

CALALCANI

From clinical requirements to a working medication calculator

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The problem

Nephrologists need to compare alkalinizing medications and calculate their sodium and potassium contributions across different formulations and units. I worked with a nephrologist and a pharmacist at Lyon University Hospitals to turn that complexity into a focused tool.

What I personally owned

I proposed the roadmap and Figma mockup for physician review, structured medication information and calculation logic, and built the React/JavaScript interface. The project progressed from a spreadsheet proof of concept to an operational v1.0 in September 2025.

The screenshot shows the CALALCANI web application. At the top, it says 'CALALCANI' and 'Calculateur d'apports en sels alcalins ioniques'. Below this is a search bar with the placeholder text 'Rentrez une spécialité ou une DCI d'alcalinisant'. Two medication cards are displayed: 'SIBNAYAL® 8 mEq' and 'UROCIT 540'. Each card lists the components (Citrate tri potassium, Bicarbonate de potassium) and their contributions to sodium and potassium. A summary section at the bottom, titled 'Total de cette sélection', shows the total alkalizing contribution (z mEq) and the individual contributions of citrate and bicarbonate to sodium and potassium.

Alcalinisants	lons
Citrate = x mEq soit y mg	Potassium = x mEq soit y mg
Bicarbonate = x mEq soit y mg	Sodium = x mEq soit y mg
Au total : z mEq alcalinisant	

Original Figma mockup, thesis figure 9, p.46. Historic design example.

Three design decisions

Start with medication search. The main task begins with selecting a medication by name rather than navigating a long catalog.

Keep individual and total contributions visible. Each medication has its own card; aggregate alkalinizing, sodium and potassium values remain separate.

Review before polishing. A spreadsheet prototype established the calculation approach; the mockup gave clinicians a concrete interface to discuss before implementation.

Work with specialists

Feedback from roughly ten nephrologists informed interface and documentation improvements. This was qualitative feedback, not a measured adoption or clinical-outcome study.

Build, check, improve

The screenshot shows the CALALCANI web application interface. At the top, there are logos for HCL, CALALCANI, and ORKID. The main title is "Calculateur d'apports en alcalinisants et en ions potassiques et sodiques". Below this is a warning message: "Avertissement : cet outil est un calculateur, il ne vise pas à se substituer à la décision du prescripteur concernant la situation propre de chaque patient. Bien que la documentation et les recommandations officielles contenues dans le calculateur soient considérées comme vérifiées et exactes au moment de la mise en ligne, ni les auteurs ni les éditeurs ne peuvent être tenus responsables des erreurs ou omissions qui auraient pu être commises. En cas de doute, merci de vous référer aux Résumés des Caractéristiques des Produits. Dernière mise à jour des spécialités médicamenteuses : 31 août 2025".

On the left, there is a "Mode d'emploi" button. In the center, there is a search bar with the placeholder text "Recherchez une spécialité ou une DCI d'alcalinisant". On the right, there is a "Tableau récap des apports par spécialité" button and a "Liste médic." button.

The main content area displays two medication entries:

- SIBNAYAL 8 mEq** (1 x Sachet(s) de granulés LP):
 - COMPOSITION UNITAIRE DU MEDICAMENT : Citrate tri-potassique mono-hydraté (282.0 mg (0.9 mmol)), Bicarbonate de potassium (527.0 mg (5.3 mmol)).
 - Alcalinisants par unité : Citrate (2.6 mEq), Bicarbonate (5.3 mEq).
 - Ions par unité : Potassium (7.9 mmol).
- UROCIT-K 10 mEq** (2 x Comprimés LP):
 - COMPOSITION UNITAIRE DU MEDICAMENT : Citrate tri-potassique (1080.0 mg (3.3 mmol)).
 - Alcalinisants par unité : Citrate (10.0 mEq).
 - Ions par unité : Potassium (10.0 mmol).

Below the medication entries, there is a "Total de cette sélection" section with the text "avec : SIBNAYAL 8 mEq, UROCIT-K 10 mEq". It shows the following results:

- Alcalinisants :** Citrate = 22.6 mEq, Bicarbonate = 5.3 mEq, **Au total : 27.8 mEq**.
- Ions :** Potassium = 27.9 mmol soit 1089.0 mg, Sodium = 0.0 mmol soit 0.0 mg.

At the bottom, there is a disclaimer: "L'outil CALALCANI est un calculateur. Il ne se substitue pas à la responsabilité du médecin prescripteur." and a "Télécharger le PDF" button.

The footer contains the copyright notice "© Briac VANNEY 2024 - 2025", a "Contact" link, a "Note de mise à jour" link, and a "Mentions légales (non disponibles)" link.

Implemented interface, thesis figure 14, p.63. Historic example values, not treatment instructions.

Engineering and product follow-through

The v1.0 included **35 automated tests** covering medication-data integrity, calculation logic and displayed outputs. Reference scenarios were checked manually and through automated tests. The tool remained a calculator supporting the clinician's work.

The interface included an integrated usage guide, a medication-summary table and a downloadable result summary. These details made the tool easier to understand and discuss with clinicians. No time saving or clinical benefit was quantified in the thesis.

What this experience transfers to

Implementation: translate specialist requirements into a workflow, make exceptions explicit and define repeatable acceptance checks.

Product and UX: propose a roadmap, use a concrete mockup to resolve ambiguity, collect feedback and stay involved through development and documentation.

Customer work: explain complex behavior in plain language, distinguish a data issue from an interface issue and leave guidance others can reuse.

Sources: Briac Vanney, PharmD thesis, project organization pp.33-34; prototyping pp.45-47; implementation p.63; testing pp.64-68; feedback and improvements pp.69-73. Screenshots reproduced from the thesis. No public beta URL included.