce bacterial colonization and biofilm formation in vitro? Clin Orthop Relat Res. 2014 Nov;472(11):3311-23. doi: 10.1007/s11999-014-3558-1. PMID: 24622801; PMCID: PMC4182393.*

3 Pressato, D.; Battista, A.; Govoni, M.; Vivarelli, L.; Dallari, D.; Pellegrini, A. The Intraoperative Use of Defensive Antibacterial Coating (DAC®) in the Form of a Gel to Prevent Peri-Implant Infections in Orthopaedic Surgery: A Clinical Narrative Review. Materials 2023, 16, 5304. https://doi.org/10.3390/ ma16155304*

**4 Data on file.*

**5 Malizos K et al. Fast-resorbable antibiotic-loaded hydrogel coating to reduce post-surgical infection after internal osteosynthesis: a multi-centre randomised controlled trial. J Orthop Traumatol. 2017 Jun;18(2):159-169*

**6 Romanò CL et al. Does an Antibiotic-Loaded Hydrogel Coating Reduce Early Post-Surgical Infection After Joint Arthroplasty? J Bone Jt Infect. 2016 Jul 19:1:34-41.*

To find out more about how DAC® can benefit your practice, please feel free to contact us or visit www.dac-coating.com.
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