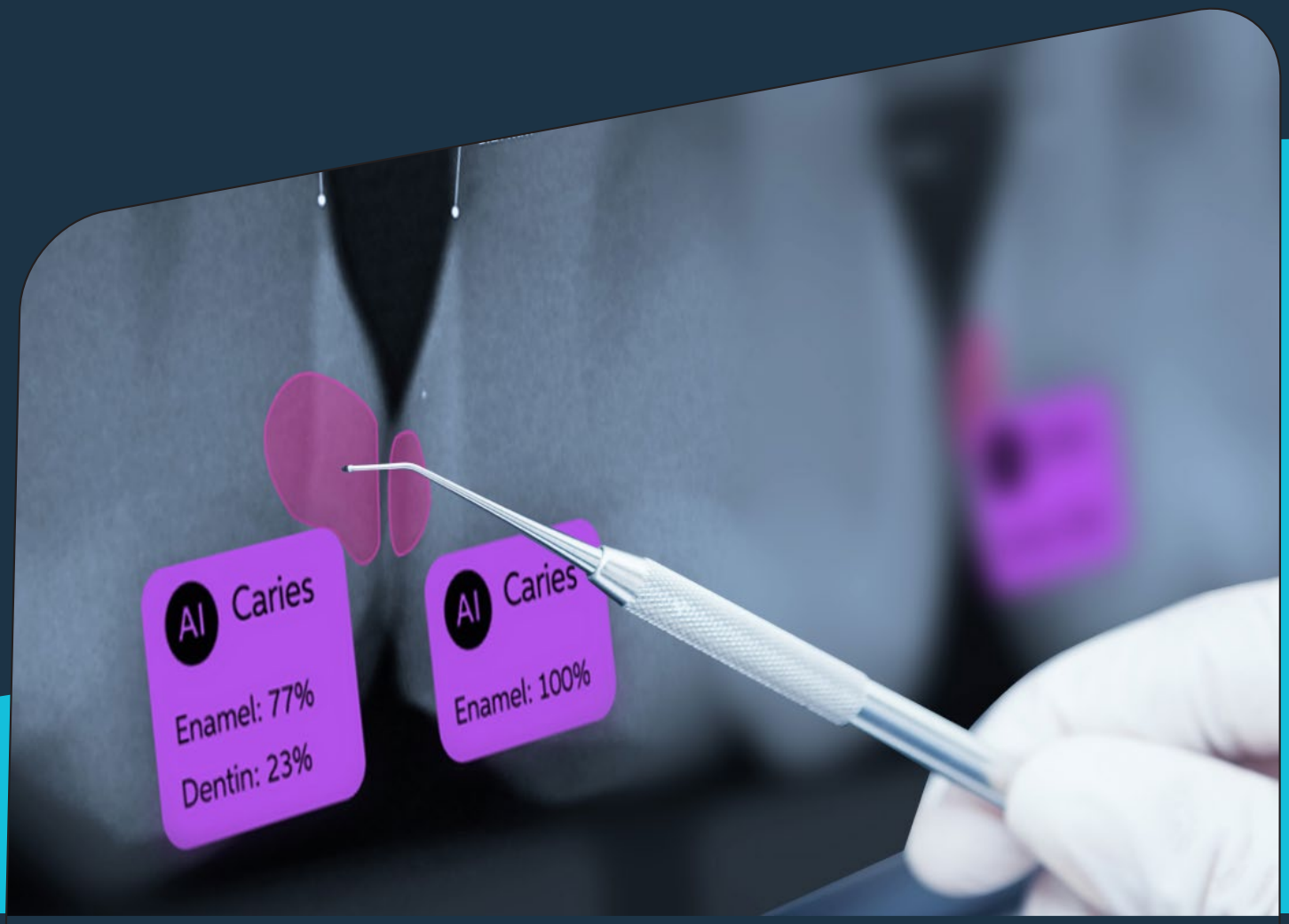
Pearl

The future of dentistry, powered by **AI**.



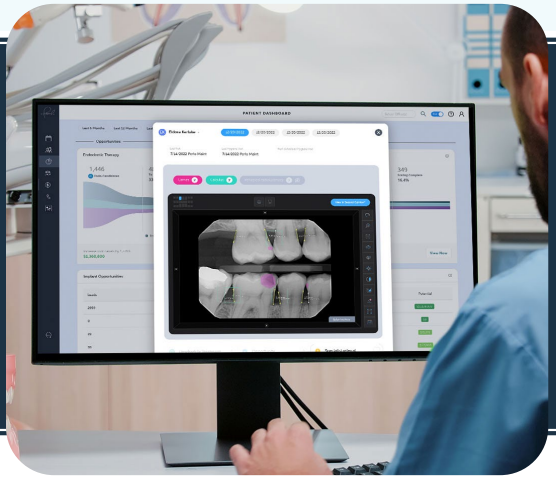
Over the last 10 years, the use of AI in medicine has taken off.

$26B

invested in healthcare AI between 2012-2022

With more than $26 billion invested in AI for healthcare over the last decade, doctors and staff have become familiar with administrative and clinical AI solutions––and some patients have come face-to-face with AI-powered pulmonary and ocological diagnostic technologies.

AI is the biggest revolution in dental care since the advent of digital dentistry.



In dentistry, the AI revolution has come more slowly. But its late arrival belies the immediacy and scale of its influence. Why is dental AI having such a rapid and outsized impact?

- Increases radiologic accuracy in a field where radiography is a standard of care for healthy and unhealthy patients alike.
- Standardizes dental diagnosis and treatment planning in a field where inconsistency frequently spoils patient trust and practice performance.
- Unlocks the valuable potential hidden in the systems and tools introduced with digital dentistry.
- Eliminates key bottlenecks and inefficiencies in dental practice operations that impede optimal clinical and financial outcomes.

> **In the last 15 years, we haven't seen any profound developments in digital dentistry. Pearl has changed that.**

Dr. Victoria Sampson
38 Devonshire Dental

Quality dental care begins with accurate x-ray diagnosis.

Radiography plays a more fundamental role in dentistry than in any other medical field. Not only do dental patients receive x-rays annually to track their health, but x-rays are the point of origin for almost every dental treatment journey. So, when it comes to the dental care, a lot rides on the accuracy of radiologic evaluation.

1.4B
dental x-rays captured annually

39%
of all medical x-rays captured are dental x-rays

BY THE NUMBERS
Dental Radiology

Diagnosing disease in x-rays can be a challenge for any dentist.

Dentists strive to deliver top tier care to every patient, but radiologic evaluations can be a significant impediment to that goal. According to a UCLA study, dentists reading x-rays misdiagnosed the depth of carious lesions 40% of the time. Another 20% of the time they found lesions where there weren't any. On the whole, a review of published research suggests that dentists fail to detect 43% of all carious lesions visible in patient x-rays. The data on radiologic diagnosis of other conditions is only marginally better: On average, dentists miss between 24% and 39% of the calculus, margin discrepancies and periapical radiolucencies that show up in patient x-rays.

Add to those findings the fact that, according to the American Dental Association, dentists see an average of 2.5 patients an hour, or around 20 per day, amounting to 3,300 teeth examined every week––it's pretty clear that they could use some backup.

43%
of caries in dental x-rays are undiagnosed

20%
of caries diagnosed in patients are not actually caries

24%
of periapical radiolucencies in x-rays are undiagnosed

Pearl makes accurately reading x-rays easy.

AI algorithms learn to see, process and understand the world much the way the human brain does–– repeated exposure to images, annotated to draw the algorithm's attention to all relevant features.

To create the most powerful clinical AI solution in dentistry, Pearl assembled the world's largest collection of expertly annotated bitewing, periapical and panoramic x-rays.

When deployed in a dental practice, Pearl's AI enables dentists to read radiographs more accurately and with greater sensitivity than ever before.

37%

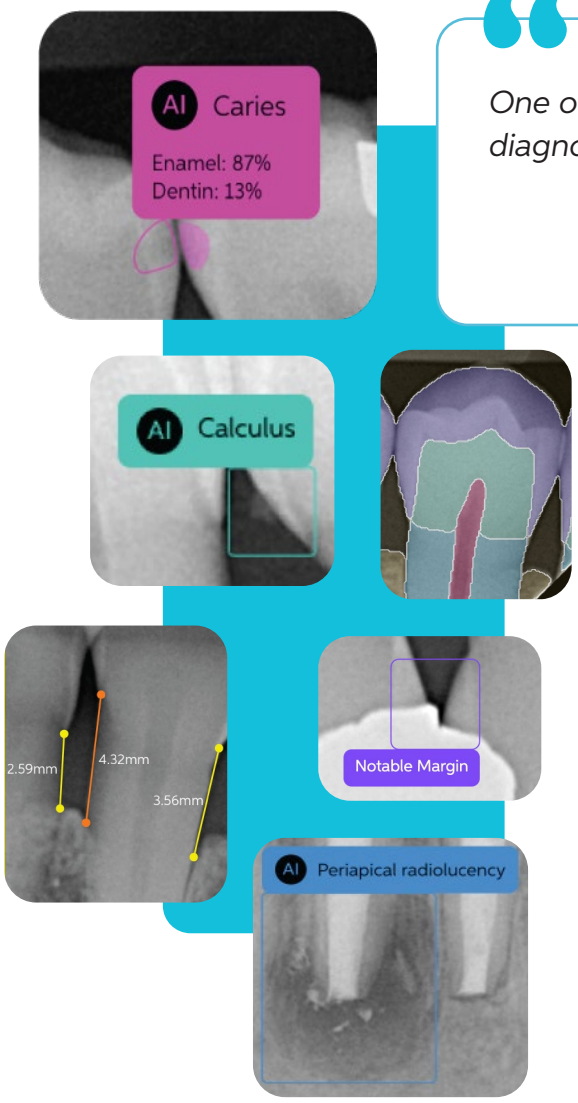
more disease accurately detected with Pearl's help

28%

less incorrectly detected disease with Pearl's help

36%

more confident x-ray diagnosis with Pearl's help



One of the things I love about Pearl is it helps me be a better diagnostician. It's a valuable second opinion. I use it every day.

Dr. Ross Nash
Cosmetic Dentistry of the Carolinas

Industry-leading capabilities afford comprehensive radiologic benefits.

Pearl's AI elevates dentists' radiologic accuracy across more types of dental imagery and for more dental conditions than any other AI system in the world–– supporting comprehensive automatic detection of all the most prevalent conditions found in bitewing, periapical and panoramic x-rays, including:

- Caries
- Periapical radiolucency
- Calculus
- Margin discrepancy
- Impaction
- Periodontal ligament
- Existing restorations
- Decay depth
- Bone level
- Tooth parts

Diagnostic accuracy is vital to patient retention in dentistry.

While a misread x-ray doesn't always lead to misdiagnosis (x-rays aren't the only diagnostic tool in the dentist's chest, after all), when a dentist misdiagoses a patient based on x-ray evidence, the patient may not stick around to see the course correction.

62%

of patients have refused treatment, sought a second opinion or switched dentists following an x-ray diagnosis

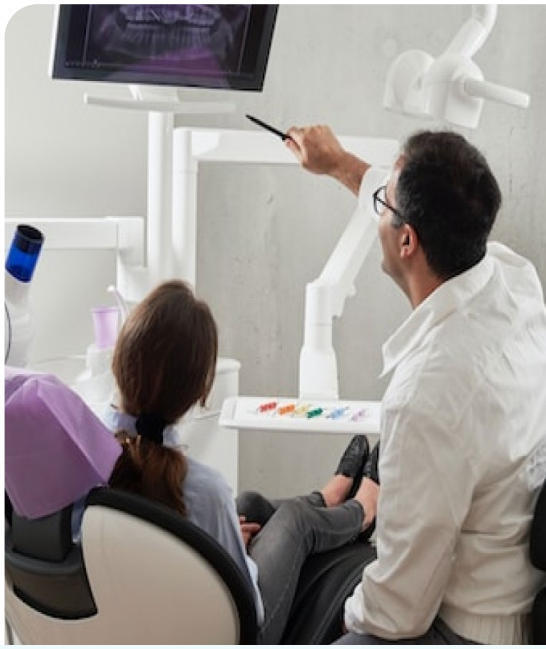
In a recent survey of 600 dental patients, a majority reported that they had on one or more occasions refused treatment (19%), sought a second opinion (25%) or switched dentists (32%) after receiving a radiologic diagnosis.

Patients aren't trained to read dental x-rays, so what makes them think their dentist is misdiagnosing their x-rays?

Given how challenging it is for dentists to accurately read x-rays, consider how the shadowy, indistinct gradations on x-ray images look to the untrained eyes of dental patients. Indeed, 65% of patients say they don't understand what their dentist is pointing out in their x-ray imagery.

Next, consider how patients feel when those indistinct gradations are presented as evidence of conditions that require hundreds or thousands in (often uncomfortable) treatment. It's not so hard to see why many patients distrust radiologic diagnosis.

The success of any dental practice hinges on overcoming that distrust. Why? Trust in diagnosis is the single most import factor influencing treatment acceptance and patient retention.



PATIENT PERSPECTIVES

Radiology & Diagnosis

65%
don't understand their x-rays

59%
don't trust their x-ray diagnosis

78%
say trust in diagnosis is key to accepting treatment

Pearl builds patient trust.

Pearl's AI-backed clinical support not only helps dentists achieve greater accuracy and consistency, it also brings more transparency to their diagnoses, so patients can rest assured that they're getting the highest level of care.

71%

will trust dentist's diagnosis if backed up by AI

People trust computers—and their own eyes. 77% of patients say they are more likely to choose a dentist who uses advanced technology, and 71% say that they would be more likely to trust their dentist's diagnosis if it were backed up by AI software.

That's no suprise, given the way Pearl's AI transforms the patient x-ray viewing experience. It brings technicolor clarity to the traditionally inscrutable grayscale imagery they're used to seeing in the dental chair. When patients see x-rays with crystal clear colorized tooth part mapping, precision automated measurement readings and boldly labled pathology detections, their trust is assured.

CASE ACCEPTANCE

IMPACT BY TREATMENT

RESTORATIVE	+28%
ENDO	+19%
PERIO	+35%

I demoed every dental AI software available and Pearl was the winner by a HUGE margin. It's faster, easier to use, and detects more. It is the only AI that actually does what we've been told that artificial intelligence will do for dentistry.

Dr. Shervin Molayem,
Periodontist & Implant Surgeon, Pair Dental

Digital dentistry holds enormous untapped clinical and commercial potential.

Anyone who has worked in a dental practice long enough to remember the hassle of pulling paper patient records or the noxious odor of x-ray developers can testify to the enormous benefits that digital technologies have brought to dentistry over the past two decades. It's called the 'digital dentistry revolution' for good reason. But, as dental offices relish the efficiency, precision and speed that digital record keeping, imaging and communication brought to clinical care and practice management, they've been unable to capitalize on digital dentistry's most important benefit: mountains of actionable clinical data.

AI provides a cognitive processing layer that unlocks this stored value, enabling us to deliver on the full promise of digital dentistry, turning bits and pixels into better, real-world outcomes.

BY THE NUMBERS

AI-Aided Practice Performance

Production

+22%
General Dentistry

+29%
Specialty

Treatment volume

+17%
Radiographs

+19%
Endo

+12%
Scaling & Root Planing

+40%
Crowns

+46%
Fillings

+24%
Implants

Average Single Location

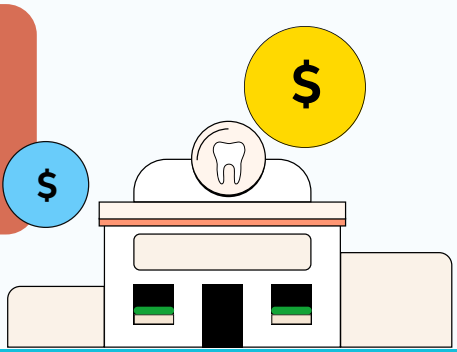
Production Increase

$12.5K /

Average Single Location with Specialty

Production Increase

$28.5K / month



Pearl grows production and elevates patient health.

Pearl's AI-powered practice performance platform integrates computer vision and natural language processing to comb through patient records and x-rays, surfacing clinical performance and patient health insights that enable dental offices to elevate their standard of clinical care while boosting practice-wide production.

Surface unmet treatment need.
Pearl's AI flags every patient with dental conditions that were missed, untreated or undocumented across a practice's entire patient population.

Elevate standard of care.
When morning huddles, scheduling, and communication are guided by AI, office staff are clinically aligned and patients receive consistent quality care.

Track actionable patient health & treatment trends.
AI insights into a practice's clinical performance or the prevalence of specific conditions in a patient population facilitate smarter staffing and procurement.

Drive targeted patient outreach.
With Pearl's help, front office staff apply clinical insight to recall and marketing, ensuring chairs are full, chairtime is efficent, and patients in need are treated.

Increase daily production.
AI-surfaced treatment needs, AI-guided operational efficiency, AI-backed case presentation and AI-enabled clinical quality let practices do more dentistry daily.

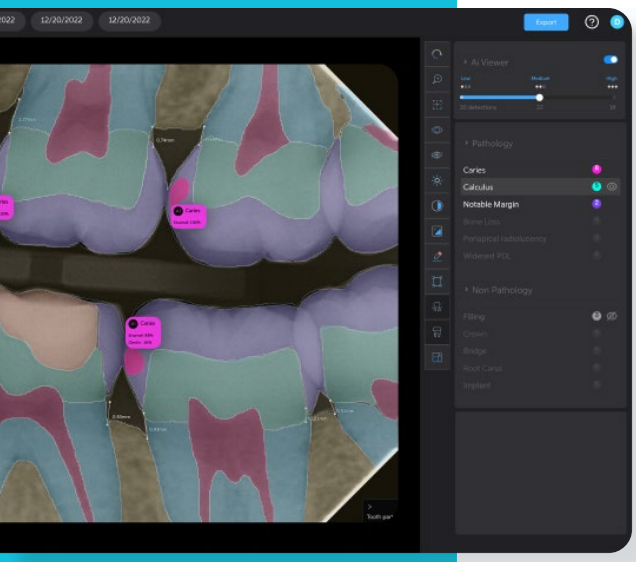
Bring the benefits of AI to younger patients

Young patients need better care.

Teens and young adults are especially vulnerable to tooth decay, so catching and treating caries early helps create healthier lifelong dental patients. According to the UK's Oral Health Foundation, tooth decay is one of the leading causes of school absences, and has cascading effects on self-image and family life.

Pearl catches cavities in teens:

Pearl is the only AI that is FDA-cleared to spot caries in permanent teeth of patients aged 12 and up. That's important, because 50% of patients aged 12- to 19 have had a cavity in at least one of their permanent teeth.



Second Opinion®

AI-powered instant pathology detection to ensure you catch even the hardest-to-spot conditions in your patient's x-rays.

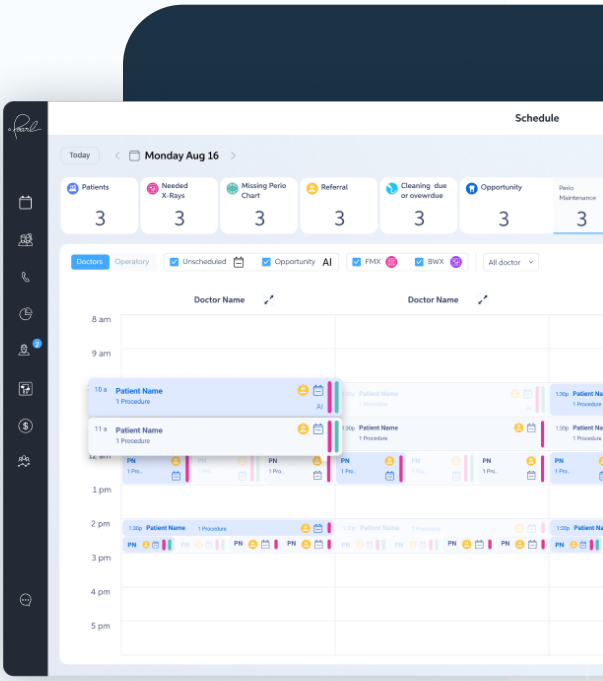
Comprehensive detection capabilities

37%
More disease detected

Better patient communication

Practice Intelligence®

AI-powered pathology detection plus PMS integration to maximize production and patient health in your practice.



AI-guided interactive daily schedule

Treatment opportunity toolset

Intelligent recall & marketing lists

Clinical performance dashboard

Second Opinion® real-time detections

Request your demo today

at hellopearl.com/demo

Pearl is the worldwide leader in dental AI, with a global reputation for excellence.

Today was one of the most exciting days I've had in my 16 years career. It was the first day we integrated Pearl's artificial intelligence for disease detection. It's going to really change dentistry and how we're going to be treating patients.

Dr. Daniel Naysan
Bedford Dental Group

Pearl is poised to fundamentally change how dental diagnosis is done.

Dr. Cindy Roark, Chief Clinical Officer
Sage Dental

In the last 15 years, we haven't seen any profound developments in digital dentistry. Pearl has changed that. We're going to see a huge pickup where dentists see that if they collaborate with AI, they're going to become better dentists.

Dr. Victoria Sampson
38 Devonshire Dental

Every patient during exam and treatment planning has said "Wow!". I think it's an extra layer of validation for them because humans may lie but computers don't.

Dr. Michael Jacobson, Founder
Robertson Dental Group

www.hellopearl.com